

2015

# BALDWIN COUNTY, ALABAMA

## MULTI-HAZARD MITIGATION PLAN

### I. COMPREHENSIVE PLAN

**A multi-jurisdiction plan**

**CITY OF BAY MINETTE**  
**CITY OF DAPHNE**  
**TOWN OF ELBERTA**  
**CITY OF FAIRHOPE**  
**CITY OF FOLEY**  
**CITY OF GULF SHORES**  
**TOWN OF LOXLEY**  
**TOWN OF MAGNOLIA SPRINGS**  
**CITY OF ORANGE BEACH**  
**TOWN OF PERDIDO BEACH**  
**CITY OF ROBERTSDALE**  
**TOWN OF SILVERHILL**  
**CITY OF SPANISH FORT**  
**TOWN OF SUMMERDALE**  
**BALDWIN COUNTY**



Prepared under the direction of the  
Baldwin County Hazard Mitigation Planning Committee



With the support of the Baldwin County EMA by:



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Draft December 14, 2015



# 2015 Baldwin County, Alabama, Multi-Hazard Mitigation Plan

## I. Comprehensive Plan

*City of Bay Minette, City of Daphne, Town of Elbert, City of Fairhope, City of Foley, City of Gulf Shores, Town of Loxley, Town of Magnolia Springs, City of Orange Beach, Town of Perdido Beach, City of Robertsdale, Town of Silverhill, City of Spanish Fort, Town of Summerdale, and Baldwin County*

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## Executive Summary

### I. Background

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U. S.C. 5165 as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, as amended, 42 U. S. C. 4001 *et seq.* reinforced the need and requirement for mitigation plans, linking flood mitigation assistance to State, Tribal and Local Mitigation Plans. FEMA has implemented the various hazard mitigation planning provisions through regulations in 44 CFR Part 201, which also permit man-made hazards to be addressed in a local mitigation plan. These Federal regulations describe the requirement for a State Mitigation Plan as a condition of pre- and post-disaster assistance as well as the mitigation plan requirement for local and Tribal governments as a condition of receiving hazard mitigation assistance. 44 CFR 201.6(d)(3) requires that a local jurisdiction must review and revise its local plan to reflect any changes and resubmit it for approval within five years in order to remain eligible for mitigation grant funding. The initial plan and the 2010 update were prepared by Lehe Planning, LLC, under the direction of the Baldwin County EMA. The 2004 Baldwin County, Alabama, Natural Hazards Mitigation Plan and the 2010 Baldwin County, Alabama, Multi-Hazard Mitigation Plan were approved by FEMA and subsequently adopted by all Baldwin County jurisdictions.

### II. Organization of the Plan

The 2015 Baldwin County Multi-Hazard Mitigation Plan is organized to parallel the 44 CFR Section 201.6 Federal requirements for a local mitigation plan, as interpreted by the Local Mitigation Plan Review Guide, FEMA, October 1, 2011, and the Local Mitigation Planning Handbook, FEMA, March 2013. The organization of this plan is consistent with the organization of the 2013 Alabama Hazard Mitigation Plan, which also parallels the Federal requirements. The main body of the plan, the “Comprehensive Plan” has seven chapters, as follows:

Chapter 1	Introduction
Chapter 2	Prerequisites
Chapter 3	Community Profiles
Chapter 4	The Planning Process
Chapter 5	Risk Assessment
Chapter 6	Mitigation Strategy
Chapter 7	Plan Maintenance Process

This plan update is also organized similar to the 2004 and 2010 Baldwin County plans, which allows for easy cross reference. Each chapter of the 2015 plan update references the requirements of 44 CFR Section 201.6 that it addresses and includes a table that summarizes the updates to the 2010 plan.

A supplemental plan document includes “Community Action Programs” which breaks out the Community Action Programs for each jurisdiction and notes priorities, time frame, implementation responsibilities, cost estimates, if available, and potential funding sources.

The “Appendices” provide evidence and supporting documentation to the Planning Process, Risk Assessment, and Mitigation Strategy chapters of the Comprehensive Plan.

### **III. Highlights of the Plan**

Through a comprehensive planning process and risk assessment, this plan update continues a unified approach among all Baldwin County communities for dealing with identified hazards and associated risk issues. It serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities. It also evaluates the previous plans and notes successes and shortcomings. The plan update suggests adjustments and introduces new measures to address the identified hazards.

Each hazard that may be viewed as a possible risk to Baldwin County is described in detail; the vulnerability of the County and each jurisdiction to the hazards are addressed: goals, objectives, and mitigation measures are stated; and mitigation action programs that direct each community in the implementation and monitoring of the measures are included in the update.

#### **Chapter 1. Introduction**

Chapter 1 of the plan update provides a general introduction to the plan update. It explains the purpose of the plan and which jurisdictions participated in the plan update. The chapter mentions the regulations that require the active participation by local jurisdictions in the mitigation planning process. Also included in this chapter is the explanation of various funding sources that can be applied for if a plan update is submitted to FEMA. Summaries of both the initial plans’ and this update’s planning processes are also included in this section.

#### **Chapter 2. Prerequisites**

Chapter 2 of the plan update addresses the Federal regulations governing the development and updating of the mitigation plan. It addresses 44 CFR §. 201.6 and the

prerequisites required through these regulations. It describes the various mitigation grants and other federal money available for the County's use for mitigation planning.

Chapter 2 also addresses multi-jurisdictional participation and plan adoption. It describes the relationship and responsibilities of the various entities involved in the planning process. It also explains the various means in which they could participate in the planning process. The multi-jurisdictional plan adoption procedure is explained in the last section of the chapter.

### **Chapter 3. Community Profiles**

Chapter 3 profiles the participating jurisdictions. Each jurisdiction within Baldwin County is described in detail. The overall geographic setting and history of Baldwin County and the participating jurisdictions are addressed. Summaries about the jurisdictions' government, demographics, economy, utilities, media, transportation and climate are included.

### **Chapter 4. The Planning Process**

Chapter 4 explains the planning process in detail. It explains how the public was involved in the planning process, what steps the Baldwin County Hazard Mitigation Planning Committee (HMPC) took in developing the plan update, what documents were consulted in the plan update, and how the plan was prepared, reviewed and updated.

From April 2015 through December 2015, the Baldwin County Hazard Mitigation Committee held five meetings. The Baldwin County EMA staff and the planning consultant team organized the planning process and the HMPC representative membership. The HMPC, comprised of representatives from all the jurisdictions and organizations concerned with hazard mitigation, guided the development of this plan.

At the meetings, each Committee member was asked to participate in a series of exercises designed to solicit input into the planning process. A notice was sent to various local and regional agencies with an interest in hazard mitigation, agencies that have the authority to regulate development, and representatives of businesses, academia and other private and non-profit interests informing them of the draft plan and requesting their input and cooperation.

Relevant planning and regulatory tools - plans, studies, reports, ordinances, regulations and technical information – were accessed through the Internet by the planning team. The team reviewed the documents for sections that pertained to hazard mitigation. These documents were closely examined to see what mitigation measures were currently being pursued and what new measures could be integrated into future revisions.

The Hazard Mitigation Planning Committee solicited public input into the mitigation plan, primarily its website at [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com). The public was also invited to attend committee meetings and provide their comments and concerns. The HMPC sponsored a special community meeting for additional public input into the planning process during the drafting stage of the plan. At that meeting, the plan, hazards, and mitigation measures were discussed among participants. Displays and handouts regarding various hazards were made available to the public. The public was encouraged to fill out a community survey about the risks and threats of hazards.

A public hearing to receive comments was held by each jurisdiction prior to adopting the plan by resolution, as required by State law. The original resolutions and public hearing minutes are kept on file at the administrative offices of each jurisdiction and the Baldwin County EMA office.

The plan review and update process resulted in a comprehensive update of the entire 2010 plan elements, which was achieved through a process that involved the following tasks, among others:

- Update of the Community Profiles to reflect changed demographics, economic characteristics, and growth and development trends;
- An update of the assessment of local capabilities to carry out mitigation measures;
- An evaluation of the status and effectiveness of Community Mitigation Action Programs adopted in the 2010 plan, which is reflected in the 2015 Action Programs for each jurisdiction;
- A reassessment of risks to include detailed research and analysis of hazards affecting the communities, as well as adding man-made hazards to the Risk Assessment;
- A complete update of the HAZUS – MH maps and analysis reports for floods, earthquakes, and hurricanes;
- A reexamination of development trends and exposure to risks;
- A review and recommitment to the vision for disaster-resistant communities; the plan goals; and support of the 2013 Alabama state goals for hazard mitigation;
- Identification and analysis of a comprehensive range of mitigation alternatives;
- A reprioritization of mitigation actions and projects;
- Revised mitigation action programs for each jurisdiction to better reflect the results of the plan update; and,
- Revisions to the plan maintenance procedures to institute streamlined amendments and better ensure continuous monitoring and implementation of mitigation actions.

**Chapter 5. Risk Assessment**

Chapter 5 first describes the process used to identify and prioritize the hazard risks to each Baldwin County jurisdiction. It describes the resources used to identify the hazards and provides detailed descriptions of each identified hazard. A hazard profile for each identified hazard includes a general description of the nature of the hazard in Baldwin County, followed by an explanation of the location, extents, previous occurrences, and the probabilities of future occurrences. The hazard profiles rely heavily on maps, charts, tables, and figures to communicate the profile information. The Federal requirements for repetitive loss properties are included in this chapter.

Vulnerability assessments are reported for each identified hazard. The vulnerability assessments include a summary of the impacts of each hazard on each jurisdiction. The estimates of losses are calculated in HAZUS-MH for hurricane winds, floods, and earthquakes. Further, the planning team evaluated land use and development trends.

Chapter 5 concludes with an analysis of how the risks vary among the jurisdictions. This concluding section summarizes the findings of the hazard profiles and vulnerability assessments.

A complete reevaluation of the hazards was performed by the planning team in the plan update process. Hazard profiles and vulnerability assessments were based on current and more complete information since the original plans. The latest release of HAZUS-MH was applied to the risk assessments. .

**Chapter 6. Mitigation Strategy**

Chapter 6 addresses the full range of mitigation strategies evaluated by the HMPC. It explains the common community vision for disaster resistance and the various goals that the plan is trying to achieve, along with companion objectives that can be used to achieve those goals. It identifies and analyzes mitigation actions and projects. A description of participation and compliance with the National Flood Insurance Program is provided. Implementation of mitigation actions from the 2010 plans and local capabilities for carrying out mitigation measures has been assessed. The final section details the County's overall mitigation strategy. The "Community Action Programs" supplement Chapter 6 by breaking out the action programs for each community.

The goals in the previous plans have been updated based on current conditions, including the completion of mitigation measures over the five-year plan implementation cycle, the 2015 update to the risk assessment in Chapter 5, the update to the risk assessment in the 2013 Alabama Hazard Mitigation Plan, and the update of State goals and mitigation priorities reflected in the state plan.

The goals for this plan update are the same as in 2010, as follows:

1. **Prevention Goal.** Manage the development of land and buildings to minimize risks of loss due to natural and man-made hazards.
2. **Property Protection Goal.** Protect structures and their occupants and contents from the damaging effects of natural and man-made hazards.
3. **Public Education and Awareness Goal.** Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.
4. **Natural Resources Protection Goal.** Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.
5. **Structural Projects Goal.** Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where found to be feasible, cost effective, and environmentally suitable.

The strategic planning approach for identifying and analyzing mitigation actions and projects follows five categories of a comprehensive hazard mitigation program, which also form the basis for the goals of this plan. These program categories were developed by FEMA for managing a successful mitigation program and were used as guidelines for identifying and sorting the alternative mitigation measures. They are prevention, property protection, public education and awareness, natural resources protection, and structural projects.

The Hazard Mitigation Planning Committee (HMPC) and local jurisdictions selected among the available mitigation measures within each of the above categories and prioritized the measures by applying the STAPLEE method. They also evaluated the consistency with the vision, goals, and objectives; weight of benefit to cost; FEMA and State funding priorities for Hazard Mitigation Assistance grants; and the fiscal and staffing capabilities of the jurisdictions for carrying out the measures. Mitigation measures that resulted in loss reduction to existing and new buildings and infrastructure were chosen for the final list of considered measures. Each jurisdiction assigned a priority to selected measures, established a general completion schedule, assigned administrative responsibility for carrying out the measures, estimated costs, where possible, and identified potential funding sources, including potential eligibility for FEMA Hazard Mitigation Assistance programs.

A separate action program has been established for each community in the supplemental document, "Community Action Programs." The proposed measures are

within the authority of the jurisdiction or are part of a joint effort among multiple jurisdictions covered by this plan. All actions included in these programs are achievable and within the capabilities of each jurisdiction.

### **Chapter 7. Plan Maintenance Process**

Chapter 7 describes the maintenance process for the 2015 Baldwin County Multi-Hazard Mitigation Plan. It explains the monitoring, evaluation and updating procedures and how to incorporate the plan into other planning mechanisms. It also describes the need for continuing public participation in the plan maintenance process.

The plan explains that ongoing monitoring of the plan should occur throughout the next five years until the next scheduled update. Ongoing status reports of each jurisdiction's progress will be reviewed by the HMPC, with the support of the Baldwin County EMA staff, and should include the following information:

- Actions that have been undertaken to implement the scheduled mitigation measure, such as, obtaining funding, permits, approvals or other resources to begin implementation.
- Mitigation measures that have been completed, including public involvement activities.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.

The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources.

Plan evaluation should occur within sixty days following a significant disaster or an emergency event having a substantial impact on a portion of or the entire Baldwin County area or any of its jurisdictions. A risk assessment should be done and the findings should determine any new mitigation initiatives that should be incorporated into this plan to avoid similar losses from future hazard events.

The HMPC will oversee an annual evaluation of progress towards implementation of the Mitigation Strategy. In its annual review, the HMPC will discuss the following topics to determine the effectiveness of the implementation actions and the need for revisions to the Mitigation Strategy:

- Are there any new potential hazards that have developed and were not addressed in the plan?

- Have any disasters occurred and are not included in plan?
- Are there additional mitigation ideas that need to be incorporated into the plan?
- What projects or other measures have been initiated, completed, deferred or deleted? Why?
- Are there any changes in local capabilities to carry out mitigation measures?
- Have funding levels to support mitigation actions either increased or decreased?

Any updates, revisions, or amendments to the Baldwin County Emergency Operations Plan, local comprehensive plans, capital improvement budgets or plans, zoning ordinances and maps, subdivision regulations, building and technical codes, and related development controls should be consistent with the goals, objectives, and mitigation measures adopted in this plan. As part of the subsequent five-year update process, all local planning mechanisms should again be reviewed for effectiveness, and recommendations for new integration opportunities should be carefully considered. Multi-hazard mitigation planning should be integrated into existing public information activities, as well as household emergency preparedness. Ongoing public education programs should stress the importance of managing and mitigating hazard risks. Consequently, the Hazard Mitigation Planning Committee is dedicated to direct involvement of its citizens in providing feedback and comments on the plan throughout the five-year implementation cycle and interim reviews.

Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the Hazard Mitigation Planning Committee. The public will be able to express their concerns, ideas, and opinions at the meetings. At a minimum, public hearings will be held during the annual and five-year plan updates and to present the final plan and amendments to the plan to the public before adoption.

### **Appendices**

The final sections of the plan are included in the “Appendices.” The evidence and supporting documents for this plan update that were able to be included in this plan update have been inserted into the following appendices:

- A *Federal Requirements for Local Mitigation Plans* contains the entire 44 CFR Sec. 201.6 requirements for local mitigation plans.
- B *Community Mitigation Capabilities* reports on the results of a comprehensive survey and assessment of each jurisdiction’s capabilities to implement mitigation measures.

- C *2010 Plan Implementation Status* reports the evaluation results of implementation of mitigation measures recommended for implementation by each jurisdiction in the 2010 plan.
- D *HMPC Hazard Identification and Ratings* reports the results of the Committee exercise for identifying hazards for inclusion in the 2015 plan update and the ratings of the hazards for extents and probability of future occurrences, along with completed descriptions of each identified hazard.
- E *Hazard Profile Data* contains detailed hazard records of the National Weather Service, the National Climatic Data Center, and local records.
- F *Identification and Analysis of Alternative Mitigation Measures* examines the range of mitigation measures considered for the 2015 Mitigation Strategy.
- G *Committee Meeting Documentation* documents the HMPC meetings during the drafting phase of the 2015 plan update and interim meetings over the previous five year planning cycle.
- H *Community Involvement Documentation* reports on the full scope of community involvement opportunities during the drafting phase of the 2015 plan update.
- I *Multi-Jurisdictional Participation Activities* records the scope of participation of all jurisdictions in the drafting and adoption of the 2015 plan update.
- J *Adopting Resolution* presents a model resolution for plan adoption by local governing bodies.

## Chapter 1 – Introduction

- 1.1 Background
- 1.2 Authority
- 1.3 Funding
- 1.4 Eligibility for FEMA Hazard Mitigation Assistance Grants
- 1.5 Baldwin County, Alabama, Natural Hazards Mitigation Plan (2004) and Baldwin County, Alabama, Natural Hazards Mitigation Plan Update (2006)
- 1.6 The 2010 Baldwin County Multi-Hazard Mitigation Plan Update
- 1.7 The 2015 Baldwin County Multi-Hazard Mitigation Plan Update

### 1.1 Background

The 2015 Baldwin County Multi-Hazard Mitigation Plan is a multi-jurisdictional guide for all communities that have participated in the preparation of this plan through the Hazard Mitigation Planning Committee (HMPC). The political jurisdictions that participated in the development of this plan include the cities of Daphne, Fairhope, Bay Minette, Foley, Spanish Fort, Gulf Shores, Orange Beach, Robertsdale, and the towns of Loxley, Magnolia Springs, Perdido Beach, Summerdale, Silverhill, Elberta and Baldwin County. It fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

### 1.2 Authority

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U. S.C. 5165 as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, as amended, 42 U. S. C. 4001 *et seq.* reinforced the need and requirement for mitigation plans, linking flood mitigation assistance to State, Tribal and local mitigation plans.

FEMA has implemented the various hazard mitigation planning provisions through regulations in 44 CFR Part 201, which also permit man-made hazards to be addressed in a local mitigation plan. These Federal regulations describe the requirement for a State mitigation plan as a condition of pre- and post-disaster assistance as well as the mitigation plan requirement for local and Tribal governments as a condition of receiving hazard mitigation assistance. 44 CFR 201.6(d)(3) requires that a local jurisdiction must review and revise its local plan to reflect any changes and resubmit it for approval within five years of FEMA approval in order to remain eligible for mitigation grant funding.

### **1.3 Funding**

FEMA awarded the Baldwin County Commission a \$30,000 planning grant on September 29, 2014 through the Pre-Disaster Mitigation (PDM) Grant Program to fund 75% of the \$40,000 total cost of the five year plan update for all incorporated and unincorporated areas within Baldwin County. The remaining 25% required for the local match has been satisfied through in-kind contributions.

### **1.4 Eligibility for FEMA Hazard Mitigation Assistance Grants**

Adoption of this plan is the initial step towards continuing eligibility for FEMA Hazard Mitigation Assistance (HMA) grant assistance to participating localities. These FEMA grants include the following programs:

1. The Hazard Mitigation Grant Program (HMGP). The HMGP is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, U.S. Code (U.S.C.) 5170c. It provides opportunities for communities to undertake mitigation measures to reduce the risk of loss of life and property from future disasters during the reconstruction process following a disaster. Funding becomes following a Presidential major disaster declaration in the areas of the State requested by the Governor. The amount of HMGP funding available is based upon the estimated total of Federal assistance for disaster recovery under the declaration: up to 15 percent of the first \$2 billion of the total estimated disaster assistance, up to 10 percent for amounts between \$2 billion and \$10 billion, and up to 7.5 percent for amounts between \$10 billion and \$35.333 billion. For States with enhanced hazard mitigation plans, up to 20 percent for estimated amounts of disaster assistance not to exceed \$35.333 billion can become available. Following the 2011 tornado outbreak, approximately \$70 million became available statewide.
2. The Pre-Disaster Mitigation Grant Program (PDM). The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. For FY 2013, \$23.7 million in PDM funding was available nationwide.

3. The Flood Mitigation Assistance Program (FMA). The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist states and communities with the implementation of measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). For FY 2013, \$120 million in FMA funding was available nationwide. Two types of FMA grants are available to communities:
  - *Planning Grants* to prepare Flood Mitigation Plans
  - *Project Grants* to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. Priority is given to properties that have incurred repetitive flood insurance losses.
4. The Public Assistance Grant Program (Categories C – G) (PA). The Public Assistance Grant Program provides assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations to quickly respond to and recover from major disasters or emergencies declared by the President. Through categories C – G of the PA Program, FEMA provides supplemental Federal disaster grant assistance for the repair, replacement, or restoration of publicly infrastructure and facilities and the facilities of certain Private Non-Profit (PNP) organizations that were damaged by the declared disaster. The PA Program can also be used to protect these damaged facilities from future events through hazard mitigation measures.
5. The Fire Management Assistance Grant Program. Fire Management Assistance Grant Program (FMAGP) provides grants to States, local and tribal governments. Funds can be used for the “mitigation, management, and control of fires on publicly or privately owned forests or grasslands,” where destruction poses such a threat that could result in a major disaster declaration. The State submits a request for assistance to FEMA at the time a "threat of major disaster" exists. The process is expedited with a FEMA decision made within hours. The FMAG provides a 75 percent Federal cost share with the State for eligible firefighting costs, such as “expenses for field camps; equipment use, repair and replacement; tools, materials and supplies; and mobilization and demobilization activities.”

### **1.5 Baldwin County, Alabama, Natural Hazards Mitigation Plan (2004) and Baldwin County, Alabama, Natural Hazards Mitigation Plan Update (2006)**

The planning process began in March 2003 with the appointment of the Hazard Mitigation Planning Committee (HMPC) by the Local Emergency Planning Committee of the Baldwin County Emergency Management Agency (EMA). The committee first convened in March 2003. In June 2004, the plan was approved and adopted by the county and all participating municipalities. Major amendments to this plan were prepared following the devastation of Hurricane Ivan on September 15, 2004. Consequently, the plan was republished in 2006.

The 2004 Baldwin County, Alabama, Natural Hazards Mitigation Plan and the 2006 plan update include unincorporated and incorporated areas within Baldwin County. The plan addresses all natural hazards deemed to threaten property and persons within the county. Both short- and long-term hazard mitigation strategies are addressed, implementation tasks assigned, and funding alternatives identified.

### **1.6 The 2010 Baldwin County Multi-Hazard Mitigation Plan Update**

The Hazard Mitigation Planning Committee (HMPC) re-convened in March 2010 to update the 2004 plan as the 2010 Baldwin County Multi-Hazard Mitigation Plan, which addressed man-made hazards in addition to natural hazards. The Baldwin County Commission retained the firm of Lehe Planning, LLC, to prepare the plan under the direction of the HMPC and the Baldwin County EMA Director, Leigh Anne Ryals. The firm's manager, James E. Lehe, AICP, a professional urban planner, served as the Planning Coordinator for the update. The 2010 HMPC represented unincorporated Baldwin County, the cities of Daphne, Fairhope, Bay Minette, Foley, Spanish Fort, Gulf Shores, Orange Beach, Robertsedale, and the towns of Loxley, Magnolia Springs, Perdido Beach, Summerdale, Silverhill, and Elberta, as well as other stakeholders and interested agencies. The HMPC convened on a regular basis during the update process to oversee the drafting of the plan. Through a comprehensive planning process and risk assessment, the plan created a unified approach among all Baldwin County communities for dealing with identified hazards and associated risk issues. It serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities.

### **1.7 The 2015 Baldwin County Multi-Hazard Mitigation Plan Update**

The Baldwin County HMPC reconvened in April of 2015 and continued to meet throughout the year to update the 2010 plan. The Baldwin County EMA, led by Danon

Hoagland, Planning and Grants Coordinator, managed the overall effort. The firm of Lehe Planning, LLC, was again selected by the Baldwin County Commission to prepare the plan under the direction of the HMPC with the support of the Baldwin County EMA. The firm's manager, professional urban planner James E. Lehe, again coordinated and guided the update process. The 2015 HMPC continued to represent all incorporated and unincorporated Baldwin County jurisdictions, as well as other stakeholders and interested agencies. The plan update continued the comprehensive planning process and risk assessment through a unified approach among all Baldwin County communities. It continues to guide local governments in their ongoing efforts to reduce community vulnerabilities and mitigate potential harm.

## **Chapter 2 – Prerequisites**

- 2.1 Federal Prerequisites
- 2.2 Plan Approval Required for Mitigation Grants Eligibility
- 2.3 Multi-Jurisdictional Participation
- 2.4 Multi-Jurisdictional Plan Adoption

### **2.1 Federal Prerequisites**

This chapter of the Plan addresses the Prerequisites of 44 CFR Sections 201.6(a)(1) and (4) and (c)(5), as follows:

*Section 201.6(a) Plan requirements.*

*(1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. ... A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.*

*(4) Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan ... .*

*Section 201.6(c) Plan content. The plan shall include the following:*

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

### **2.2 Plan Approval Required for Mitigation Grants Eligibility**

FEMA approval of this plan is the initial step towards continuing eligibility for FEMA grant assistance to participating localities and school districts, under the following hazard mitigation assistance programs: the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation Grant Program (PDM), the Flood Mitigation Assistance Program (FMA), Categories C – G of the Public Assistance (PA) Grant Program, and the Fire Management Assistance Grant Program (FMAGP). Once the plan is approved pending adoption, the governing bodies of the participating jurisdictions and school districts must formally adopt the plan and submit their adopting resolutions to FEMA through the Alabama EMA to receive official FEMA approval. This process must take place within twelve months of FEMA's notification of conditional approval pending

adoption. If the plan is not approved by FEMA and locally adopted by resolution of the governing body, the jurisdiction or school board will not be eligible to apply for and receive project grants under any of the FEMA hazard mitigation assistance programs. Hazard mitigation assistance programs have additional requirements for grant eligibility depending on the program's funding source.

### **2.3 Multi-Jurisdictional Participation**

The Baldwin County EMA serves as the lead coordinating agency for mitigation planning. It has been working in conjunction with the Hazard Mitigation Planning Committee (HMPC) and has remained in contact and coordinated mitigation activities with all Baldwin County jurisdictions throughout the period since the initial plan was first approved in 2004. Baldwin County, the cities of Bay Minette, Daphne, Fairhope, Foley, Gulf Shores, Orange Beach, Robertsedale, Spanish Fort, as well as the towns of Elberta, Loxley, Magnolia Springs, Perdido Beach, Silverhill, and Summerdale have continued to participate in the 2015 plan update. In addition to the participating jurisdictions, other stakeholders affected by the plan contributed to the drafting of this update, including Federal, State, and regional agencies, the Baldwin County Board of Education, business interests, academia, non-profits, and the general public. (See Chapter 4 – “The Planning Process” for a more detailed explanation of the organization of the HMPC and the participation of local jurisdictions and stakeholders in the planning process).

School districts are defined as local governments, according to Federal regulations at 44 CFR Section 201.2, and are therefore required to have a FEMA-approved local mitigation plan to be eligible for project grants under FEMA hazard mitigation assistance programs. A school district may choose to participate as a local government that is independent of the municipal and county governments or demonstrate their participation as a stakeholder in another local government's approved mitigation plan. The Baldwin County Board of Education chose the latter avenue of participation and actively participated as a stakeholder in all of the local jurisdictional plans. The Board of Education demonstrated their commitment and support of the plan by formally adopting the 2015 plan.

The planning process presented many opportunities for multi-jurisdictional participation. (See Appendix I “Multi-Jurisdictional Participation Activities,” which shows the type of participation by Baldwin County jurisdictions.) These multi-jurisdictional participation opportunities included the following activities:

- Attendance and participation in five HMPC committee meetings beginning on April 24, 2015, during the drafting phase of the plan (see Appendix G “Committee Meeting Documentation,” which includes agendas, sign-in sheets, and meeting minutes).

- Providing key staff support to complete HMPC exercises and questionnaires regarding local capabilities for conducting mitigation activities, the implementation status of the 2010 mitigation actions, identifying and rating hazards, profiling hazards and hazard events, evaluating alternative mitigation measures, and updating plan goals and objectives.
- Reviewing and providing comments on draft plan sections.
- Compiling plans, studies, reports, regulations, ordinances, and codes related to hazard mitigation and making these documents available to planners for review.
- Conferring with planners during the drafting phase of the plan update.
- Providing information to the HMPC and planners on critical facilities and infrastructure.
- Attendance and participation in the Community Meeting held after the final HMPC committee meeting, at the end of the drafting phase of the plan update.
- Communicating with elected officials and other jurisdictional constituents on the scope and contents of the draft plan update.
- Conducting public hearings, which offered additional opportunities for public comments prior to formal adoption by the governing bodies.

Residents of each jurisdiction and other stakeholders were provided the following opportunities for participation in the planning process:

- Attending HMPC meetings as observers of these open public forums, which were publicly announced.
- Participating in the Community Meeting.
- Completing Public Questionnaires distributed at the Community Meeting.
- Accessing the plan update website at <http://baldwin.hazardmitigationplan.com> to keep abreast of HMPC activities, review draft sections of the plan, and offer comments and suggestions through a website link.
- Contacting HMPC members and Baldwin County EMA staff.
- Contacting elected officials of each jurisdiction.
- Attending public hearings of the local governing bodies and offering comments.

## **2.4 Multi-Jurisdictional Plan Adoption**

All local jurisdictions in Baldwin County have actively participated in the planning process. Upon completion of the plan, each of the municipalities, along with the Baldwin County Commission, passed a formal resolution accepting, approving, and adopting the 2015 Baldwin County Multi-Hazard Mitigation Plan. The Baldwin County Board of Education likewise adopted this plan. By adopting this multi-jurisdictional hazard mitigation plan, the participating local governments and other eligible entities may apply for mitigation monies through the various Hazard Mitigation Assistance programs offered by FEMA. The model Adopting Resolution can be found in Appendix J.

## Chapter 3 – Community Profiles

- 3.1 Federal Advisory Guidance for Community Profiles
- 3.2 Summary of Plan Updates
- 3.3 Geographic Setting and History
- 3.4 Government
- 3.5 Physical Features
- 3.6 Climate
- 3.7 Demographics
- 3.8 Economy
- 3.9 Utilities
- 3.10 Media
- 3.11 Transportation

### 3.1 Federal Advisory Guidance for Community Profiles

This Chapter of the Plan addresses the advisory on page 27 of the FEMA Local Multi-Hazard Mitigation Planning Guidance, July 1, 2008, which suggests community profile information be included to provide context for understanding the plan:

“The planning team should consider including a current description of the jurisdiction in this section or in the introduction of the plan. The general description can include a socio-economic, historic, and geographic profile to provide a context for understanding the mitigation actions that will be implemented to reduce the jurisdiction’s vulnerability.”

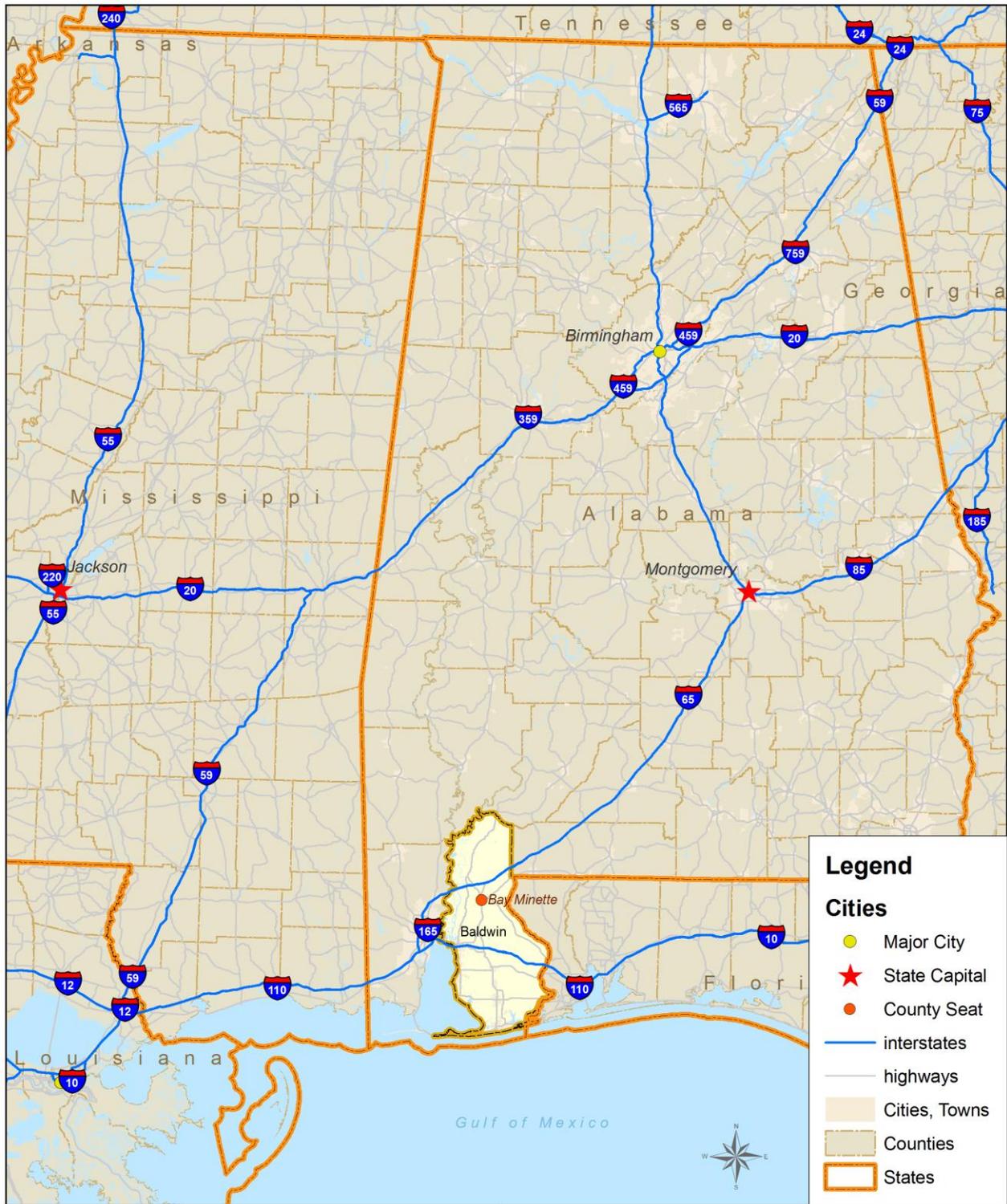
### 3.2 Summary of Plan Updates

Table 3-1 summarizes changes made to the 2010 plan as a result of the 2015 plan update, as follows:

**Table 3-1. Summary of Plan Updates**

Section		Change
3.3	Geographic Setting and History	Update descriptions, maps, and data
3.4	Government	Update descriptions and data
3.5	Physical Features	Update descriptions
3.6	Climate	Update descriptions and data
3.7	Demographics	Update descriptions, map, and data
3.8	Economy	Update descriptions, map, and data
3.9	Utilities	Update descriptions
3.10	Transportation	Update descriptions

**Map 3-1. Location of Baldwin County**



**Lehe Planning**  
 URBAN AND ENVIRONMENTAL PLANNING  
 March, 2010

Data Source:  
 Streetmap North America 2009  
 0 5 10 20 30 40 50  
 Miles

**Baldwin County Location**

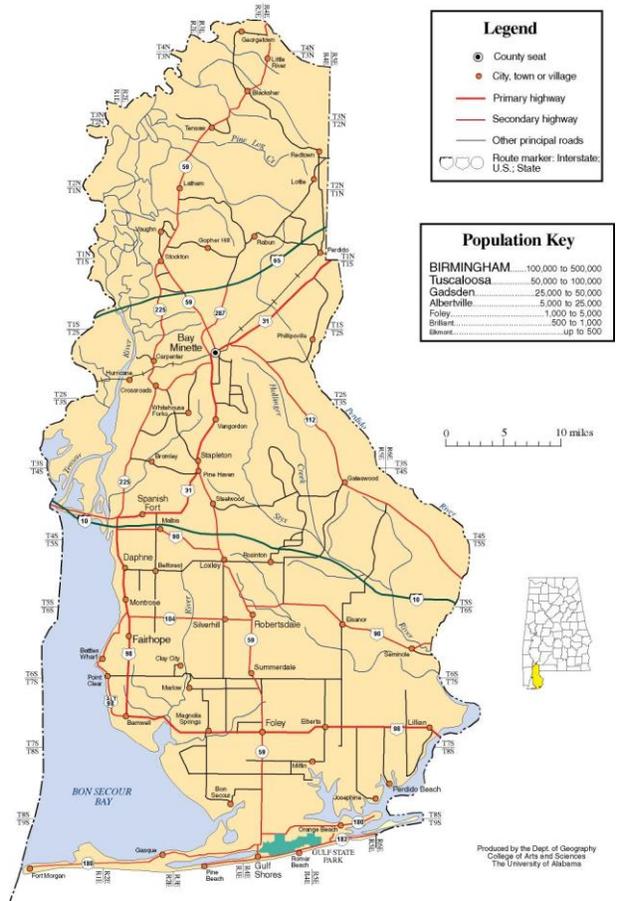
**3.3 Geographic Setting and History**

**Baldwin County**

Baldwin County is older than Alabama. It was created by the Mississippi Territorial legislature on December 21, 1809. As depicted in Map 3-2, Baldwin County lies on the Gulf Coast in the southwestern corner of Alabama. It is bounded on the north by Clarke and Monroe Counties, on the east by Escambia County, Alabama and Escambia County, Florida, and on the west by Mobile County and Mobile Bay. Encompassing approximately 1,590 square miles, it is Alabama’s largest county by area.

Travel and tourism are the dominant industries in Baldwin County, which is home to Gulf Shores, Orange Beach, Gulf State Park, and Fort Morgan. Table 3-2 shows approximate distances from Baldwin County to major metropolitan areas. Map 3-3 depicts municipalities of Baldwin County.

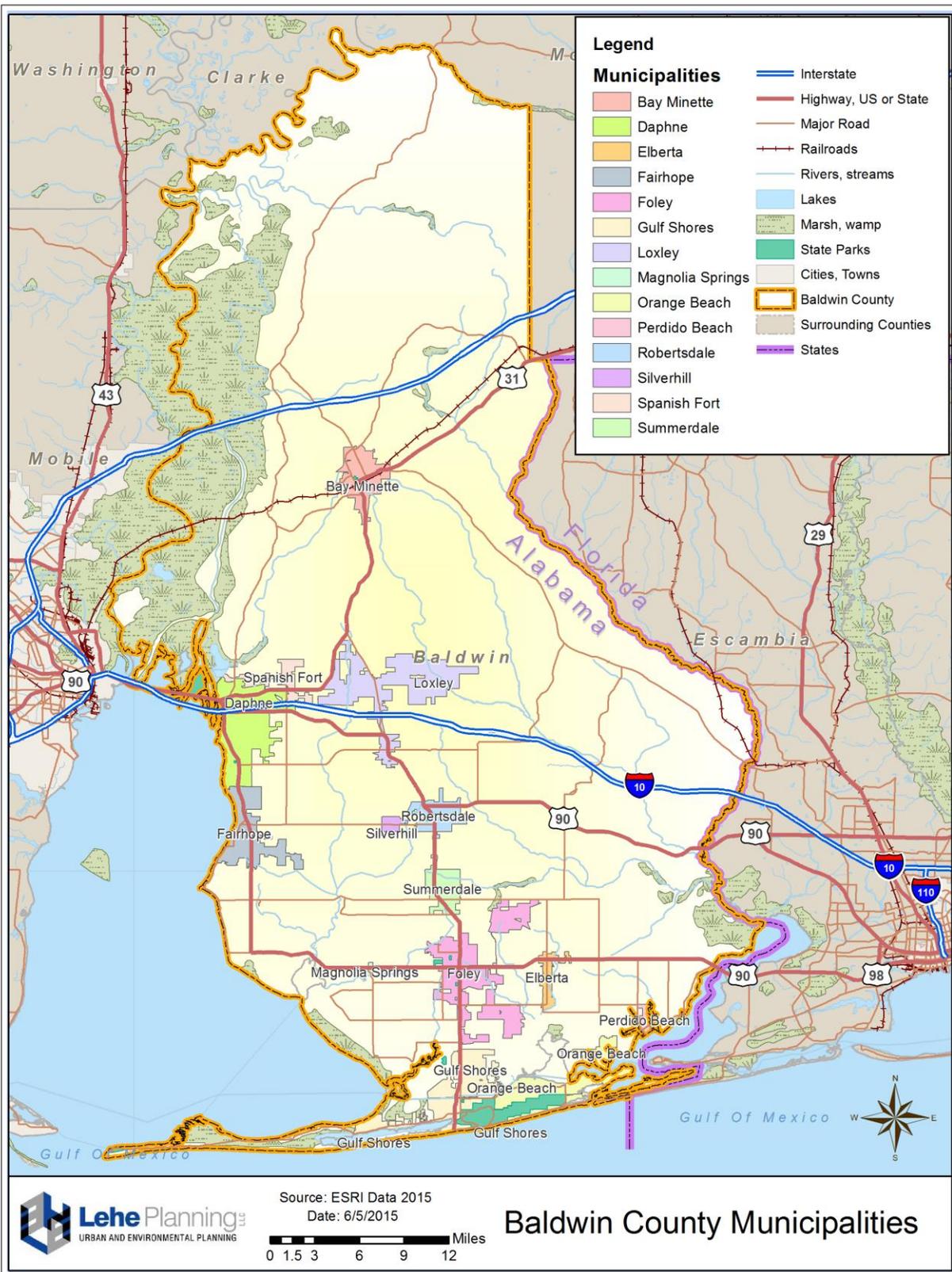
**Map 3-2. Baldwin County Detail**



**Table 3-2. Driving Distances to Nearby Cities**

City	Mileage
Pensacola, Florida	34
Mobile, Alabama	38
New Orleans, Louisiana	179
Birmingham, Alabama	264
Atlanta, Georgia	343
Nashville, Tennessee	449
Dallas, Texas	650

**Map 3-3. Baldwin County Municipalities**



**City of Bay Minette**

The City of Bay Minette has been the county seat of Baldwin County since 1900. It is located in north central Baldwin County and does not border any other municipalities. Its estimated 2014 population is 9,049 and it encompasses 8.65 square miles. Despite its name, Bay Minette does not border the body of water also called Bay Minette, which is located along Mobile Bay. The City of Bay Minette is landlocked.

**City of Daphne**

The City of Daphne is located in west central Baldwin County. With an estimated 2014 population of 24,395 residents, Daphne is the largest municipality in Baldwin County by population. It has an area of approximately 17.49 square miles, of which 0.6 square miles are water. Daphne is known as the “Jubilee City,” a name that derives from the biological phenomenon called “jubilee,” in which large numbers of crab, shrimp, and other sea life wash ashore. Daphne served as the county seat of Baldwin County until 1900. Daphne was incorporated on July 8, 1927.

**Town of Elberta**

With an area of 6.87 square miles and a 2014 estimated population of 1,634, the Town of Elberta is the one of the smallest municipalities in Baldwin County by area and the fourth smallest by population. The town is named for the elberta variety of peach. Elberta was incorporated on December 9, 1952. The community was founded by the Baldwin County Colonization Company to provide land to German farmers who had immigrated from Germany to the United States.

**City of Fairhope**

The City of Fairhope borders Daphne to the south and is located in southwestern Baldwin County. It has an area of 12.0 miles and an estimated 2014 population of 18,089, which makes Fairhope the second largest municipality in Baldwin County by population. Fairhope was founded in 1894 as a utopian colony based on the idea of American economist Henry George that a single tax on the rental value of land should supply all government revenues. Today, 4,000 acres of the City of Fairhope is still owned by the Fairhope Single Tax Corporation, which provides 99-year leases to residents but does not allow its land to be sold.

**City of Foley**

With an estimated 2014 population of 16,243 residents, the City of Foley is Baldwin County’s third largest municipality by population. It has an area of 25.88 square miles and is located in south central Baldwin County. Foley is the third major city of the Daphne-Fairhope-Foley Micropolitan Statistical area, which includes all of Baldwin

County. Foley was founded by Chicago businessman John Burton Foley, who convinced Cornelius Vanderbilt to place a railroad station in Foley.

**City of Gulf Shores**

The City of Gulf Shores is a seaside resort city that borders the Gulf of Mexico. With an area of 27.9 square miles, of which 23.2 square miles is land, the City of Gulf Shores is the largest municipality in Baldwin County by area. It's estimated 2014 population was 10,963, which marks more than a 100 percent increase from its 2000 population. Gulf Shores forms the middle link of a contiguous stretch of beachfront development running from unincorporated Fort Morgan to the City of Orange Beach.

**Town of Loxley**

Located to the east of Daphne in central Baldwin County, the Town of Loxley has 1,725 residents and an area of 32.22 square miles. Loxley hosts the Baldwin County Strawberry Festival. Loxley does not border any other municipalities.

**Town of Magnolia Springs**

Magnolia Springs incorporated June 29, 2006 as Baldwin County's thirteenth municipality. The incorporation was motivated in part by a desire to better protect local waterways and control rapid development in the area. Magnolia Springs has an estimated 2014 population of 782 residents. It sits on the Magnolia River to the west of Foley and comprises one square mile.

**City of Orange Beach**

The City of Orange Beach is a seaside resort city that lies to the east of the City of Gulf Shores. It has an area of 15.95 square miles, of which 14.7 is land. Like Gulf Shores, Orange Beach has experienced a population increase of more than 80 percent since 2000. Its estimated 2014 population is 5,788.

**Town of Perdido Beach**

The Town of Perdido Beach is the newest addition to the list of municipalities in Baldwin County. It was incorporated on June 10, 2009 and is located on the northern shore of Perdido Bay. The town has an estimated population of 624 permanent residents in 2009 and encompasses 1.24 square miles.

**City of Robertsdale**

The City of Robertsdale is located in south central Baldwin County, to the north of Foley and to the east of Fairhope. Its estimated 2014 population is 5,773, and its area

is 5.5 square miles. Robertsdale was incorporated in 1921 by the Southern Plantation Corporation of Chicago.

**Town of Silverhill**

With a 2014 estimated population of 754 and an area of 1.2 square miles, the Town of Silverhill is the smallest municipality in Baldwin County by population. Silverhill incorporated in 1926. Like other municipalities in southern Baldwin County, it was founded as a colonization project by a Chicago real estate company.

**City of Spanish Fort**

The City of Spanish Fort is located on Mobile Bay to the north of the City of Daphne and Interstate 10. The city has an estimated 2014 population of 7,806 residents and an area of 33.4 square miles, of which only 28.7 square miles is land. In 2000, Spanish Fort had the highest median household income—\$56,699—of any municipality in Baldwin County, as well as the lowest poverty rate—2.8 percent.

**Town of Summerdale**

The Town of Summerdale is located in south central Baldwin County. Its area is 9.73 square miles and its estimated 2014 population is 1,005.

**3.4 Government**

A four-member County Commission governs Baldwin County. Each commissioner serves a four-year term and must reside in the district he or she represents. Bay Minette is the county seat. The 14 municipalities located in the county utilize the mayor/council system of government.

**3.5 Physical Features**

Baldwin County is located in the Lower Coastal Plain of the Gulf Coastal Plain physiographic province. It consists of five different geologic formations. The northwest region encloses wetlands along the Mobile Bay and primarily consists of silt and clay sediments washed by the Alabama and Tombigbee Rivers from areas to the north. Elevations in this area range from sea level up to 200 feet above sea level. The south has a nearly level to sloping topography and ranges in elevation from 10 to 100 feet above sea level. The soil in this area consists of marine materials. The southern tip encompasses the sandy, coastal beaches along the Gulf of Mexico. Elevation rises from sea level to a height of 20 feet above sea level in inland areas. The east has a hilly topography and ranges in elevation from 50 to 300 feet above sea level. Finally, the central part of the county, which envelopes most of the population, has a level to gently sloping topography that varies from 100 to 300 feet above sea level in elevation.

### 3.6 Climate

Baldwin County has a wet, sub-tropical maritime climate that is strongly influenced by weather systems in the Gulf of Mexico. Hot and humid summer months are tempered by cooling southerly breezes. High winds and heavy rainfall from hurricanes or tropical systems pose a threat during summer and fall. During the summertime, moisture from the Gulf of Mexico produces very humid conditions and occasional afternoon thunderstorms that may produce high winds, dangerous lightning, hail or tornadoes. Winters are mild and snowfall is very rare. Additional climate information is presented in Table 3-3.

**Table 3-3. Climate Information**

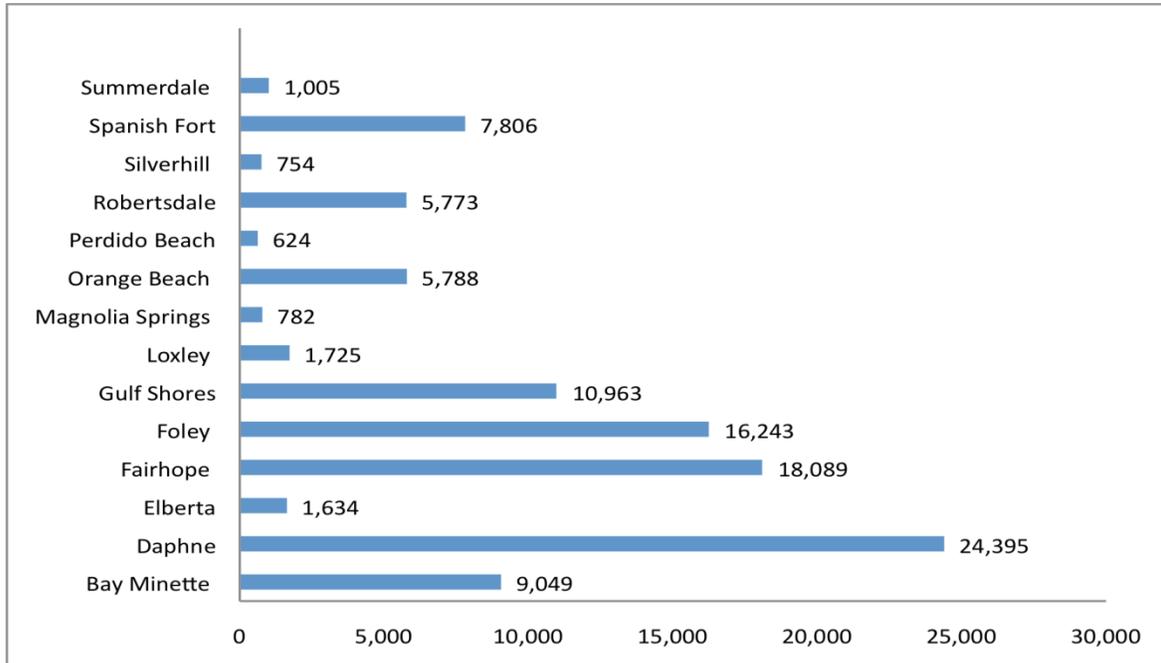
<b>Category</b>	<b>Average</b>
Annual Average Temperature	67.4° F
Avg. January Temperature	51.4° F
Average July Temperature	81.8° F
Average Annual Precipitation (inches)	64.0
Average Annual Snowfall	0 .0
Growing Season Range	230 to 270 Days
Prevailing Wind Direction	South/ Southeast

### 3.7 Demographics

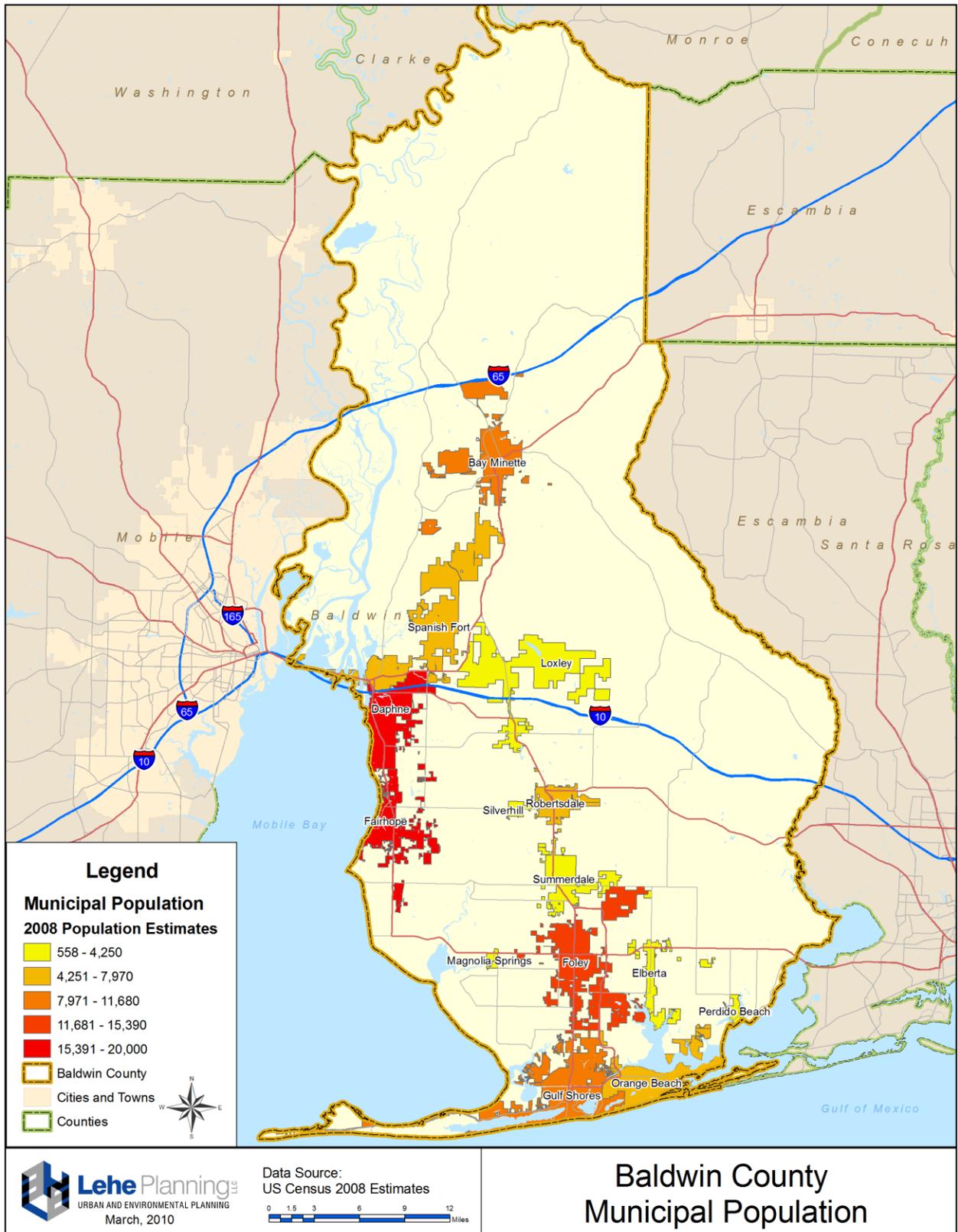
#### 2014 Population

The latest U.S. Census estimates provide the latest population count for Baldwin County and its municipalities in 2014. As shown on Chart 3-1 “2014 Population by Municipality,” Foley, Daphne and Fairhope are the only cities in Baldwin County with populations greater than 15,000. A total of 104,630, or just over half of Baldwin County’s 182,265 residents, live in incorporated municipalities. The remaining 77,635 persons reside in unincorporated Baldwin County. Map 3-4 shows the population density of the county.

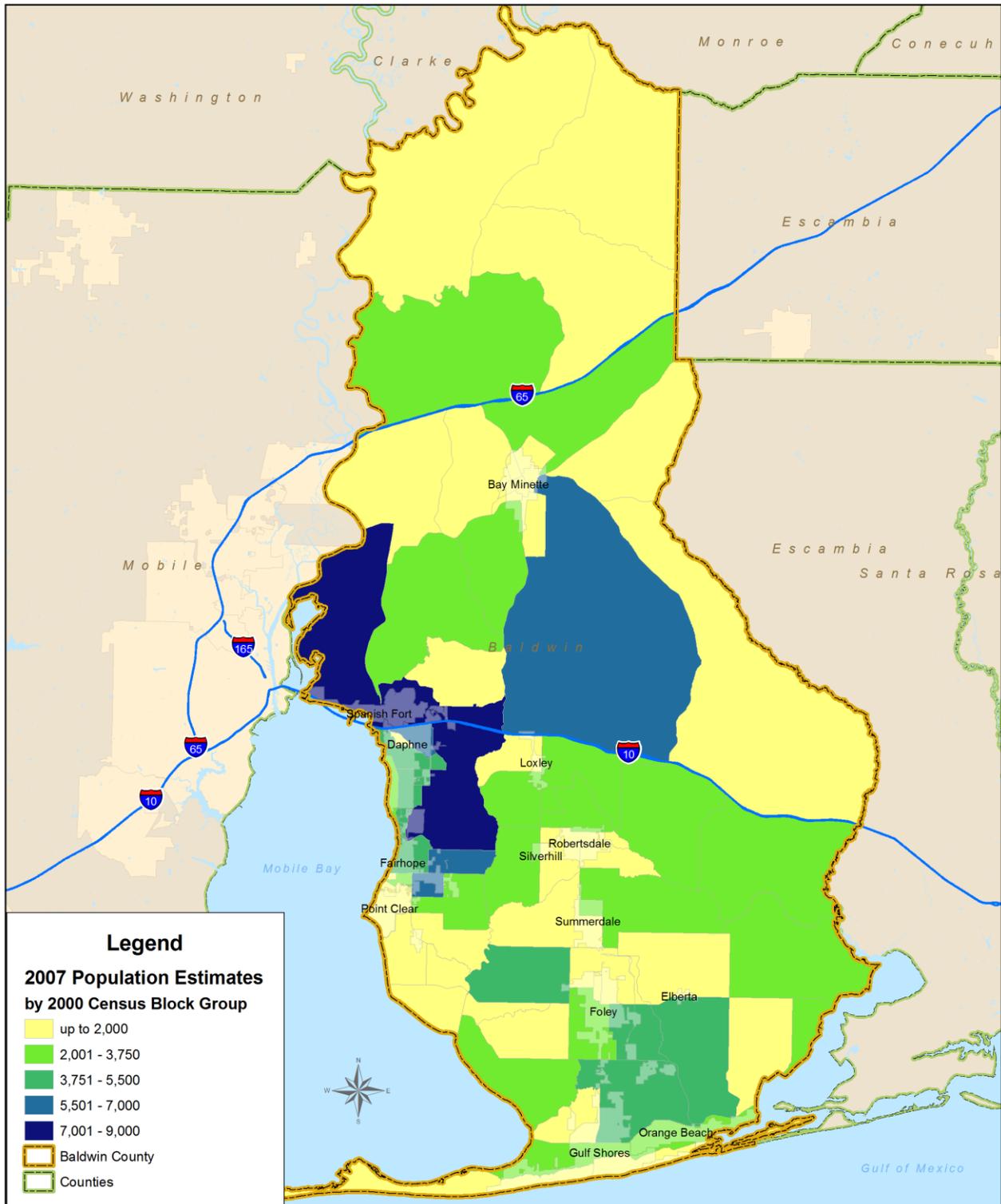
**Chart 3-1. 2014 Population by Municipality**  
**Map 3-4. 2008 Baldwin County Municipal Population**



*Source: U.S. Census Bureau American Fact Finder, 2014 Population Estimates*



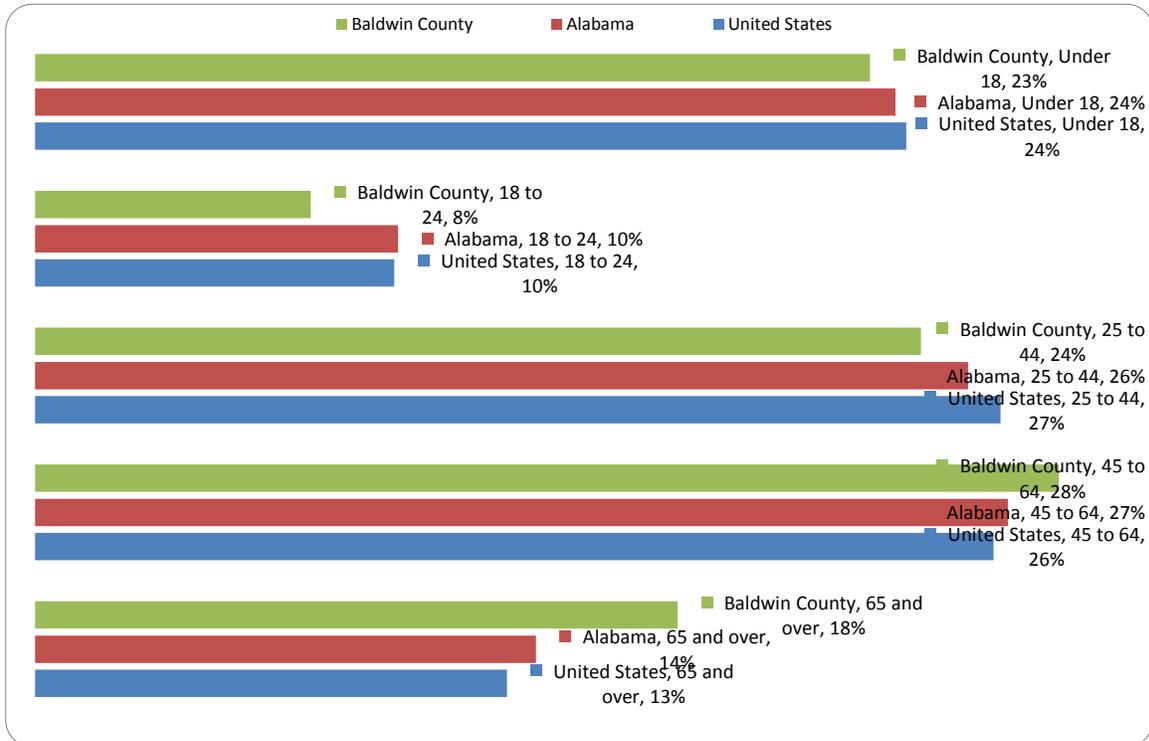
**Map 3-5. Population Density, Baldwin County**



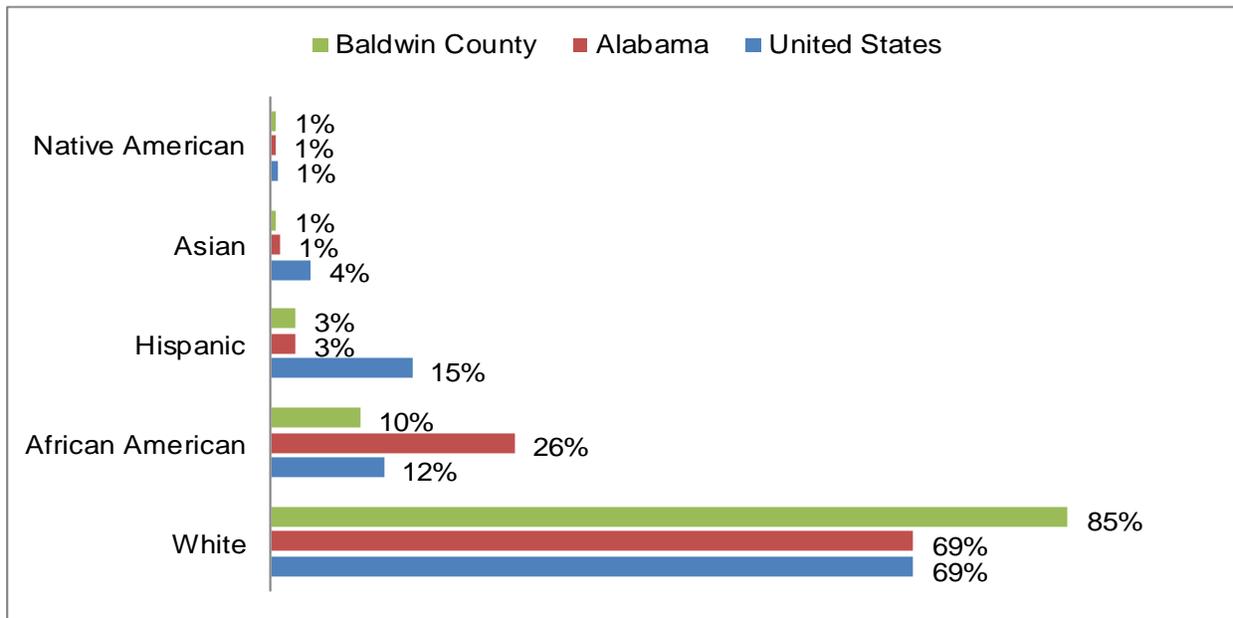
**Social Characteristics**

The following charts illuminate Baldwin County’s demography in 2010 and compare the county with the State of Alabama and the United States when possible. As displayed in Chart 3-3, a significantly smaller share of Baldwin County’s population is African American than is the case for the State of Alabama.

**Chart 3-2. 2008 Population Distribution by Age, Baldwin County**



**Chart 3-3. Racial Composition of Baldwin County**

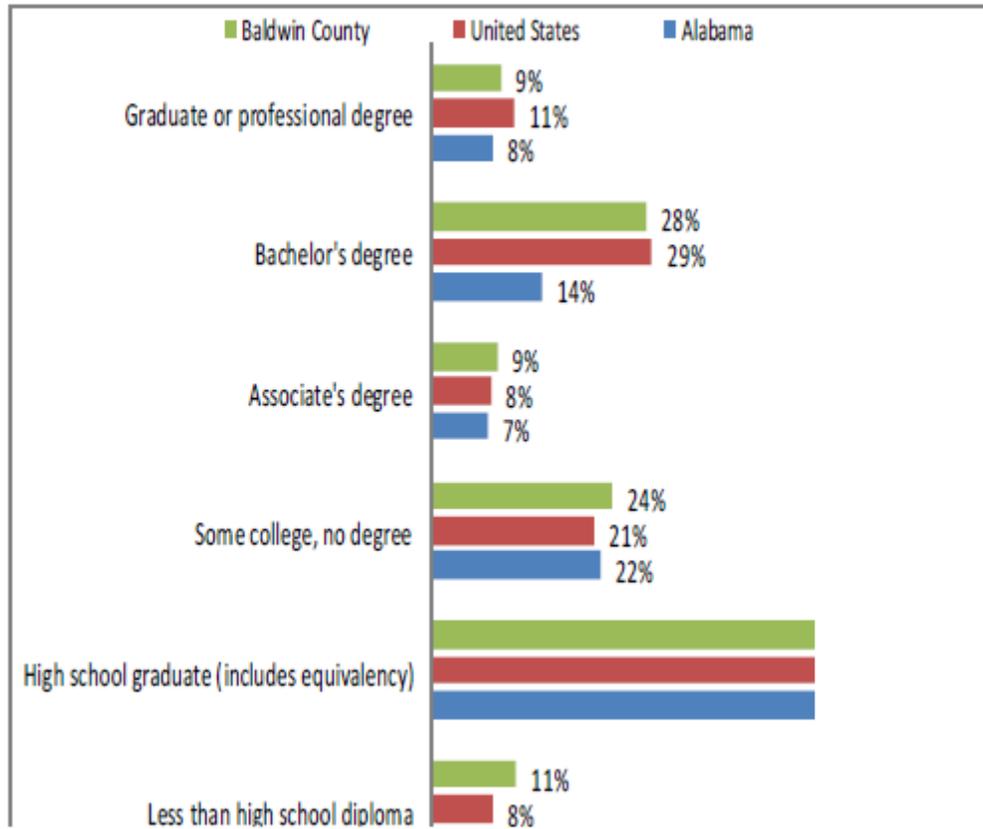


Source: U.S. Census Bureau, 2010-2013 American Community Survey

**Educational Attainment**

Chart 3-4 “Education Attainment of Baldwin County” illustrates the highest level of education attained by Baldwin County residents. The proportion of Baldwin County adults with a high school education or above is 88 percent—7 percent higher than the Alabama average. Likewise, 27 percent of Baldwin County’s over 25 population possesses a bachelor’s degree or higher. This proportion equals the national average and exceeds the Alabama average of 22 percent.

**Chart 3-4. Educational Attainment of Baldwin County**

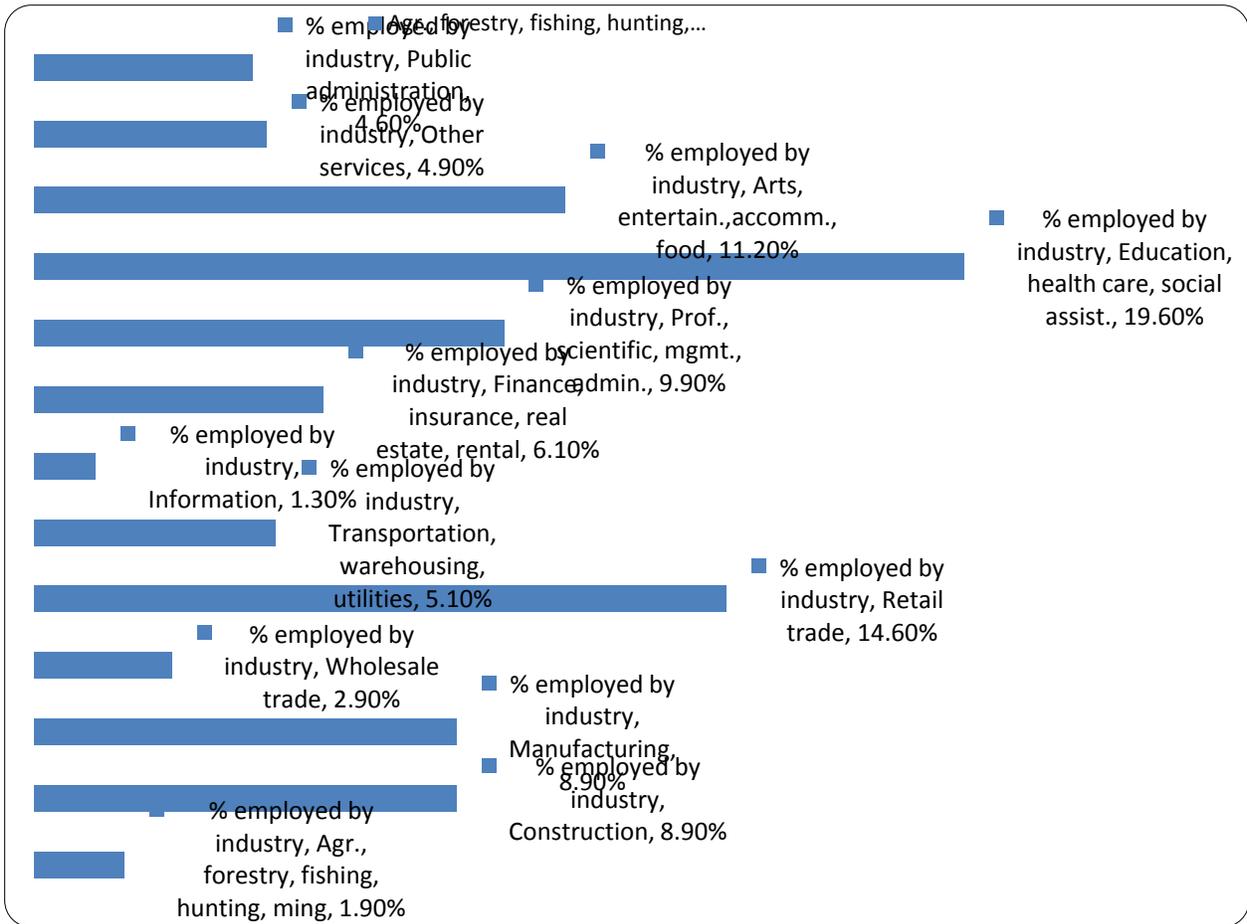


Source: U.S. Census Bureau, 2013 American Community Survey

**3.8 Economy**

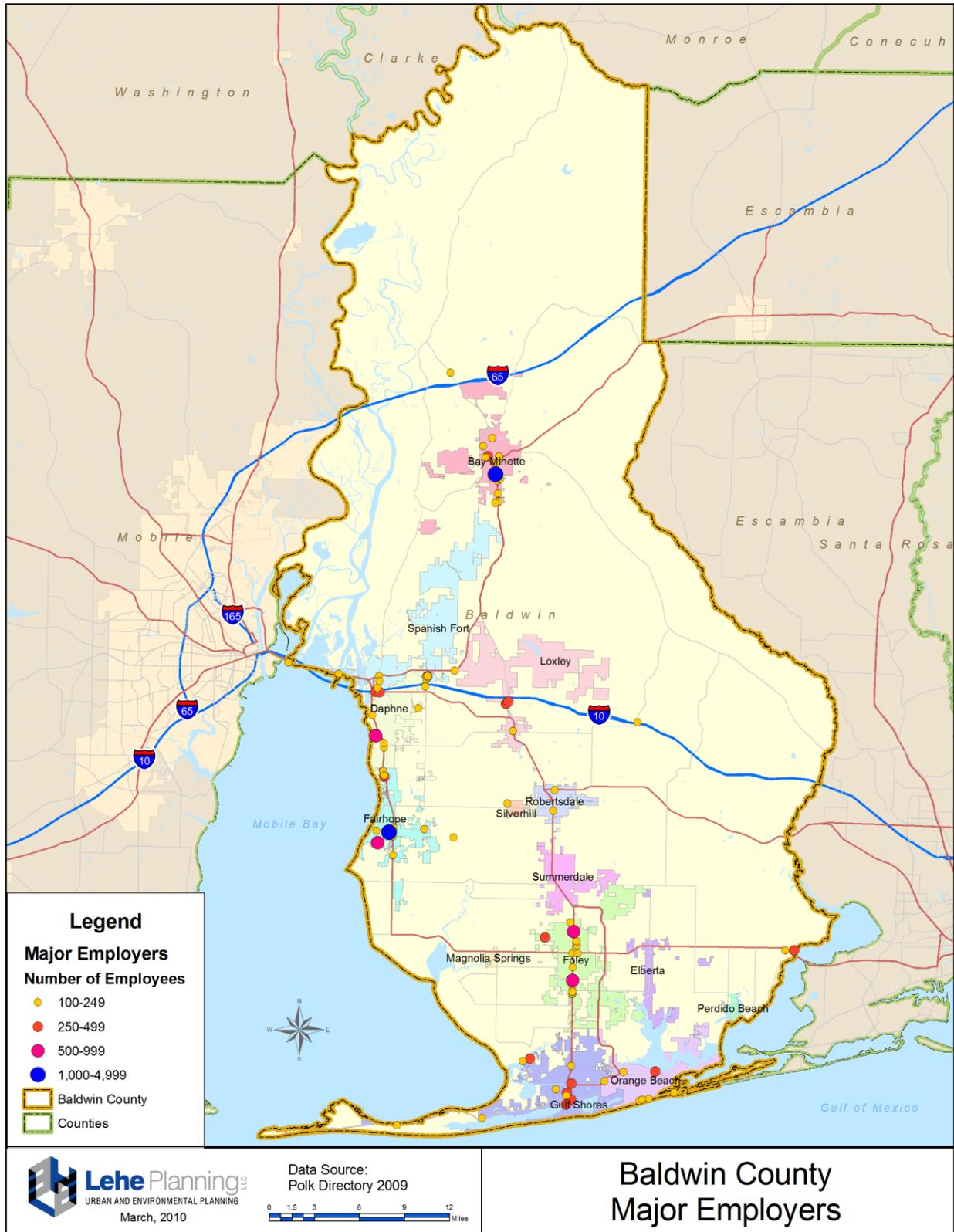
Baldwin County’s economy depends heavily on the service sectors. Retail and social services are the largest industries by employment. The Board of Education is the largest employer with 3,150 workers. The Tanger Outlet Mall, which markets itself to the Gulf Coast tourism industry, and Wal-Mart are the second and third largest employers, respectively. In the manufacturing sector, UTC Aerospace employs 820 people and Standard Furniture employees 600. Chart 3-5 shows Baldwin County’s employment by industry. Map 3-5 shows the locations of major employers in Baldwin County.

**Chart 3-5. Employment by Industry, Baldwin County**



Source: US Census Bureau, 2013 American Community Survey

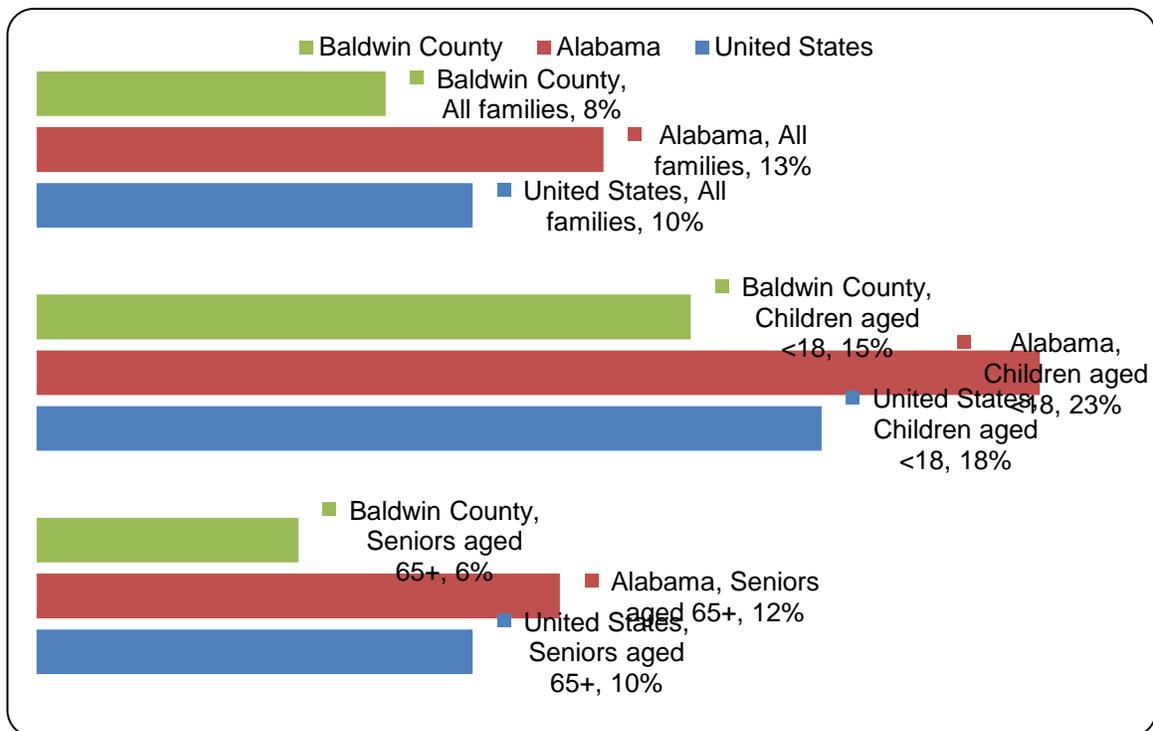
**Map 3-6. Baldwin County Major Employers**



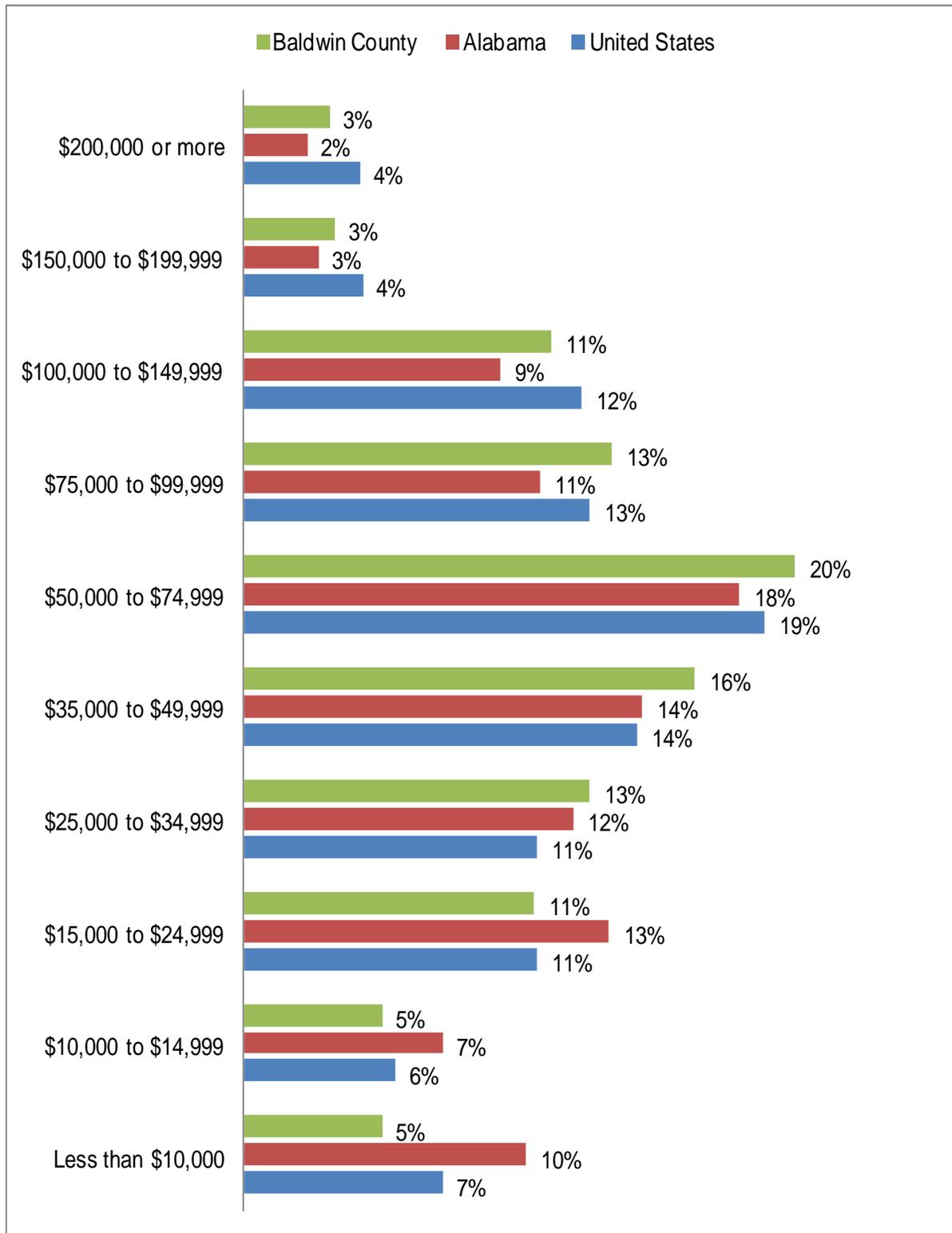
**Income**

According to the American Community Survey's 2010-2013 Three Year Estimates, Baldwin County has a median household income of \$50,593. Eleven percent of Baldwin County residents receive incomes below the poverty level, including 15 percent of children, as shown on Chart 3-6. However, only 6 percent of Baldwin County residents over the age of 65 are counted as below the poverty level—a low proportion due partly to income from Social Security and partly to Baldwin County's status as a popular destination for affluent retirees. Thirty-five percent of Baldwin County households receive income from Social Security. As illustrated in Chart 3-7, Baldwin County is more affluent on average than the State of Alabama.

**Chart 3-6. Poverty Rates by Demographic Group**



**Chart 3-7. Distribution of Income, Baldwin County**



**3.9 Utilities****Electrical Power**

Baldwin EMC, Riviera Utilities (City of Foley) and the cities of Fairhope and Robertsdale distribute electric power to customers in their service territories. Power suppliers to other regions of Baldwin County are Alabama Power, Alabama Electric Cooperative and Alabama Municipal Electric Authority.

**Natural Gas**

Natural Gas is supplied by the United Gas Pipeline and distributed by the cities of Bay Minette, Daphne, Fairhope and Riviera Utilities (City of Foley).

**Water**

Baldwin County's municipalities and public and private water systems provide treated water to residential customers as well as businesses and industry. Excess capacity per system ranges from 70,000 to 3,000,000 gallons per day. Most cities have elevated water tanks for storage.

**Wastewater**

Ten municipal systems and Baldwin County Sewer Service provide wastewater services to residents, businesses, and industries. Excess capacity per system ranges from 50,000 to 1,000,000 gallons per day. The predominant treatment types are activated sludge, aeration, lagoon and bio-chemical treatments.

**Solid Waste**

Baldwin County operates its own federally permitted, subtitled landfill. Several transfer stations also serve as a point to transport waste to the landfill. The county and several private companies serving municipalities, as well as municipalities provide transportation to the landfill.

**Telecommunications**

Gulf Telephone and AT&T provide state-of-the-art telecommunications including central offices, fiber optics, ISDN, POPS, high-speed internet, and other services. Cellular service is available through several well-known providers.

**3.10 Media**

Five regional and local television stations, five cable providers, and 27 regional and local radio stations serve the area. Baldwin County news is included in the Press-Register and The Baldwin Times.

**3.11 Transportation****Highway, Truck and Parcel**

Two interstate highways bisect Baldwin County to providing north/south and east/west routes. Interstate 65, which runs north to Nashville and Chicago, originates in Mobile. Interstate 10 begins in Jacksonville, Florida and terminates in Los Angeles, California. Three federal highways and ten state highways traverse the county. Seven truck terminals are located in Baldwin County with an additional 50 located in the surrounding metro area. All major parcel carriers provide service in Baldwin County. United Parcel Service (UPS) operates a terminal in Robertsdale.

**Public Transportation**

Baldwin County has received numerous awards for its county transportation system. The Baldwin County Rural Area Transportation System (BRATS) has 48 buses that transport employees to and from work. Each year, it transports over 700,000 passengers over its 68 regular routes.

**Rail**

One major Class I railroad, CSX, serves Baldwin County. CSX joins with three other Class I railroads in Mobile. Piggyback service, containerized service, and reciprocal switching are available in Mobile. There is also Amtrak passenger service in the Mobile metro area to New Orleans, Miami and Mobile.

**Water**

Baldwin County is located near the 1,000 mile Gulf Intracoastal Waterway, which is used for barge transportation from Brownsville, Texas to Saint Marks, Florida. The waterway has a depth of 12 feet, and its minimum width in Baldwin County is 125 feet. The waterway links to the Mobile Ship Channel, which has an average depth of 45 feet. This channel links to the Mobile River, providing access to the Tenn-Tom Waterway.

**Ports**

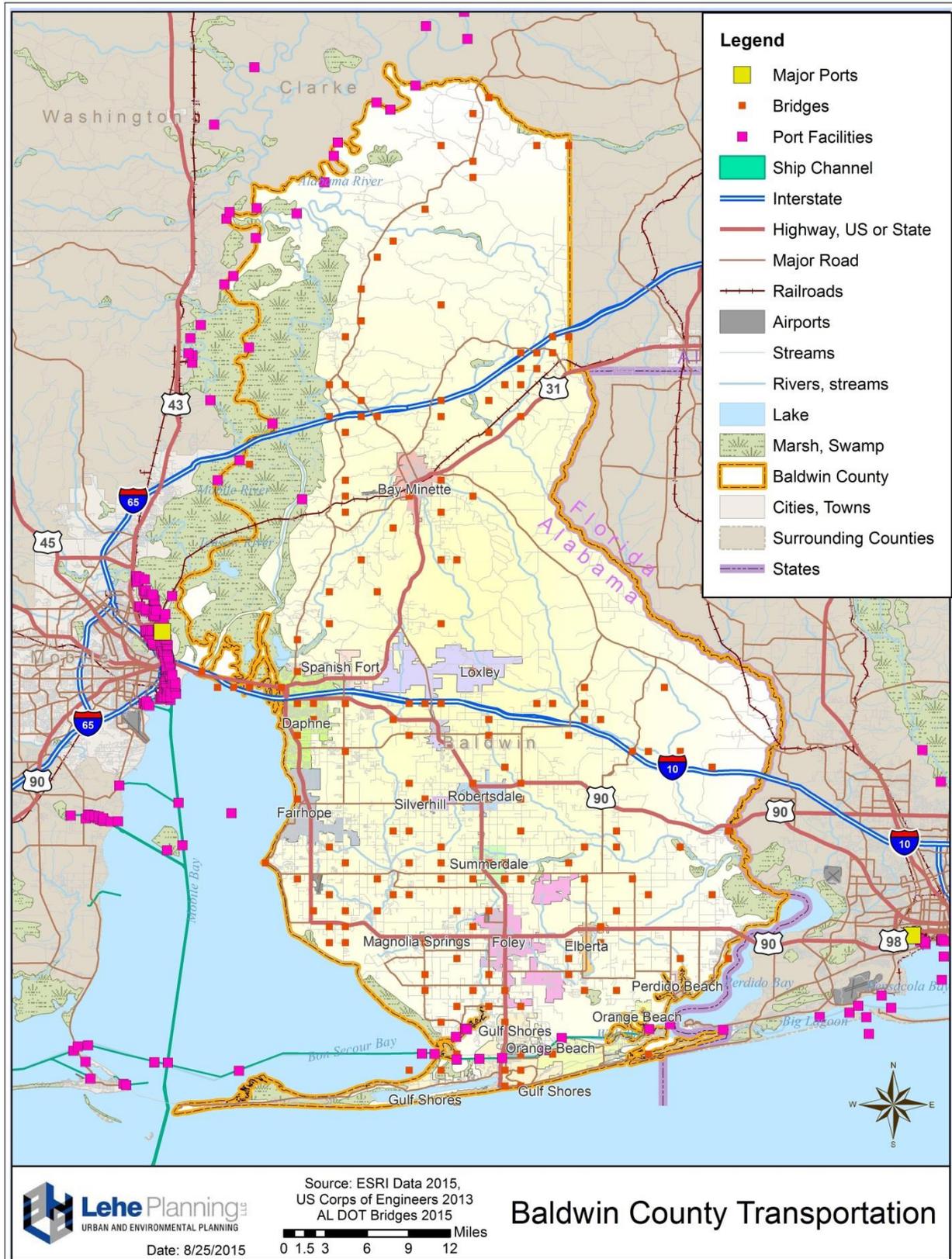
Baldwin County does not have its own port but is located between the Port of Mobile and the Port of Pensacola. The Port of Mobile acts as the hub of the Alabama State Docks, which operates several major cargo-handling facilities. Container cranes, bulk handling facilities, and a main docks complex with 26 general cargo piers are available to service most cargo needs. Special roll-on/roll-off berths are available with millions of square feet of storage space and other value-added port services.

**Air Service**

Municipal airports located in Bay Minette, Fairhope, Foley and Gulf Shores provide general aviation service. Regional commercial service is provided in Mobile and Pensacola, with 51 flights daily. In Mobile, carriers include American Airlines, Delta, United and US Airways. In Pensacola, carriers include American Airlines, Delta, Silver Airways, Southwest Airlines, United Airlines and US Airways.

Federal Express, UPS and several other companies provide air freight service. Air freight facilities connect to railways, the Port of Mobile, interstates, and a foreign trade zone. All four municipal airports offer lighted approaches.

**Map 3-7. Baldwin County Transportation**



## Chapter 4 - The Planning Process

- 4.1 Federal Requirements for the Planning Process
- 4.2 Summary of Plan Updates
- 4.3 Opportunities for Public Comment on the Plan
- 4.4 Opportunities for Involvement in the Planning Process
- 4.5 Review and Incorporation of Applicable Plans and Documents
- 4.6 How the Plan was Prepared
- 4.7 Who was Involved in the Planning Process
- 4.8 How the Public was Involved in the Planning Process
- 4.9 The Plan Review and Update Process

### 4.1 Federal Requirements for the Planning Process

This chapter addresses the Planning Process requirements of 44 CFR Section 201.6 (b) and (c)(1) and the processes for the plan review and update requirements of Section 201.6 (d)(3), as follows:

“201.6 (b) *Planning process*. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. ”

“201.6 (c) *Plan content*. The plan shall include the following:

- (1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.”

“201.6 (d) *Plan review*.

- (1) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities,

and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.”

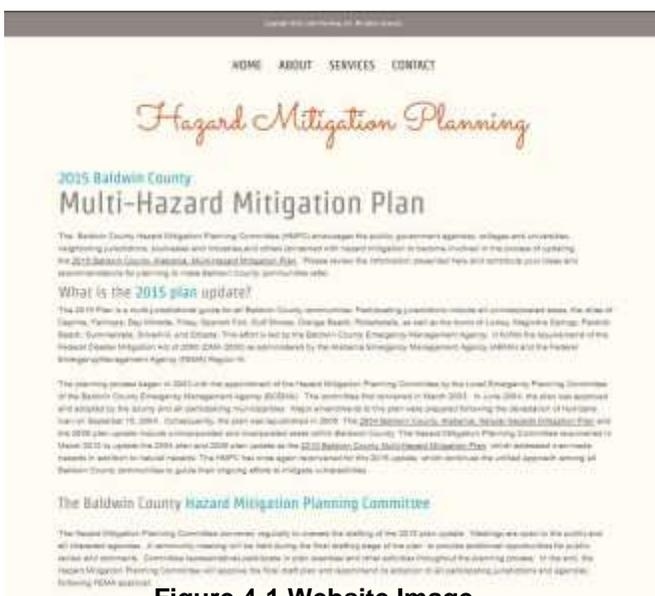
**4.2 Summary of Plan Updates**

Table 4-1 summarizes changes made to the 2010 plan as a result of the 2015 plan update:

**Table 4-1. Summary of Plan Updates**

Section	Change	
4.3	Opportunities for Public Comment on the Plan	Adds new opportunities through Facebook and Twitter and an updated community survey
4.4	Opportunities for Involvement in the Planning Process	Expanded opportunities
4.5	Review and Incorporation of Plans and Documents	Incorporated new plans and documents; examination of local tools
4.6	How the Plan was Prepared	Increased number and scope of HMPC meetings; more direct involvement and oversight by HMPC
4.7	Who was Involved in the Planning Process	Reestablished HMPC and added new members
4.8	How the Public was Involved in the Planning Process	Increased involvement through social media; new community event
4.9	The Plan Review and Update Process	This is the second 5-year review and update of the plan

**4.3 Opportunities for Public Comment on the Plan**



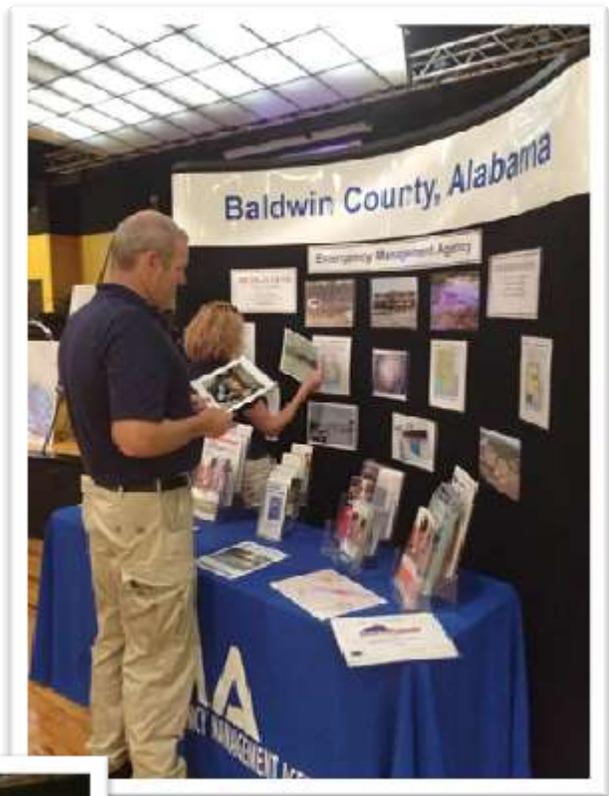
**Figure 4-1 Website Image**

The Hazard Mitigation Planning Committee (HMPC) solicited public input into the mitigation plan throughout the drafting phase of the plan, primarily through its plan website at [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com). The website provided opportunities for the public to keep abreast of HMPC meetings, with meeting agendas, slide presentations, and committee exercises and handouts readily available for the public to download. The draft plan sections were continuously posted to the website and available for public review and comment throughout the planning process. The website included a web form to send comments directly to the planning

team, as well as a special email account at [baldwin@hazardmitigationplan.com](mailto:baldwin@hazardmitigationplan.com). Residents were further encouraged to provide input through their jurisdiction representative on the HMPC and to attend committee meetings. Baldwin County EMA staff could also be reached by telephone at their offices and by individual meetings by appointment.

During the later drafting phases, the Baldwin County EMA hosted a community meeting to solicit public comments. The meeting on October 22, 2015, was held between 4 PM and 6 PM at the Central Baldwin County Annex in Robertsedale, a recognizable public location. It was conducted in an open house format. A meeting of the HMPC preceded the event.

The community meeting included many exhibits of maps and tables on display and educational handouts. Members of the HMPC and planning team were on hand to answer questions for public attendees. Copies of the draft plan and the 2010 plan, for comparison, were available for public review. A community survey questionnaire, distributed and also posted on the website for download, provided an opportunity for the public to submit their concerns in writing. (Refer to Appendix H “Community Involvement Documentation” for further explanation and documentation of community involvement, including a copy of the survey, the media release, and other supporting documentation).



For 2015, the HMPC added social media for this plan update to expand opportunities for public comment. The community meeting announcements were posted on Facebook and Twitter (search for “Baldwin County Emergency Management Agency”), all of which included a link to the plan website for the public to keep abreast of the progress of the plan update and offer their concerns and suggestions.

**Figure 4-2 Social Media Images**



Public hearings to receive final comments were held by all jurisdictions prior to adoption of this Plan by resolution, as required by State law.

**4.4 Opportunities for Involvement in the Planning Process**

The planning team mailed a notice of the draft plan and a survey requesting input from decision makers across Baldwin County, neighboring jurisdictions, and other interested agencies and stakeholders. This effort targeted government agencies with interest in hazard mitigation and/or, with the authority to regulate development, and representatives of businesses, academia and other private and non-profit interests. (A copy of the notice and survey are included in Appendix H “Community Involvement Documentation”). Recipients are listed below:

Federal Agencies

- National Weather Service – Mobile Office
- U.S.D.A. Natural Resources Conservation Service – Alabama District
- U.S. Army Corps of Engineers – Mobile District
- FEMA

## State Agencies

- Alabama Emergency Management Agency (AEMA)
- Alabama Department of Economic and Community Affairs (ADECA)
- Alabama Department of Environmental Management (ADEM)
- Alabama Department of Transportation (ALDOT)
- Alabama Forestry Commission
- Geological Survey of Alabama
- Alabama Historical Commission

## Local and Regional Agencies

- South Alabama Regional Planning Commission
- Baldwin County Economic Development Alliance

## Neighboring Counties (represented by County EMA directors)

- Mobile County, Alabama
- Washington County, Alabama
- Clarke County, Alabama
- Monroe County, Alabama
- Escambia County, Alabama
- Escambia County, Florida

## Business Interests

- Mobile Area Chamber of Commerce
- Alabama Gulf Coast Area Chamber of Commerce
- Central Baldwin Chamber of Commerce
- South Baldwin Chamber of Commerce
- North Baldwin Chamber of Commerce
- Eastern Shore Chamber of Commerce

## Academia

- Baldwin County Public Schools – Board of Education
- Faulkner State Community College
- United States Sports Academy

## Non-Profits and Other Agencies

- American Red Cross, Madison-Baldwin County Chapter
- South Baldwin Regional Medical Center

- Thomas Hospital
- Mercy Medical
- North Baldwin Infirmary

#### **4.5 Review and Incorporation of Applicable Plans and Documents**

The planning team found that most of the communities' plans and ordinances relevant to hazard mitigation were adopted before the original mitigation plans. Some ordinances address specific natural hazards concerns – flood plain management, storm water detention, erosion and sedimentation control, tree protection, and open space and conservation of land.

The planning team thoroughly reviewed all community plans and regulatory tools as part of the 2010 update. During the 2010 plan update, the participating jurisdictions provided copies of their plans, studies, reports, ordinances, regulations and technical information related to hazard mitigation to the planning team. Since then, no significant changes had occurred, except for the plan updates described below. The documents were closely examined to see which hazard mitigation measures were currently being pursued and what new measures could be included in future revisions of existing documents. Generally, the review included local comprehensive plans, zoning ordinances, subdivision regulations, building and technical codes, floodplain management ordinances, and erosion and sedimentation control ordinances. Select plans and ordinances that addressed special concerns, such as, stormwater management/drainage, tree preservation, open burning, and wildfire mitigation were also reviewed. In addition, the planning team used a variety of data sources for developing the plan, such as, Census Bureau data, NOAA weather data, FEMA disaster reports, and the 2013 Alabama State Hazard Mitigation Plan. To complete its 2015 assessment of planning and regulatory tools, the planning team reviewed the most significant plans and ordinances adopted since 2010. In 2015, most documents were accessible via the Internet.

In 2013, the Baldwin County Commission and the Baldwin County Planning and Zoning Commission adopted the Baldwin County Master Plan. This plan intends to guide growth and development, with an emphasis on land use and public improvements and infrastructure. The “Master Plan Map” includes a future land use designation for a Conservation District, which “is intended to protect environmentally sensitive areas” and provide for large open spaces. The Parks and Recreation element of the plan calls for “resource-based recreation facilities where recreation is driven by the natural landscape, such as river, forest or lake ...”

The City of Gulf Shores adopted its 2014 Land Use Plan Update, “a comprehensive strategy to guide planning and design for land development and



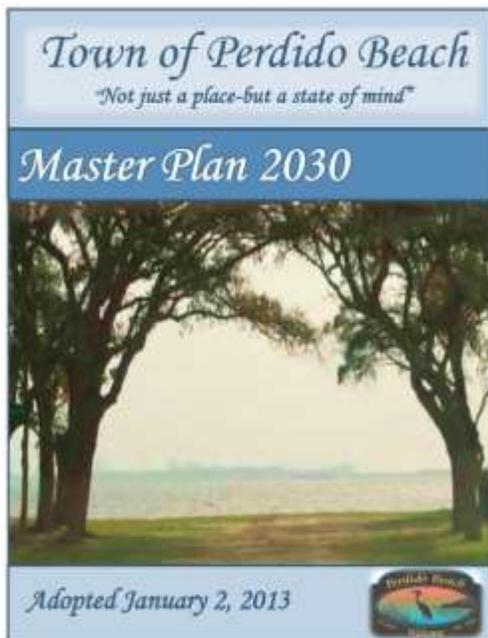
LAND USE PLAN

resource conservation. One of the four major themes of this plan is “Protect Gulf Shores’ Green Infrastructure.” As stated in the plan:

*Gulf Shores is blessed by a beautiful and bountiful coastal natural environment. Gulf Shores intends to protect, preserve and enhance important and fragile ecosystems and wildlife habitats by acquiring land and utilizing conservation tools and environmental regulations to promote a system of accessible publicly owned lands which provide for a broad range of educational, interpretive, and recreational opportunities to meet the needs of the community.*

The Town of Perdido Beach adopted its Master Plan 2030 in January of 2013. The plan’s mission statement is:

*To embrace and enhance the coastal, historic and rural nature of Perdido Beach while ensuring the highest quality of life for each resident; preserving and protecting small town family values and **protecting the natural resources** (emphasis added), historical environments and scenic beauty.*



Master Plan 2030 recognizes that “conservation and preservation of the unique lands, stream corridors and other significant natural features are important to the viability of Perdido Beach.” Further, the plan specifically addresses coastal hazards with a list of hazard mitigation guidelines. These guidelines include participation in the Community Rating System (CRS) Program of the National Flood Insurance Program, development of a hazard mitigation plan through the Baldwin County EMA, continuing drainage system maintenance with assistance from Baldwin County, and identification of hazard mitigation projects eligible for funding under FEMA’s HMA grant programs.

Pertinent mitigation strategies developed from this mitigation plan update should be integrated into any revisions of existing comprehensive plans and future planning documents at the appropriate time. Specific measures for plan integration are included in the Community Mitigation Action Programs for each jurisdiction, which can be found in Chapter 6 “Mitigation Strategy.”

## 4.6 How the Plan was Prepared

From April 2015 through December 2015, the Baldwin County Hazard Mitigation Committee (HMPC) held five meetings to participate in the plan drafting process.

Minutes from these meetings are on file in the Baldwin County EMA office, and copies of agendas and sign in sheets are included in Appendix G “Committee Meeting Documentation.” All agendas, presentations and exercises were made available on the plan update website at [baldwin.hazmitigationplan.com](http://baldwin.hazmitigationplan.com). If a committee member could not attend a meeting, all of the meeting materials were available to download on the website, review, and submit comments to the planning team.

The first planning meeting was held on April 24, 2015. The planning process was discussed and the review of Chapters 1 “Introduction,” 2 “Prerequisites,” and 7 “Plan Maintenance Process” and Appendices A “Federal Requirements for Local Mitigation Plans” and J “Adopting Resolution” were completed. The members were provided the Hazard Identification and Ratings Exercise to identify hazards they believed affected their jurisdiction and rate the potential impacts and probabilities of future occurrences. (See Appendix D “HMPC Hazard Identification and Ratings” for the results of this exercise).

The second meeting of the HMPC was held on June 19, 2015. The primary topic of this meeting was the first half of Chapter 5 “Risk Assessment,” which includes detailed profiles of the hazards affecting each community. Appendices D “Hazard Ratings and Descriptions” and E “Hazard Profile Data” were also presented for review. The HMPC discussed hazard events over the previous five-year period, resulting impacts, and potential future occurrences. Chapter 3 “Community Profiles” was also reviewed for completeness and accuracy of community descriptions.

On August 14, 2015, the third HMPC meeting was conducted. The second part of Chapter 5 “Risk Assessment,” covering vulnerabilities, was reviewed. Discussion focused on the types of structures and potential losses. Further, the HMPC reviewed land development trends and the future impacts of hazards on future growth and development. Finally, HMPC members were asked to complete exercises to update their capabilities assessment and plan implementation status as homework.

The meeting held on October 22, 2015 was the fourth for the HMPC. Topics discussed during this meeting included Chapter 6 “Mitigation Strategies” and Appendices B “Community Mitigation Capabilities,” C “2010 Plan Implementation Status,” and F “Identification and Analysis of Mitigation Measures.” During the review of Chapter 6 “Mitigation Strategies”, the HMPC discussed goals and objectives and alternative mitigation measures available to each community. The planning team presentation emphasized the value of thoroughly evaluating each measure by applying the STAPLEE method (Social, Technical, Administrative, Political, Legal, Environmental, and Economic considerations). Appendix B, “Community Mitigation Capabilities” was reviewed to determine if any information needed to be updated. Review of Appendix C “Plan Implementation Status 2010” helped the HMPC better understand and grasp the measures from the last plan update. Appendix F “Alternative Mitigation Measures” was also reviewed so that the HMPC would be aware of the various ways to mitigate their

hazards. The HMPC was provided with the Community Action Program exercise to begin developing their action programs for the next five year planning cycle. A copy of this exercise is located in Appendix F.

The final meeting was conducted on December 11, 2015, immediately preceding the community event at the Baldwin County Central Annex auditorium. The HMPC reviewed Volume II, Community Action Programs during this meeting. The planning team discussed the importance of the individual programs and the responsibilities of the HMPC to oversee the progress of their jurisdiction's plan. Chapter 4 "Planning Process" was also discussed, including the process taken during the update period and expectations for FEMA approval and local adoption. The approval process was outlined, from the recommendation for approval from AEMA to FEMA's final approval. It was stressed that each community must adopt the plan in order to be eligible for consideration of future mitigation projects. Finally, the planning team emphasized the need for the HMPC to meet at least annually to review the plan, in accordance with the plan maintenance procedures in Chapter 7.



The planning team assembled the final draft of the plan and submitted it to the Alabama EMA for its recommendation to FEMA. Subsequently, FEMA approved the plan, pending local adoption. The final approved plan was adopted by resolutions of all participating jurisdictions at public hearings of their governing bodies. As an active participant in the planning process and with facilities and services across all local jurisdictions, the Baldwin County Board of Education likewise adopted the plan.

## **4.7 Who was Involved in the Planning Process**

### **4.7.1 The Hazard Mitigation Planning Committee**

The Baldwin County Hazard Mitigation Planning Committee (HMPC), comprised of representatives from all the jurisdictions and organizations concerned with hazard mitigation, guided the development of this plan. The membership of the HMPC and the political jurisdictions and stakeholder organizations represented are listed below:

**Table 4-2. HMPC Membership**

Name	Title or Position	Type	Jurisdiction/Organization	Agency/Department
Reggie Chitwood	Director	Jurisdiction	All	Baldwin County EMA
Danon Hoagland	Planning/Grants Coord.	Jurisdiction	All	Baldwin County EMA
Jenni Guerry	Secretary	Jurisdiction	All	LEPC / EMA
Mike Howell	Building Official	Jurisdiction	Baldwin County	Building Inspections
Charlie Jones	Chief Deputy	Jurisdiction	Baldwin County	Sherriff's Dept.
Joey Nunnally	Pre-Const. Manager	Jurisdiction	Baldwin County	Highway Department
Anthony Sampson	Director	Jurisdiction	Baldwin County	Board of Education
David Corley		Jurisdiction	Baldwin County	North Baldwin Utilities
Mike Minchew	Fire Chief	Jurisdiction	City of Bay Minette	Fire and Rescue
Chip Martin	Fire Marshall	Jurisdiction	City of Daphne	Fire and Rescue
Denise Penry	PW Accountant	Jurisdiction	City of Daphne	
Ashley Campbell	Envir. Prgms. Manager	Jurisdiction	City of Daphne	
Erik Cortinas	Building Official	Jurisdiction	City of Fairhope	Building Inspections
John Saraceno	EM Coordinator	Jurisdiction	City of Fairhope	Fire Department
Joe Bouzan		Jurisdiction	City of Foley	
Rachael Keith		Jurisdiction	City of Foley	
Brandan Franklin	Building Official	Jurisdiction	City of Gulf Shores	Building Inspections
Alan Carpenter	Lieutenant	Jurisdiction	City of Gulf Shores	Police
Ken Grimes	City Administrator	Jurisdiction	City of Orange Beach	Office of the Mayor
Lannie Smith	Building Official	Jurisdiction	City of Orange Beach	Building Inspections
Greg Smith	Building Official	Jurisdiction	City of Robertsdale	Building Inspections
Scott Gilbert	Director	Jurisdiction	City of Robertsdale	Public Works
Bruce Renkert	Building Official	Jurisdiction	City of Spanish Fort	Building Inspections
Marvin Williams	Mayor	Jurisdiction	Town of Elberta	Office of the Mayor
Ashley Powers	Town Clerk	Jurisdiction	Town of Elberta	Office of the Town Clerk
Billy Middleton	Mayor	Jurisdiction	Town of Loxley	Office of the Mayor
Richard Rider, II	Superintendent	Jurisdiction	Town of Loxley	Public Works
Kenneth Underwood	Mayor	Jurisdiction	Town of Magnolia Springs	Office of the Mayor
Patsy Parker	Mayor	Jurisdiction	Town of Perdido Beach	Office of the Mayor
Ellen Leslie	Councilwoman	Jurisdiction	Town of Perdido Beach	Town Council
Timothy Wilson	Mayor	Jurisdiction	Town of Silverhill	Office of the Mayor
Jimmy Davis	Chief	Jurisdiction	Town of Summerdale	Police
Tiffany Lynn	Town Clerk	Jurisdiction	Town of Summerdale	Office of the Town Clerk
Kim Frank		Stakeholder	Baldwin County EMC	
Steve Millstead		Stakeholder	Belforest Water System	
Lori Wilson		Stakeholder	Daphne Utilities	
Dan McCrory		Stakeholder	Fairhope Utilities	
Clifford Johnson		Stakeholder	Gulf Shores Utilities	

Name	Title or Position	Type	Jurisdiction/Organization	Agency/Department
Rick Rider		Stakeholder	Loxley Utilities	
Stacey Quates		Stakeholder	Park City Water Authority	
Miles McDaniel		Stakeholder	Riviera Utilities	
Paula Aldrich		Stakeholder	Robertsdale Utilities	
Charles Hall		Stakeholder	Water, Sewer & Fire Protection	E. Central Baldwin
Mark Bohlin		Stakeholder	Water, Sewer & Fire Protection	Perdido Bay
Pete Stritzinger		Stakeholder	Water, Sewer & Fire Protection	Ono Island
Judy Sullivan		Stakeholder	Water, Sewer & Fire Protection	Orange Beach
Rhonda Durant		Stakeholder	White House Fork Water System	
Teresa Porter		Stakeholder	State of Alabama	Ala. Dept of Public Health

*Note: The Baldwin County EMA serves as the lead local agency supporting the drafting, adoption, and ongoing implementation of the plan. The EMA supports committee activities and represents the interests of all Baldwin County jurisdictions and agencies, including school boards and utilities.*

## 4.7.2 The Mission of the Hazard Mitigation Planning Committee

The HMPC chose to retain the mission statement from the 2010 plan for this update:

*The mission of the Baldwin County Hazard Mitigation Planning Committee is to oversee and establish a comprehensive hazard mitigation planning process that:*

- *Engages public participation and support;*
- *Facilitates Federal, state, regional and local agencies' coordination;*
- *Constantly monitors and evaluates the potential risks of hazards to life and property;*
- *Actively mobilizes all available community resources and measures to mitigate the threats of hazards; and,*
- *Concludes in programmed actions with specific results.*

## 4.7.3 Preparation of the Plan Update

The 2015 plan update was prepared under the direction of the HMPC with the support of the Baldwin County EMA Planning and Grants Coordinator, Danon Hoagland. The Baldwin County Commission was awarded a FEMA Pre-Disaster Mitigation (PDM) planning grant in the amount of \$30,000 to fund the plan update. The Commission retained the consulting firm of Lehe Planning, LLC, the same firm that assisted with the 2004 and 2010 plans, to prepare the 2015 update. A professional urban planner James E. Lehe, AICP, served as Plan Coordinator.

## **4.8 How the Public was Involved in the Planning Process**

As previously mentioned in other sections of this chapter, the public received many opportunities to participate in the plan update. These public involvement opportunities included: (1) active participation in any of the five committee meetings; (2) submitting comments through the internet via the plan website, email, Facebook, and Twitter; (3) attending the two community meeting; (4) completing the community survey; (5) submitting comments by postal mail or email; and, (6) consulting with the planning team by telephone or in-person.

All Hazard Mitigation Planning Committee (HMPC) meetings were publicly announced and open to the public. All meeting dates appeared publicly on the plan website at [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com). The posting of meeting agendas, slide presentations, committee exercises, meeting handouts, and draft sections of the plan provided the public with full access to the planning process.

The HMPC sponsored a special community meeting on October 22, 2015, during the drafting stages of the plan. At this public meeting, the draft plan was publicly presented, and the hazards and alternative mitigation measures were discussed among participants. Map displays and handouts of FEMA publications regarding various hazards and mitigation measures were made available to the public. Additionally, the public was encouraged to fill out a survey about the risks and threats of hazards and offer any suggestions. The community survey results were compiled and posted on the plan website and distributed to HMPC members.

At the end of the planning process, individuals were afforded one last opportunity for comments on the 2015 plan update. Each governing body held a public hearing prior to adoption. For more detailed documentation and discussion of public involvement, see Appendix H “Community Involvement Documentation.”

## **4.9 The Plan Review and Update Process**

The plan review and update process resulted in a comprehensive update of the entire 2010 plan elements, which was achieved through a process that involved the following tasks, among others:

- Update of the Community Profiles to reflect changed demographics, economic characteristics, and growth and development trends;
- An update of the assessment of local capabilities to carry out mitigation measures;
- An evaluation of the status and effectiveness of Community Mitigation Action Programs adopted in the 2010 plan, which is reflected in the 2015 Action Programs for each jurisdiction;
- A reassessment of risks to include detailed research and analysis of hazards affecting the communities, as well as adding man-made hazards to the Risk Assessment;

- A complete update of the HAZUS – MH maps and analysis reports for floods, earthquakes, and hurricanes;
- A reexamination of development trends and exposure to risks;
- A review and recommitment to the vision for disaster-resistant communities; the plan goals; and support of the 2013 Alabama state goals for hazard mitigation;
- Identification and analysis of a comprehensive range of mitigation alternatives;
- A reprioritization of mitigation actions and projects;
- Revised mitigation action programs for each jurisdiction to better reflect the results of the plan update; and,
- Revisions to the plan maintenance procedures to institute streamlined amendments and better ensure continuous monitoring and implementation of mitigation actions.

During the period between approval of the 2010 plan and the drafting of the 2015 plan, the HMPC held nine interim meetings to review plan implementation measures and projects, in accordance with Chapter 7 “Plan Maintenance.” Documentation of those meetings can be found in Appendix G “Committee Meeting Documentation.”

## Chapter 5 – Risk Assessment

- 5.1 Federal Requirements for Risk Assessments
- 5.2 Summary of Plan Updates
- 5.3 Identification of Hazards Affecting Each Jurisdiction
- 5.4 Hazard Profiles
- 5.5 Vulnerability of Structures within Each Jurisdiction
- 5.6 Estimate of Dollar Losses to Vulnerable Structures
- 5.7 General Description of Land Uses and Development Trends
- 5.8 Repetitively-Damaged NFIP-Insured Structures
- 5.9 Summary of Hazards and Community Impacts
- 5.10 Risks that Vary Among the Jurisdictions

### 5.1 Federal Requirements for Risk Assessments

This chapter of the Plan addresses the Risk Assessment requirements of 44 CFR Section 201.6 (c)(2), as follows:

“201.6 (c)(2) A *Risk Assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:

- (i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
- (ii) A description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:
  - A. The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
  - B. An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;
  - C. Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

- (iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.”

**5.2 Summary of Plan Updates**

Table 5-1 summarizes updates to the 2015 plan:

**Table 5-1. Plan Updates**

Section		Change
5.3	Identification of Hazards Affecting Each Jurisdiction	Adds Tsunamis to Table 5.2
5.4	Hazard Profiles	Adds Tsunamis to Section 5.4; improves descriptions of locations and extents; updates Past Events; improves mapping
5.5	Vulnerability of Structures within Each Jurisdiction	Provides HAZUS-MH inventory data and population estimates
5.6	Estimate of Dollar Losses to Vulnerable Structures	Provides HAZUS-MH loss estimates and losses from historical records
5.7	General Description of Land Uses and Development Trends	Reserved.
5.8	Repetitively-Damaged NFIP-Insured Structures	Addresses new requirement
5.9	Summary of Hazards and Community Impacts	Previously mentioned in hazard profiles; more community specific impact descriptions
5.10	Risks that Vary Among the Jurisdictions	Improved explanation of how risks vary

**5.3 Identification of Hazards Affecting Each Jurisdiction**

**5.3.1 Types of Hazards**

Hazards affecting each jurisdiction are listed in Table 5-2 “Identified Baldwin County Hazards”. This table highlights the relationships between hazards. In addition to the natural hazards listed in the 2010 Baldwin County Multi-Hazard Mitigation Plan, this 2015 plan includes tsunamis. Detailed descriptions appear in Appendix D, “Hazard Identification, Ratings and Descriptions.”

**Table 5-2. Identified Baldwin County Hazards**

Hazards	Associated Hazards	Jurisdictions Affected				
<p><b>Hurricanes</b></p>	<p>Tropical Storms Tropical Depressions Severe Storms High Winds Floods Storm Surge Tornadoes</p>	<p>Baldwin County Bay Minette Daphne Elberta Fairhope Foley Gulf Shores Loxley Magnolia Springs Orange Beach Perdido Beach Robertsdale Silverhill Spanish Fort Summerdale</p>				
		<p><b>Flooding</b></p>		<p>Baldwin County Bay Minette Daphne Elberta Fairhope Foley Gulf Shores Loxley Magnolia Springs Orange Beach Perdido Beach Robertsdale Silverhill Spanish Fort Summerdale</p>		
				<p><b>Severe Storms</b></p>	<p>Thunderstorms Hail Lightning High Winds/Straight-line Winds Tornadoes Floods Landslides Wildfires</p>	<p>Baldwin County Bay Minette Daphne Elberta Fairhope Foley Gulf Shores Loxley Magnolia Springs Orange Beach Perdido Beach Robertsdale Silverhill Spanish Fort Summerdale</p>

Hazards	Associated Hazards	Jurisdictions Affected				
<p align="center"><b>Tornadoes</b></p>	<p>High Winds Severe Storms</p>	<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>				
		<p align="center"><b>Wildfires</b></p>		<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>		
				<p align="center"><b>Drought/Heat Waves</b></p>	<p>Extreme Heat Wildfires Sinkholes</p>	<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>

Hazards	Associated Hazards	Jurisdictions Affected				
<p><b>Winter Storms/Freezes</b></p>	<p>Snow Storms Ice Storms Extreme Cold</p>	<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>				
		<p><b>Earthquakes</b></p>	<p>Landslides</p>	<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>		
				<p><b>Landslides</b></p>		<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>

Hazards	Associated Hazards	Jurisdictions Affected				
<p><b>Dam/Levee Failures</b></p>	<p>Flooding</p>	<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>				
		<p><b>Sinkholes (Land Subsidence)</b></p>		<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>		
				<p><b>Tsunamis</b></p>		<p>Baldwin County</p> <p>Bay Minette</p> <p>Daphne</p> <p>Elberta</p> <p>Fairhope</p> <p>Foley</p> <p>Gulf Shores</p> <p>Loxley</p> <p>Magnolia Springs</p> <p>Orange Beach</p> <p>Perdido Beach</p> <p>Robertsdale</p> <p>Silverhill</p> <p>Spanish Fort</p> <p>Summerdale</p>

Hazards	Associated Hazards	Jurisdictions Affected
<b>Manmade/Technological</b>		Baldwin County
		Bay Minette
		Daphne
		Elberta
		Fairhope
		Foley
		Gulf Shores
		Loxley
		Magnolia Springs
		Orange Beach
		Perdido Beach
		Robertsdale
		Silverhill
		Spanish Fort
Summerdale		

**5.3.2 Sources for Identifying Baldwin County Hazards**

The planning team used the following sources to identify hazards:

1. HMPC Hazard Identification and Ratings Exercise. The Hazard Mitigation Planning Committee began the 2015 hazard identification process by completing an exercise to evaluate the list of hazards identified in the 2010 plan, which is reported in Appendix D “HMPC Hazard Identification and Ratings.”
2. 2013 Alabama State Plan. The 2013 update of the Alabama State Plan served as an additional resource for identifying local hazards. The planning team compared the list of hazards identified in the State Plan with the local list of hazards and noted the differences. Table 5-3 highlights these differences.

**Table 5-3. Comparison of Identified Baldwin County Hazards to State Plan**

Hazards Identified in 2013 Alabama State Plan	Equivalent 2015 Baldwin County Identified Hazards	Differences
High Winds (hurricanes, tornadoes and windstorms)	Tornadoes – High Winds Severe Storms – High Winds Hurricanes – High Winds	High winds included as components of tornadoes, severe storms, and hurricanes in Baldwin County plan.
Floods (storm surge, riverine, flash floods, etc.)	Flooding	Coastal and riverine flooding; Baldwin County plan associates storm surge with hurricanes.
Hail	Severe Storms – Hail	Included as a component of severe storms in Baldwin County plan.
Lightning	Severe Storms – Lightning	Included as a component of severe storms in Baldwin County plan.
Wildfires	Wildfires	Baldwin County plan associates wildfires with droughts/heat waves.

Hazards Identified in 2013 Alabama State Plan	Equivalent 2015 Baldwin County Identified Hazards	Differences
Droughts	Droughts/Heat Waves	Included as a component of droughts/heat waves in Baldwin County plan. Baldwin County plan identifies sinkholes as a consequence of droughts/heat waves.
Extreme Temperatures	Droughts/Heat Waves – Extreme Heat Winter Storms/Freezes – Extreme Cold	Included as components of droughts/heat waves and winter storms/freezes in Baldwin County plan.
Winter/Ice Storms	Winter Storms/Freezes	Baldwin County plan identifies extreme cold as an associated hazard.
Earthquakes	Earthquakes	Baldwin County plan identifies landslides as an associated natural hazard.
Landslides	Landslides	Baldwin County plan identifies mudslides as an associated natural hazard.
Dam/Levee Failures	Dam/Levee Failures	Baldwin County plan associates floods with dam/levee failures.
Sinkholes & Land Subsidence	Sinkholes (Land Subsidence)	No difference.
Tsunamis	Tsunamis	Newly identified natural hazard in Baldwin County plan.
Sea Level Rise	Tsunamis – Sea Level Rise	Included as a component of Tsunamis in Baldwin County plan.

3. List of Federally-Declared Disasters. Federal disaster declarations were an additional source for hazard identification. Baldwin County was included in 62 federal disaster declarations from 1973-2014. However, it should be noted that not all of these disasters occurred within Baldwin County’s borders, as FEMA often includes a "buffer" area of adjoining counties in its disaster declarations in case damage is more widespread than initially reported. All declarations that have been issued since 1973 are included in Table 5-4.

**Table 5-4. 1973-2014 Federal Disaster Declarations Affecting Baldwin County**

Disaster No.	Description	Date of Declaration	Declaration Type
369	Tornado	5/3/1973	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
388	Severe Storms, Flooding	5/29/1973	HM
422	Tornadoes	4/4/1974	HM
458	Severe Storms, Flooding	3/14/1975	HM
464	Severe Storms, Flooding	4/23/1975	HM
488	Severe Storms, Tornadoes, Flooding	10/2/1975	HM
532	Severe Storms, Flooding	4/9/1977	HM
3045	Drought	7/20/1977	PA-AB
563	Severe Storms, Flooding	8/9/1978	PA-ABCDEFGF, HM

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<b>Disaster No.</b>	<b>Description</b>	<b>Date of Declaration</b>	<b>Declaration Type</b>
3074	Flooding	3/17/1979	PA-AB
578	Storms, Wind, Flooding	4/18/1979	HM
598	Hurricane Frederic	9/13/1979	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
619	Severe Storms	4/20/1980	HM
638	Severe Storms, Tornadoes, Flooding	4/10/1981	HM
639	Flood	5/14/1981	HM
695	Severe Storms, Flooding, Tornadoes	12/13/1983	HM
742	Hurricane Elena	9/7/1985	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
848	Severe Storms, Tornadoes	11/17/1989	HM
856	Flooding, Severe Storm, Tornado	2/17/1990	HM
861	Severe Storms	3/23/1990	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
890	Flooding, Severe Storm	1/4/1991	HM
3096	Severe Snowfall, Winter Storm	3/15/1993	PA-AB
1013	Winter Storm, Severe Storm, Freezing, Flooding	3/3/1994	HM
1019	Severe Storm, Flooding, Tornado	3/30/1994	HM
1034	Severe Storm, Flooding, Tropical Storm Alberto	7/8/1994	HM
1047	Severe Storms, Tornadoes, Flooding	4/21/1995	HM
1070	Hurricane Opal	10/10/1995	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1104	Storms, Flooding	2/23/1996	HM
1108	Storms, Tornadoes, Floods	3/20/1996	HM
1185	Severe Storms	7/25/1997	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1208	Severe Storms, Flooding	3/9/1998	HM
1214	Tornadoes, Severe Storms	4/9/1998	HM
3133	Hurricane Georges	9/28/1998	PA-AB, HM
1250	Hurricane Georges	10/6/1998	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1261	Freezing Rain, Ice Storm	1/15/1999	HM
1317	Winter Storm	2/18/2000	HM
1322	Severe Storms, Flooding	3/17/2000	HM
1352	Tornadoes	12/18/2000	HM
1362	Severe Storms, Flooding	3/5/2001	HM
1399	Severe Storms, Tornadoes	12/7/2001	HM
1438	Tropical Storm Isidore	10/9/2002	PA-ABCDEFGF, HM
1442	Severe Storms, Tornadoes	11/9/2002	HM
1466	Severe Storms, Tornadoes and Flooding	5/12/2003	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1549	Hurricane Ivan	9/15/2004	IA, PA-ABCDEFGF, DH, DUA, IFG, HM

<b>Disaster No.</b>	<b>Description</b>	<b>Date of Declaration</b>	<b>Declaration Type</b>
1593	Hurricane Dennis	7/10/2005	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1605	Hurricane Katrina	8/29/2005	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
3237	Hurricane Katrina Evacuation	9/10/2005	PA-B
1687	Severe Storms, Tornadoes	3/3/2007	HM
3214	Hurricane Katrina	8/28/2005	PA-AB
3292	Hurricane Gustav	8/30/2008	PA-B
1789	Hurricane Gustav	9/10/2008	IA, PA-ABCDEFGF, DH, DUA, IFG, HM
1797	Hurricane Ike: Severe Storms, Flooding	9/26/2008	PA-AB, HM
1835	Severe Storms, Flooding, Tornadoes	4/28/2009	PA-ABCDEFGF, HM
1836	Severe Storms, Flooding, Tornadoes, Straight-line Winds	5/8/2009	HM
1842	Severe Storms, Tornadoes, Flooding, Straight-line Winds	6/3/2009	HM
1866	Tropical Storm Ida	12/22/2009	PA-AB, HM
1870	Severe Storms, Flooding	12/31/2009	HM
1908	Severe Storms, Tornadoes, Straight-line Winds, Flooding	5/3/2010	HM
1971	Severe Storms, Tornadoes, Straight-line Winds, Flooding	4/28/2011	HM
4052	Severe Storms, Tornadoes, Straight-line Winds, Flooding	2/1/2012	HM
4082	Hurricane Isaac	9/21/2012	PA-ABCDEFGF, HM
4176	Severe Storms, Tornadoes, Straight-line Winds, Flooding	5/2/2014	IA, PA-ABCDEFGF, HM
<b>* Declaration Type / Description Key:</b>			
IA – Individual assistance		PA-A – Debris removal	
PA – Public assistance		PA-B – Protective measures	
DH – Disaster housing		PA-C – Roads and bridges	
CC – Crisis counseling		PA-D – Water control facilities	
DFA – Direct federal assistance		PA-E – Public buildings	
DUA – Disaster unemployment assistance		PA-F – Public utilities	
HM – Hazard mitigation		PA-G – Recreation	
IFG – Individual and family grant		SA – Stafford Act	
SBA – Small Business Administration		403C – Department of Defense	

Source: FEMA, Region IV

4. Other Hazard Identification Sources.

- Local expertise provided by Baldwin County EMA staff and local government professionals
- Discussions with residents who served on the HMPC and participated in community events and surveys

- The National Weather Service
- The NOAA Storm Events Database
- Southeast Regional Climate Center
- U.S. Geological Survey
- Southern Wildfire Risk Assessment Portal
- Alabama Forestry Commission
- U.S. Department of Transportation, HAZMAT Intelligence Portal
- Extensive internet research

## 5.4 Hazard Profiles

### 5.4.1 Hurricanes Profile

Hurricanes typically form in early fall, after months of summer weather have warmed the waters of the mid-Atlantic to their warmest temperatures of the year. Evaporation from the ocean fuels the development of constant tropical storms, of which the most powerful become hurricanes. Baldwin County's location at the center of the Gulf Coast puts the county at risk of hurricane landfalls. The Alabama EMA has included Baldwin County in the Primary Hurricane Risk Area.

Hurricane Isaac declared a State of Emergency on September 21, 2012, made landfall in Louisiana as a Category 1 hurricane on August 28, 2012. Though most of the damage occurred in neighboring states, Baldwin County was inundated by rainfall and experienced minor road flooding in low-lying areas, as well as power outages. The photo to the right shows waves breaking over the road in Orange Beach (credit: CNN). The photo below shows the public fishing pier at Gulf State Park in Gulf Shores before Hurricane Isaac made landfall in Louisiana.



**Location of Potential Hurricanes**

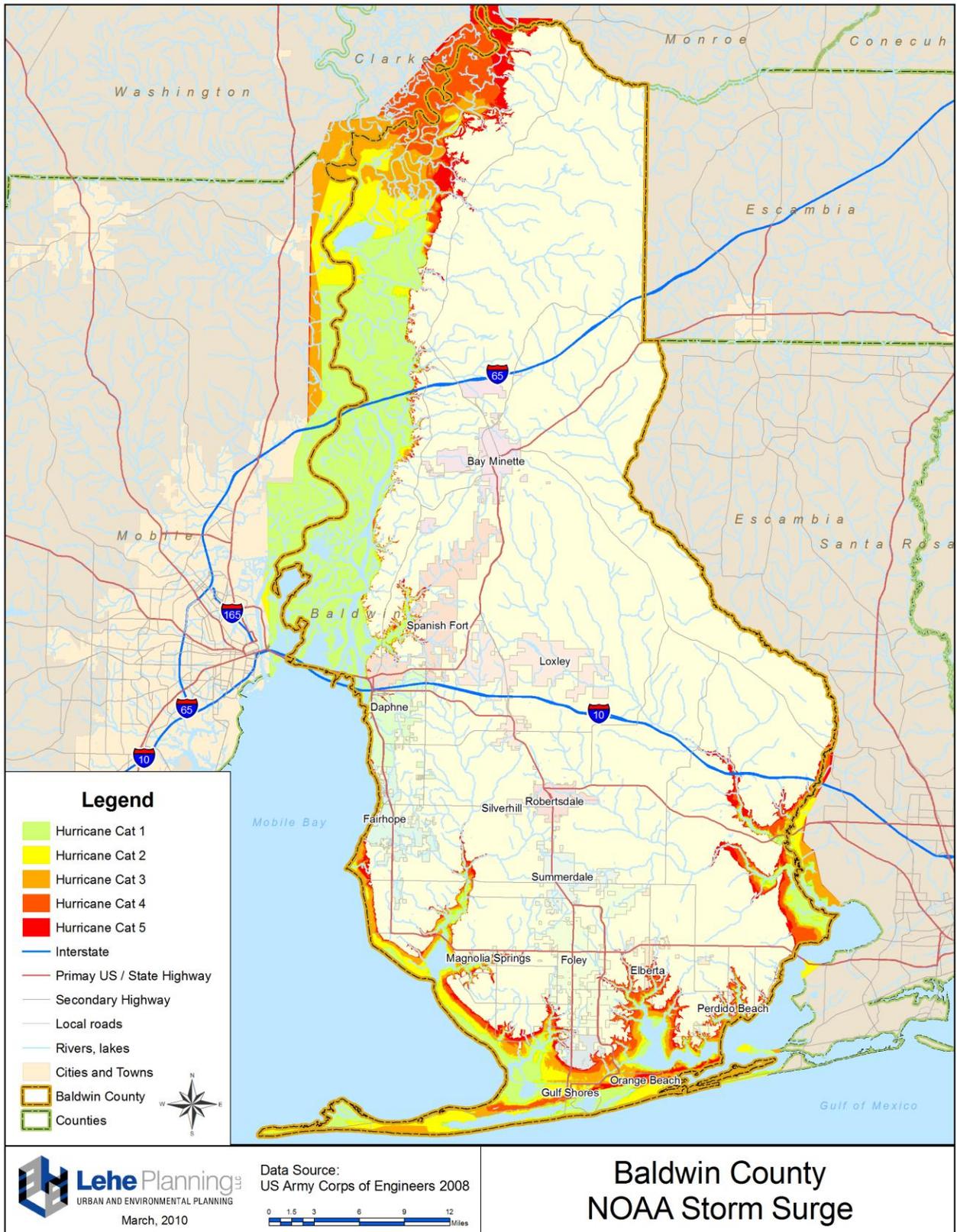
Although all of Baldwin County faces the risk of significant hurricane damage, certain areas are relatively more susceptible to associated hazards.

Coastal communities, including Gulf Shores, Orange Beach, Perdido Beach and nearby unincorporated areas, are most at risk of high winds and *storm surge*. Hurricane strength is measured by wind speed, which tends to be highest when the hurricane first makes landfall. *Storm surge* occurs when a hurricane's high winds push water up higher than sea level. As the hurricane meets land the swell of water spills over into low-lying coastal areas.

**Extent and Intensity of Hurricanes**

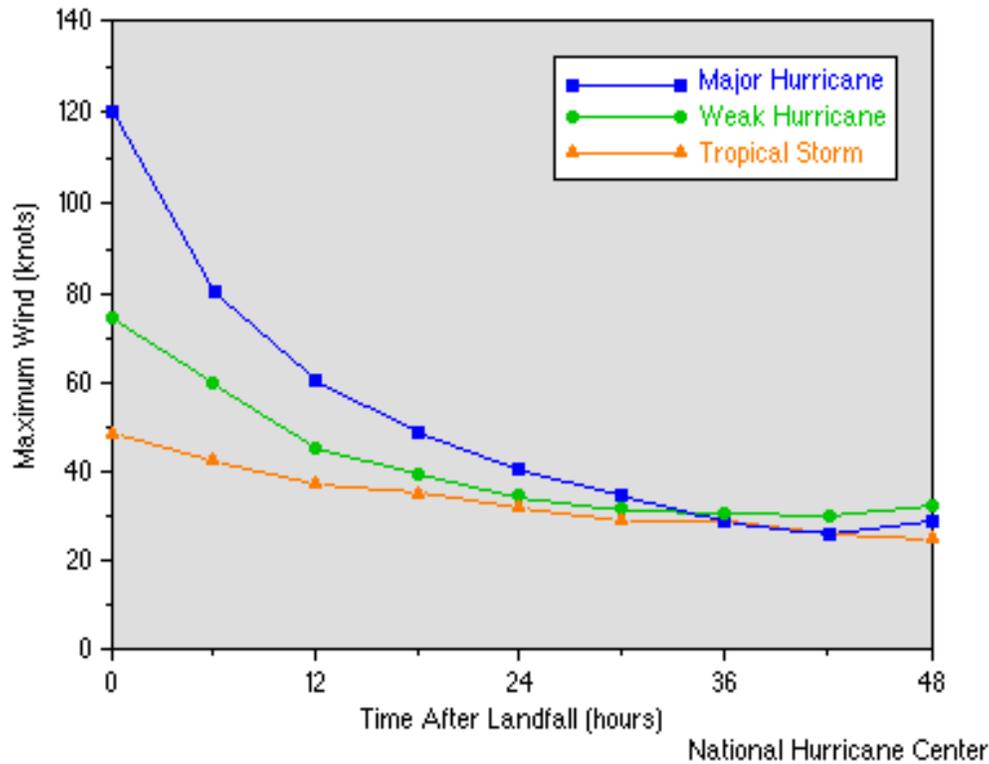
For Baldwin County, storm surge is the most dangerous hazard associated with hurricanes. Storm surge extent depends upon wind speed, the proximity of the affected area to the coast, and underwater geography. Map 5-1 delineates areas subject to storm surge. The communities along the Gulf of Mexico shore and at the inner quadrant of Mobile Bay are subject to storm surges from higher category hurricanes.

## Map 5-1. Storm Surge, Baldwin County



The second most dangerous hazard associated with hurricanes is high winds. Chart 5-1 illustrates how a hurricane’s wind speed falls so by half within 24 hours of landfall. However, every Baldwin County community lies within the distance a hurricane could cover within several hours of land fall, so most areas should expect wind speeds near initial values.

**Chart 5-1. Wind Speed Decay**



Source: National Hurricane Center

Hurricanes often produce torrential rains, which may last days. Flooding from heavy rains in advance of a landfall can sometimes be compounded by tidal surge. Slow-moving hurricanes, such as Hurricanes Danny and Georges (described below) pose the greatest risk of flooding and can drop more than 25 inches of rain.

Tornadoes are a third hazard associated with hurricanes and are often the most deadly aspect of the storm. Ten percent of damage attributable to hurricanes results from tornadoes. Records show half of all hurricanes produce a tornado capable of damaging property. Tornadoes typically form within 12 hours of landfall—a timeframe that allows for tornadoes to strike anywhere in Baldwin County.

**Previous Occurrences of Hurricanes**

Since 1900, Alabama has endured many powerful hurricanes. Descriptions of recent hurricanes give context to the threat Baldwin County faces.

Hurricane Elena, a Category 3 storm with sustained winds of 124 miles per hour, made landfall on September 2, 1985, near Biloxi, Mississippi, causing extensive damage along the Florida, Mississippi and Alabama coasts. The eye of the storm passed 30 miles south of Mobile, Alabama, battering Gulf Shores in Baldwin County, and Dauphin Island in Mobile County. Baldwin and Mobile counties were declared disaster areas on September 7, 1985 due to Elena. Damage from Hurricane Elena was caused, for the most part, by wind, with additional damage from storm surge and wave action. Shoreline properties in Baldwin and Mobile Counties were affected with the most extensive damage concentrated on the western end of Dauphin Island.

Three hurricanes impacted Alabama in 1995. Hurricane Allison caused a scare to Alabama and Florida residents in June of that year. There was relatively little damage, and Alabama was affected only by the evacuees from the Florida coast. Hurricane Erin in August caused extensive crop damage in Escambia County and damages in Baldwin, Washington, Clarke, and other southwestern Alabama counties. Hurricane Opal was the most devastating hurricane of the 1995 season to impact the State of Alabama.

Hurricane Opal, a Category 4 hurricane, made landfall on October 4, 1995, and moved northeast across the state of Alabama. Wind speeds at landfall were 125 miles per hour. In the coastal Alabama communities of Baldwin and Mobile counties, storm surge severely eroded beaches; damaged piers, docks, boats and roads; and flooded low-lying areas. Heavy rains, high winds, and tornadoes accompanying Opal caused flooding, blocked roads, and downed power lines. The overall effect of Hurricane Opal was a displacement of sand, destruction of the primary dune system, and overall narrowing of the beach in many areas.

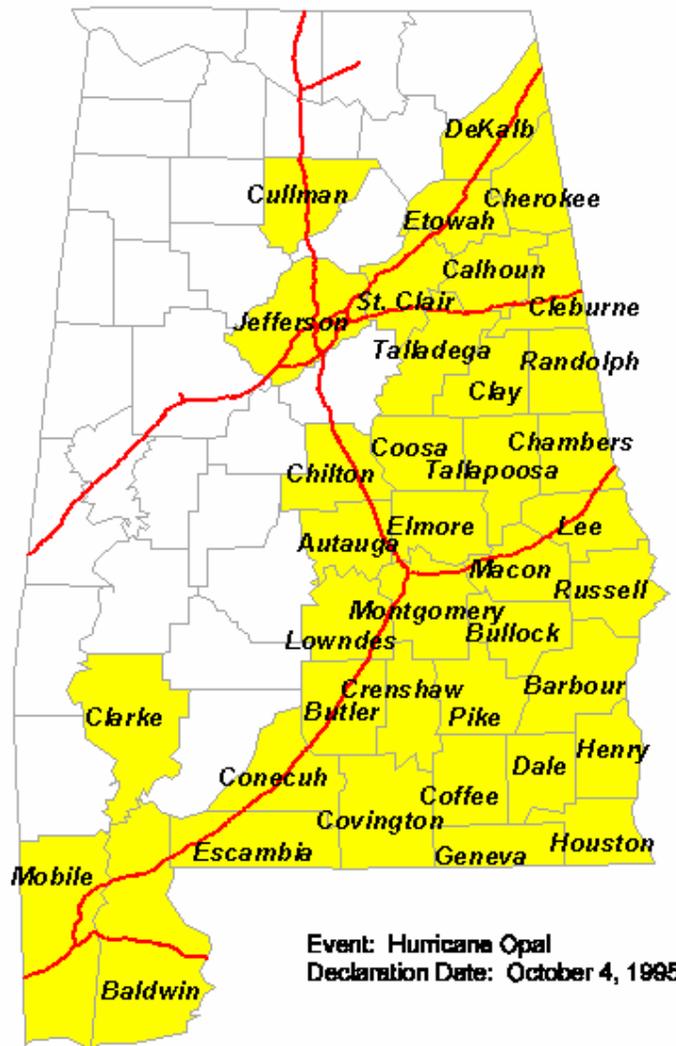
**Figure 5-1. Hurricane Opal Track**



**Source: National Hurricane Center**

More than one half of the state's counties were included in the disaster declaration areas. The Alabama counties affected were concentrated in the eastern half of the state and along the southern border westward to the Mississippi line, is illustrated by Map 5-2. The area contains a total population of 2,982,088, and includes the three largest cities in the state, Birmingham, Mobile, and Montgomery.

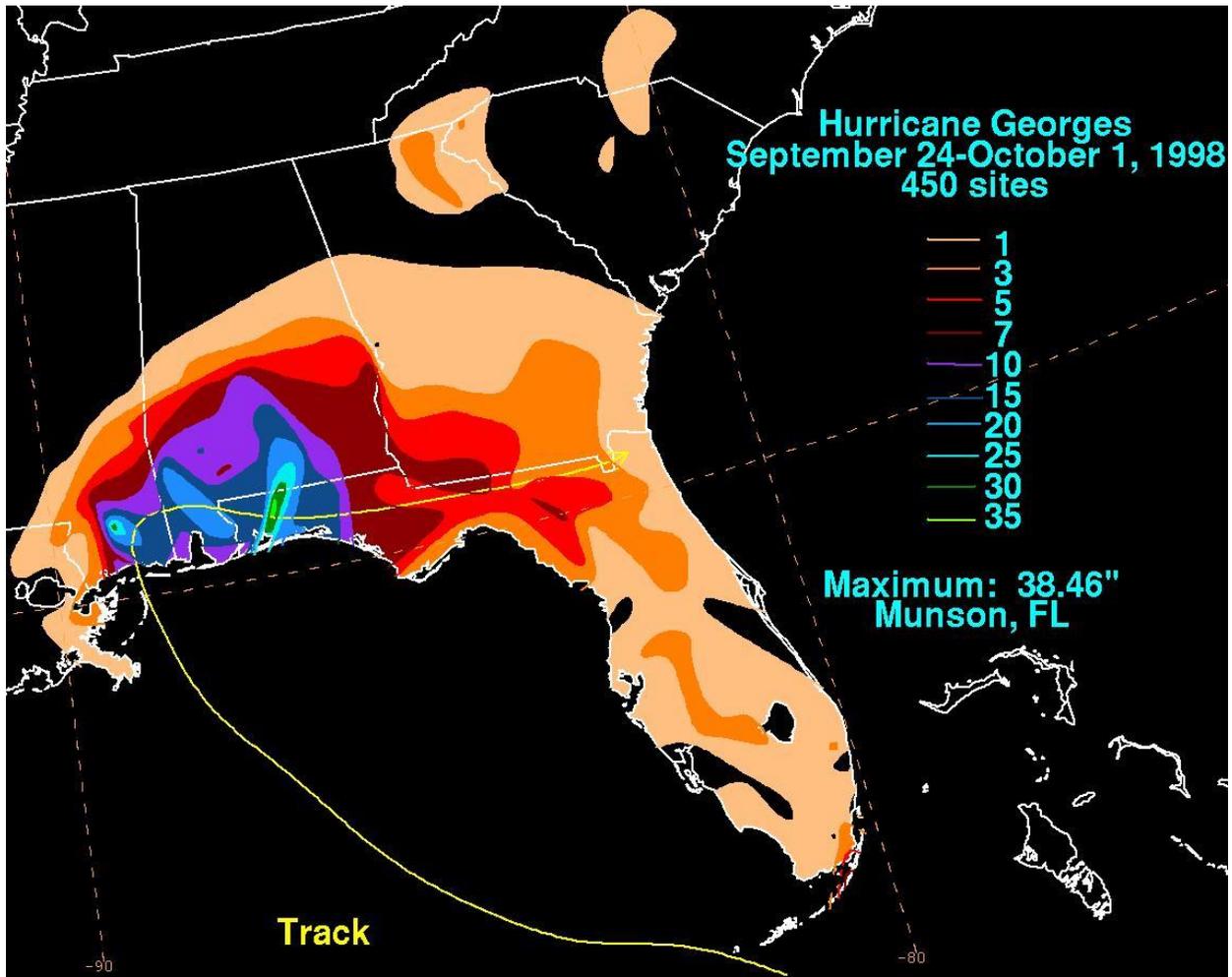
**Map 5-2. Alabama Counties affected by Hurricane Opal**



Hurricane Danny made landfall in Mobile Bay on July 19, 1997. The storm is remarkable for stalling in Mobile Bay for two days, during which time 25 in. of rain fell in Baldwin County. Areas around the Fish River in central Baldwin County suffered extensive flood damage, and the heavy rainfall destroyed crops in rural areas.

Hurricane Georges, a Category 2 hurricane, made landfall on September 28, 1998 near Biloxi, Mississippi. Like Hurricane Danny, Hurricane Georges was slow-moving, so most of its damage is attributable to floods resulting from heavy rainfall. Bay Minette reported rainfall of 29.66 inches. Fort Morgan reported a storm surge of 11.9 ft. Damage estimates for Hurricane Georges include \$18.2 million for unincorporated areas of Baldwin County and \$28.7 million for the City of Orange Beach. (Source: U.S.G.S Hurricane Georges Brochure).

**Figure 5-2. Hurricane Georges Rainfall**

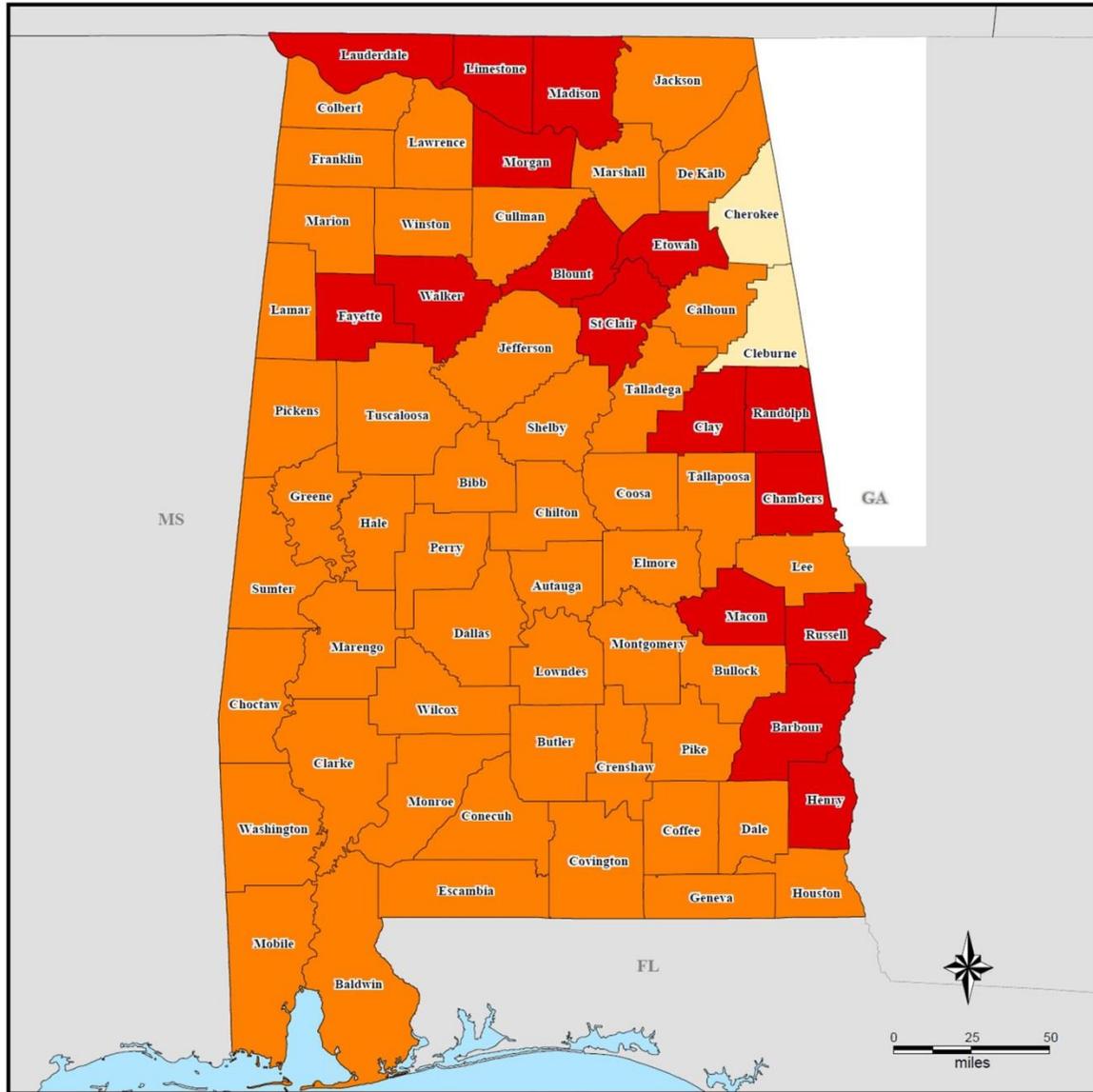


Hydrometeorological Prediction Center report on Hurricane Georges

Hurricane Ivan, a Category 5 hurricane, made landfall near Gulf Shores on September 16, 2004 with maximum sustained winds of 130 mph. Ivan produced a 12 ft. storm surge, heavy rains and more than 100 tornadoes. The damage, which was concentrated in Baldwin and Escambia Counties, is estimated at \$14 billion. With a death toll of 57, Ivan is remembered as one of the most powerful and deadly hurricanes in Gulf Coast history.

Map 5-3. Hurricane Ivan Disaster Declaration Area

### FEMA-1549-DR, Alabama Disaster Declaration as of 12/03/2004



**Legend**

**Designated Counties**  
(All counties are eligible for Hazard Mitigation)

- Individual Assistance
- Individual & Public Assistance
- Public Assistance



**FEMA**  
ITS Mapping and Analysis Center  
Washington, DC  
12/03/2004 -- 15:29:28 EST

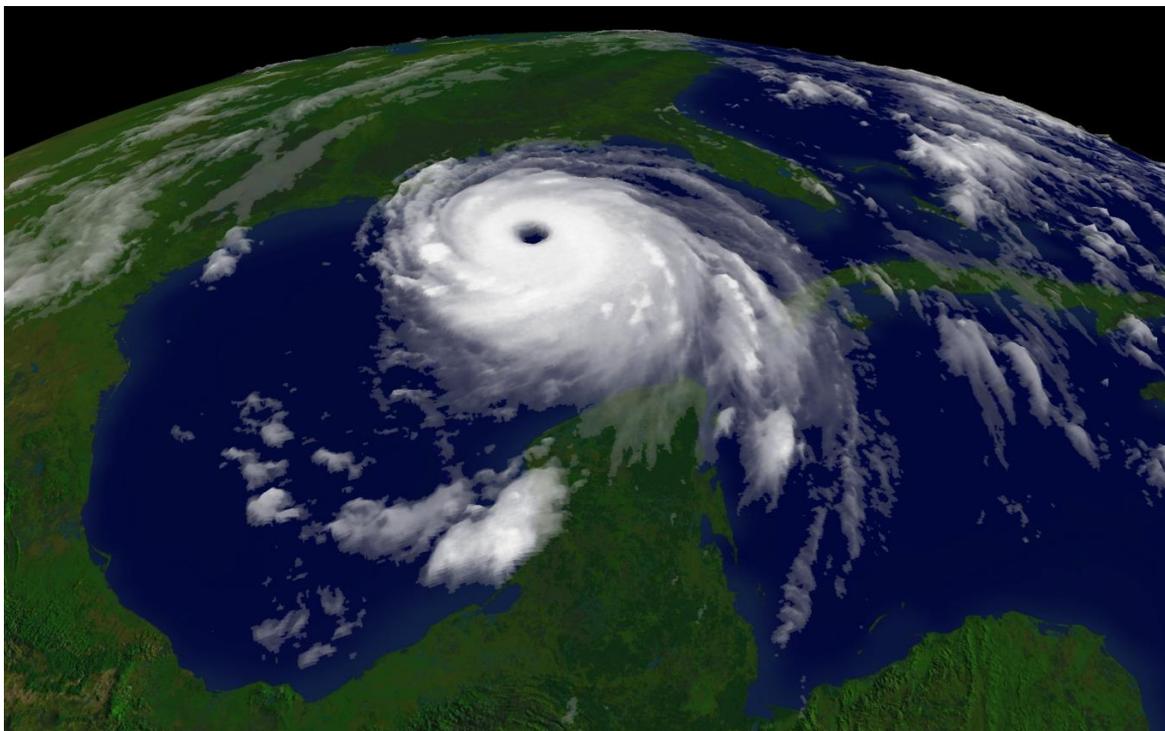
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The hurricane season of 2005 produced a record number of named storms in the Atlantic and Gulf Coast regions. There were 27 named storms and several either threatened or impacted the Gulf Coast. Those with the greatest impact to Alabama include tropical storms Arlene and Cindy and hurricanes Dennis and Katrina.

Hurricane Dennis, a Category 3 hurricane, made landfall in the western Florida panhandle on July 10, 2005, bringing storm surge and wind damage along the Florida and Alabama coasts, as well as scattered wind and flood damage in Georgia, Mississippi and Tennessee. The storm caused over \$2 billion in damages and 12 deaths in the United States.

Hurricane Katrina, a Category 3 hurricane at landfall, made landfall in southeastern Louisiana. A storm surge between 12 and 16 feet struck Mobile Bay. Oil rigs collapsed and washed ashore across Alabama's Gulf Coast. Katrina is remembered for its massive size, death toll of 1300, and damage estimate of over \$100 billion--making it the costliest natural disaster in U.S. history.

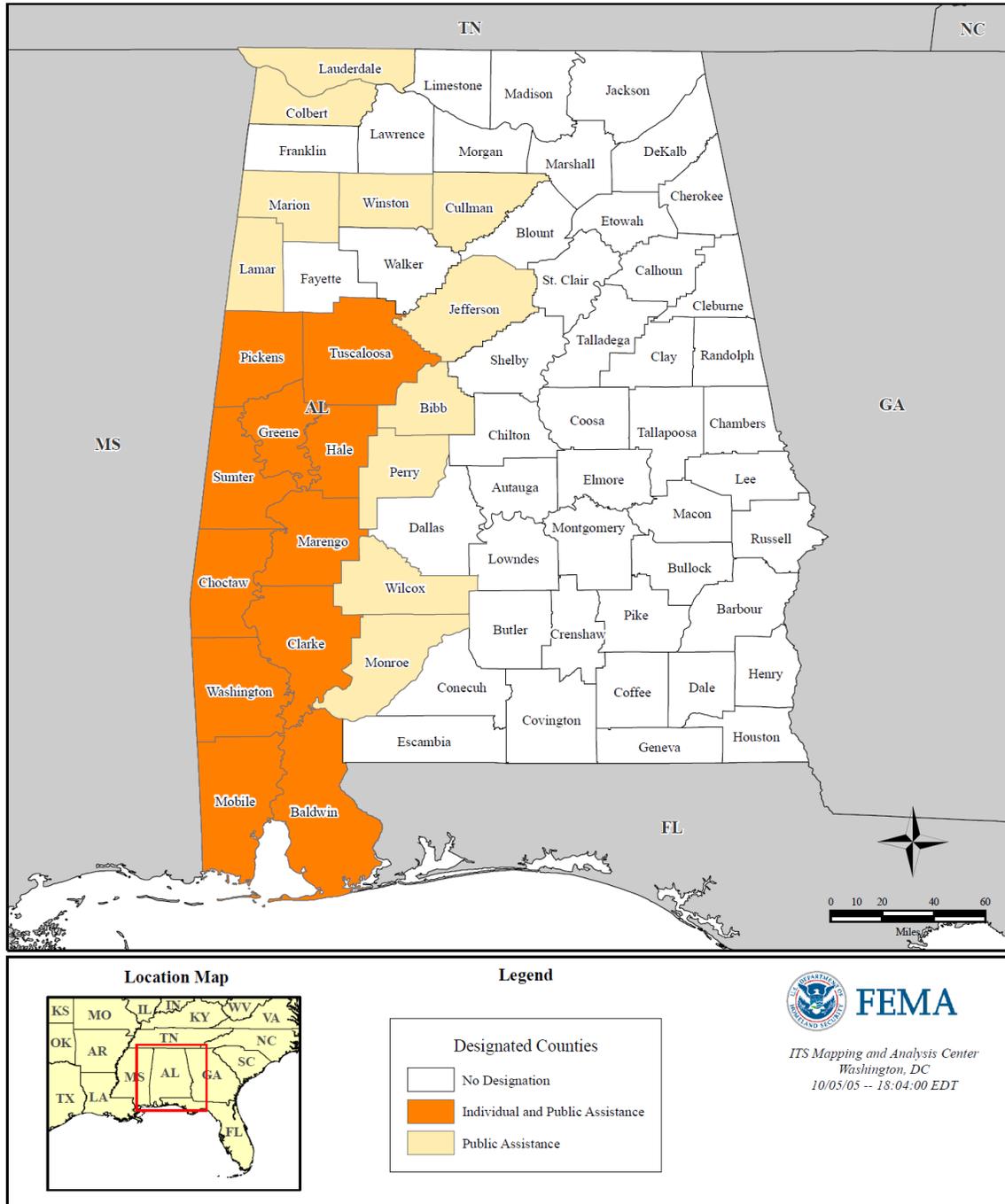
**Figure 5-3. Hurricane Katrina Approaching the Gulf Coast**



Source: National Oceanic and Atmospheric Administration

Map 5-4. Alabama County Disaster Designations for Hurricane Katrina

FEMA-1605-DR, Alabama  
Disaster Declaration as of 10/05/2005



Map 5-5 below shows historic Gulf Coast hurricanes between 1851 and 2008. Map 5-6 illustrates hurricane paths impacting Baldwin County, from 1900-2015.



**Map 5-6. Hurricane Paths, 1900-2015**

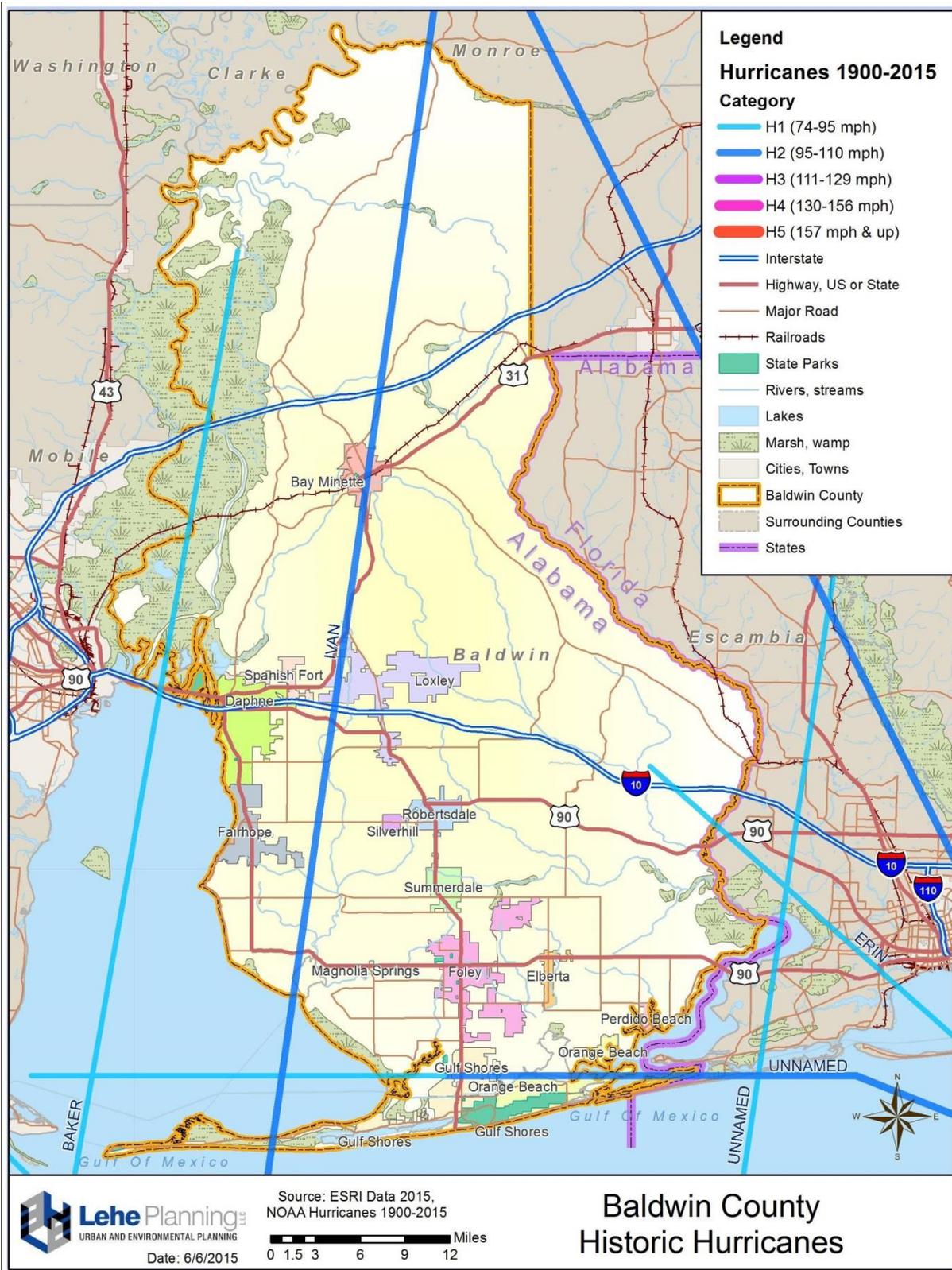


Table 5-5 provides a historical look of hurricanes impacting Baldwin County since 1893. Table 5-6 summarizes hurricane and tropical storms damage estimates over the last twenty years, as recorded by the National Climatic Data Center (NCDC).

**Table 5-5. Baldwin County Area Hurricane History**

DATE	CATEGORY	NAME	NOTES
10/3/1893	unknown		Mobile deluged. Water Driven in from the Bay Far Up in the City. Winds of 75 miles per hour.
9/27/1906	unknown		Moved inland in Pensacola, strongest to hit Pensacola since 1736.
7/5/1916	3		The pressure measured at Fort Morgan was 28.38 inches, or 961 Mb. The Hurricane made landfall just west of Mobile.
10/18/1916	3		Winds reached 114 mph at landfall. It moved inland over Pensacola.
9/20/1926	3		The pressure at Perdido Beach measured 28.20 inches, or 955 Mb. Significant flooding occurred in South Mobile and Baldwin Counties.
8/17/1969	5	Camille	The strongest known land-falling hurricane in recorded history. Winds were estimated at 190 mph at landfall. Hurricane Camille was extremely small, and moved inland near Bay St. Louis, MS. Great damage occurred throughout coastal Mississippi, with a recorded pressure of 26.84 inches, or 909 Mb. The storm surge was estimated at 22-25 feet. The devastation of Camille inspired the Saffir-Simpson Hurricane Scale.
9/12/1979	3	Frederic	Frederic strengthened from a category one to a category four storm in 30 hours while in the Gulf of Mexico, but weakened before landfall. The sustained winds reached 100 mph at landfall with gusts near 145 mph. Frederic moved inland near Mobile Bay and the Dauphin Island Bridge. The wind resulted in incredible damage to Mobile. Frederic was the first major hurricane to affect Mobile since 1926.
9/2/1985	3	Elena	Hurricane Elena, with sustained winds of 124 mph, made landfall on September 2, 1985 near Biloxi, causing extensive damage along the Florida, Mississippi and Alabama coasts. The eye passed 30 miles south of Mobile, battering Gulf Shores and Dauphin Island. Wind gusts were estimated at up to 132 miles per hour on Dauphin Island. Storm surge reached 6 to 8 feet in an area from Dauphin Island west to Gulfport. The rainfall amounts were light, averaging about 2.5 inches in the Mobile area.
8/3/1995	2	Erin	Hurricane Erin had winds of 100 mph at landfall, and it moved inland near Pensacola, FL. Hurricane Erin was the first of two local Hurricanes in 1995.

# CHAPTER 5

# 2015 Baldwin County Multi-Hazard Mitigation Plan

DATE	CATEGORY	NAME	NOTES
10/4/1995	3	Opal	Hurricane winds were estimated near 115 mph at landfall, and Opal moved inland near Santa Rosa Island, FL. Opal reached category four strength, rapidly intensifying from a category one hurricane in only 18 hours. Hurricane Opal attained category four status 200 miles south of Pensacola. Before landfall, Opal weakened to a category three, but still caused major damage in Pensacola. The storm surge reached 12-20 feet. The highest rain total near Pensacola in the Ellyson community reached 15.45 inches.
7/19/1997	1	Danny	Hurricane Danny had wind gusts reaching 80 mph at landfall as it crossed Mullet Point south of Point Clear in Baldwin County. Hurricane Danny then stalled over Mobile Bay and brought record flooding to south Alabama. Rain totals at the Dauphin Island Sea Lab reached 36.71 inches with 25.98 inches of that in seven hours.
9/28/1998	2	Georges	Hurricane Georges delivered sustained winds of 103 mph at landfall, and then it moved inland near Biloxi MS. Georges produced 16.7 inches of rain in Pascagoula. The storm surge reached 12 feet near Fort Morgan, and Georges produced 25 foot waves in the Gulf of Mexico. Georges slowed in forward speed once it approached Alabama. This led to huge rain amounts. In Bay Minette, a rain total of nearly 30 inches was recorded.
9/16/2004	3	Ivan	Hurricane Ivan had winds around 120 mph at landfall, and it moved inland near Gulf Shores. Ivan was the strongest Hurricane from Baldwin to Santa Rosa Counties in more than 100 years. 160 miles inland, near Demopolis, AL, a wind gust near 90 mph was recorded. Rain totals reached 15.75 inches in Pensacola, with a storm surge in Escambia Bay of 12 feet.
7/10/2005	3	Dennis	Hurricane Dennis carried winds of 121 mph at landfall, as it moved inland near Navarre Beach. Dennis had an extremely small eye, and was only significant in a localized area. Dennis prompted a large scale evacuation as it reached category four status in the Gulf of Mexico before it weakened near the central Gulf coast.
8/29/2005	3	Katrina	Hurricane Katrina had winds at landfall estimated at 120 mph. It moved inland near Waveland MS. Katrina was the costliest and one of the deadliest U.S. disasters. Hurricane Katrina produced a 27 ft. storm surge in Hancock County, MS, and breached levees in New Orleans. The highest storm surge along Mobile Bay reached 12 feet at the USS Alabama along I-10. The death toll was over 1,800.
9/01/2008	2	Gustav	Gustav moved erratically through the Greater Antilles into the Gulf of Mexico, eventually making landfall on the coast of Louisiana. It briefly became a category 4 hurricane on the Saffir-Simpson Hurricane Scale and caused many deaths and considerable damage in Haiti, Cuba, and Louisiana. In the United States, the Insurances Services Office reports that the hurricane caused an estimated \$2.15 billion in damages to insured property, of which \$2.045 billion occurred in Louisiana. Gustav is known to have produced 41 tornadoes – 21 in Mississippi, 11 in Louisiana, 6 in Florida, 2 in Arkansas, and 1 in Alabama.

# CHAPTER 5

# 2015 Baldwin County Multi-Hazard Mitigation Plan

DATE	CATEGORY	NAME	NOTES
9/13/2008	2	Ike	Ike, with its associated storm surge, caused extensive damage across parts of the northwestern Gulf Coast when it made landfall on September 13, 2008, along the north end of Galveston Island on the Texas coast at the upper end of Category 2 intensity.
11/10/2009	2	Ida	Ida was a late season hurricane that had a large impact on the east coast of Nicaragua and the adjacent islands. It was the first November hurricane in the Gulf of Mexico since Kate of 1985. It made landfall as a tropical storm near Dauphin Island, AL, and quickly dissipated over the Florida Panhandle by the next day.
8/28/2012	1	Isaac	Isaac spared Alabama the worst, damaging a few buildings and minor road flooding in low-lying areas of Baldwin County. Scattered blackouts occurred with the greatest impact to Dauphin Island (Mobile County) where about 2,400 residences were without electricity. Isaac made landfall in Louisiana as a Category 1.

Source: National Hurricane Center

**Table 5-6. Baldwin County Hurricane/Tropical Storm Events, 1995-2014**

Year	Event Type	Deaths	Injuries	Total Damages
1995	Hurricane Opal	*	*	*
1996	-	-	-	-
1997	Hurricane Danny	1	0	\$63,000,000
1998	Hurricane Georges (2)	0	0	\$82,005,000
1999	-	-	-	-
2000	Tropical Storm	0	0	\$0
2001	Tropical Storm (3)	1	0	\$41,000
2002	Tropical Storm (2)	0	0	\$2,040,000
2002	Hurricane	0	0	\$75,000
2003	-	-	-	-
2004	Tropical Storm (2)	0	0	\$0
2004	Hurricane Ivan	0	0	\$0
2005	Tropical Storm (2)	0	0	\$1,500,000
2005	Hurricane Dennis (3)	0	0	\$0
2006-2007	-	-	-	-
2008	Tropical Depression	0	0	\$0
2008	Tropical Storm Gustav & Ike (2)	0	0	\$1,000,000
2009	Tropical Storm Ida	0	0	\$8,000,000
2010	Tropical Storm	0	0	\$1,000
2012	Tropical Storm Isaac	0	0	\$0
2014-2014	-	-	-	-
<b>TOTAL</b>	<b>25</b>	<b>2</b>	<b>0</b>	<b>\$157,662,000</b>
<b>Annual Average</b>	<b>1.3</b>	<b>0.1</b>	<b>0</b>	<b>\$7,883,100</b>

Source: National Climatic Data Center

\*Data for Hurricane Opal not available

**Probability of Future Hurricane Events**

Baldwin County is highly susceptible to hurricanes. Based on historical data (Table 5-6), the county can expect more than two hurricanes or tropical storms every two years. Average annual damages are estimated to be \$8 million. The HMPC ranked hurricanes as the most likely natural hazard to occur in Baldwin County (refer to Appendix D for results).

Climate changes have been theorized to affect future hurricane events in that the hurricane season has been expanded in recent years. The typical April through November hurricane season is lasting longer. According to Meteorologist Jeff Masters, this is likely due to warmer seawater and an increase of moisture in the atmosphere. Hurricanes most significant damage is cause by high winds and storm surges. While the

effect of climate change on winds is debatable, there is a general consensus that sea levels are rising and water temperatures are increasing as a direct result of global warming.

#### **5.4.2 Floods Profile**

A massive downpour occurring as a result of storms on May 2, 2014 damaged more than 2,000 homes in Baldwin County and took one life. The storms dropped 20 to 26 inches of rain and damaged culverts, roads, and created sinkholes. One man died after the storms by driving around a barricade into a sinkhole. On October 19, 2007, rainfalls totaled 5 to 10 inches throughout the southern areas of Baldwin County, south of I-10. Several roads flooded by high water had to be closed, and a few homes were flooded by several inches. Flooding is a frequent and recurring natural hazard within Baldwin County. Such events confirm the Hazard Mitigation Planning Committee (see Appendix D “HMPC Hazard Identification and Ratings”) assessment that floods pose serious concerns to most Baldwin County communities, especially coastal communities. NOAA records from the Storm Events Database confirm this finding.

##### **Location of Potential Floods**

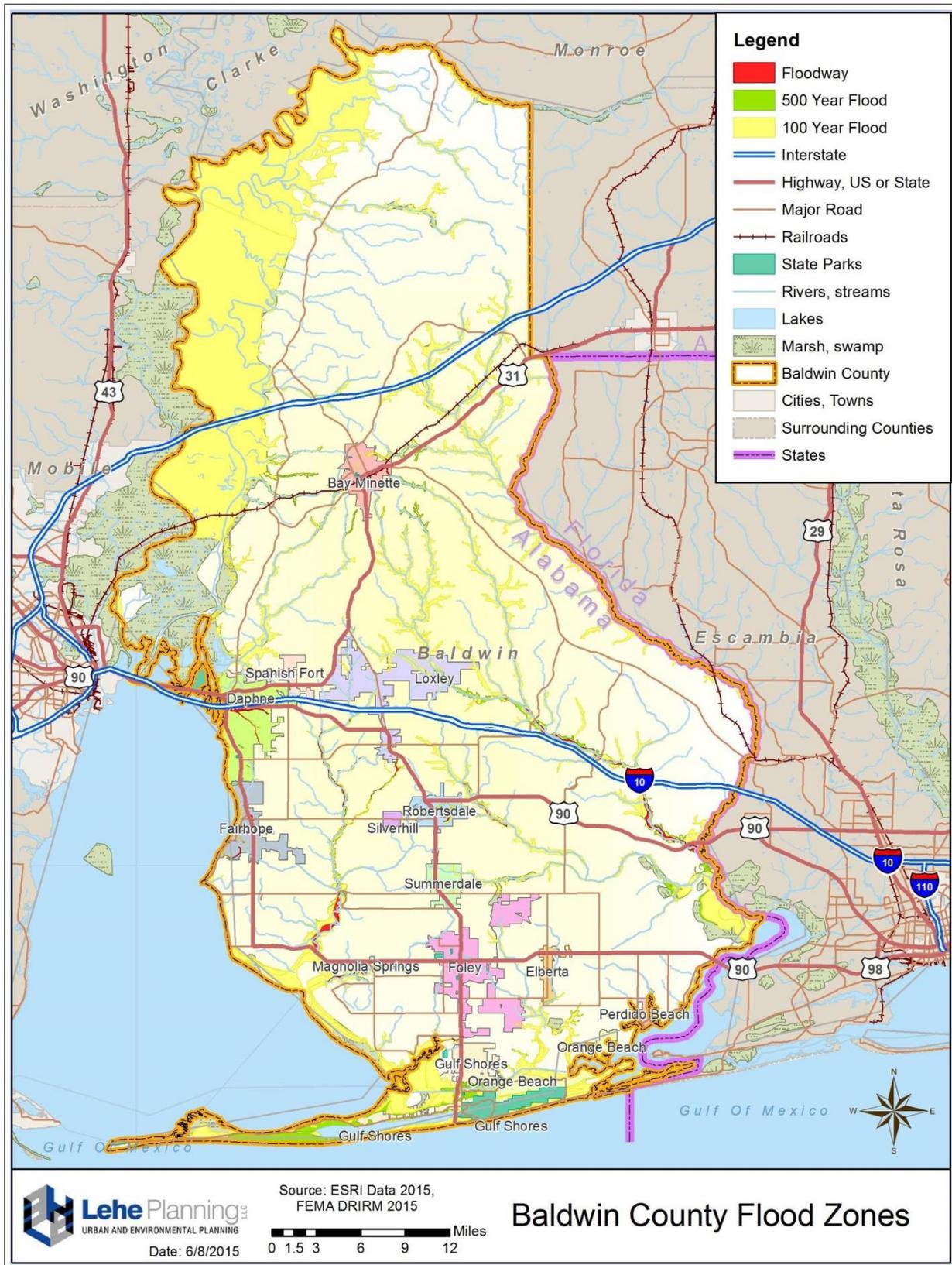
The planning team reviewed Flood Insurance Rate Maps (FIRM), Federal disaster declarations, Planning Committee input, and the Storm Events Database to profile the history of floods in Baldwin County. Most flooding occurs along the Fish River in southwestern Baldwin County and the Styx River in east-central Baldwin County. Other flood-prone bodies include the Mobile River, Perdido River, Bay Minette Creek, Hollinger Creek and their tributaries.

Baldwin County is at risk of riverine and coastal flooding (refer to Appendix D for definitions of flooding types). Map 5-7 shows the location of flood zones depicted on the FIRM. Gulf Shores, Orange Beach, Perdido Beach, and the Ft. Morgan Peninsula are at the greatest risk for coastal flooding, as each is located along the coastline and are extremely vulnerable to weather in the Gulf of Mexico. The City of Fairhope and unincorporated Point Clear are also vulnerable to flooding from the Fish River and its tributaries, as are unincorporated communities in the Styx River Basin.

##### **Extent and Intensity of Potential Floods**

For a given rainfall, the extent of flooding depends on the amount of rainfall and the capacity of natural water channels and local drainage infrastructure to discharge floodwaters. Channel maintenance, a robust drainage infrastructure system, and hazard mitigation—such as buyouts, building retrofits, advanced warning, and sound construction practices—can greatly diminish the threat flooding poses. Construction along coastal zones increases exposure to flooding, where strict construction standards must be met by coastal zone flood hazard prevention ordinances. As shown on Map 5-6, 100 year flood zones, both coastal and riverine, encompass extensive areas of Baldwin County and can cause widespread damage.

**Map 5-7. Baldwin County Flood Zones**



**Previous Occurrences of Floods**

The National Climatic Data Center (NCDC) indicates frequent flooding since 1995. There have been 78 floods reported for Baldwin County—3.9 per year—as summarized in Table 5-7. According to NCDC estimates, damage has averaged \$1.5 million per year and \$380,000 per event.

**Table 5-7. Baldwin County Flood Events, 1995-2014**

<b>Year</b>	<b>Floods</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Total Damages</b>
1995	-	-	-	-
1996	2	0	0	\$202,000
1997	1	0	0	\$0
1998	8	0	0	\$1,095,000
1999	1	0	0	\$5,000
2000	-	-	-	-
2001	2	0	0	\$18,000
2002	3	0	0	\$0
2003	7	0	0	\$500,000
2004	2	0	0	\$0
2005	6	0	0	\$260,000
2006	4	0	0	\$20,000
2007	4	0	0	\$100,000
2008	7	0	0	\$27,000
2009	6	0	0	\$0
2010	2	0	0	\$0
2011	-	-	-	-
2012	2	0	0	\$0
2013	7	0	0	\$0
2014	14	0	0	\$27,140,000
<b>TOTAL</b>	<b>78</b>	<b>0</b>	<b>0</b>	<b>\$29,442,000</b>
<b>Annual Average</b>	<b>3.9</b>	<b>0</b>	<b>0</b>	<b>\$1,472,100</b>

Source: National Climatic Data Center

**Probability of Future Flood Events**

Historical data (Table 5-7) indicates Baldwin County averages 3.9 floods per year. Because floods are closely associated with hurricanes, expectations for hurricane season should be closely monitored to create expectations for severe flooding. With respect to climate change, an increase in temperature and moisture in the air can lead to heavier precipitation events. However, the causes of flooding are varied, including improper land uses on floodplains, surface paving, quality of flood forecasting, settlement patterns, and warning systems. The HMPC ranked floods as the third most likely natural hazard to affect Baldwin County (refer to Appendix D for results).

**5.4.3 Severe Storms Profile**

Severe storms are dangerous, because they are accompanied by high winds, lightning, tornadoes, hail and flooding. Like hurricanes, severe storms represent a combination of hazards, but, unlike hurricanes, severe storms occur during every season and strike with little advance warning.

According to the Hazard Mitigation Planning Committee (see Appendix D “HMPC Hazard Identification and Ratings”) and surveys of community opinions, severe storms are the second most dangerous natural hazard threatening Baldwin County (refer to Appendix D for results). NOAA records affirm this perception.

**Location of Potential Severe Storms**

All areas of Baldwin County have experienced severe storms frequently. However, because severe storms form without precise geographic borders, it is difficult to map their precise locations.

**Extent and Intensity of Potential Severe Storms**

The extent of severe storm damages depends upon the inches of precipitation, hail size, lightning intensity, wind speed and other factors. Large amounts of rainfall in short time periods induce flash and riverine flooding. Large hail is very rare, and damage is generally limited to automobiles and minor building damage, such as cracked windows and roof damage. Lightning is most commonly responsible for wildfires. By toppling trees, high winds cause power outages, damages to structures, and road closures.

**Previous Occurrences of Severe Storms**

The Storm Events Database of the National Climatic Data Center (NCDC) indicates frequent annual severe storm occurrences since 1995 (Table 5-8). The database shows 293 severe storm events for Baldwin County—roughly 15 per year. The database also shows \$2.5 million in damages since 1995, averaging about 125,000 per year.

**Table 5-8. Baldwin County Severe Storm Events, 1995-2014**

Year	Type	Number	Deaths	Injuries	Total Damages
1995	Hail	12	0	0	\$1,000
	Lightning	0	0	0	\$0
	Thunderstorm/High Wind	19	0	0	\$97,500
1996	Hail	7	0	0	\$0
	Lightning	2	0	0	\$25,000
	Thunderstorm/High Wind	9	0	1	\$102,000
1997	Hail	15	0	0	\$2,000
	Lightning	2	0	0	\$93,000
	Thunderstorm/High Wind	7	0	1	\$26,500
1998	Hail	10	0	0	\$0

Year	Type	Number	Deaths	Injuries	Total Damages
	Lightning	3	0	0	\$180,000
	Thunderstorm/High Wind	10	0	0	\$199,000
1999	Hail	7	0	0	\$0
	Lightning	7	0	0	\$21,000
	Thunderstorm/High Wind	9	0	1	\$178,000
2000	Hail	5	0	0	\$0
	Lightning	1	0	0	\$5,000
	Thunderstorm/High Wind	11	0	0	\$106,000
2001	Hail	1	0	0	\$0
	Lightning	3	0	0	\$48,000
	Thunderstorm/High Wind	5	0	0	\$118,000
2002	Hail	5	0	0	\$0
	Lightning	1	0	0	\$30,000
	Thunderstorm/High Wind	8	0	0	\$106,000
2003	Hail	18	0	0	\$5,000
	Thunderstorm/High Wind	8	0	0	\$45,000
2004	Thunderstorm/High Wind	3	0	0	\$20,000
2005	Hail	8	0	0	\$4,000
	Lightning	2	2	0	\$0
	Thunderstorm/High Wind	4	0	0	\$50,000
2006	Hail	13	0	0	\$0
	Lightning	5	1	2	\$145,000
	Thunderstorm/High Wind	8	0	0	\$94,000
2007	Hail	3	0	0	\$8,000
	Lightning	3	0	1	\$310,000
	Thunderstorm/High Wind	7	0	0	\$55,000
2008	Hail	3	0	0	\$0
	Thunderstorm/High Wind	5	0	0	\$140,000
2009	Hail	2	0	0	\$0
	Thunderstorm/High Wind	7	0	0	\$165,000
2010	Lightning	2	1	2	\$0
	Thunderstorm/High Wind	2	0	0	\$22,000
2011	Hail	4	0	0	\$0
	Lightning	1	0	1	\$0
	Thunderstorm/High Wind	5	0	10	\$23,000
2012	Hail	2	0	0	\$0
	Lightning	1	0	1	\$0

Year	Type	Number	Deaths	Injuries	Total Damages
	Thunderstorm/High Wind	8	0	0	\$51,000
2013	Hail	1	0	0	\$0
	Thunderstorm/High Wind	5	0	0	\$25,500
2014	Thunderstorm/High Wind	4	0	0	\$8,000
<b>TOTAL</b>		<b>293</b>	<b>4</b>	<b>20</b>	<b>\$2,508,500</b>
<b>Annual Average</b>		<b>14.7</b>	<b>0.2</b>	<b>1.0</b>	<b>\$125,425</b>

Source: National Climatic Data Center

**Probability of Future Severe Storms**

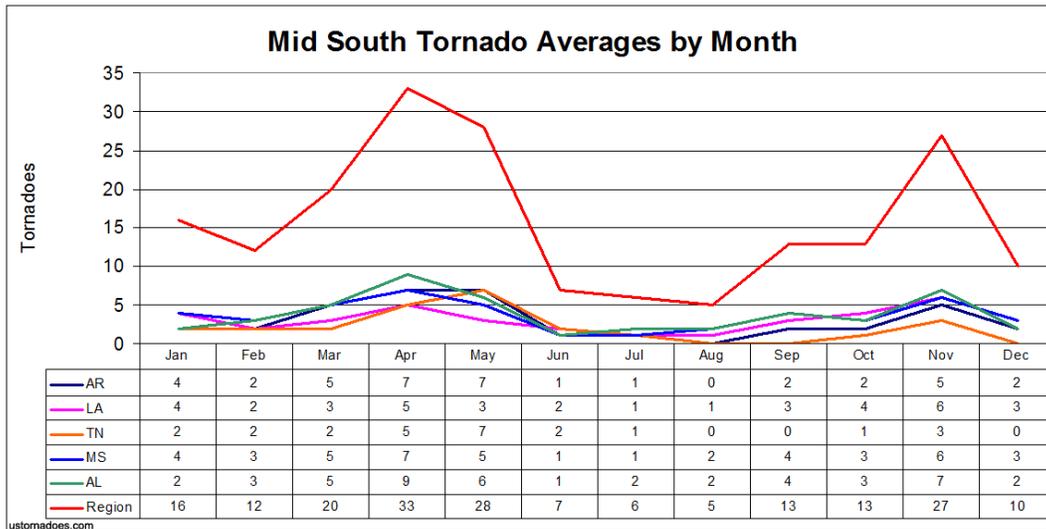
Severe storms will certainly strike Baldwin County every year and in every jurisdiction. Past trends average 15 storms per year. High winds and hail infrequently accompany severe storms in Baldwin County, but can cause significant property damage.

**5.4.4 Tornadoes Profile**

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It forms alongside thunderstorms and hurricanes when cool air suddenly forces a band of warm air to rise rapidly. Tornadoes can occur in thunderstorms that develop in warm, moist air masses in advance of eastward-moving cold fronts. Tornadoes occasionally accompany tropical storms and hurricanes that move over land.

Tornadoes are accompanied by recorded winds in excess of 300 miles per hour. They are highly localized events, most of which last for a short period of time and have a limited destruction path. In Alabama, the peak tornado season extends from March through early June, with April and May being peak months for tornado activity. Additionally, Alabama experiences a secondary tornado season from September through November. Chart 5-2 depicts the monthly tornado frequency for the mid-south region.

**Chart 5-2. Monthly Tornado Frequency, Mid-South Region**



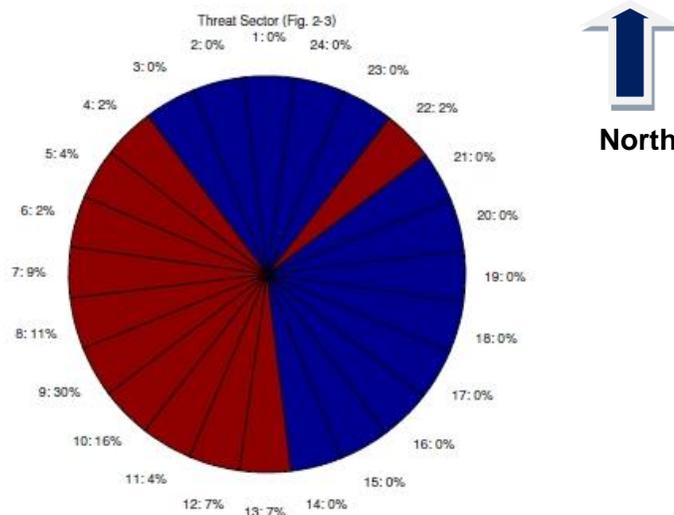
Source: ustornadoes.com, 2013

**Location of Potential Tornadoes**

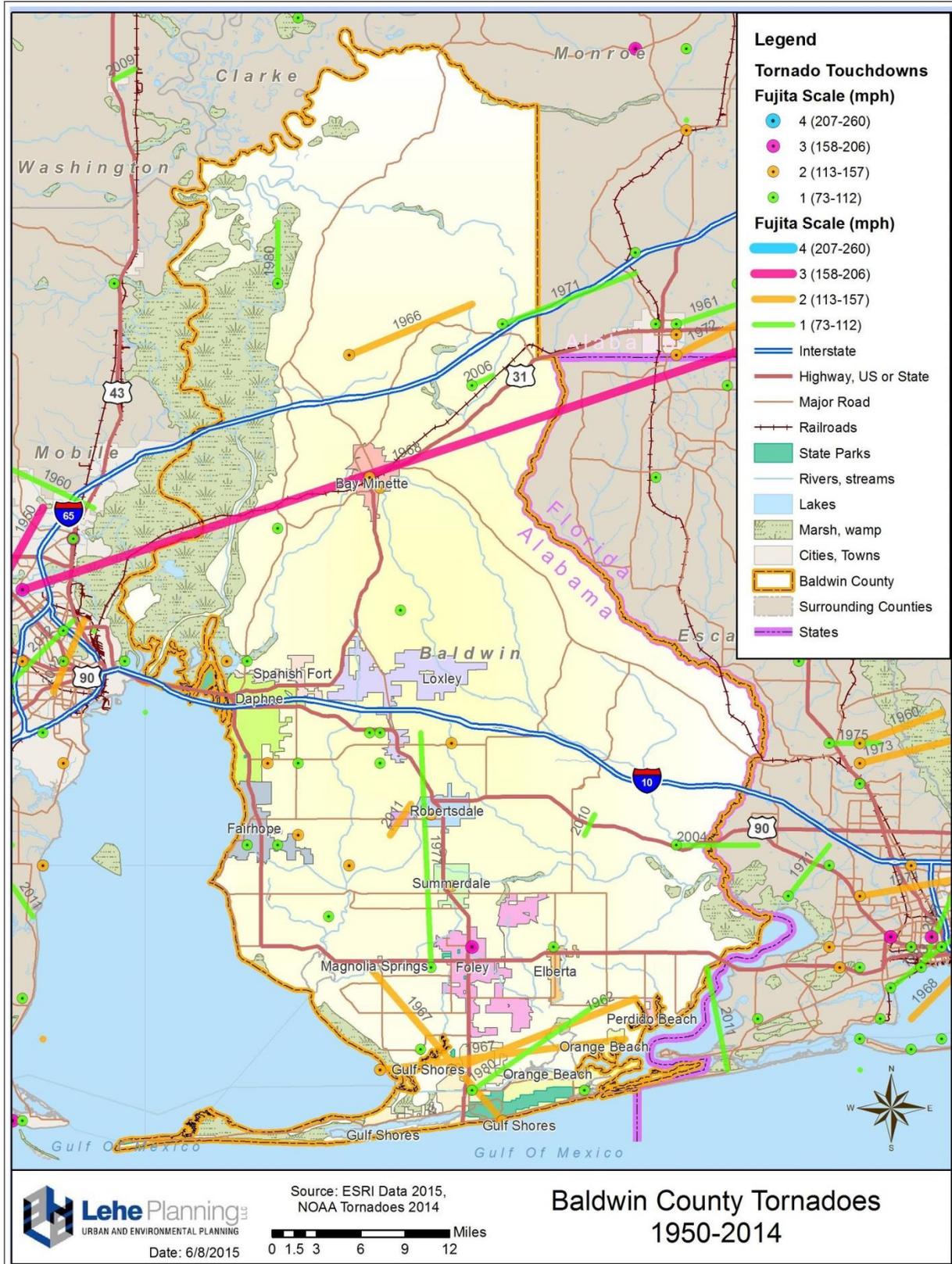
Tornadoes are generally not location-specific hazards. Therefore, all Baldwin County locations and jurisdictions bear an equal risk. Map 5-8 shows touchdown locations and paths of tornadoes since 1950. The map affirms tornadoes can occur anywhere.

The direction of tornadoes is shown in Chart 5-3 “Tornado Threat Sectors”. The threat sectors are color coded. Red sectors have had tornadic activity over the 1950-2006 time periods and blue sectors have had zero activity. The chart indicates that most tornadoes travel from a southwesterly direction.

**Chart 5-3. Tornado Threat Sectors**



Map 5-8. Baldwin County Tornado Locations, 1950-2014



**Extent and Intensity of Potential Tornadoes**

According to the Hazard Mitigation Planning Committee (HMPC), tornadoes pose a significant threat: hazard exposure, risk severity, and the probability of future events are fourth highest for tornadoes among all identified hazards (refer to Appendix D for results).

Tornadoes are now measured using the enhanced Fujita Tornado Scale by examining the damage caused by the tornado after it passes over manmade structures and vegetation. The new scale was put into use in February 2007. Table 5-9 compares the estimated winds in the original F-scale and the operational EF-scale that is currently in use by the National Weather Service. Like the original scale there are six categories from zero to five that represent damage in increasing degrees.

**Table 5-9. Comparison of F-Scale to EF-Scale**

<b>EF-Scale</b>	<b>Old F-Scale</b>	<b>Typical Damage</b>
EF-0 (65-85 mph)	F0 (65-73 mph)	<a href="#">Light damage</a> . Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF-1 (86-110 mph)	F1 (73-112 mph)	<a href="#">Moderate damage</a> . Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2 (111-135 mph)	F2 (113-157 mph)	<a href="#">Considerable damage</a> . Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3 (136-165 mph)	F3 (158-206 mph)	<a href="#">Severe damage</a> . Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4 (166-200 mph)	F4 (207-260 mph)	<a href="#">Devastating damage</a> . Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.

<b>EF-Scale</b>	<b>Old F-Scale</b>	<b>Typical Damage</b>
EF-5 (>200 mph)	F5 (261-318 mph)	<a href="#">Incredible damage</a> . Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.
EF No rating	F6-F12 (319 mph to speed of sound)	Inconceivable damage. Should a tornado with the maximum wind speed in excess of EF-5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water

**Previous Occurrences of Tornadoes**

On May 2, 2014 an F-2 tornado touched down in Baldwin County, injuring five people and damaging several homes. The tornado hit Summerdale at approximately 11:30 am, destroying a five to six block radius. NOAA National Climatic Data Center (Table 5-10) records indicate that 35 tornadoes have affected Baldwin County since 1995, averaging over 1.75 annually. These tornadoes caused 4 injuries and property damages of \$2.1 million. The costliest tornado during this time period occurred in 2004 when an F2 tornado touched down west of Summerdale along County Road 32. Damages were estimated at \$648,000.

**Table 5-10. Baldwin County Tornado Events, 1995-2014**

<b>Year</b>	<b>Number</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Total Damages</b>
1995	1	0	0	\$0
1996	0	0	0	\$0
1997	1	0	0	\$20,000
1998	2	0	0	\$3,000
1999	4	0	0	\$20,000
2000	4	0	0	\$360,000
2001	7	0	0	\$570,000
2002	3	0	0	\$50,000
2003	0	0	0	\$0
2004	6	0	4	\$648,000
2005	1	0	0	\$4,000
2006	2	0	0	\$150,000

Year	Number	Deaths	Injuries	Total Damages
2007	0	0	0	\$0
2008	1	0	0	\$20,000
2009	0	0	0	\$0
2010	1	0	0	\$45,000
2011	2	0	0	\$200,000
2012	0	0	0	\$0
2013	0	0	0	\$0
2014	0	0	0	\$0
<b>TOTAL</b>	<b>35</b>	<b>0</b>	<b>4</b>	<b>\$2,090,000</b>
<b>Annual Average</b>	<b>1.75</b>	<b>0</b>	<b>0.2</b>	<b>\$104,500</b>

Source: National Climatic Data Center

**Probability of Future Tornadoes**

It is impossible to accurately predict the location or frequency of tornadoes in a given year, since past trends do not guarantee the likelihood of future events. However, over the long term, Baldwin County can expect about 1.8 tornadoes annually with minimal damages. The risk of tornadoes is evenly distributed across all areas of Baldwin County. Importantly, trends indicate tornadoes often accompany hurricanes. Since 1995, annual property damage due to tornadoes has averaged over \$104,000.

According to climatologists, the effect of climate change on tornadic activity is inconclusive. Jeff Trapp, a professor of atmospheric science at Purdue University indicates that, “while it’s unclear how the intensity or frequency of tornadoes will increase, there may be more days featuring conditions ripe for twisters. We would see an increase in the number of days that could be favorable for severe thunderstorm and tornado formation. The tornado season, which varies by region, could be expanded.”

**5.4.5 Wildfires Profile**

There are two types of wildfires experienced in Baldwin County: *wildland* wildfires and *interface* wildfires. *Wildland* fires burn only on vegetation and therefore occur in strictly rural areas. *Interface* wildfires burn on a mix of vegetation and human structures and therefore occur at the interface of human development and rural landscapes. Like wildland fires, interface fires can start due to lightning strikes. More commonly, though, interface wildfires are started by human activities, such as debris burning. Non-permitted burns are a major cause of interface wildfires.

There exist potential measures for reducing the risk of wildfires. Limiting underbrush vegetation through prescribed burns and herbicides reduces the fuel supply of potential wildfires. Public campaigns to spread fire safety strategies can reduce dangerous behavior such as leaving campfires untended or burning trash in forests.

**Location of Potential Wildfires**

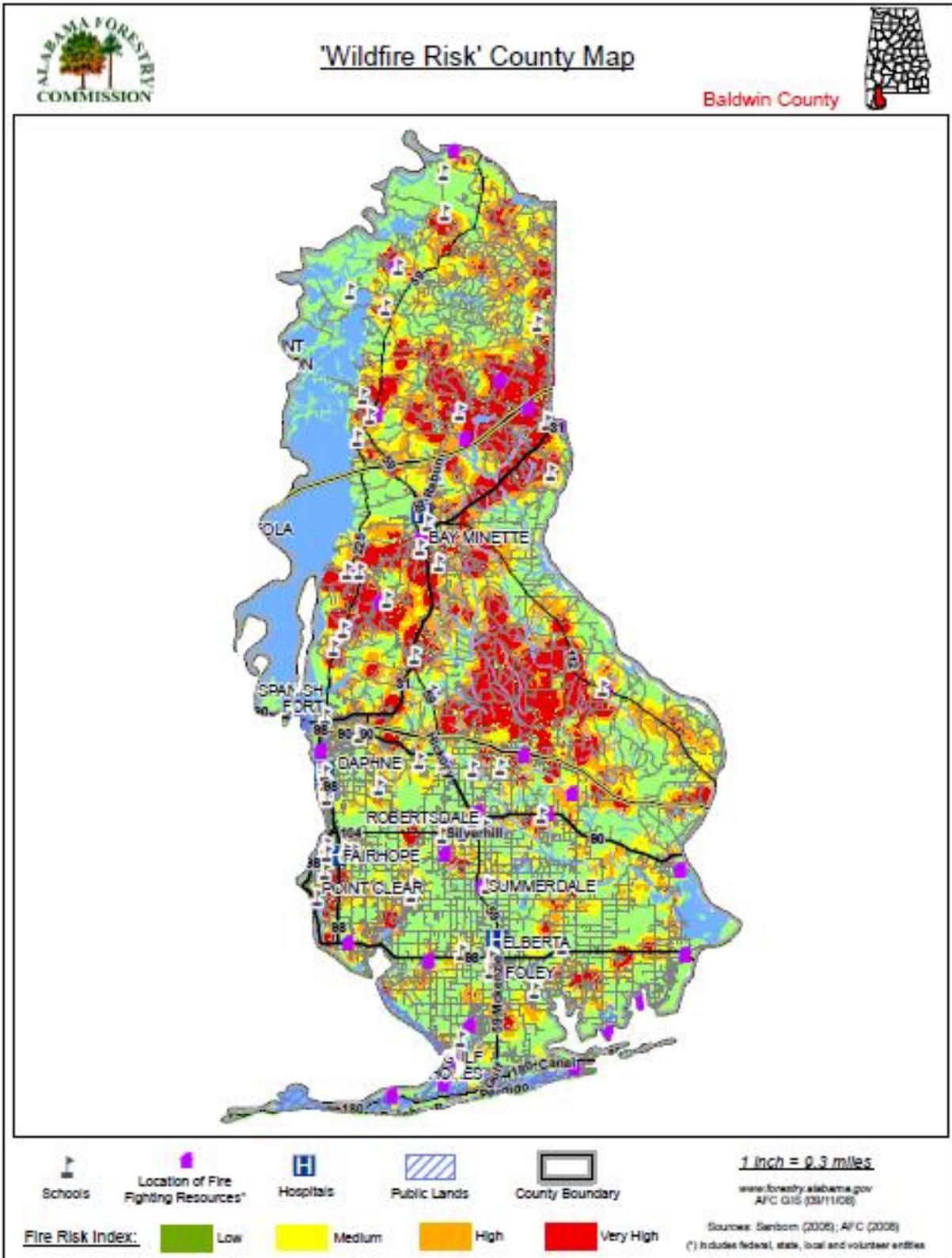
Unincorporated, rural areas of Baldwin County are most susceptible to wildfires, but, due to sparse development, the risks to life and property are lower in these areas. The risks are greatest for sprawl areas where human development coexists with conditions amenable to wildfires. Map 5-9, from the Alabama Forestry Commission, shows risk levels for wildfires by area. The very high risk areas are located predominantly north of Robertsdale, in and around Bay Minette. The Alabama Forestry Commission maps have not changed since the last plan update, due to data unavailability.

**Extent and Intensity of Potential Wildfires**

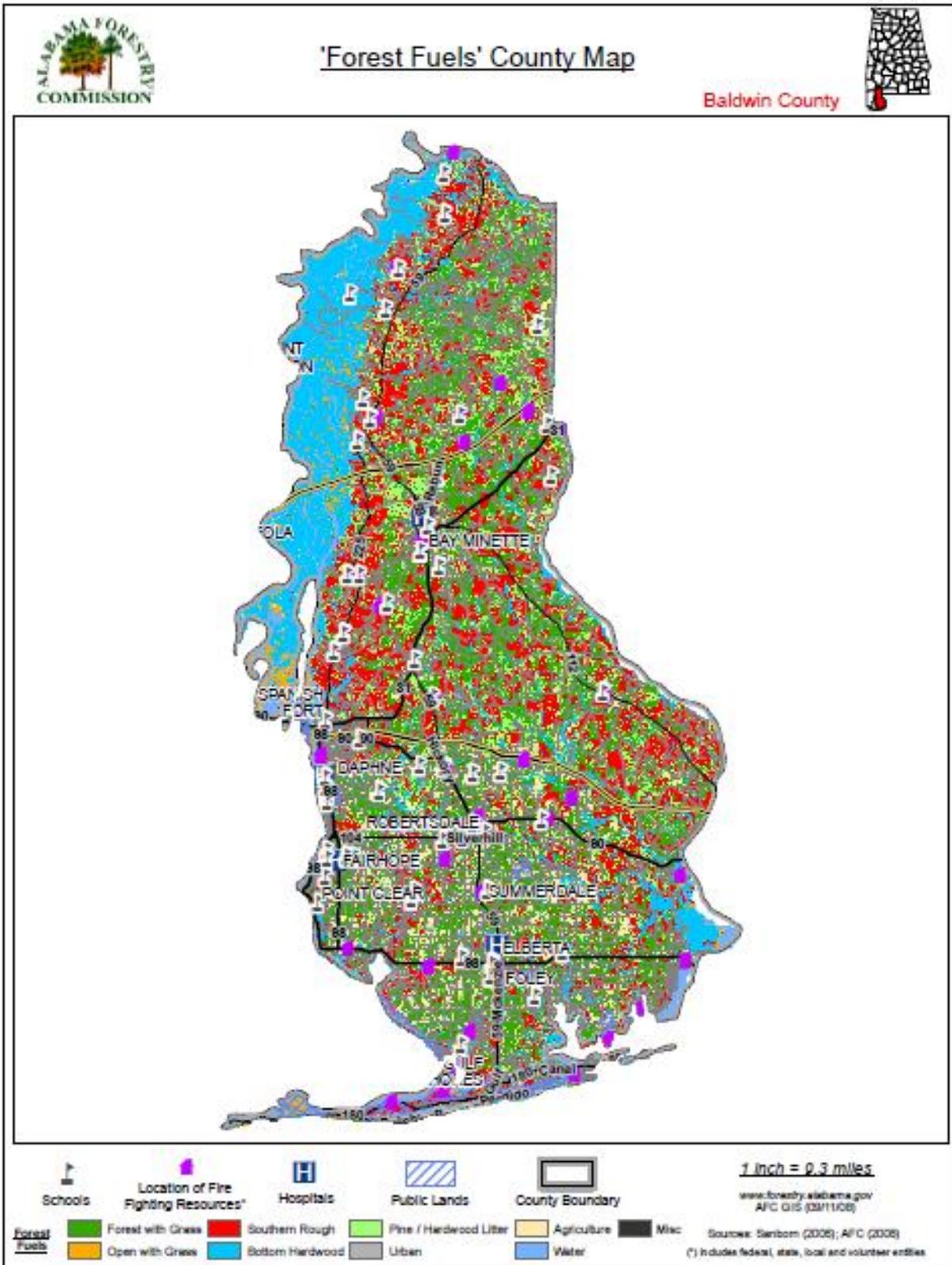
Baldwin County's extensive forest coverage creates an abundant and widespread fuel source for wildfires. Further, the County's weather conditions, drought and lightning from severe storms, can increase risks. The wildland-urban interface, where urban development and humans interact with forested wildlands compound the extent of wildfires in Baldwin County. Unpermitted burns can contribute to the many causes of wildfires, with out-of-control burns that can rage, leading to extensive damage. Effective forest management practices call for prescribed burns, thinning, mowing and herbicidal applications to reduce hazardous concentrations of underbrush vegetation. Additionally, prescribed burns can help develop valuable wildlife habitats. Map 5-10 "Baldwin County Forest Fuels" (Alabama Forestry Commission) shows the extent of forest fuels and jurisdictions in proximity to those forest fuels. The map indicates that Baldwin County is covered with southern rough, pinewood/hardwood, forest with grass, and bottom hardwood.

According to the Wildfire Risk Assessment Portal (Southern Group of State Foresters), the majority of Baldwin County has a moderate fire intensity risk. This means that flames up to 8 feet in length are possible and trained firefighters will find it difficult to suppress the fires without support from aircraft or engines. Local resources can affect the severity of wildfires and local capabilities for firefighting. Rural volunteer fire departments with limited resources often cannot handle firefighting demands when multiple fires break out.

**Map 5-9. Baldwin County Wildfire Risk**



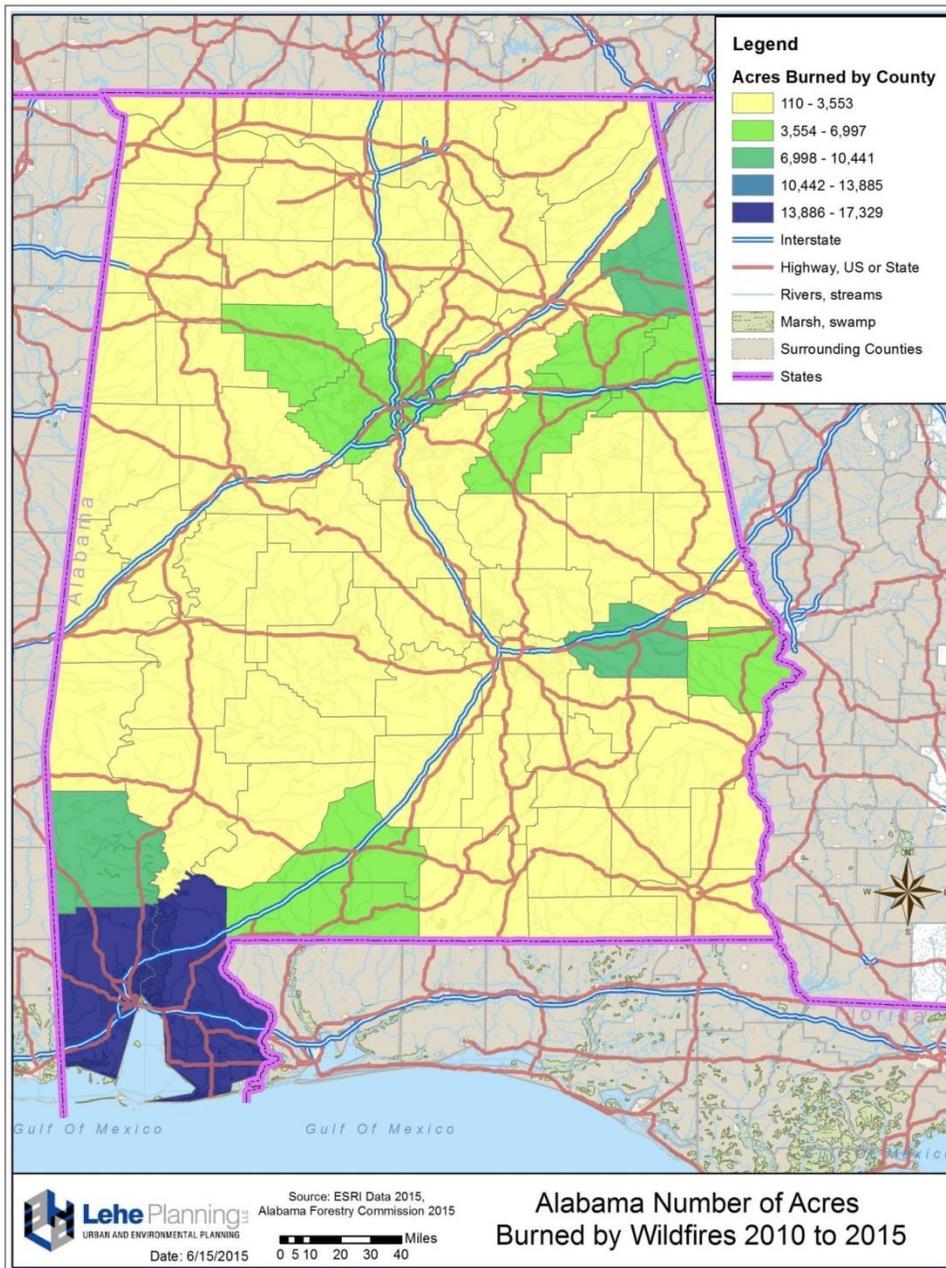
**Map 5-10. Baldwin County Forest Fuels**



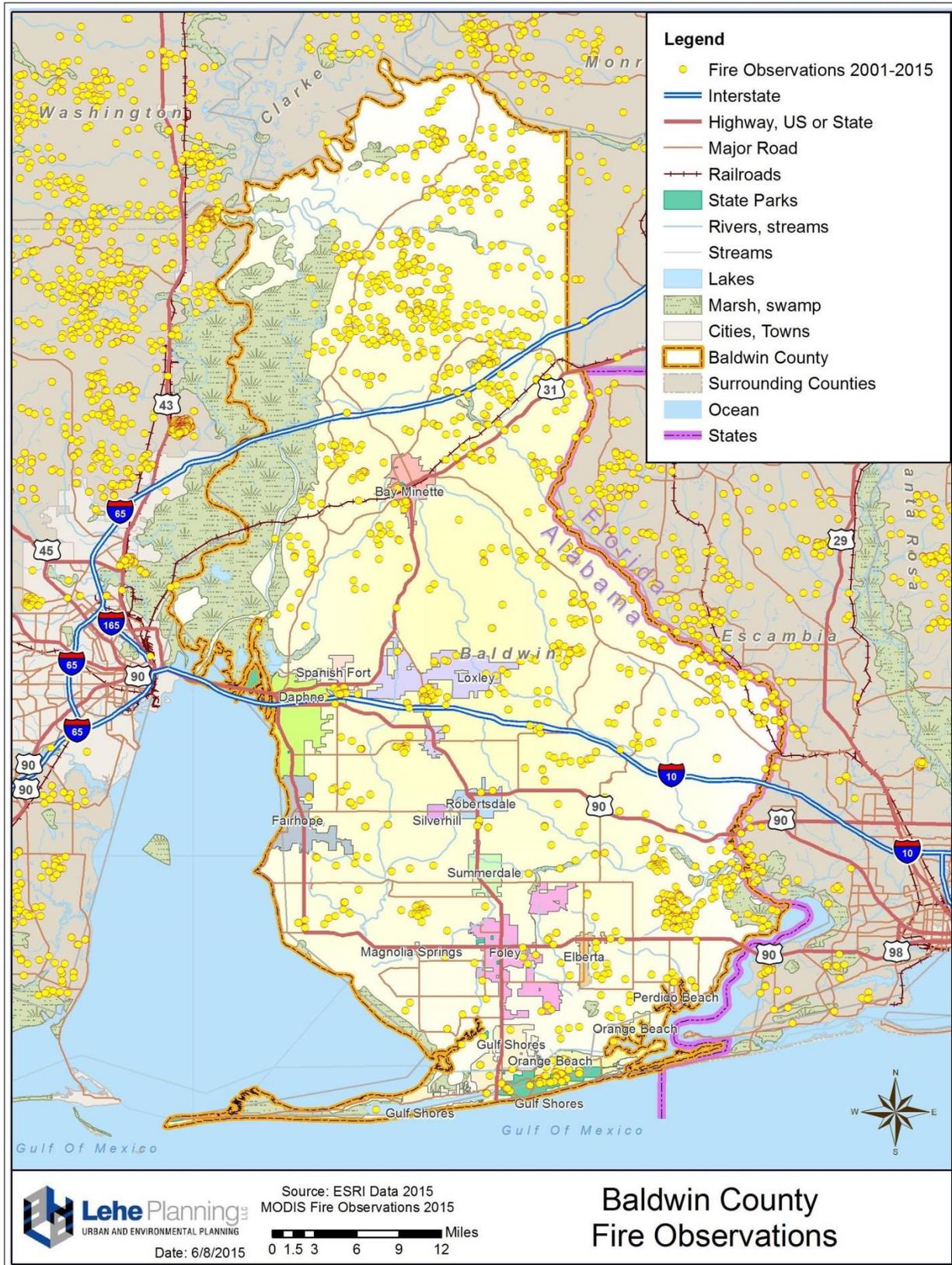
**Previous Occurrences of Wildfires**

Among Alabama counties, Baldwin County is annually ranked in the top two in number of acres lost to wildfires, from 2010 to 2015 (Map 5-11). Over this 5-year period, Baldwin County incurred 810 wildfires, burning over 17,000 acres. From January 1, 2015 to date (May 24, 2015), Baldwin County has experienced 70 wildfires burning a total of 1,475 acres. Additionally, Map 5-12 “Baldwin County Fire Observations, 2001 – 2015” indicates wildfires can occur anywhere; however they are more concentrated in rural, unincorporated areas of the county.

**Map 5-11. Alabama Total Acres Burned 1999-2014**



**Map 5-12. Baldwin County Fire Observation, 2001-2015**



**Probability of Future Wildfire Events**

The average number of fires over the last five years (2010-2015) is 162. The average number of acres burned annually over the last twenty years is 3,466, with an average of 21.4 acres consumed per fire. Factors that may alter this trend include the growth of sprawl in western and southern Baldwin County and weather patterns.

Historically there has been an increase in wildfire activity after hurricanes, which topple trees, thereby increasing the supply of dead timber that fuels wildfires. In the year 2006 following Hurricane Katrina in 2005, for example, the acreage burned jumped markedly, then declined.

**5.4.6 Droughts/Heat Waves Profile**

Drought occurs when there is a deficiency of precipitation over an extended period of time. Climatic factors, such as high temperature, high winds, and low relative humidity can contribute to the severity of a drought. There are two primary types of drought: meteorological and hydrological droughts. These events can result in agricultural and socioeconomic droughts.

*Meteorological droughts* are defined as the degree of dryness as compared to the normal precipitation for the area over the duration of the dry season. This type of drought is specific to a given region since atmospheric conditions and precipitation vary from one region to the next.

*Hydrological droughts* are associated with the effects of precipitation deficiencies on surface or groundwater supplies. Hydrological droughts do not occur as often as meteorological or agricultural droughts. It takes longer for precipitation deficiencies to show up in soil moisture, stream flow, groundwater levels, and reservoir levels. Hydrological droughts have an immediate impact on crop production, but reservoirs may not be affected for several months. Climate, changes in land use, land degradation, and the construction of dams can have adverse effects on the hydrological system, especially in drought conditions.

*Agricultural droughts* occur when the moisture in the soil no longer meets the needs of the crop.

*Socioeconomic droughts* occur when physical water shortage begins to affect people and their quality of life.

The National Weather Service uses two indexes to categorize drought. The most accurate index of short-term drought is the Crop Moisture Index (CMI). This index is effective in determining short-term dryness or wetness affecting agriculture. The most accurate index of long-term drought is the Palmer Index (PI). It has become the semi-official index of drought.

Baldwin County may occasionally experience short droughts and extreme summer heat. The drought affecting a large part of Alabama from 2006 to 2008 had little impact on Baldwin County.

**Location of Potential Droughts/Heat Waves**

Droughts and heat waves affect all areas of Baldwin County equally. However, wildfires fostered by drought conditions are most dangerous for residents living at the rural/urban interface.

**Extent and Intensity of Potential Droughts/Heat Waves**

Farmers and other citizens who depend on rainfall economically may incur material damages during a drought. Heat waves are frequently dangerous for senior citizens, especially those whose homes lack air conditioning.

**Previous Occurrences of Droughts/Heat Waves**

According to National Climatic Data Center (NCDC), no droughts were recorded in Baldwin County between 1995 and 2014. The NCDC database includes three recorded instances of extreme heat. Two occurred in 2000, including one fatality during a late June heat wave, and the other in August, 2007, when the entire state and much of the nation was in the midst of a two year drought, and Baldwin County reached “Drought Watch Status”, one step below “Full Drought.” It should be noted that this 2007 drought record does not show up in the NCDC database.

**Table 5-11. Baldwin County Drought/Extreme Heat Events, 1995-2014**

Year	Type	Number	Deaths	Injuries	Total Damages
1995-1999	-	0	0	0	\$0
2000	Heat	2	1	0	\$0
2001-2006	-	0	0	0	\$0
2007	Heat	1	0	1	\$0
2008-2014	-	0	0	0	\$0
<b>Total</b>		<b>3</b>	<b>1</b>	<b>1</b>	<b>\$0</b>
<b>Annual Average</b>		<b>0.15</b>	<b>0.05</b>	<b>0.05</b>	<b>\$0</b>

Source: National Climatic Data Center

**Probability of Future Droughts/Heat Waves**

Although Baldwin County has no recent droughts, it is located in an area that may experience infrequent and short droughts. Extreme summer heat events are likely. According to the National Climatic Data Center, “scientists know that atmospheric moisture plays an important role in heat waves. They tend to occur more frequently in dry conditions with low humidity, but heat waves in high humidity can take their toll on the population, livestock, and wildlife”.

**5.4.7 Winter Storms/Freezes Profile**

Winter storms in this region of the county can form as a result of Arctic cold fronts meeting warm weather systems in the Gulf of Mexico. The risks of winter storms and freezes include frostbite and deaths from freezing, crop failure, power failure, and dangerously slippery roads. Table 5-12 portrays winter weather observations from the Southeast Regional Climate Center, based on data for the City of Robertsedale. Snowfall accumulation is low and winter temperatures are mild.

**Table 5-12. Winter Weather Observations, Baldwin County**

<b>Category</b>	<b>Observation</b>
Average Winter Temperature	52.4°F
Average Winter Minimum Temperature	40.9°F
Lowest Temperature (January 30, 1957)	3°F
Average Season Snowfall	0.1 in
Largest Snowfall (1973)	3.0 in

Source: SE Regional Climate Center, 2012

**Location of Potential Winter Storms/Freezes**

Baldwin County and its participating jurisdictions are all equally unlikely to experience winter storms. Areas farther from the coast are more susceptible to freezes, although the risk is still slight.

**Extent and Intensity of Potential Winter Storms/Freezes**

In Baldwin County, winter storms are infrequent and relatively mild when they occur, because the county is located so far to the south. However, in the event a winter storms takes place, the risk is commensurately greater, because residents and authorities are not equipped to handle the unfamiliar conditions.

Freezes are more common in Baldwin County than winter storms, but the county’s semi-tropical location and low altitude make the severity of these events much less for Baldwin County than for other counties in Alabama.

**Previous Occurrences of Winter Storms/Freezes**

Baldwin County occasionally experiences winter storms and extreme colds. The National Climatic Data Center (NCDC) reports 8 winter storm events and 2 ice storm events. Table 5-13 summarizes winter storm and extreme cold events and damages associated with those.

**Table 5-13. Baldwin County Winter Storm Damages, 1995-2014**

<b>Year</b>	<b>Type</b>	<b>Number</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Total Damages</b>
1995	-	0	0	0	\$0
1996	Winter Weather	1	0	0	\$10,000

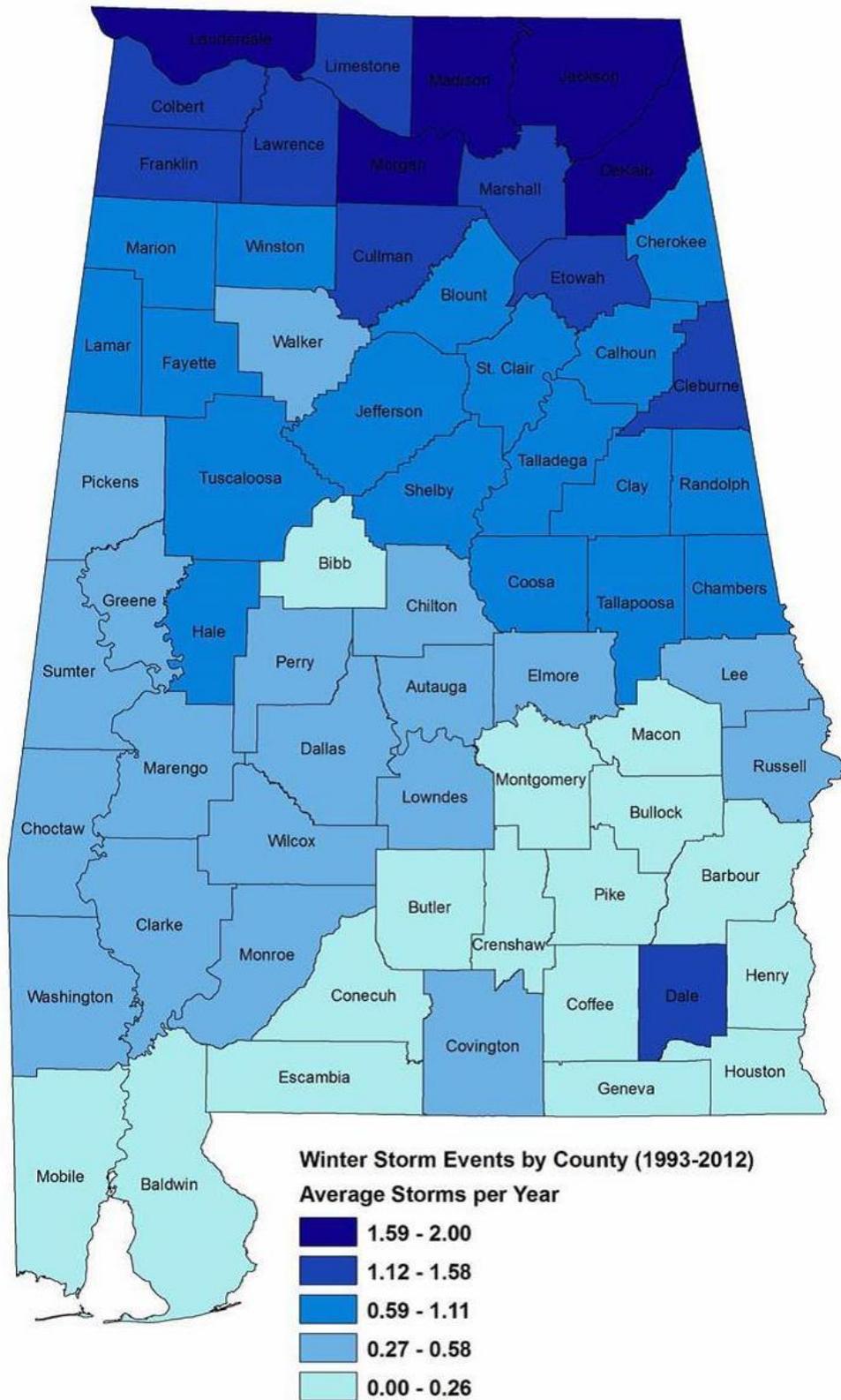
<b>Year</b>	<b>Type</b>	<b>Number</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Total Damages</b>
2002	Winter Storm	1	0	0	\$0
2003-2009	-	0	0	0	\$0
2010	Winter Storm	4	0	0	\$0
2011-2013	-	0	0	0	\$0
2014	Winter Storm	2	0	0	\$0
2014	Ice Storm	2			
<b>Total</b>		<b>10</b>	<b>0</b>	<b>0</b>	<b>\$10,000</b>
<b>Annual Average</b>		<b>0.5</b>	<b>0</b>	<b>0</b>	<b>\$500</b>

Source: National Climatic Data Center

**Probability of Future Winter Storms/Freezes**

As indicated in the committee’s hazard identification exercise, Baldwin County is not at significant risk of winter storms. Map 5-13 shows that Baldwin County has experienced fewer winter storms than most Alabama counties, about 2.5 every 10 years. The HMPC ranked winter storms/freezes as having some likelihood of occurring and may have moderate impacts (refer to Appendix D for results).

**Map 5-13. Alabama Winter Storm Interval, 1993-2012**



Source: State of Alabama Hazard Mitigation Plan, 2013

**5.4.8 Earthquakes Profile**

An earthquake is a sudden slip on a fault and the resulting ground shaking and radiated seismic energy caused by the slip. The hazards associated with earthquakes include anything that can affect the lives of humans including surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches. Earthquake risk is defined as the probability of damage and loss that would result if an earthquake caused by a particular fault were to occur.

Losses depend on several factors including the nature of building construction, population density, topography and soil conditions, and distance from the epicenter. Interestingly, an earthquake's magnitude can be a poor indicator of hazard impact because the duration of ground shaking, and resulting increased damages, is not factored into the magnitude concept. While collapse of structures can be a great loss, collapse is caused mainly by large magnitude earthquakes, and earthquakes of this size are rare. For any given earthquake, few structures will actually collapse, but most damage will be associated with contents and nonstructural components. Structures built with more flexible materials, such as steel framing, are preferred. Wood frame construction, which constitutes a high percentage of homes in the United States, also tends to flex rather than crack or crumble, but is more susceptible to fire.

Building codes have historically been utilized to address construction standards to mitigate damages for earthquakes and other hazards. However, older structures, non-compliance, and incomplete knowledge of needed measures remain a problem. In order to reduce losses to lives and property, wider adoption of improved construction methods for both residential and important critical facilities such as hospitals, schools, dams, power, water, and sewer utilities is needed.

**Location of Potential Earthquakes**

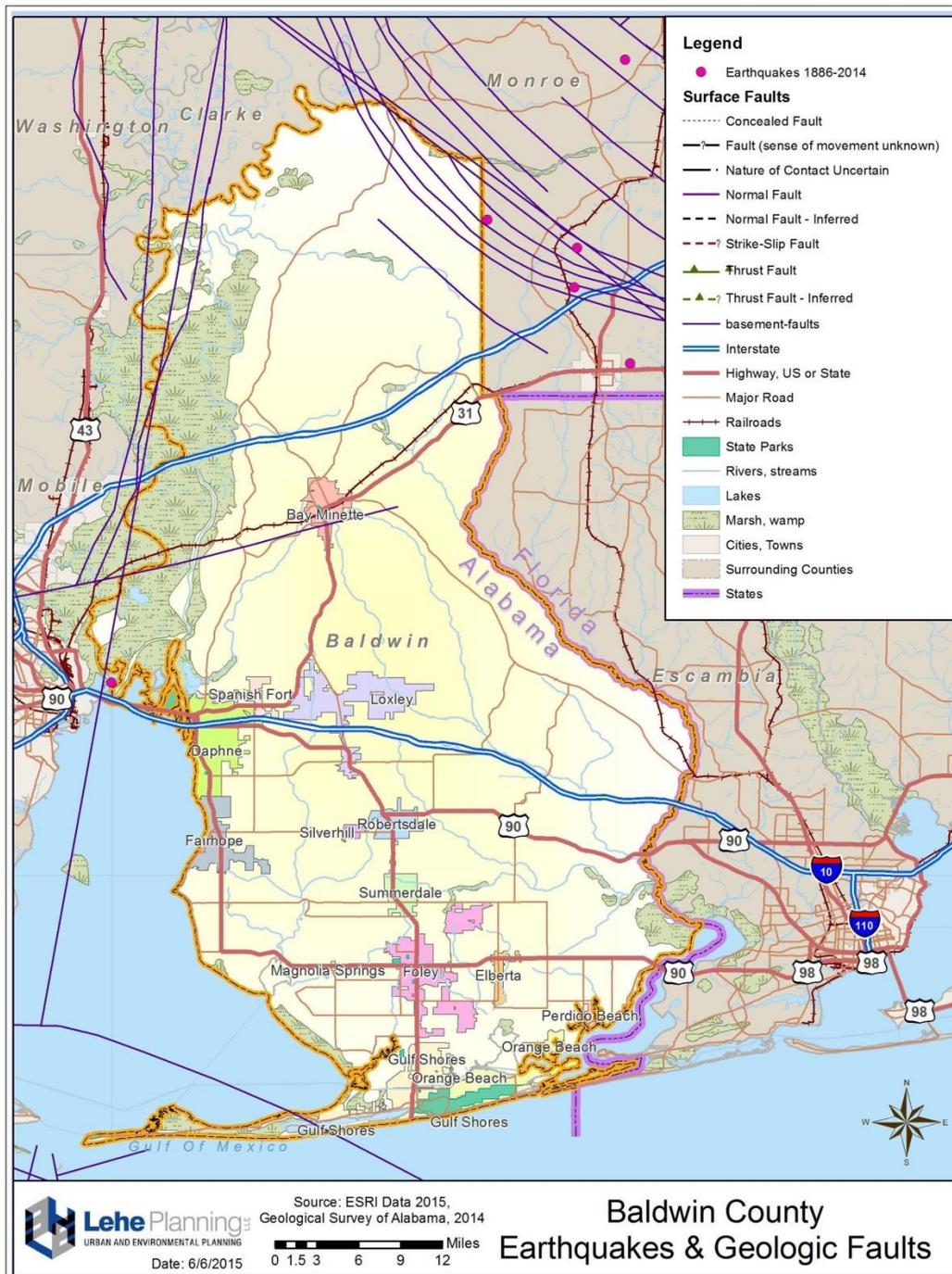
When earthquakes strike a region, it is impossible to predict which area will be affected the most at a sub-county level. The following maps (Map 5-14, 5-15, & 5-16), generated from 2014 GIS data supplied by the Geological Survey of Alabama (GSA), show earthquake locations, locational variations in ground shaking, and soil liquefaction throughout Baldwin County. Map 5-14 portrays earthquake locations from 1886 to 2014, as well as geologic faults in the county. According to this map, only two earthquakes have occurred in or near Baldwin County.

Baldwin County has a low to moderate degree of seismic liquefaction susceptibility to earthquakes (Map 5-15), but the impacts can vary depending on the magnitude and epicenter location. Damages to buildings and infrastructure depend not only on the energy released during an earthquake but also underlying soils and geological characteristics. As shown on Map 5-15, communities located along the Gulf coast and Mobile Bay are more susceptible to seismic liquefaction, indicating a very high susceptibility.

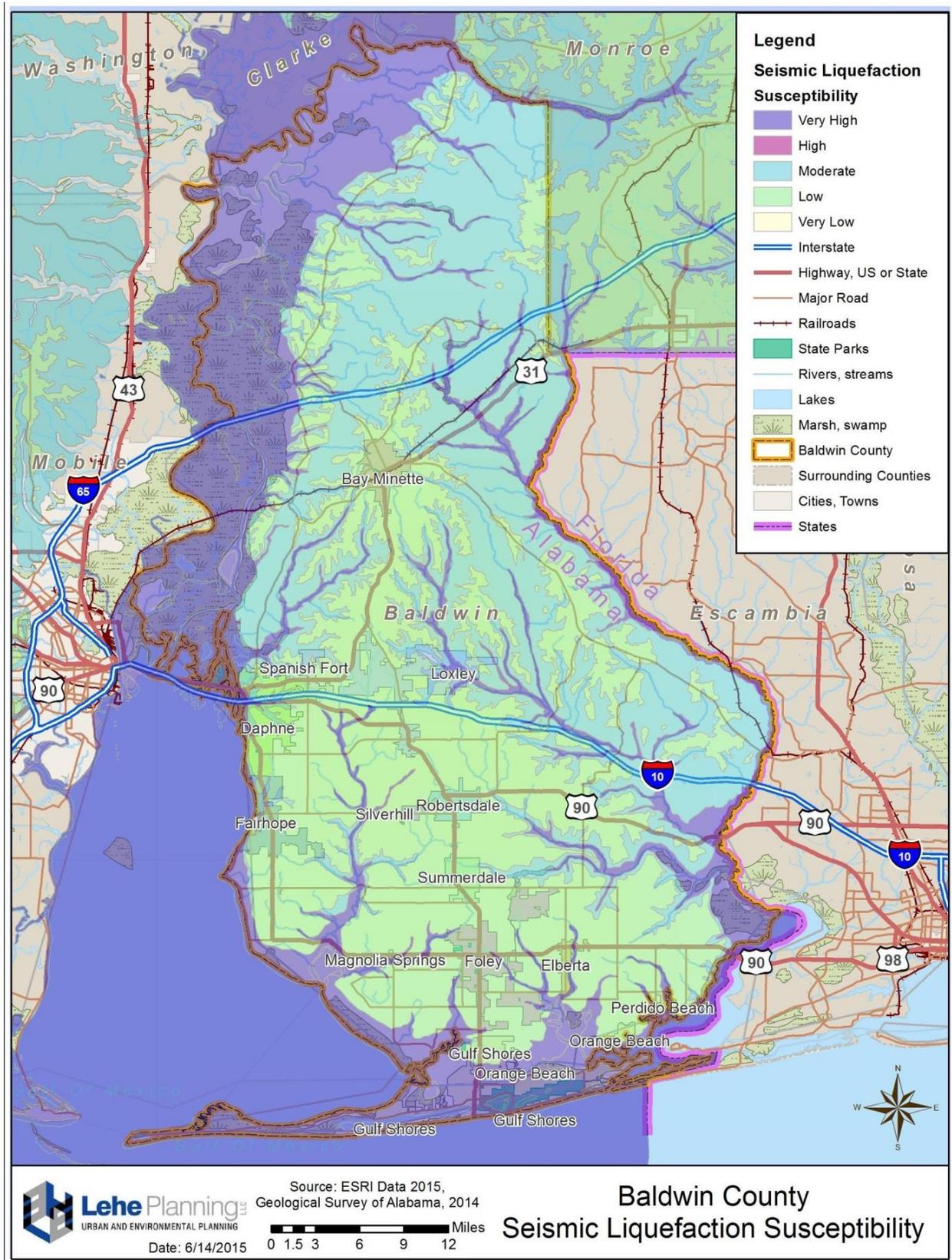
In addition to seismic liquefaction, soil type and site amplification contribute to the velocity at which rock or soil transmits shear waves (USGS). Of the five soil types identified by the National Earthquake Hazards Reduction Program, Baldwin County

contains two: Soil Type D and Soil Type E (shown on Map 5-16). Soil Type D, which characterizes unincorporated areas along Mobile Bay, includes some quaternary muds, sands, gravels, and silts. Significant amplification of shaking by these soils is generally expected. Soil Type E, which characterizes the rest of Baldwin County, includes water-saturated mud and artificial fill. The strongest amplification of shaking due is expected for this soil type.

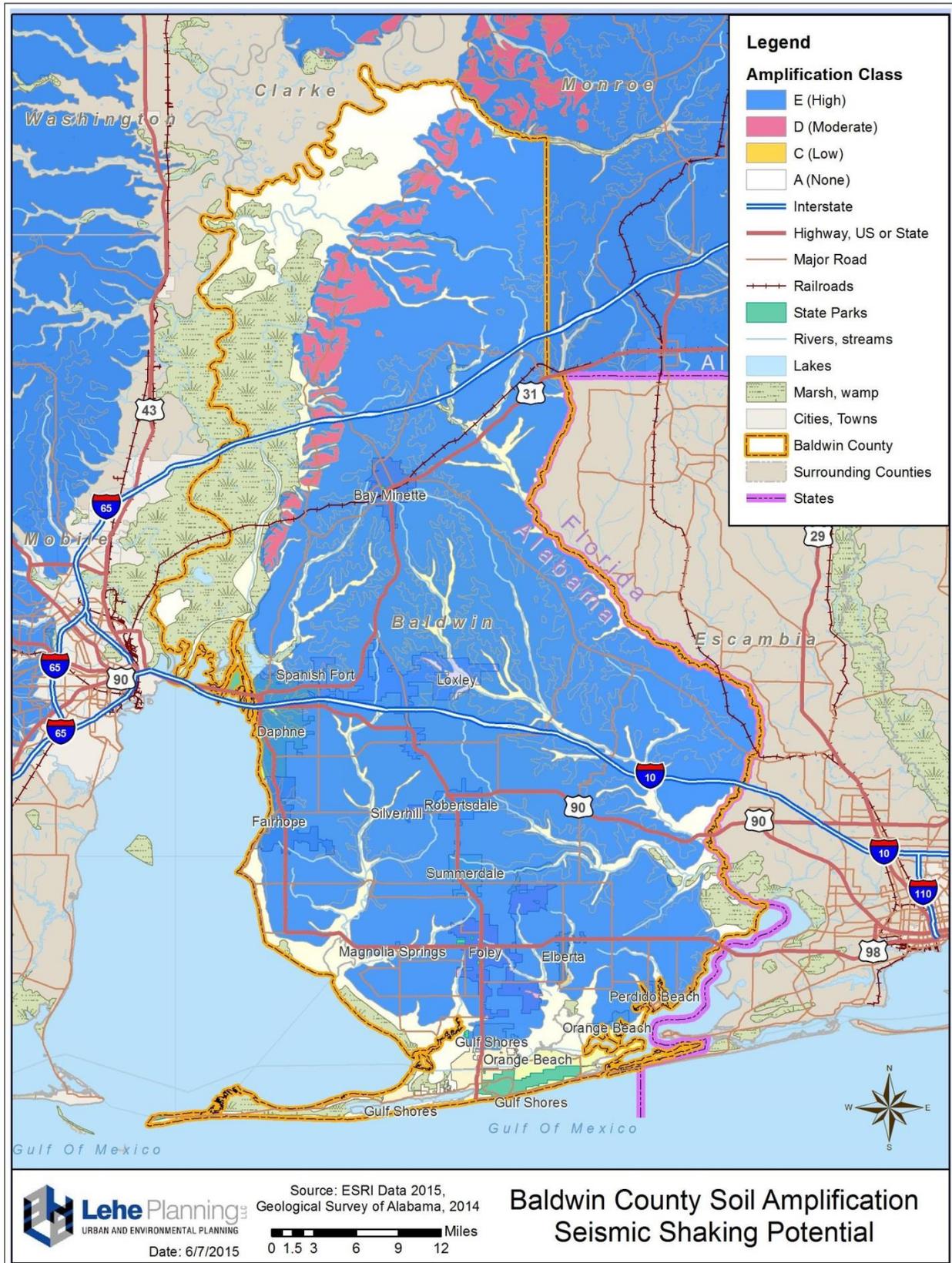
**Map 5-14. Baldwin County Earthquakes & Geologic Faults**



**Map 5-15. Baldwin County Earthquake Liquefaction Potential**



**Map 5-16. Baldwin County Soil Amplification Seismic Shaking Potential**



**Extent and Intensity of Potential Earthquakes**

According to the Geological Survey of Alabama (GSA), recent seismograph records indicate that earthquakes in the state are frequent but not strong enough to be felt on the land surface. Earthquakes can occur anywhere in the state, but are unlikely to cause damage.

As discussed in the “Earthquakes Description” found in Appendix D, the intensity of shaking from an earthquake is measured according to the Modified Mercalli Intensity Scale, for which numbers relate to observed effects of shaking on a scale of 1 to 12 (see Figure 5-4).

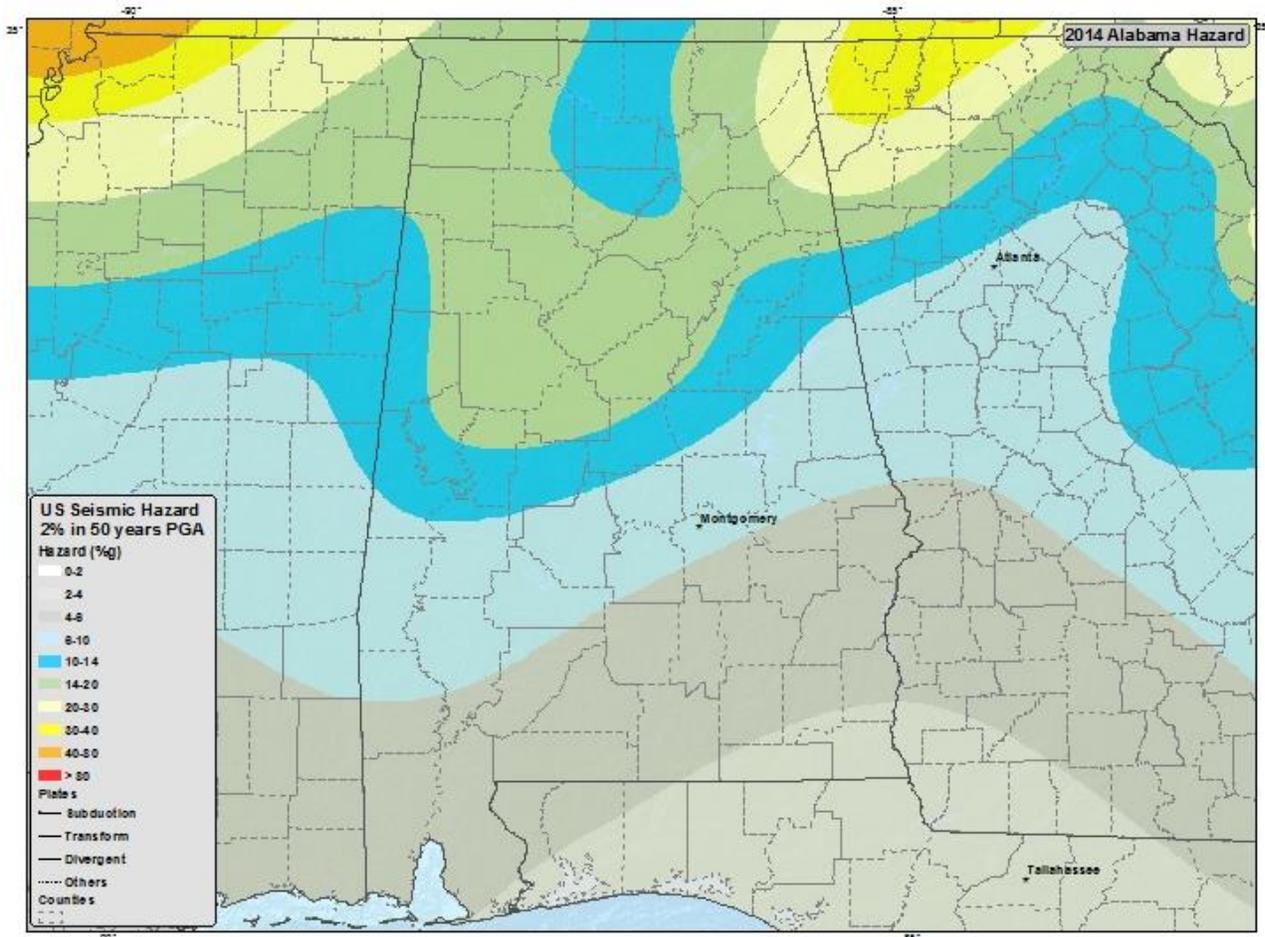
**Figure 5-4. Modified Mercalli Intensity Scale**

<b>I.</b>	<b>Not felt.</b>
<b>II.</b>	<b>Felt by persons at rest, on upper floors, or favorably placed.</b>
<b>III.</b>	<b>Felt indoors. Vibrations like passing of light trucks.</b>
<b>IV.</b>	<b>Vibration like passing of heavy trucks.</b>
<b>V.</b>	<b>Felt outdoors. Small unstable objects displaced or upset.</b>
<b>VI.</b>	<b>Felt by all. Furniture moved. Weak plaster/masonry cracks.</b>
<b>VII.</b>	<b>Difficult to stand. Damage to masonry and chimneys.</b>
<b>VIII.</b>	<b>Partial collapse of masonry. Frame houses moved.</b>
<b>IX.</b>	<b>Masonry seriously damaged or destroyed.</b>
<b>X.</b>	<b>Many buildings and bridges destroyed.</b>
<b>XI.</b>	<b>Rails bent greatly. Pipelines severely damaged.</b>
<b>XII.</b>	<b>Damage nearly total.</b>

Source: Geological Survey of Alabama

The USGS publishes national seismic hazard maps which show likelihood of exceeding a level of earthquake shaking in a given time period. The shaking intensity is measured in peak ground acceleration (PGA) which is acceleration (shaking) of the ground expressed as a percentage of gravity (%g), or as a percentage of 9.8 meters per second squared. Map data from the USGS Earthquake Hazards Program 2014 seismic hazard map (Map 5-17) shows Baldwin County has only a 4-6% chance of exceeding shaking above 16%g in the next 50 years.

**Map 5-17. State of Alabama Seismic Hazard Map, 2014**

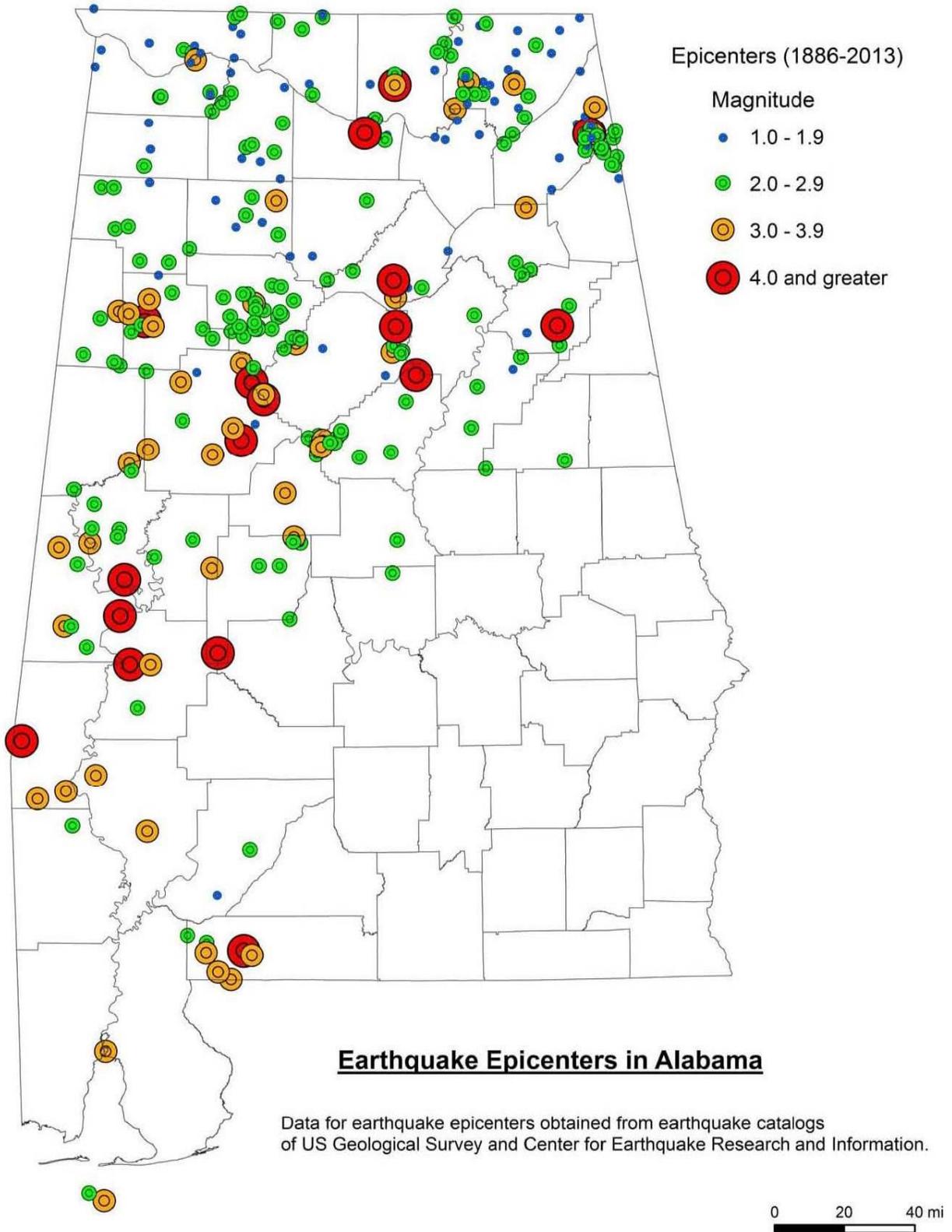


Source: United States Geological Survey, Earthquakes Hazards Program, 2014

**Previous Occurrences of Earthquakes**

Map 5-18 “Alabama Earthquake Locations” shows the location and magnitude of recorded earthquakes from 1886 through 2013. According to this map, Baldwin County has only experienced one earthquake and sixteen earthquakes with a magnitude greater than 4.0 have been recorded in Alabama.

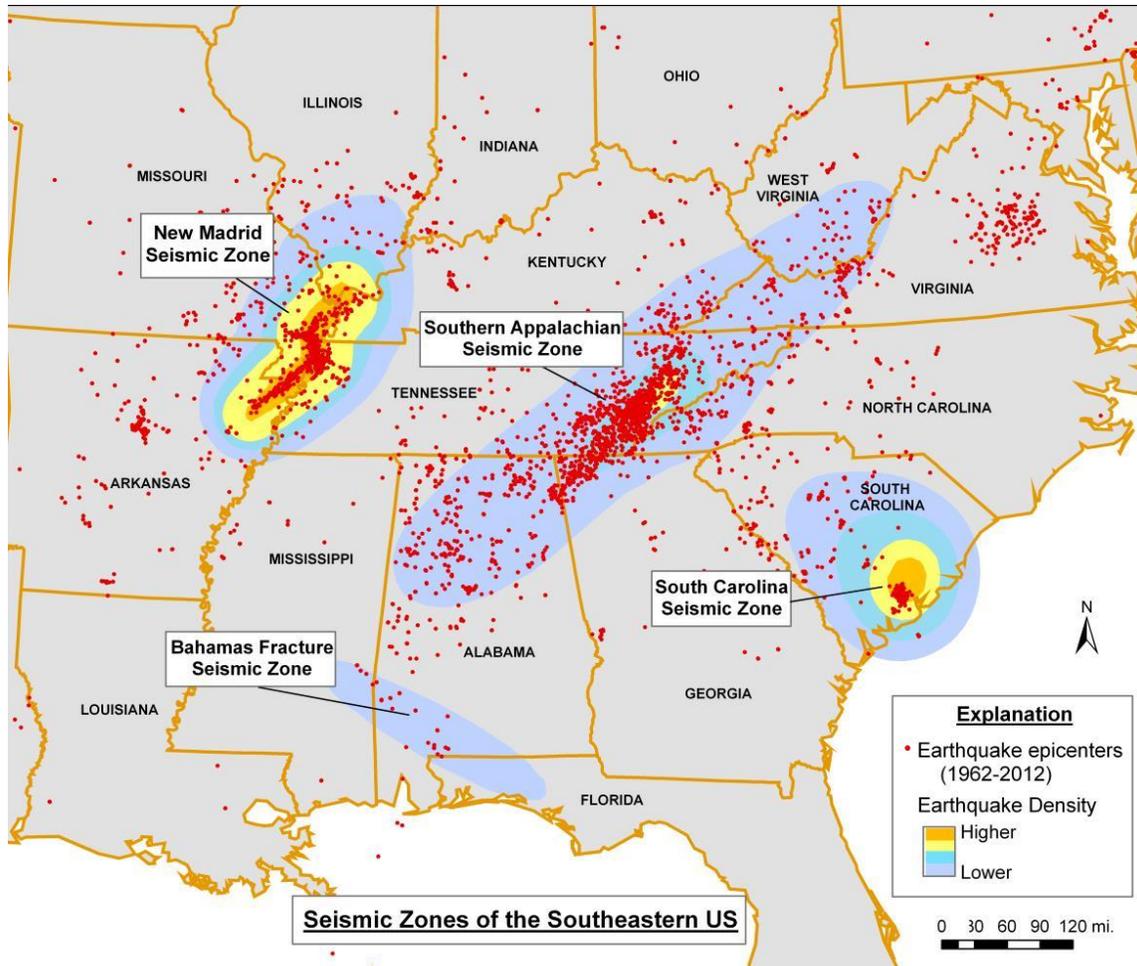
**Map 5-18. Alabama Earthquake Locations**



**Probability of Future Earthquakes**

Geologic Survey of Alabama (GSA) records and analysis suggest the likelihood of damaging earthquake is extremely low. Map 5-19 “Seismic Zones in Southeastern United States” shows that Alabama’s boundaries enclose two seismic zones: the Southern Appalachian and the Bahamas Fracture. Most Alabama earthquakes have been associated with the Southern Appalachian Seismic Zone. Baldwin County borders the less active Bahamas Fracture Seismic Zone.

**Map 5-19. Seismic Zones in Southeastern United States**



Source: Geological Survey of Alabama, Mapping and Hazards Program

**5.4.9 Landslides**

A landslide is defined by the United States Geological Survey as the movement of rock, debris, or earth down a slope. Various natural and man-induced triggers can cause a landslide. Naturally induced landslides occur as a result of weakened rock composition, heavy rain, changes in groundwater levels, and seismic activity. Geologic formations in a given area are key factors when determining landslide susceptibility. Due to its generally level topography, Baldwin County is not susceptible to landslides.

The Geologic Survey of Alabama (GSA) has studied the potential for landslides throughout Alabama. Geographic Information Systems (GIS) data provided by the GSA for this plan, classifies landslide incident and susceptibility shown on Map 5-20 “Baldwin County Landslide Susceptibility”, as follows:

1. Landslide susceptibility. Susceptibility is the probable degree of response to landslide triggers, that is, the response to cutting or excavation, loading of slopes, or to unusually high rainfall. Generally, unusually high rainfall or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. The potential for landslides is classified into one of the following categories:
  - High susceptibility – greater than 15% of a given area is susceptible to land sliding;
  - Medium susceptibility – 1.5% to 15% of a given area is susceptible to land sliding; or
  - Low susceptibility – less than 1.5% of a given area is susceptible to land sliding.
  - No susceptibility indicated – susceptibility is the same as or lower than incidence.
2. Landslide incidence. Landslide incidence is the number of landslides that have occurred. These areas are classified according to the percentage of the area affected by landslides, as follows:
  - High incidence – greater than 15% of a given area has previously experienced land sliding;
  - Medium incidence – 1.5% to 15% of a given area has previously experienced land sliding; or
  - Low incidence – less than 1.5% of a given area has previously experienced land sliding.

**Location of Potential Landslides**

As shown on Map 5-20, the entire county has at least a low degree of susceptibility to landslides. The hilly regions located primarily in the northern and

western portions of Baldwin County are more susceptible to landslides than other areas, which are uniformly flat.

**Extent and Intensity of Potential Landslides**

According to GSA data, the majority of Baldwin County has a low degree of landslide susceptibility. Unincorporated areas near Mobile Bay have a high degree of landslide susceptibility (Map 5-20). Baldwin County landslides are mild, because the flat topography precludes the mass and velocity that make landslides dangerous. The severity of a landslide in Baldwin County is primarily dependent on human or weather activity.

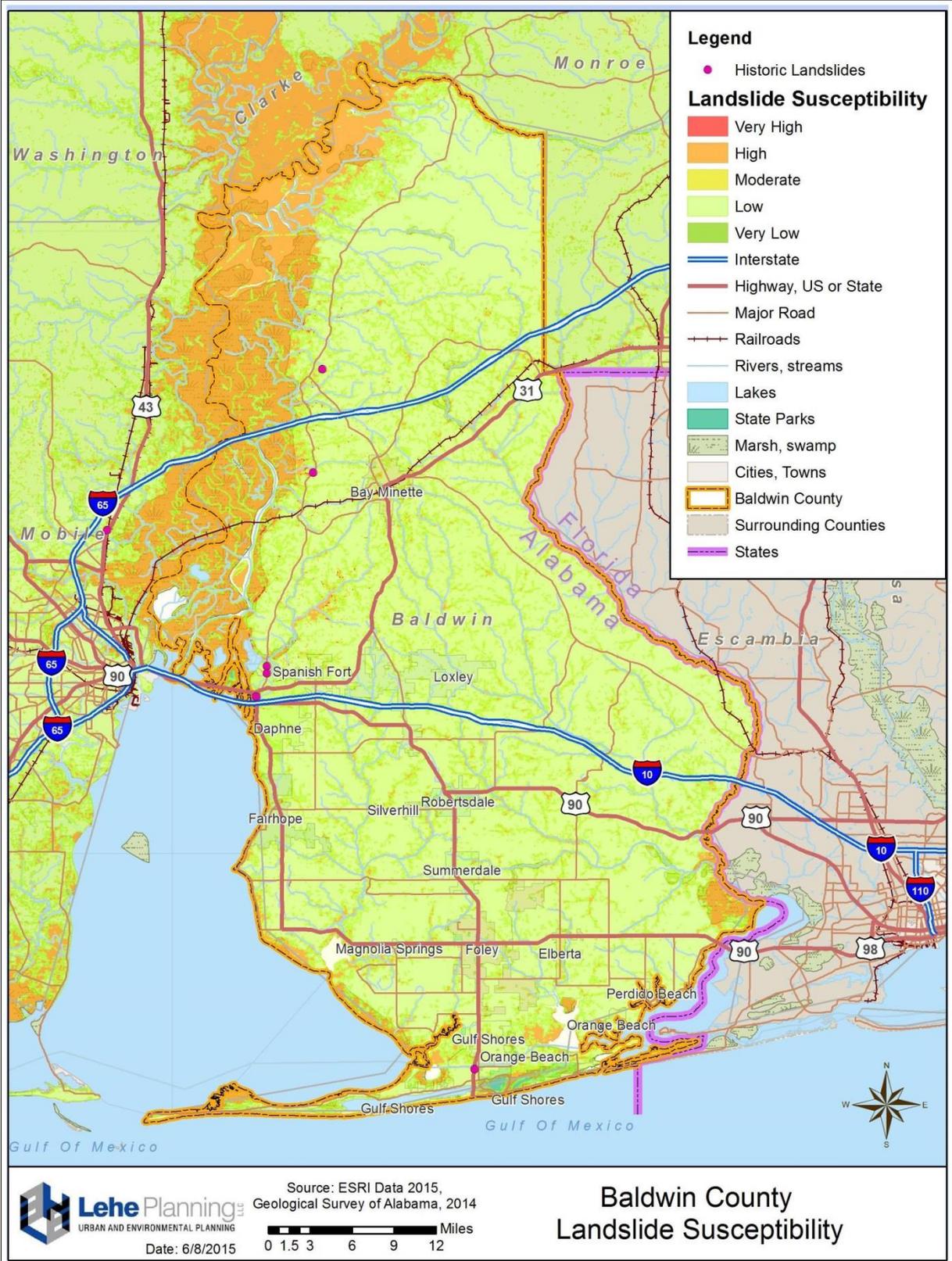
**Previous Occurrences of Landslides**

Heavy rains from Hurricane Danny caused a landslide in Spanish Fort in 1997. Currently, the bluffs alongside the eastern shore of Mobile Bay are susceptible to erosion and future landslides. This affects the homes along the bluff. In an effort to stabilize the bluff and reduce future property damage, the State of Alabama and the City of Spanish Fort applied funding. GSA records show a total of six landslides in Baldwin County.

**Probability of Future Landslides**

Although the GSA map data locates the general degrees of risk for landslides in Baldwin County, the actual probability varies according to specific site locations and the presence of activities or conditions that might trigger a landslide, such as rock type, slope, excavation, hillside development, deforestation, heavy rainfall, or seismic activity. GSA records of landslides have occurred even in areas mapped as "low incidence". Qualitative probability for landslides in Baldwin County is low compared to other natural hazards.

**Map 5-20. Baldwin County Landslide Susceptibility**



**5.4.10 Dam/Levee Failures Profile**

In Baldwin County, dam and levees have mainly been built to create reservoirs for water supplies and recreation. These dams and levees pose less of a threat than dams constructed for hydroelectric generation, because they contain much less water. The National Inventory of Dams lists 23 dams in Baldwin County.

Dam and levee failures are potentially catastrophic flood events and can occur with little warning. A failure is usually the result of neglect, unsound construction, or structural damage attributable to an earthquake or other natural hazard. Severe dam and levee failures are very rare in the United States, but, when they do occur, downstream damages can include devastating human casualties, property damages, and altered natural landscapes.

**Location of Potential Dam/Levee Failures**

According to the U.S. Corps of Engineers National Inventory of Dams, there are 23 dams in Baldwin County. See Table 5-14 and Map 5-21 for location information.

**Table 5-14. Baldwin County Dams**

<b>Dam Name</b>	<b>River</b>	<b>Year Completed</b>	<b>NID Height (Ft.)</b>	<b>Max Discharge</b>	<b>Max Storage</b>
Baroco Lake Dam No. One	TR-Soldier Creek	1970	12	500	53
Bob Pace	TR-Blackwater River	1973	17	184	323
Branchland Lake Dam	Cowpen Creek - Offstream	1958	18	700	72
Calvin Childers Lake Dam No. One	TR-Polecat Creek	1968	16	500	70
Calvin Childers Lake Dam No. Two	TR-Polecat Creek	1958	22	370	100
Childress Dam	TR-Blackwater River	1981	15	330	142
Cook Lake Dam	TR-Blackwater River	1955	12	500	100
Cooper Number One	Mill Creek	1968	14	271	233
Corte Dam	Fly Creek	1981	21	580	73

**CHAPTER 5****2015 Baldwin County Multi-Hazard Mitigation Plan**

<b>Dam Name</b>	<b>River</b>	<b>Year Completed</b>	<b>NID Height (Ft.)</b>	<b>Max Discharge</b>	<b>Max Storage</b>
Crosby Lumber Co.	TR- McCurtin Creek	1972	17	1,200	200
Deep South Girl Scouts Lake	Aikin Creek	1983	30	-	583
John Q. Kendrick	TR-Styx River	1968	21	105	180
JP Bertolli	TR-Styx River	1955	15	80	93
Lake Bobo	TR-Joes Creek	1974	15	99	160
Lake Muriel	Owens Creek	1967	16	210	512
Laupero Use	TR-Bay Minette Creek	1957	19	127	132
Miles Neuman	TR-Spring Branch	1979	18	384	232
Patterson	Seven Mile Creek	1958	34	800	2,640
Paul Childress Lake Dam	TR-Blackwater River	1951	10	-	80
Raynag UA	Perone Branch	1969	17	550	404
Stacey Lake Dam	TR-Whitehouse Creek	1968	15	700	65
Tennessee Coal & Iron	Roans Creek	1953	24	13,000	2,000
Wynn Brothers Lake Dam	TR-Polecat Creek	1969	35	500	140

Source: Army Corps of Engineers, 2015

**Extent and Intensity of Potential Dam/Levee Failures**

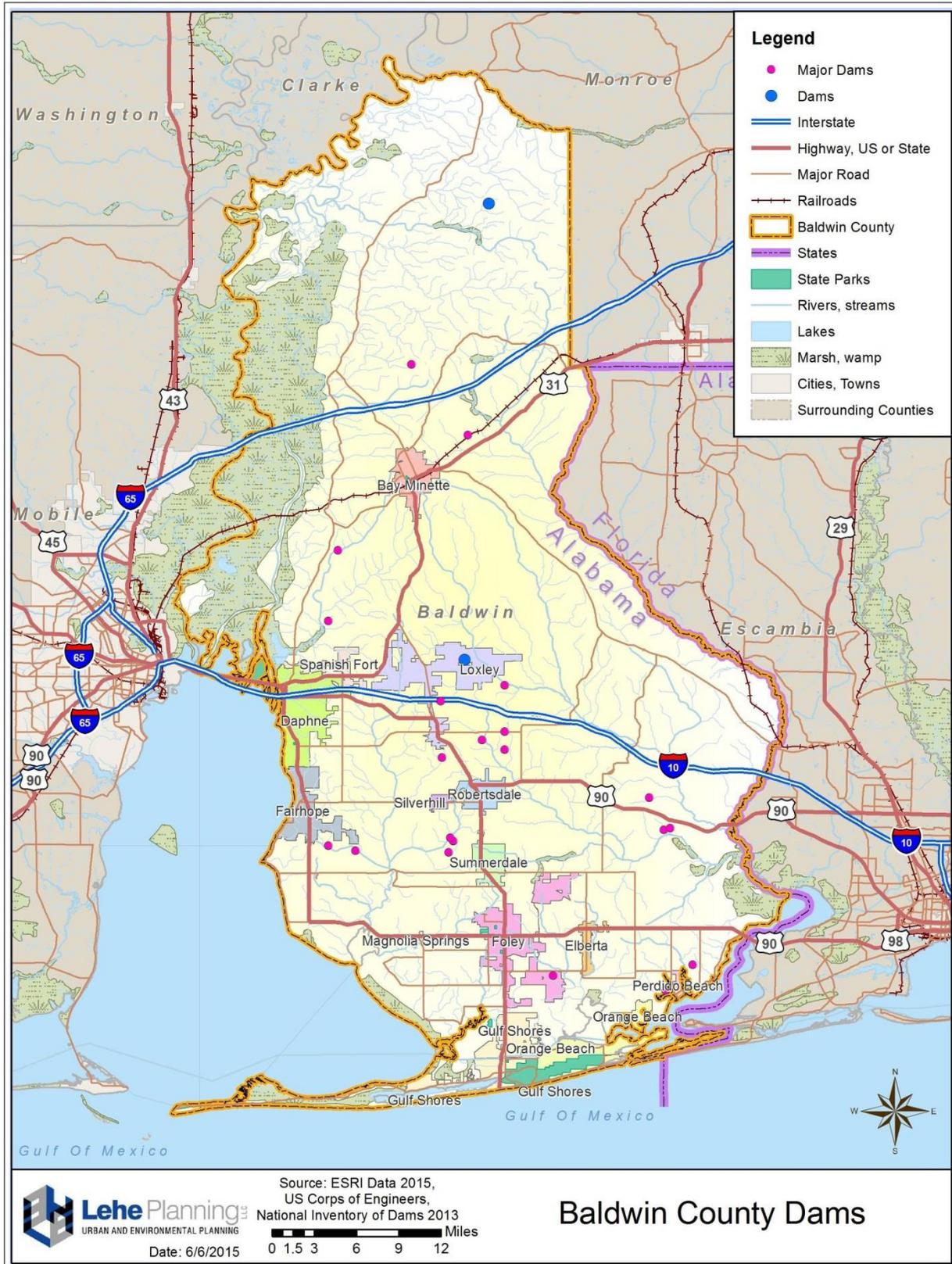
According to the Army Corps of Engineers, Baldwin County has zero dams in the high hazard category, 1 dam in the significant category, and 22 in the low category (Table 5-15). Significant risk indicates failure or faulty operation would probably not result in loss of life, but would result in economic loss, environmental damage, and disruption of lifeline facilities. Low risk indicates failure/faulty operation would not result in loss of life and only low economic or environmental damage.

**Table 5-15. Baldwin County Dams Risk**

<b>Hazard Categories</b>	<b>Number of Dams</b>
High	0
Significant	1
Low	22
Undetermined	0
<b>Total</b>	<b>23</b>

Source: Army Corps of Engineers

**Map 5-21. Baldwin County Dams**



**Previous Occurrences of Dam/Levee Failures**

No known dams or levee failures have occurred in Baldwin County.

**Probability of Future Dam/Levee Failures**

The probability of a catastrophic dam failure in Baldwin County is very slight. Detailed data about dam construction does not exist to rate the dams, but none of the dams would cause severe damage to developed areas in the event of failure. Dam/levee failures are perceived as the least likely event to occur by the HMPC.

**5.4.11 Sinkholes (Land Subsidence) Profile**

Sinkholes occur naturally where limestone, salt, or other rocks below the ground surface are dissolved by circulating groundwater. As the rock dissolves, spaces and caverns develop underground. The land usually stays intact until the underground spaces become too large to support the ground at the surface. When the ground loses its support, it will collapse, forming a sinkhole. Sinkholes can be small or so extreme they consume an automobile or a house. Certain activities can increase the potential for sinkholes in these areas, such as: periods of drought, excessive rainfall, well pump-age, and construction.

**Location of Potential Sinkholes**

Sinkholes are geological phenomenon characterized by a sudden collapse of the topsoil, which occurs when water bores channels in a sub-soil layer of limestone. Map 5-22 shows Karst Geography across the state and indicates that Baldwin County contains units with minor carbonates. Map 5-23 shows USGS sinkhole distribution, indicating that Baldwin County has a higher density of sinkholes relative to the state. The Hazard Mitigation Planning Committee (HMPC) assigned sinkholes a low threat and risk level, based on research and local perception.

**Extent and Intensity of Potential Sinkholes**

Any sinkhole in Baldwin County is likely to be a small-scale event.

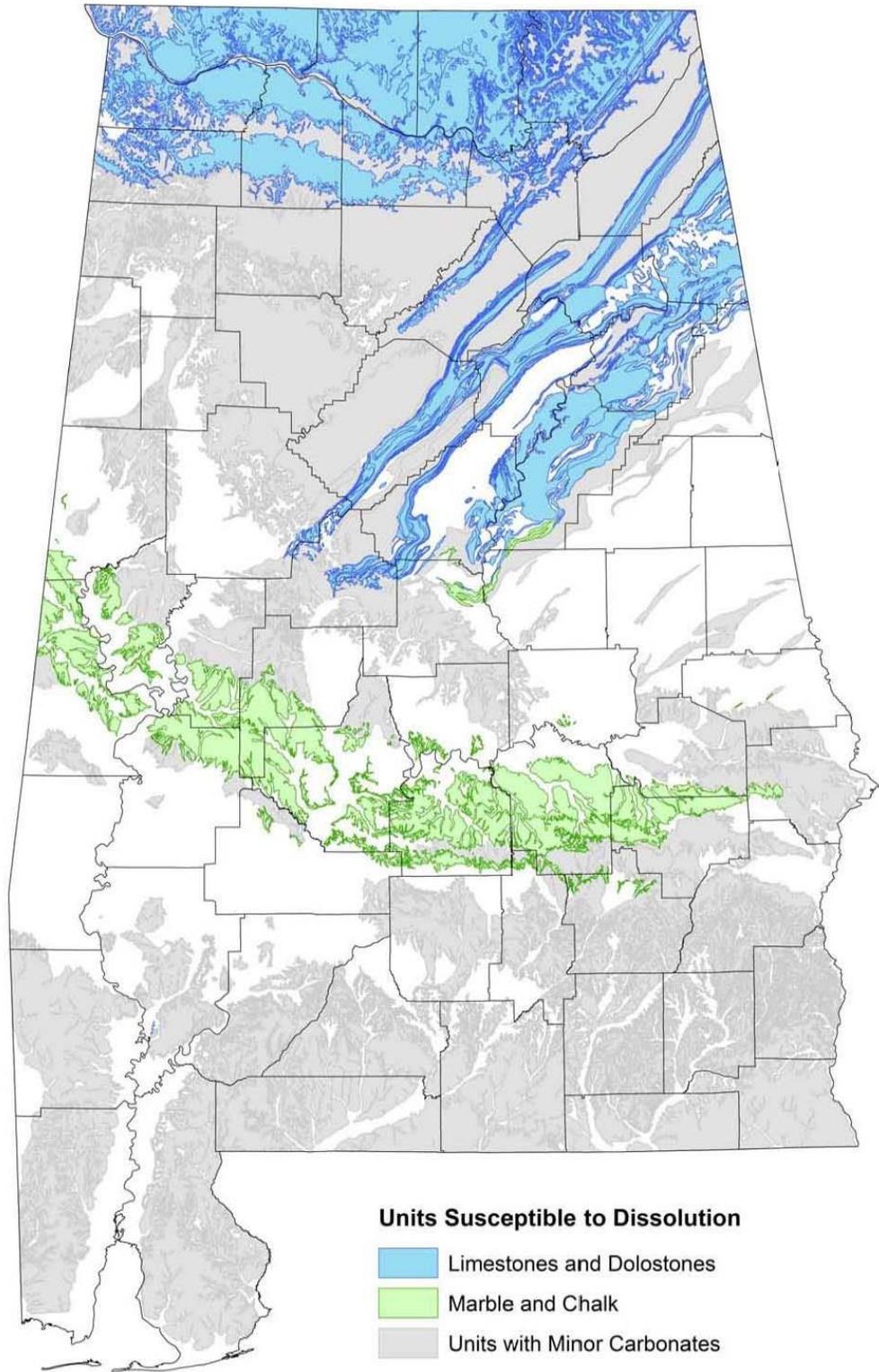
**Previous Occurrences of Potential Sinkholes**

Data from the Geological Survey of Alabama counts over 6,400 sinkhole events in Alabama and indicates various sinkhole occurrences throughout Baldwin County, predominantly in the southern half of the county (Map 5-24).

**Probability of Future Sinkholes**

Map 5-24 "Baldwin County Sinkhole Susceptibility" shows a relative lack of dolostone and limestone rock types, which indicates future probability for sinkholes is low. Ongoing data collection by the Geological Survey of Alabama might reveal unknown conditions that raise the likelihood of sinkholes in Baldwin County.

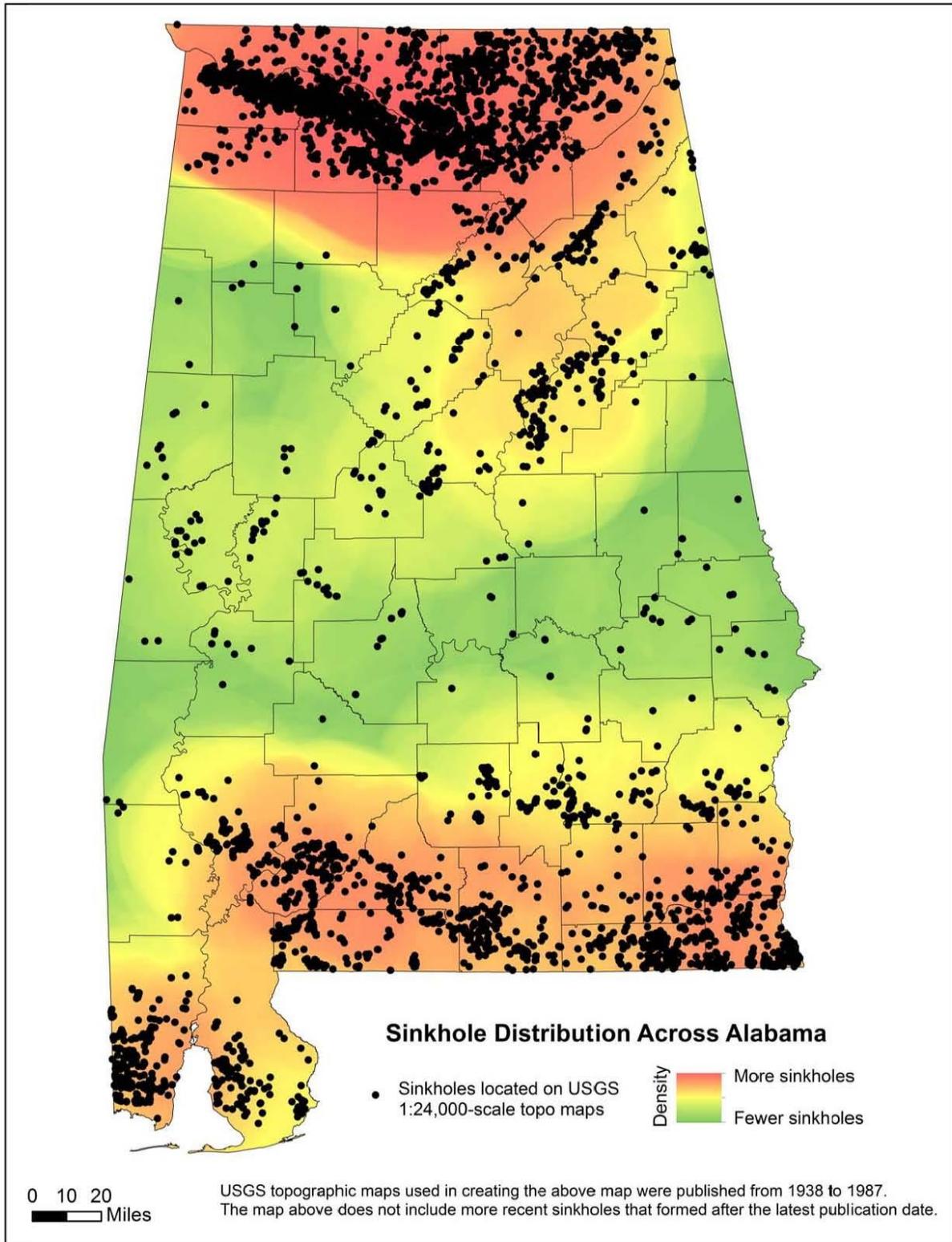
**Map 5-22. Karst Geography, Alabama**



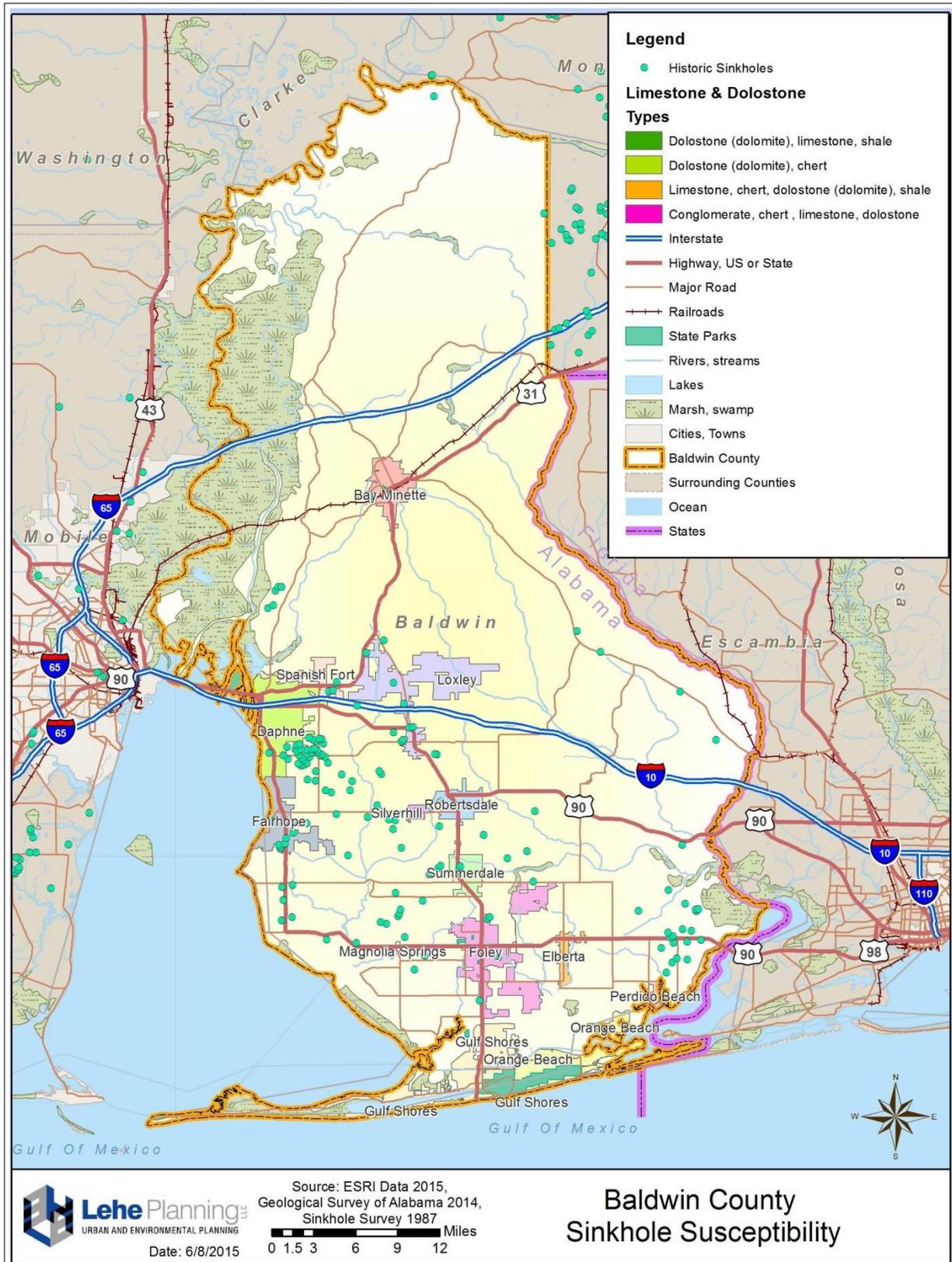
0 10 20  
Miles

Rock types from 1:250,000-scale digital surface geology of Alabama.

**Map 5-23. Alabama Sinkhole Density**



**Map 5-24. Baldwin County Sinkhole Susceptibility**



**5.4.12 Tsunamis**

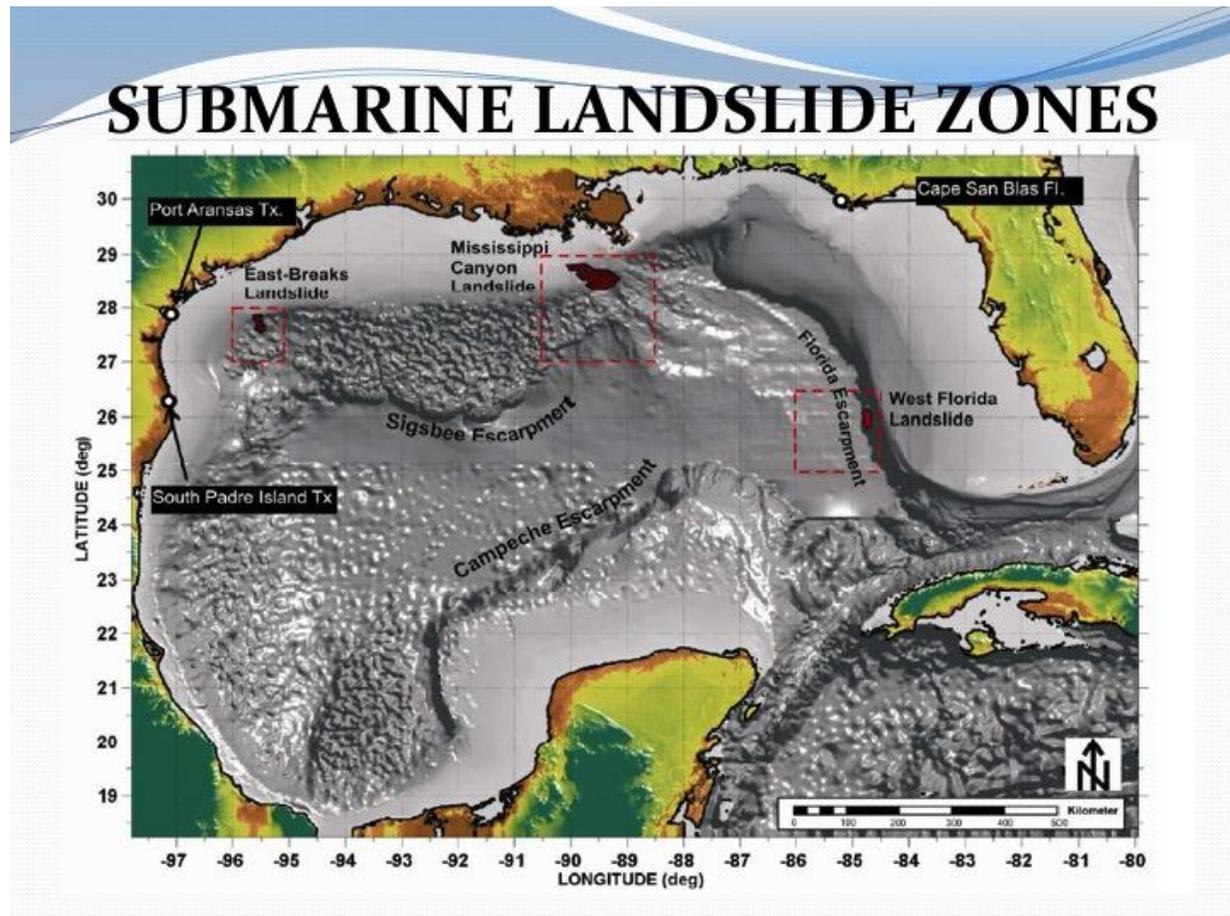
Tsunamis are large ocean waves triggered by earthquakes, volcanic eruptions, submarine landslides, and onshore landslides. However, the tsunami threat to Baldwin County is largely a result of submarine landslides.

There are no records of any tsunamis along the Gulf Coast, but the *Regional Assessment of Tsunami Potential in the Gulf of Mexico* (USGS, 2009) report finds there are some risks, although minimal. The risk is from “submarine landslides”, not earthquakes. Submarine landslides are landslides that occur on the marine surface and transport sediment across the continental shelf, into the deep ocean. The report also states that the vulnerability of the Gulf Coast is high due to the concentrations of population, industrial facilities, and infrastructure should a significant landslide trigger a tsunami. Tsunamis caused by earthquakes are not likely within the Gulf of Mexico.

**Location of Potential Tsunamis**

The three geologic landslide provinces in the Gulf of Mexico are the Northwest Gulf of Mexico, the Mississippi Canyon and fan, and the Florida/Campeche Margin (Map 5-25). Submarine landslides, of sufficient volume, in the Gulf of Mexico are present “along the continental margin of the gulf”.

**Map 5-25. Submarine Landslide Zones**



**Extent and Intensity of Potential Tsunamis**

Communities in Baldwin County at low-lying elevations are especially vulnerable to tsunami damage, due to the amount of people and industrial activity occurring in these areas.

**Previous Occurrences of Tsunamis**

There are no previous occurrences of tsunamis affecting Baldwin County.

**Probability of Future Tsunamis**

Due to the lack of historical evidence for tsunami activity, the probability of future occurrences is low.

**5.4.13 Man-made/Technological Hazards Profile**

Man-made hazards are beginning to play a prominent role in hazard mitigation planning. These hazards include chemical spills, radiation leaks, and acts of terrorism. Hazardous material accidents are a primary main type of man-made hazards. These accidents can occur at any stage of a hazardous material's lifecycle, from extraction to manufacturing to storage to delivery.

**Location of Potential Man-made/Technological Hazards**

Baldwin County has 20 facilities listed by the EPA Toxic Facilities Inventory, which are places where hazardous chemicals are stored. See Map 5-26 for locations of hazardous materials. In addition to the fixed facilities listed by EPA, there are trains and tractor trailers that transport hazardous materials through Baldwin County, particularly on Interstate 10.

**Extent and Intensity of Potential Man-made/Technological Hazards**

The extent of technological hazards impacts and terrorist attacks can be quite severe, with potential for widespread damage to property and infrastructure and major loss of life and casualties, within any jurisdiction.

**Previous Occurrences of Man-made/Technological Hazards**

The most recent significant hazardous materials incident occurred on April 20, 2010 when the Deepwater Horizon oil rig (BP Corporation) exploded and collapsed. The petroleum oil spill has been noted as the worst oil spill in U.S. history, dumping 4.9 million barrels of oil in the Gulf of Mexico between April 20 and July 15, 2010. The coast of Baldwin County was severely affected by the spill with tar balls covering miles of beaches and an oil sheen on the water's surface. Tourism suffered as a result.

Other man-made hazard events that have occurred in Baldwin County are hazardous materials accidents. These have occurred at manufacturing sites, storage sites, and even during transport. The U.S. Department of Transportation's HAZMAT Intelligence Portal provides a record of transportation-related hazardous materials incidents and shows that 23 incidents occurred in Baldwin County from 1995 to 2014 (over twenty years). Total amount of damages is \$667,804. Refer to Table E-9 in Appendix E. Units of hazardous materials are liquid gallons, unless otherwise noted.

**Probability of Future Man-made/Technological Hazards**

Unpredictability is a vexing feature of man-made hazards. Earthquakes and tornadoes generally occur during specific seasons. Floods and earthquakes recur in fixed areas. Severe storms can be tracked through meteorology. Man-made hazards, however, can happen anytime and virtually anywhere. The 2010 BP oil spill, which released millions of gallons of oil onto Baldwin County’s beaches and habitats, affirms that even hazardous materials sources far outside Baldwin County’s borders can have devastating effects on Baldwin County’s residents, properties and businesses.

**Map 5-26. Hazardous Materials Storage**



## **5.5 Vulnerability of Structures within Each Jurisdiction**

### **5.5.1 Scope of Structure Inventory**

Section 5.5 presents an inventory of existing and future buildings, critical facilities, and infrastructure. For the purposes of this risk assessment, *vulnerability* refers to the exposure of buildings, critical facilities, and infrastructure to a particular hazard and their susceptibility to damage from the hazard. The inventory in this section forms the loss estimates in Section 5.6 “Estimate of Dollar Losses to Vulnerable Structures.”

### **5.5.2 Inventory Methodology**

A countywide inventory of the number and property values of structures was created using FEMA’s HAZUS-MH, which is a risk assessment software tool for projecting losses from floods, hurricane winds, and earthquakes. The planning team used the latest edition of HAZUS-MH software (2015). HAZUS-MH modeled hurricane winds scenarios for Baldwin County using a Level 1 analysis, which utilizes data provided with the software and calculates damages at the county level. Calculations below the county level are not recommended, because accuracy tends to diminish.

Local GIS data was used to create maps and lists of critical facilities located in vulnerable areas. The GIS data came primarily from Baldwin County. Other mapping and data sources included the Geologic Survey of Alabama, U.S.G.S., National Weather Service, FEMA NFIP, U.S. Census Bureau, Alabama State Data Center, and the Alabama Forestry Commission.

The designation *building*, as used in this risk assessment, includes all walled and roofed structures. The designations *critical facilities* and *infrastructure* include the following structures, as classified by HAZUS-MH:

#### *Critical Facilities*

- Essential Facilities. These critical facilities are essential to the health and welfare of the entire Baldwin County population and are particularly critical following hazard events. Emergency response facilities (police, fire, and emergency management), medical care facilities (hospitals and other care facilities), schools, and shelters for evacuation are all examples of essential facilities.
- High Potential Loss Facilities. These critical facilities include military installations, nuclear power plants and dams.
- Hazardous Materials. These materials may pose a threat if disrupted by natural hazards and include hazardous industrial chemicals, explosives, flammables, toxins, and radioactive materials.

### Infrastructure

- Transportation Systems Lifeline. These facilities include highways, bridges, tunnels, heavy/light railways, airports, buses, ports, and waterways.
- Lifeline Utility Systems Lifeline. These facilities are essential lifelines that include potable water, wastewater, natural gas, oil, electric, and communications systems.

### Other

- User-Defined Facilities. The user may include additional facilities or systems unique to their study region which are not included in the general HAZUS-MH listing of critical facilities and infrastructure.

Critical facilities and infrastructure can be apportioned to each jurisdiction on the basis of population distribution, as follows:

**Table 5-16. 2014 Population Distribution by Jurisdiction**

Jurisdiction	2014 Estimate	% of Total
Bay Minette	9,049	4.5%
Daphne	24,395	12.5%
Elberta	1,634	0.8%
Fairhope	18,089	9.0%
Foley	16,243	8.1%
Gulf Shores	10,963	5.5%
Loxley	1,725	0.9%
Magnolia Springs	782	0.4%
Orange Beach	5,788	2.9%
Perdido Beach	624	0.3%
Robertsdale	5,773	2.9%
Silverhill	754	0.4%
Spanish Fort	7,806	3.9%
Summerdale	1,005	0.5%
Unincorporated	94,941	47.4%
<b>Baldwin County</b>	<b>200,111</b>	<b>100%</b>

Source: U.S. Census 2014 Population Estimates

The plan projects future number of buildings, critical facilities, and infrastructure to the year 2035 using the Alabama State Data Center's projection of Baldwin County population growth. Since no projections existed for individual jurisdictions, the method described here was developed to provide a 2035 projected population for each jurisdiction. To project populations for each jurisdiction, the annual growth rate for each jurisdiction has been calculated based upon population growth between 1990 and 2014. In the case of the overall population of Baldwin County, the Alabama State Data Center 2035 county estimate has been used, and the unincorporated area projection is that countywide population less the total of all municipal populations.

The 2035 populations of Baldwin County and its jurisdictions are used to compute *growth multipliers*. The growth multiplier is equal to 1 + the 2014-2035 percentage increases for each jurisdiction. For example, if 1,000 residential buildings are presently exposed, then a 2035 Growth Multiplier of 1.24 (where a jurisdiction’s population is projected to increase 24 percent) would project 1,240 residential buildings will be exposed in 2035. The Growth Multiplier is applied to all present day estimates to project future conditions. This growth projection method is not precise, but it does provide a good indication of how growth might affect future exposure of structures to hazards.

**Table 5-17. 2035 County Growth Projection**

Projected County Growth 2014-2035				
	2014	2035	Number	Percent
Baldwin County	200,111	283,120	83,009	41.5%

Source: Alabama State Data Center

**Table 5-18. Annual Growth Rates by Jurisdiction**

Jurisdiction	1990	2010	Est. 2014	1990-2014 Growth*	% Change 1990-2014	Annual Growth Rate
Bay Minette	7,168	8,044	9,049	1,881	26.2%	0.98%
Daphne	11,290	21,570	24,395	13,105	116.1%	3.26%
Elberta	458	1,498	1,634	1,176	256.8%	5.44%
Fairhope	8,485	15,326	18,089	9,604	113.2%	3.20%
Foley	4,937	14,618	16,243	1,625	11.1%	5.09%
Gulf Shores	3,261	9,741	10,963	7,702	236.2%	5.18%
Loxley	1,161	1,632	1,725	564	48.6%	1.66%
Magnolia Springs	n/a	723	782	59	8.2%	1.98%
Orange Beach	2,253	5,441	5,788	347	15.4%	4.01%
Perdido Beach	n/a	581	624	43	7.4%	1.80%
Robertsdale	2,401	5,276	5,773	3,372	140.4%	3.72%
Silverhill	556	706	754	198	35.6%	1.28%
Spanish Fort	3,732	6,798	7,806	4,074	109.2%	3.12%
Summerdale	559	862	1,005	446	79.8%	2.47%
Unincorporated	n/a	89,449	95,481	6,032	6.7%	1.64%
Baldwin Co.	98,280	182,265	200,111	101,831	103.6%	3.01%

Source: U.S. Census, 1990-2014

\*Magnolia Springs, Perdido Beach & Unincorporated growth are based on 2010-2014 population changes, due to unavailability of 1990 Census data

**Table 5-19. 2035 Growth Projections and Multipliers**

Jurisdiction	Est. 2014	Annual Growth Rate	Projected 2035	Projected Change 2014-2035	% Change 2014-2035	2035 Growth Multiplier
Bay Minette	9,049	0.98%	11,105.6	2,057	22.73%	1.23
Daphne	24,395	3.26%	47,849.3	23,454	96.14%	1.96
Elberta	1,634	5.44%	4,970.1	3,336	204.17%	3.04
Fairhope	18,089	3.20%	35,050.0	16,961	93.76%	1.94
Foley	16,243	5.09%	46,074.0	29,831	183.65%	2.84
Gulf Shores	10,963	5.18%	31,661.1	20,698	188.80%	2.89
Loxley	1,725	1.66%	2,437.5	712	41.30%	1.41
Magnolia Springs	782	1.98%	1,180.4	398	50.94%	1.51
Orange Beach	5,788	4.01%	13,216.2	7,428	128.34%	2.28
Perdido Beach	624	1.80%	907.6	284	45.45%	1.45
Robertsdale	5,773	3.72%	12,431.2	6,658	115.33%	2.15
Silverhill	754	1.28%	984.8	231	30.62%	1.31
Spanish Fort	7,806	3.12%	14,880.9	7,075	90.63%	1.91
Summerdale	1,005	2.47%	1,677.6	673	66.93%	1.67
Unincorporated	95,481	1.64%	58,693.7	-36,787	-38.53%	0.61
Baldwin Co	200,111	3.01%	283,120.0	83,009	41.48%	1.41

Source: Derived from AL State Data Center and U.S. Census

**Table 5-20. 2035 Population Distribution by Jurisdiction**

Jurisdiction	2035 Population	% of Total
Bay Minette	11,106	2.98%
Daphne	47,849	12.83%
Elberta	4,970	1.33%
Fairhope	35,050	9.40%
Foley	46,074	12.35%
Gulf Shores	31,661	8.49%
Loxley	2,438	0.65%
Magnolia Springs	1,180	0.32%
Orange Beach	13,216	3.54%
Perdido Beach	908	0.24%
Robertsdale	12,431	3.33%
Silverhill	985	0.26%
Spanish Fort	14,881	3.99%
Summerdale	1,678	0.45%
Unincorporated	58,694	20.73%
Baldwin Co	283,120	100.00%

Source: Derived from Alabama State Data Center

**5.5.3 HAZUS-MH Structure Inventory**

The percent exposure can be applied to the structure inventories to derive a general estimate of vulnerable structures by hazard. Most hazards are county-wide, but location-specific hazards – flooding, dam/levee failures, sinkholes and landslides – can vary from minimal vulnerability to as much as 100% of a community’s total geographic area. In cases where exposure is 1% or less, a 1% exposure rate has been applied. Although this does not yield a precise estimate, it provides a general indication of the number and types of structures exposed to each hazard within each jurisdiction. This data is shown in Table 5-21 below.

**Table 5-21. Hazard Exposure Rates by Jurisdiction**

Jurisdiction	Identified Hazard												
	Hurricanes	Flooding	Severe Storms	Tornadoes	Wildfires	Droughts/Heat Waves	Winter Storms/Freezes	Earthquakes	Landslides	Dam/Levee Failures	Sinkholes/Land Subsidence	Tsunamis	Manmade/ Technological
<b>Bay Minette</b>	100%	25%	100%	100%	5%	100%	100%	5%	<1%	0%	<1%	1%	100%
<b>Daphne</b>	100%	15%	100%	100%	5%	100%	100%	100%	<1%	0%	5%	1%	100%
<b>Elberta</b>	100%	5%	100%	100%	5%	100%	100%	50%	<1%	0%	0%	1%	100%
<b>Fairhope</b>	100%	75%	100%	100%	5%	100%	100%	100%	<1%	1%	5%	1%	100%
<b>Foley</b>	100%	5%	100%	100%	5%	100%	100%	5%	<1%	1%	5%	1%	100%
<b>Gulf Shores</b>	100%	90%	100%	100%	5%	100%	100%	100%	<1%	0%	<1%	1%	100%
<b>Loxley</b>	100%	5%	100%	100%	5%	100%	100%	5%	<1%	1%	5%	1%	100%
<b>Magnolia Springs</b>	100%	25%	100%	100%	5%	100%	100%	100%	<1%	0%	5%	1%	100%
<b>Orange Beach</b>	100%	90%	100%	100%	5%	100%	100%	100%	<1%	0%	0%	1%	100%
<b>Perdido Beach</b>	100%	90%	100%	100%	5%	100%	100%	100%	<1%	1%	<1%	1%	100%
<b>Robertsdale</b>	100%	5%	100%	100%	5%	100%	100%	5%	<1%	0%	<1%	1%	100%
<b>Silverhill</b>	100%	5%	100%	100%	5%	100%	100%	50%	<1%	0%	5%	1%	100%
<b>Spanish Fort</b>	100%	25%	100%	100%	5%	100%	100%	100%	<1%	0%	5%	1%	100%
<b>Summerdale</b>	100%	5%	100%	100%	5%	100%	100%	5%	<1%	0%	5%	1%	100%
<b>Unincorporated</b>	100%	75%	100%	100%	100%	100%	100%	5%	5%	1%	5%	1%	100%
<b>Baldwin County</b>	100%	75%	100%	100%	100%	100%	100%	50%	5%	1%	5%	1%	100%

**General Description of the Planning Region**

HAZUS-MH refers to the geographic study area as the *region*, which is all of Baldwin County, including all unincorporated areas and fourteen municipalities. A more complete description of the planning region is presented in Chapter 3 “Community Profiles.” The descriptions provided here were generated by the HAZUS-MH Global Report for Hurricane Frederic. The Baldwin County region is generally described by HAZUS-MH, as follows:

- The geographical size of the region is 1,626 square miles.
- The region contains 32 census tracts.
- There were over 73,000 households in the region, with a total population of 182,265 persons, according to the 2010 Census.

**Table 5-22. HAZUS-MH Population and Building Value Data**

State	County Name	2010 Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Alabama	Baldwin	182,265	\$18,745	\$4,397	\$23,143

**Building Inventory**

- HAZUS estimates that there are 88,540 buildings in the region which have an aggregate total replacement value of 23,143 million (2010 dollars).
- Approximately 92.8% of the buildings (and 81.4% of the building value) are associated with residential housing (Table 5-23).
- In terms of building construction types found in the region, wood frame construction comprises the majority of the building inventory, at 72.8%. Manufactured housing comprises approximately 17% of buildings, a considerable amount (Table 5-24).

**Table 5-23. HAZUS-MH Building Inventory by Occupancy**

Occupancy	Count	Share
Agriculture	272	0.3%
Commercial	4,154	4.7%
Education	146	0.2%
Government	96	0.1%
Industrial	1,302	1.5%
Religion	385	0.4%
Residential	82,185	92.8%
<b>Total</b>	<b>88,540</b>	<b>100%</b>

**Table 5-24. HAZUS-MH Building Inventory by Construction Type**

<b>Construction Type</b>	<b>Count</b>	<b>Share</b>
Concrete	686	0.8%
Masonry	5,795	6.5%
Manufactured Housing	14,713	16.6%
Steel	2,931	3.3%
Wood	64,421	72.8%
<b>Total</b>	<b>88,546</b>	<b>100%</b>

\*Discrepancies in total # of buildings exist due to rounding in HAZUS-MH software

**Critical Facilities Inventory**

HAZUS-MH results list **essential facilities**, which include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. HAZUS-MH estimates the numbers and types of essential facilities within the region, as follows:

- ✓ 4 hospitals with a total bed capacity of 437 beds;
- ✓ 62 schools;
- ✓ 24 fire stations;
- ✓ 16 police stations; and
- ✓ 1 emergency operations center.

**Transportation and Utility Lifeline Inventories**

HAZUS-MH breaks lifeline inventories into the two groups described below and estimates the number of each type of facility. HAZUS-MH estimates the total value of the lifeline inventory at \$5.3 million. A more detailed breakdown is provided in Tables 5-30 and 5-31.

- (1) **Transportation systems**, which include highways, railways, light rail, bus, ports, ferry and airports. HAZUS-MH estimates this information, as follows:
  - ✓ 373 miles (600 kilometers) of highways;
  - ✓ 224 highway bridges;
  - ✓ 1 ferry facility;
  - ✓ 4 port facilities;
  - ✓ 5 airports with 6 runways.
  
- (2) **Utility systems**, which include potable water, wastewater, natural gas, crude & refined oil, electric power, and communications. HAZUS-MH estimates the length of pipes, as follows:
  - ✓ 8,107 miles (13,047 kilometers) of potable water, waste water, and natural gas pipes.

**5.5.4 Existing and Future Structure Vulnerabilities by Hazard and Jurisdiction**

**Buildings**

The building exposure totals generated by HAZUS-MH are gross estimates that show relative vulnerability. The numbers provided in the HAZUS-MH reports are not based on actual field inventories, which is beyond the scope of this planning process. Many of the numbers provided by HAZUS-MH are generated from formulas based on national standards. For example, HAZUS-MH estimates 4,154 commercial buildings, but the actual number is likely to be higher. Where values are given for future conditions, the values are in present value dollars.

Building exposure in Baldwin County is mostly residential at about 81 percent. Commercial building exposure comprises approximately 13 percent (Table 5-25). This ratio should remain constant through the 2035 plan horizon and occupancy ratios are assumed constant for the purposes of this analysis.

**Table 5-25. Building Exposure by Occupancy**

<b>Occupancy</b>	<b>Existing Exposure (\$1,000)</b>	<b>Future Exposure (\$1,000)</b>	<b>% of Total (Future)</b>
Agriculture	\$74,725	\$105,362	0.32%
Commercial	\$2,837,089	\$4,000,295	12.26%
Education	\$166,172	\$234,303	0.72%
Government	\$83,342	\$117,512	0.36%
Industrial	\$822,209	\$1,159,315	3.55%
Religious	\$317,631	\$447,860	1.37%
Residential	\$18,841,781	\$26,566,911	81.41%
<b>Total</b>	<b>\$23,142,949</b>	<b>\$32,631,558</b>	<b>100%</b>

Building values within each jurisdiction are expected to increase according to (a) growth in Baldwin County’s population; and (b) the growth in each jurisdiction’s share of the county population. Communities need to be cognizant of the increasing risks and exposure resulting from growth.

Baldwin County is projected to increase in growth approximately 41.5% from 2014 to 2035, with the highest growth rates in Elberta, Foley, Gulf Shores and Orange Beach. The areas with the least projected amount of growth are Bay Minette, Loxley, Silverhill, and Magnolia Springs. Occupancy of buildings by jurisdiction is assumed to generally follow the county-wide distribution, and is projected to change according to each jurisdiction’s growth multiplier. See Tables 5-26 to 5-28 for estimated building values by jurisdiction, building count by occupancy and jurisdiction, and building exposure by jurisdiction.

**Table 5-26. Building Values by Jurisdiction**

Jurisdiction	Building Value					
	Existing Residential	Future Residential	Existing Non-Residential	Future Non-Residential	Existing Total	Future Total
Bay Minette	\$847,880	\$1,044,968	\$193,553	\$238,543	\$1,041,433	\$1,283,512
Daphne	\$2,355,223	\$4,505,092	\$537,646	\$1,028,414	\$2,892,869	\$5,533,507
Elberta	\$150,734	\$469,169	\$34,409	\$107,101	\$185,144	\$576,271
Fairhope	\$1,695,760	\$3,300,180	\$387,105	\$753,359	\$2,082,865	\$4,053,539
Foley	\$1,526,184	\$4,337,151	\$348,395	\$990,077	\$1,874,579	\$5,327,228
Gulf Shores	\$1,036,298	\$2,980,292	\$236,564	\$680,336	\$1,272,862	\$3,660,628
Loxley	\$169,576	\$229,253	\$38,711	\$52,334	\$208,287	\$281,587
Magnolia Springs	\$75,367	\$111,961	\$17,205	\$25,558	\$92,572	\$137,519
Orange Beach	\$546,412	\$1,244,898	\$124,734	\$284,183	\$671,146	\$1,529,081
Perdido Beach	\$56,525	\$85,304	\$12,904	\$19,473	\$69,429	\$104,776
Robertsdale	\$546,412	\$1,170,258	\$124,734	\$267,144	\$671,146	\$1,437,402
Silverhill	\$75,367	\$93,301	\$17,205	\$21,299	\$92,572	\$114,599
Spanish Fort	\$734,829	\$1,402,177	\$167,746	\$320,086	\$902,575	\$1,722,263
Summerdale	\$94,209	\$157,278	\$21,506	\$35,903	\$115,715	\$193,182
Unincorporated	\$8,931,004	\$5,526,069	\$2,038,754	\$1,261,481	\$10,969,758	\$6,787,550
Baldwin County	\$18,841,781	\$26,657,352	\$4,301,168	\$6,085,292	\$23,142,949	\$32,742,644
Note: Totals of all municipalities and unincorporated areas may not equal Baldwin County totals due to rounding.						

**Table 5-27. Building Count by Occupancy and Jurisdiction**

Jurisdiction	Building Count by Occupancy													
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
	Agric.		Commercial		Education		Govt.		Industrial		Religion		Residential	
Bay Minette	12	15	187	229	7	8	4	5	59	72	17	21	3698	4535
Daphne	34	65	519	993	18	35	12	23	163	311	48	92	10,273	19,653
Elberta	2	7	33	106	1	4	1	2	10	33	3	10	657	2,093
Fairhope	24	48	374	729	13	26	9	17	117	228	35	68	7,397	14,420
Foley	22	63	336	958	12	34	8	22	105	300	31	89	6,657	18,956
Gulf Shores	15	43	228	658	8	23	5	15	72	206	21	61	4,520	13,025
Loxley	2	3	37	53	1	2	1	1	12	17	3	5	740	1047
Magnolia Springs	1	2	17	24	1	1	0	1	5	7	2	2	329	465
Orange Beach	8	18	120	276	4	10	3	6	38	87	11	26	2,383	5,466
Perdido Beach	1	1	12	18	0	1	0	0	4	6	1	2	247	349
Robertsdale	8	17	120	259	4	9	3	6	38	81	11	24	2,383	5,117
Silverhill	1	2	17	24	1	1	0	1	5	7	2	2	329	465
Spanish Fort	11	20	162	312	6	11	4	7	51	98	15	29	3,205	6,163
Summerdale	1	2	21	35	1	1	0	1	7	11	2	3	411	698
Unincorporated	129	80	1,969	1,218	69	43	46	28	617	382	182	113	38,956	24,107
Baldwin Co	272	385	4,154	5,878	146	207	96	136	1,302	1,842	385	545	82,185	116,292

Note: Totals of all municipalities and unincorporated areas may not equal Baldwin County totals due to rounding.

**Table 5-28. Building Exposure by Jurisdiction and Hazard, Part A**

Identified Hazard	Building Exposure (\$1000s) by Jurisdiction													
	Bay Minette		Daphne		Elberta		Fairhope		Foley		Gulf Shores		Loxley	
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
Hurricanes	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282
Flooding	\$260	\$321	\$434	\$830	\$9	\$29	\$1,562	\$3,040	\$94	\$266	\$1,146	\$3,295	\$10	\$14
Severe Storms	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282
Tornadoes	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282
Wildfires	\$52	\$64	\$145	\$277	\$9	\$29	\$104	\$203	\$94	\$266	\$64	\$183	\$10	\$14
Droughts/Heat Waves	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282
Winter Storms/ Freezes	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282
Earthquakes	\$52	\$64	\$2,893	\$5,534	\$93	\$288	\$2,083	\$4,054	\$94	\$266	\$1,273	\$3,661	\$10	\$14
Landslides	\$10	\$13	\$29	\$55	\$2	\$6	\$21	\$41	\$19	\$53	\$13	\$37	\$2	\$3
Dam/Levee Failures	\$0	\$0	\$0	\$0	\$0	\$0	\$21	\$41	\$19	\$53	\$0	\$0	\$2	\$3
Sinkholes (Land Subsidence)	\$10	\$13	\$145	\$277	\$0	\$0	\$104	\$203	\$94	\$266	\$13	\$37	\$10	\$14
Tsunamis	\$10	\$13	\$29	\$55	\$2	\$6	\$21	\$41	\$19	\$53	\$13	\$37	\$2	\$3
Manmade/ Technological	\$1,041	\$1,284	\$2,893	\$5,534	\$185	\$576	\$2,083	\$4,054	\$1,875	\$5,327	\$1,273	\$3,661	\$208	\$282

**Table 5-28. Building Exposure by Jurisdiction and Hazard, Part B**

Identified Hazard	Building Exposure (\$1000s) by Jurisdiction																	
	Magnolia Springs		Orange Beach		Perdido Beach		Robertsdale		Silverhill		Spanish Fort		Summerdale		Unincorporated		Baldwin Co	
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
Hurricanes	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743
Flooding	\$23	\$34	\$604	\$1,376	\$62	\$94	\$34	\$72	\$5	\$6	\$226	\$431	\$6	\$10	\$8,227	\$5,091	\$17,357	\$24,557
Severe Storms	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743
Tornadoes	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743
Wildfires	\$5	\$7	\$34	\$76	\$3	\$5	\$34	\$72	\$5	\$6	\$45	\$86	\$6	\$10	\$10,970	\$6,788	\$23,143	\$32,743
Droughts/Heat Waves	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743
Winter Storms/ Freezes	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743
Earthquakes	\$93	\$138	\$671	\$1,529	\$69	\$105	\$34	\$72	\$46	\$57	\$903	\$1,722	\$6	\$10	\$548	\$339	\$11,571	\$16,371
Landslides	\$1	\$1	\$7	\$15	\$1	\$1	\$7	\$14	\$1	\$1	\$9	\$17	\$1	\$2	\$548	\$339	\$1,157	\$1,637
Dam/Levee Failures	\$0	\$0	\$0	\$0	\$1	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$110	\$68	\$231	\$327
Sinkholes (Land Subsidence)	\$5	\$7	\$0	\$0	\$1	\$1	\$7	\$14	\$5	\$6	\$45	\$86	\$6	\$10	\$548	\$339	\$1,157	\$1,637
Tsunamis	\$1	\$1	\$7	\$15	\$1	\$1	\$7	\$14	\$1	\$1	\$9	\$17	\$1	\$2	\$110	\$68	\$231	\$327
Manmade/ Technological	\$93	\$138	\$671	\$1,529	\$69	\$105	\$671	\$1,437	\$93	\$115	\$903	\$1,722	\$116	\$193	\$10,970	\$6,788	\$23,143	\$32,743

**Critical Facilities**

HAZUS-MH estimates there are 107 critical facilities within Baldwin County, classifications listed in Table 5-29. The number of critical facilities will increase to approximately 151, according to future estimates.

**Table 5-29. HAZUS-MH Essential Facilities Data**

<b>Classification</b>	<b>Existing Estimate</b>	<b>Future Estimate</b>
Hospitals	4 (437 beds)	5.6 (616 beds)
Fire Stations	24	33.8
Police Stations	16	22.6
Schools	62	87.4
EOC	1	1.4

**Infrastructure**

Infrastructure inventories appear below. Infrastructure expansion is not directly related to population growth; consequently, no projections are given here. Most of the at-risk transportation system components are highway road segments and bridges, which are most vulnerable to flooding (Table 5-30).

**Table 5-30. HAZUS-MH Transportation Systems Lifeline Inventory**

<b>System</b>	<b>Component</b>	<b># Locations/Segments</b>	<b>Replacement Value (\$ millions)</b>
<b>Highway</b>	Bridges	224	\$645.8
	Segments	113	\$2,998.4
	Tunnels	0	\$0
	<i>Subtotal</i>		<b>\$3,664.2</b>
<b>Railways</b>	Bridges	0	\$0
	Facilities	0	\$0
	Segments	8	\$45
	Tunnels	0	\$0
	<i>Subtotal</i>		<b>\$45.0</b>
<b>Light Rail</b>	Bridges	0	\$0
	Facilities	0	\$0
	Segments	0	\$0
	Tunnels	0	\$0
	<i>Subtotal</i>		<b>\$0</b>
<b>Bus</b>	Facilities	0	\$0
	<i>Subtotal</i>		<b>\$0</b>
<b>Ferry</b>	Facilities	1	\$1.3
	<i>Subtotal</i>		<b>\$1.3</b>
<b>Port</b>	Facilities	4	\$8.0
	<i>Subtotal</i>		<b>\$8.0</b>

System	Component	# Locations/Segments	Replacement Value (\$ millions)
Airport	Facilities	5	\$53.5
	Runways	6	\$227.8
		<i>Subtotal</i>	<b>\$281.0</b>
		<b>Total</b>	<b>\$3979.6</b>

The types of utilities most vulnerable to hazards are wastewater treatment plants, water treatment and distribution facilities, and electric power lines and substations. Hurricanes, severe storms, and flooding pose the greatest threat to these facilities (Table 5-31).

**Table 5-31. HAZUS-MH Utilities Systems Lifeline Inventory**

System	Component	# Locations / Segments	Replacement value (\$ millions)
Potable Water	Distribution Lines	n/a	\$130.5
	Facilities	1	\$30.0
	Pipelines	0	\$0
		<i>Subtotal</i>	<b>\$160.4</b>
Waste Water	Distribution Lines	n/a	\$78.3
	Facilities	19	\$1,138.9
	Pipelines	0	\$0
		<i>Subtotal</i>	<b>\$1,2717.1</b>
Natural Gas	Distribution Lines	n/a	\$52.2
	Facilities	1	\$1.0
	Pipelines	0	\$0
		<i>Subtotal</i>	<b>\$53.2</b>
Oil Systems	Facilities	0	\$0
	Pipelines	0	\$0
		<i>Subtotal</i>	<b>\$0</b>
Electrical Power	Facilities	1	\$99.0
		<i>Subtotal</i>	<b>\$99.0</b>
Communication	Facilities	29	\$2.6
		<i>Subtotal</i>	<b>\$2.6</b>
		<b>Total</b>	<b>\$1532.4</b>

**Local Inventories of Critical Facilities and Infrastructure**

The following maps and tables show the locations of major critical facilities, including Government Facilities, Public Safety Facilities, Schools, Medical Facilities, Elderly Care Facilities, Utilities, Communication Facilities, Communication Towers, Community Shelters, Dams, and Transportation.

**Table 5-32. Baldwin County Government Facilities**

<b>Agency</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Alabama Dept Transportation	47450 Rabun Rd	Bay Minette	36507
Alabama DOT	19800 State Highway 59	Summerdale	36580
Alabama Marine Police	27559 Perdido Beach Blvd	Orange Beach	36561
Baldwin County Court House	1 Courthouse Sq	Bay Minette	36507
Baldwin County Health Dept	257 Hand Ave	Bay Minette	36507
Baldwin County Health Dept	23280 Gilbert Dr	Robertsdale	36567
Baldwin County Highway Dept	22220 West Blvd	Silverhill	36576
Baldwin County Jail	200 Hand Ave	Bay Minette	36507
Baldwin County Transportation	18100 County Road 54	Robertsdale	36567
Baldwin County Welfare	1705 S Us Highway 31	Bay Minette	36507
Bay Minette City Hall	301 Dolive St	Bay Minette	36507
Daphne City Hall	1705 Main St	Daphne	36526
Daphne City Jail	1502 Us Highway 98	Daphne	36526
Elberta Town Hall	13052 Main St	Elberta	36530
Fairhope City Hall	555 s Section St	Fairhope	36532
Foley City Hall	407 East Laurel Ave	Foley	36535
Foley Municipal Court	200 E Section Ave	Foley	36535
Gulf Shores City Hall	2149 W 1st St	Gulf Shores	36542
Gulf Shores Court Clerk	1905 W 1st St	Gulf Shores	36542
Loxley Town Hall	1089 S Hickory St	Loxley	36551
Loxley Town Municipal Court	2131 E Relham Ave	Loxley	36551
Magnolia Springs Town Hall	12191 Magnolia Springs Hwy	Magnolia Springs	36555
Orange Beach City Hall	4099 Orange beach Blvd	Orange Beach	36561
Perdido Beach Town Hall	9212 County Rd 97	Perdido Beach	36562
Robertsdale Town Hall	22647 Racine St	Robertsdale	36567
Silverhill Municipal Court	16150 Silverhill Ave	Silverhill	36576
Silverhill Town Hall	15965 Silverhill Ave	Silverhill	36576

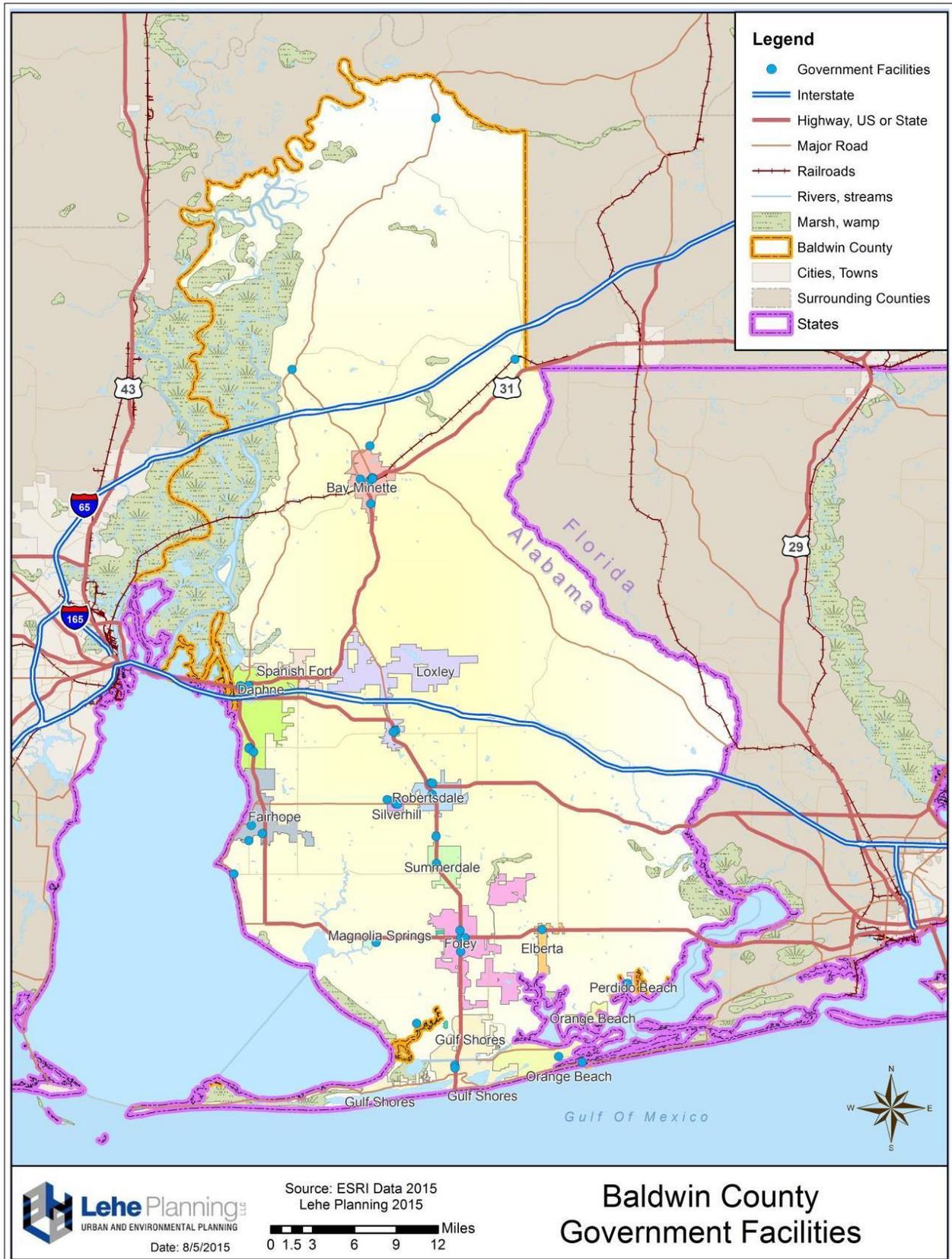
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Agency	Address	City	Zip
Spanish Fort City Hall	7581 Spanish Fort Blvd	Spanish Fort	36527
Summerdale Town Hall	502 W Lee Ave	Summerdale	36580
Unemployment Tax Svc	200 W Michigan Ave	Foley	36535
US Post Office	601 McMeans Ave	Bay Minette	36507
US Post Office	808 Daphne Ave	Daphne	36526
US Post Office	6419 Bon Secour Hwy	Bon Secour	36511
US Post Office	6450 US Highway 90	Spanish Fort	36527
US Post Office	509 Fairhope Ave	Fairhope	36532
US Post Office	150 E Laurel Ave	Foley	36535
US Post Office	1059 S Holley St	Loxley	36551
US Post Office	70715 State Highway 59	Little River	36550
US Post Office	23336 County Road 47	Perdido	36562
US Post Office	17008 Scenic Hwy 98	Point Clear	36564
US Post Office	52925 Hodgson Rd	Stockton	36579
US Social Security Administration	368 Commercial Park Dr	Fairhope	36532

Source: Derived from US Company Database, 2013

Map 5-27. Government Facilities



**Table 5-33. Baldwin County Public Safety Facilities**

<b>Name</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Fairhope Volunteer Fire Dept	198 S Ingleside Ave	Fairhope	36533
Huggerlanding/Oyster Bay Volunteer Fire	4590 CR 6	Gulf Shores	36542
Gateswood Volunteer Fire Dept	33014 St Hwy 112	Robertsdale	36567
Styx River Volunteer Fire Dept	23350 Dunbar Rd	Robertsdale	36567
Stapleton Fire Dept	36276 State Highway 59	Stapleton	36578
Bay Minette Fire - Rescue	300 N Hoyle Ave	Bay Minette	36507
Belforest Volunteer Fire Search & Rescue	25490 Hwy 54 W	Daphne	36526
Robertsdale Volunteer Fire Dept	22575 St. Paul St	Robertsdale	36567
Silverhill Volunteer Fire Dept	22031 Sixth St	Silverhill	36576
Spanish Fort Fire Rescue	7580 Spanish Fort Blvd	Spanish Fort	36527
Summerdale Fire Dept	105 W Broadway Ave	Summerdale	36580
Fish River Marlow Fire & Rescue Dept	13355 CR 32	Summerdale	36580
Fort Morgan Volunteer Fire Dept	12105 Hwy 180 W	Gulf Shores	36542
Daphne Fire Dept	28280 N Main St	Daphne	36526
City of Foley Fire Dept	120 W Verbena Ave	Foley	36535
Bon Secour Volunteer Fire Dept	7392 Hwy 65	Bon Secour	36511
Elberta Volunteer Fire Dept	13120 Illinois St	Elberta	36530
Josephine Volunteer Fire Dept	6824 CR 95	Josephine	36530
Lillian Volunteer Fire Dept	34180 Widell Ave	Lillian	36549
Rabun Volunteer Fire Dept	47860 Rabun Rd	Bay Minette	36507
Barnwell Volunteer Fire & Rescue Dept	13319 CR 13	Fairhope	36532
Gulf Shores Fire Rescue	1921 W First St	Gulf Shore	36547
Orange Beach Fire & Rescue	25853 John Snook Dr	Orange Beach	36561
Magnolia Springs Fire Dept	14809 Gates Ave	Magnolia Springs	36555
Summerdale Police Dept	105 W Broadway St	Summerdale	36580
Daphne Police Dept	1502 Highway 98	Daphne	36526
Foley Police Dept	200 E Section Ave	Foley	36535

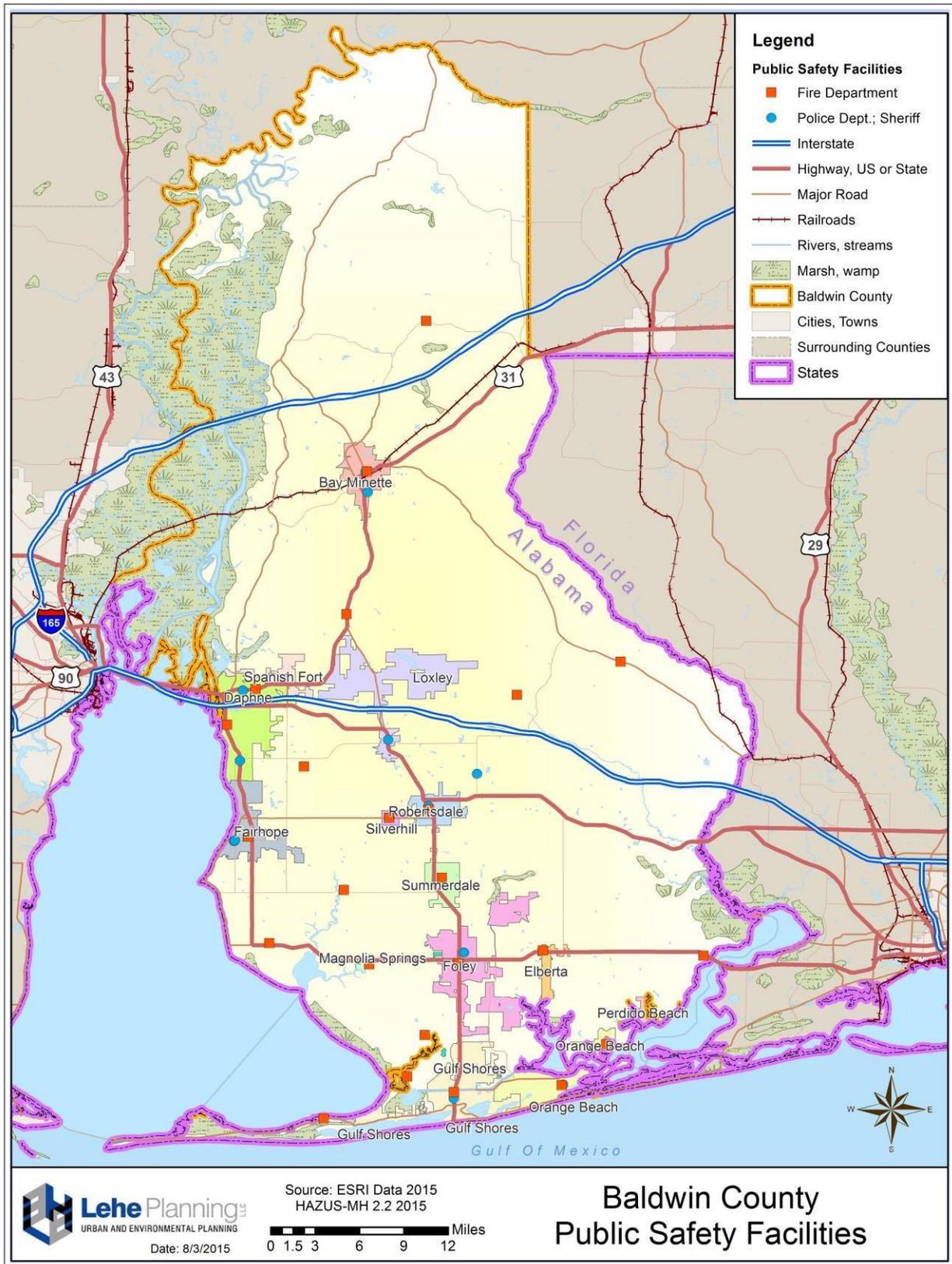
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Name	Address	City	Zip
Loxley Police Dept	2139 E Relham Ave	Loxley	36551
Police Dept Records Div	220 Clubhouse Dr	Gulf Shores	36542
Silverhill Police Dept	22030 Sixth St	Silverhill	36576
Robertsdale Police Dept	22647 Racine St	Robertsdale	36567
Fairhope Police Dept	24 N Section St	Fairhope	36532
Orange Beach Police Dept	25855 John Snook Ave	Orange Beach	36561
Bay Minette Police Dept	300 N Hoyle Ave	Bay Minette	36507
Spanish Fort Police Chief	7581 Spanish Fort Blvd	Spanish Fort	36527
Sheriff-Civil Div Chief	1 Courthouse Sq	Bay Minette	36507
Baldwin County Sheriff	1100 Fairhope Ave	Fairhope	36532
Baldwin County Sheriff	201 E Section Ave	Foley	36535
Baldwin County Sheriff	18126 CR 54	Robertsdale	36567
Baldwin Sheriff	310 Hand Ave	Bay Minette	36507

Source: Info USA, 2001

**Map 5-28. Baldwin County Public Safety Facilities**



**Table 5-34. Baldwin County Schools**

<b>Name</b>	<b>Students</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
E J Carroll Intermediate School	306	1000 Main St	Daphne	36526
Fairhope Intermediate School	469	1101 Fairhope Ave	Fairhope	36532
Bay Minette Intermediate School	830	600 Blackburn Ave	Bay Minette	36507
Elberta Middle School	613	13355 Main St	Elberta	36530
Foley Intermediate School	267	2000 S Cedar St	Foley	36535
Spanish Fort Middle School	835	33899 Jimmy Faulkner Dr	Spanish Fort	36527
Fairhope Middle School	685	408 N Section	Fairhope	36532
Baldwin County Alternative School	332	6925 Twin Beech Rd	Fairhope	36532
Gulf Shores Middle School	573	450 E 15th Ave	Gulf Shores	36542
New Bay Minette Middle School	558	1131 W 13th St	Bay Minette	36507
Foley Middle School	725	201 N Pine St	Foley	36535
Central Baldwin Middle School	784	24545 State Hwy 59	Robertsdale	36576
Daphne Middle School	773	1 Jody Davis Cir	Daphne	36526
Robertsdale High School	1231	1 Golden Bear Dr	Robertsdale	36567
Foley High School	1374	1 Pride Pl	Foley	36535
Fairhope High School	1235	18800 Greeno Rd	Fairhope	36532
Gulf Shores High School	708	600 E 15th Ave	Gulf Shores	36542
Daphne High School	1416	9300 E Lawson Rd	Daphne	36526
Spanish Fort High School	711	1 Plaza Del Toros	Spanish Fort	36527
Baldwin County High School	1170	1 Tiger Dr	Bay Minette	36507
South Baldwin Center for Technology	514	19200 Anderson Ln	Robertsdale	36567
North Baldwin Center for Technology	514	505 W Hurricane Rd	Bay Minette	36507
Bayshore Christian School	165	23050 US Hwy 98	Fairhope	36532
Berean Baptist Christian School	37	24070 US Hwy 98	Elberta	36530
Daphne Elementary North	599	2307 Main St	Daphne	36526
Elberta Elementary School	478	25820 US Hwy 98	Elberta	36530
Foley Elementary School	673	200 N Cedar St	Foley	36535

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<b>Name</b>	<b>Students</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Rockwell Elementary	662	10183 US Hwy 31	Spanish Fort	36527
Spanish Fort Elementary	696	30900 State Hwy 225	Spanish Fort	36527
Gulf Shores Elementary	616	1600 E 3rd St	Gulf Shores	36542
Daphne East Elementary	513	26651 CR 13	Daphne	36526
Orange Beach Elementary	357	4900 Wilson Blvd	Orange Beach	36561
Christ the King Elementary	492	1503 Main St	Daphne	36526
Marietta Johnson School of Org.	30	8 Marietta Dr	Fairhope	36532
Open Door Christian School	117	20774 CR 12 S	Foley	36535
Fairhope K-1 Center	498	100 S Church St	Fairhope	36532
Eastern Shore Early Childhood	100	1090 Fairhope Ave	Fairhope	36532
Central Christian School	312	17395 Highway 104 W	Robertsdale	36567
Faith Presbyterian School	90	18632 Berner Rd	Robertsdale	36567
AL Gulf Coast Christian Academy	128	18930 CR 28	Foley	36535
Calvary Christian Learning Center	64	25550 Canal Rd	Orange Beach	36561
Bayside Academy PK-12	758	303 Dryer Ave	Daphne	36526
Cornerstone Preparatory School (PK-12)	162	6389 Spanish Fort Blvd	Spanish Fort	36527
Fairhope Primary School	444	2 N Bishop Rd	Fairhope	36532
Bay Minette Elementary	561	800 Blackburn Ave	Bay Minette	36507
Magnolia School	536	1 Jaguar Loop	Foley	36535
Delta Elementary	279	10251 White House Fork Rd	Bay Minette	36507
Silverhill Middle	342	15800 4th Ave	Silverhill	36576
Robertsdale Elementary	779	19150 Wilters St	Robertsdale	36567
Rosinton Elementary	283	19757 CR 64	Robertsdale	36567
Elsanor Elementary	250	23440 US Hwy 90	Robertsdale	36567
Stapleton Elementary	201	35500 Baldwin Ave	Stapleton	36578
Pine Grove Elementary	353	43980 Pine Grove Rd	Bay Minette	36507
Loxley Elementary	367	4999 S Magnolia St	Loxley	36551
Swift Consolidated Elementary	183	6330 Bon Secour Hwy	Bon Secour	36511
The Academy of Arts & Sciences	42	6900 Hwy 59	Gulf Shores	36542

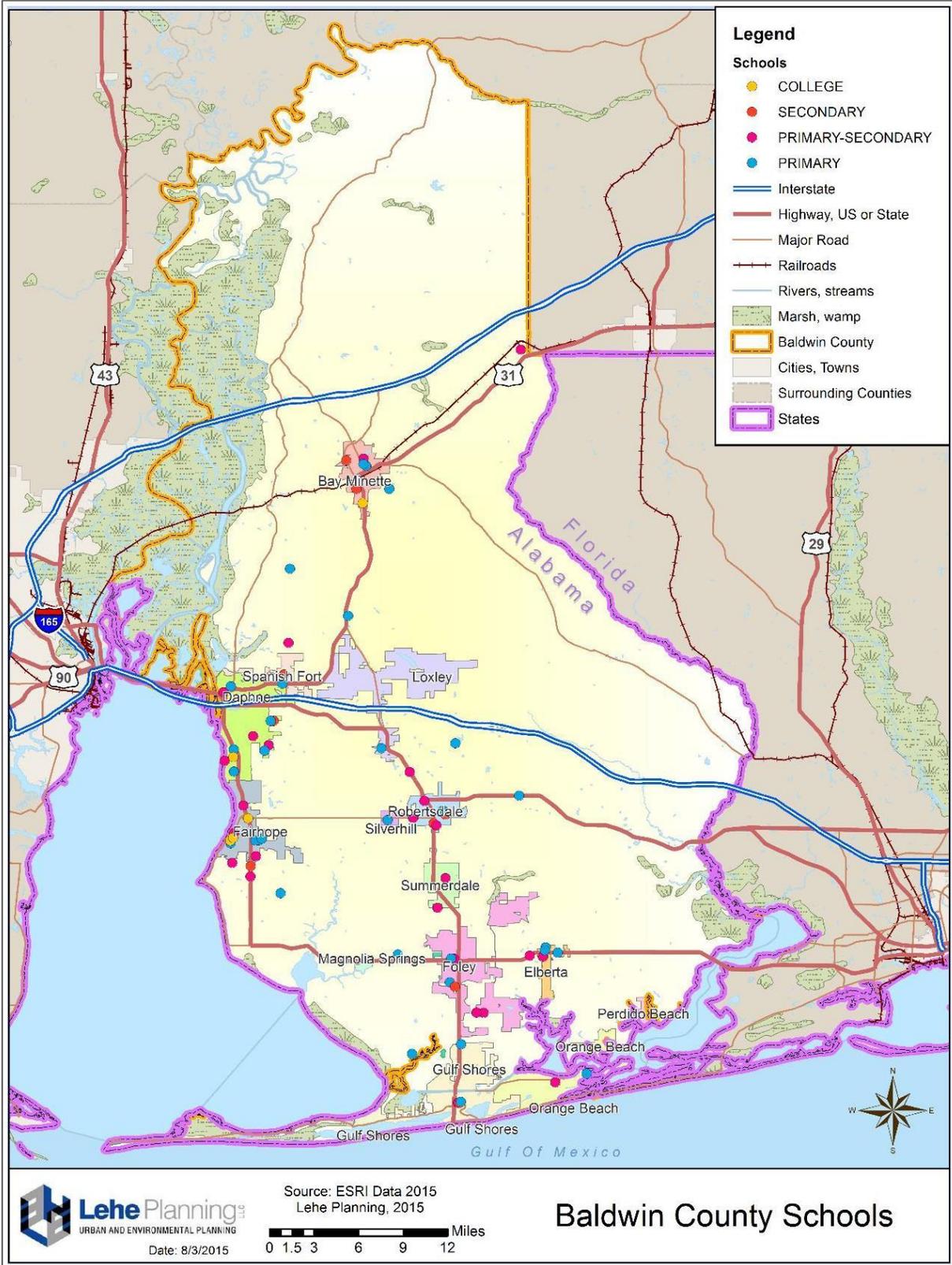
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Name	Students	Address	City	Zip
Eastern Shore Christian Academy	133	9078 Lawson Rd	Daphne	36526
J. Larry Newton Elementary	799	9761 CR 32	Fairhope	36532
Faith Christian Academy	75	18109 US HWY 98	Foley	36535
Grace Christian Academy	123	19470 Oak Rd W	Gulf Shores	36542
Victory Christian Academy	13	20511 CR 12 S	Foley	36535
St. Benedict Catholic School	169	12786 S Illinois St	Elberta	36530
St. Patrick Catholic School	198	23070 State Highway 59	Robertsdale	36567
Perdido Elementary	505	23589 CR 47	Perdido	36562
Summerdale School	543	400 E Broadway	Summerdale	36580
Good Shepherd Lutheran School	16	24933 Oak St	Elberta	36530
University of South Alabama - Baldwin Co	-	10 N Summit St	Fairhope	36532
University of South Alabama - Nursing Dept.	-	161 N Section St	Fairhope	36532
Faulkner State Community College	4094	1900 US Hwy 31 S	Bay Minette	36507
Huntingdon College	-	1903 Main St	Daphne	36526
Auburn University	-	8301 State Highway 104	Fairhope	36532

Source: US Department of Education, 2001

**Map 5-29. Baldwin County Schools**

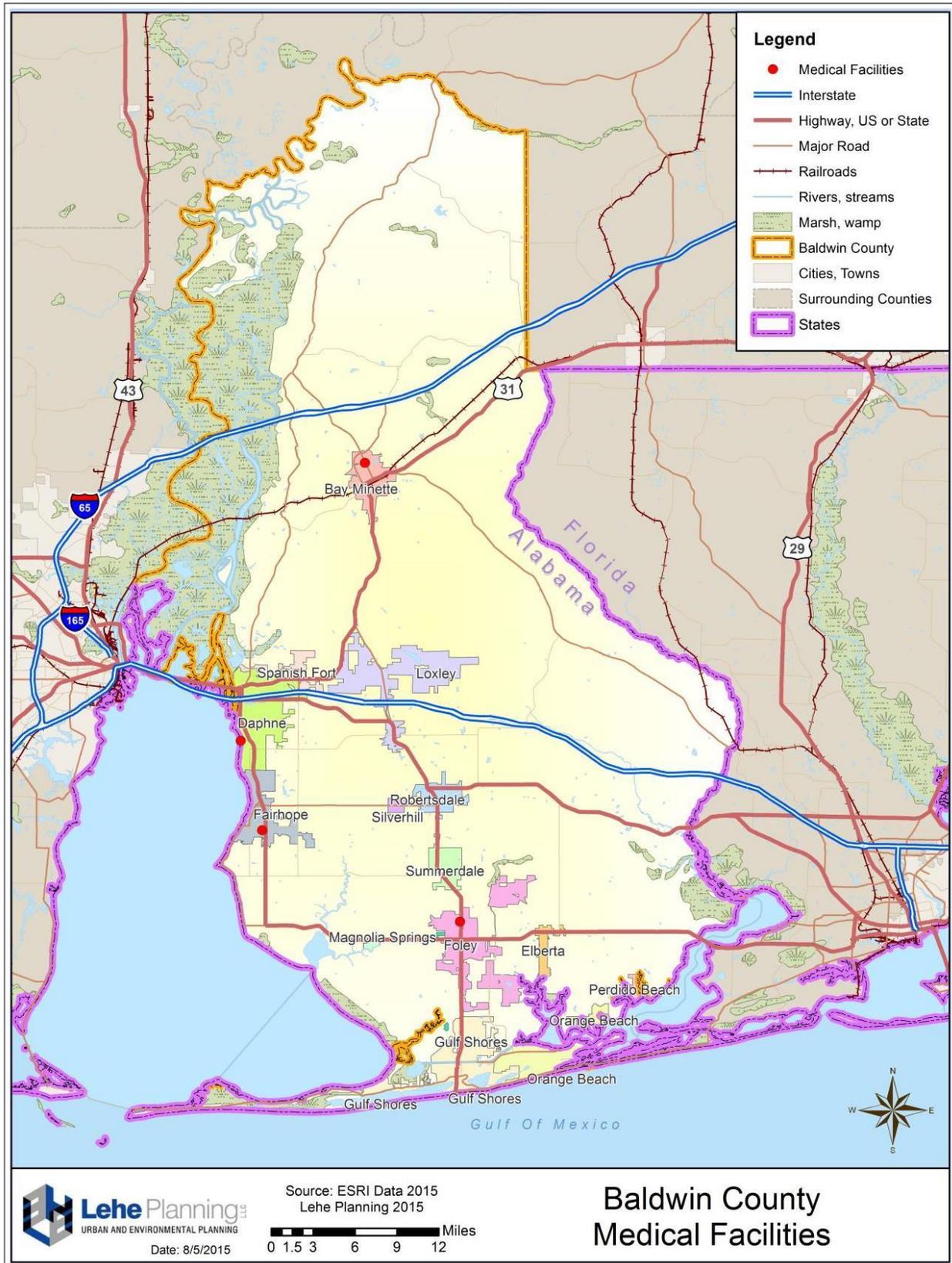


**Table 5-35. Baldwin County Medical Facilities**

<b>Name</b>	<b># Beds</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Mercy Medical	162	101 Villa Dr	Daphne	36526
North Baldwin Infirmary	43	1815 Hand Ave	Bay Minette	36507
South Baldwin Regional Medical Center	82	1613 N Mackenzie St	Foley	36535
Thomas Hospital	150	750 Morphy Ave	Fairhope	36532

Source: American Hospital Association, 2000

**Map 5-30. Baldwin County Medical Facilities**



**Table 5-36. Baldwin County Elderly Care Facilities**

<b>Name</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Age Well At Home, Inc.	620 E 21st Ave	Gulf Shores	36542
Azalea Place Assisted Living	2411 S Highway 31	Bay Minette	36507
Bay Minette Rotary Village	2211 McMillan Ave	Bay Minette	36507
Beverly Healthcare	108 S Church St	Fairhope	36532
Community Health Care Systems	25819 Canal Rd	Orange Beach	36561
Community Hospice	2770 S McKenzie St	Foley	36535
Community Hospice Of Baldwin	311 Dolive St	Bay Minette	36507
Covenant Hospice	6475 Van Buren St	Daphne	36526
Crossroad Assisted Living	42020 Snowden Ln	Bay Minette	36507
Foley Nursing Home	1701 N Alston St	Foley	36535
Garden of Daphne	1307 Daphne Ave	Daphne	36526
Hamlet Retirement Home	214 Windsor Dr N	Fairhope	36532
Homestead Village Of Fairhope	924 Plantation Blvd	Fairhope	36532
Hospice South	1113 N McKenzie St	Foley	36535
Magnolia House, Inc.	10171 Papageorge St	Daphne	36526
Magnolia Manors of Bay Minette	709 W 14th St	Bay Minette	36507
Mid Delta Hospice	300 S Greeno Rd	Fairhope	36532
Montrose Bay Health Care Center	22670 Main St	Montrose	36559
Nursing Advantage, Inc.	22913 CR 62 N	Robertsdale	36567
Oakwood	2010 Medical Center Dr	Bay Minette	36507
Robertsdale Healthcare Center	18000 US Hwy 90	Robertsdale	36567
Skilled Nursing At Westminster	500 Spanish Fort Blvd	Spanish Fort	36527
William F Green St Vet Home	300 Faulkner Dr	Bay Minette	36507
Wiregrass Hospice, Inc.	23210 US 98	Fairhope	36532

Source: Derived from US Company Database, 2013

**Map 5-31. Baldwin County Elderly Care Facilities**

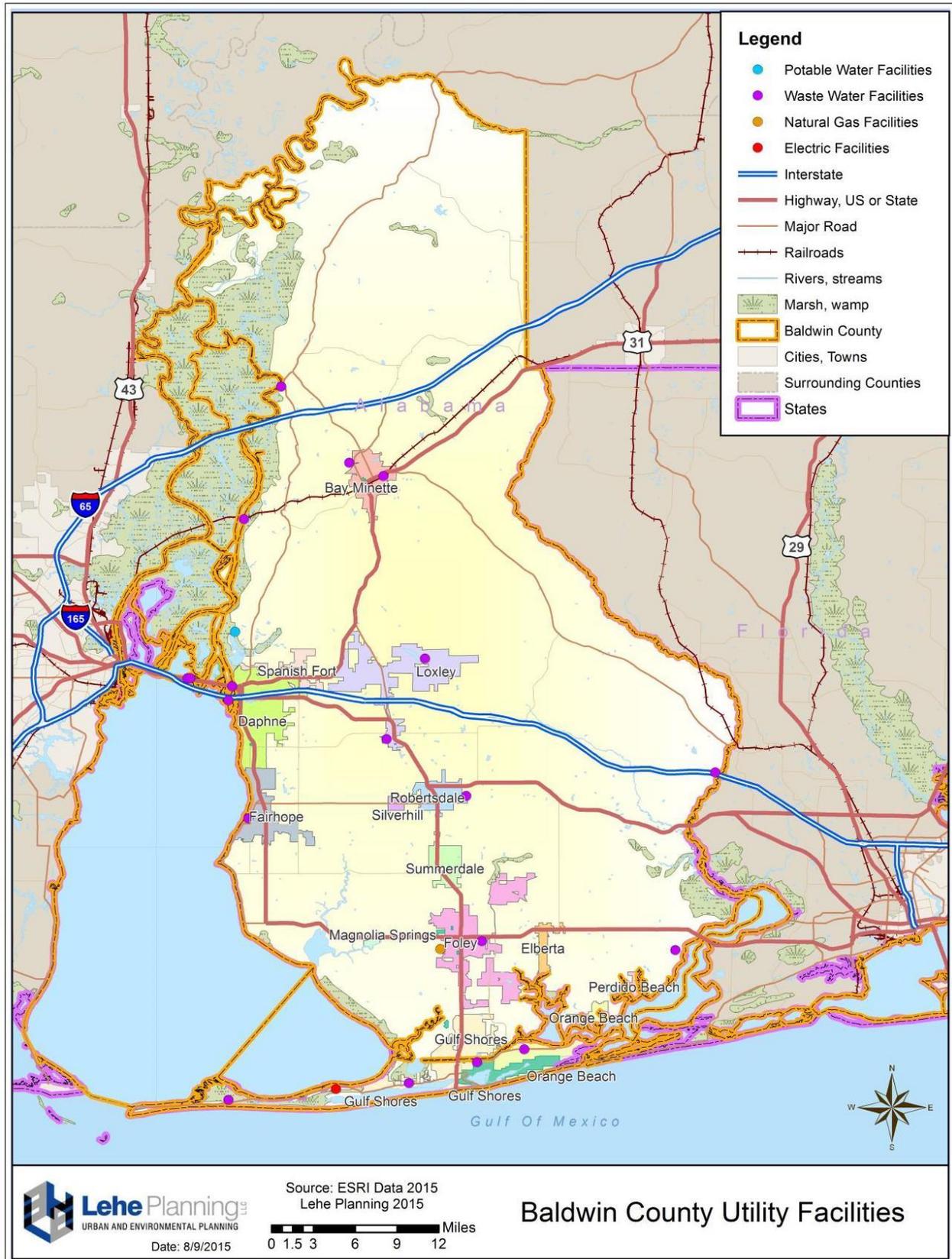


**Table 5-37. Baldwin County Utilities**

<b>Name</b>	<b>City</b>	<b>Zip</b>	<b>Latitude</b>	<b>Longitude</b>
ADOT I-10 Welcome Center Lagoon	Loxley	36551	30.57767	-87.41919
Baldwin County Electric Cooperation	Gulf Shores	36547	30.24875	-87.81328
Bay Minette Martin Br Lagoon	Bay Minette	36507	30.89947	-87.79936
Fairhope Sewage Treatment Plant	Fairhope	36532	30.529969	-87.904249
Foley Waste Water Treatment Plant	Foley	36535	30.4025	-87.66172
Gulf Shores Waste Water Treatment Plant	Gulf Shores	36542	30.27664	-87.66661
Harry Still Sr Waste Water Treatment Plant	Bay Minette	36507	30.88558	-87.764059
Lake Forest Waste Water Treatment Plant	Daphne	36526	30.6525	-87.924999
Landing Incorporation Wastewater Treatment Plant	Stockton	36579	30.97858	-87.87017
Lillian Sewer Co LLC WWTP	Lillian	36549	30.39314	-87.46053
Loxley Town Of Lagoon	Loxley	36551	30.612279	-87.760829
Orange Beach City Of	Orange Beach	36561	30.289919	-87.61758
Pollution Contl. Sys Ft Morgan	Fort Morgan	36542	30.237499	-87.924999
Riverdocs, Inc.	Daphne	36526	30.675499	-87.96764
Riviera Utilities	Foley	36535	30.394169	-87.704719
Robertsdale WWTP	Robertsdale	36567	30.55328	-87.677999
South Ala Sewer Services WWTP	Fort Morgan	36542	30.25503	-87.73744
Spanish Fort Water System, Inc.	Spanish Fort	36527	30.724	-87.91819
Steelwood Limited WWTP	Loxley	36551	30.69614	-87.72083
Tensaw Island Land Shores WWTP	Bay Minette	36507	30.840969	-87.90883

Source: Environmental Protection Agency, 2001

**Map 5-32. Baldwin County Utilities**



**Table 5-38. Baldwin County Communication Facilities**

Name	Owner	City
WEIQ CH 42	Alabama Educational TV Co.	Mobile
WPMI CH 15	Clear Channel Broadcasting	Mobile
WALA-TV CH 10	Emmis Television License	Mobile
WEAR-TV CH 3	Wear Licensee, LLC	Pensacola
WMPV-TV CH 21	Trinity Broadcasting Network	Mobile
WHBR CH 33	Christian Television of Pensacola	Pensacola
WKRG-TV CH 5	Media General Broadcasting	Mobile
WJTC CH 44	Clear Channel Broadcasting	Mobile
WBPG CH 55	WBPG License Corp.	Gulf Shores
WLVV 1410	WLVV, Inc.	Mobile
WDLT 660	Cumulus Licensing Corp.	Fairhope
WBCA 1110	Southern Media Communications	Bay Minette
WABF 1220	Gulf Coast Broadcasting Co.	Fairhope
WDXZ 1000	Great American Radio Network	Robertsdale
WBLX-FM CH 225	Cumulus Licensing Corp.	Mobile
WYOK CH 281	Cumulus Licensing Corp.	Atmore
WMXC CH 260	Clear Channel Broadcasting	Mobile
WJLQ CH 264	Cumulus Licensing Corp.	Pensacola
WNSP CH 288	Com+, LLC	Bay Minette
WBHY-FM CH 203	Goforth Media, Inc.	Mobile
WXBM-FM CH 274	6 Johnson Rd Licenses	Milton
WPCS CH 208	Pensacola Christian College	Pensacola
WCSN-FM CH 289	Gulf Coast Broadcasting Co.	Orange Beach
WRKH CH 241	Clear Channel Broadcasting	Mobile
WKSJ-FM CH 235	Clear Channel Broadcasting	Mobile
WTKX-FM CH 268	Clear Channel Broadcasting	Pensacola
WHIL-FM CH 217	Spring Hill College	Mobile

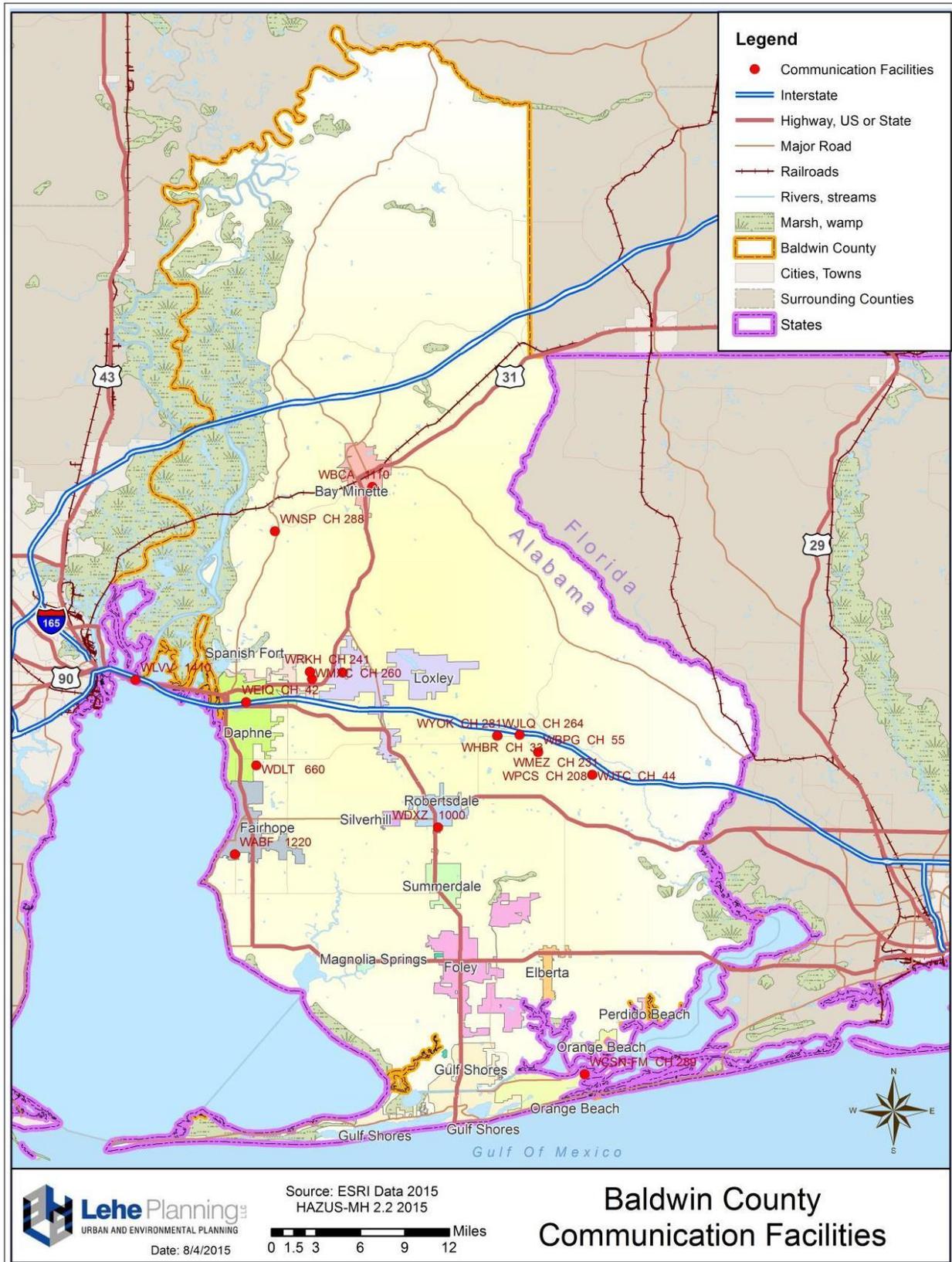
# CHAPTER 5

## 2015 Baldwin County Multi-Hazard Mitigation Plan

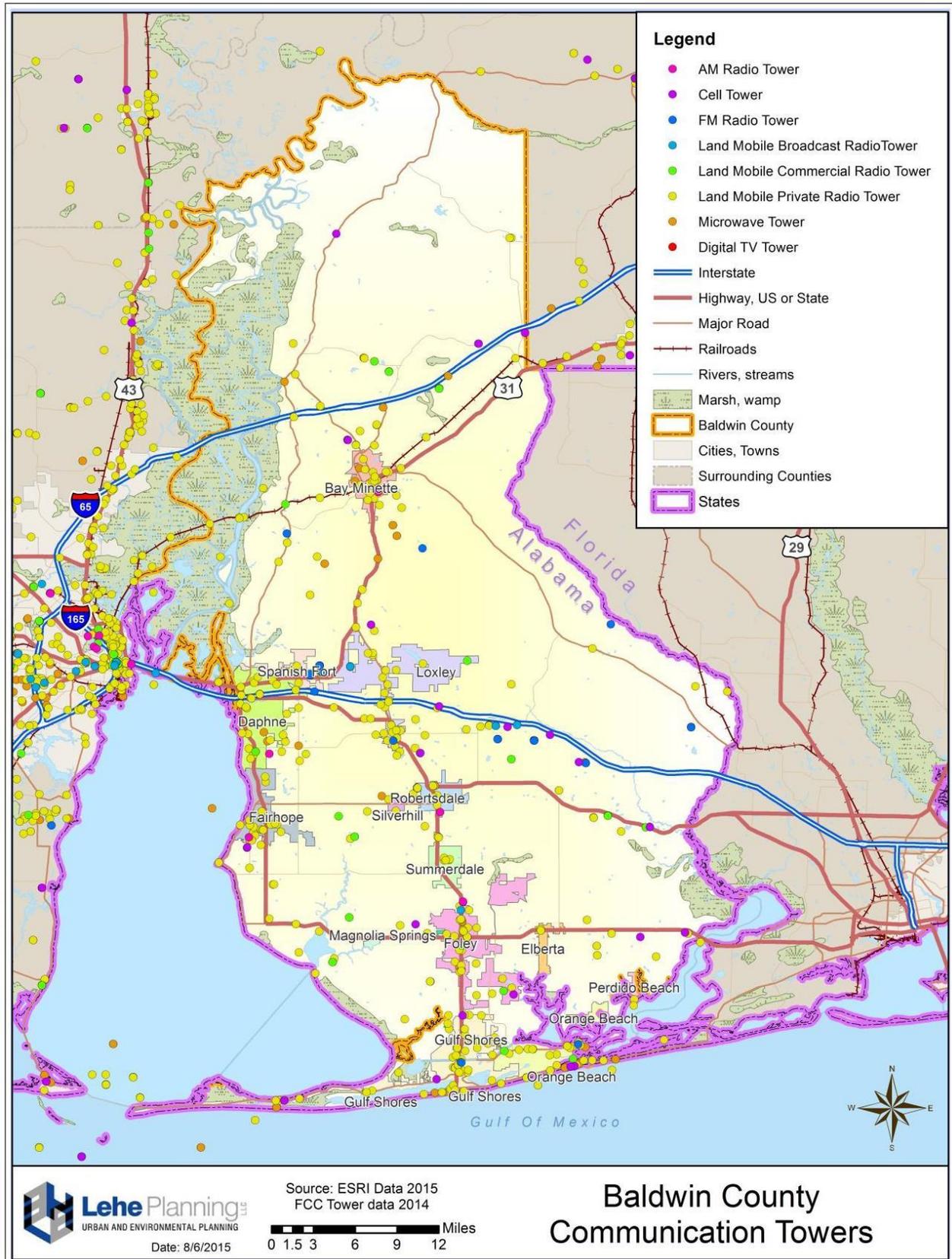
Name	Owner	City
WABB-FM CH 248	WABB-FM, Inc.	Mobile
WMEZ CH 231	6 Johnson Rd Licenses	Pensacola

Source: Federal Communication Commission, 2001

**Map 5-33. Baldwin County Communication Facilities**



**Map 5-34. Baldwin County Communication Towers**

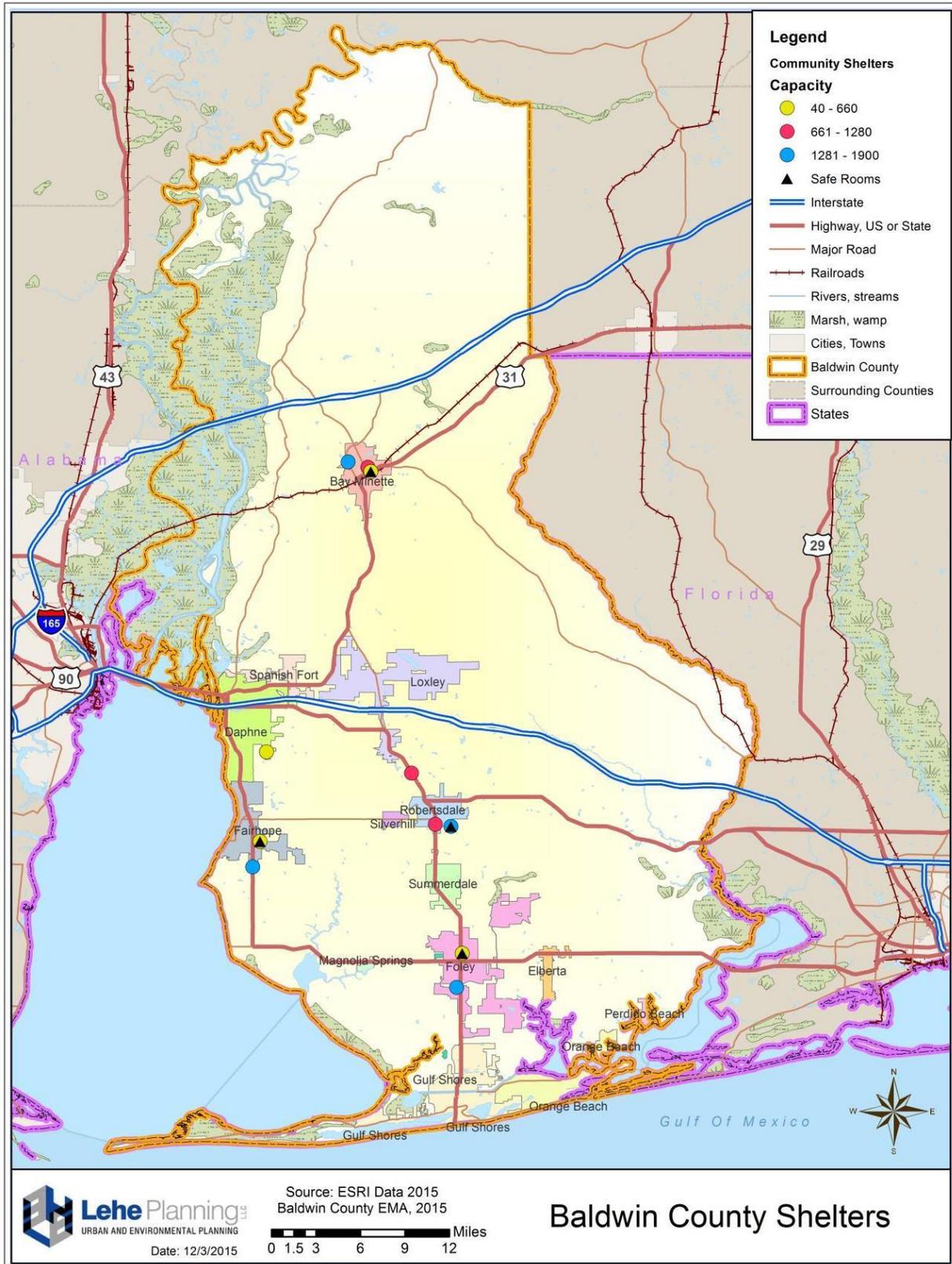


**Table 5-39. Baldwin County Emergency Shelters**

<b>Name</b>	<b>Capacity</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
Baldwin County High School	1733	1 Tiger Dr	Bay Minette	36507
Bay Minette Middle School	700	600 Blackburn Ave	Bay Minette	36507
Central Baldwin Middle School	813	24545 State Hwy 59	Robertsdale	36576
Daphne East Elementary School	388	26651 CR 13	Daphne	36526
Fairhope High School	1357	18800 Greeno Rd	Fairhope	36532
Foley High School	1377	1 Pride Pl	Foley	36535
Robertsdale High School	858	1 Golden Bear Dr	Robertsdale	36567
Baldwin County Coliseum	1900	19477 Fairground Rd	Robertsdale	36567
Fairhope Satellite Courthouse	40	1100 Fairhope Ave	Fairhope	36532
Foley Satellite Courthouse	40	201 East Section St	Foley	36535
Baldwin Co (Level 2) Community Shelter	50	207 N White Ave	Bay Minette	36507

Source: Baldwin County Emergency Management Agency, 2015

**Map 5-35. Baldwin County Emergency Shelters**

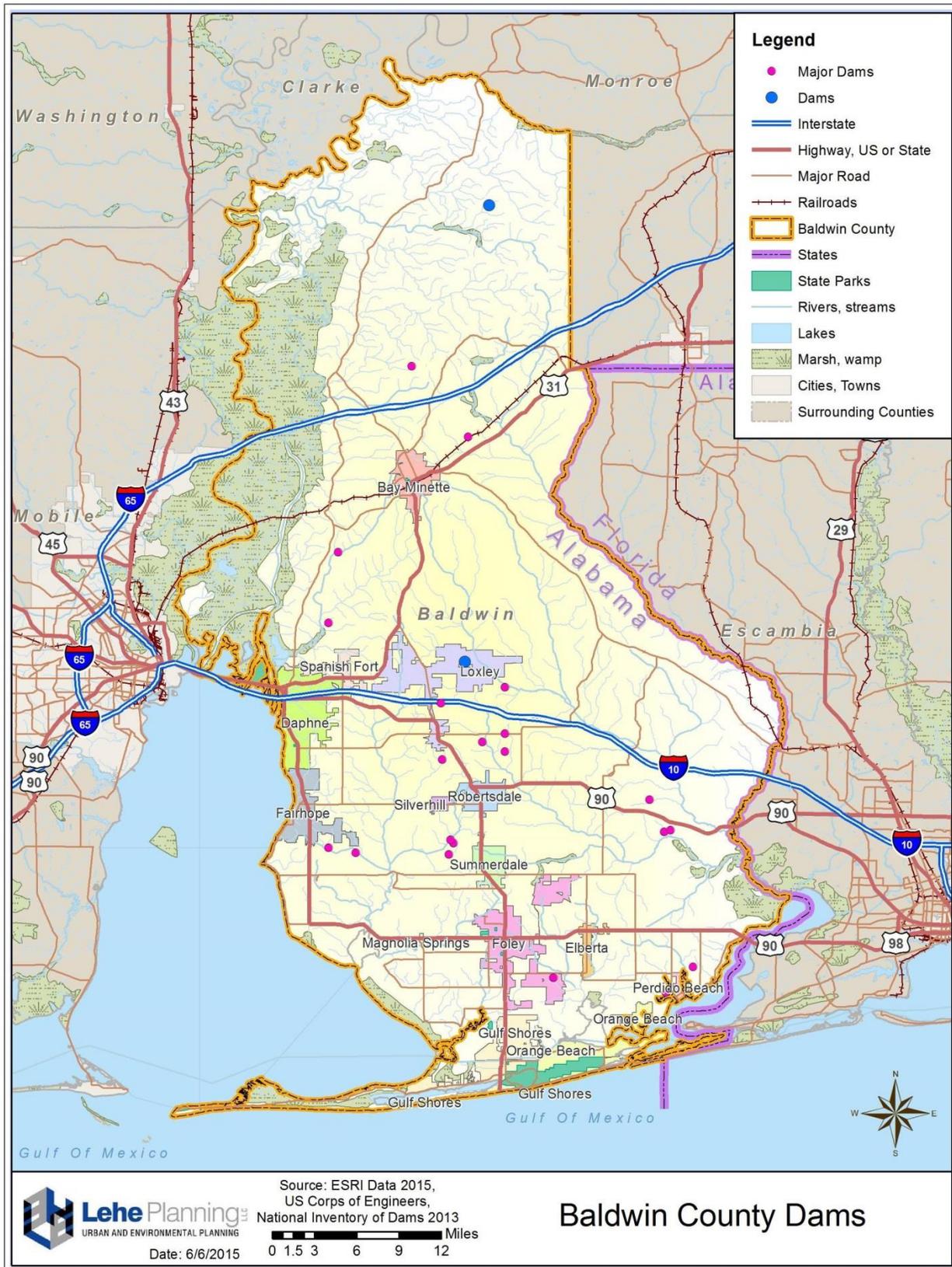


**Table 5-40. Baldwin County Dams**

Dam Name	River	Year Completed	NID Height (Ft.)	Max Discharge	Max Storage
Baroco Lake Dam No. One	TR-Soldier Creek	1970	12	500	53
Bob Pace	TR-Blackwater River	1973	17	184	323
Branchland Lake Dam	Cowpen Creek - Offstream	1958	18	700	72
Calvin Childers Lake Dam No. One	TR-Polecat Creek	1968	16	500	70
Calvin Childers Lake Dam No. Two	TR-Polecat Creek	1958	22	370	100
Childress Dam	TR-Blackwater River	1981	15	330	142
Cook Lake Dam	TR-Blackwater River	1955	12	500	100
Cooper Number One	Mill Creek	1968	14	271	233
Corte Dam	Fly Creek	1981	21	580	73
Crosby Lumber Co.	TR- McCurtin Creek	1972	17	1,200	200
Deep South Girl Scouts Lake	Aikin Creek	1983	30	-	583
John Q. Kendrick	TR-Styx River	1968	21	105	180
JP Bertolli	TR-Styx River	1955	15	80	93
Lake Bobo	TR-Joes Creek	1974	15	99	160
Lake Muriel	Owens Creek	1967	16	210	512
Laupero Use	TR-Bay Minette Creek	1957	19	127	132
Miles Neuman	TR-Spring Branch	1979	18	384	232
Patterson	Seven Mile Creek	1958	34	800	2,640
Paul Childress Lake Dam	TR-Blackwater River	1951	10	-	80
Raynag UA	Perone Branch	1969	17	550	404
Stacey Lake Dam	TR-Whitehouse Creek	1968	15	700	65
Tennessee Coal & Iron	Roans Creek	1953	24	13,000	2,000
Wynn Brothers Lake Dam	TR-Polecat Creek	1969	35	500	140

Source: Army Corps of Engineers, National Inventory of Dams, 1999

**Map 5-36. Baldwin County Dams**

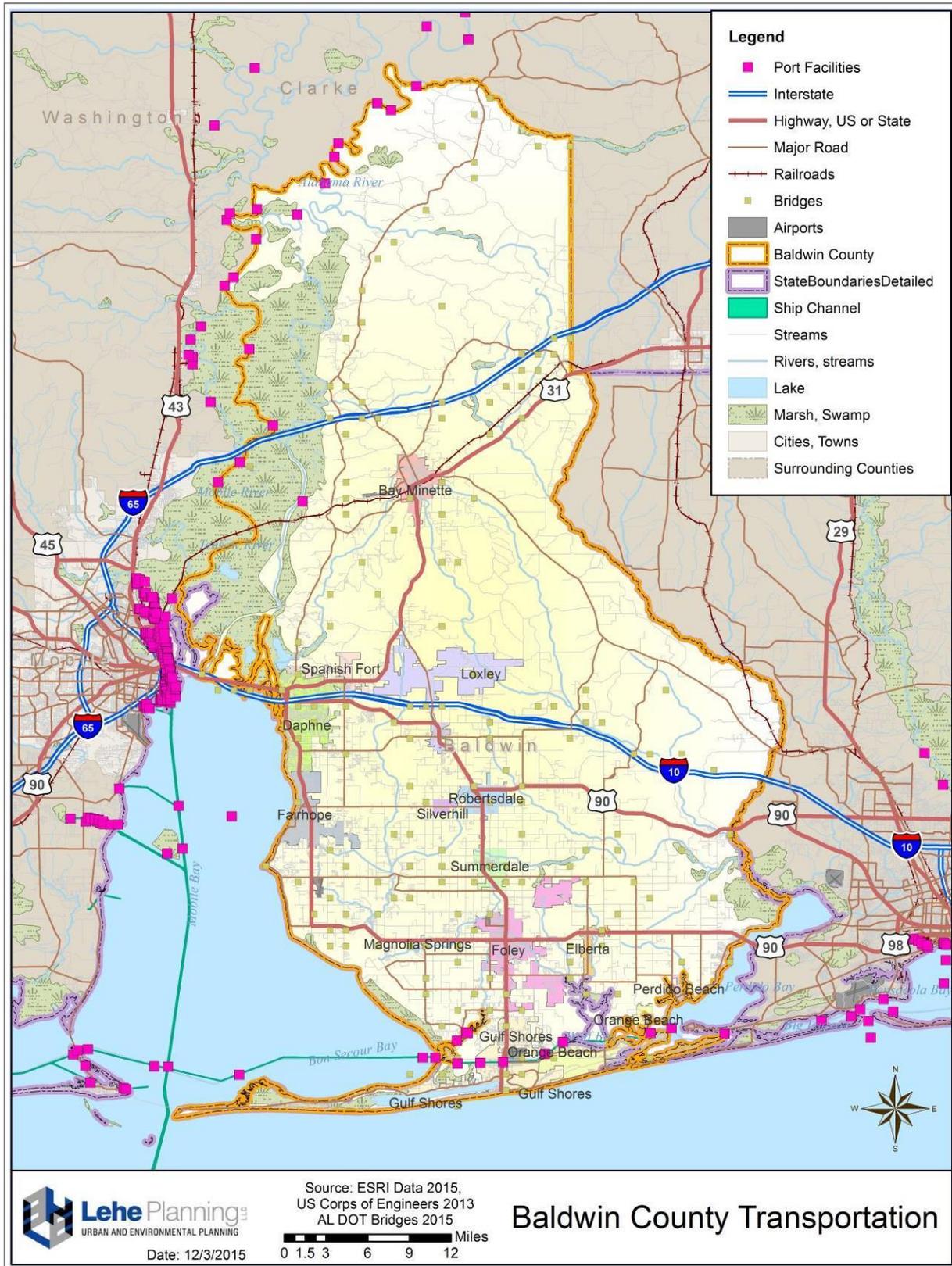


**Table 5-41. Baldwin County Port Facilities**

<b>Port Facility</b>	<b>City</b>	<b>Waterway</b>
Alabama River Cut-off	Stockton	Alabama-Coosa Rivers, AL and GA
Andrew G Inc.	Gulf Shores	Bon Secour River, AL
C&H Towing, Inc.	Gulf Shores	Bon Secour River, AL
Dredge Area	Orange Beach	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Ewin Seafood Co.	Gulf Shores	Bon Secour River, AL
Gulf Coast Bagged Products	Gulf Shores	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Miflin and Wolf Creek	Orange Beach	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Mile 162 GIWE Bank Unloading	Orange Beach	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Mt. Vernon Landing (Pulpwood)	Stockton	Mobile River Channel
Orange Beach, AL	Orange Beach	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Portage Creek	Gulf Shores	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Reynold (Sand)	Gulf Shores	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Tensaw River Docks & Storage Yard Wharf	Bay Minette	Mobile River Channel
Vulcan Materials	Gulf Shores	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL
Wilken Bend Landing	Stockton	Alabama-Coosa Rivers, AL and GA
Zekes Landing	Orange Beach	Gulf Intracoastal Waterway, Pensacola Bay, FL to Mobile Bay, AL

Source: US Army Corps of Engineers, 2000 (\*Port facilities are portrayed on Map 5-37)

**Map 5-37. Baldwin County Transportation Infrastructure**



## 5.6 Estimate of Dollar Losses to Vulnerable Structures

### 5.6.1 Scope and Purpose of Loss Estimates

This section provides estimates of damages to vulnerable structures identified above in Section 5.5. Loss estimates are calculated using the structure, contents, and function of each asset. The following definitions are used:

- ✓ *Structure loss* – (% damage) X (\$ replacement value of the structure)
- ✓ *Content loss* – (% damage) X (\$ replacement value of the contents)
- ✓ *Functional Loss* - indirect effects of the hazard, such as the days of interruptions in operations that an asset incurs during an event.

For hazards with damage records, loss estimates count damages from the most probable severity. For location-specific events, loss estimates evaluate the affected parts of each jurisdiction. Although these estimates are broad, they can be useful in roughly assessing the benefits and costs of a proposed mitigation project. Moreover, these estimates provide a basis for selecting and prioritizing actions recommended by the Mitigation Strategy in Chapter 6.

This section also describes methodology and highlights limitations of insufficient data and lack of reliable methods. Measures for compiling and analyzing data to improve risk assessment studies appear in Section 5.6.5 “Recommended Risk Assessment Measures.”

As explained above, most hazards are county-wide. In the case of county-wide hazards, exposure is distributed uniformly over all municipalities and unincorporated areas. County-wide hazards include tornadoes, severe storms, winter storms/freezes, droughts/heat waves, wildfires, and earthquakes. In contrast, exposure to location-specific hazards—including flooding, dam/levee failures, sinkholes and landslides—varies widely among jurisdictions.

### 5.6.2 Loss Estimate Methodology

#### Method 1: HAZUS-MH Loss Estimates

This plan estimates losses using HAZUS-MH, which was used as a basis for the vulnerable structures inventory of Section 5.5. HAZUS-MH uses approximations and algorithms to estimate losses, so results do not reflect actual losses with certainty. These loss estimates are most useful for judging the hazard’s risk *relative to* other hazards and the vulnerability of a structure *relative to* other structures, rather than as absolute measures of likelihood and economic appraisal. These 2015 HAZUS-MH loss estimates are updates of the 2010 plan estimates.

HAZUS-MH offers three levels of analysis. Level 1 requires the least amount of local data and is sufficient for mitigation policy planning purposes. A Level 1 analysis relies on the national data set provided with HAZUS-MH. The analysis provides general loss estimates for earthquakes, floods, and hurricane winds. All loss estimates are at a

county level, which is the smallest geographic area of meaningful analysis using HAZUS-MH.

**Method 2: Estimates Based on Historical Records**

Data and records from Section 5.4 supplemented the HAZUS-MH data to prepare loss estimates. Damage data and records of previous occurrences were obtained from the following primary sources:

1. NFIP insurance claims data (see Section 5.8);
2. NOAA, National Climatic Data Center damage estimates (see damage summaries in Section 5.4 “Hazard Profiles” and Appendix E “Hazard Profile Data”);
3. National Weather Service Alabama Tornado database; and
4. Alabama State Hazard Mitigation Plan, 2013 update, section 5.4 “Vulnerability Assessment and Loss Estimation.”

**Jurisdictional Estimates**

To derive jurisdictional estimates, the planning team used existing (2014) and future (2035) population estimates to distribute losses among Baldwin County’s 15 jurisdictions. Population distribution appears in Table 5-42 below. (See Section 5.5.2 “Inventory Methodology”). The damage estimates in this section, however, only apply to existing conditions.

**Table 5-42. Population Distribution by Jurisdiction, 2014 & 2035**

Jurisdiction	Estimated 2014	% of 2014	Projected 2035	% of 2035 Projection
Bay Minette	9,049	4.5%	11,105	3.92%
Daphne	24,395	12.5%	47,849	16.90%
Elberta	1,634	0.8%	4,970	1.76%
Fairhope	18,089	9.0%	35,050	12.38%
Foley	16,243	8.1%	46,074	16.27%
Gulf Shores	10,963	5.5%	31,661	11.18%
Loxley	1,725	0.9%	2,437	0.86%
Magnolia Springs	782	0.4%	1,180	0.42%
Orange Beach	5,788	2.9%	13,216	4.67%
Perdido Beach	624	0.3%	907	0.32%
Robertsdale	5,773	2.9%	12,431	4.39%
Silverhill	754	0.4%	984	0.35%
Spanish Fort	7,806	3.9%	14,880	5.26%
Summerdale	1,005	0.5%	1,677	0.59%
Unincorporated	95,481	47.4%	58,693	20.73%
Baldwin Co	200,111	100%	283,120	100.00%

Source: US Census, AL State Data Center

**5.6.3 HAZUS-MH Loss Estimates**

The planning team utilized HAZUS-MH to estimate losses. Global Summary and Quick Assessment Reports of the HAZUS-MH runs contain detailed results. These studies, maps, and reports were prepared by a qualified GIS professional with advanced HAZUS training classes completed at the FEMA Emergency Management Institute in Emmitsburg, Maryland, and extensive experience in its local application to mitigation planning. The following HAZUS-MH reports are on file with the Baldwin County EMA and available for public review:

1. HAZUS-MH Probabilistic 100-Year Hurricane Global Summary and Quick Assessment Reports, dated July 29, 2015.
2. HAZUS-MH Hurricane Frederic Global Summary and Quick Assessment Reports, dated July 29, 2015.
3. HAZUS-MH 500 Year Earthquake Event Global Summary and Quick Assessment Reports, dated August 10, 2015

**Hurricane Loss Estimates**

The planning team used HAZUS-MH to assess two hurricane events: a 100-year scenario and the 1979 Frederic historical event. Hurricane Frederic unleashed high winds and flooding and spawned tornadoes across Alabama, but HAZUS only assesses the hurricane wind effects. The following Tables 5-43 and 5-44 show the loss estimates generated by HAZUS-MH for each of these events, followed by Maps 5-38 through 5-42, which show the geographic distribution of economic losses, debris volume, and wind speeds (for Frederic only).

Probabilistic Hurricane Scenario. The HAZUS model estimates that a 100-year hurricane event would cause \$5.4 billion of damage and cause at least moderate damage to 23% of all buildings. Finally, a 500-year hurricane event, with only a 0.2 percent of occurring in any year, would cause catastrophic damage throughout Baldwin County as a result of its coastal location. HAZUS estimates that nearly 90 percent of all buildings would suffer damage, and losses would total close to \$14.5 billion. Almost 17% of all buildings would be destroyed in a 500-year hurricane event.

Maps 5-38 and 5-39 show direct economic losses and debris volume generated, by census tract, as a result of a 100-year hurricane. The predicted damages would be compounded by storm surge and flooding since the HAZUS model only assesses wind effects. Inland communities, such as Bay Minette and Loxley, would incur no additional damage from storm surge, but coastal communities, especially Perdido Beach, Orange Beach, and Gulf Shores can expect significantly more damage than HAZUS estimates, due to storm surge. Community impacts from hurricane winds can best be compared by a careful review of the HAZUS-generated maps, which show the locations of estimated economic losses in relation to each municipality.

**Table 5-43. 100 Year Hurricane Event Loss Estimates**

**General Building Stock**

<i>Occupancy</i>	<i>Building Count</i>	<i>Dollar Exposure (\$ K)</i>
Residential	82,185	18,841,781
Commercial	4,154	2,837,089
Other	2,203	1,464,079
<b>Total</b>	<b>88,542</b>	<b>23,142,949</b>

**Number of Residential Buildings Damaged**

<i>Return Period</i>	<i>Minor</i>	<i>Moderate</i>	<i>Severe</i>	<i>Destruction</i>	<i>Total</i>
10	974	129	3	0	1,106
20	9,130	1,900	76	56	11,163
50	25,886	11,247	1,722	1,021	39,876
100	27,460	18,843	5,668	3,417	55,388
200	9,264	10,324	10,117	9,129	38,854
500	17,122	24,367	17,686	14,552	73,728
1000	12,326	22,718	21,563	21,079	77,686

**Number of Buildings Damaged**

<i>Return Period</i>	<i>Minor</i>	<i>Moderate</i>	<i>Severe</i>	<i>Destruction</i>	<i>Total</i>
10	1,054	135	3	0	1,192
20	9,690	2,093	105	57	11,945
50	27,338	12,459	2,181	1,038	43,017
100	28,893	20,578	6,846	3,469	59,786
200	9,766	11,061	11,573	9,259	41,658
500	17,949	26,201	20,569	14,750	79,468
1000	12,911	24,332	25,067	21,365	83,675

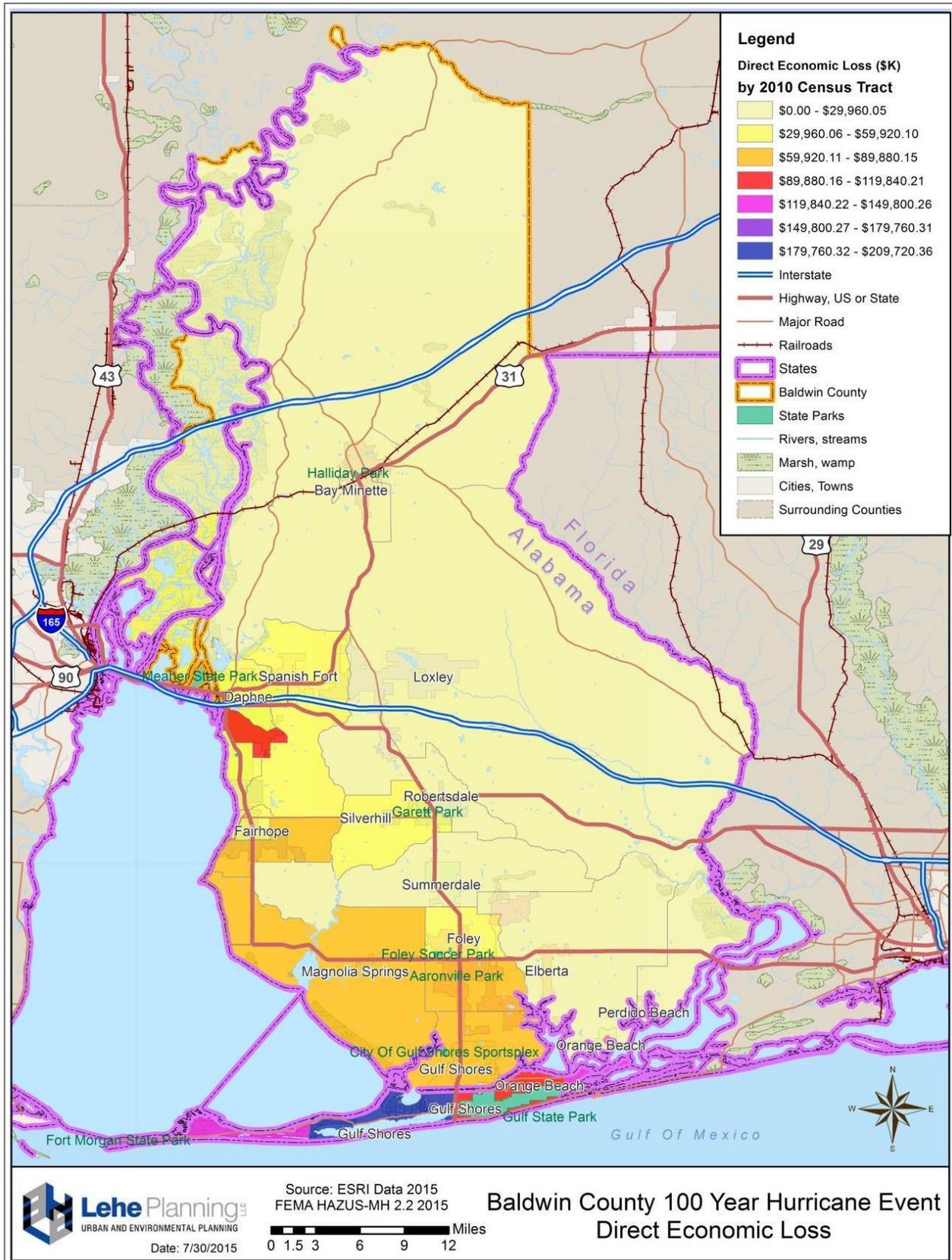
**Shelter Requirements**

<i>Return Period</i>	<i>Displaced Households (#Households)</i>	<i>Short Term Shelter (#People)</i>
10	24	5
20	316	69
50	2,475	566
100	7,663	1,759
200	15,843	3,733
500	30,494	7,044
1000	40,650	9,387

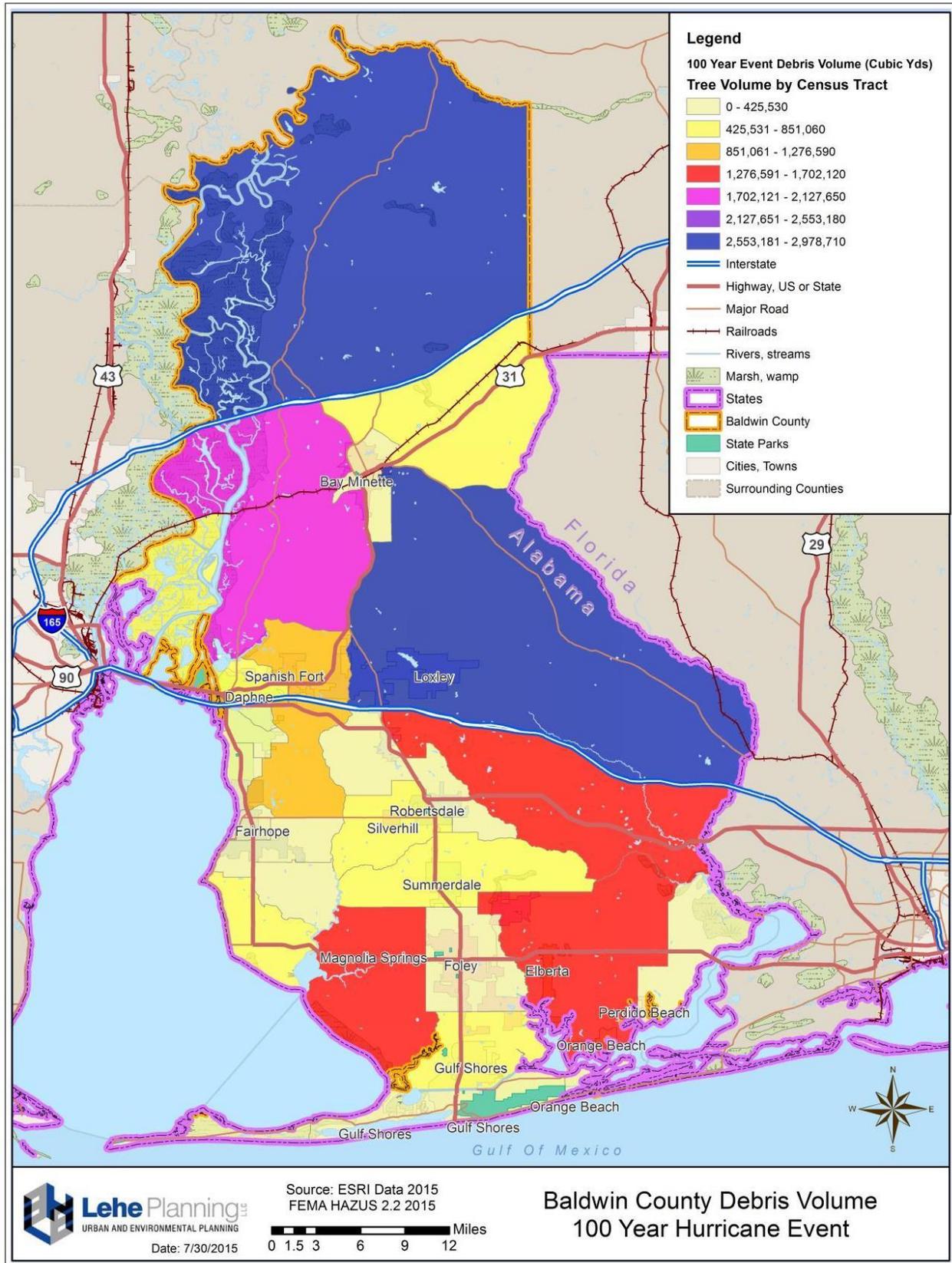
**Economic Loss (x 1000)**

<i>Return Period</i>	<i>Property Damage (Capital Stock) Losses</i>		<i>Business Interruption (Income) Losses</i>
	<i>Residential</i>	<i>Total</i>	
10	73,503	74,925	4,502
20	375,709	400,520	40,858
50	1,807,276	2,075,051	315,164
100	3,997,114	4,681,585	741,581
200	6,886,683	8,046,853	1,097,339
500	10,641,653	12,687,122	1,792,568
1000	13,445,075	16,141,322	2,213,954
<b>Annualized</b>	<b>145,468</b>	<b>168,835</b>	<b>23,263</b>

**Map 5-38. 100 Year Hurricane Event Direct Economic Loss**



**Map 5-39. 100 Year Hurricane Event Debris Volume**



Hurricane Frederic Scenario. The HAZUS-MH assessment reports major building damage resulting from peak wind gusts of as high as 124 mph for Hurricane Frederic. Over 36 percent (32,000) of all buildings in Baldwin County would receive some damage and 500 of those damaged buildings would be destroyed. HAZUS reports over \$1,526 million in building and related damage. Map 5-40 shows direct economic loss by census tract, as a result of a hurricane similar to Frederic. Areas along the Gulf Coast, such as Gulf Shores, Orange Beach, and Daphne would experience the greatest economic loss. Map 5-41 shows the volume of debris accumulated as a result of a hurricane of this magnitude. Most of the debris generation lies in areas north of I-10 and I-65. Map 5-42 portrays Hurricane Frederic wind speeds; communities along the Gulf Coast experience the highest wind speeds.

**Table 5-44. Hurricane Frederic Loss Estimates**

**General Building Stock**

<i>Occupancy</i>	<i>Building Count</i>	<i>Dollar Exposure (\$ M)</i>
Residential	82,185	18,842
Commercial	4,154	2,837
Other	2,203	1,464
<b>Total</b>	<b>88,542</b>	<b>23,143</b>

**Number of Buildings Damaged**

<i>Damage State</i>	<i>Residential</i>	<i>Commercial</i>	<i>Other</i>	<i>Total</i>
Minor	21,000	800	400	22,000
Moderate	7,400	600	200	8,200
Severe	900	200	80	1,100
Destruction	500	<10	<10	500
<b>Total</b>	<b>30,000</b>	<b>1,600</b>	<b>800</b>	<b>32,000</b>

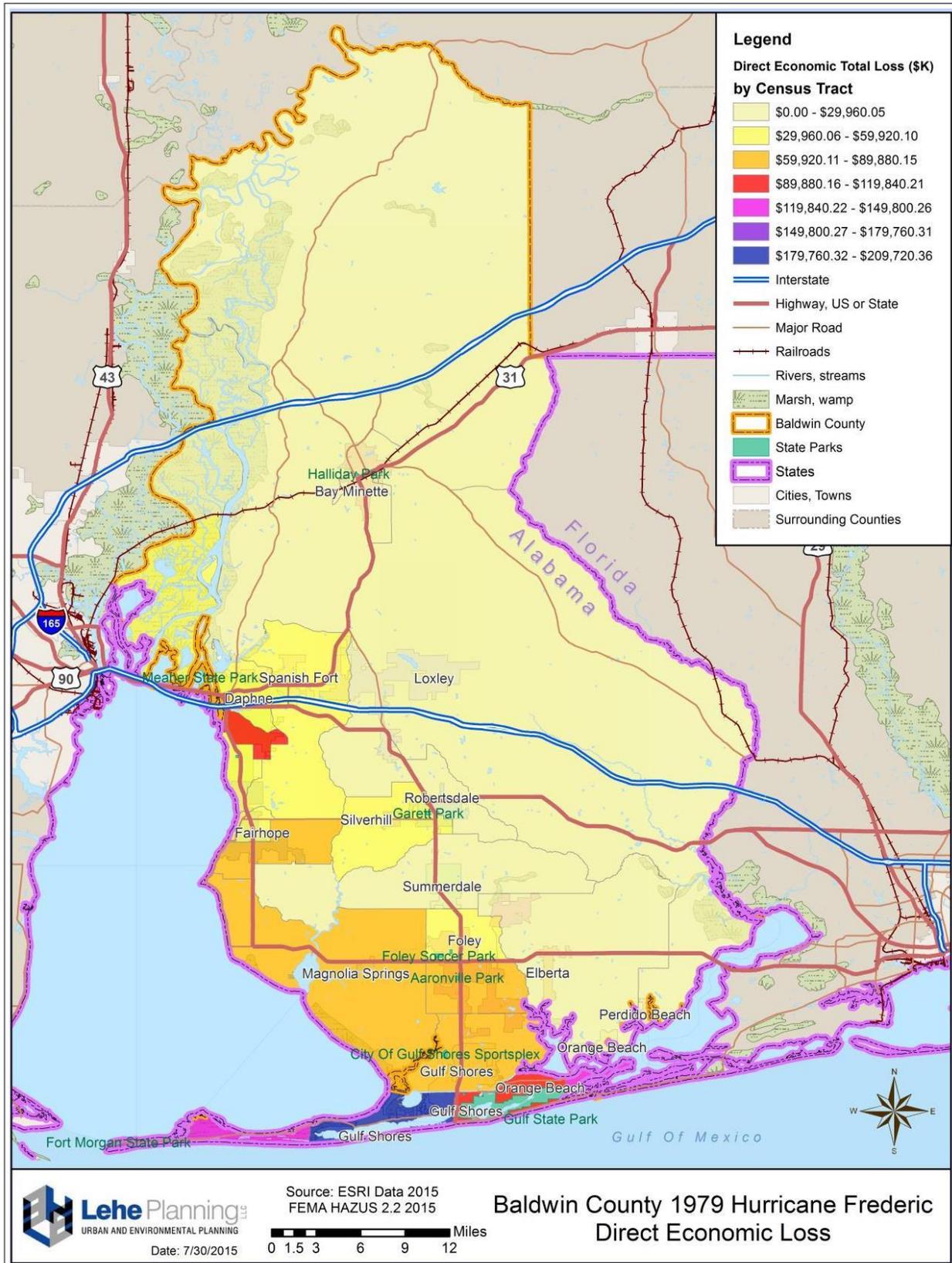
**Shelter Requirements**

Displaced Households (# Households)	1,400
Short Term Shelter (# People)	300

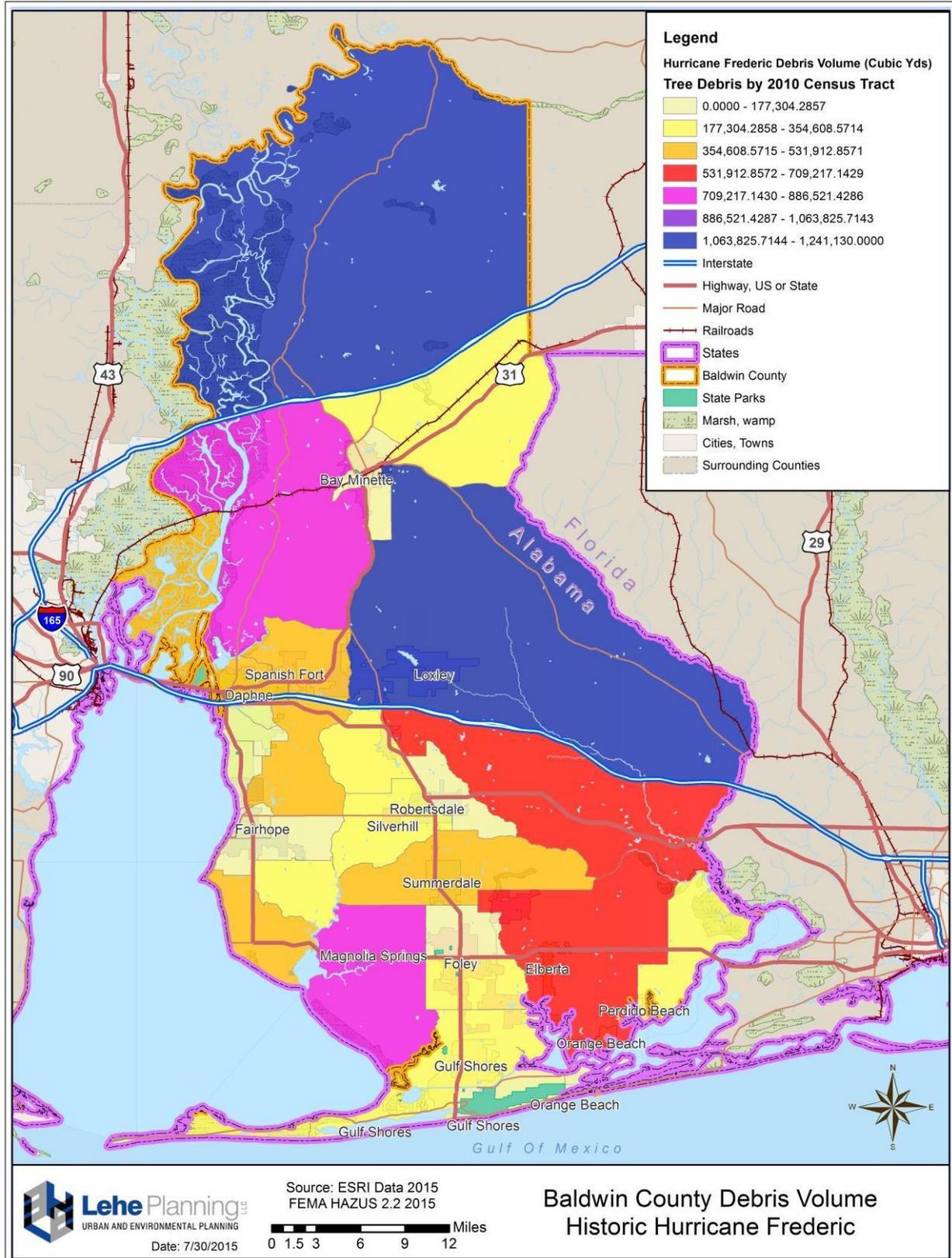
**Economic Loss ( \$ Millions )**

Capital Stock	1,339
Residential Property	1,192
Commercial Property	105
Other Property	42
<b>Business Interruption (Income)</b>	<b>187</b>
<b>Total Direct Economic Loss</b>	<b>1,526</b>

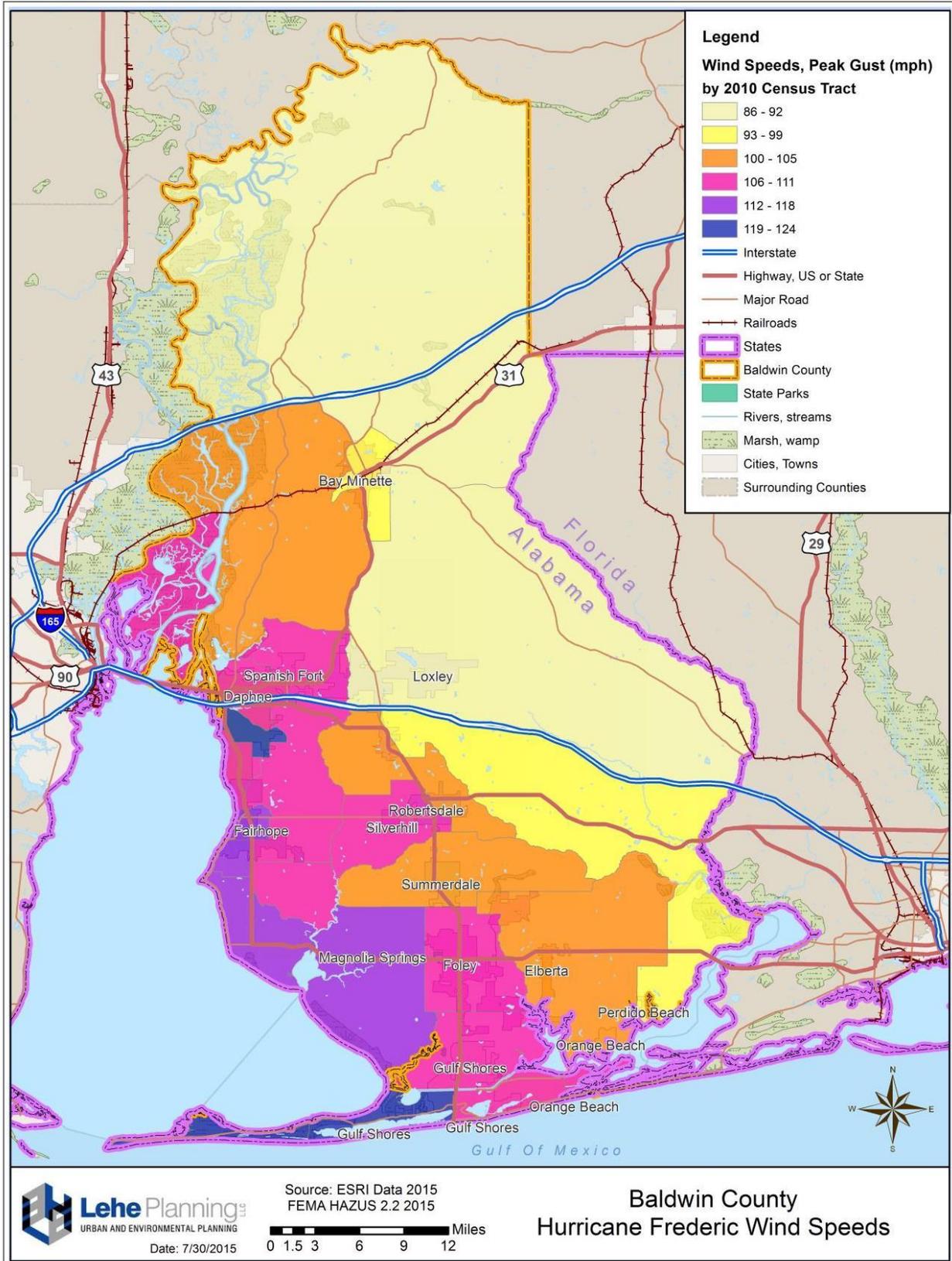
## Map 5-40. Hurricane Frederic Direct Economic Loss



**Map 5-41. Hurricane Frederic Debris Volume**



**Map 5-42. Hurricane Frederic Wind Speeds**



**Table 5-45. Comparative Hurricane Scenarios Economic Losses**

<b>Hurricane Scenario</b>	<b>Total Bldg.</b>	<b>Res. Bldg. Damaged</b>	<b>Total Bldg. Damaged</b>	<b>% of Total Bldg.</b>	<b>Res. Damage (\$1,000)</b>	<b>Total Bldg. Damage (\$1,000)</b>	<b>Business Interruption Losses (\$1,000)</b>	<b>Total Economic Losses (\$1,000)</b>
Hurricane Frederic	88,000	29,670	31,983	81.4%	\$18,841,781	\$1,338,642	\$187,433	\$1,526,074
10 Yr.	88,000	1,106	1,192	92.8%	\$73,503	\$74,925	\$4,502	\$79,427
50 Yr.	88,000	39,876	43,017	92.7%	\$1,807,276	\$2,075,051	\$315,164	\$2,390,215
100 Yr.	88,000	55,388	59,786	92.6%	\$3,997,114	\$4,681,585	\$741,581	\$5,423,166
500 Yr.	88,000	73,728	79,468	92.8%	\$10,641,653	\$12,687,122	\$1,792,568	\$14,479,690

**Flood Loss Estimates**

The planning team attempted to run the HAZUS-MH flood module to assess the 100-year flood event scenario. However, due to a lack of stream elevation, the module could not be run.

**Earthquake Loss Estimates**

The planning team used HAZUS-MH to estimate the losses as a result of a 500 year earthquake event. Map 5-43 portrays peak ground acceleration (PGA) by census tract. Areas north of I-65 experience the highest PGAs; it decelerates from north to south, with southern communities experiencing lower PGAs.

Approximately 142 buildings are at least moderately damaged and zero buildings are damaged beyond repair. Tables 5-46 and 5-47 shows expected building damage by occupancy and building type. Table 5-48 shows building related economic loss estimates, with a total of \$5.9 million loss.

**Table 5-46. Expected Building Damage by Occupancy, 500 Year Earthquake Event**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	269	0.31	3	0.48	1	0.47	0	1.07	0	0.88
Commercial	4,091	4.66	49	8.12	13	9.44	1	21.72	0	22.98
Education	144	0.16	2	0.27	0	0.30	0	0.68	0	0.83
Government	96	0.11	1	0.18	0	0.19	0	0.41	0	0.35
Industrial	1,284	1.46	14	2.37	4	2.70	0	5.82	0	4.93
Other Residential	16,845	19.19	349	58.37	88	64.72	2	32.03	0	11.44
Religion	379	0.43	4	0.74	1	0.99	0	2.47	0	3.50
Single Family	64,694	73.68	176	29.48	29	21.18	2	35.80	0	55.08
<b>Total</b>	<b>87,803</b>		<b>597</b>		<b>136</b>		<b>6</b>		<b>0</b>	

**Table 5-47. Expected Building Damage by Type, 500 Year Earthquake Event**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	64,286	73.22	127	21.20	11	7.77	0	0.00	0	0.00
Steel	2,902	3.30	27	4.44	6	4.22	0	6.97	0	0.00
Concrete	488	0.56	4	0.63	1	0.49	0	0.33	0	0.00
Precast	188	0.21	3	0.53	1	1.10	0	3.19	0	0.00
RM	710	0.81	6	1.04	2	1.63	0	3.88	0	0.00
URM	4,937	5.62	99	16.63	32	23.50	4	61.53	0	100.00
MH	14,292	16.28	332	55.52	83	61.30	1	24.09	0	0.00
<b>Total</b>	<b>87,803</b>		<b>597</b>		<b>136</b>		<b>6</b>		<b>0</b>	

\*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

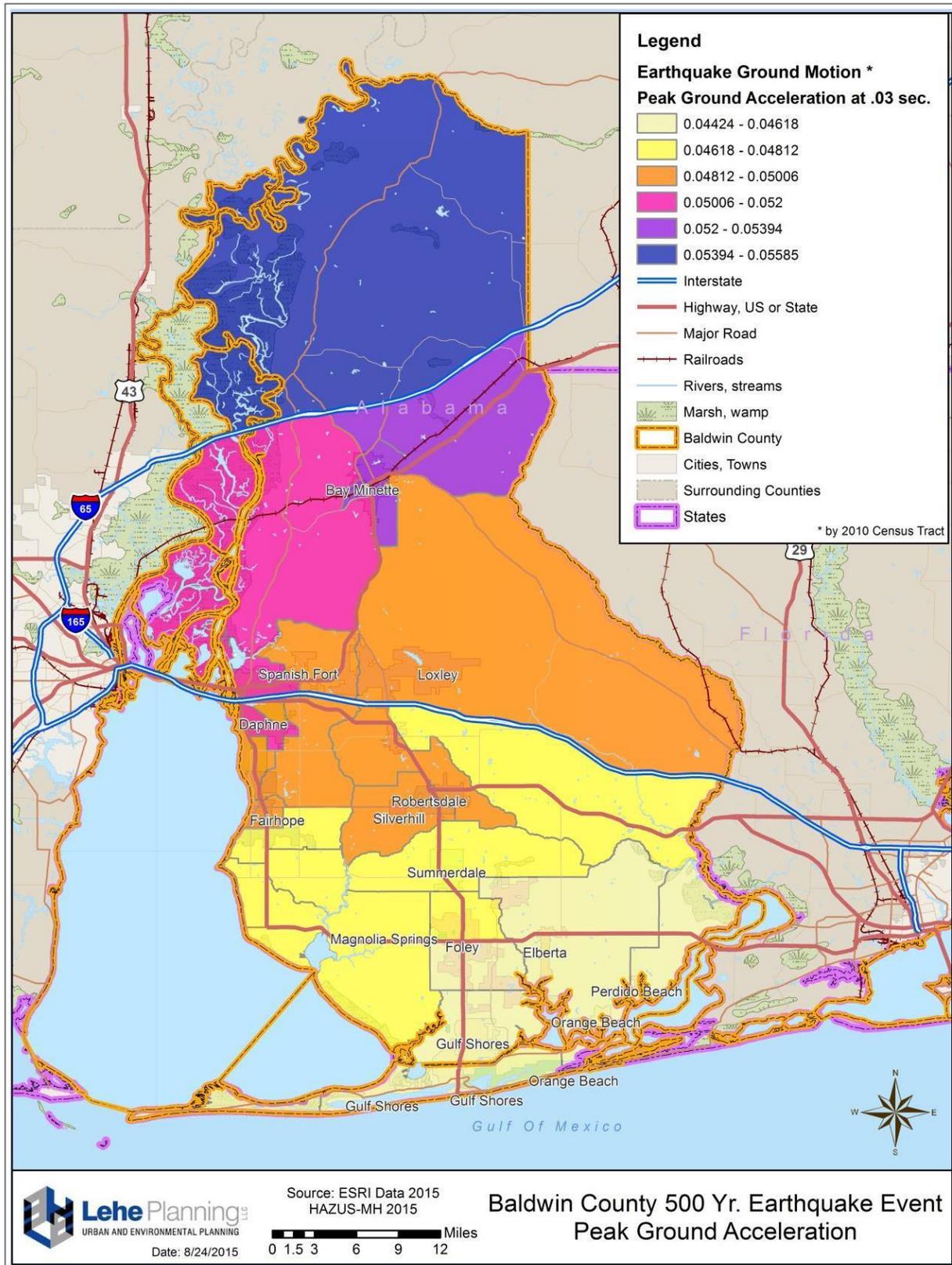
**Table 5-48. Building Related Economic Loss Estimates, 500 Year Earthquake Event**

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
<b>Income Losses</b>							
	Wage	0.00	0.03	0.33	0.01	0.03	0.41
	Capital-Related	0.00	0.01	0.27	0.01	0.01	0.30
	Rental	0.04	0.15	0.22	0.01	0.01	0.43
	Relocation	0.15	0.20	0.26	0.03	0.07	0.73
	<b>Subtotal</b>	<b>0.19</b>	<b>0.39</b>	<b>1.10</b>	<b>0.06</b>	<b>0.12</b>	<b>1.86</b>
<b>Capital Stock Losses</b>							
	Structural	0.42	0.35	0.39	0.10	0.09	1.35
	Non_Structural	1.12	0.62	0.44	0.09	0.11	2.38
	Content	0.15	0.04	0.09	0.04	0.02	0.34
	Inventory	0.00	0.00	0.00	0.01	0.00	0.01
	<b>Subtotal</b>	<b>1.69</b>	<b>1.02</b>	<b>0.93</b>	<b>0.23</b>	<b>0.23</b>	<b>4.09</b>
	<b>Total</b>	<b>1.88</b>	<b>1.41</b>	<b>2.02</b>	<b>0.28</b>	<b>0.35</b>	<b>5.95</b>

With regard to essential facilities, 410 (94%) hospital beds are available for use on the day of the earthquake, with 98% of the beds available after one week and 100% of beds available after one month. No casualties are expected; although six Level 1 injuries (requires medical attention, but not hospitalization) are predicted by the model. Three households are expected to be displaced from the earthquake, one of which will seek temporary shelter.

Additionally, the event report predicts that all components of the transportation system will maintain at least 50 percent functionality, because no component will suffer damage. And the transportation system economic losses are negligible. Likewise, HAZUS predicts no disabling damage to the utility infrastructure; however, minor leaks and breaks are anticipated.

**Map 5-43. 500 Year Earthquake Event Ground Motion**



**5.6.4 Loss Estimates Based on Historical Records****Flood Loss Estimates**

The National Climatic Data Center (NCDC) Storm Events Database shows frequent flooding since 1995 (Section 5.4.2). There have been 78 floods reported for Baldwin County—four per year—for the 1995-2014 period with damages averaging \$1.5 million per year and \$380K per event.

**Severe Storms Loss Estimates**

As reported in the severe storms hazard profile in Section 5.4.3, National Climatic Data Center (NCDC) records show frequent annual severe storm occurrences since 1995. The database shows nearly 293 severe storm events for Baldwin County—roughly 15 per year—including 144 reports of damage from thunderstorms, 33 from lightning, and 116 from hail. The database also shows \$2.5 million in damages since 1995.

**Tornado Loss Estimates**

According to the NOAA National Climatic Data Center and National Weather Service (NWS) records (Section 5.4.4), Baldwin County has been the site of 35 tornadoes since 1995, averaging \$104,500 annually. These tornadoes caused 4 injuries and property damages of \$2.1 million.

**Loss Estimates for Remaining Hazards**

Damages from the 10 winter storms, from 1995-2014, amount to \$10,000 in Baldwin County. Historical data is not available to estimate losses from the remaining hazards identified in this Plan. In some cases, there have been no recorded events, such as dam/levee failures, and in other cases, no damages resulted from an event, as is the case for instances of droughts/heat waves, earthquakes, landslides, sinkholes/land subsidence, and tsunamis. For wildfires, although Baldwin County is ranked in the top two in number of acres lost to wildfires, estimated losses are not available.

**5.6.5 Recommended Risk Assessment Measures**

The Mitigation Strategy of this Plan should include both short term and long term measures to improve the completeness and reliability of loss estimates. These measures should carry out the following general objectives:

- ✓ Critical Facilities Assessments. Assess critical facilities (hospitals, schools, fire and police stations, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.

- ✓ Geographic Information Systems (GIS). Maintain a comprehensive database of hazard locations, socio-economic data, infrastructure, and critical facilities inventories.
- ✓ Planning Studies. Conduct special plans and studies, as needed, to identify hazard risks and develop mitigation projects.

## 5.7 General Description of Land Uses and Development Trends

### 5.7.1 Impacts of Development Trends on Vulnerability

### 5.7.2 Past Trends

Baldwin County has experienced rapid growth in the past twenty years, increasing by 86% from 1990 to 2010. In fact, Baldwin County represents one of the state’s top ten fastest growing counties since the 2010 Census and the number one fastest growing county in Alabama from 2013 to 2014 (at a rate of 2.4%). Additionally, the 2.4% rate of growth landed Baldwin County as the 12<sup>th</sup> fastest growing metro area in the country.

Table 5-49 shows the population figures for Alabama, Baldwin County, and its 14 jurisdictions. Top contributors to Baldwin County’s major growth, from 2000 to 2010, include Elberta (171.4%), Gulf Shores (93.1%), and Foley (92.6%). All of the jurisdictions experienced some growth, with Bay Minette experiencing the least at 2.9%. Map 5-44 shows population density (persons per square mile) for Baldwin County using 2013 U.S. Census block groups. The densest areas are predominately located in Daphne, Spanish Fort, Fairhope, and Foley.

**Table 5-49. Baldwin County Historic Growth Trends**

Jurisdiction	1990	2000	Number Change (1990-2000)	Percent Change (1990-2000)	2010	Number Change (2000-2010)	Percent Change (2000–2010)
Alabama	4,040,389	4,447,100	406,711	10.1%	4,779,736	332,636	7.5%
Baldwin Co	98,280	140,415	42,135	42.9%	182,265	41,850	29.8%
Bay Minette	7,168	7,820	652	9.1%	8,044	224	2.9%
Daphne	11,290	16,581	5,291	46.9%	21,570	4,989	30.1%
Elberta	458	552	94	20.5%	1,498	946	171.4%
Fairhope	8,485	12,480	3,995	47.1%	15,326	2,846	22.8%
Foley	4937	7,590	2,653	53.7%	14,618	7,028	92.6%
Gulf Shores	3,261	5,044	1,783	54.7%	9,741	4,697	93.1%
Loxley	1,161	1,348	187	16.1%	1,632	284	21.1%

Jurisdiction	1990	2000	Number Change (1990-2000)	Percent Change (1990-2000)	2010	Number Change (2000-2010)	Percent Change (2000-2010)
Magnolia Springs	n/a	n/a	n/a	n/a	723	n/a	n/a
Orange Beach	2,253	3,784	1,531	68.0%	5,441	1,657	43.8%
Perdido Beach	n/a	n/a	n/a	n/a	581	n/a	n/a
Robertsdale	2,401	3,782	1,381	57.5%	5,276	1,494	39.5%
Silverhill	556	616	60	10.8%	706	90	14.6%
Spanish Fort	3,732	5,423	1,691	45.3%	6,798	1,375	25.4%
Summerdale	559	655	96	17.2%	862	207	31.6%

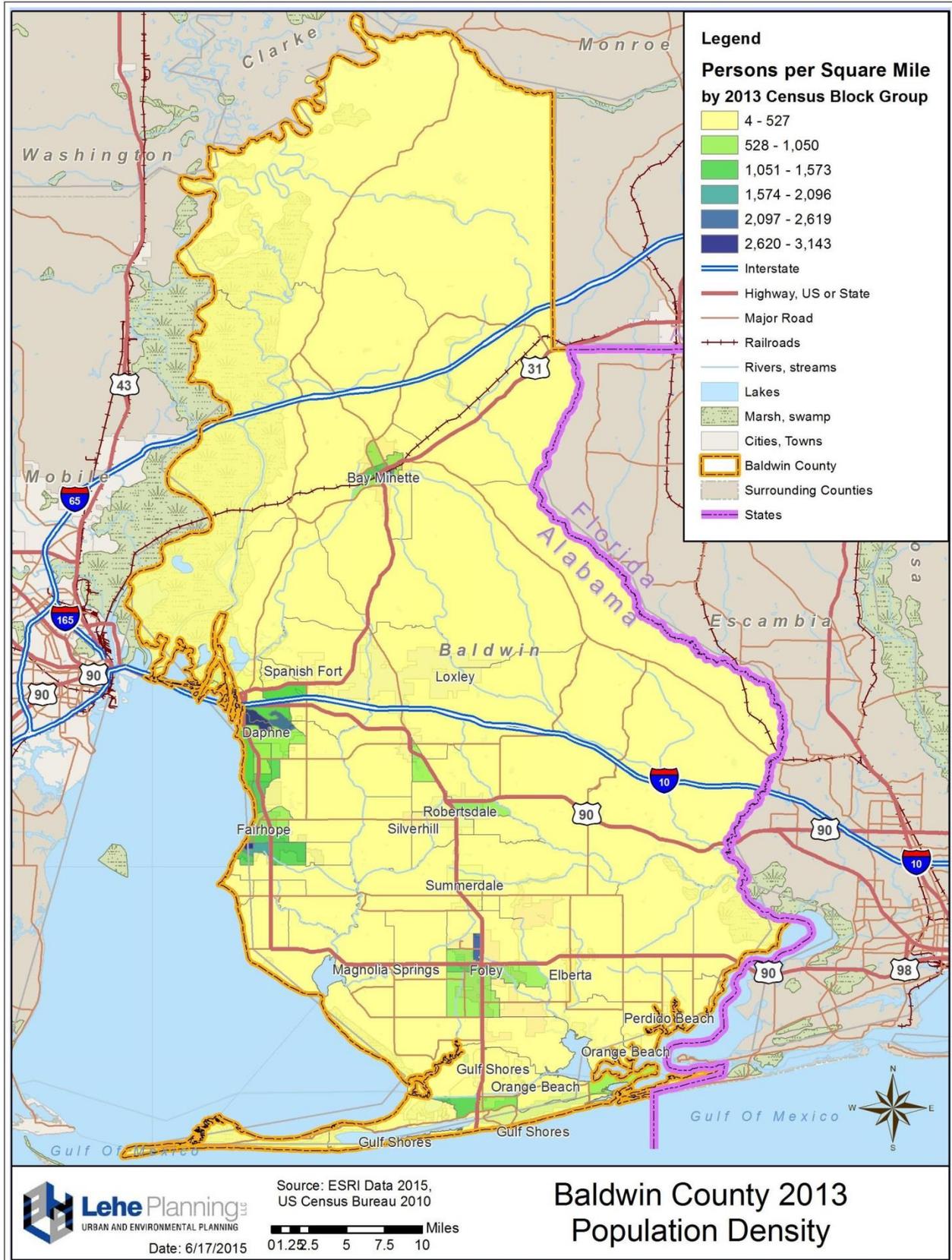
Source: US Census

**Land Use**

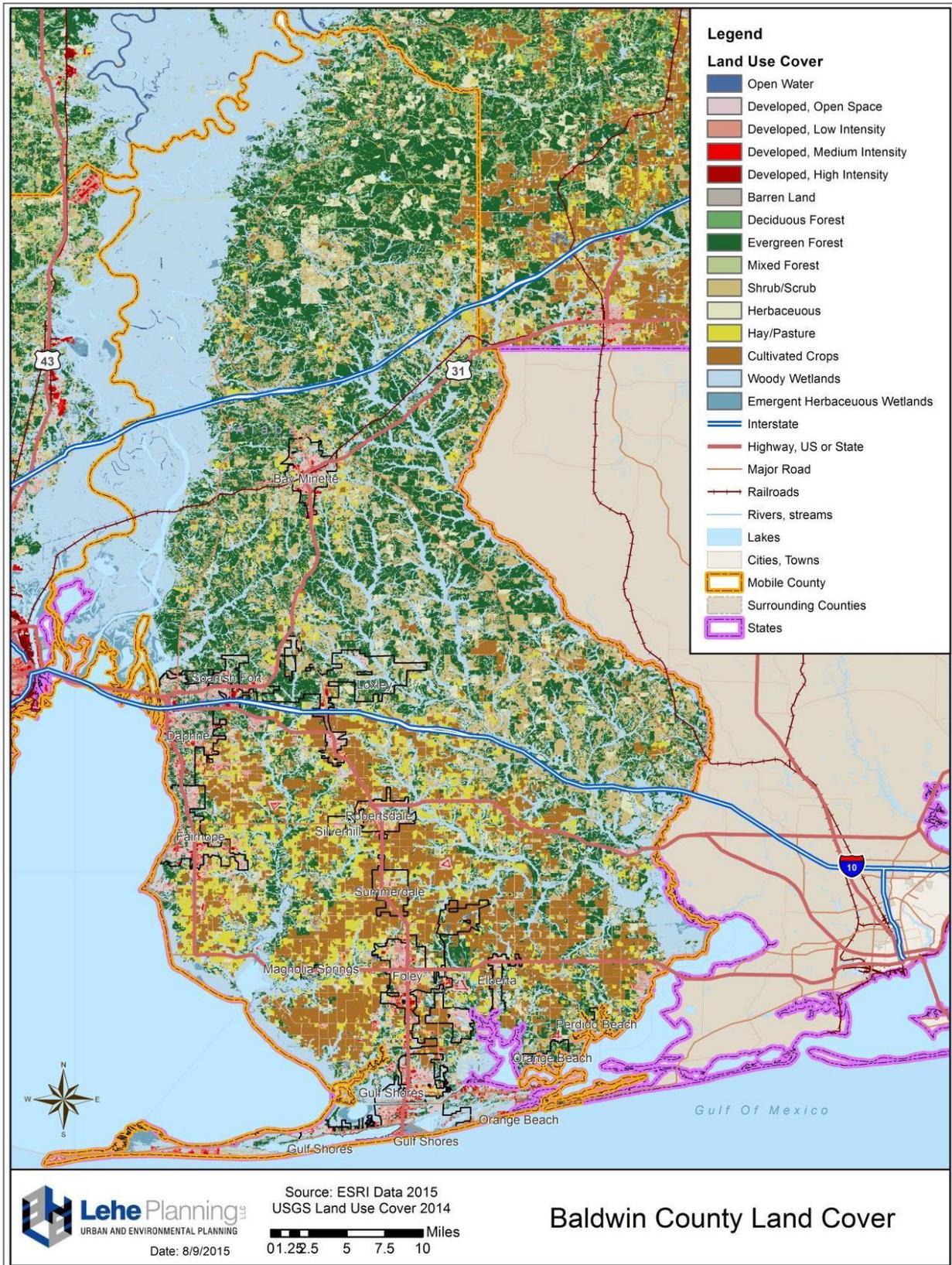
Baldwin County has an area of approximately 1,590 square miles, marking it Alabama’s largest county. The county is located in south Alabama, on the Gulf Coast and Mobile Bay. It is bounded on the north by Clarke and Monroe Counties, on the east by Escambia County (AL & FL), and on the west by Mobile County.

Map 5-45 “Baldwin County Land Cover” shows additional information about growth and development within the county. Most of the developed areas are located in Baldwin County’s jurisdictions. The northern portion of the county is largely evergreen forest, while the southern portion includes land available for farming.

**Map 5-44. Population Density in Baldwin County**



**Map 5-45. Baldwin County Land Cover**



**5.7.3 Future Trends**

Strong growth will likely continue in the future. For 2035, Baldwin County’s population is expected to be 283,120, up 100,855 from the 2010 population. Most of this growth will occur in the southwestern portion of the county. Table 5-50 presents projected growth in Baldwin County and the State of Alabama, between 2010 and 2035 according to projections compiled by the Center for Business and Economic Research at the University of Alabama. Alabama’s population growth between 2010 and 2035 nears 15%, compared to a growth of 55% for Baldwin County. These projections are based on historical data and do not reflect current economic development efforts in Baldwin County or throughout the State. Table 5-51 shows the estimated 2014 population and the projected 2035 population by jurisdiction. Unincorporated areas account for most of the projected 2035 growth at 21%, followed by 17% growth in Daphne, 16% growth in Foley, and 12% growth in Fairhope.

**Table 5-50. Population 2000-2010 and Projections 2015-2035**

	Population Estimate/Projection						Change 2000-2035	
	2010 <sup>a</sup>	2015 <sup>b</sup>	2020 <sup>b</sup>	2025 <sup>b</sup>	2030 <sup>b</sup>	2035 <sup>b</sup>	Number	Percent
Alabama	4,779,736	4,943,866	5,096,521	5,242,423	5,365,245	5,486,147	706,411	14.8%
Baldwin	182,265	204,543	225,564	245,841	264,992	283,120	100,855	55.3%

<sup>a</sup> US Census Bureau. 2010 Census    <sup>b</sup> Center for Business and Economic Research, U. of Alabama

**Table 5-51. Population Projections by Jurisdiction**

Jurisdiction	Estimated 2014	Projected 2035	Projected Change 2014-2035	Percent Change 2014-2035	% of Total 2035
Bay Minette	9,049	11,105	2,057	22.73%	3.9%
Daphne	24,395	47,849	23,454	96.14%	16.9%
Elberta	1,634	4,970	3,336	204.17%	1.8%
Fairhope	18,089	35,050	16,961	93.76%	12.4%
Foley	16,243	46,074	29,831	183.65%	16.3%
Gulf Shores	10,963	31,661	20,698	188.80%	11.2%
Loxley	1,725	2,437	712	41.30%	0.9%
Magnolia Springs	782	1,180	398	50.94%	0.4%
Orange Beach	5,788	13,216	7,428	128.34%	4.7%
Perdido Beach	624	907	284	45.45%	0.3%
Robertsdale	5,773	12,431	6,658	115.33%	4.4%
Silverhill	754	984	231	30.62%	0.3%
Spanish Fort	7,806	14,880	7,075	90.63%	5.3%
Summerdale	1,005	1,677	673	66.93%	0.6%
Unincorporated	95,481	58,693	-36,787	-38.53%	20.7%
Baldwin Co	200,111	283,120	83,009	41.48%	100.1%

Source: Derived from the Alabama State Data Center & U.S. Census  
 Baldwin County total does not equal 100% due to rounding

**5.8 Repetitively-Damaged NFIP-Insured Structures**

FEMA defines a repetitive loss property as those which have two or more losses of at least \$1,000 and have been paid under the National Flood Insurance Program (NFIP) within any 10 year period. According to FEMA, there are 2,335 NFIP repetitive loss structures within Baldwin County and the NFIP participating jurisdictions as of August 2015. The table below describes the number of policies in force and includes the number of repetitive loss properties by jurisdiction.

**Table 5-52. Repetitive Loss Properties by Jurisdiction**

<b>Community Name</b>	<b>NFIP Policies in Force</b>	<b>Total Insurance in Force (\$)</b>	<b>Repetitive Loss Structures</b>	<b>Total RL Claims</b>	<b>Total RL Losses (\$)</b>
Baldwin County	10,589	\$2,338,349,400	563	1,534	\$58,595,677
Bay Minette	12	\$2,987,000	1	2	\$21,871
Daphne	406	\$86,121,500	12	29	\$892,640
Elberta	5	\$686,000	2	6	\$557,125
Fairhope	336	\$84,116,000	78	227	\$13,519,960
Foley	146	\$35,528,800	9	19	\$1,128,672
Gulf Shores	7,524	\$1,427,685,000	1,382	4,068	\$128,206,078
Loxley	21	\$3,075,000	3	10	\$177,811
Orange Beach	8,635	\$1,770,903,300	272	744	\$79,721,751
Robertsdale	34	\$7,594,000	2	5	\$334,230
Silverhill	8	\$1,770,000	-	-	-
Spanish Fort	38	\$12,424,600	11	30	\$2,262,337
Summerdale	5	\$1,078,000	-	-	-
<b>Total</b>	<b>27,759</b>	<b>\$5,772,318,600</b>	<b>2,335</b>	<b>6,674</b>	<b>\$285,418,152</b>

Source: NFIP State Coordinator, 08/04/2015 & FEMA Policy Statistics  
 \*Silverhill & Summerdale data included in Baldwin County figures

The repetitive loss claims (to date) originate from all of the jurisdictions in Baldwin County; however the majority of claims come from Gulf Shores (4,068) and Baldwin County (1,534). The majority of the properties that have experienced repetitive losses are single family homes. The remaining properties are classified as other residential, multi-family homes, non-residential and condominiums. Of the repetitive loss properties identified above, the following table (Table 5-53) provides a breakdown of severe repetitive loss properties, which is defined by FEMA’s NFIP as properties with a high frequency of losses or a high value of claims. Specifically, a severe repetitive loss property must meet one of two criteria: 1) four or more separate claim payments of more than \$5,000 each (building and/or contents); or 2) two or more separate claim payments

(building payments only) where the total of the payments exceeds the current market value of the property.

**Table 5-53. Severe Repetitive Loss Properties by Jurisdiction**

<b>Community Name</b>	<b>Severe Repetitive Loss Structures</b>	<b>Total SRL Claims</b>	<b>Total SRL Losses (\$)</b>
Baldwin County	26	132	\$5,671,415
Elberta	1	3	\$467,662
Fairhope	4	23	\$2,778,438
Gulf Shores	93	493	\$22,632,501
Orange Beach	16	75	\$8,817,263
<b>Total</b>	<b>140</b>	<b>726</b>	<b>\$40,367,279</b>

As previously discussed in Section 5.4.2 “Floods Profile”, Gulf Shores and Orange Beach are at greatest risk for coastal flooding and Fairhope, Elberta, and unincorporated areas of the county are susceptible to flooding from Fish River and Styx River. Furthermore, Table 6-3 “2014-2019 Baldwin County Multi-Jurisdictional Mitigation Action Program” lists the specific goals, objectives, and mitigation measures related to flooding.

**5.9 Summary of Hazards and Community Impacts**

Table 5-55 summarizes each jurisdiction’s vulnerability. Community impacts include the following descriptions and measurements:

Location. Location measures the geographic extent of the identified hazard in one of three ways, as follows:

- 1) *Community-wide* - the entire geographic area is affected;
- 2) *Partial* - a significant portion of the community is affected; or
- 3) *Minimal* - a negligible area is affected.

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

- 1) *Very high* - annually;
- 2) *High* - every two to three years;
- 3) *Moderate* - every three to ten years;
- 4) *Low* - every ten years; or
- 5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

- 1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
- 2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
- 3) *Moderate* – moderate potential for economic losses and structure damage; or
- 4) *Slight* – slight or minimal potential for economic losses and structure damage.

Exposure. Exposure measures the percentage of structures within the community, including buildings, critical facilities, and infrastructure lifelines, that are exposed to the hazard. The classifications are defined as follows:

- 1) *High* - includes more than approximately 25 percent of the structures;
- 2) *Medium* - includes 10 percent to 25 percent of the structures; or
- 3) *Low* - includes less than 10 percent of the structures.

Damage Potential. Damage potential measures the damage that can be expected should an event take place. The classifications are defined as follows:

- 1) *High* - a hazard could damage more than 5 percent of the structures in a community;
- 2) *Medium* - a hazard could damage between 1 and 5 percent of the structures in a community; or
- 3) *Low* - a hazard could damage fewer than 1 percent of the structures in a community.

**Table 5-54. Summary of Hazards and Community Impacts**

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
<b>Hurricanes</b>	Bay Minette	Community-wide	Moderate	Moderate	High	High
	Daphne	Community-wide	Moderate	Significant	High	High
	Elberta	Community-wide	Moderate	Significant	High	High
	Fairhope	Community-wide	Moderate	Significant	High	High
	Foley	Community-wide	Moderate	Significant	High	High
	Gulf Shores	Community-wide	Moderate	Devastating	High	High
	Loxley	Community-wide	Moderate	Moderate	High	High
	Magnolia Springs	Community-wide	Moderate	Significant	High	High
	Orange Beach	Community-wide	Moderate	Devastating	High	High
	Perdido Beach	Community-wide	Moderate	Devastating	High	High
	Robertsdale	Community-wide	Moderate	Moderate	High	High
	Silverhill	Community-wide	Moderate	Moderate	High	High
	Spanish Fort	Community-wide	Moderate	Significant	High	High
	Summerdale	Community-wide	Moderate	Moderate	High	High
	Unincorporated	Community-wide	Moderate	Moderate	High	High
<b>Severe Storms</b>	Bay Minette	Community-wide	Very High	Moderate	High	Low
	Daphne	Community-wide	Very High	Moderate	High	Low
	Elberta	Community-wide	Very High	Moderate	High	Low
	Fairhope	Community-wide	Very High	Moderate	High	Low
	Foley	Community-wide	Very High	Moderate	High	Low
	Gulf Shores	Community-wide	Very High	Moderate	High	Low
	Loxley	Community-wide	Very High	Moderate	High	Low
	Magnolia Springs	Community-wide	Very High	Moderate	High	Low
	Orange Beach	Community-wide	Very High	Moderate	High	Low
	Perdido Beach	Community-wide	Very High	Moderate	High	Low

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Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Robertsdale	Community-wide	Very High	Moderate	High	Low
	Silverhill	Community-wide	Very High	Moderate	High	Low
	Spanish Fort	Community-wide	Very High	Moderate	High	Low
	Summerdale	Community-wide	Very High	Moderate	High	Low
	Unincorporated	Community-wide	Very High	Moderate	High	Low
Tornadoes	Bay Minette	Community-wide	High	Moderate	High	High
	Daphne	Community-wide	High	Moderate	High	High
	Elberta	Community-wide	High	Moderate	High	High
	Fairhope	Community-wide	High	Moderate	High	High
	Foley	Community-wide	High	Moderate	High	High
	Gulf Shores	Community-wide	High	Moderate	High	High
	Loxley	Community-wide	High	Moderate	High	High
	Magnolia Springs	Community-wide	High	Moderate	High	High
	Orange Beach	Community-wide	High	Moderate	High	High
	Perdido Beach	Community-wide	High	Moderate	High	High
	Robertsdale	Community-wide	High	Moderate	High	High
	Silverhill	Community-wide	High	Moderate	High	High
	Spanish Fort	Community-wide	High	Moderate	High	High
	Summerdale	Community-wide	High	Moderate	High	High
	Unincorporated	Community-wide	High	Moderate	High	High
Floods	Bay Minette	Minimal	Low	Slight	Low	Low
	Daphne	Partial	Moderate	Moderate	Low	Medium
	Elberta	Minimal	Low	Slight	Low	Low
	Fairhope	Partial	Moderate	Significant	Low	Medium
	Foley	Minimal	Low	Slight	Low	Low
	Gulf Shores	Partial	Moderate	Significant	Low	Medium
	Loxley	Partial	Moderate	Significant	Low	Medium

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Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Magnolia Springs	Partial	Moderate	Significant	Low	Medium
	Orange Beach	Partial	Moderate	Significant	Low	Medium
	Perdido Beach	Partial	Moderate	Significant	Low	Medium
	Robertsdale	Minimal	Low	Slight	Low	Low
	Silverhill	Minimal	Low	Slight	Low	Low
	Spanish Fort	Minimal	Low	Slight	Low	Low
	Summerdale	Minimal	Low	Slight	Low	Low
	Unincorporated	Partial	Moderate	Slight	Low	Low
<b>Wildfires</b>	Bay Minette	Partial	Very High	Moderate	High	Medium
	Daphne	Minimal	Low	Slight	Low	Low
	Elberta	Minimal	Low	Slight	Low	Low
	Fairhope	Minimal	Low	Slight	Low	Low
	Foley	Minimal	Low	Slight	Low	Low
	Gulf Shores	Minimal	Low	Slight	Low	Low
	Loxley	Minimal	Low	Slight	Low	Low
	Magnolia Springs	Minimal	Low	Slight	Low	Low
	Orange Beach	Minimal	Low	Slight	Low	Low
	Perdido Beach	Minimal	Low	Slight	Low	Low
	Robertsdale	Minimal	Low	Slight	Low	Low
	Silverhill	Minimal	Low	Slight	Low	Low
	Spanish Fort	Minimal	Low	Slight	Low	Low
	Summerdale	Minimal	Low	Slight	Low	Low
Unincorporated	Partial	High	Moderate	High	Medium	
<b>Drought/Heat Waves</b>	Bay Minette	Community-wide	Very Low	Slight	High	Low
	Daphne	Community-wide	Very Low	Slight	High	Low
	Elberta	Community-wide	Very Low	Slight	High	Low
	Fairhope	Community-wide	Very Low	Slight	High	Low

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Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Foley	Community-wide	Very Low	Slight	High	Low
	Gulf Shores	Community-wide	Very Low	Slight	High	Low
	Loxley	Community-wide	Very Low	Slight	High	Low
	Magnolia Springs	Community-wide	Very Low	Slight	High	Low
	Orange Beach	Community-wide	Very Low	Slight	High	Low
	Perdido Beach	Community-wide	Very Low	Slight	High	Low
	Robertsdale	Community-wide	Very Low	Slight	High	Low
	Silverhill	Community-wide	Very Low	Slight	High	Low
	Spanish Fort	Community-wide	Very Low	Slight	High	Low
	Summerdale	Community-wide	Very Low	Slight	High	Low
	Unincorporated	Community-wide	Very Low	Slight	High	Low
<b>Winter Storms/Freezes</b>	Bay Minette	Community-wide	Very Low	Slight	High	Low
	Daphne	Community-wide	Very Low	Slight	High	Low
	Elberta	Community-wide	Very Low	Slight	High	Low
	Fairhope	Community-wide	Very Low	Slight	High	Low
	Foley	Community-wide	Very Low	Slight	High	Low
	Gulf Shores	Community-wide	Very Low	Slight	High	Low
	Loxley	Community-wide	Very Low	Slight	High	Low
	Magnolia Springs	Community-wide	Very Low	Slight	High	Low
	Orange Beach	Community-wide	Very Low	Slight	High	Low
	Perdido Beach	Community-wide	Very Low	Slight	High	Low
	Robertsdale	Community-wide	Very Low	Slight	High	Low
	Silverhill	Community-wide	Very Low	Slight	High	Low
	Spanish Fort	Community-wide	Very Low	Slight	High	Low
	Summerdale	Community-wide	Very Low	Slight	High	Low
Unincorporated	Community-wide	Very Low	Slight	High	Low	
<b>Earthquakes</b>	Bay Minette	Community-wide	Very Low	Slight	High	Low

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Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Daphne	Community-wide	Very Low	Slight	High	Low
	Elberta	Community-wide	Very Low	Slight	High	Low
	Fairhope	Community-wide	Very Low	Slight	High	Low
	Foley	Community-wide	Very Low	Slight	High	Low
	Gulf Shores	Community-wide	Very Low	Slight	High	Low
	Loxley	Community-wide	Very Low	Slight	High	Low
	Magnolia Springs	Community-wide	Very Low	Slight	High	Low
	Orange Beach	Community-wide	Very Low	Slight	High	Low
	Perdido Beach	Community-wide	Very Low	Slight	High	Low
	Robertsdale	Community-wide	Very Low	Slight	High	Low
	Silverhill	Community-wide	Very Low	Slight	High	Low
	Spanish Fort	Community-wide	Very Low	Slight	High	Low
	Summerdale	Community-wide	Very Low	Slight	High	Low
	Unincorporated	Community-wide	Very Low	Slight	High	Low
Dam/Levee Failures	Bay Minette	Minimal	Very Low	Slight	Low	Low
	Daphne	Minimal	Very Low	Slight	Low	Low
	Elberta	Minimal	Very Low	Slight	Low	Low
	Fairhope	Minimal	Very Low	Slight	Low	Low
	Foley	Minimal	Very Low	Slight	Low	Low
	Gulf Shores	Minimal	Very Low	Slight	Low	Low
	Loxley	Minimal	Very Low	Slight	Low	Low
	Magnolia Springs	Minimal	Very Low	Slight	Low	Low
	Orange Beach	Minimal	Very Low	Slight	Low	Low
	Perdido Beach	Minimal	Very Low	Slight	Low	Low
	Robertsdale	Minimal	Very Low	Slight	Low	Low
	Silverhill	Minimal	Very Low	Slight	Low	Low
Spanish Fort	Minimal	Very Low	Slight	Low	Low	

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# 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Summerdale	Minimal	Very Low	Slight	Low	Low
	Unincorporated	Minimal	Very Low	Slight	Low	Low
Landslides	Bay Minette	Minimal	Very Low	Slight	Low	Low
	Daphne	Minimal	Very Low	Slight	Low	Low
	Elberta	Minimal	Very Low	Slight	Low	Low
	Fairhope	Minimal	Very Low	Slight	Low	Low
	Foley	Minimal	Very Low	Slight	Low	Low
	Gulf Shores	Minimal	Very Low	Slight	Low	Low
	Loxley	Minimal	Very Low	Slight	Low	Low
	Magnolia Springs	Minimal	Very Low	Slight	Low	Low
	Orange Beach	Minimal	Very Low	Slight	Low	Low
	Perdido Beach	Minimal	Very Low	Slight	Low	Low
	Robertsdale	Minimal	Very Low	Slight	Low	Low
	Silverhill	Minimal	Very Low	Slight	Low	Low
	Spanish Fort	Minimal	Low	Slight	Low	Low
	Summerdale	Minimal	Very Low	Slight	Low	Low
	Unincorporated	Minimal	Very Low	Slight	Low	Low
Sinkholes (Land Subsidence)	Bay Minette	Minimal	Very Low	Slight	Low	Low
	Daphne	Minimal	Very Low	Slight	Low	Low
	Elberta	Minimal	Very Low	Slight	Low	Low
	Fairhope	Minimal	Very Low	Slight	Low	Low
	Foley	Minimal	Very Low	Slight	Low	Low
	Gulf Shores	Minimal	Very Low	Slight	Low	Low
	Loxley	Minimal	Very Low	Slight	Low	Low
	Magnolia Springs	Minimal	Very Low	Slight	Low	Low
	Orange Beach	Minimal	Very Low	Slight	Low	Low
Perdido Beach	Minimal	Very Low	Slight	Low	Low	

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# 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Robertsdale	Minimal	Very Low	Slight	Low	Low
	Silverhill	Minimal	Very Low	Slight	Low	Low
	Spanish Fort	Minimal	Very Low	Slight	Low	Low
	Summerdale	Minimal	Very Low	Slight	Low	Low
	Unincorporated	Minimal	Very Low	Slight	Low	Low
<b>Tsunamis</b>	Bay Minette	Minimal	Very Low	Slight	Low	Medium
	Daphne	Partial	Very Low	Moderate	Low	Medium
	Elberta	Partial	Very Low	Moderate	Low	Medium
	Fairhope	Partial	Very Low	Moderate	Low	Medium
	Foley	Minimal	Very Low	Slight	Low	Medium
	Gulf Shores	Partial	Very Low	Devastating	High	High
	Loxley	Minimal	Very Low	Slight	Low	Medium
	Magnolia Springs	Partial	Very Low	Moderate	Low	Medium
	Orange Beach	Partial	Very Low	Devastating	High	High
	Perdido Beach	Partial	Very Low	Devastating	High	High
	Robertsdale	Minimal	Very Low	Slight	Low	Medium
	Silverhill	Minimal	Very Low	Slight	Low	Medium
	Spanish Fort	Partial	Very Low	Moderate	Low	Medium
	Summerdale	Minimal	Very Low	Slight	Low	Medium
	Unincorporated	Minimal	Very Low	Slight	Low	Medium
<b>Manmade/Technological</b>	Bay Minette	Minimal	Low	Slight	Low	Low
	Daphne	Minimal	Low	Slight	Low	Low
	Elberta	Minimal	Low	Slight	Low	Low
	Fairhope	Minimal	Low	Slight	Low	Low
	Foley	Minimal	Low	Slight	Low	Low
	Gulf Shores	Minimal	Low	Slight	Low	Low
	Loxley	Minimal	Low	Slight	Low	Low

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location	Probability	Extent	Exposure	Damage Potential
	Magnolia Springs	Minimal	Low	Slight	Low	Low
	Orange Beach	Minimal	Low	Slight	Low	Low
	Perdido Beach	Minimal	Low	Slight	Low	Low
	Robertsdale	Minimal	Low	Slight	Low	Low
	Silverhill	Minimal	Low	Slight	Low	Low
	Spanish Fort	Minimal	Low	Slight	Low	Low
	Summerdale	Minimal	Low	Slight	Low	Low
	Unincorporated	Minimal	Low	Slight	Low	Low

## 5.10 Risks that Vary Among the Jurisdictions

This Plan has strongly emphasized the variations in risks among jurisdictions. In particular, the following sections contain specific references to jurisdictional variations:

- Hazard identification. Each jurisdiction was independently assessed to identify pertinent hazards, based on the sources noted in Section 5.3 “Identification of Hazards Affecting Each Jurisdiction.” Descriptions of hazards can be found in Appendix D, “Hazard Identification, Ratings and Descriptions”.
- Hazard profiles. Each of the hazard profiles in Section 5.4 notes how the location, extent, past occurrences, and probability of future events may vary among all jurisdictions. Maps are included, where possible, to emphasize the locations of hazards in relation to jurisdictional limits.
- Summary of Community Impacts. Table 5-54 “Summary of Hazards and Community Impacts” summarizes how hazards impact each jurisdiction.

Risk may vary among jurisdictions, as described in Table 5-55 “Jurisdictional Risk Variations.” Table 5-55 presents an overview of the common and unique risks within each jurisdiction and the unique characteristics of those risks. The risk variations table uses the following terms, as defined here:

Variation of Risks. Measures whether a risk is common or unique, as follows:

- 1) *Common risk* - affects all areas equally; or
- 2) *Unique risk* - affects certain jurisdictions with varying probability and extent.

Location. Indicates whether a hazard’s impact varies within the community, as follows:

- 1) *Specific locations* - the hazard only threatens particular parts of the jurisdiction; or
- 2) *Not unique* - the hazard affects all parts of the jurisdiction (if the location of a hazard is not unique, then it follows that the probability and the extent will also be marked not unique).

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

- 1) *Very high* - annually;
- 2) *High* - every two to three years;
- 3) *Moderate* - every three to ten years;
- 4) *Low* - every ten years; or
- 5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

- 1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
- 2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
- 3) *Moderate* – moderate potential for economic losses and structure damage; or
- 4) *Slight* – slight or minimal potential for economic losses and structure damage.

**Table 5-55. Jurisdictional Risk Variations**

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
<b>Hurricanes</b>	Unique Risk	Bay Minette	Specific Locations	Moderate	Significant
		Daphne	Specific Locations	Moderate	Significant
		Elberta	Specific Locations	Moderate	Devastating
		Fairhope	Specific Locations	Moderate	Significant
		Foley	Specific Locations	Moderate	Significant
		Gulf Shores	Specific Locations	Moderate	Devastating
		Loxley	Specific Locations	Moderate	Significant
		Magnolia Springs	Specific Locations	Moderate	Devastating
		Orange Beach	Specific Locations	Moderate	Devastating
		Perdido Beach	Specific Locations	Moderate	Devastating
		Robertsdale	Specific Locations	Moderate	Significant
		Silverhill	Specific Locations	Moderate	Significant
		Spanish Fort	Specific Locations	Moderate	Significant
		Summerdale	Specific Locations	Moderate	Significant
		Unincorporated	Specific Locations	Moderate	Devastating
<b>Severe Storms</b>	Common Risks	Bay Minette	Not Unique	Not Unique	Not Unique
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
		Unincorporated	Not Unique	Not Unique	Not Unique
<b>Tornadoes</b>	Common Risks	Bay Minette	Not Unique	Not Unique	Not Unique
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
Unincorporated	Not Unique	Not Unique	Not Unique		
<b>Floods</b>	Unique Risks	Bay Minette	Specific Locations	Low	Slight
		Daphne	Specific Locations	Moderate	Moderate
		Elberta	Specific Locations	Low	Slight
		Fairhope	Specific Locations	Moderate	Significant
		Foley	Specific Locations	Low	Slight
		Gulf Shores	Specific Locations	Moderate	Significant
		Loxley	Specific Locations	Moderate	Significant

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Magnolia Springs	Specific Locations	Moderate	Significant
		Orange Beach	Specific Locations	Moderate	Significant
		Perdido Beach	Specific Locations	Moderate	Significant
		Robertsdale	Specific Locations	Low	Slight
		Silverhill	Specific Locations	Low	Slight
		Spanish Fort	Specific Locations	Low	Slight
		Summerdale	Specific Locations	Low	Slight
		Unincorporated	Specific Locations	Moderate	Slight
Wildfires	Unique Risks	Bay Minette	Specific Locations	Very High	Moderate
		Daphne	Specific Locations	Low	Slight
		Elberta	Specific Locations	Low	Slight
		Fairhope	Specific Locations	Low	Slight
		Foley	Specific Locations	Low	Slight
		Gulf Shores	Specific Locations	Low	Slight
		Loxley	Specific Locations	Low	Slight
		Magnolia Springs	Specific Locations	Low	Slight
		Orange Beach	Specific Locations	Low	Slight
		Perdido Beach	Specific Locations	Low	Slight
		Robertsdale	Specific Locations	Low	Slight
		Silverhill	Specific Locations	Low	Slight
		Spanish Fort	Specific Locations	Low	Slight
		Summerdale	Specific Locations	Low	Slight
Unincorporated	Specific Locations	High	Moderate		
Drought/Heat Waves	Common Risks	Bay Minette	Not Unique	Not Unique	Not Unique
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique

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# 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
		Unincorporated	Not Unique	Not Unique	Not Unique
<b>Winter Storms/Freezes</b>	Common Risks	Bay Minette	Not Unique	Not Unique	Not Unique
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
Unincorporated	Not Unique	Not Unique	Not Unique		
<b>Earthquakes</b>	Common Risks	Bay Minette	Not Unique	Not Unique	Not Unique

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
		Unincorporated	Not Unique	Not Unique	Not Unique
<b>Dam/Levee Failures</b>	Unique Risks	Bay Minette	Specific Locations	Very Low	Slight
		Daphne	Specific Locations	Very Low	Slight
		Elberta	Specific Locations	Very Low	Slight
		Fairhope	Specific Locations	Very Low	Slight
		Foley	Specific Locations	Very Low	Slight
		Gulf Shores	Specific Locations	Very Low	Slight
		Loxley	Specific Locations	Very Low	Slight
		Magnolia Springs	Specific Locations	Very Low	Slight
		Orange Beach	Specific Locations	Very Low	Slight
		Perdido Beach	Specific Locations	Very Low	Slight
		Robertsdale	Specific Locations	Very Low	Slight
		Silverhill	Specific Locations	Very Low	Slight
Spanish Fort	Specific Locations	Very Low	Slight		

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Summerdale	Specific Locations	Very Low	Slight
		Unincorporated	Specific Locations	Very Low	Slight
<b>Landslides</b>	Unique Risks	Bay Minette	Specific Locations	Very Low	Slight
		Daphne	Specific Locations	Very Low	Slight
		Elberta	Specific Locations	Very Low	Slight
		Fairhope	Specific Locations	Very Low	Slight
		Foley	Specific Locations	Very Low	Slight
		Gulf Shores	Specific Locations	Very Low	Slight
		Loxley	Specific Locations	Very Low	Slight
		Magnolia Springs	Specific Locations	Very Low	Slight
		Orange Beach	Specific Locations	Very Low	Slight
		Perdido Beach	Specific Locations	Very Low	Slight
		Robertsdale	Specific Locations	Very Low	Slight
		Silverhill	Specific Locations	Very Low	Slight
		Spanish Fort	Specific Locations	Low	Slight
		Summerdale	Specific Locations	Very Low	Slight
		Unincorporated	Specific Locations	Very Low	Slight
<b>Sinkholes (Land Subsidence)</b>	Unique Risks	Bay Minette	Specific Locations	Very Low	Slight
		Daphne	Specific Locations	Very Low	Slight
		Elberta	Specific Locations	Very Low	Slight
		Fairhope	Specific Locations	Very Low	Slight
		Foley	Specific Locations	Very Low	Slight
		Gulf Shores	Specific Locations	Very Low	Slight
		Loxley	Specific Locations	Very Low	Slight
		Magnolia Springs	Specific Locations	Very Low	Slight
		Orange Beach	Specific Locations	Very Low	Slight
Perdido Beach	Specific Locations	Very Low	Slight		

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Robertsdale	Specific Locations	Very Low	Slight
		Silverhill	Specific Locations	Very Low	Slight
		Spanish Fort	Specific Locations	Very Low	Slight
		Summerdale	Specific Locations	Very Low	Slight
		Unincorporated	Specific Locations	Very Low	Slight
<b>Tsunamis</b>	Unique Risk	Bay Minette	Specific Locations	Very Low	Slight
		Daphne	Specific Locations	Very Low	Significant
		Elberta	Specific Locations	Very Low	Moderate
		Fairhope	Specific Locations	Very Low	Significant
		Foley	Specific Locations	Very Low	Significant
		Gulf Shores	Specific Locations	Very Low	Devastating
		Loxley	Specific Locations	Very Low	Slight
		Magnolia Springs	Specific Locations	Very Low	Significant
		Orange Beach	Specific Locations	Very Low	Devastating
		Perdido Beach	Specific Locations	Very Low	Devastating
		Robertsdale	Specific Locations	Very Low	Slight
		Silverhill	Specific Locations	Very Low	Slight
		Spanish Fort	Specific Locations	Very Low	Moderate
		Summerdale	Specific Locations	Very Low	Slight
Unincorporated	Specific Locations	Very Low	Slight		
<b>Manmade/Technological Hazards</b>	Common Risk	Bay Minette	Not Unique	Not Unique	Not Unique
		Daphne	Not Unique	Not Unique	Not Unique
		Elberta	Not Unique	Not Unique	Not Unique
		Fairhope	Not Unique	Not Unique	Not Unique
		Foley	Not Unique	Not Unique	Not Unique
		Gulf Shores	Not Unique	Not Unique	Not Unique
		Loxley	Not Unique	Not Unique	Not Unique

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
		Magnolia Springs	Not Unique	Not Unique	Not Unique
		Orange Beach	Not Unique	Not Unique	Not Unique
		Perdido Beach	Not Unique	Not Unique	Not Unique
		Robertsdale	Not Unique	Not Unique	Not Unique
		Silverhill	Not Unique	Not Unique	Not Unique
		Spanish Fort	Not Unique	Not Unique	Not Unique
		Summerdale	Not Unique	Not Unique	Not Unique
		Unincorporated	Not Unique	Not Unique	Not Unique

## **Chapter 6 – Mitigation Strategy**

- 6.1 Federal Requirements for the Mitigation Strategy
- 6.2 Summary of Plan Updates
- 6.3 Goals for Hazard Mitigation
- 6.4 Participation and Compliance with the National Flood Insurance Program (NFIP)
- 6.5 Implementation of Mitigation Actions
- 6.6 Multi-Jurisdictional Mitigation Action Program

### **6.1 Federal Requirements for the Mitigation Strategy**

This chapter of the Plan addresses the Mitigation Strategy requirements of 44 CFR Section 201.6 (c) (3), as follows:

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

- (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
- (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction’s participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
- (iii) An Action Program describing how the actions identified in paragraph (c) (3) (ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
- (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.”

**6.2 Summary of Plan Updates**

Table 6-1 summarizes changes made to the plan as a result of the 2015 plan update:

**Table 6-1. Summary of Plan Updates**

Section		Change
6.3	Goals for Hazard Mitigation	Goals and objectives from previous plans reviewed and modified based on current conditions.
6.4	Participation and Compliance with the National Flood Insurance Program (NFIP)	Describes participation and ongoing commitments of NFIP participants to enhance flood plain management program activities.
6.5	Implementation of Mitigation Actions	Describes new selection criteria for mitigation actions and projects.
6.6	Multi-Jurisdictional Mitigation Action Program	Creates new five-year action programs for each participating community.

**6.3 Goals for Hazard Mitigation**

**6.3.1 Description of How the Goals were Developed**

The Hazard Mitigation Planning Committee (HMPC) evaluated the validity and effectiveness of the goals from the previous 2010 plan and determined that the goals statements should be retained in the 2015 plan update. The HMPC determination of the goals is based on current conditions and also considers the following factors, among others:

- The completion of mitigation measures over the five-year plan implementation cycle (see Appendix C “2010 Plan Implementation Status”);
- The 2015 update to the risk assessment in Chapter 5;
- The update to the risk assessment in the Alabama State Hazard Mitigation Plan; and
- The update of State goals and mitigation priorities reflected in the State Plan.

The previously approved plan also included objectives, and this update carries forward many of the same objectives. Some objectives have been modified and new objectives have been added to better identify and select among available mitigation measures that best respond to the considerations listed in the next paragraph (see Appendix F “Identification and Analysis of Mitigation Measures”). The 2010 implementation status report in Appendix C “2010 Plan Implementation Status” documents which objectives have been met.

Among the considerations reviewed by the planning team during the process of updating this goals section of the mitigation strategy, were the following concerns:

- Whether the 2010 goals and objectives reflected the updates to the local risk assessment and the update to the State risk assessment;
- Whether the 2010 goals and objectives effectively directed mitigation actions and projects that helped reduce vulnerability to property and infrastructure;
- Whether the 2010 goals and objectives support the changed 2015 mitigation priorities established by the HMPC; and
- Whether the 2010 goals reflect the adopted goals in the Alabama State Hazard Mitigation Plan.

The updated goals are presented in Section 6.3.3 “Community Goals” and have also been incorporated into Table 6-3 “2015-2020 Mobile County Multi-Jurisdictional Action Program” and the “Community Action Programs” in Volume II.

A strategic planning approach has been applied for identification and analysis of mitigation actions and projects. FEMA’s program categories for managing a successful mitigation program were used as guidelines for identifying and sorting the alternative mitigation measures:

- **Prevention.** Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to natural hazards.
- **Property Protection.** Protecting structures and their occupants and contents from the damaging effects of natural hazard occurrences, including retrofitting existing structures to increase their resistance to damage and exposure of occupants to harm; relocating vulnerable structures and occupants from hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.
- **Public Education and Outreach.** Educating and informing the public about the risks of hazards and the techniques available to reduce threats to life and property.
- **Natural Resources Protection.** Preserving and restoring the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.
- **Structural Projects.** Engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a hazard on a community.

The comprehensive listing of alternative mitigation measures within each of the above mitigation program areas was developed by the planning team (again, refer to Appendix F “Identification and Analysis of Mitigation Measures”). The process by which the Hazard Mitigation Planning Committee (HMPC) and local jurisdictions finally selected among the available mitigation measures applied the STAPLEE method. STAPLEE examines social, technical, administrative, political, legal, environmental, and economic considerations.

HMPC representatives from each jurisdiction participated in the evaluation and selection of the mitigation measures. Not all of the mitigation measures initially considered were included in the final Community Mitigation Action Programs (see Volume II “Community Action Programs”). The STAPLEE evaluation eliminated many of the measures. Also, some communities did not have the capabilities to carry out a particular measure under consideration or had other concerns revealed by the STAPLEE method.

A capability assessment was performed by the planning team to determine each participating community’s capability to implement their selected mitigation action program. A report of the assessment is documented in Appendix B - “Community Mitigation Capabilities.” The assessment includes, among other capability factors, a review of local plans, studies, regulatory tools and other local planning tools. Mitigation measures to improve these tools to better integrate mitigation objectives were considered and, where deemed appropriate, selected for the action programs.

In addition to STAPLEE and community capabilities, the communities examined other evaluation criteria, including consistency with the vision, goals, and objectives established for the 2015 plan update; cost effectiveness in terms of benefit to cost; FEMA and State funding priorities for Hazard Mitigation Assistance grants; and the fiscal and staffing capabilities of the jurisdictions for carrying out the measures.

The “2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program,” as presented in Table 6-3 in Section 6.6, presents all of goals, objectives and measures chosen by each of the participating jurisdictions. The Community Action Programs in Volume II, which supplements Table 6-3, breaks out the same mitigation goals, objectives, and mitigation measures by community and adds the priority, timeframe for completion, and responsibility for implementation.

### **6.3.2 The Vision for Disaster-Resistant Baldwin County Communities**

The communities of Baldwin County envision active resistance to the threats of nature to human life and property through publicly supported mitigation measures with proven results. The communities within Baldwin County commit to reduce the exposure and risk of natural hazards by activating all available resources through cooperative

intergovernmental and private sector initiatives and augmenting public knowledge and awareness.

This shared vision among all Baldwin County local governments can be achieved through a long-term hazard mitigation strategy that fully responds to the following hazards identified by this plan:

- hurricanes,
- flooding,
- severe storms,
- tornadoes,
- wildfires,
- drought/heat waves,
- winter storms/freezes,
- earthquakes,
- landslides,
- dam/levee failures,
- sinkholes,
- tsunamis, and
- manmade/technological.

The attainment of this vision requires successful implementation of a comprehensive range of mitigation measures that promote the following underlying principles and purposes:

- to reduce or eliminate risks from natural hazards;
- to reduce the vulnerability of existing, new, and future development of buildings and infrastructure;
- to minimize exposure and vulnerability of people, buildings, critical facilities, and infrastructure to identified hazards;
- to increase public awareness and support of hazard mitigation;
- to establish interagency cooperation for conducting hazard mitigation activities;
- to strengthen communications and coordination among individuals and organizations;
- to integrate local hazard mitigation planning with State hazard mitigation planning, local comprehensive planning activities, and emergency operations planning; and
- to protect people and property and reduce losses and damages to buildings and infrastructure.

**6.3.3 Community Goals**

The goals for guiding the Mitigation Strategy and achieving the long-range vision shared among Baldwin County communities are presented here:

1. **Prevention Goal.** Manage the development of land and buildings to minimize risks of loss due to natural and man-made hazards.
2. **Property Protection Goal.** Protect structures and their occupants and contents from the damaging effects of natural and man-made hazards.
3. **Public Education and Awareness Goal.** Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.
4. **Natural Resources Protection Goal.** Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.
5. **Structural Projects Goal.** Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where found to be feasible, cost effective, and environmentally suitable.

**6.3.4 Compatibility with 2013 Alabama State Plan Goals**

The 2015 Baldwin County vision, goals, and objectives are reflective of the goals adopted in the 2013 Alabama State Hazard Mitigation Plan. The State plan includes the following five goals for statewide hazard mitigation:

1. Establish a comprehensive statewide hazard mitigation system.
2. Reduce the State of Alabama's vulnerability to natural hazards.
3. Reduce vulnerability of new and future development.
4. Foster public support and acceptance of hazard mitigation.
5. Expand and promote interagency hazard mitigation cooperation.

Alabama local governments, including Baldwin County communities, are the fundamental building blocks of the "comprehensive statewide hazard mitigation system." The underlying principles and purposes of the 2015 Baldwin County goals, listed in Table 6.3, complement the remaining five State goals, as follows: (a) to reduce or eliminate risks from natural and man-made hazards; (b) to reduce the vulnerability of existing, new, and future development of buildings and infrastructure; (c) to minimize exposure and vulnerability of people, buildings, critical facilities, and infrastructure to identified hazards; (d) to increase public awareness and support of hazard mitigation; and (e) to establish interagency cooperation for conducting hazard mitigation activities.

## **6.4 Participation and Compliance with the National Flood Insurance Program (NFIP)**

Baldwin County and all jurisdictions are in good standing with the NFIP. Since the 2010 plan update, both Elberta and Magnolia Springs have entered the NFIP; they were unmapped at the last update. All communities in Baldwin County have continued to effectively enforce and keep their floodplain ordinances current since their original entry into the program. Local flood plain ordinance administrators provide technical assistance to applicants and keep abreast of changes in flood plain management requirements through the State NFIP Coordinator. All communities have developed five-year action programs to improve local flood plain management programs (see specific action items for each community in Section #, Goal 1 Prevention, Objective 1.6, Flood Plain Management Regulations). Demonstrations of community commitment to effective implementation of the NFIP include the following actions:

- Longstanding records of continuous and effective enforcement of flood plain management ordinance requirements;
- Continuing education of local flood plain administrators;
- Community outreach to inform builders and property owners of flood plain management ordinance permitting requirements;
- Continuing updates of local flood plain ordinances for compliance with the most current NFIP standards;
- Maintaining the latest FIRM data in the County's GIS database for all communities;
- Ongoing relations by each community with the State NFIP Coordinator;
- Monitoring flooding events and damages in conjunction with the Baldwin County EMA;
- Encouragement to participate in the Community Rating System (CRS) program, through this hazard mitigation planning process and the HMPC; and
- Maintaining NFIP publications on hand by the Baldwin County EMA as technical support resources to local flood plain administrators and as public education information for the general public.
- The following Table 6-2 provides information on the NFIP participation status of Baldwin County jurisdictions:

**Table 6-2. NFIP Community Status, Baldwin County Jurisdictions**

Community ID	Jurisdiction	Current Effective Map Date	Status
015000	Baldwin County	07/17/2007	Participating
010004	Bay Minette	07/17/2007	Participating
010005	Daphne	07/17/2007	Participating
010212	Elberta	NSFHA*	Participating
010006	Fairhope	07/17/2007	Participating
010007	Foley	07/17/2007	Participating
015005	Gulf Shores	07/17/2007	Participating
010009	Loxley	07/17/2007	Participating
010524	Magnolia Springs	08/01/2011	Participating
015011	Orange Beach	07/17/2007	Participating
010523	Perdido Beach	7/17/2007	Participating
010222	Robertsdale	07/17/2007	Participating
010010	Silverhill	07/17/2007	Participating
010429	Spanish Fort	07/17/2007	Participating
010328	Summerdale	07/17/2007	Participating

\*No Special Flood Hazard Areas (NSFHA) mapped.

Source: NFIP Community Status Book, 09/22/2015

## 6.5 Implementation of Mitigation Actions

The range of measures identified in Section 6.3 “Goals for Hazard Mitigation” was the source for all actions and projects selected by the Hazard Mitigation Planning Committee (HMPC) and the planning team for inclusion in the five-year Community Mitigation Action Programs for each jurisdiction. Each jurisdiction assigned a priority to selected measures, established a general completion schedule, assigned administrative responsibility for carrying out the measures, estimated costs, where possible, and identified potential funding sources, including potential eligibility for FEMA Hazard Mitigation Assistance Programs.

Social, technical, administrative, political, legal, environmental, and economic considerations, often referred to as the STAPLEE method, guided the evaluation of the range of measures considered by the Hazard Mitigation Planning Committee (HMPC) and its final recommended action programs for each participating jurisdictions. The STAPLEE method addressed the following areas of concern and responded to many of the questions presented here:

### 1. Social Considerations.

- *Environmental justice.* Will the proposed measure be socially equitable to minority, disadvantaged, and special needs populations, such as the elderly and handicapped?

- *Neighborhood impact.* Will the measure disrupt established neighborhoods or improve quality of life for affected neighborhoods?
- *Community support.* Is the measure consistent with community values? Will the affected community support the measure?
- *Impact on social and cultural resources.* Does the measure adversely affect valued local resources or enhance those resources?

## 2. Technical Considerations.

- *Technical feasibility.* Is the proposal technically possible? Are there technical issues that remain? Does the measure effectively solve the problem or create new problems? Are there secondary impacts that might be considered? Have professional experts been consulted?

## 3. Administrative Considerations.

- *Staffing.* Does the jurisdiction have adequate staff resources and expertise to implement the measure? Will additional staff, training, or consultants be necessary? Can local funds support staffing demands? Will the measure overburden existing staff loads?
- *Maintenance.* Does the jurisdiction have the capabilities to maintain the proposed project once it is completed? Are staff, funds, and facilities available for long-term project maintenance?
- *Timing.* Can the measure be implemented in a timely manner? Are the timeframes for implementation reasonable?

## 4. Political Considerations.

- *Political support.* Does the local governing body support the proposed measure? Does the public support the measure? Do stakeholders support the measure? What advocates might facilitate implementation of the proposal?

## 5. Legal Considerations.

- *Legal authority.* Does the jurisdiction have the legal authority to implement the measure? What are the legal consequences of taking action to implement the measure as opposed to an alternative action or taking no action? Will new legislation be required?

**6. Environmental Considerations.**

- *National Environmental Policy Act (NEPA).* Will the measure be consistent with Federal NEPA criteria? How will the measure affect environmental resources, such as land, water, air, wildlife, vegetation, historic properties, archaeological sites, etc.? Can potentially adverse impacts be sufficiently mitigated through reasonable methods?
- *State and local environmental regulations.* Will the measure be in compliance with State and local environmental laws, such as flood plain management regulations, water quality standards, and wetlands protection criteria?
- *Environmental conservation goals.* Will the proposal advance the overall environmental goals and objectives of the community?

**7. Economic Considerations.**

- *Availability of funds.* Will the measure require Federal or other outside funding sources? Are local funds available? Can in-kind services reduce local obligations? What is the projected availability of required funds during the timeframe for implementation? Where funding is not apparently available, should the project still be considered but at a lower priority?
- *Benefits to be derived from the proposed measure.* Will the measure likely reduce dollar losses from property damages in the event of a hazard? To what degree?
- *Costs.* Are the costs reasonable in relation to the likely benefits? Do economic benefits to the community outweigh estimated project costs? What cost reduction alternatives might be available?
- *Economic feasibility.* Have the costs and benefits of the preferred measure been compared against other alternatives? What is the economic impact of the no-action alternative? Is this the most economically effective solution?
- *Impact on local economy.* Will the proposed measure improve local economic activities? What impact might the measure have on the tax base?
- *Economic development goals.* Will the proposal advance the overall economic goals and objectives of the community?

The STAPLEE evaluation also facilitated the prioritization of measures. If a measure under consideration was found to be financially feasible and had high ratings, it was given a higher priority for implementation than measures that fell lower in the rating. Moreover, a general economic evaluation was performed as part of the STAPLEE method, as described above. Weighing potential economic benefits to reducing

damages against costs made it possible to select among competing projects. Especially important to the selection process is the estimated cost and availability of funds through local sources and potential FEMA Hazard Mitigation Assistance (HMA) grant programs. Prior to implementation of projects proposed for HMA funding, a detailed benefit-cost analysis (BCA) will be required.

All of the above considerations and prioritization methods resulted in the final goals, objectives, and mitigation measures presented in Section 6.6, Table 6.3 “2010-2015 Baldwin County Multi-Jurisdictional Mitigation Action Program” and Volume II “Community Action Programs,” which supplements Table 6.3.

## **6.6 Multi-Jurisdictional Mitigation Action Program**

Table 6-3 “2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program” lists all goals, objectives, and mitigation measures for each participating jurisdiction. Separate action programs have been established for each community, which are presented in Volume II “Community Action Programs.” The proposed measures are within the authority of the jurisdiction or are part of a joint effort among multiple jurisdictions covered by this plan. Each jurisdiction participated in the development of its action program through its representative(s) on the Hazard Mitigation Planning Committee (HMPC), who identified and analyzed a comprehensive range of mitigation actions and projects that address each identified hazard. All actions included in these programs are achievable and within the capabilities of each jurisdictions. The planning team completed a comprehensive assessment of each jurisdiction’s capabilities to undertake hazard mitigation activities, and the results are reported in Appendix B “Community Mitigation Capabilities.” The action programs include multiple mitigation actions for each jurisdiction and each profiled hazard.

This is an updated multi-jurisdictional plan for 2015. As such, the status of measures proposed in the last 2010 plan have been reported in Appendix C - “Plan Implementation Status,” which identifies each measure as completed, ongoing, not completed but deferred to the 2015 plan, or not completed and deleted from the 2015 plan update. The reasons for deferring or deleting a measure were categorized in the status report as lack of funding, administrative, political, technical, or legal. The updated plan also includes new mitigation measures added through the plan update process. The sources for these new measures are noted in Appendix F, Table F-1 “Alternative Types of Mitigation Measures.” The sources for new measures include those measures recommended for implementation by local governments in the 2013 Alabama State Plan update and measures recommended by the Hazard Mitigation Planning Committee (HMPC) and planning team in the 2015 plan update. Mitigation measures that remain unchanged from the previously approved plan include ongoing measures and measures that were deferred for the reasons noted in the 2010 implementation status report.

Table 6-3 “2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program” presents the goals, objectives, and mitigation measures selected for each of the participating communities. The hazards addressed by the measure are listed. *All*, where used to denote hazards addressed, includes all hazards identified in Chapter 5 “Risk Assessment.” Whether the measure would affect new or existing buildings and infrastructure is noted on the table, and each measure is identified as a *Project* or *Action*. Potential funding sources were identified and noted in the table. *FEMA HMA Grant* (Hazard Mitigation Assistance) funds, where noted as a possible funding source are subject to final eligibility determination, including, among other eligibility criteria, a positive benefit/cost analysis, and the availability of funds.

**Table 6-3. 2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program**

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source	
1	<u>Goal for Prevention.</u> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<u>Comprehensive Plans and Smart Growth.</u> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source	
<p><b>1.2</b> <u>Geographic Information Systems (GIS)</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.</p>						
1.2.1	<p>Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.</p>	<p>Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale</p>	<p>All</p>	<p>Both</p>	<p>Action</p>	<p>HMA</p>
1.2.2	<p>Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.</p>	<p>Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale</p>	<p>All</p>	<p>Both</p>	<p>Action</p>	<p>HMA</p>
1.2.3	<p>Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.</p>	<p>Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale</p>	<p>Flooding</p>	<p>Both</p>	<p>Action</p>	<p>Existing</p>
<p><b>1.3</b> <u>Planning Studies</u>. Conduct special studies, as needed, to identify hazard risks and mitigation measures.</p>						
1.3.1	<p>Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.</p>	<p>Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale</p>	<p>Flooding</p>	<p>Both</p>	<p>Action</p>	<p>HMA</p>

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
1.3.2	Identify existing culturally or socially significant structures and critical facilities within the jurisdiction that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Existing	Action	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	TBD
1.3.4	Inventory and map existing fire hydrants throughout the jurisdiction, and identify areas in need of new fire hydrants.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfires	Existing	Action	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	HMA
1.4	<b>Zoning.</b> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.					
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
1.4.4	Enact local ordinance that requires community storm shelters within sizeable mobile home parks and subdivisions.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, Hurricanes, Severe Storms	New	Action	Existing
1.5	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	New	Action	Existing
1.6	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
1.6.5	Participate in the “Turn Around Don’t Drown” program by purchasing and installing signs in known flash flood bridge overpass locations.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	Other
1.6.6	Improve flood risk assessment by documenting high water marks post event, verification of FEMA’s repetitive loss inventory and revising and updating regulatory floodplain maps.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	New	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, Hurricanes, Severe Storms	New	Action	Existing
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, severe storms, tsunamis, winter storms/freezes, hurricanes	Both	Action	HMA
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfires	Both	Action	Existing
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Existing	Action	Existing
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, Hurricanes, Severe Storms	New	Project	HMA
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort,	Flooding	Action	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
		Summerdale				
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfires	Both	Action	Existing
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfires	Both	Actions	Existing
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	Existing
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	Existing
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach,	Flooding	Both	Action	TBD

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
		Robertsdale, Silverhill, Spanish Fort, Summerdale				
<b>1.10</b>	<b><u>Dam Safety Management.</u> Establish a comprehensive dam safety program.</b>					
1.10.1	Support legislation to establish a State dam safety program.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Dam/Levee Failure	Both	Action	Existing
<b>1.11</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
<b>1.12</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding, Tornadoes, Hurricanes, Severe Storms, Tsunamis and Earthquakes	Existing	Action	HMA
1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfire	Both	Project	HMA

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source	
<p><b>2</b> <u>Goal for Property Protection:</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</p>						
<p><b>2.1</b> <u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</p>						
2.1.1	Pursue FEMA grant funds to relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
<p><b>2.2</b> <u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</p>						
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
<p><b>2.3</b> <u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</p>						

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
<b>2.5</b>	<b><u>Flood Control Measures.</u> Small flood control measures built to reduce/prevent flood damage</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
<b>2.6</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
2.6.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding, Tornadoes, Hurricanes, Severe Storms, Tsunamis and Earthquakes	Existing	Action	HMA
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding, Tornadoes, Hurricanes, Severe Storms, Tsunamis and Earthquakes	Existing	Action	Existing
2.7	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Existing	Action	Existing
2.7.2	Promote the purchase of crop insurance to cover potential losses due to drought.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Drought	Existing	Action	Existing
2.8	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.8.1	Install lightning and/or surge protection on existing critical facilities.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Severe storms	Existing	Project	TBD

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source	
<b>2.9</b> <u>Back Up Power.</u> Assure uninterrupted power supplies during emergency events.						
2.9.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Hurricanes, Tornadoes, Severe Storms	Existing	Project	HMA
<b>3</b> <u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.						
<b>3.1</b> <u>Map Information.</u> Increase public access to Flood Insurance Rate Map (FIRM) information.						
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
<b>3.2</b> <u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.						
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Existing	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
<b>3.3</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	Existing
<b>3.4</b>	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
<b>3.5</b>	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.5.1	Distribute hazard mitigation brochures to students through area schools.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach,	All	Both	Action	Existing

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
		Robertsdale, Silverhill, Spanish Fort, Summerdale				
3.5.2	Educate homeowners about structural and non-structural retrofitting of vulnerable homes.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Earthquake	Both	Action	Existing
3.6	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.6.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.6.2	Distribute the 2015 plan summary to the public through local jurisdictions, via the internet and other media.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.7	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source	
<b>3.8</b> <u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.						
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
<b>3.9</b> <u>Weather Radios.</u> Improve public access to weather alerts.						
3.9.1	Promote the use of weather radios in households and businesses.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Action	Existing
<b>3.10</b> <u>Disaster Warning.</u> Improve public warning systems.						

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Project	HMA
3.10.5	Upgrade critical communications infrastructure.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	All	Both	Project	HMA
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>Open Space Easements and Acquisitions.</b> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.					

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Project	HMA
4.2	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Other
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	Existing
4.3	<b><u>Urban Forestry Programs.</u> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.</b>					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Existing	Action	Existing
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfire	Both	Action	Existing

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Wildfire	Both	Action	Existing
4.4	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and renourish.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding, Hurricanes	Existing	Action	Other
4.4.2	Develop a coastal renourishment program.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding, Hurricanes	Existing	Action	Other
4.5	<b><u>Water Resources Conservation Programs.</u> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.</b>					
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Droughts/heat waves, wildfires	Both	Action	Existing
5	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
5.1	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Action	Existing
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Flooding	Both	Project	HMA
5.2.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Drought	Both	Project	HMA
5.3	<b><u>Community Shelters and Safe Rooms:</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Hurricanes, Tornadoes, Severe Storms	New	Project	HMA
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, Hurricanes, Severe Storms	Existing	Project	HMA

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	Baldwin County, Bay Minette, Daphne, Elberta, Fairhope, Foley, Gulf Shores, Loxley, Magnolia Springs, Orange Beach, Perdido Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale	Tornadoes, Hurricanes, Severe Storms	Both	Project	HMA

## **Chapter 7 – Plan Maintenance Process**

- 7.1 Federal Requirements for the Plan Maintenance Process
- 7.2 Summary of Plan Updates
- 7.3 Monitoring, Evaluating and Updating the Mitigation Plan
- 7.4 Incorporation of the Mitigation Plan into Other Planning Mechanisms
- 7.5 Continuing Public Participation in the Plan Maintenance Process

### **7.1 Federal Requirements for the Plan Maintenance Process**

This Chapter of the Plan addresses the Plan Maintenance Process requirements of 44 CFR Sec. 201.6 (c) (4), as follows:

Sec. 201.6 (c) *Plan content*. The plan shall include the following:

(4) *A plan maintenance process that includes:*

- (i) *A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*
- (ii) *A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*
- (iii) *Discussion on how the community will continue public participation in the plan maintenance process.*

### **7.2 Summary of Plan Updates**

This Chapter continues an active monitoring and streamlined plan amendment process; guidance for annual evaluation of plan status; refined and updated process; ongoing integration of local planning mechanisms; and public participation opportunities to be continuously monitored and annually evaluated.

### **7.3 Monitoring, Evaluating, and Updating the Mitigation Plan**

#### **7.3.1 Ongoing Monitoring of the Plan**

During the previous five years, between adoption of the 2010 Baldwin County Multi-Hazard Mitigation Plan and initiation of the 2015 Baldwin County Multi-Hazard Mitigation Plan, the Hazard Mitigation Planning Committee (HMPC) reconvened

beginning August 14, 2013. They reorganized their membership at a September 11, 2013 meeting and met six additional times reviewing topics such as the HMPG meeting schedule, THIRA, and the plan revision process. Despite the lack of efforts to actively maintain the 2010 plan over the previous five-year planning cycle, the Hazard Mitigation Planning Committee (HMPC) is committed to following the procedures presented in this 2015 plan update.

The HMPC ongoing review process throughout the year should continually monitor the current status of the mitigation measures scheduled for implementation. Ongoing status reports of each jurisdiction's progress will be reviewed by the Baldwin County EMA Director and representatives from the HMPC and should include the following information:

- Actions that have been undertaken to implement the scheduled mitigation measure, such as, obtaining funding, permits, approvals or other resources to begin implementation.
- Mitigation measures that have been completed, including public involvement activities.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.

The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources scheduled in the "Community Action Programs." In the event modifications to the plan are warranted as a result of the annual review or other conditions, the HMPC will oversee and approve all amendments to the plan by majority vote of a quorum of HMPC members. Conditions that might warrant amendments to this plan would include, but not be limited to, special opportunities for funding and response to a natural disaster. A copy of the plan amendments will be submitted by the Baldwin County EMA to all jurisdictions in a timely manner and filed with the Alabama EMA.

### **7.3.2 Evaluating the Plan**

Within sixty days following a significant disaster or an emergency event having a substantial impact on a portion of or the entire Baldwin County area or any of its jurisdictions, the HMPC will conduct or oversee an analysis of the event to evaluate the responsiveness of the Mitigation Strategy to the event and the effects on the contents of the Risk Assessment. The Risk Assessment should evaluate the direct and indirect damages, response and recovery costs (economic impacts) and the location, type, and

extents of the damages. The findings of the assessment should determine any new mitigation initiatives that should be incorporated into this plan to avoid similar losses from future hazard events. The results of the assessment will be provided to those affected jurisdictions for review. These results also provide useful information when considering new mitigation initiatives as an amendment to the existing plan or during the next five-year plan update period.

The HMPC will oversee an annual evaluation of progress towards implementation of the Mitigation Strategy. Any discussions and reports by the HMPC should be documented. When the plan is next revised, the evaluation findings can clearly justify and explain any revisions. In its annual review, the HMPC should discuss the following topics to determine the effectiveness of the implementation actions and the need for revisions to the Mitigation Strategy:

- Are there any new potential hazards that have developed and were not addressed in the plan?
- Have any disasters occurred that are not included in the plan?
- Are there additional mitigation ideas that need to be incorporated into the plan?
- What projects or other measures have been initiated, completed, deferred or deleted?
- Are there any changes in local capabilities to carry out mitigation measures?
- Have funding levels to support mitigation actions either increased or decreased?

The HMPC may create subcommittees to oversee and evaluate plan implementation. This will be done at the Committee's discretion.

### **7.3.3 Plan Update Process**

Any of the following situations may require a review and update of the plan:

- Requirement for a five-year update.
- Change in federal requirements for review and update of the plan.
- Significant natural hazard event(s) before the expiration of the five-year plan update.

As stated above in Section 7.3.2, the HMPC will convene within 60 days of a significant disaster to discuss the potential need for any amendments to the plan. If there are no significant disasters which trigger an update, the current Federal guidelines require a five-year update.

The Baldwin County EMA will release or publish a notice to the public that an update is being initiated and provide information on meeting schedules, how and where to get information on the plan, how to provide comments on the plan, and opportunities for other public involvement activities. The EMA will then convene the HMPC and, with the assistance of EMA staff or a consultant, as deemed necessary, carry out the steps necessary to update the plan.

The initial steps for the five-year update to this plan should begin nine to twelve months before the current FEMA approval expiration, which takes into consideration the 90 day review process by the Alabama EMA and FEMA. Additional time for planning grants may require up to an additional year added to the start date. Once the Hazard Mitigation Planning Committee has been organized to oversee the update, the following steps will take place in order to facilitate the process:

- Step 1. Review of the most recent FEMA local mitigation planning requirements and guidance.
- Step 2. Evaluation of the existing planning process and recommendations for improvements.
- Step 3. Examination and revision of the risk assessment, including hazard identification, profiles, vulnerabilities, and impacts on development trends, to ensure accuracy and up-to-date information.
- Step 4. Update of mitigation strategies, goals and action items, in large part based on the annual plan implementation evaluation input.
- Step 5. Evaluation of existing plan maintenance procedures and recommendations for improvements.
- Step 6. Comply with all applicable Federal regulations and directives.

Ninety days prior to the anniversary date, a final draft of the revised plan will be submitted to the Alabama EMA for review and comments and then to FEMA for conditional approval. Once FEMA Region IV has issued a conditional approval, the updated plan will be adopted by all participating jurisdictions.

## **7.4 Incorporation of the Mitigation Plan into Other Planning Mechanisms**

This plan supplements the most recent edition of the Baldwin County Emergency Operations Plan, which is administered through the Baldwin County Emergency Management Agency. Further, each governmental entity will be responsible for implementation of their individual Community Mitigation Action Programs based on priorities, funding availability, capabilities, and other considerations described in Chapter 6 – “Mitigation Strategy.” Because the 2015 Baldwin County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan, the mechanisms for implementation of the various mitigation measures through existing programs may vary by jurisdiction. Each

jurisdiction's unique needs and capacities for implementation are reflected in its respective mitigation action program.

The Hazard Mitigation Planning Committee recognizes the importance of fully integrating hazard mitigation planning and implementation into existing local plans, regulatory tools, and related programs. This plan is intended to influence each jurisdiction's planning decisions concerning land use, development, public facilities, and infrastructure. Any updates, revisions, or amendments to the Baldwin County Emergency Operations Plan, local comprehensive plans, capital improvement budgets or plans, zoning ordinances and maps, subdivision regulations, building and technical codes, and related development controls should be consistent with the goals, objectives, and mitigation measures adopted in this plan. Each jurisdiction's commitment to this consistency is reflected in its respective mitigation action program. As part of the subsequent five-year update process, all local planning mechanisms should again be reviewed for effectiveness, and recommendations for new integration opportunities should be carefully considered. This type of evaluation was performed in the 2015 update and should follow in the next update cycle.

Multi-hazard mitigation planning should not only be integrated with local planning tools, but into existing public information activities, as well as household emergency preparedness. Ongoing public education programs should stress the importance of managing and mitigating hazard risks. Public information handouts and brochures for emergency preparedness should emphasize hazard mitigation options, where appropriate.

Of particular importance to incorporating hazard mitigation planning into other planning programs, is the Baldwin County EMA's commitment to full integration of multi-hazard mitigation planning into its comprehensive emergency operations planning program and associated public emergency management activities, to the furthest possible extent.

## **7.5 Continuing Public Participation in the Plan Maintenance Process**

A critical part of maintaining an effective and relevant multi-hazard mitigation plan is ongoing public review and comment. Consequently, the Hazard Mitigation Planning Committee is dedicated to direct involvement of its citizens in providing feedback and comments on the plan throughout the five-year implementation cycle and interim reviews.

To this end, copies of this 2015 Baldwin County Multi-Hazard Mitigation Plan will be maintained in the offices of the Baldwin County EMA and the principal offices of all of the jurisdictions that participated in the planning process. After adoption, a public information notice will inform the public that the plan may be viewed at these offices or

on the Web. The Baldwin County EMA website at [www.baldwincountyal.gov](http://www.baldwincountyal.gov) contains a link to download an online copy of the plan. Public comments can be received by the Baldwin County EMA by telephone, mail, or e-mail.

Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the Hazard Mitigation Planning Committee. The public will be able to express their concerns, ideas, and opinions at the meetings. At a minimum, public hearings will be held during the annual and five-year plan updates and to present the final plan and amendments to the plan to the public before adoption. Public opinion surveys are conducted during the community meetings and public involvement activities required for the five-year update may be periodically administered by the Baldwin County EMA.

Extensive public involvement activities initiated by the 2015 planning process are well documented in Appendix H - "Community Involvement Documentation." Many of these activities will continue throughout the five-year implementation cycle and be evaluated for effectiveness at least annually by the Hazard Mitigation Planning Committee. Moreover, the public outreach goal of this plan and the associated objectives and mitigation measures commit each locality to implement a range of public education and awareness opportunities. The constant monitoring of these programmed mitigation actions assures ongoing public participation throughout the plan maintenance process.

2015

# BALDWIN COUNTY, ALABAMA MULTI-HAZARD MITIGATION PLAN

## II. COMMUNITY ACTION PROGRAMS

### A multi-jurisdiction plan

**CITY OF BAY MINETTE**  
**CITY OF DAPHNE**  
**TOWN OF ELBERTA**  
**CITY OF FAIRHOPE**  
**CITY OF FOLEY**  
**CITY OF GULF SHORES**  
**TOWN OF LOXLEY**  
**TOWN OF MAGNOLIA SPRINGS**  
**CITY OF ORANGE BEACH**  
**TOWN OF PERDIDO BEACH**  
**CITY OF ROBERTSDALE**  
**TOWN OF SILVERHILL**  
**CITY OF SPANISH FORT**  
**TOWN OF SUMMERDALE**  
**BALDWIN COUNTY**



Prepared under the direction of the  
Baldwin County Hazard Mitigation Planning Committee



With the support of the Baldwin County EMA by:



Funded in Part through the  
FEMA Pre-Disaster Mitigation (PDM) Grant Program

Draft December 14, 2015



# 2015 Baldwin County, Alabama, Multi-Hazard Mitigation Plan

## II. Community Action Programs

*City of Bay Minette, City of Daphne, Town of Elbert, City of Fairhope, City of Foley, City of Gulf Shores, Town of Loxley, Town of Magnolia Springs, City of Orange Beach, Town of Perdido Beach, City of Robertsdale, Town of Silverhill, City of Spanish Fort, Town of Summerdale, and Baldwin County*

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Draft December 14, 2015



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## **Community Action Programs**

- 1.0 Development of Community Action Programs
- 2.0 Community Action Programs for Each Jurisdiction

### **1.0 Development of Community Action Programs**

The Community Action Programs presented here supplement Table 6-3 “2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program” found in Volume I, Chapter 6, Section 6.6. These Community Action Programs delineate the same mitigation goals, objectives, and mitigation measures by community and add the priority, timeframe for completion, and lead responsibility for implementation. Section 6.3.1 “Description of How the Goals were Developed” describes the process leading to selection of mitigation measures by each jurisdiction.

In developing a list of mitigation measures for potential loss reduction, the planning team, in cooperation with the Hazard Mitigation Planning Committee (HMPC), consulted these four primary sources:

- 1) The 2010 Baldwin County, Alabama, Multi-Hazard Mitigation Plan;
- 2) The 2013 Alabama State Hazard Mitigation Plan;
- 3) Appendix C – “Plan Implementation Status”; and,
- 4) Appendix F – “Identification and Analysis of Mitigation Measures”.

First, the planning team examined the implementation status of the mitigation measures adopted by each community in the 2010 plan. Next, the planning team reviewed the alternative measures with the HMPC (refer to Appendix F “Identification and Analysis of Mitigation Measures).” The HMPC then selected among alternatives to develop the overall county mitigation strategy and action program for each jurisdiction. The team also added the action items that are listed in the 2013 Alabama State Hazard Mitigation Plan mitigation strategy, in which the State assigned implementation responsibility to local jurisdictions. Finally, mitigation actions selected by the HMPC through various exercises were added to the list. The results of the planning steps described above comprise each jurisdiction’s Community Action Program. Each participating jurisdiction was provided an opportunity to choose the measures for completion during the five-year (2015-2020) plan update cycle. Jurisdictional representatives were asked to rank the priority of each measure and choose a timeframe for completion. Measures could be ranked as short-range (less than two years), mid-range (two to five years), or long-range (five or more years). In addition, various measures have been carried over from the previous plans. The agency responsible for implementation of each measure has been identified, and estimated costs and funding source have been noted, where available. Most cost estimates will be provided at the time the measure is planned for implementation, or, if eligible for FEMA HMA funding, at the time of application.

## **2.0 Community Action Programs for Each Jurisdiction**

This section presents the Community Action Programs adopted by each of the participating jurisdictions. The following key explains the components of the Community Action Programs:

### **Key**

- Action programs are in alphabetical order by jurisdiction.
- The action programs assign lead responsibility for implementation to a specific department or agency or position within the organization.
- Priorities are *High*, *Medium*, and *Low*.
- Timelines are *Short-Range* (less than 2 years), *Mid-Range* (2-5years), *Long-Range* (more than 5 years) or *Ongoing*.
- General cost estimates and potential funding sources are identified. FEMA Hazard Mitigation Assistance funds, where noted as a possible funding source, are subject to final eligibility determination, including, among other eligibility criteria, a positive benefit/cost analysis, and the availability of funds.
- *TBD* is "To Be Determined."

**2.1 Baldwin County Community Action Program**

Baldwin County Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to natural hazards.</b>					
1.1	<b>Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.</b>					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Baldwin County EMA/ Planning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Baldwin County EMA/ Planning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Baldwin County EMA/ Planning Department	Medium	Mid-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
<b>1.2</b>	<b><u>Geographic Information Systems (GIS).</u> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.</b>					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA/ GIS Department/ Engineering Department	Medium	Mid-Range	HMA	TBD
<b>1.3</b>	<b><u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Planning Department/ Building Department	Medium	Mid- Range/Ongoing	HMA Grant	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Consider large lot size restriction on flood prone areas designated on Flood Insurance Rate Maps.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, and restrictive development of flood ways, among others.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning Department/ Building Department/ Engineering Department	Medium	Mid-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	County Commission	Medium	Mid-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	Medium	Mid-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.6.5	Participate in the "Turn Around, Don't Drown" program by purchasing and installing signs in known flash flood overpass locations.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.6.6	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Floodplain Manager	Medium	Short-Range	TBD	TBD
<b>1.7</b>	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	Medium	Mid-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	Medium	Mid-Range	Local Funds	TBD
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning Department/ Building Department	Medium	Mid-Range	FEMA HMA Grant	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Official	Medium	Mid-Range	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Official	Medium	Mid-Range	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning Department/ Building Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning Department	Medium	Mid-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	Planning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning Department	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning Department	Medium	Ongoing	Existing	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Planning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	High	Short-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning Department	Medium	Long-Range	FEMA HMA Grant	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.11.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Fire Department	Medium	Mid-Range	Local Funds	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Official	High	Short-Range	TBD	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damage.</b>					

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of building in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Flood Control Measures.</u> Construct small flood control measures to reduce/prevent flood damage.</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.	Building Official	Low	Long-Range	FEMA HMA Grant	TBD
<b>2.6</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
2.6.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
<b>2.7</b>	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.8</b>	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.8.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Medium	Mid-Range	Local Funds	TBD
<b>2.9</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.9.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Map Information.</u> Increase public access to Flood Insurance Rate Map (FIRM) information.</b>					

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Planning Department	Low	Mid-Range	Existing	TBD
<b>3.2</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning Department	High	Short-Range	Local Funds	TBD
3.2.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning Department	High	Short-Range	Local Funds	TBD
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Baldwin County EMA	High	Short-Range	Local Funds	TBD
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Local Floodplain Manger	High	Short-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain disclosure when a property is for sale.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
<b>3.4</b>	<b><u>Library.</u></b> Use local library resources to educate the public on hazard risks and mitigation alternatives.					
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Local Floodplain Manger	Medium	Long-Range	Local Funds	TBD
<b>3.5</b>	<b><u>Education Programs.</u></b> Use schools and other community education resources to conduct programs related to hazard risks and mitigation measures.					
3.5.1	Distribute hazard mitigation brochures to students through area schools.	Baldwin County EMA	High	Short-Range	Local Funds	TBD
3.5.2	Educate homeowners about structural and non-structural retrofitting of vulnerable homes.	Baldwin County EMA	Low	Long-Range	Local Funds	TBD
<b>3.6</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u></b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					
3.6.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.7</b>	<b><u>Technical Assistance.</u></b> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.					
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	Medium	Short-Range	Local Funds	TBD

Baldwin County Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.8	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Local Government	Medium	Ongoing	Local Funds	TBD
3.9	<b>Weather Radios.</b> Improve public access to weather alerts.					
3.9.1	Promote the use of weather radios in households and businesses.	Local Government	High	Short-Range	Existing	TBD
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.	Local Government	High	Short-Range	Existing	TBD
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Local Government	High	Short-Range	Existing	TBD
3.10	<b>Disaster Warning.</b> Improve public warning systems.					
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Local Government	High	Mid-Range	FEMA HMA Grant	TBD
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Local Government	High	Mid-Range	FEMA HMA Grant	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Local Government	High	Mid-Range	FEMA HMA Grant	TBD
3.10.5	Upgrade critical communications infrastructure.	Local Government	High	Long-Range	TBD	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>Open Space Easements and Acquisitions.</u> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.</b>					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	County Commission	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>4.2</b>	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning Department	Medium	Mid-Range	Local Funds	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>4.3</b>	<b><u>Urban Forestry Programs.</u> Maintain a healthy forest that can help mitigate damaging impacts of flooding, erosion, landslides and wildfires within urban areas.</b>					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	County Commission	Medium	Mid-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	County Commission	Medium	Mid-Range	Local Funds	TBD
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.	County Commission	Medium	Mid-Range	Local Funds	TBD
<b>4.4</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	County Commission	Medium	Mid-Range	Local Funds	TBD
4.4.2	Develop a coastal renourishment program.	County Commission	Medium	Mid-Range	Local Funds	TBD
<b>4.5</b>	<b><u>Water Resources Conservation Programs.</u> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.</b>					
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	County Commission	High	Long-Range	Local Funds	TBD
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Official	Medium	Long-Range	Local Funds	TBD

<b>Baldwin County Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
<b>5.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u></b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
5.2.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Planning Department	Low	Long-Range	FEMA HMA Grant	TBD
<b>5.3</b>	<b><u>Community Shelters and Safe Rooms.</u></b> Provide shelters from natural hazards for the safety of community residents.					
5.3.1	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
5.3.2	Establish a program for subsidizing individual and community safe room construction in appropriate locations and facilities.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD



**2.2 Bay Minette Community Action Program**

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning Department	High	Short- Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Planning Department	High	Short- Range	Local Funds	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	GIS Department/ Engineering Department/ Baldwin County EMA	High	Mid-Range	HMA	TBD
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	GIS Department/ Engineering Department/ Baldwin County EMA	Low	Mid-Range	HMA	TBD
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	GIS Department/ Engineering Department/ Baldwin County EMA	Low	Mid-Range	HMA	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Planning Department	Medium	Mid-Range	Local Funds	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Planning Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, and restrictive development of flood ways, among others.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					

<b>City of Bay Minette Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.5.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD
1.5.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.5.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	High	Short-Range	FEMA HMA Grant	TBD
1.5.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.5.5	Participate in the "Turn Around Don't Drown" program by purchasing and installing signs in known flash flood bridge overpass locations.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.5.6	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.6.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	City Building Official	High	Ongoing	Local Funds	TBD
1.6.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	City Building Official	High	Ongoing	Local Funds	TBD
1.6.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	City Building Official	High	Ongoing	Local Funds	TBD
1.6.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	City Fire Department	High	Ongoing	Local Funds	TBD
1.6.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	City Building Official	High	Ongoing	Local Funds	TBD
1.6.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	City Building Official	High	Ongoing	FEMA HMA Grant	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.7.1	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	City Building Official	Medium	Long-Range	Local Funds	TBD
1.7.2	Establish ordinance for the planting of new urban forests or replacement of the hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	City Building Official	Medium	Long-Range	Local Funds	TBD
1.8	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.8.1	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	City Building Official	Medium	Ongoing	Existing	TBD
1.9	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.9.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	Medium	Long-Range	Local Funds	TBD
1.10	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.10.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	City Building Official	Medium	Long-Range	FEMA HMA Grant	TBD
1.10.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Fire Department	Medium	Mid-Range	Local Funds	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Official	High	Short-Range	FEMA HMA Grant	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
<b>2.3</b>	<b><u>Building Elevation.</u></b> Elevate buildings in hazardous flood areas to safeguard against damages					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u></b> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u></b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.6	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.7	<b>Backup Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.7.1	Pursue grant funding for the installation of backup power generators for critical facilities.	Planning Department	High	Ongoing	Local Funds	TBD
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning Department	Medium	Mid-Range	Local Funds	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Planning Department	Low	Mid-Range	Local Funds	TBD
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Planning Department	Low	Mid-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.3.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.4</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.4.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council / Baldwin County EMA	Medium	Ongoing	Local Funds	TBD
<b>3.5</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.5.1	Promote the use of weather radios in households and businesses.	Mayor and Council	High	Short-Range	Existing	TBD
3.5.2	Require the installation of weather radios in all public buildings and places of public assembly.	Mayor and Council	High	Short-Range	Existing	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.5.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>3.6</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.6.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Local Government	High	Long-Range	TBD	TBD
3.6.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Local Government	High	Long-Range	TBD	TBD
3.6.5	Upgrade critical communications infrastructure.	Local Government	High	Long-Range	TBD	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	City Building Official	Medium	Long-Range	Local Funds	TBD
<b>4.2</b>	<b><u>Urban Forestry Programs.</u> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.</b>					
4.2.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Local Government	Low	Long-Range	Existing	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.3	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.3.1	Restore and protect wetlands to enhance stormwater drainage.	Planning Department	Medium	Long-Range	Local Funds	TBD
5	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
5.1	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Planning Department	Medium	Long-Range	Local Funds	TBD
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Planning Department	Medium	Long-Range	Local Funds	TBD
5.3	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	City Building Official	High	Short-Range	FEMA HMA Grant	TBD

City of Bay Minette Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.3.2	Establish a program for subsidizing individual and community safe room construction in appropriate locations and facilities.	City Building Official	High	Short-Range	FEMA HMA Grant	TBD
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	City Building Official	High	Short-Range	FEMA HMA Grant	TBD



**2.3 Daphne Community Action Program**

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to natural hazards.</b>					
1.1	<b>Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.</b>					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Community Development Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Community Development Department	Medium	Mid-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.3.4	Inventory and map existing fire hydrants throughout the jurisdiction, and identify areas in need of new fire hydrants.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Community Development Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
1.4	<b>Zoning. Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Community Development Department	Medium	Mid-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.5	<b>Open Space Preservation. Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Community Development Department	Medium	Long-Range	Local Funds	TBD
1.6	<b>Flood Plain Management Regulations. Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	High	Short-Range	FEMA HMA Grant	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.6.5	Participate in the "Turn Around Don't Drown" program by purchasing and installing signs in known flash flood bridge overpass locations.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.6.6	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Floodplain Manager	Low	Long-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Inspection Department	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Inspection Department	High	Ongoing	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Community Development Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Inspection Department	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Inspection Department	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Community Development Department	Medium	Long-Range	Local Funds	TBD
1.8	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Community Development Department	Medium	Long-Range	Local Funds	TBD
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	Community Development Department	Medium	Long-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	Community Development Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Community Development Department	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Community Development Department	Medium	Ongoing	Existing	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Community Development Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Dam Safety Management.</u> Establish a comprehensive dam safety program.</b>					
1.10.1	Support legislation to establish a State dam safety program.	Community Development Department	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	Medium	Long-Range	Local Funds	TBD
1.12	<b>Critical Facilities Assessments.</b> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.					
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Community Development Department	Medium	Long-Range	FEMA HMA Grant	TBD
1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Community Development Department	Medium	Long-Range	FEMA HMA Grant	TBD
2	<b>Goal for Property Protection.</b> Protect structures and their occupants and contents from the damaging effects of natural hazards.					
2.1	<b>Building Relocation.</b> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD
2.2	<b>Acquisition.</b> Acquire flood prone buildings and properties and establish permanent open space.					

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Inspection Department	High	Short-Range	FEMA HMA Grant	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5	<b><u>Flood Control Measures.</u> Construct small flood control measures to reduce/prevent flood damage.</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.	Community Development Department	Medium	Long-Range	FEMA HMA Grant	TBD
2.6	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.6.1	Retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.7	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.8	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.8.1	Install lightning and/or surge protection on existing critical facilities.	Building Inspection Department	High	Ongoing	Local Funds	TBD
<b>2.9</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.9.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	Community Development Department	Medium	Ongoing	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Community Development Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
3.1.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Community Development Department	Medium	Mid-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Local Floodplain Manger	Medium	Ongoing	Local Funds	TBD
<b>3.2</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.2.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Local Floodplain Manger	Medium	Long-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					
3.3.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.4</b>	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.4.1	Distribute hazard mitigation brochures to students through area schools.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.5</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.5.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.6</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.6.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	High	Ongoing	Local Funds	TBD
3.7	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.7.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
3.8	<b>Weather Radios.</b> Improve public access to weather alerts.					
3.8.1	Promote the use of weather radios in households and businesses.	Mayor and Council	High	Long-Range	Existing	TBD
3.8.2	Require the installation of weather radios in all public buildings and places of public assembly.	Mayor and Council	Medium	Mid-Range	Existing	TBD
3.8.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
3.9	<b>Disaster Warning.</b> Improve public warning systems.					
3.9.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Community Development Department	Medium	Mid-Range	FEMA HMA Grant	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.9.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Community Development Department	Medium	Mid-Range	FEMA HMA Grant	TBD
3.9.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
3.9.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Community Development Department	Medium	Mid-Range	FEMA HMA Grant	TBD
3.9.5	Upgrade critical communications infrastructure.	Community Development Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>Open Space Easements and Acquisitions.</u> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.</b>					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Community Development Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>4.2</b>	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Community Development Department	Medium	Long-Range	Local Funds	TBD
<b>4.3</b>	<b><u>Urban Forestry Programs.</u> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.</b>					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Community Development Department	Medium	Long-Range	Local Funds	TBD
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Community Development Department	Medium	Long-Range	Local Funds	TBD
<b>4.4</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.4.1	Restore and protect wetlands to enhance stormwater drainage.	Community Development Department	Medium	Long-Range	Local Funds	TBD
4.4.2	Develop a coastal renourishment program.	Community Development Department	Medium	Long-Range	Local Funds	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.5	<b>Water Resources Conservation Programs.</b> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.					
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	Community Development Department	High	Short-Range	Local Funds	TBD
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					
5.1	<b>Drainage System Maintenance.</b> Improve maintenance programs for streams and drainage ways.					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Inspection Department	Medium	Long-Range	Local Funds	TBD
5.2	<b>Reservoirs and Drainage System Improvements.</b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Community Development Department	High	Short-Range	FEMA HMA Grant	TBD
5.3	<b>Community Shelters and Safe Rooms.</b> Provide shelters from natural hazards for the safety of community residents.					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Community Development Department	High	Short-Range	FEMA HMA Grant	TBD
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Community Development Department	High	Short-Range	FEMA HMA Grant	TBD

City of Daphne Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	Community Development Department	High	Short-Range	FEMA HMA Grant	TBD

**2.4 Elberta Community Action Program**

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning Department	Medium	Mid-Range	TBD	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Fund	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, and restrictive development of flood ways, among others.	Planning Department	Medium	Mid-Range	Local Funds	TBD

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	High	Short-Range	FEMA HMA Grant	TBD

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	High	Ongoing	Local Funds	TBD
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Official	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Official	High	Ongoing	Local Funds	TBD

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning Department	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Floodplain Manager	Medium	Ongoing	FEMA HMA Funds	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.6	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.7	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	High	Ongoing	Local Funds	TBD
2.8	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.8.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning Department	Medium	Ongoing	Local Funds	TBD
3.2	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.2.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.3</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.3.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	High	Ongoing	Local Funds	TBD
<b>3.4</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.4.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
<b>3.5</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.5.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning Department	Medium	Mid-Range	Local Funds	TBD

Town of Elberta Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning Department	Medium	Long-Range	Local Funds	TBD
4.2	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.2.1	Restore and protect wetlands to enhance stormwater drainage.	Planning Department	Medium	Long-Range	Local Funds	TBD
5	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
5.1	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Official	Medium	Long-Range	Local Funds	TBD
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Building Official	Medium	Long-Range	FEMA HMA Grant	TBD
5.3	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning Department	High	Short-Range	FEMA HMA Grant	TBD



**2.5 Fairhope Community Action Program**

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning Department	High	Ongoing	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning Department	High	Ongoing	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Planning Department	High	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	City Engineer/Baldwin County EMA	High	Short-Range	FEMA HMA Grant	\$35,000
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	City GIS Department/Engineer	High	Mid-Range	FEMA HMA Grant	\$25,000
1.2.3	Create GIS systems for inventorying and assessing urban forest for in order to identify current and potential hazards and develop a comprehensive plan for managing urban forest.	City GIS Department/Planning Department	High	Short-Range	Local Funds	TBD
1.2.4	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	City GIS Department/Planning Department	High	Ongoing	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					

<b>City of Fairhope Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	City GIS Department/Planning Department/ City Engineer/ Floodplain Manager	High	Ongoing	Local Funds/ FEMA HMA Grant	TBD
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning Department	Low	Long-Range	TBD	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	City GIS Department/Planning Department/ City Engineer	Medium	Long-Range	FEMA HMA Grant	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	Medium	Ongoing	TBD	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Planning Department/ Floodplain Manager	High	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Planning Department/ Floodplain Manager	High	Ongoing	Local Funds	TBD
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning Department/ Floodplain Manager	High	Ongoing	Local Funds	TBD
1.4.4	Enact local ordinance that require community storm shelters within sizeable mobile home parks and subdivisions.	Planning Department/ Floodplain Manager	Low	Long-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning Department	High	Ongoing	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	High	Ongoing	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Ongoing	Local Funds	TBD
1.6.5	Participate in the "Turn Around Don't Drown" program by purchasing and installing signs in known flash flood bridge overpass locations.	Floodplain Manager	Medium	Mid-Range	TBD	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official/ Floodplain Manager/ City Engineer	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official/ City Engineer	High	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	City Engineer/ Planning Department	High	Ongoing	TBD	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Official	Medium	Mid-Range	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Official	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Building Official/ Planning Department/ Baldwin County EMA	Medium	Long-Range	FEMA HMA Grant	TBD
1.8	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning Department	High	Ongoing	TBD	TBD
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	City Council/ Planning Department	Low	Long-Range	TBD	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	City Council	Low	Long-Range	TBD	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning Department/ City Engineer	High	Ongoing	Local Funds	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning Department/ City Engineer	High	Ongoing	Local Funds	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Planning Department	Low	Long-Range	Local Funds	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Maintain membership in the CRS Program; continue to upgrade rating.	Building Official	High	Ongoing	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Building Official/ Planning Department/ City Engineer	High	Long-Range	FEMA HMA Grant	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.11.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Planning Department/ Floodplain Manager	Medium	Long-Range	Local Funds	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official/ Floodplain Manager	High	Ongoing	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official/ Floodplain Manager	High	Ongoing	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Official/ Floodplain Manager	High	Ongoing	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official/ Floodplain Manager	High	Ongoing	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official/ Floodplain Manager	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official/ City Engineer	High	Ongoing	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Building Official/ Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.6</b>	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Building Official/ Floodplain Manager	High	Ongoing	Local Funds	TBD
<b>2.7</b>	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Low	Long-Range	TBD	TBD
2.7.2	Conduct ongoing tree trimming programs along power lines.	Utility	High	Ongoing	Local Funds	TBD
<b>2.8</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Map Information.</u> Increase public access to Flood Insurance Rate Map (FIRM) information.</b>					
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
<b>3.2</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
<b>3.3</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.3.1	Arrange with the Multiple Listing Service (MLS) to require floodplain location disclosure as a condition for each real estate listing.	Floodplain Manager/ Baldwin County EMA	Low	Long-Range	Local Funds	TBD
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Floodplain Manager/ Baldwin County EMA	Medium	Long-Range	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.4	<b>Library.</b> Use local library resources to educate the public on hazard risks and mitigation alternatives.					
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Baldwin County EMA	Low	Long-Range	Local Funds	TBD
3.5	<b>Education Programs.</b> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.					
3.5.1	Distribute hazard mitigation brochures to students through area schools.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
3.6	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					
3.6.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Ongoing	Local Funds	TBD
3.7	<b>Technical Assistance.</b> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.					
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Floodplain Manager/ Building Official	High	Ongoing	Local Funds	TBD
3.8	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Baldwin County EMA	High	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
<b>3.9</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.9.1	Promote the use of weather radios in households and businesses.	Baldwin County EMA	Medium	Mid-Range	Local Funds	TBD
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.	Baldwin County EMA	Medium	Mid-Range	Local Funds	TBD
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Baldwin County EMA	Medium	Mid-Range	Local Funds	\$150,000
<b>3.10</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.10.5	Upgrade critical communications infrastructure.	Baldwin County EMA	High	Mid-Range	FEMA HMA Grant	TBD
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>Open Space Easements and Acquisitions.</b> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Floodplain Manager/ Planning Department	Medium	Ongoing	FEMA HMA Grant	TBD
4.2	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Floodplain Manager/ Planning Department	High	Ongoing	Other	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Building Official	High	Ongoing	Local Funds	TBD
4.3	<b>Urban Forestry Programs.</b> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Planning Department	Medium	Ongoing	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Planning Department	Medium	Ongoing	TBD	TBD
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant species.	Planning Department	Medium	Ongoing	TBD	TBD
<b>4.4</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	Floodplain Manager/ Building Official	High	Short-Range	Local Funds	TBD
4.4.2	Develop a coastal renourishment program.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>4.5</b>	<b><u>Water Resources Conservation Programs.</u> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.</b>					
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	Public Works	High	Ongoing	Local Funds	TBD
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Public Works	High	Short-Range	Local Funds	TBD

City of Fairhope Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	City Engineer/ Public Works	High	Ongoing	FEMA HMA Grant	TBD
5.3	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Building Official/ Baldwin County EMA	Medium	Long-Range	Local Funds	TBD
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Planning Department/ Baldwin County EMA	Medium	Long-Range	FEMA HMA Grant	TBD
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	Building Official/ City Council	Medium	Long-Range	FEMA HMA Grant	TBD

**2.6 Foley Community Action Program**

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Community Development Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Community Development Department	High	Short-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Finance Department	High	Short-Range	Local Funds	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Community Development Department	High	Short-Range	HMA	TBD
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	Community Development Department	High	Short-Range	Local Funds	TBD
1.2.3	Create GIS systems for inventorying and assessing urban forest for in order to identify current and potential hazards and develop a comprehensive plan for maanging urban forest.	Community Development Department/ Fire Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	City Engineer	Medium	Mid-Range	FEMA HMA Grant	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.2	Identify existing culturally or socially significant structures and critical facilities within the jurisdiction that have the most potential for losses from natural hazard events and identify needed structural upgrades.	City Engineer	Medium	Mid-Range	Local Funds	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	City Engineer	High	Short-Range	Local Funds	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Funds	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	City Engineer	High	Short-Range	FEMA HMA Grant	TBD
1.4	<b>Zoning. Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Community Development Department	High	Short-Range	Local Funds	TBD
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Community Development Department	High	Short-Range	Local Funds	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Community Development Department	High	Short-Range	Local Funds	TBD
1.5	<b>Open Space Preservation. Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Community Development Department	High	Short-Range	Existing	TBD
1.6	<b>Flood Plain Management Regulations. Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Community Development Department	Medium	Mid-Range	Local Funds	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Community Development Department	High	Short-Term	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Community Development Department	High	Short-Term	Local Funds	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Community Development Department	High	Short-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Community Development Department	High	Short-Range	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Community Development Department	High	Short-Range	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Fire Department	High	Short-Range	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Community Development Department	High	Short-Range	Local Funds	TBD
1.8	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce stormwater runoff and improve urban aesthetics.</b>					

<b>City of Foley Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Community Development Department	High	Short-Range	Local Funds	TBD
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	Community Development Department	Medium	Short-Range	Local Funds	TBD
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	Parks Department	High	Short-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	City Council	High	Ongoing	Local Funds	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	City Council	High	Ongoing	Local Funds	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Parks Department	High	Short-Range	Local Funds	TBD
<b>1.10</b>	<b><u>Dam Safety Management.</u> Establish a comprehensive dam safety program.</b>					

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.10.1	Support legislation to establish a State dam safety program.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Community Development Department	Medium	Long-Range	Local Funds	TBD
<b>1.12</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Community Development Department	Medium	Long-Range	FEMA HMA Grant	TBD
1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Fire Department/ Environmental Services	High	Short-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					

<b>City of Foley Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.1.1	Pursue FEMA grant funds to relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5	<b><u>Flood Control Measures.</u> Small flood control measures built to reduce/prevent flood damage</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.	Community Development Department	Medium	Long-Range	FEMA HMA Funds	TBD
2.6	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.6.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Community Development Department	High	Short-Range	FEMA HMA Funds	TBD
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Community Development Department	High	Short-Range	Local Funds	TBD
2.7	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Community Development Department	High	Short-Range	Local Funds	TBD
2.8	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.8.1	Install lightning and/or surge protection on existing critical facilities.	City Council	High	Short-Range	Local Funds	TBD
<b>2.9</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.9.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	City Council	High	Short-Range	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Community Development Department	High	Short-Range	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Fire Department	High	Short-Range	Local Funds	TBD
3.1.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Chamber of Commerce	Low	Long-Range	Existing	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Community Development Department	High	Short-Range	Local Funds	TBD
<b>3.2</b>	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					
3.2.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	City Library	High	Short-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.3.1	Distribute hazard mitigation brochures to students through area schools.	Fire Department	High	Short-Range	Local Funds	TBD
<b>3.4</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.4.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.5</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.5.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Building Official	High	Short-Range	Local Funds	TBD
<b>3.6</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.6.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Public Information	High	Short-Range	TBD	TBD
<b>3.7</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.7.1	Promote the use of weather radios in households and businesses.	Public Safety	High	Short-Range	Local Funds	TBD
3.7.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	City Council	Medium	Mid-Range	Existing	TBD
<b>3.8</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.8.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Public Safety	Medium	Mid-Range	FEMA HMA Grant	TBD
3.8.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Public Safety	Medium	Mid-Range	FEMA HMA Grant	TBD
3.8.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Public Safety	Medium	Mid-Range	FEMA HMA Grant	TBD
3.8.5	Upgrade critical communications infrastructure.	Public Safety	High	Short-Range	FEMA HMA Grant	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>Open Space Easements and Acquisitions.</b> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	City Council	Medium	Mid-Range	FEMA HMA Grant	TBD
4.2	<b>Urban Forestry Programs.</b> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.					
4.2.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Parks Department	High	Short-Range	Local Funds	TBD
4.2.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Parks Department	High	Short-Range	Local Funds	TBD
4.2.3	Develop and urban forestry management plans to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.	Parks Department	High	Short-Range	Local Funds	TBD
4.3	<b>Beach and Dune Protection/Renourishment.</b> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.					
4.3.1	Restore and protect wetlands to enhance storm water drainage.	Wolf Bay Watershed	Medium	Mid-Range	TBD	TBD

City of Foley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					
5.1	<b>Drainage System Maintenance.</b> Improve maintenance programs for streams and drainage ways.					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	City Council	Medium	Long-Range	Existing	TBD
5.2	<b>Reservoirs and Drainage System Improvements.</b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	City Council	High	Short-Range	FEMA HMA Grant	TBD
5.3	<b>Community Shelters and Safe Rooms.</b> Provide shelters from natural hazards for the safety of community residents.					
5.3.1	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	City Council	High	Short-Range	FEMA HMA Grant	TBD
5.3.2	Encourage the construction of safe rooms in new and existing homes and buildings.	City Council	High	Short-Range	FEMA HMA Grant	TBD

**2.7 Gulf Shores Community Action Program**

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning and Zoning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Planning and Zoning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Planning and Zoning Department	High	Short-Range	Local Fund	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Planning and Zoning Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
1.4	<b>Zoning. Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.5	<b>Open Space Preservation. Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Building Department	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Building Department	High	Short-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Department	High	Ongoing	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Department	High	Ongoing	Local Funds	TBD
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning and Zoning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Department	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Department	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning and Zoning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					

<b>City of Gulf Shores Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning and Zoning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u></b> Acquire flood prone buildings and properties and establish permanent open space.					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.3</b>	<b><u>Building Elevation.</u></b> Elevate buildings in hazardous flood areas to safeguard against damages.					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.4	<b>Flood Proofing.</b> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Department	Medium	Ongoing	Local Funds	TBD
2.5	<b>Building Retrofits.</b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Department	Medium	Ongoing	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Building Department	Medium	Ongoing	Local Funds	TBD
2.6	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Building Department	Medium	Ongoing	Local Funds	TBD
2.7	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Department	High	Ongoing	Local Funds	TBD
<b>2.8</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Building Department	High	Ongoing	FEMA HMA Funds	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning and Zoning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
3.1.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Building Department	Medium	Ongoing	Local Funds	TBD
<b>3.2</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.2.1	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					
3.3.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	City Library	High	Short-Range	Local Funds	TBD
<b>3.4</b>	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.4.1	Distribute hazard mitigation brochures to students through area schools.	Fire Department	High	Short-Range	Local Funds	TBD
<b>3.5</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.5.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.5</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.5.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Building Department	High	Ongoing	Local Funds	TBD
<b>3.6</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.6.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
<b>3.7</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts</b>					
3.7.1	Promote the use of weather radios in households and businesses.	Mayor and Council	High	Short-Range	Existing	TBD
3.7.2	Require the installation of weather radios in all public buildings and places of public assembly.	Mayor and Council	High	Short-Range	Existing	TBD
3.7.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>Open Space Easements and Acquisitions.</u> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.</b>					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Planning and Zoning Department	Medium	Mid-Range	FEMA HMA Grant	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.2	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
4.3	<b><u>Urban Forestry Programs.</u> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.</b>					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Planning Department	Medium	Ongoing	Local Funds	TBD
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Planning Department	Medium	Ongoing	TBD	TBD
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant species.	Planning Department	Medium	Ongoing	TBD	TBD
4.4	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	Floodplain Manager/ Building Official	High	Short-Range	Local Funds	TBD

City of Gulf Shores Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.4.2	Develop a coastal renourishment program.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					
5.1	<b>Drainage System Maintenance.</b> Improve maintenance programs for streams and drainage ways.					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Department	Medium	Long-Range	Local Funds	TBD
5.2	<b>Reservoirs and Drainage System Improvements.</b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Planning and Zoning Department	High	Short-Range	FEMA HMA Grant	TBD
5.3	<b>Community Shelters and Safe Rooms.</b> Provide shelters from natural hazards for the safety of community residents.					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning and Zoning Department	High	Short-Range	FEMA HMA Grant	TBD



**2.8 Loxley Community Action Program**

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning and Zoning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.2	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.2	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Fund	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Building Department	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Building Department	High	Short-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Department	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Department	High	Ongoing	Local Funds	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning and Zoning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Department	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Department	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning and Zoning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning and Zoning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Department	Medium	Ongoing	Local Funds	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Department	Medium	Ongoing	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Building Department	Medium	Ongoing	Local Funds	TBD
2.6	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Building Department	Medium	Ongoing	Local Funds	TBD
2.7	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Department	High	Ongoing	Local Funds	TBD
2.8	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Building Department	High	Ongoing	FEMA HMA Funds	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning and Zoning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Building Department	Medium	Ongoing	Local Funds	TBD
3.2	<b>Real Estate Disclosure.</b> Encourage real estate agents to disclose flood plain location for property listings.					
3.2.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Building Department	Medium	Long-Range	Local Funds	TBD
3.3	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.3.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.4</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.4.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Building Department	High	Ongoing	Local Funds	TBD
<b>3.5</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.5.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
<b>3.6</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts</b>					
3.6.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>3.7</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.7.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.1	<b><u>Open Space Easements and Acquisitions.</u> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.</b>					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
4.2	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
5	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
5.1	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Department	Medium	Long-Range	Local Funds	TBD
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Building Department	Medium	Long-Range	FEMA HMA Grant	TBD

Town of Loxley Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.3	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning and Zoning Department	High	Short-Range	FEMA HMA Grant	TBD

**2.9 Magnolia Springs Community Action Program**

Magnolia Springs Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning and Zoning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD

<b>Magnolia Springs Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b><u>Geographic Information Systems (GIS).</u> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.</b>					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.2	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b><u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.3.1	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.2	Identify existing culturally or socially significant structures and critical facilities within participating jurisdictions that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning and Zoning Department	High	Short-Range	Local Funds	TBD
1.3.3	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Funds	TBD

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, and restrictive development of flood ways, among others.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Building Department	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Building Department	High	Short-Range	Local Funds	TBD
<b>1.7</b>	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Department	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Department	High	Ongoing	Local Funds	TBD

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning and Zoning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Department	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Department	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning and Zoning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require	Planning and Zoning	Medium	Ongoing	Existing	TBD

Magnolia Springs Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
	proper storm water infrastructure design and construction.	Department				
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning and Zoning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u>Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD

Magnolia Springs Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5	<b>Building Retrofits.</b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Department	Medium	Ongoing	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Building Department	Medium	Ongoing	Local Funds	TBD
2.6	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Building Department	Medium	Ongoing	Local Funds	TBD
2.7	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Department	High	Ongoing	Local Funds	TBD
2.8	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Building Department	High	Ongoing	FEMA HMA Grant	TBD

Magnolia Springs Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning and Zoning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Building Department	Medium	Ongoing	Local Funds	TBD
3.2	<b>Real Estate Disclosure.</b> Encourage real estate agents to disclose flood plain location for property listings.					
3.2.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Building Department	Medium	Long-Range	Local Funds	TBD
3.3	<b>Library.</b> Use local library resources to educate the public on hazard risks and mitigation alternatives.					

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
3.3.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	City Library	Medium	Ongoing	Local Funds	TBD
<b>3.4</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.4.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.5</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.5.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Building Department	High	Ongoing	Local Funds	TBD
<b>3.6</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.6.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
<b>3.7</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.7.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
<b>3.8</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					

Magnolia Springs Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.8.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
3.8.5	Upgrade critical communications infrastructure.	Mayor and Council	High	Short-Range	FEMA HMA Grant	TBD
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					
5.1	<b>Drainage System Maintenance.</b> Improve maintenance programs for streams and drainage ways.					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Department	Medium	Long-Range	Local Funds	TBD
5.2	<b>Reservoirs and Drainage System Improvements.</b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					

<b>Magnolia Springs Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Building Department	High	Ongoing	FEMA HMA Grant	TBD
<b>5.3</b>	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning and Zoning Department	High	Short-Range	FEMA HMA Grant	TBD

**2.10 Orange Beach Community Action Program**

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Planning Department	Low	Mid-Range	Existing	TBD
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	Low	Mid-Range	HMA	TBD
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	City GIS Department	Low	Long-Range	FEMA HMA Grant	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	City GIS Department	Medium	Mid-Range	Existing	TBD
<b>1.3</b>	<b><u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Building Official	Low	Long-Range	FEMA HMA Grant	TBD
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Building Official	Low	Long-Range	TBD	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Building Official	Low	Long-Range	TBD	TBD
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	City Fire Department	Medium	Ongoing	TBD	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	City Engineer	Medium	Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Local Government	Medium	Short-Range	Existing	TBD
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Local Government	Medium	Short-Range	Existing	TBD
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Local Government	Medium	Short-Range	Existing	TBD
1.5	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning Department	Medium	Ongoing	Existing	TBD
1.6	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Floodplain Manager	High	Ongoing	Existing	TBD
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	Medium	Ongoing	Existing	TBD

<b>City of Orange Beach Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.3	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Ongoing	Existing	TBD
1.6.4	Participate in the "Turn Around Don't Drown" program by purchasing and installing signs in known flash flood bridge overpass locations.	Floodplain Manager	Medium	Short-Range	Existing	TBD
1.6.5	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Floodplain Manager	Medium	Long-Range	FEMA HMA Grant	TBD
<b>1.7</b>	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	High	Ongoing	Existing	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	High	Ongoing	Existing	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	City Engineer	Medium	Ongoing	TBD	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Fire Chief	Medium	Ongoing	Existing	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Code Enforcement	Medium	Ongoing	Existing	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning Department	Low	Mid-Range	TBD	TBD
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	City Forester	Low	Low	TBD	TBD
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	City Forester	Low	Low	TBD	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.9	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	City Engineer	High	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	City Engineer	High	Ongoing	Existing	TBD
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	City Forester	Low	Low	TBD	TBD
1.10	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	High	Ongoing	Existing	TBD
1.11	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Building Official	Medium	Ongoing	FEMA HMA Grant	TBD
1.11.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Building Official	Medium	Ongoing	TBD	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Floodplain Manager	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Long-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Flood Control Measures.</u> Small flood control measures built to reduce/prevent flood damage</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.6</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.6.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Short-Range	Existing	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.7	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Existing	TBD
2.8	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.8.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Low	Long-Range	TBD	TBD
2.9	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.9.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Public Works	Low	Long-Range	FEMA HMA Grant	TBD
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Map Information.</b> Increase public access to Flood Insurance Rate Map (FIRM) information.					
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Floodplain Manager	Medium	Ongoing	Existing	TBD
3.2	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Floodplain Manager	Medium	Ongoing	Existing	TBD
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Floodplain Manager	Medium	Ongoing	Existing	TBD
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	Floodplain Manager	Medium	Ongoing	Existing	TBD
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Floodplain Manager	Medium	Ongoing	Existing	TBD
<b>3.3</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.3.1	Arrange with the Multiple Listing Service (MLS) to require floodplain location disclosure as a condition for each real estate listing.	Floodplain Manager	Medium	Ongoing	TBD	TBD
<b>3.4</b>	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Floodplain Manager	Medium	Ongoing	Existing	TBD
<b>3.5</b>	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.5.1	Distribute hazard mitigation brochures to students through area schools.	Floodplain Manager	Medium	Ongoing	Existing	TBD
<b>3.6</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.6.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	Medium	Mid-Range	Existing	TBD
<b>3.7</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Floodplain Manager	High	Ongoing	Existing	TBD
<b>3.8</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Baldwin County EMA	High	Short-Term	Existing	TBD
<b>3.9</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.9.1	Promote the use of weather radios in households and businesses.	Baldwin County EMA	High	Short-Range	Existing	TBD
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.	Baldwin County EMA	Medium	Long-Range	Existing	TBD
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Baldwin County EMA	Medium	Long-Range	Existing	TBD
<b>3.10</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Baldwin County EMA	Low	Long-Range	FEMA HMA Grant	TBD
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Baldwin County EMA	Low	Long-Range	FEMA HMA Grant	TBD
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Baldwin County EMA	Low	Long-Range	FEMA HMA Grant	TBD
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Baldwin County EMA	Low	Long-Range	FEMA HMA Grant	TBD
3.10.5	Upgrade critical communications infrastructure.	Baldwin County EMA	Low	Long-Range	FEMA HMA Grant	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>Open Space Easements and Acquisitions.</b> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	Local Government	Medium	Ongoing	FEMA HMA Grant	TBD
4.2	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Building Official	High	Ongoing	Other	TBD
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	City Engineer	Medium	Ongoing	Existing	TBD
4.3	<b>Urban Forestry Programs.</b> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.					
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	City Forester	Medium	Ongoing	Existing	TBD
4.3.2	Create an integrated wildfire mitigation plan for Baldwin County.	City Forester	Low	Ongoing	TBD	TBD

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant species.	City Forester	Low	Ongoing	TBD	TBD
<b>4.4</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	City Engineer	Medium	Ongoing	TBD	TBD
4.4.2	Develop a coastal renourishment program.	Coastal Resource Manager	High	Short-Range	Other	TBD
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	City Engineer	High	Short-Range	Existing	TBD
<b>5.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	City Engineer	High	Ongoing	FEMA HMA Grant	TBD
<b>5.3</b>	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					

City of Orange Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.3.1	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD
5.3.2	Encourage the construction of safe rooms in new and existing homes and buildings.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD



**2.11 Perdido Beach Community Action Programs**

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Mayor and Council	Medium	Long-Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Mayor and Council	Medium	Long-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Long-Range	Local Funds	TBD

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b><u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.2.2	Identify existing culturally or socially significant structures and critical facilities within participating jurisdictions that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Mayor and Council	Medium	Long-Range	Local Funds	TBD
1.3	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.3.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Mayor and Council	Medium	Long-Range	Local Funds	TBD
1.4	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.4.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	Medium	Long-Range	Local Funds	TBD
1.4.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.5	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.5.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	Medium	Mid-Range	Local Funds	TBD
1.5.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	Medium	Mid-Range	Local Funds	TBD
1.5.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning Department/ Building Department	Medium	Mid-Range	Local Funds	TBD
1.6	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.6.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning Department	Medium	Ongoing	Existing	TBD
1.6.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning Department	Medium	Ongoing	Existing	TBD
1.7	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
<b>1.8</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.8.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
1.8.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Fire Department	Low	Long-Range	Local Funds	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Mayor and Council	Medium	Ongoing	TBD	TBD
<b>2.3</b>	<b><u>Building Elevation.</u></b> Elevate buildings in hazardous flood areas to safeguard against damage.					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u></b> Encourage flood proofing of building in hazardous flood areas to safeguard against damages.					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u></b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Mayor and Council	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.6</b>	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.7</b>	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Medium	Mid-Range	Local Funds	TBD
<b>2.8</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Map Information.</u> Increase public access to Flood Insurance Rate Map (FIRM) information.</b>					
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Mayor and Council	High	Short-Range	Local Funds	TBD

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.2	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Mayor and Council	High	Short-Range	Local Funds	TBD
3.3	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					
3.3.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
3.4	<b>Technical Assistance.</b> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.					
3.4.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	Medium	Short-Range	Local Funds	TBD
3.5	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.5.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	High	Ongoing	Existing	TBD
3.6	<b>Weather Radios.</b> Improve public access to weather alerts.					
3.6.1	Promote the use of weather radios in households and businesses.	Mayor and Council	High	Short-Range	Existing	TBD

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.6.2	Require the installation of weather radios in all public buildings and places of public assembly.	Mayor and Council	High	Short-Range	Existing	TBD
3.6.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>3.7</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.7.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	Mayor and Council	High	Mid-Range	FEMA HMA Grant	TBD
3.7.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	Mayor and Council	High	Mid-Range	FEMA HMA Grant	TBD
3.7.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Mayor and Council	High	Mid-Range	FEMA HMA Grant	TBD
<b>4</b>	<b><u>Goal for Natural Resources Protection.</u> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
<b>4.1</b>	<b><u>River/Stream Corridor Restoration and Protection.</u> Restore and protect river and stream corridors within areas.</b>					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning Department	Medium	Mid-Range	Local Funds	TBD

<b>Town of Perdido Beach Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>4.2</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.</b>					
4.2.1	Restore and protect wetlands to enhance storm water drainage.	Planning Department	Medium	Mid-Range	Local Funds	TBD
4.2.2	Develop a coastal renourishment program.	Planning Department	Medium	Mid-Range	Local Funds	TBD
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Official	Medium	Long-Range	Local Funds	TBD
<b>5.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>5.3</b>	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD

Town of Perdido Beach Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD

**2.12 Robertsdale Community Action Program**

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Municipal Planning Commission	Medium	Short- Range	Local Funds	\$36,000
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Municipal Planning Commission	Medium	Mid-Range	Local Funds	TBD
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					

<b>City of Robertsdale Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	County GIS Department	High	Mid-Range	HMA	TBD
1.2.2	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	City Engineer	Medium	Long-Range	\$10,000	TBD
<b>1.3</b>	<b><u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	City Engineer	Medium	Mid-Range	\$50,000	TBD
1.3.2	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	City Engineer	Medium	Mid-Range	\$20,000	TBD
1.3.3	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	Medium	Mid-Range	Local Funds	TBD
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works	Medium	Mid-Range/Ongoing	\$120,000	TBD

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.4	<b>Zoning.</b> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.					
1.4.1	Consider large lot size restriction on flood prone areas designated on Flood Insurance Rate Maps.	Municipal Planning Commission	Low	Long-Range	Local Funds	TBD
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Municipal Planning Commission	Low	Long-Range	Local Funds	TBD
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	City Engineer	Medium	Mid-Range	Local Funds	TBD
1.5	<b>Open Space Preservation.</b> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Municipal Planning Commission	Medium	Long-Range	Local Funds	TBD
1.6	<b>Flood Plain Management Regulations.</b> Effectively administer and enforce local floodplain management regulations.					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	City Engineer	Medium	Short-Range	Local Funds	\$1,500
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	City Engineer	Medium	Short-Range	Local Funds	TBD

<b>City of Robertsdale Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.3	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Municipal Planning Commission	Low	Long-Range	Local Funds	TBD
<b>1.7</b>	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	Medium	Mid-Range	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	High	Mid-Range	Local Funds	TBD
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Municipal Planning Commission	Low	Long-Range	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Official	Medium	Short-Range	Local Funds	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Municipal Planning Commission	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Municipal Planning Commission	Medium	Ongoing	Existing	TBD
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Municipal Planning Commission	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Municipal Planning Commission	Medium	Ongoing	Existing	TBD
<b>2</b>	<b><u>Goal for Property Protection:</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	Medium	Ongoing	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u></b> Elevate buildings in hazardous flood areas to safeguard against damage.					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u></b> Encourage flood proofing of building in hazardous flood areas to safeguard against damages.					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u></b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	City Engineer	Medium	Mid-Range	Local Funds	TBD
2.6	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.6.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Medium	Mid-Range	Local Funds	TBD
2.7	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.7.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Library.</b> Use local library resources to educate the public on hazard risks and mitigation alternatives.					
3.1.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	City Engineer	Low	Long-Range	Local Funds	TBD
3.2	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					
3.2.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.3	<b>Technical Assistance.</b> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.					
3.3.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	Medium	Short-Range	Local Funds	TBD
3.4	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.4.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Public Works Director	High	Mid-Range	Local Funds	TBD
3.5	<b>Disaster Warning.</b> Improve public warning systems.					
3.5.5	Upgrade critical communications infrastructure.	Public Works Director	Medium	Short-Range	FEMA HMA Grant	TBD
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	City Engineer	Low	Mid-Range	Local Funds	TBD
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	City Engineer	Medium	Mid-Range	Local Funds	TBD

City of Robertsdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.2	<b>Urban Forestry Programs.</b> Maintain a healthy forest that can help mitigate damaging impacts of flooding, erosion, landslides and wildfires within urban areas.					
4.2.1	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	Public Works Director	Low	Mid-Range	Local Funds	TBD
4.3	<b>Beach and Dune Protection/Renourishment.</b> Protect beaches and dunes from coastal and man-made erosion and implement renourishment programs.					
4.3.1	Restore and protect wetlands to enhance storm water drainage.	Public Works Director	High	Mid-Range	FEMA HMA Grant	
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					
5.1	<b>Drainage System Maintenance.</b> Improve maintenance programs for streams and drainage ways.					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	City Engineer	High	Long-Range	Local Funds	\$10,000
5.2	<b>Reservoirs and Drainage System Improvements.</b> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Public Works Director	High	Mid-Range	FEMA HMA Grant	\$500,000
5.3	<b>Community Shelters and Safe Rooms.</b> Provide shelters from natural hazards for the safety of community residents.					

<b>City of Robertsdale Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Public Works Director	High	Mid-Range	FEMA HMA Grant	\$1,500,000

**2.13 Silverhill Community Action Program**

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning and Zoning Department	High	Short- Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.2	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.2	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Fund	TBD

<b>Town of Silverhill Community Action Program</b>						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	Mayor and Council	High	Short-Range	Local Funds	TBD

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Building Department	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Building Department	High	Short-Range	Local Funds	TBD
1.7	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Department	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Department	High	Ongoing	Local Funds	TBD

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning and Zoning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Department	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Department	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning and Zoning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning and Zoning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning and Zoning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Department	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Department	Medium	Mid-Range	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Building Department	Medium	Ongoing	Local Funds	TBD
<b>2.6</b>	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Building Department	Medium	Ongoing	Local Funds	TBD
<b>2.7</b>	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Department	High	Ongoing	Local Funds	TBD
<b>2.8</b>	<b><u>Back Up Power.</u> Ensure uninterrupted power supply to critical facilities during emergency events.</b>					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Building Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>3</b>	<b><u>Goal for Public Education and Outreach.</u> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.</b>					
<b>3.1</b>	<b><u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.</b>					

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning and Zoning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Building Department	Medium	Ongoing	Local Funds	TBD
<b>3.2</b>	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.2.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Building Department	Medium	Long-Range	Local Funds	TBD
<b>3.3</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.3.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.4</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.4.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Building Department	High	Ongoing	Local Funds	TBD
3.5	<b>Mass Media Relations.</b> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.					
3.5.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
3.6	<b>Weather Radios.</b> Improve public access to weather alerts.					
3.6.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning and Zoning Department	Medium	Mid-Range	Local Funds	TBD
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning and Zoning Department	Medium	Long-Range	Local Funds	TBD
5	<b>Goal for Structural Projects.</b> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.					

Town of Silverhill Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
5.1	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Department	Medium	Long-Range	Local Funds	TBD
5.2	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Public Works Department	Medium	Long-Range	FEMA HMA Grant	TBD
5.3	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning and Zoning Department	High	Short-Range	FEMA HMA Grant	TBD
5.3.2	Encourage the construction of safe rooms in new and existing homes and buildings.	Planning and Zoning Department	High	Short-Range	Local Funds	TBD



**2.14 Spanish Fort Community Action Program**

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Planning Department	High	Short- Range	Local Funds	\$60,000
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	City Council	Medium	Mid-Range	Local Funds	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.2	<b>Geographic Information Systems (GIS).</b> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.					
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	Baldwin County EMA	High	Short-Range	HMA	TBD
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.3.1	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3.2	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.3.3	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department	High	Short-Range	Local Fund	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3.4	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Public Works Department	Medium	Mid-Range/Ongoing	FEMA HMA Grant	TBD
<b>1.4</b>	<b><u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Planning Department	Medium	Mid-Range	Local Funds	TBD
1.4.2	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Planning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.5</b>	<b><u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.</b>					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.</b>					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	City Council	High	Short-Range	Local Funds	TBD

<b>City of Spanish Fort Community Action Program</b>						
<b>#</b>	<b>Goal, Objectives and Mitigation Measures</b>	<b>Lead Responsibility for Carrying Out Measure</b>	<b>Priority</b>	<b>Timeline</b>	<b>Funding Source</b>	<b>Estimated Cost</b>
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager	High	Short-Range	Local Funds	TBD
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Floodplain Manager	High	Short-Range	FEMA HMA Grant	TBD
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	High	Short-Range	Local Funds	TBD
<b>1.7</b>	<b><u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.</b>					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Building Official	High	Ongoing	Local Funds	TBD
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Building Official	High	Ongoing	Local Funds	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Planning Department	High	Ongoing	Local Funds	TBD
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	Building Official	High	Ongoing	Local Funds	TBD
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Building Official	High	Ongoing	Local Funds	TBD
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Planning Department	High	Ongoing	FEMA HMA Grant	TBD
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Planning Department	Medium	Ongoing	Existing	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	Planning Department	Medium	Ongoing	Existing	TBD
<b>1.10</b>	<b><u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.</b>					
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager	Medium	Long-Range	Local Funds	TBD
<b>1.11</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning Department	Medium	Long-Range	FEMA HMA Grant	TBD
<b>2</b>	<b><u>Goal for Property Protection.</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
<b>2.1</b>	<b><u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.2</b>	<b><u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.</b>					

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.5	<b>Building Retrofits.</b> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Floodplain Manager	Medium	Ongoing	FEMA HMA Grant	TBD
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.6	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
2.7	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	High	Ongoing	Local Funds	TBD
2.8	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.8.1	Pursue grant funding for the installation of back-up power generators for critical facilities.	Building Official	High	Ongoing	FEMA HMA Grant	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning Department	Medium	Ongoing	Local Funds	TBD
3.1.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning Department	Medium	Mid-Range	Local Funds	TBD
3.1.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	Local Floodplain Manger	Medium	Ongoing	Local Funds	TBD
3.2	<b>Real Estate Disclosure.</b> Encourage real estate agents to disclose flood plain location for property listings.					
3.2.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.	Local Floodplain Manger	Medium	Long-Range	Local Funds	TBD
3.3	<b>Community Hazard Mitigation Plan Distribution.</b> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.					

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.3.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
3.4	<b>Technical Assistance. Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.4.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Local Floodplain Manger	High	Ongoing	Local Funds	TBD
3.5	<b>Mass Media Relations. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.5.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Local Government	Medium	Ongoing	Local Funds	TBD
3.6	<b>Weather Radios. Improve public access to weather alerts.</b>					
3.6.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Local Government	High	Short-Range	Existing	TBD
4	<b>Goal for Natural Resources Protection. Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.</b>					
4.1	<b>River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.</b>					
4.1.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	Planning Department	Medium	Mid-Range	Local Funds	TBD

City of Spanish Fort Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.1.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Planning Department	Medium	Long-Range	Local Funds	TBD
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Building Official	Medium	Long-Range	Local Funds	TBD
<b>5.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Public Works Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>5.3</b>	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	Planning Department	High	Short-Range	FEMA HMA Grant	TBD
5.3.2	Encourage the construction of safe rooms in new and existing homes and buildings.	Planning Department	High	Short-Range	Local Funds	TBD



**2.15 Summerdale Community Action Program**

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1	<b>Goal for Prevention.</b> Manage the development of land and buildings to minimize risks of loss due to natural hazards.					
1.1	<b>Comprehensive Plans and Smart Growth.</b> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.					
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD
1.2	<b>Planning Studies.</b> Conduct special studies, as needed, to identify hazard risks and mitigation measures.					
1.2.1	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Mayor and Council	Medium	Mid-Range	FEMA HMA Grant	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.3	<b>Open Space Preservation.</b> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.					
1.3.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Mayor and Council	Medium	Mid-Range	Local Funds	TBD
1.4	<b>Flood Plain Management Regulations.</b> Effectively administer and enforce local floodplain management regulations.					
1.4.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.4.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Floodplain Manager	Medium	Mid-Range	Local Funds	TBD
1.5	<b>Building and Technical Codes.</b> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.					
1.5.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	Community Development	Medium	Mid-Range	Local Funds	TBD
1.5.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Community Development	Medium	Mid-Range	Local Funds	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
1.5.3	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.6</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.6.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>1.7</b>	<b><u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.</b>					
1.7.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Zoning Department	Medium	Ongoing	Existing	TBD
1.7.2	Develop, adopt and implement subdivision regulations that require proper stormwater infrastructure design and construction.	Zoning Department	Medium	Ongoing	Existing	TBD
1.7.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	Zoning Department	Medium	Ongoing	Existing	TBD
<b>1.8</b>	<b><u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.</b>					
1.8.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2	<b>Goal for Property Protection: Protect structures and their occupants and contents from the damaging effects of natural hazards.</b>					
2.1	<b>Building Relocation. Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.</b>					
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Building Official	Medium	Ongoing	FEMA HMA Grant	TBD
2.2	<b>Acquisition. Acquire flood prone buildings and properties and establish permanent open space.</b>					
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
2.2.2	Utilize the the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
2.3	<b>Building Elevation. Elevate buildings in hazardous flood areas to safeguard against damage.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	Building Official	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of building in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	Building Official	High	Short-Range	FEMA HMA Grant	TBD
<b>2.5</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	Building Official	Low	Long-Range	FEMA HMA Grant	TBD
<b>2.6</b>	<b><u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.</b>					
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	Floodplain Manager	Medium	Ongoing	Local Funds	TBD
<b>2.7</b>	<b><u>Critical Facilities Protection.</u> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.</b>					
2.7.1	Install lightning and/or surge protection on existing critical facilities.	Building Official	Medium	Mid-Range	Local Funds	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
2.8	<b>Back Up Power.</b> Ensure uninterrupted power supply to critical facilities during emergency events.					
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	Baldwin County EMA	Medium	Mid-Range	FEMA HMA Grant	TBD
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					
3.1.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	Planning Department	High	Short-Range	Local Funds	TBD
3.1.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	Planning Department	High	Short-Range	Local Funds	TBD
3.2	<b>Library.</b> Use local library resources to educate the public on hazard risks and mitigation alternatives.					
3.2.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Local Floodplain Manger	Medium	Long-Range	Local Funds	TBD
3.3	<b>Education Programs.</b> Use schools and other community education resources to conduct programs related to hazard risks and mitigation measures.					

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.3.1	Distribute hazard mitigation brochures to students through area schools.	Mayor and Council	High	Short-Range	Local Funds	TBD
<b>3.4</b>	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					
3.4.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.	Baldwin County EMA	High	Short-Range	Existing	TBD
<b>3.5</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.5.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	Mayor and Council	Medium	Ongoing	Local Funds	TBD
<b>3.6</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.6.1	Promote the use of weather radios in households and businesses.	Mayor and Council	High	Short-Range	Existing	TBD
3.6.2	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	Mayor and Council	High	Short-Range	Existing	TBD
<b>3.7</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.7.1	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	Mayor and Council	Low	Long-Range	FEMA HMA Grant	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
3.7.2	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	Mayor and Council	High	Long-Range	FEMA HMA Grant	TBD
3.7.3	Upgrade critical communications infrastructure.	Police Department	Medium	Mid-Range		
<b>4</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>4.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
4.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	Zoning Department	Medium	Mid-Range	Local Funds	TBD
<b>4.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					
4.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD
<b>4.3</b>	<b><u>Community Shelters and Safe Rooms.</u> Provide shelters from natural hazards for the safety of community residents.</b>					
4.3.1	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.	Planning Department	Medium	Mid-Range	FEMA HMA Grant	TBD

Town of Summerdale Community Action Program						
#	Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Priority	Timeline	Funding Source	Estimated Cost
4.3.2	Encourage the construction of safe rooms in new and existing homes and buildings.	Planning Department	Medium	Mid-Range	Local Funds	TBD



# BALDWIN COUNTY, ALABAMA MULTI-HAZARD MITIGATION PLAN

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**B - COMMUNITY MITIGATION CAPABILITIES**

**C - 2009 PLAN IMPLEMENTATION STATUS**

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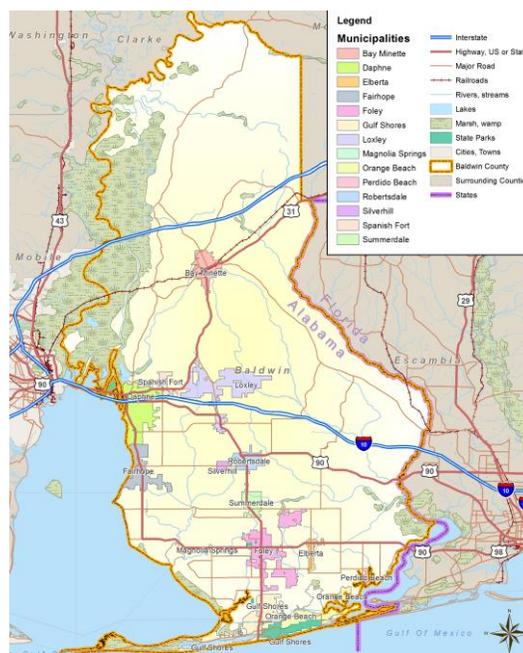
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**J - ADOPTING RESOLUTION**



Prepared under the direction of the  
Baldwin County Hazard Mitigation Planning Committee



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# 2015 Baldwin County, Alabama, Multi-Hazard Mitigation Plan

## Appendices

*City of Bay Minette, City of Daphne, Town of Elbert, City of Fairhope, City of Foley  
City of Gulf Shores, Town of Loxley, Town of Magnolia Springs, City of Orange Beach  
Town of Perdido Beach, City of Robertsdale, Town of Silverhill, City of Spanish Fort  
Town of Summerdale, and Baldwin County*

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Draft December 14, 2015



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**Appendix A  
Federal Requirements for  
Local Mitigation Plans**



## App. A – Federal Requirements for Local Mitigation Plans

- 1.0 Compliance
- 2.0 44 CFR Sec. 201.6 (2013)

### 1.0 Compliance

The 2015 Baldwin County Multi-Hazard Mitigation Plan addresses the Local Mitigation Plans requirements of 44 CFR Sec. 201.6.

### 2.0 44 CFR Sec. 201.6 (2013)

**Section 201.6 Local Mitigation Plans.** The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

(a) *Plan requirements.*

- (1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. The Administrator may, at his discretion, require a local mitigation plan for the Repetitive Flood Claims Program. A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.
- (2) Plans prepared for the FMA program, described at part 79 of this chapter, need only address these requirements as they relate to flood hazards in order to be eligible for FMA project grants. However, these plans must be clearly identified as being flood mitigation plans, and they will not meet the eligibility criteria for other mitigation grant programs, unless flooding is the only natural hazard the jurisdiction faces.
- (3) Regional Directors may grant an exception to the plan requirement in extraordinary circumstances, such as in a small and impoverished community, when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of the grant's termination will not be reimbursed by FEMA.
- (4) Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has

officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.

(b) *Planning process.* An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

(c) *Plan content.* The plan shall include the following:

- (1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
- (2) A *risk* assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:
  - (i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
  - (ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

- A. The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
  - B. An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;
  - C. Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.
- (iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.
- (3) A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:
- (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
  - (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
  - (iii) An action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
  - (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

(4) *A plan maintenance process that includes:*

- (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
- (ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
- (iii) Discussion on how the community will continue public participation in the plan maintenance process.

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

(d) *Plan review.*

- (1) Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.
- (2) The Regional review will be completed within 45 days after receipt from the State, whenever possible.
- (3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.
- (4) Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c) will be delegated approval authority for local mitigation plans, and the review will be based on the criteria in this part. Managing States will review the plans within 45 days of receipt of the plans, whenever possible, and provide a copy of the approved plans to the Regional Office. [67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 68 FR 61370, Oct. 28, 2003; 69 FR 55096, Sept. 13, 2004; 72 FR 61748, Oct. 31, 2007; 74 FR 47482, Sept. 16, 2009]

**Appendix B**  
**Community Mitigation Capabilities**



## **App. B - Community Mitigation Capabilities**

### 1.0 Scope and Methodology

#### **1.0 Scope and Methodology**

This report assesses community mechanisms that can affect hazard mitigation activities in a jurisdiction. This assessment provides an overview of the capabilities of Baldwin County jurisdictions to implement mitigation strategies, and it identifies any existing gaps or weaknesses that could hinder mitigation activities under consideration in this plan. The results of this assessment help determine the types of mitigation activities a local government can realistically undertake over its five-year action program framework included in Chapter 6 Mitigation Strategy.

The following table lists each jurisdiction in Baldwin County and shows the results of a comprehensive questionnaire that was distributed by the planning team to all participating jurisdictions. The survey results show whether or not certain indicators of a community's capabilities to carry out mitigation actions are in place. These indicators examine planning and regulatory tools, mitigation project experience, and staffing.

**Table B-1 Community Capabilities Assessment**

<b>JURISDICTION</b>	<b>enforce zoning ordinance</b>	<b>administer subdivision regulations</b>	<b>enforce building and technical codes</b>	<b>up-to-date comprehensive plan adopted in last 5 years</b>	<b>5-6 year capital improvements plan updated annually</b>	<b>experience with FEMA grant programs for hazard mitigation projects</b>	<b>professional urban planner on staff</b>	<b>professional engineer on staff</b>	<b>Certified Floodplain Manager on staff</b>	<b>full-time building inspector on staff</b>
Baldwin County	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Bay Minette	Y	N	Y	N	Y	Y	N	N	N	Y
Daphne	Y	Y	Y	N	N	Y	Y	Y	Y	Y
Elberta	Y	Y	Y	Y	N	Y	N	N	N	Y
Fairhope	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Foley	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Gulf Shores	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Loxley	Y	N	Y	Y	N	Y	N	N	N	Y
Magnolia Springs	Y	Y	Y	Y	N	N	Y	Y	N	Y
Orange Beach	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Perdido Beach	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Robertsdale	Y	Y	Y	Y	N	Y	N	Y	Y	Y
Silverhill	Y	N	Y	N	N	Y	N	N	N	Y
Spanish Fort	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Summerdale	Y	Y	Y	N	N	Y	Y	N	N	Y

**KEY: Y = Yes N = No**

**Appendix C**  
**2010 Plan Implementation Status**



## **App. C – 2010 Plan Implementation Status**

- 1.0 Scope and Methodology
- 2.0 Summary of Results

### **1.0 Scope and Methodology**

As part of the 2015 plan update, each jurisdiction that participated in the 2010 planning process revisited its original five-year mitigation action program from the 2010 Baldwin County Multi-Hazard Mitigation Plan. FEMA guidance requires this review of previous mitigation actions. Each action or project must be identified as completed, ongoing, deleted or deferred actions. If a mitigation action remained unchanged, the jurisdiction must explain why no changes occurred. The community must also describe any challenges that hindered implementation of mitigation measures and how these might be dealt with in future updates. Technical, political, financial, legal, administrative, and agency coordination issues need to be evaluated for any potential hindrances to effective implementation of mitigation measures.

This appendix includes the Community Mitigation Action Programs adopted by Baldwin County and its participating jurisdictions. Actions identified in the 2010 plan were evaluated to obtain the current implementation status. Each jurisdiction or agency responsible for implementing a mitigation measure in 2010 was asked to provide a status update by classifying each action as completed, ongoing but completed, deferred, or deleted. Agencies were asked to provide comments on any milestones achieved or impediments to implementation of the mitigation measures.

To accomplish this status assessment, a questionnaire based on the mitigation action program from the 2010 plan was sent to all members of the Hazard Mitigation Planning Committee and the lead agencies or persons responsible for implementing each action of the jurisdictions that participated in the original plan. The survey provided each jurisdiction with a mechanism to provide feedback on the implementation status of the mitigation measures along with any relevant comments.

Results from this survey are highlighted on the table found in this appendix. If a mitigation measure was deferred or recommended for deletion, the jurisdiction was required to give the reason. The reasons for deleting a measure were categorized as DE for economic, DA for administrative, DP for political, DT for technical, DL for legal, or DN for not needed. An explanation of each category is as follows:

<b>Economic</b>	Lack of funding or budget constraints impeded the implementation of the mitigation measure
<b>Administrative</b>	Inadequate staff resources to implement and maintain the mitigation measure

<b>Political</b>	Lacks local political support of the mitigation measure
<b>Technical</b>	Mitigation measure was not technically feasible
<b>Legal</b>	Lacks the legal authority to implement the mitigation measure
<b>Not Needed</b>	The measure is no longer necessary

## 2.0 Summary of Results

- ✓ The 2010 Baldwin County Multi-Hazard Mitigation Plan contained approximately 84 mitigation measures. The majority of the mitigation measures were completed or completed, but on-going.
- ✓ The predominant reason given for deleting certain measures by individual jurisdictions was that the lead agency determined that the adopted mitigation measure was not economically feasible or they did not have the technical ability to carry out the measure.

The Key for Table C-1 is as follows:

- C** = Completed
- O** = Completed but Ongoing
- DF** = not completed, defer for the 2015 Plan Update
- DA** = delete for administrative reasons
- DE** = delete for economic reasons
- DL** = delete for legal reason
- DP** = delete for political reasons
- DT** = delete for technical reasons
- DN** = delete, not needed
- NR** = No Response
- NA** = Not Applicable

**Table C-1. 2015 Plan Implementation Status**

#	Mitigation Measure	Baldwin Co.	Bay Minette	Daphne	Elberta	Fairhope	Foley	Gulf Shores	Loxley	Magolia Springs	Orange Beach	Perdido Beach	Robertsdale	Silverhill	Spanish Fort	Summerdale
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions.	O	O	D	X		O	O	O	C	O	D	O		O	D
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs	O	O	D	X		O	O	O	O	O	O	O		O	D
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.	D	O	D	X		C	O	D	O	O	D			O	
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	D	O	D	X		C	O		X	O		O			

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measure	Baldwin Co.	Bay Minette	Daphne	Elberta	Fairhope	Foley	Gulf Shores	Loxley	Magolia Springs	Orange Beach	Perdido Beach	Robertsdale	Silverhill	Spanish Fort	Summerdale
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	D			X		C	O			D					
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	O					O									
1.2.4	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.	O		D	X			O	D	X	O		O		O	
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	D						O					D			
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Baldwin County that have the most potential for losses from natural hazard events and identify needed structural upgrades.	O	O	D	X			O	D	O	O	D			X	
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	O	O	O	X		O	O	D		O		O		O	

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1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	O	O	O	X		O	O	O	O	C		O		O	
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	O	O	O	X		O	O	D	O	O		O		O	D
1.4.1	Consider large lot size restriction on flood prone areas designated on Flood Insurance Rate Maps.	O		D			C						O			
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	O	O	D			C	O	D	O			O		D	
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	O		O	X			O	O	O	O		O		O	
1.4.4	Enact local ordinance that require community storm shelters within sizeable mobile home parks and subdivisions.	D		O												
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	O		C	X		C	O	O	O	O	O	C		O	D

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1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.	O		O	X		C	O	D	O	O	D	O		O	D
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	O		O	X		O	O	D	O	O		O		O	
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	O	O	O	X		C	O	O	O	O				D	
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	O		O	X		O	O	D	O	O	D	O		O	O
1.6.5	Participate in the "Turn Around, Don't Drown" program by purchasing and installing signs in known flash flood overpass locations.	D		X												
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	O	O	O	X		O	O	D	O	O	C	O		O	O

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1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	O		O	X		O	O	O	O	O	C	O		O	O
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	O		O	X			O	D	O	O	D	O		O	
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	O	O	O	X		C	O	D	O	O				O	
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	O	O	O	X		O	O	O	O	O		O		O	O
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	X	O		X			D	D	X	O				D	
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.	O	O	O	X		O	O	D	O	O		O		O	O

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1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.	O		O	X						O					
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.	D		O	X		O				O					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	O	O	O	X		C	O	O	O	O		O			O
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.	O		O	X		C	O	O	O	O	C	O		O	O
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.	D			X		O	O								X
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	O		O	X		O	O	D	O	O	O	O		D	
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	O		D	X			O	D	X	O	D			D	O

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1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	O	O		X		D				O	O				
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	O	O	O	X		D	O	D	O	O	D	D		O	D
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	O	O	O	X		D	O	D	X	O	D	O		O	D
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	O	O	O	X		D	O	D	X	O	D			D	D
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	O	O	O	X		D	O	D	O	O	D	O		D	D

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2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.	O		D	X		D	O	D	X	O	D	D		D	D
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.	O		D	X		X	O	D	X	O	D	O		D	D
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	O		D	X		X	O	D	X	O	D	O		D	D
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.	O	O	O	X		O	O	D	O	O		O		O	
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	O	O	O	X		O	O	D	O	O	O			O	O
2.7.1	Install lightning and/or surge protection on existing critical facilities.	O	O	O	X		C	O	O	O	D	O	O		D	O
2.7.2	Conduct ongoing tree trimming programs along power lines.	O	O													
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.	O		O	C		C	O	O	O	C	O	O		D	O
3.1.1	Publicize the availability of FIRM information to real estate agencies, builders, developers, and homeowners through local trade publications				C						O	O				

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	and newspaper announcements.															
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	O	O	O	C		O	O	O	O	O	O			O	O
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	O		O	O		O	O	D	O	O				O	D
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	O			O		O	O			O					
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	O		D	O		O	O	D	O	O				O	
3.3.1	Arrange with the Multiple Listing Service (MLS) to require floodplain location disclosure as a condition for each real estate listing.				O						D					
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain disclosure when a property is for sale.	O		D				O	D	O					D	

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3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	O			O		O	O		O	O		O			O
3.5.1	Distribute hazard mitigation brochures to students through area schools.	O			O		O	O			O					D
3.6.1	Distribute the 2010 plan to local officials, stakeholders, and interested individuals through internet download.	C		O	O		C	O	D	O	O	D	D		O	O
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	O	O	O	O		O	O	D	X	O	D	O		O	
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	O	O	O	O		O	O	O	O	O	O	O		O	D
3.9.1	Promote the use of weather radios in households and businesses.	O	O		O		O	O			O	O				D
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.	O	O					D				O				
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.	X		D			D	O	D	O		D			O	D
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.	O										D				

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3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.	O										D				
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.	X										D				D
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	X			X					X	X					D
3.10.5	Upgrade critical communications infrastructure.	O	O		O		O			O	O		O			O
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	X			X			O	O		O					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.	O	O	O	C			O	D	O	O	O	O		O	
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	O	O	O	C			O	O	O	O	O	O		O	
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	O			C		O	O			O					
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.	O			X		O	O			D		D			

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4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.	O			X		O	D			O					
4.4.1	Restore and protect wetlands to enhance storm water drainage.	O		O	O		C	O			O	O	O			
4.4.2	Develop a coastal renourishment program.	O			X			O			O	X				
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	O		O									O			
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	O	O	O	X		O	O	D	O	O	O			D	D
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	O	O	O	C		O	O	O	O	O	O	O		O	O
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.	O		O	C			O	D	X	O	D	D		D	
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.			O	C		O				D	D				D

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5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.											O			O	D

**Appendix D**  
**HMPC Hazard Identification and Ratings**



**App. D - HMPC Hazard Identification and Ratings**

- 1.0 Scope and Methodology
- 2.0 Hazard Descriptions

**1.0 Scope and Methodology**

**1.1 The HMPC Hazard Identification Exercises**

The tables in this Appendix show the results of the Hazard Mitigation Planning Committee (HMPC) responses to hazard identification exercises presented at its April 24, 2015, committee meeting. These results are not necessarily supported by other resources evaluated in Chapter 5 – Risk Assessment, but are, nonetheless, indicators of the location, probability, and extent of natural and man-made hazards affecting Baldwin County jurisdictions. These responses are those perceived by the HMPC membership, based on local knowledge and experience of the members. These exercises serve as a resource to help identify the hazards affecting each jurisdiction and determine the probability and extents (severity or magnitude) and how these measures of community impacts vary among Baldwin County jurisdictions. The averages of the ratings compare how the location and impacts of hazards could vary among the jurisdictions. The same exercise was administered during the drafting of the 2010 plan update for natural hazards, and the results are compared.

**Key.** The following key to the tables describes the hazard ratings:

A blank field indicates no response.

<b>LOCATION - WHETHER THE JURISDICTION IS AFFECTED BY THE HAZARD</b>
1 = YES
0 = NO
<b>PROBABILITY - THE LIKELIHOOD THAT THE HAZARD WOULD OCCUR IN THIS JURISDICTION</b>
5 - VERY HIGH
4 - HIGH
3 - MEDIUM
2 - LOW
1 - MINIMUM
<b>EXTENT - THE SEVERITY OR MAGNITUDE OF THE HAZARD SHOULD IT OCCUR IN THIS JURISDICTION</b>
5 - VERY HIGH
4 - HIGH
3 - MEDIUM
2 - LOW
1 - MINIMUM

**1.2 Summary of Results****Location of natural hazards**

- ✓ In 2010, the HMPC has identified the following hazards that could occur in all jurisdictions: hurricanes, tornadoes, severe storms, winter storms/freezes, droughts/heat waves, and tsunamis. In 2015, tsunami was added to the identified hazards.
- ✓ Floods can occur in all jurisdictions, and flood studies confirm all jurisdictions are subject to flooding. Flood maps included in Chapter 5 – “Risk Assessment” show precise flood zones.
- ✓ All jurisdictions recognize the impacts from hurricanes, though only coastal communities would be affected by storm surge. The data suggests hurricane-generated wind, rain (flooding) and tornadoes from land falling hurricanes and tropical storms could have severe impacts on all communities. Further, Gulf Shores, Orange Beach and Perdido Beach could incur inundation flooding from hurricane storm surge, while Fairhope, Spanish Fort and Daphne could experience storm surge impacts from major storms directly impacting Mobile Bay.
- ✓ Some communities did not find threats from landslides, sinkholes, dam/levee failures, earthquakes, and tsunamis, although all communities could experience these disasters to some extent. See locational maps in Chapter 5 – “Risk Assessment.”
- ✓ Tsunamis were added as a possible hazard risk due to a 2009 USGS study, which noted the slight potential for submarine landslides beneath Gulf waters that could cause tsunamis.

**Probability of natural hazards**

- ✓ According to the HMPC, hurricanes are the most likely natural hazard to occur with an average rating of 4.2. According to records, however, severe storms (rated at 3.9) have a higher probability. Floods have a very high probability of 3.8, which is a much higher probability than that perceived by the 2010 HMPC. Tornadoes also have a very high probability of 3.5, according to this survey.
- ✓ The natural hazards that have some likelihood of occurring (less than 3.0 but greater than 2.0) include wildfires and droughts/heat waves, each with a rating of 2.8, followed by winter storms/freezes at 2.6, up from 1.6 in 2010.
- ✓ The natural hazards that are less likely to occur across all of Baldwin County include sinkholes and earthquakes at 1.8, tsunamis at 1.6, and landslides at 1.4. Dam/levee failures are perceived as the least likely event at 1.1.

**Extents of natural hazards**

- ✓ The most potentially severe natural hazards are severe storms, rated 4.7, and hurricanes with a rating of 4.6.
- ✓ Tornadoes (3.5), flooding (3.3), and wildfires (3.1) are other hazards with potentially severe impacts.
- ✓ Natural hazards considered by the HMPC to have a moderate severity include droughts/heat waves (2.8) and winter storms/freezes (2.6).
- ✓ Less severe impacts would be caused by earthquakes (1.7), landslides and sinkholes (1.4) and tsunamis (1.3). Consistent with the 2010 findings, dam/levee failures were perceived to have the least potential severity at 0.9.

# APPENDICES

# 2015 Baldwin County Multi-Hazard Mitigation Plan

Table D-1. Baldwin County HMPC Identification and Ratings of Natural Hazards

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
Flooding *		<i>Riverine, Coastal Flooding</i>	<i>All Flooding Types</i>	<i>Riverine, Coastal Flooding</i>	<i>All Flooding Types</i>	<i>Riverine, Coastal Flooding</i>	<i>All Flooding Types</i>
	Baldwin County		1		4		5
	Bay Minette		1		5		5
	Daphne	0, 1	1	0, 3	3	0, 3	4
	Elberta	1, 1	1	3, 3	3	3, 3	3
	Fairhope	1, 1	1	4, 4	5	4, 4	5
	Foley	1, 1	1	3, 2	5	4, 2	4
	Gulf Shores	0, 1	1	0, 3	5	0, 5	5
	Loxley	1, 0	1	3, 0	3	2, 0	2
	Magnolia Springs	1, 1	2	3, 3	4	4, 4	5
	Orange Beach	0, 1	1	0, 5	5	0, 4	5
	Perdido Beach	0, 1	1	0, 4	5	0, 3	5
	Robertsdale		1		3		3
	Silverhill		1		3		3
	Spanish Fort	1, 1	1	3, 4	3	3, 5	3
Summerdale	1, 0	0	1, 1	1	1, 1	1	
	<i>AVERAGE</i>	<i>0.6, 0.8</i>	<i>1</i>	<i>1.8, 2.9</i>	<i>3.8</i>	<i>1.9, 3.1</i>	<i>3.9</i>
Hurricanes **		<i>Surge, Winds</i>	<i>All Hurricane Impacts</i>	<i>Surge, Winds</i>	<i>All Hurricane Impacts</i>	<i>Surge, Winds</i>	<i>All Hurricane Impacts</i>
	Baldwin County		1		5		4
	Bay Minette		1		5		5
	Daphne	1, 4	1	4, 4	5	3, 4	5
	Elberta	1, 1	1	4, 4	4	3, 3	4
	Fairhope	1, 1	1	5, 5	4	5, 5	5
	Foley	1, 1	1	2, 4	5	2, 4	4
	Gulf Shores	1, 1	1	5, 5	5	5, 5	5
	Loxley	0, 1	1	0, 4	3	0, 5	2
	Magnolia Springs	1, 1	1	3, 3	5	4, 4	4
	Orange Beach	1, 1	1	5, 5	5	5, 5	4
	Perdido Beach	1, 1	1	5, 5	5	5, 5	5
	Robertsdale		1		5		5
	Silverhill		1		4		4
	Spanish Fort	1, 1	1	5, 5	4	5, 5	3
Summerdale	0, 1	1	0, 5	4	0, 5	4	
	<i>AVERAGE</i>	<i>0.8, 1</i>	<i>1</i>	<i>3.5, 4.5</i>	<i>4.5</i>	<i>3.4, 4.5</i>	<i>4.2</i>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
<b>Severe Storms</b>	Baldwin County		1		5		3
	Bay Minette		1		5		5
	Daphne	1	1	4	4	4	4
	Elberta	1	1	3	4	3	4
	Fairhope	1	1	4	4	5	5
	Foley	1	1	3	5	4	4
	Gulf Shores	1	1	2	4	3	4
	Loxley	1	1	4	3	3	2
	Magnolia Springs	1	1	3	5	3	3
	Orange Beach	1	1	4	5	4	3
	Perdido Beach	1	1	3	5	3	5
	Robertsdale		1		5		4
	Silverhill		1		5		5
	Spanish Fort	1	1	4	5	5	4
	Summerdale		1		5		4
	<b>AVERAGE</b>	<b>1</b>	<b>1</b>	<b>3.4</b>	<b>4.6</b>	<b>3.7</b>	<b>4.1</b>
<b>Tornadoes</b>	Baldwin County		1		3		4
	Bay Minette		1		5		5
	Daphne	1	1	5	3	2	3
	Elberta	1	1	3	3	3	3
	Fairhope	1	1	3	3	3	4
	Foley	1	1	4	3	2	2
	Gulf Shores	1	1	1	3	1	4
	Loxley	1	1	3	3	3	3
	Magnolia Springs	1	1	4	3	3	4
	Orange Beach	1	1	4	2	2	3
	Perdido Beach	1	1	2	5	1	5
	Robertsdale		1		5		4
	Silverhill		1		4		4
	Spanish Fort	1	1	4	3	4	4
	Summerdale	1	1	5	3	3	4
	<b>AVERAGE</b>	<b>1</b>	<b>1</b>	<b>3.5</b>	<b>3.4</b>	<b>2.5</b>	<b>3.7</b>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
<b>Wildfires</b>	Baldwin County		1		2		3
	Bay Minette		1		5		4
	Daphne	1	1	3	3	3	3
	Elberta	1	1	2	2	1	2
	Fairhope	1	1	2	3	3	4
	Foley	1	1	3	5	5	2
	Gulf Shores	1	1	3	3	3	3
	Loxley	1	1	4	3	4	1
	Magnolia Springs	1	1	3	2	2	3
	Orange Beach	1	1	3	3	3	4
	Perdido Beach	1	1	2	5	1	5
	Robertsdale		1		2		3
	Silverhill		1		2		2
	Spanish Fort	1	1	3	3	3	3
	Summerdale	1	1	1	1	2	1
	<b>AVERAGE</b>	<b>1</b>	<b>1</b>	<b>2.6</b>	<b>2.9</b>	<b>2.7</b>	<b>2.9</b>
<b>Droughts/Heat Waves</b>	Baldwin County		1		3		3
	Bay Minette		1		5		5
	Daphne	1	1	1	2	3	2
	Elberta	1	1	1	1	1	1
	Fairhope	1	1	2	4	3	5
	Foley	1	1	4	5	3	4
	Gulf Shores	1	1	2	2	3	3
	Loxley	1	1	3	3	3	2
	Magnolia Springs	1	1	2	3	2	3
	Orange Beach	1	1	3	3	3	3
	Perdido Beach	0	1	0	3	0	3
	Robertsdale		1		2		2
	Silverhill		1		2		2
	Spanish Fort	1	1	3	3	4	3
	Summerdale	1	1	2	1	2	1
	<b>AVERAGE</b>	<b>0.9</b>	<b>1</b>	<b>2.1</b>	<b>2.8</b>	<b>2.5</b>	<b>2.8</b>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
<b>Winter Storms/Freezes</b>	Baldwin County		1		2		3
	Bay Minette		1		5		4
	Daphne	1	1	1	2	2	2
	Elberta	1	1	1	2	1	2
	Fairhope	1	1	1	2	1	4
	Foley	1	1	4	5	2	5
	Gulf Shores	1	1	4	2	1	3
	Loxley	1	1	3	3	2	2
	Magnolia Springs	1	1	2	2	2	3
	Orange Beach	1	1	3	2	2	2
	Perdido Beach	0	1	0	2	0	2
	Robertsdale		1		2		2
	Silverhill		1		2		2
	Spanish Fort	1	1	2	3	3	3
	Summerdale	1	1	1	1	1	1
	<b>AVERAGE</b>	<b>0.9</b>	<b>1</b>	<b>2</b>	<b>2.5</b>	<b>1.6</b>	<b>2.7</b>
<b>Dam/levee Failures</b>	Baldwin County		0		0		0
	Bay Minette		0		1		1
	Daphne	1	1	3	1	3	2
	Elberta	0	0	0	1	0	1
	Fairhope	0	0	0	1	0	1
	Foley	1	0	1	1	1	1
	Gulf Shores	0	2	0	1	0	1
	Loxley	1	0	2	1	1	1
	Magnolia Springs	1	0	1	0	1	0
	Orange Beach	0	0	0	1	0	1
	Perdido Beach	0	0	0	1	0	1
	Robertsdale		1		1		2
	Silverhill		0		1		1
	Spanish Fort	0	0	0	1	0	1
	Summerdale	0	0	0	1	0	1
	<b>AVERAGE</b>	<b>0.4</b>	<b>0.3</b>	<b>0.6</b>	<b>0.9</b>	<b>0.6</b>	<b>1</b>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
<b>Landslides</b>	Baldwin County		1		2		2
	Bay Minette		0		1		1
	Daphne	0	1	0	2	0	2
	Elberta	1	0	1	1	1	1
	Fairhope	0	1	0	2	0	3
	Foley	0	0	0	1	0	1
	Gulf Shores	0	2	0	1	0	1
	Loxley	0	0	0	1	0	1
	Magnolia Springs	1	1	1	2	1	2
	Orange Beach	0	0	0	1	0	1
	Perdido Beach	0	0	0	1	0	1
	Robertsdale		1		1		2
	Silverhill		0		1		1
	Spanish Fort	1	1	2	4	3	3
	Summerdale	0	0	0	1	0	1
	<b>AVERAGE</b>	<i>0.3</i>	<i>0.5</i>	<i>0.4</i>	<i>1.5</i>	<i>0.5</i>	<i>1.5</i>
<b>Sinkholes</b>	Baldwin County		1		2		2
	Bay Minette		1		3		3
	Daphne	1	1	3	3	2	3
	Elberta	1	0	2	1	2	1
	Fairhope	0	1	0	2	0	2
	Foley	0	0	0	1	0	1
	Gulf Shores	0	1	0	1	0	1
	Loxley	1	1	3	2	2	1
	Magnolia Springs	1	1	1	2	1	2
	Orange Beach	0	1	0	2	0	2
	Perdido Beach	0	1	0	2	0	2
	Robertsdale		1		1		2
	Silverhill		0		1		1
	Spanish Fort	0	1	0	2	0	2
	Summerdale	0	0	0	1	0	1
	<b>AVERAGE</b>	<i>0.4</i>	<i>0.7</i>	<i>0.8</i>	<i>1.7</i>	<i>0.6</i>	<i>1.7</i>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2010)	Location (2015)	Extent (2010)	Extent (2015)	Probability (2010)	Probability (2015)
Earthquakes	Baldwin County		1		3		4
	Bay Minette		1		5		5
	Daphne	1	1	4	1	1	1
	Elberta	1	0	1	1	1	1
	Fairhope	1	0	1	1	1	1
	Foley	1	0	4	1	1	1
	Gulf Shores	0	2	0	1	0	1
	Loxley	1	1	5	2	1	2
	Magnolia Springs	1	1	1	3	1	4
	Orange Beach	1	1	5	1	1	1
	Perdido Beach	0	1	0	2	0	2
	Robertsdale		1		1		2
	Silverhill		1		1		1
	Spanish Fort	1	1	3	1	1	1
	Summerdale	1	0	1	1	1	1
	<b>AVERAGE</b>	<i>0.8</i>	<i>0.1</i>	<i>2.27</i>	<i>1.7</i>	<i>0.8</i>	<i>1.9</i>
Tsunamis	Baldwin County		1		1		5
	Bay Minette		1		2		2
	Daphne		1		1		1
	Elberta		0		1		1
	Fairhope		0		1		1
	Foley		0		1		1
	Gulf Shores		1		1		1
	Loxley		1		1		1
	Magnolia Springs		1		3		3
	Orange Beach		1		2		2
	Perdido Beach		1		2		2
	Robertsdale		0		0		0
	Silverhill		0		1		1
	Spanish Fort		1		2		2
	Summerdale		0		1		1
	<b>AVERAGE</b>		<i>0.6</i>		<i>1.3</i>		<i>1.6</i>

**NOTES:**

\*2010 exercise listed riverine and coastal flooding separately. The first number in 2010 is the response for riverine flooding, and the second number is for coastal flooding. In 2015, the types of flooding were not separated.

\*\*2010 exercise listed hurricane surge and winds separately. The first number in 2010 is the response for surge, and the second number is for winds. In 2015, impacts categories were not separated.

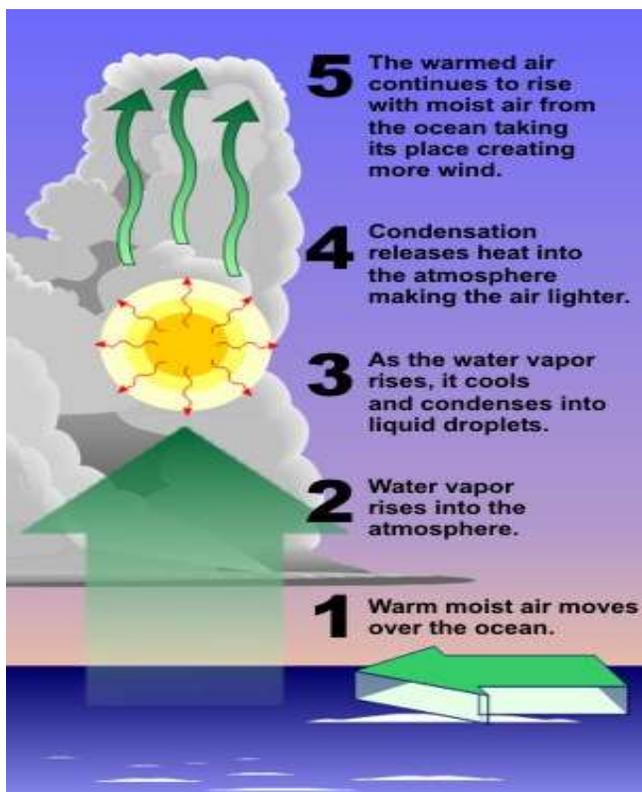
**Table D-2. Baldwin County Identification and Ratings of County-Wide Natural Hazards by Agencies**

<b>Natural Hazard</b>	<b>Agency</b>	<b>Location (2015)</b>	<b>Extent (2015)</b>	<b>Probability (2015)</b>
<b>Flooding</b>	Ala. Dept of Public Health (All)	1	3	3
	BOE (Baldwin County)	2	4	5
	<i>AVERAGE</i>	<i>1.5</i>	<i>3.5</i>	<i>4</i>
<b>Hurricanes</b>	Ala. Dept of Public Health (All)	1	3	5
	BOE (Baldwin County)	1	5	4
	<i>AVERAGE</i>	<i>1</i>	<i>4</i>	<i>4.5</i>
<b>Severe Storms</b>	Ala. Dept of Public Health (All)	1	5	5
	BOE (Baldwin County)	1	5	3
	<i>AVERAGE</i>	<i>1</i>	<i>5</i>	<i>4</i>
<b>Tornadoes</b>	Ala. Dept of Public Health (All)	1	3	4
	BOE (Baldwin County)	3	3	3
	<i>AVERAGE</i>	<i>2</i>	<i>3</i>	<i>3.5</i>
<b>Wildfires</b>	Ala. Dept of Public Health (All)	1	3	2
	BOE (Baldwin County)	1	2	3
	<i>AVERAGE</i>	<i>1</i>	<i>2.5</i>	<i>2.5</i>
<b>Droughts/Heat Waves</b>	Ala. Dept of Public Health (All)	1	5	3
	BOE (Baldwin County)	1	3	3
	<i>AVERAGE</i>	<i>1</i>	<i>4</i>	<i>3</i>
<b>Winter Storms/Freezes</b>	Ala. Dept of Public Health (All)	1	2	4
	BOE (Baldwin County)	1	2	3
	<i>AVERAGE</i>	<i>1</i>	<i>2</i>	<i>3.5</i>
<b>Dam/levee Failures</b>	Ala. Dept of Public Health (All)	0	0	0
	BOE (Baldwin County)	0	0	0
	<i>AVERAGE</i>	<i>0</i>	<i>0</i>	<i>0</i>
<b>Landslides</b>	Ala. Dept of Public Health (All)	1	2	3
	BOE (Baldwin County)	1	2	2
	<i>AVERAGE</i>	<i>1</i>	<i>2</i>	<i>2.5</i>
<b>Sinkholes</b>	Ala. Dept of Public Health (All)	1	3	3
	BOE (Baldwin County)	1	2	2
	<i>AVERAGE</i>	<i>1</i>	<i>2.5</i>	<i>2.5</i>
<b>Earthquakes</b>	Ala. Dept of Public Health (All)	0	0	0
	BOE (Baldwin County)	1	3	4
	<i>AVERAGE</i>	<i>0.5</i>	<i>1.5</i>	<i>2</i>
<b>Tsunamis</b>	Ala. Dept of Public Health (All)	1	1	5
	BOE (Baldwin County)	1	1	5
	<i>AVERAGE</i>	<i>1</i>	<i>1</i>	<i>5</i>

**2.0 Hazard Descriptions**

**2.1 Hurricanes Description**

Hurricanes, as referred to in this plan, include all types of tropical cyclones: hurricanes, tropical storms, and tropical depressions. A tropical cyclone is a rotating weather system that develops in the tropics. A tropical depression is an organized system of persistent clouds and thunderstorms with low level closed circulation and maximum sustained winds of 38 mph or less. A tropical storm is an organized system of strong thunderstorms with a well-defined circulation and maximum sustained winds of 39 to 73 mph. All of these tropical cyclones begin as a disturbance. A disturbance may result from a number of different weather events including Easterly Waves, West African Disturbance Line, Tropical Upper Tropospheric Trough or an Old Frontal Boundary. In



**Figure D-1. How a Hurricane Forms**

Source: National Hurricane Center ([www.nhc.noaa.gov](http://www.nhc.noaa.gov))

order for a tropical disturbance to develop into a hurricane, three things must occur. First, the disturbance must gather energy and heat through contact with warm ocean waters. Next, added moisture evaporated from the sea surface provides power to the tropical storm. And last, the seedling storm forms a wind pattern near the ocean surface that spirals inward. Warm water is the most important of the three, as it provides the fuel for a disturbance to eventually develop into a hurricane. A hurricane is a tropical weather system with a well-defined circulation and sustained winds of 74 mph or higher. Even inland areas, well away from the coastline, can experience destructive winds, tornadoes and floods from tropical storms and hurricanes.

The Atlantic hurricane season begins on June 1 and lasts through November. Within the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico annually there are an average of 11 tropical storms, 6

of which become hurricanes. In a typical three-year span, the US coastline is struck an average of five times, two that are major hurricanes (category 3 or higher.) Hurricanes pose the greatest threat to life and property, but tropical depressions and storms can also cause extensive damage and loss of life. Hurricanes are categorized on a scale of 1 to 5 based on their sustained wind speed. Herbert Saffir, a consulting engineer in Coral Gables, Florida, and Dr. Robert Simpson, then director of the National Hurricane Center, developed this scale in the 1970's. Category 3-5 hurricanes are considered to be major storms. The Saffir-Simpson scale

is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories.

**Table D-3. Saffir-Simpson Scale**

Category	Wind Speed	Storm Surge (feet above normal sea level)	Expected Damage
1	74-95 mph	4-5 ft	<b>Minimal:</b> Damage is done primarily to shrubbery and trees, unanchored mobile homes are damaged, some signs are damaged, no real damage is done to structures
2	96-110 mph	6-8 ft	<b>Moderate:</b> Some trees are toppled, some roof coverings are damaged, major damage is done to mobile homes
3	111-130 mph	9-12 ft	<b>Extensive:</b> Large trees are toppled, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131-155 mph	13-18 ft	<b>Extreme:</b> Extensive damage is done to roofs, windows, and doors; roof systems on small buildings completely fail, some curtain walls fail
5	>155 mph	>18 ft	<b>Catastrophic:</b> Roof damage is considerable and widespread, window and door damage is severe, there are extensive glass failures and entire buildings could fail.

Source: National Hurricane Center

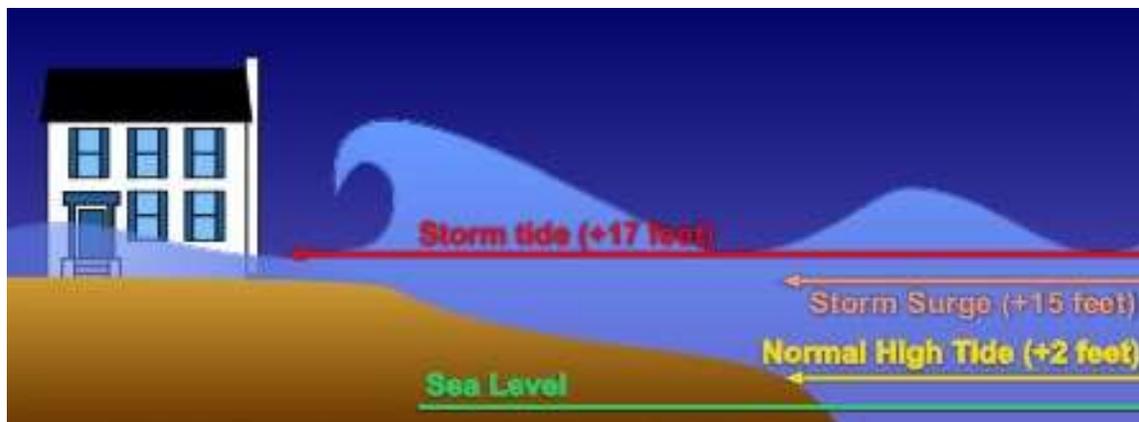
The main parts of a hurricane are the eye, the eye wall, and rain bands. The **eye** of a hurricane is the calmest part. The eye is typically 20-40 miles across and has light winds that don't exceed 15 mph. An eye will usually develop when the maximum sustained wind speed is more than 74 mph. The strong rotation around the cyclone balances inflow to the center, causing air to ascend about 10-20 miles from the center forming the eye wall. A vacuum of air at the center is caused due to the strong rotation, the vacuum allows air flowing out of the top of the eye wall to turn inward and sink to replace the loss of air mass near the center. Due to the sinking air, cloud formation is suppressed. The passage of the eye is the calmest part of the hurricane. Since there is a light wind and fair weather, many believe that the storm has passed, which can prove dangerous. Immediately after the passage of the eye, the eye wall winds return but in an opposite direction.

The **eye wall** is the part of a hurricane where the strong winds meet the eye. The eye wall is a group of tall thunderstorms that produce heavy rain and the strongest winds within the storm. Changes in the structure of the eye and eye wall can cause changes in the wind speed, which is an indicator of the storm's intensity. An eye may grow or shrink in size and additional eye walls can form.

The **rain bands** are the outermost part of the hurricane. They are bands of clouds and thunderstorms that trail away from the eye wall in a spiral fashion. These bands produce heavy rain and strong winds, as well as potentially tornadoes.

A hurricane also has additional hazards associated with it, both direct and indirect. The secondary hazards include storm surge, wind gusts, squalls, inland flooding and tornadoes. **Storm surge** is water that is pushed toward the shore by the winds around the storm. Storm surge combines with the normal tides to create the hurricane storm tide. Wind driven waves also combine into hurricane storm tide. The rise in water level can cause severe flooding in coastal areas. The level of surge is dependent upon the slope of the continental shelf. A shallow slope off of the coast allows a higher surge to inundate the area.

**Figure D-2. Storm Surge**



Source: NWS Jet Stream- Online School for Weather at [www.srh.noaa.gov/srh/jetstream/tropics/tc\\_hazards.htm](http://www.srh.noaa.gov/srh/jetstream/tropics/tc_hazards.htm)

In addition to storm surge, hurricanes are also known for **damaging winds**. They are rated according to their sustained wind speed. This scale does not account for gusts and squalls. **Gusts** are short and rapid bursts in wind speed. They are caused by turbulence over land mixing faster air aloft to the surface. **Squalls** are longer period of increased wind speeds; they are normally located within the outer rain bands.

Hurricanes, tropical storms, and depressions many times bring torrential rains and flooding. This flooding may last many days after the storm has passed. The strength of the storm does not always affect the level of flooding. A slow, weak tropical storm can cause more damage due to flooding than a more powerful fast moving hurricane.

Tornadoes also may occur within a tropical cyclone. They are most likely to occur in the right-front quadrant of the storm, but can be embedded within the rain bands well away from the center of the storm. Some hurricanes produce no tornadoes, while others develop numerous ones. According to NOAA studies, half of all land falling hurricanes produce at least one tornado. The effects of a tornado, in addition to hurricane force winds, can produce substantial wind damages. A tornado can develop at any point during landfall, but normally occur within 12 hours after landfall, during daylight hours.

Due to the likelihood of a tornado within a hurricane, a tornado watch is normally issued along the anticipated path of a hurricane before landfall.

*(The description of hurricanes presented in this section is based upon information extracted from the NOAA publication Hurricanes Unleashing Nature's Fury, A Preparedness Guide, Revised January 2007 at <http://www.nws.noaa.gov/om/hurricane/pdfs/HurricanesUNF07.pdf> and the NWS Jet Stream Online School for Weather at [http://www.srh.noaa.gov/srh/jetstream/tropics/tropics\\_intro.htm](http://www.srh.noaa.gov/srh/jetstream/tropics/tropics_intro.htm)).*

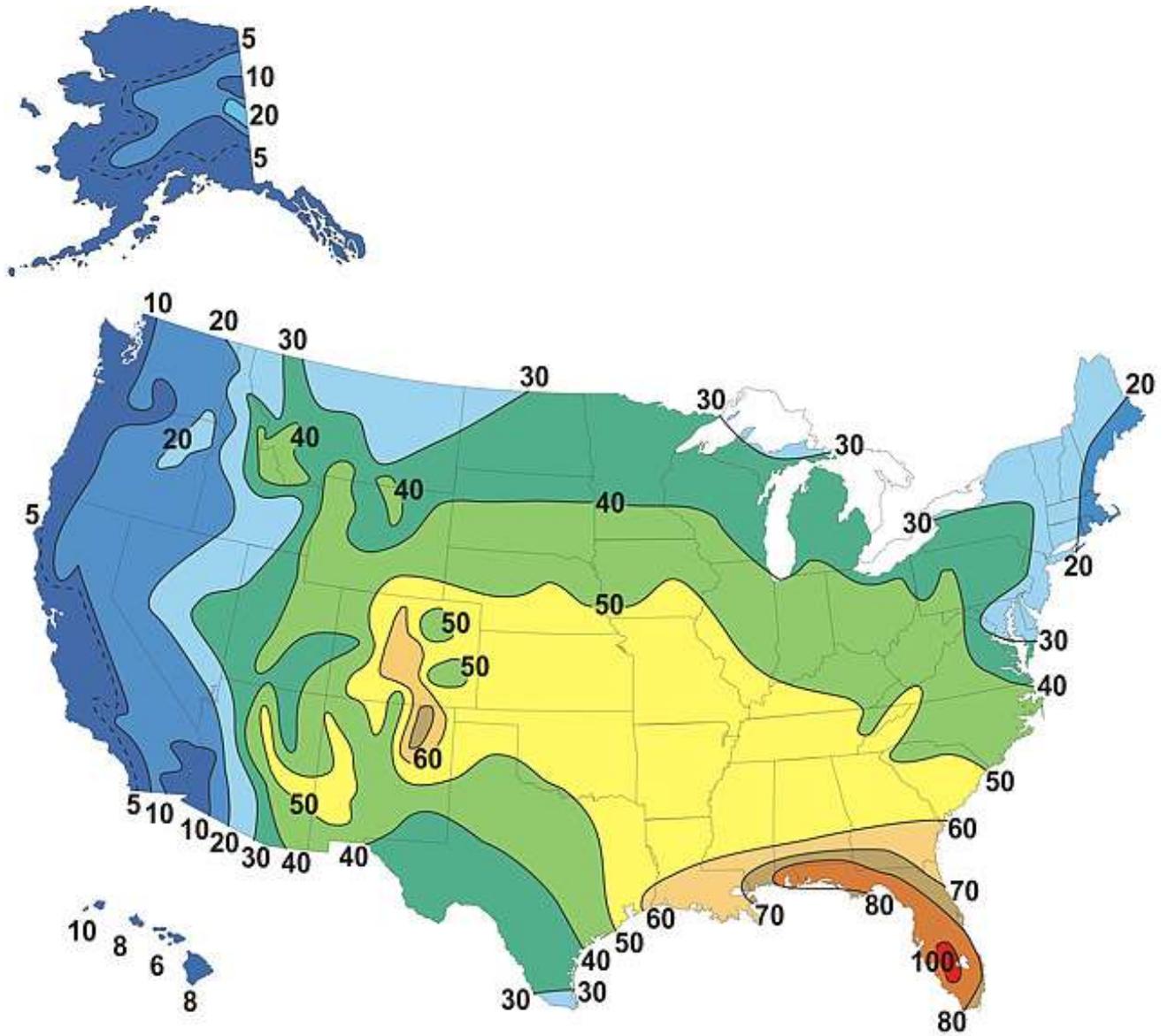
## **2.2 Severe Storms Description**

Severe storms, as referred to in this plan, include severe thunderstorms with damaging lightning, hail, and straight-line winds. Severe storms are also associated with tornadoes, hurricanes, and floods, which are described separately in this plan.

**Thunderstorms** affect relatively small areas when compared with hurricanes and winter storms. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, thunderstorms can be dangerous. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe. The National Weather Service considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, winds of 58 mph or stronger, or a tornado.

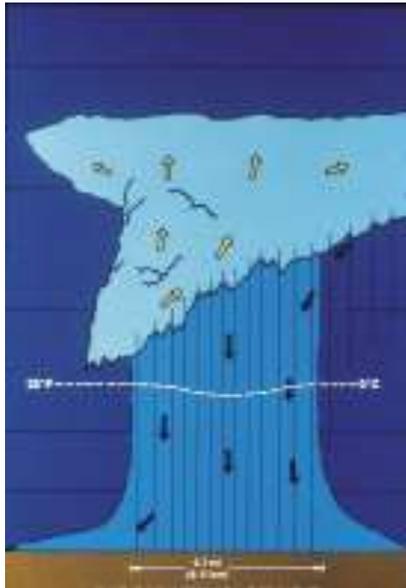
The National Weather Service estimates over 40,000 thunderstorms occur each day worldwide or close to 16 million annually. In the U.S., roughly 100,000 thunderstorms occur each year. The following map shows the average number of thunderstorm days each year throughout the U.S. The most frequent occurrence is in the southeastern states, with Florida having the highest incidence at 80 to 100+ thunderstorm days per year. Alabama's incidence is high at 50 to 80 thunderstorm days per year. Warm, moist air from the Gulf of Mexico and the Atlantic Ocean is most readily available to fuel thunderstorm development in this region of the country.

Map D-1. U.S. Average Thunderstorm Days per Year



Source: National Weather Service

**Figure D-3. Life Cycle of a Thunderstorm**

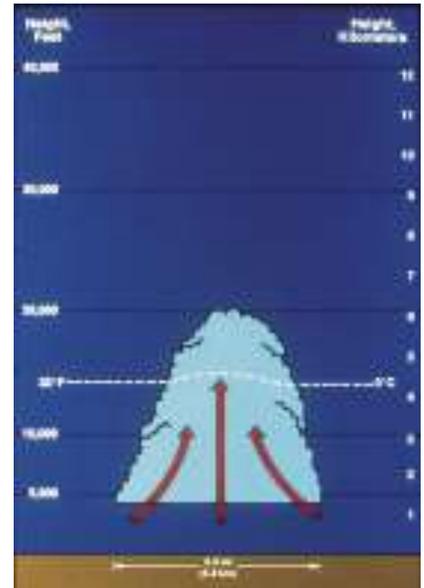


**Developing Stage**

- Towering cumulus cloud indicates rising air.
- Usually little if any rain during this stage.
- Lasts about 10 minutes.
- Occasional lightning.

**Mature Stage**

- Most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes.
- Storm occasionally has a black or dark green appearance.
- Lasts an average of 10 to 20 minutes but may last much longer in some storms.



**Dissipating Stage**

- Rainfall decreases in intensity.
- Can still produce a burst of strong winds.
- Lightning remains a danger

Source: National Weather Service

**Lightning** results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges. Water and ice particles also affect charge distribution. A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

Here are some facts about lightning from the National Weather Service:

- Lightning causes an average of 80 fatalities and 300 injuries each year.
- Lightning occurs in all thunderstorms.
- Each year lightning strikes the earth 20 million times. The energy from one lightning flash could light a 100-watt light bulb for more than three months.
- Most lightning fatalities and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.
- Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air.
- Lightning starts many fires in the western United States and Alaska.
- The air near a lightning strike is heated to 50,000°F--hotter than the surface of the sun!
- The rapid heating and cooling of the air near the lightning channel causes a shock wave that results in thunder.

Another damaging effect of severe storms is **hail**. Hail stones are large ice particles produced by intense thunderstorms. Strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs. Ice particles grow in size, becoming too heavy to be supported by the updraft, and fall to the ground. Large stones can fall at speeds faster than 100 mph. Hail causes substantial damage to property and crops each year in the U.S.



**Figure D-4. Hail Stones.**

Most thunderstorm wind damage is caused by straight-line winds, which can exceed 100 mph. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado.

*(The description of severe storms presented in this section is based upon information extracted from National Weather Service on-line publications at <http://www.srh.noaa.gov/jetstream/tstorms/>).*

**2.3 Tornadoes Description**

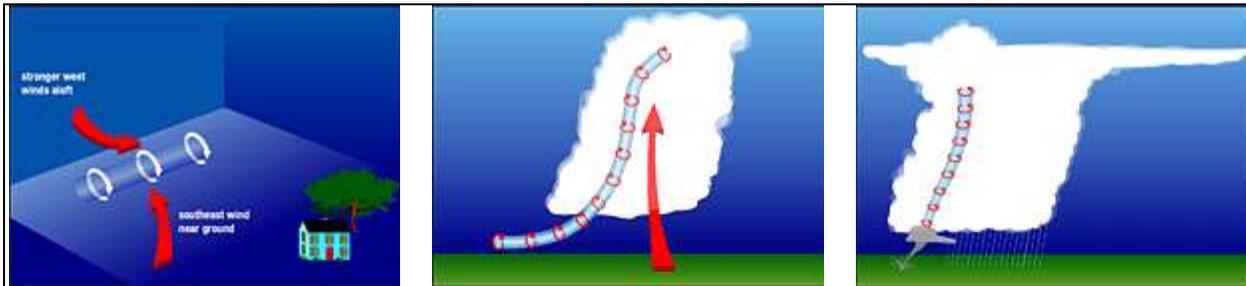
Tornadoes are one of nature's most violent storms, which are characterized by a rapidly rotating column of air extending from the base of a thunderstorm to the ground. In an average year, approximately 1,000 tornadoes are reported across the United States, resulting in over 1,500 injuries and 80 deaths, the greatest number of wind-related deaths. The most violent tornadoes, with wind speeds of 250 mph or more, are capable of tremendous destruction. Damage paths can be more than one mile wide and 50 miles long. Tornadoes can occur anywhere and come in all shapes and sizes.

In Alabama, peak tornado season is generally March through May with a secondary season in late fall; however, tornadoes can strike at any time of the year if the essential conditions are present. Tornadoes in the peak season are often associated with strong, frontal systems that form in central states and move east. Occasionally, large outbreaks of tornadoes occur with this type of weather pattern. Several states may be affected by numerous severe storms and tornadoes.

Tornadoes can occur in thunderstorms that develop in warm, moist air masses in advance of eastward-moving cold fronts. These thunderstorms often produce large hail and strong winds, in addition to tornadoes. Thunderstorms spawn tornadoes when cold air overrides a layer of warm air, causing the warm air to rise rapidly. Tornadoes occasionally accompany tropical storms and hurricanes that move over land. They are most common to the right and ahead of the path of the storm center as it comes onshore. The winds produced from wildfires have also been known to produce tornadoes.

The following graphic describes the formation of a tornado:

**Figure D-5. How a Tornado Forms**



▲ Before thunderstorms develop, a change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere.

▲ Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical.

▲ An area of rotation, 2-6 miles wide, now extends through much of the storm. Most strong and violent tornadoes form within this area of strong rotation.



Woodward OK (Ron Przybylinski)

▲ A lower cloud base in the center of the photograph identifies an area of rotation known as a rotating wall cloud. This area is often nearly rain-free. Note rain in the background.



Woodward OK (Ron Przybylinski)

▲ Moments later a strong tornado develops in this area. Softball-size hail and damaging "straight-line" winds also occurred with this storm.

Source: Tornadoes – A Preparedness Guide, National Weather Service, February 1995.

Meteorologists rely on weather radar to provide information on developing storms. The National Weather Service is strategically locating Doppler radars across the country, which can detect air movement toward or away from the radar. Early detection of increasing rotation aloft within a thunderstorm can allow life-saving warnings to be issued before the tornado forms.

When conditions are favorable for severe weather to develop, a severe thunderstorm or tornado WATCH is issued. Weather Service personnel use information

from weather radar, spotters, and other sources to issue severe thunderstorm and tornado WARNINGS for areas where severe weather is imminent. Severe thunderstorm warnings are passed to local radio and television stations and are broadcast over local NOAA Weather Radio stations serving the warned areas. These warnings are also relayed to local emergency management and public safety officials who can activate local warning systems to alert communities.

In 1971, Dr. T. Theodore Fujita of the University of Chicago developed the original F-scale for wind damages, including tornadoes. The original F-scale, however, was recently replaced by an enhanced version effective February 1, 2007. The Enhanced F-scale is a more precise method of tornado damage assessment that classifies damage according to calibrations developed by engineers and meteorologists across 28 different types of damage indicators. The underlying premise is that a tornado scale needs to take into account the varying strengths and weaknesses of different types of construction. As with the original F-scale, the enhanced version rates the tornado as a whole based on most intense damage within the path. Historical tornadoes before February 1, 2007, will not be re-evaluated using the Enhanced F-scale.

**Table D-4. Enhanced F Scale for Tornado Damage**

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	4D-78	0	6D-85	<b>0</b>	<b>6D-85</b>
1	73-112	79-117	1	86-109	<b>1</b>	<b>86-110</b>
2	113-157	118-161	2	110-137	<b>2</b>	<b>111-135</b>
3	158-207	162-209	3	138-167	<b>3</b>	<b>136-165</b>
4	208-260	210-261	4	168-199	<b>4</b>	<b>166-200</b>
5	261-318	262-317	5	200-234	<b>5</b>	<b>Over 200</b>

Source: NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes  
<http://www.spc.noaa.gov/faq/tornado/#f-scale3>

**Table D-5. Fujita Tornado Damage Scale**

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F0	< 73	<b>Light damage.</b> Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	<b>Moderate damage.</b> Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	<b>Considerable damage.</b> Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	<b>Severe damage.</b> Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	<b>Devastating damage.</b> Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	<b>Incredible damage.</b> Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Source: NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes (<http://www.spc.noaa.gov/faq/tornado/#f-scale3>)

*(The description of tornadoes presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), FEMA, August 2001, and Using HAZUS-MH for Risk Assessment (FEMA 433), FEMA, August 2004, Tornadoes – A Preparedness Guide, National Weather Service, February 1995, and the NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes (<http://www.spc.noaa.gov/faq/tornado/#f-scale3>).*

**2.4 Floods Description**

A flood is a natural event for rivers and streams. Excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers, lakes, and oceans that are subject to recurring floods.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories. Floods kill an average of 150 people a year nationwide. They can occur at any time of the year, in any part of the country, and at any time of day or night. Floodplains in the U.S. are home to over nine million households. Most injuries and deaths occur when people are swept away by flood currents, and most property damage results from inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity, other water source and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also result in floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of

impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Frequency of inundation depends on the climate, soil, and channel slope. In regions where substantial precipitation occurs in a particular season each year, or in regions where annual flooding is derived principally from snowmelt, the floodplains may be inundated nearly every year. In regions without extended periods of below-freezing temperatures, floods usually occur in the season of highest precipitation. In areas where flooding is caused by melting snow, and occasionally compounded by rainfall, the flood season is spring or early summer.

Fortunately, most of the known floodplains in the United States have been mapped by FEMA, which administers the NFIP (National Flood Insurance Program). When a flood study is completed for the NFIP, the information and maps are assembled into a Flood Insurance Study (FIS). An FIS is a compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community and includes causes of flooding. The FIS report and associated maps delineate Special Flood Hazard Areas (SFHAs), designate flood risk zones, and establish base flood elevations (BFEs), based on the flood that has a 1% chance of occurring annually, or the 100-year flood. Paper FIRMs and FIS reports are gradually being replaced by DFIRMs (digital FIRMs).

The **100-year flood** designation applies to the area that has a 1 percent chance, on average, of flooding in any given year. However, a 100-year flood could occur two years in a row, or once every 10 years. The 100-year flood is also referred to as the **base flood**. The base flood is the standard that has been adopted for the NFIP. It is a national standard that represents a compromise between minor floods and the greatest flood likely to occur in a given area and provides a useful benchmark.

**Base Flood Elevation (BFE)**, as shown on the FIRM, is the elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year. The BFE is the height of the base flood, usually in feet, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, the North American Vertical Datum (NAVD) of 1988, or other datum referenced in the FIS report.

**Special Flood Hazard Area (SFHA)** is the shaded A-Zone or V-Zone area on a FIRM that identifies an area that has a 1% chance of being flooded in any given year or the **100-year floodplain**. FIRMs show different floodplains with different zone designations, as shown on Table D-6 "Flood Zone Designations." These are used for insurance rating purposes, but are also necessary for flood permitting and flood hazard mitigation planning purposes. The **500-Year Floodplain** is the shaded X-Zone area shown on a FIRM that has a 0.2% chance of being flooded in any given year.

**Table D-6. Flood Zone Designations**

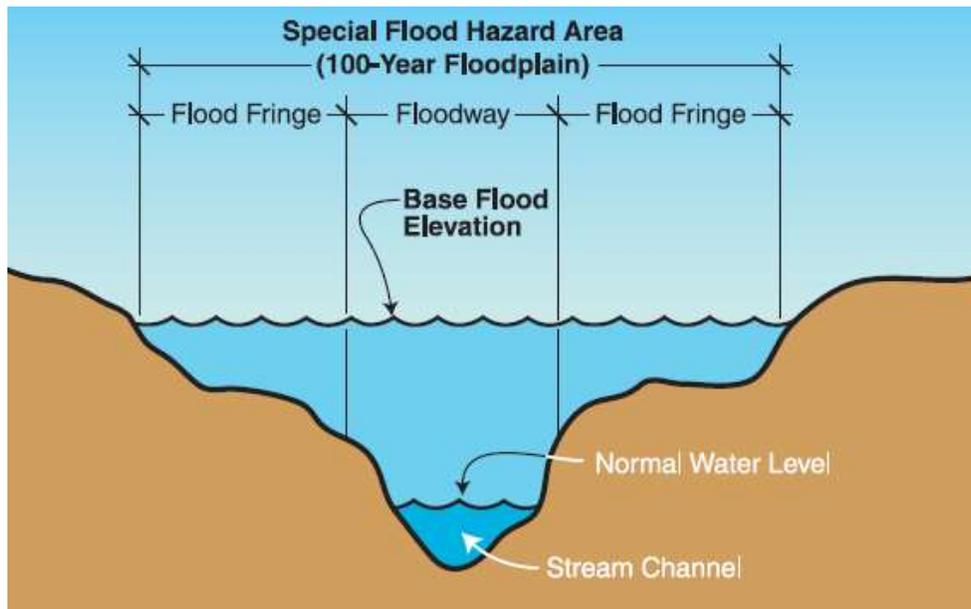
<b>A Zones</b>	100-year floodplain areas of high risk.	
	A	The base floodplain mapped by approximate methods, i.e., BFEs are not determined. This is often called an unnumbered A zone or an approximate A zone.
	AE	The base floodplain where base flood elevations are provided.
	AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
	AH	Shallow flooding base floodplain. BFEs are provided.
	A99	Area to be protected from base flood by levees or Federal flood protection systems under construction. BFEs are not determined.
	AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection.
<b>V Zones</b>	100-year coastal floodplain areas of high risk	
	V	The coastal area subject to a velocity hazard (wave action) where BFEs are not determined on the FIRM.
	VE	The coastal area subject to a velocity hazard (wave action) where BFEs are provided on the FIRM.
<b>X Zones</b>	Areas of minimal to moderate risk outside the 100-year floodplain.	
	Shaded	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Also includes areas protected by levees from the 100-year flood and shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
	Unshaded	Area of minimal flood hazard determined to be outside the 500-year floodplain.
<b>D Zone</b>	Area of undetermined but possible flood hazards.	

Source: FEMA

**Floodway** is the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood without substantial increases in flood heights. The **Flood Fringe** is the remainder of the 100-year floodplain.

The following graphic shows the components of a floodplain along a stream:

Figure D-6. Flood Plain Cross Section



Source: FEMA

A range of floods, other than just the 100-year flood, could happen within an area. Buildings in very close proximity to a stream or shoreline, for example, might experience flooding much more frequently.

*(The description of floods presented in this section is based upon information extracted from the FEMA How to Guide Understanding Your Risks (FEMA 386-2), FEMA, August 2001).*

## 2.5 Wildfires Description

Wildfires are a serious and growing hazard over much of the United States, posing great threats to life and property, particularly when moving from rural forest or rangeland into developed urban areas. Millions of acres burn every year in the United States as a result of wildfires, causing millions of dollars in damage. Each year more than 100,000 wildfires occur in the United States, almost 90 percent of which are started by humans; the rest are caused by natural causes, primarily lightning, other natural causes include sparks from falling rocks and volcanic activity. Weather is one of the most significant factors in determining the severity of wildfires. The intensity of fires and the rate with which they spread is directly related to wind speed, temperature, and relative humidity. Climatic conditions, such as long-term drought, also play a major role in the number and the intensity of wildfires.

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around.

Most wildfires fall within two categories: Wildland Fire and Wildland-Urban Interface fires. **Wildland fires** occur in areas where there is little development except

for roads, railroads, power lines and other basic infrastructure. **Wildland-urban interface fires** occur in areas where development, primarily residential, meet wildland areas. Areas with a large amount of wooded, brush and grassy areas are at highest risk from wildfires.

The primary cause of wildfires is human activity, either intentional or accidental. Intentional fires may be started as prescribed burns, to drive game or arson. Accidental fires are caused by the carelessness of hikers or others traveling through wildland areas. The severity and duration of the fire is based upon numerous factors including available fuel, topography and weather conditions. Through efforts of the Alabama Forestry Commission, wildfires are decreasing. They have a fleet of airplanes available to patrol vulnerable areas. There is also a toll-free number in place for the public to call and report wildfires. The forestry commission does have firefighters available to respond to fires, but the effort is largely accomplished through a network of volunteer fire departments.

*(The description of wildfires presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), August 2001, Using HAZUS-MH for Risk Assessment How to Guide (FEMA 433), August 2004, and the Alabama Forestry Commission at <http://www.forestry.alabama.gov>).*

## 2.6 Droughts/Heat Waves Description

A drought can occur almost anywhere, and its features vary from place to place depending on culture and geography. According to the National Drought Mitigation Center (NDMC), there are four ways of measuring drought. First is a **meteorological drought**, which is a decrease in precipitation in some period of time. These are usually region-specific, and based on a thorough understanding of regional climatology. Meteorological measurements are the first sign of drought. An **agricultural drought** occurs when there is not enough soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought occurs after a meteorological drought, but before hydrological drought. **Hydrological drought** is deficiencies in surface and subsurface water supplies. It is measured as stream flow and at lake, reservoir and groundwater levels. There is a time lag between lack of rain and less water in rivers, streams, reservoirs and lakes. When precipitation is deficient over time, it will show in these water levels. The last type of drought defined by NDMC is a **socioeconomic drought**, which occurs when water shortages begin to affect people. In addition to the impacts discussed above, water level decline due to drought can also cause sinkholes to form.

The draft Alabama Drought Management Plan (2004) by the Office of Water Resources of the Alabama Department of Economic and Community Affairs (ADECA) explains the potential threats of droughts to Alabama and the need for effective drought planning and management, as follows:

*In recent years, drought conditions have endangered Alabama's water resources and adversely affected the livelihood of many people. Drought is a natural event that, unlike floods or tornadoes, does not occur in a violent burst but gradually happens; furthermore, the duration and extent*

*happens; furthermore, the duration and extent of drought conditions are unknown because rainfall is unpredictable in amount, duration and location. The devastation (environmental, social, and economic) experienced in recent years due to drought conditions has not been successfully mitigated because previous responses to drought conditions at all levels of government has been slow and fragmented, with little focus on preparedness and mitigation. In an effort to be more proactive, the Office of Water Resources worked closely with numerous local, state, and federal agencies and other water resources professionals to develop and implement this statewide approach to drought planning and management.*

The State drought plan establishes four phases of drought conditions – drought watch, advisory, warning, and emergency – identified by a compilation of drought indices, which include Crop Moisture Index, Palmer Drought Severity Index, Stream Flow, Reservoir Elevation Level, and Groundwater. Each of these phases requires varying levels of management. The U.S. Drought Monitor by the National Drought Mitigation Center (NDMC) uses a four-tier system to continuously monitor drought intensity based on another combination of drought indices. “D0” includes drought watch areas that are abnormally dry and on the verge of drought or recovering from drought. “D1” is the first drought stage with severe conditions, and “D4” is most intense drought stage with exceptional drought conditions. The primary adverse physical effects of drought are classified as “A” (adverse impacts to agricultural crops, pastures, and grasslands) or “H” (adverse impacts to hydrologic resources for water supply, including rivers, reservoirs, and groundwater).

According to NOAA, extreme heat is the number one weather related killer taking an average of 1,500 people in the U.S. annually. The National Weather Service issues watches and warnings when the heat index is expected to exceed 105°-110° F for at least two consecutive days. The heat index is given in degrees Fahrenheit and is a measure of how hot it really feels when the relative humidity is added to the actual air temperature.

**Table D-7. NOAA's National Weather Service Heat Index**

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

■ Caution    
 ■ Extreme Caution    
 ■ Danger    
 ■ Extreme Danger

Source: NOAA at <http://www.weather.gov/om/heat/index.shtml>

*(The description of droughts/extreme heat presented in this section is extracted from: National Drought Mitigation Center, Defining Drought: Overview at <http://drought.unl.edu/whatis/define.htm> and NOAA, Heat Wave: A Major Summer Killer at <http://www.noaa.gov/themes/heat.php> ).*

**2.7 Winter Storms/Freezes Description**

Winter storms and blizzards originate as mid-latitude depressions or cyclonic weather systems, sometimes following the meandering path of the jet stream. A blizzard combines heavy snowfall, high winds, extreme cold, and ice storms. The origins of the weather patterns that cause severe winter storms are primarily from four sources in the continental United States. Winter storms in the southeast region of the United States are usually a result of Canadian and Arctic cold fronts from the north and mid-western states combining with tropical cyclonic weather systems in the Gulf of Mexico. Typical winter storms in the Southeast include ice storms, crop-killing freezes and occasional snow.

**Figure D-7. Types of Winter Precipitation**



Source: National Weather Service, Winter Storms, The Deceptive Killers at <http://www.weather.gov/os/winter/resources/winterstorm.pdf>

Types of events that occur within a winter storm include freezing rain, sleet, blizzards, and frost/freeze. **Freezing rain** is rain that freezes when it hits the ground which coats roads, trees and power lines. **Sleet** is rain that turns into ice pellets before hitting the ground. A **blizzard** is snowfall with sustained winds or frequent gusts up to 35mph and considerable amounts of blowing snow. The expectation is that blizzard conditions will last 3 or more hours. Freezes occur when the temperatures will go below freezing. Many times frost/freezes cause substantial damage to crops.

*(The description of winter storms/freezes presented in this section is extracted from NOAA/NWS's publication Winter Storms, The Deceptive Killers, A Preparedness Guide at <http://www.weather.gov/os/winter/resources/winterstorm.pdf>).*

**2.8 Earthquakes Description**

An earthquake is the shaking and vibration at the surface of the earth resulting from underground movement along a fault plane. Earthquakes are caused by the release of built-up stress within rocks along geologic faults or by the movement of magma in volcanic areas. They usually occur without warning and are usually followed by aftershocks. Earthquakes can affect hundreds of thousands of square miles and cause tens of billions of dollars of damage to property. An earthquake event can cause injury and loss of life to hundreds of thousands of persons and can greatly disrupt the social and economic functioning of the affected area. Secondary hazards during an earthquake may occur, such as surface faulting, sinkholes, and landslides.

The rupture or sudden movement of a fault causes earthquakes where stresses have accumulated along opposing fault planes of the earth's outer crust. These fault planes are usually found along the borders of the earth's tectonic plates, which generally follow the outlines of the continents. However, fault planes may occur at the interior of the plates. The plates range from 50 to 60 miles in thickness and move slowly and

continuously over the earth's interior. Where the plates move past each other, they continually bump, slide, catch, and hold. When the stress exceeds the elastic limit of the rock, an earthquake occurs. Generally, the larger the earthquake, the greater the potential for surface fault rupture.

The area of greatest seismic activity in the United States is along the Pacific coast in California and Alaska, but as many as forty states can be characterized as having at least moderate earthquake risk. For example, seismic activity has been recorded in Boston, Massachusetts; New Madrid, Missouri; and Charleston, South Carolina, places not typically thought of as earthquake zones. Areas prone to



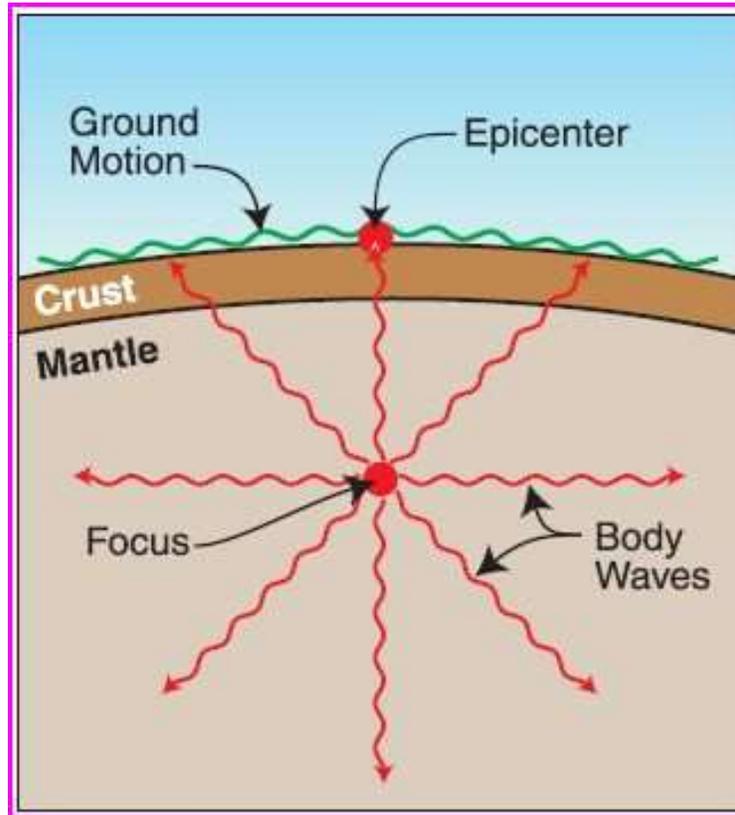
earthquakes are relatively easy to identify in the Western United States based on known geologic formations; however, predicting exactly when and where earthquakes will occur is very difficult everywhere. Records show that building inventories in 39 states are vulnerable to earthquake damage.

Most property damage and earthquake-related deaths result from the

failure and collapse of structures caused by **ground shaking or ground motion**. Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by an earthquake. The strength of the ground shaking is determined by the magnitude of the earthquake, the surface distance from the earthquake's epicenter and type of fault, and by the site and regional geology.

Ground shaking causes waves in the earth's interior, known as **seismic waves**, and along the earth's surface, known as **surface waves**. There are two types of seismic waves: *primary waves* which are longitudinal that cause back-and-forth oscillation along the direction of travel (vertical motion); and *secondary waves or shear waves* which are slower than primary waves and cause structures to vibrate from side-to-side (horizontal motion). Surface waves travel more slowly than and are usually significantly less damaging than seismic waves, illustrated by Figure D-8, below.

Figure D-8. Seismic and Surface Waves



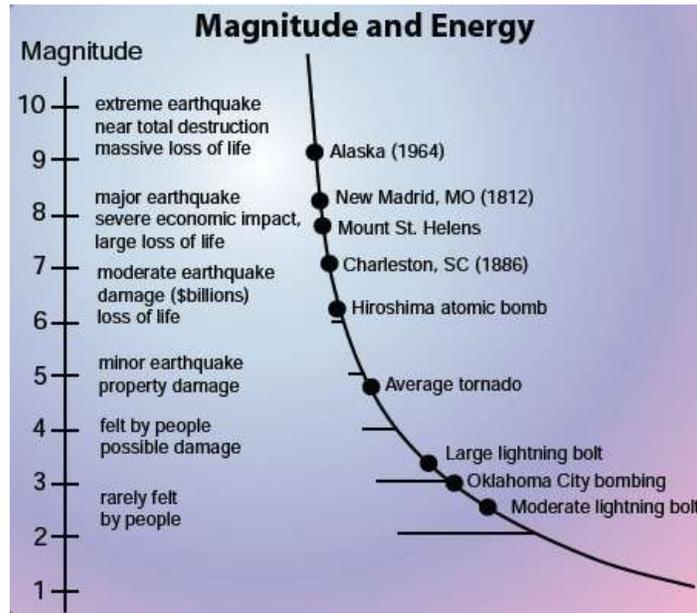
Source: FEMA

Additional earthquake related hazards include landslides, liquefaction, and amplification. Earthquake-induced **landslides** are secondary earthquake hazards that occur from ground shaking. They can destroy roads, buildings, utilities, and other critical facilities necessary to respond to or recover from an earthquake. As sloped lands are developed, earthquake-induced landslides pose additional threats to homes and infrastructure.

Soil type can substantially increase earthquake risk. **Liquefaction** occurs when ground-shaking causes saturated soft soils to change from a solid to a liquid state. Liquefaction results in the loss of soil strength and three potential types of ground failure: lateral spreading, flow failure, and loss of bearing strength. Buildings and their occupants are at risk when the ground can no longer support buildings and structures. Areas susceptible to liquefaction include areas with high ground water tables and sandy soils. The extreme earthquake damage to San Francisco in 1989 was due to liquefaction of the soil used to fill in waterfront properties.

**Amplification** (strengthening) of shaking also results in areas of soft soils, which includes fill, loose sand, waterfront, and lakebed clays. Amplification increases the magnitude of the seismic waves generated by the earthquake.

**Chart D-1. Earthquake Magnitude Scale**



Source: USGS

Seismic activity is described in terms of magnitude and intensity. **Magnitude** describes the total energy released and **intensity** describes the effects at a particular location. Magnitude is defined as the measure of the amplitude of the seismic wave and is expressed by the Richter scale. The **Richter scale** is a logarithmic measurement where an increase in the scale by one whole number represents a tenfold increase in the measured amplitude of the earthquake. Geologists use other measures of magnitude and intensity such as Moment Magnitude, Energy Magnitude and others as described at [http://neic.usgs.gov/neis/phase\\_data/mag\\_formulas.html](http://neic.usgs.gov/neis/phase_data/mag_formulas.html).

Intensity is defined as the measure of the strength of the shock at a particular location and is expressed by the **Modified Mercalli Intensity (MMI) scale**. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. The scale consists of a series of certain key responses such as people awakening, movement of furniture, the damage to structures, and total destruction. The *lower* numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The *higher* numbers of the scale are based on observed structural damage. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects. Table D-8 compares the Modified Mercalli Intensity scale with the Richter scale.

**Table D-8. Earthquake Scales Comparison**

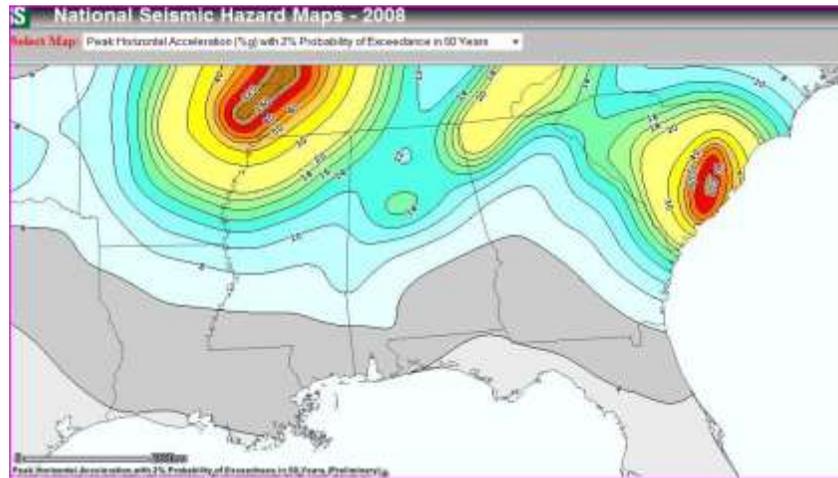
<b>Modified Mercalli Intensity and Richter Scale Comparison</b>			
<b>SCALE</b>	<b>INTENSITY</b>	<b>DESCRIPTION OF EFFECTS</b>	<b>CORRESPONDING RICHTER SCALE MAGNITUDE</b>
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves	<5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>8.1

Source: FEMA

Another measurement of seismic activity is **Peak Ground Acceleration (PGA)**, which measures the rate of change of motion relative to the rate of acceleration due to gravity. An object falling to earth will fall faster and faster, until it reaches terminal velocity. This principle is known as **acceleration** and represents the rate at which speed is increasing. This movement can be described by its changing position as a function of time, or by its acceleration as a function of time. The peak acceleration is the maximum acceleration experienced by the object during the course of the earthquake motion. Peak ground acceleration can be measured in *g* (the acceleration due to gravity at the earth’s surface is 9.8 meters per second squared). For example, acceleration of the ground surface of 244 cm/sec/sec (where *g* equals 9.8 meters per second squared) equals a PGA of 25.0 percent.

Map D-2 shows the 2008 Peak Ground Acceleration (PGA) values for the southeastern United States with a 2% chance of being exceeded over 50 years. This is a common earthquake measurement that shows three things: the geographic area affected (the areas shown in color), the probability of an earthquake at each given level of severity, and the severity (the PGA is indicated by color).

**Map D-2. 2008 PGA for Southeast  
Peak Ground Acceleration with 2% Probability of Exceedance in 50 Years**



Source: U.S. Geological Survey Earthquake Hazards Program

*(The description of earthquakes presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), August 2001, Using HAZUS-MH for Risk Assessment How to Guide (FEMA 433), August 2004, 2007 Alabama State Hazard Mitigation Plan, U.S. Geological Survey Earthquakes Hazard Program, and various FEMA-adopted plans).*

**2.9 Dam/Levee Failures Description**

Dam failure or levee failure can occur with little warning. Strong storms may produce a flood in a few hours or minutes for upstream locations, which can cause a dam or levee failure. Flash floods occur within six hours of the beginning of heavy rainfall and dam failure may occur within hours of the first sign of a breach. Dam failures are potentially



the worst flood event. There are more than 80,000 dams in the United States according to the 2007 update of the National Inventory of Dams. According to FEMA, one third of these pose a high or significant hazard to life and property if failure occurs. 56% of dams are privately owned, and the dam owner is responsible for the safety and liability of the dam as well for upkeep, upgrade and repair. This compounds the risk that is posed due to dam or levee failure.

(The description of dam/levee failures presented in this section is extracted from FEMA, Disaster Types, Dam Failure at <http://www.fema.gov/hazard/damfailure/index.shtm>).

## 2.10 Landslides Description

Landslides occur and can cause damage in all 50 States, at an annual cost of about \$3.5 billion per year (*FEMA 2005*). Between 25 and 50 deaths per year in the U.S. are attributable to landslides. Landslides cause damage to the natural environment and economic losses, due to reduced real estate values, decreased agricultural and forestry productivity, among other adverse economic effects.

Severe storms, earthquakes, coastal wave attack, and wildfires can cause widespread slope instability and result in landslides. Landslide danger may be high, even as emergency personnel are providing rescue and recovery services for these other hazard events.

A landslide is a downward and outward movement of slope-forming soil, rock, and vegetation under the influence of gravity, which includes a wide range of ground movement. Numerous types of events, including natural and man-made changes within the environment, can trigger landslides. Examples of these changes that cause weaknesses in the composition or structures of the rock or soil include heavy rain, changes in ground water level, seismic activity, or construction activity. Man-made landslides may result from activities such as terracing, cut and fill construction, building construction, mining operations, and changes in irrigation or surface runoff.

There are three different types of landslides: rock falls, slides, and flows. **Rock falls** are rapid movement of bedrock characterized by free-fall, bouncing and rolling. **Slides** are movements of soil or rock along a distinct surface of rupture that separates the slide material from the more stable underlying material. There are two major types of slides:



rotational and translational slides. In a **rotational slide** the surface of rupture is curved concavely upward and the slide block rotates around an axis parallel to the slope contours. A **translational slide** is a mass that moves down and outward along a relatively planar surface with little rotational movement or backward tilting. **Flows** are mass movements of water-saturated material. The movement of flows can be extremely rapid (debris avalanche), very rapid (debris flow) or very slow (earth flow).

Here are some significant landslide facts from the USGS:

- *Landslides often accompany earthquakes, floods, storm surges, hurricanes, wildfires, or volcanic activity. They are often more damaging and deadly than the triggering event (examples: the 1964 Alaska earthquake-induced landslides and the 1980 Mount St. Helens volcanic debris flow).*
- *Human activities and population expansion are major factors in increased landslide damage and costs.*
- *The May 1980 eruption of Mount St. Helens caused the largest landslide in history— a rock slide-debris avalanche large enough to fill 250 million dump trucks to the brim traveled about 14 miles, destroying nine highway bridges, numerous private and public buildings, and many miles of highways, roads, and railroads. The debris avalanche also formed several new lakes by damming the North Fork Toutle River and its tributaries. These lakes posed hazards to downstream communities because of the possible failure of the dams, which could have resulted in catastrophic flooding.*
- *Although the National Flood Insurance Act covers certain damage from “mudflows,” insurance against landslides is generally unavailable in most areas of the United States. As a result, many victims of landslides resort to litigation in order to recover damages.*

*(The description of landslides presented in this section is extracted from the Geological Survey of Alabama, Geologic Hazards Section at <http://www.gsa.state.al.us/gsa/geologichazards/landslides/index.html> and the U.S.G.S. Landslides Hazards Program at <http://landslides.usgs.gov> ).*

## **2.11 Sinkholes (Land Subsidence) Description**

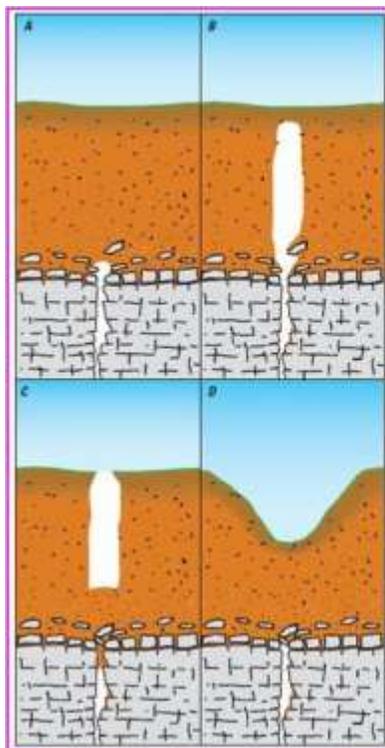
Sinkholes are a naturally occurring geologic feature that can be hazardous to property and the environment. Their formation is due to water dissolving rock below the land surface. The types of rock most susceptible to sinkhole formation are limestone, carbonate rock and salt beds. As the rock dissolves, spaces and caverns develop underground, when large enough, the ground dramatically collapses leaving a visible sinkhole at the surface. Although normally no more than a nuisance, some sinkholes can become very large and a house or road may be on top when the collapse occurs. See Figure D-9, which shows the making of a sinkhole. Figure D-10 illustrates the formation of a collapse.

**Figure D-9. The Making of a Sinkhole**



Source: Southwest Florida Water Management District

**Figure D-10. Formation of a Collapse**



**A - Soil bridges gap where sediment has been washing into a solution enlarged fracture.**

**B - Over time, the void migrates upward through the soil.**

**C - After the bridge thins, a sudden collapse occurs.**

**D - The collapse often plugs the drain and erosion will, after many years, transform the collapse into a more bowl-shaped sinkhole.**

Source: U.S. Geological Survey Mid-Centent Geographic Science Center

Sinkholes range in size from several square yards to hundreds of acres. They may be quite shallow or may extend hundreds of feet deep. The most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. The picture in Figure D-11 shows a sinkhole that quickly opened up causing major damage to a house and yard.

**Figure D-11. Sinkhole Collapse of House**



Photo courtesy of Doug Gouze, 2006

Source: U.S. Geological Survey, Water Science for Schools

Sinkholes are triggered by a change in the local environment affecting the soil mass. Water is the most important agent effecting environmental changes; examples include water level decline, increased loading and ground water flow changes. Areas become more susceptible to sinkholes when new water-diversion systems are developed, the land surface is changed and when storage ponds are created. The weight of the new material can cause a collapse of the supporting rock resulting in a sinkhole.

Lowering water levels is one of the most significant triggering mechanisms for subsidence in a karst terrain. Water-level decline may occur naturally or be induced by man. Factors leading to a decline in water levels include the pumping of water from wells, localized drainage from construction, dewatering from mining, and periods of drought.

Sinkholes also threaten water and environmental resources by draining streams, lakes, and wetlands, and creating pathways for transmitting surface waters directly into underlying aquifers. Where these pathways are developed, movement of surface contaminants into the underlying aquifer systems can persistently degrade ground-water resources. In some areas, sinkholes are used as storm drains, and because they are a direct link with the underlying aquifer systems it is important that their drainage areas be kept free of contaminants. Conversely, when sinkholes become plugged, they can cause flooding by capturing surface-water flow and can create new wetlands, ponds, and lakes.

*(The description of sinkholes presented in this section is based upon information extracted from the FEMA How to Guide Understanding Your Risks (FEMA 386-2), FEMA, August 2001, and*

*other sources from the Geological Survey of Alabama Geological Hazards Program, Southwest Florida Water Management District, and the U.S. Geological Survey Mid-Continent Geographic Science Center).*

## 2.12 Man-Made Hazards Description

Man-made hazards are hazards that originate from human activity. The two categories of man-made hazards are **technological hazards** and **terrorism**. Technological hazards are accidental with unintended consequences. They often include the manufacture, transportation, storage and use of hazardous materials. The definition of terrorism has been established by Federal law, as follows: *“Terrorism includes the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” 28 CFR Section 0.85.* In comparison to technological hazards, acts of terrorism are not accidental and the consequences are intentional.

**Technological hazards** are divided into three categories: fixed facility industrial accident, transportation industrial accident, and the failure of a supervisory control system. For an industrial accident, the hazard will either exist at a fixed location such as a manufacturing plant or storage facility, or while in transport, i.e. in a vehicle that is transporting it from one location to another or while it is moving through a pipeline from one location to another. Supervisory control system failure will affect which ever component within the system it is directing and the extents of the damage possible due to failure are usually easy to predict.

**Terrorism** includes: the use of weapons of mass destruction – biological, chemical, nuclear, and radiological weapons, explosives, and incendiary devices; arson; armed attacks; agriterrorism; an intentional hazardous materials release; industrial sabotage; and cyber-terrorism. It can be carried out domestically or internationally, by known or unknown assailants, locally or from a distance.

Man-made hazards are very difficult to assess, terrorism more so than technological hazards. Since terrorism involves the human mind and what actions a person may chose to take, the what, where, how and when is largely unpredictable. On the other hand, with technological hazards, since they primarily involve hazardous materials, the assessment of the manufacture, storage, transportation and use of the materials can at least answer to some degree the where, what and how and those answers can aid in the mitigation of some possible technological disasters. For this reason: ***the scope of man-made hazards addressed by the Mitigation Strategy in this plan is limited to mitigation of fixed location technological hazards involving hazardous materials.***

The extent of the effects of a man-made hazard can range from localized to widespread, depending on the type of incident, the mode of application, duration, dynamic/static characteristic and mitigating conditions. A conventional bomb could damage a building in which it was placed or an entire city can be in danger if a hazardous material is released into the water supply. Three noted modes of force to the

built environment involved by man-made hazards are: contamination, energy, and failure or denial of service. If a hazard remains for an extended period of time, the damage can be far reaching; however, if the hazard lasts for only a short time, the damage can usually be quickly determined and response can be swift and the disaster contained. A dynamic hazard is more damaging and unpredictable than a static hazard. Mitigating conditions can be deterrents or they can at least lessen the effects of a hazard at a certain location which also affects the extent of a disaster. The following table shows the different possible man-made hazards and their corresponding application mode, hazard duration, extent of effects - static/dynamic, mitigating and exacerbating conditions.

When trying to mitigate man-made hazards, measures must address security, unknown risks and civil liberties; concerns not raised by natural disasters. The events will usually occur in specific locations and mitigation measures can usually aid in the alleviation of man-made disasters. Those specific locations are known as critical facilities. In addition to the facilities usually addressed in vulnerability assessments for natural hazards, the following critical infrastructure is usually assessed: agriculture and food, water, public health, emergency services, defense industrial base, telecommunications, energy, transportation, banking and finance, chemicals and hazardous materials, and postal and shipping. Threats to infrastructure can be carried out by anyone who has the knowledge, opportunity and desire to do harm. They can be anyone from terrorists to upset employees and are therefore largely unidentifiable.

Table D-9 “Event Profiles for Terrorism and Technological Hazards,” (from the FEMA “How to Guide” for man-made hazards) explains the ways in which man-made hazards can interact with the built environment. As presented in the FEMA Guide, for each type of hazard, the following factors are addressed:

- **Application mode** describes the human act(s) or unintended event(s) necessary to cause the hazard to occur.
- **Duration** is the length of time the hazard is present on the target. For example, the duration of a tornado may be just minutes, but a chemical warfare agent such as mustard gas, if not remediated, can persist for days or weeks under the right conditions.
- The **dynamic/static characteristic** of a hazard describes its tendency, or that of its effects, to either expand, contract, or remain confined in time, magnitude, and space. For example, the physical destruction caused by an earthquake is generally confined to the place in which it occurs, and it does not usually get worse unless there are aftershocks or other cascading failures; in contrast, a cloud of chlorine gas leaking from a storage tank can change location by drifting with the wind and can diminish in danger by dissipating over time.
- **Mitigating conditions** are characteristics of the target and its physical environment that can reduce the effects of a hazard. For example, earthen berms can provide protection from bombs; exposure to sunlight can render some biological agents ineffective; and effective perimeter lighting and surveillance can minimize the

likelihood of someone approaching a target unseen. In contrast, *exacerbating conditions* are characteristics that can enhance or magnify the effects of a hazard. For example, depressions or low areas in terrain can trap heavy vapors, and a proliferation of street furniture (trash receptacles, newspaper vending machines, mail boxes, etc.) can provide concealment opportunities for explosive devices.

**Table D-9. Event Profiles for Terrorism and Technological Hazards**

<b>Man-Made Hazard</b>	<b>Application Mode</b>	<b>Hazard Duration</b>	<b>Extent of Effects; Static/Dynamic</b>	<b>Mitigating and Exacerbating Conditions</b>
<b>Conventional Bomb/ Improvised Explosive Device</b>	Detonation of explosive device on or near target; delivery via person, vehicle, or projectile.	Instantaneous; additional "secondary devices" may be used, lengthening the time duration of the hazard until the attack site is determined to be clear.	Extent of damage is determined by type and quantity of explosive. Effects generally static other than cascading consequences, incremental structural failure, etc.	Overpressure at a given standoff is inversely proportional to the cube of the distance from the blast; thus, each additional increment of standoff provides progressively more protection. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting energy and debris. Exacerbating conditions include ease of access to target; lack of barriers/shielding; poor construction; and ease of concealment of device.

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Man-Made Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
<p><b>Chemical Agent</b></p>	<p>Liquid/aerosol contaminants can be dispersed using sprayers or other aerosol generators; liquids vaporizing from puddles/containers; or munitions.</p>	<p>Chemical agents may pose viable threats for hours to weeks depending on the agent and the conditions in which it exists.</p>	<p>Contamination can be carried out of the initial target area by persons, vehicles, water and wind. Chemicals may be corrosive or otherwise damaging over time if not remediated.</p>	<p>Air temperature can affect evaporation of aerosols. Ground temperature affects evaporation of liquids. Humidity can enlarge aerosol particles, reducing inhalation hazard. Precipitation can dilute and disperse agents but can spread contamination. Wind can disperse vapors but also cause target area to be dynamic. The micro-meteorological effects of buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects.</p>

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Man-Made Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
<b>Arson/ Incendiary Attack</b>	Initiation of fire or explosion on or near target via direct contact or remotely via projectile.	Generally minutes to hours.	Extent of damage is determined by type and quantity of device/accelerant and materials present at or near target. Effects generally static other than cascading consequences, incremental structural failure, etc.	Mitigation factors include built-in fire detection and protection systems and fire-resistive construction techniques. Inadequate security can allow easy access to target, easy concealment of an incendiary device and undetected initiation of a fire. Non-compliance with fire and building codes as well as failure to maintain existing fire protection systems can substantially increase the effectiveness of a fire weapon.
<b>Armed Attack</b>	Tactical assault or sniping from remote location.	Generally minutes to days.	Varies based upon the perpetrators' intent and capabilities.	Inadequate security can allow easy access to target, easy concealment of weapons and undetected initiation of an attack.
<b>Biological Agent</b>	Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point or line sources such as munitions, covert deposits and moving sprayers.	Biological agents may pose viable threats for hours to years depending on the agent and the conditions in which it exists.	Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water. Infection can be spread via human or animal vectors.	Altitude of release above ground can affect dispersion; sunlight is destructive to many bacteria and viruses; light to moderate wind will disperse agents but higher winds can break up aerosol clouds; the micrometeorological effects of buildings and terrain can influence aerosolization and travel of agents.

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Man-Made Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
<b>Cyber-terror</b>	Electronic attack using one computer system against another.	Minutes to days.	Generally no direct effects on built environment.	Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks.
<b>Agriterrorism</b>	Direct, generally covert contamination of food supplies or introduction of pests and/or disease agents to crops and livestock.	Days to months.	Varies by type of incident. Food contamination events may be limited to discrete distribution sites, whereas pests and diseases may spread widely. Generally no effects on built environment.	Inadequate security can facilitate adulteration of food and introduction of pests and disease agents to crops and livestock.
<b>Radiological Agent</b>	Radioactive contaminants can be dispersed using sprayers/aerosol generators, or by point or line sources such as munitions, covert deposits and moving sprayers.	Contaminants may remain hazardous for seconds to years depending on material used.	Initial effects will be localized to site of attack; depending on meteorological conditions, subsequent behavior of radioactive contaminants may be dynamic.	Duration of exposure, distance from source of radiation, and the amount of shielding between source and target determine exposure to radiation.

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Man-Made Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
<b>Nuclear Bomb</b>	Detonation of nuclear device underground, at the surface, in the air or at high altitude.	Light/heat flash and blast/shock wave last for seconds; nuclear radiation and fallout hazards can persist for years. Electromagnetic pulse from a high altitude detonation lasts for seconds and affects only unprotected electronic systems.	Initial light, heat and blast effects of a subsurface, ground or air burst are static and are determined by the device's characteristics and employment; fallout of radioactive contaminants may be dynamic, depending on meteorological conditions.	Harmful effects of radiation can be reduced by minimizing the time of exposure. Light, heat and blast energy decrease logarithmically as a function of distance from seat of blast. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting radiation and radioactive contaminants.
<b>Hazardous Material Release (fixed facility or transportation)</b>	Solid, liquid and/or gaseous contaminants may be released from fixed or mobile containers.	Hours to days.	Chemicals may be corrosive or otherwise damaging over time. Explosion and/or fire may be subsequent. Contamination may be carried out of the incident area by persons, vehicles, water and wind.	As with chemical weapons, weather conditions will directly affect how the hazard develops. The micrometeorological effects of buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects. Non-compliance with fire and building codes as well as failure to maintain existing fire protection and containment features can substantially increase the damage from a hazardous materials release.

*(The information presented in this section was extracted from the FEMA How to Guide Integrating Manmade Hazards into Mitigation Planning, FEMA 386-7 Version 2.0, FEMA, September 2003).*

**Appendix E**  
**Hazard Profile Data**



## **App. E - Hazard Profile Data**

1.0 Records of Previous Occurrences of Hazard Events

### **1.0 Records of Previous Occurrences of Hazard Events**

This section contains the detailed records of previous occurrences of hazard events reported in Section 5.4 “Hazard Profiles,” for events reported by the National Weather Service, the National Climatic Data Center, and the Geological Survey of Alabama.

**Past Occurrences of Hurricanes**

**Table E-1. Baldwin County Hurricanes and Tropical Storms, 1995-2014**

**36 HURRICANE & TROPICAL STORM** event(s) were reported in **Baldwin County, Alabama** between **01/01/1995** and **12/31/2014**.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<b>Totals:</b>					1	0	146.160M	2.500M
<a href="#"><u>UPPER BALDWIN (ZONE)</u></a>	7/18/97	12:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	7/18/97	12:00	CST	Hurricane (typhoon)	1	0	60.500M	2.500M
<a href="#"><u>UPPER BALDWIN (ZONE)</u></a>	9/1/98	15:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	9/1/98	15:00	CST	Hurricane (typhoon)	0	0	5.00K	0.00K
<a href="#"><u>UPPER BALDWIN (ZONE)</u></a>	9/25/98	9:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	9/25/98	9:00	CST	Hurricane (typhoon)	0	0	82.000M	0.00K
<a href="#"><u>UPPER BALDWIN (ZONE)</u></a>	9/21/00	9:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	9/21/00	9:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#"><u>UPPER BALDWIN (ZONE)</u></a>	8/4/01	9:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	8/4/01	9:00	CST	Tropical Storm	0	0	40.00K	0.00K

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# 2015 Baldwin County Multi-Hazard Mitigation Plan

<a href="#">Location</a>	<a href="#">Date</a>	<a href="#">Time</a>	<a href="#">T.Z.</a>	<a href="#">Type</a>	<a href="#">Dth</a>	<a href="#">Inj</a>	<a href="#">PrD</a>	<a href="#">CrD</a>
<a href="#">UPPER BALDWIN (ZONE)</a>	9/12/02	9:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	9/12/02	9:00	CST	Tropical Storm	0	0	40.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	9/24/02	9:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	9/24/02	9:00	CST	Tropical Storm	0	0	2.000M	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	10/2/02	9:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	10/2/02	9:00	CST	Hurricane (typhoon)	0	0	75.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	9/13/04	21:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	9/13/04	21:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	10/9/04	15:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	10/9/04	15:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	6/10/05	3:00	CST	Tropical Storm	0	0	1.500M	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	6/10/05	3:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	7/5/05	3:00	CST	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	7/5/05	3:00	CST	Tropical Storm	0	0	0.00K	0.00K

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<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<a href="#">LOWER BALDWIN (ZONE)</a>	7/9/05	3:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	7/9/05	3:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	7/10/05	16:45	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	8/27/05	15:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	8/27/05	15:00	CST	Hurricane (typhoon)	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	8/23/08	23:00	CST-6	Tropical Depression	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	8/23/08	23:00	CST-6	Tropical Depression	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	8/31/08	21:00	CST-6	Tropical Storm	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	8/31/08	21:00	CST-6	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	9/1/08	0:00	CST-6	Tropical Storm	0	0	0.00K	0.00K
<a href="#">UPPER BALDWIN (ZONE)</a>	9/1/08	0:00	CST-6	Tropical Storm	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	8/28/12	6:00	CST-6	Tropical Storm	0	0	0.00K	0.00K
<b>Totals:</b>					1	0	146.160M	2.500M

Source: National Climatic Data Center

**Table E-2. Hurricanes Affecting Alabama Gulf Coast, 1995-Present (NWS)**

YEAR	DATE	CATEGORY	NAME	NOTES
1995	3-Aug	2	Erin	Hurricane Erin had winds of 100 mph at landfall, and it moved inland near Pensacola, FL. Hurricane Erin was the first of two local Hurricanes in 1995.
1995	4-Oct	3	Opal	Hurricane winds were estimated near 115 mph at landfall, and Opal moved inland near Santa Rosa Island, FL. Opal reached category four strength, rapidly intensifying from a category one hurricane in only 18 hours. Hurricane Opal attained category four status 200 miles south of Pensacola. Before landfall, Opal weakened to a category three, but still caused major damage in Pensacola. The storm surge reached 12-20 feet. The highest rain total near Pensacola in the Ellyson community reached 15.45 inches.
1997	19-Jul	1	Danny	Hurricane Danny had wind gusts reaching 80 mph at landfall as it crossed Mullet Point south of Point Clear in Baldwin County. Hurricane Danny then stalled over Mobile Bay and brought record flooding to south Alabama. Rain totals at the Dauphin Island Sea Lab reached 36.71 inches with 25.98 inches of that in seven hours.
1998	28-Sep	2	Georges	Hurricane Georges delivered sustained winds of 103 mph at landfall, and then it moved inland near Biloxi MS. Georges produced 16.7 inches of rain in Pascagoula. The storm surge reached 12 feet near Fort Morgan, and Georges produced 25 foot waves in the Gulf of Mexico. Georges slowed in forward speed once it approached Alabama. This led to huge rain amounts. In Bay Minette, a rain total of nearly 30 inches was recorded.
2004	16-Sep	3	Ivan	Hurricane Ivan had winds around 120 mph at landfall, and it moved inland near Gulf Shores. Ivan was the strongest Hurricane from Baldwin to Santa Rosa Counties in more than 100 years. 160 miles inland, near Demopolis, AL, a wind gust near 90 mph was recorded. Rain totals reached 15.75 inches in Pensacola, with a storm surge in Escambia Bay of 12 feet.
2005	10-Jul	3	Dennis	Hurricane Dennis carried winds of 121 mph at landfall, as it moved inland near Navarre Beach. Dennis had an extremely small eye, and was only significant in a localized area. Dennis prompted a large scale evacuation as it reached category four status in the Gulf of Mexico before it weakened near the central Gulf coast.
2005	29-Aug	3	Katrina	Hurricane Katrina had winds at landfall estimated at 120 mph. It moved inland near Waveland MS. Katrina was the costliest and one of the deadliest U.S. disasters. Hurricane Katrina produced a 27 ft. storm surge in Hancock County, MS, and breached levees in New Orleans. The highest storm surge along Mobile Bay reached 12 feet at the USS Alabama along I-10. The death toll was over 1,800.
2005	21-Sep	3	Rita	Rita was a destructive and deadly hurricane that devastated portions of southeastern Texas and southwestern Louisiana and significantly impacted the Florida Keys. After entering the Gulf of Mexico, Rita intensified from Category 2 to Category 5 in about 24 hours. The maximum sustained winds reached 165 mph late on September 21, and the hurricane reached a peak intensity of 180 mph early on September 22. Weakening began later that day and continued until landfall around 0740 UTC 24 September just east of the Texas/Louisiana border between Sabine Pass and Johnson's Bayou. At that time, maximum sustained winds were 115 mph (Category 3). Weakening continued after landfall, but Rita remained a tropical storm until reaching northwestern Louisiana late on 24 September. The cyclone then turned northeastward and merged with a frontal system two days later. Rita brought hurricane conditions to southwestern Louisiana and southeastern Texas.
2008	13-Sep	2	Ike	Ike developed a large wind field as it moved northwestward across the Gulf of Mexico with tropical-storm-force winds extending up to 275 miles from the center and hurricane-force winds extending up to 115 miles from the center. The hurricane gradually intensified as it moved across the Gulf toward the Texas coast. Ike made landfall over the north end of Galveston Island in the early morning hours of September 13 as a Category 2 hurricane with maximum sustained winds of 110 mph. The hurricane weakened as it moved inland across eastern Texas and Arkansas and became extratropical over the middle Mississippi Valley on September 14. It then moved rapidly through the Ohio valley and into Canada, producing wind gusts to hurricane force along the way.

National Hurricane Center

## Past Occurrences of Severe Storms

**Table E-3. Baldwin County Severe Storm Events, 1995-2014**

296 THUNDERSTORM & HIGH WIND event(s) were reported in Baldwin County, Alabama between 01/01/1995 and 12/31/2014.

Mag: Magnitude  
 Dth: Deaths  
 Inj: Injuries  
 PrD: Property Damage  
 CrD: Crop Damage

<a href="#">Location</a>	<a href="#">Date</a>	<a href="#">Time</a>	<a href="#">T.Z.</a>	<a href="#">Type</a>	<a href="#">Mag</a>	<a href="#">Dth</a>	<a href="#">Inj</a>	<a href="#">PrD</a>	<a href="#">CrD</a>
<b>Totals:</b>						4	20	2.509M	0.00K
<a href="#">Fairhope</a>	1/6/95	12:00	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
<a href="#">Robertsdale</a>	1/6/95	12:10	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Central</a>	1/6/95	17:50	CST	Thunderstorm Wind	0 kts.	0	0	50.00K	0.00K
<a href="#">Tensaw</a>	2/3/95	18:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Barnwell</a>	2/3/95	19:30	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
<a href="#">Lottie</a>	2/17/95	8:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Daphne</a>	3/15/95	12:50	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">Spanish Fort</a>	3/15/95	13:20	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">Stapleton</a>	3/15/95	14:00	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">Bay Minette</a>	3/15/95	14:45	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Bay Minette</a>	3/15/95	14:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Bay Minette</a>	3/15/95	15:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Bay Minette</a>	3/15/95	17:00	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">Gulf Shores</a>	4/11/95	19:24	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Gulf Shores</a>	4/11/95	19:45	CST	Hail	0.88 in.	0	0	1.00K	0.00K
<a href="#">Stockton</a>	4/21/95	3:00	CST	Thunderstorm Wind	0 kts.	0	0	1.00K	0.00K
<a href="#">Hurricane</a>	4/23/95	18:15	CST	Thunderstorm Wind	0 kts.	0	0	1.00K	0.00K

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<a href="#">Stockton and</a>	5/9/95	22:15	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Fairhope</a>	5/10/95	4:00	CST	Thunderstorm Wind	0 kts.	0	0	1.00K	0.00K
<a href="#">Gulf Shores</a>	5/11/95	17:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">Foley</a>	5/11/95	17:57	CST	Thunderstorm Wind	0 kts.	0	0	1.00K	0.00K
<a href="#">Seminole</a>	5/11/95	18:20	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Silverhill</a>	7/8/95	16:45	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Stockton</a>	7/9/95	14:45	CST	Thunderstorm Wind	0 kts.	0	0	1.00K	0.00K
<a href="#">Orange Beach</a>	7/9/95	16:25	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Fairhope/Silverhill/F</a>	7/10/95	4:10	CST	Thunderstorm Wind	0 kts.	0	0	4.00K	0.00K
<a href="#">Mobile Bay</a>	7/12/95	13:45	CST	Thunderstorm Wind	0 kts.	0	0	1.50K	0.00K
<a href="#">Foley</a>	7/12/95	14:20	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
<a href="#">Daphne</a>	8/16/95	18:30	CST	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
<a href="#">Robertsdale</a>	12/18/95	11:00	CST	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
<a href="#">Gulf Shores</a>	12/18/95	17:10	CST	Thunderstorm Wind	0 kts.	0	0	20.00K	0.00K
<a href="#">LATHAM</a>	1/26/96	16:15	CST	Thunderstorm Wind	50 kts.	0	0	2.00K	0.00K
<a href="#">TENSAW</a>	1/26/96	18:10	CST	Thunderstorm Wind	50 kts.	0	0	2.00K	0.00K
<a href="#">BAY MINETTE</a>	2/19/96	17:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	3/7/96	4:15	CST	Thunderstorm Wind	45 kts.	0	1	1.50K	0.00K
<a href="#">ROBERTSDALE</a>	3/18/96	4:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	4/14/96	18:20	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	4/14/96	20:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	4/14/96	21:00	CST	Lightning		0	0	25.00K	0.00K

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<a href="#">BAY MINETTE</a>	5/23/96	16:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	5/24/96	13:29	CST	Thunderstorm Wind	55 kts.	0	0	0.50K	0.00K
<a href="#">LOXLEY</a>	8/12/96	13:00	CST	Thunderstorm Wind	40 kts.	0	0	0.50K	0.00K
<a href="#">SUMMERDALE</a>	8/24/96	14:55	CST	Thunderstorm Wind	45 kts.	0	0	90.00K	0.00K
<a href="#">BAY MINETTE</a>	8/25/96	13:50	CST	Thunderstorm Wind	50 kts.	0	0	2.50K	0.00K
<a href="#">BAY MINETTE</a>	8/25/96	14:00	CST	Lightning		0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	8/25/96	15:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	9/21/96	9:30	CST	Thunderstorm Wind	50 kts.	0	0	2.50K	0.00K
<a href="#">ORANGE BEACH</a>	11/5/96	18:00	CST	Thunderstorm Wind	40 kts.	0	0	0.50K	0.00K
<a href="#">TENSAW</a>	12/12/96	20:10	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">MAGNOLIA SPGS</a>	1/15/97	20:55	CST	Thunderstorm Wind	52 kts.	0	0	0.50K	0.00K
<a href="#">BLACKSHER</a>	1/24/97	6:40	CST	Thunderstorm Wind	50 kts.	0	0	1.50K	0.00K
<a href="#">MALBIS</a>	1/24/97	9:00	CST	Thunderstorm Wind	55 kts.	0	1	15.00K	0.00K
<a href="#">FAIRHOPE</a>	1/24/97	18:00	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">SILVERHILL</a>	1/24/97	18:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	1/24/97	18:50	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">ORANGE BEACH</a>	1/24/97	20:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	1/24/97	20:03	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	1/24/97	20:45	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ORANGE BEACH</a>	1/24/97	22:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	1/24/97	23:30	CST	Lightning		0	0	90.00K	0.00K

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<a href="#">FT MORGAN</a>	4/11/97	14:50	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	4/21/97	17:20	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	4/21/97	17:57	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">STAPLETON</a>	4/22/97	20:30	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	4/22/97	20:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	4/22/97	21:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	4/22/97	22:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">CHRYSLER</a>	5/27/97	22:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	6/20/97	14:15	CST	Thunderstorm Wind	50 kts.	0	0	1.50K	0.00K
<a href="#">FAIRHOPE</a>	7/11/97	17:30	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">ROBERTSDALE</a>	8/9/97	15:00	CST	Lightning		0	0	3.00K	0.00K
<a href="#">LOXLEY</a>	8/20/97	16:45	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
<a href="#">SEMINOLE</a>	11/6/97	11:20	CST	Hail	1.75 in.	0	0	2.00K	0.00K
<a href="#">WHITEHOUSE FORKS</a>	1/7/98	7:30	CST	Thunderstorm Wind	70 kts.	0	0	25.00K	0.00K
<a href="#">GULF SHRS</a>	1/7/98	7:30	CST	Thunderstorm Wind	50 kts.	0	0	25.00K	0.00K
<a href="#">SEMINOLE</a>	1/7/98	8:20	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">DAPHNE</a>	1/22/98	7:45	CST	Lightning		0	0	100.00K	0.00K
<a href="#">ELSANOR</a>	1/22/98	7:57	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">MAGNOLIA SPGS</a>	1/22/98	10:45	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">SPANISH FT</a>	2/11/98	1:55	CST	Thunderstorm Wind	55 kts.	0	0	12.00K	0.00K
<a href="#">STOCKTON</a>	3/5/98	13:30	CST	Hail	0.88 in.	0	0	0.00K	0.00K

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<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<a href="#">PERDIDO</a>	3/5/98	14:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	3/8/98	5:30	CST	Lightning		0	0	20.00K	0.00K
<a href="#">LATHAM</a>	4/8/98	8:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	4/8/98	9:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	4/17/98	17:45	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	4/17/98	18:25	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	5/3/98	19:08	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	5/3/98	19:38	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	5/3/98	20:11	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">COUNTYWIDE</a>	6/5/98	23:25	CST	Thunderstorm Wind	60 kts.	0	0	100.00K	0.00K
<a href="#">SEMINOLE</a>	7/5/98	16:00	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">BAY MINETTE</a>	7/24/98	13:05	CST	Lightning		0	0	60.00K	0.00K
<a href="#">PERDIDO</a>	7/26/98	19:12	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
<a href="#">LITTLE RIVER</a>	8/30/98	15:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ORANGE BEACH</a>	9/28/98	9:50	CST	Thunderstorm Wind	50 kts.	0	0	20.00K	0.00K
<a href="#">BAY MINETTE</a>	1/2/99	10:35	CST	Thunderstorm Wind	55 kts.	0	0	3.00K	0.00K
<a href="#">LILLIAN</a>	1/2/99	12:00	CST	Thunderstorm Wind	55 kts.	0	0	5.00K	0.00K
<a href="#">STAPLETON</a>	1/9/99	4:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	3/3/99	0:40	CST	Thunderstorm Wind	58 kts.	0	0	30.00K	0.00K
<a href="#">PERDIDO</a>	3/9/99	2:40	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	3/9/99	3:00	CST	Lightning		0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	3/9/99	4:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K

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<a href="#">ELSANOR</a>	3/9/99	5:10	CST	Thunderstorm Wind	70 kts.	0	1	70.00K	0.00K
<a href="#">GULF SHRS</a>	3/9/99	5:55	CST	Thunderstorm Wind	60 kts.	0	0	50.00K	0.00K
<a href="#">STOCKTON</a>	3/13/99	19:20	CST	Thunderstorm Wind	58 kts.	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	3/13/99	21:00	CST	Lightning		0	0	0.00K	0.00K
<a href="#">SEMINOLE</a>	3/13/99	21:10	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">FT MORGAN</a>	5/4/99	13:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">STAPLETON</a>	5/4/99	15:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	6/8/99	14:32	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	7/30/99	13:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	7/30/99	14:32	CST	Lightning		0	0	5.00K	0.00K
<a href="#">LITTLE RIVER</a>	7/30/99	14:55	CST	Thunderstorm Wind	50 kts.	0	0	4.00K	0.00K
<a href="#">ROSINTON</a>	7/30/99	15:17	CST	Lightning		0	0	3.00K	0.00K
<a href="#">SILVERHILL</a>	7/30/99	15:17	CST	Lightning		0	0	5.00K	0.00K
<a href="#">BELFOREST</a>	7/30/99	15:17	CST	Lightning		0	0	5.00K	0.00K
<a href="#">DAPHNE</a>	7/30/99	17:40	CST	Lightning		0	0	3.00K	0.00K
<a href="#">FOLEY</a>	8/14/99	14:20	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
<a href="#">TENSAW</a>	1/10/00	1:00	CST	Thunderstorm Wind	50 kts. E	0	0	5.00K	0.00K
<a href="#">FT MORGAN</a>	1/24/00	1:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">TENSAW</a>	3/3/00	19:40	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
<a href="#">STAPLETON</a>	3/11/00	10:40	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
<a href="#">PERDIDO</a>	3/29/00	14:15	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">TENSAW</a>	6/24/00	14:20	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K

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<a href="#">ROSINTON</a>	7/21/00	12:20	CST	Thunderstorm Wind	60 kts. E	0	0	7.00K	0.00K
<a href="#">ROSINTON</a>	7/21/00	12:20	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	7/21/00	13:45	CST	Thunderstorm Wind	70 kts. E	0	0	8.00K	0.00K
<a href="#">SILVERHILL</a>	7/21/00	14:55	CST	Thunderstorm Wind	70 kts. E	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	8/9/00	17:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ELSANOR</a>	8/10/00	14:25	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
<a href="#">STOCKTON</a>	8/27/00	15:30	CST	Thunderstorm Wind	70 kts. E	0	0	50.00K	0.00K
<a href="#">DAPHNE</a>	9/2/00	16:00	CST	Lightning		0	0	5.00K	0.00K
<a href="#">DAPHNE</a>	9/2/00	17:25	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
<a href="#">LOXLEY</a>	9/5/00	15:05	CST	Thunderstorm Wind	50 kts. E	0	0	5.00K	0.00K
<a href="#">LOXLEY</a>	9/5/00	15:05	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	3/12/01	2:45	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	3/12/01	11:55	CST	Thunderstorm Wind	65 kts. E	0	0	10.00K	0.00K
<a href="#">BAY MINETTE</a>	5/28/01	14:00	CST	Lightning		0	0	25.00K	0.00K
<a href="#">STOCKTON</a>	8/19/01	12:45	CST	Thunderstorm Wind	50 kts. E	0	0	8.00K	0.00K
<a href="#">DAPHNE</a>	8/19/01	13:30	CST	Lightning		0	0	3.00K	0.00K
<a href="#">FT MORGAN</a>	9/8/01	6:30	CST	Lightning		0	0	20.00K	0.00K
<a href="#">FAIRHOPE</a>	10/13/01	19:00	CST	Thunderstorm Wind	50 kts. E	0	0	10.00K	0.00K
<a href="#">SUMMERDALE</a>	10/13/01	19:10	CST	Thunderstorm Wind	60 kts. E	0	0	40.00K	0.00K
<a href="#">GULF SHRS</a>	10/13/01	19:22	CST	Thunderstorm Wind	60 kts. E	0	0	50.00K	0.00K
<a href="#">DAPHNE</a>	4/3/02	15:40	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	4/3/02	15:40	CST	Hail	1.00 in.	0	0	0.00K	0.00K

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<a href="#">FAIRHOPE</a>	4/8/02	19:25	CST	Thunderstorm Wind	55 kts. E	0	0	15.00K	0.00K
<a href="#">LOXLEY</a>	5/29/02	13:35	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	5/29/02	14:10	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	5/29/02	14:20	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	7/1/02	16:30	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
<a href="#">JOSEPHINE</a>	8/25/02	14:50	CST	Thunderstorm Wind	60 kts. E	0	0	35.00K	0.00K
<a href="#">BAY MINETTE</a>	8/29/02	14:00	CST	Lightning		0	0	30.00K	0.00K
<a href="#">DAPHNE</a>	11/5/02	13:30	CST	Thunderstorm Wind	60 kts. E	0	0	15.00K	0.00K
<a href="#">STOCKTON</a>	12/19/02	16:30	CST	Thunderstorm Wind	50 kts. E	0	0	8.00K	0.00K
<a href="#">DAPHNE</a>	12/19/02	18:00	CST	Thunderstorm Wind	50 kts. E	0	0	8.00K	0.00K
<a href="#">SUMMERDALE</a>	12/24/02	4:30	CST	Thunderstorm Wind	50 kts. E	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	12/31/02	8:40	CST	Thunderstorm Wind	55 kts. E	0	0	10.00K	0.00K
<a href="#">FAIRHOPE</a>	2/21/03	14:48	CST	Thunderstorm Wind	53 kts. EG	0	0	5.00K	0.00K
<a href="#">FOLEY</a>	3/12/03	15:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	3/12/03	16:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	3/12/03	16:00	CST	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
<a href="#">SUMMERDALE</a>	3/13/03	2:40	CST	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
<a href="#">SEMINOLE</a>	3/13/03	2:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	3/13/03	16:50	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">MAGNOLIA SPGS</a>	3/13/03	17:29	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<a href="#">BAY MINETTE</a>	4/25/03	19:10	CST	Hail	1.75 in.	0	0	5.00K	0.00K

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<a href="#">STAPLETON</a>	4/25/03	19:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	4/25/03	20:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LATHAM</a>	5/2/03	15:40	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">LATHAM</a>	5/2/03	16:00	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<a href="#">STOCKTON</a>	5/2/03	16:55	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">DYAS</a>	5/2/03	17:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	5/2/03	21:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	5/3/03	1:35	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">LITTLE RIVER</a>	5/3/03	10:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">SEMINOLE</a>	5/3/03	11:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	7/1/03	1:35	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<a href="#">DAPHNE</a>	7/12/03	16:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">FOLEY</a>	7/17/03	14:30	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">GULF SHRS</a>	7/17/03	14:52	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	8/6/03	17:20	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	8/16/03	14:05	CST	Thunderstorm Wind	50 kts. EG	0	0	7.00K	0.00K
<a href="#">BELFOREST</a>	11/18/03	14:20	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">BAY MINETTE</a>	6/2/04	9:30	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">SILVERHILL</a>	6/3/04	6:30	CST	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
<a href="#">SPANISH FT</a>	7/25/04	13:40	CST	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K

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<a href="#">ORANGE BEACH</a>	1/29/05	9:25	CST	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
<a href="#">PERDIDO</a>	3/26/05	15:05	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	3/27/05	2:35	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	3/27/05	2:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">VAUGHN</a>	3/27/05	2:50	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	4/1/05	5:05	CST	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
<a href="#">FOLEY</a>	4/6/05	14:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	4/22/05	20:26	CST	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	4/22/05	21:23	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">WHITEHOUSE FORKS</a>	4/26/05	14:38	CST	Hail	1.75 in.	0	0	4.00K	0.00K
<a href="#">ELBERTA</a>	4/30/05	9:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">LOTTIE</a>	5/24/05	20:05	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	7/23/05	11:13	CST	Lightning		2	0	0.00K	0.00K
<a href="#">DAPHNE</a>	8/24/05	14:00	CST	Lightning		0	0	0.00K	0.00K
<a href="#">PERDIDO BEACH</a>	1/13/06	9:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	1/17/06	9:20	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">FAIRHOPE</a>	4/21/06	17:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">SEMINOLE</a>	4/25/06	17:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">WHITEHOUSE FORKS</a>	5/8/06	21:25	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">SEMINOLE</a>	5/8/06	22:05	CST	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K

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<a href="#">SPANISH FT</a>	5/9/06	9:45	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">MALBIS</a>	5/9/06	10:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">CROSSROADS</a>	5/9/06	12:20	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">WHITEHOUSE FORKS</a>	5/9/06	12:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	5/23/06	15:45	CST	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">SILVERHILL</a>	5/29/06	14:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	5/29/06	14:45	CST	Lightning		0	1	15.00K	0.00K
<a href="#">FOLEY</a>	6/23/06	12:45	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">GULF SHRS</a>	6/23/06	12:50	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	6/23/06	13:25	CST	Thunderstorm Wind	50 kts. EG	0	0	20.00K	0.00K
<a href="#">GULF SHRS</a>	7/6/06	10:09	CST	Lightning		0	1	0.00K	0.00K
<a href="#">ELBERTA</a>	7/16/06	8:30	CST	Lightning		1	0	0.00K	0.00K
<a href="#">FOLEY</a>	7/20/06	13:20	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	8/8/06	14:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	8/9/06	12:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">SPANISH FT</a>	8/15/06	21:40	CST	Lightning		0	0	100.00K	0.00K
<a href="#">BAY MINETTE</a>	8/30/06	16:15	CST	Thunderstorm Wind	50 kts. EG	0	0	12.00K	0.00K
<a href="#">BAY MINETTE</a>	8/30/06	16:45	CST	Thunderstorm Wind	50 kts. EG	0	0	12.00K	0.00K
<a href="#">DAPHNE</a>	10/17/06	7:00	CST-6	Lightning		0	0	30.00K	0.00K
<a href="#">MIFLIN</a>	11/15/06	10:25	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">PERDIDO</a>	5/11/07	13:10	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K

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<a href="#">BELFOREST</a>	5/13/07	13:00	CST-6	Lightning		0	0	60.00K	0.00K
<a href="#">BELFOREST</a>	5/13/07	13:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<a href="#">ROBERTSDALE</a>	6/9/07	15:25	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	6/9/07	15:40	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	6/9/07	16:15	CST-6	Hail	1.75 in.	0	0	8.00K	0.00K
<a href="#">MALBIS</a>	6/27/07	14:15	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	7/11/07	19:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">FAIRHOPE</a>	7/11/07	19:35	CST-6	Lightning		0	0	250.00K	0.00K
<a href="#">SPANISH FT</a>	7/14/07	14:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">BELFOREST</a>	7/14/07	14:40	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<a href="#">MARLOW</a>	8/9/07	14:30	CST-6	Lightning		0	1	0.00K	0.00K
<a href="#">SPANISH FT</a>	8/24/07	14:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	2/12/08	17:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	55.00K	0.00K
<a href="#">DAPHNE</a>	2/12/08	17:30	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
<a href="#">GULF SHRS</a>	3/1/08	3:51	CST-6	Thunderstorm Wind	50 kts. EG	0	0	18.00K	0.00K
<a href="#">FAIRHOPE</a>	5/15/08	10:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	12.00K	0.00K
<a href="#">SUMMERDALE</a>	5/15/08	10:25	CST-6	Thunderstorm Wind	54 kts. EG	0	0	30.00K	0.00K
<a href="#">FOLEY</a>	5/25/08	14:05	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K

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<a href="#">FAIRHOPE</a>	6/29/08	7:45	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
<a href="#">BAY MINETTE</a>	12/24/08	17:40	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	3/27/09	3:12	CST-6	Thunderstorm Wind	75 kts. MG	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	3/27/09	3:15	CST-6	Thunderstorm Wind	104 kts. EG	0	0	125.00K	0.00K
<a href="#">ELSANOR</a>	3/27/09	21:05	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	4/13/09	6:30	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	7/31/09	3:15	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">SEMINOLE</a>	8/4/09	16:15	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">PHILLIPSVILLE</a>	8/5/09	14:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">PHILLIPSVILLE</a>	8/5/09	15:05	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	12/24/09	17:38	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	6/18/10	15:42	CST-6	Thunderstorm Wind	52 kts. EG	0	0	12.00K	0.00K
<a href="#">GULF SHRS</a>	8/3/10	10:30	CST-6	Lightning		0	2	0.00K	0.00K
<a href="#">HURRICANE</a>	8/7/10	17:50	CST-6	Lightning		1	0	0.00K	0.00K
<a href="#">DAPHNE</a>	12/11/10	23:40	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	1/18/11	20:05	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
<a href="#">FOLEY</a>	2/1/11	17:20	CST-6	Thunderstorm Wind	52 kts. EG	0	5	10.00K	0.00K
<a href="#">SEMINOLE</a>	2/1/11	17:51	CST-6	Thunderstorm Wind	52 kts. EG	0	5	0.00K	0.00K

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<a href="#">FOLEY</a>	6/6/11	13:10	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	6/6/11	13:20	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	6/6/11	13:32	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	7/2/11	13:05	CST-6	Thunderstorm Wind	61 kts. EG	0	0	10.00K	0.00K
<a href="#">LOXLEY</a>	7/2/11	13:05	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	8/4/11	22:40	CST-6	Lightning		0	1	0.00K	0.00K
<a href="#">FOLEY</a>	8/24/11	12:59	CST-6	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
<a href="#">SEMINOLE</a>	2/18/12	17:20	CST-6	Thunderstorm Wind	61 kts. EG	0	0	10.00K	0.00K
<a href="#">LILLIAN</a>	2/18/12	17:40	CST-6	Thunderstorm Wind	61 kts. EG	0	0	10.00K	0.00K
<a href="#">FOLEY</a>	5/21/12	18:05	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
<a href="#">ELSANOR</a>	5/30/12	14:18	CST-6	Thunderstorm Wind	52 kts. EG	0	0	8.00K	0.00K
<a href="#">LOXLEY</a>	6/5/12	16:20	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">GULF SHRS</a>	6/10/12	9:00	CST-6	Lightning		0	1	0.00K	0.00K
<a href="#">SILVERHILL</a>	7/3/12	15:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	7.00K	0.00K
<a href="#">SUMMERDALE</a>	7/4/12	12:20	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
<a href="#">WHITEHOUSE FORKS</a>	7/17/12	17:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
<a href="#">DAPHNE</a>	7/17/12	18:00	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
<a href="#">FOLEY</a>	7/30/12	14:20	CST-6	Thunderstorm Wind	52 kts. EG	0	0	7.00K	0.00K
<a href="#">GULF SHRS</a>	4/14/13	9:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K

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<a href="#">FAIRHOPE</a>	4/14/13	10:00	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
<a href="#">DAPHNE</a>	5/1/13	12:53	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	7/22/13	15:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.50K	0.00K
<a href="#">ROSINTON</a>	7/22/13	15:55	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.50K	0.00K
<a href="#">SEMINOLE</a>	7/22/13	16:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.50K	0.00K
<a href="#">BAY MINETTE</a>	2/21/14	2:30	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	6:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	6:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	16:22	CST-6	Heavy Rain		0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:22	CST-6	Heavy Rain		0	0	0.00K	0.00K
<a href="#">ELSANOR</a>	5/28/14	17:40	CST-6	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
<a href="#">ELBERTA</a>	12/23/14	20:30	CST-6	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
<b>Totals:</b>						4	20	2.509M	0.00K

Source: National Climatic Data Center

**Past Occurrences of Tornadoes**

**Table E-4. Baldwin County Tornadoes, 1840 - 2014  
Alabama Tornado Database**

Year	Month	Day	Time (CST)	Damage Scale	Path Length (Miles)	Fatalities	Injuries	Location/Damage Description
2011	9	4	0222	F1	0.76	0	0	<p><b>0.7 S Lillian - 0.3 WNW Lillian</b></p> <p>The tornado moved off the Gulf of Mexico in Perdido Key, Florida and continued moving north-northwest into southeastern Baldwin County near Lillian. The tornado moved off of Perdido Bay near Spanish Cove, south of Lillian. A brick home on Clubhouse Drive was destroyed when a large tree fell on the house. A house across the street suffered roof and chimney damage. The tornado continued north-northwest into a K.O.A. Campground, downing and snapping trees as well as rolling a recreation vehicle onto its side. The last location of noted damage was to trees in the Spanish Cove West subdivision. The tornado was associated with Tropical Storm Lee.</p>
2011	3	9	0917	F2	2.05	0	0	<p><b>1.3 SSW Silverhill - 0.8 NE Silverhill</b></p> <p>The tornado first touched down on West Boulevard just south of South Boulevard in Silverhill. At this location, two homes suffered roof damage with some windows blown out. The tornado then tracked northeast where it widened and intensified as it moved just south of South Avenue west of County Road 55. Maximum winds were 111-135 mph. Several homes were destroyed or severely damaged, and a utility trailer was thrown nearly 100 yards. A pickup truck that was backing out of the U.S. Post Office was tossed 40 yards. The tornado continue northeast where it crossed Highway 104 and did major damage to several homes, businesses and structures. The tornado lifted near County Road 52 just east of Hill Road.</p>
2010	10	24	2010	F1	1.71	0	0	<p><b>1.8 SSE Elsanor - 1.2 E Elsanor</b></p> <p>The tornado first touched down on Trester Road, just west of Greek Cemetary Road and south of U.S. Highway 90. At this point, a few trees were downed in a convergent path. The tornado continued northeast and strengthened to EF-1 intensity as it reached Gilman Lane. At this location, a mobile home was blown off its foundation and destroyed. Winds are estimated to have been near 100 MPH. After close inspection by a member of the NWS storm damage assessment team, it appears the mobile home was not anchored and was resting on a cinder block foundation. Two metal sheds were also destroyed. As the tornado continued northeast, it damaged two other mobile homes, shifting one of them off its foundation. Numerous pine trees were snapped in half or uprooted at a residence on Whispering Pine Road off Greek Cemetary Road. Due to the extent of the tree damage, the tornado was determined to have reached EF-1 intensity at this location with estimated winds of 86 MPH to 100 MPH. A brick home at this location suffered minor roofing shingle damage with two windows blown out. A fence, back porch, and an outbuilding/shed were badly damaged. The tornado then continued northeast and weakened, crossing U.S. Highway 90, and destroying a metal shed. The tornado lifted on Koier Road, just over one half mile north of U.S. Highway 90.</p>
2008	9	1	1205	F0	0.1	0	0	<p><b>1 N Elberta</b></p>

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Year	Month	Day	Time (CST)	Damage Scale	Path Length (Miles)	Fatalities	Injuries	Location/Damage Description
								A weak tornado briefly touched down just north of Elberta. The tornado blew down a couple of trees and a trailer home had roof damage.
2006	11	15	909	F1	1.3	0	0	<p style="text-align: center;"><b>0.3 SE Dyas-1 WNW Dyas</b></p> <p>A tornado touched down along Hollingsworth Road in the Dyas community where it blew down several trees. It continued east northeast reaching F1 strength where it crossed over Dyas Road about a mile north of Brushy Creek. A house on the east side of the road sustained considerable roof damage. Two sheds, a barn, horse pen and a screened in porch were destroyed. Numerous debris from this property were blown into an adjacent field and the owner said several items were found as far as a half mile away. The tornado quickly weakened and dissipated at the end of Sanks Road.</p>
2006	11	15	848	F0	1.1	0	0	<p style="text-align: center;"><b>3.8 NE Rabun-3.5 NNE Rabun</b></p> <p>A weak tornado touched down along Old Ganey Road blowing down several trees on both sides of the road. The tornado generally paralleled the roadway to the intersection of Silas Ganey Road where it began to parallel that road for a brief period. The tornado then crosses Majors Creek then dissipated shortly thereafter. No structures were in the path of the tornado.</p>
2005	8	28	1804	F0	0.5	0	0	<p style="text-align: center;"><b>Fort Morgan</b></p> <p>A weak tornado developed along the outer bands of Hurricane Katrina. The weak tornado blew down several trees and power lines just east of Fort Morgan.</p>
2004	11	27	1155	F1	1	0	0	<p style="text-align: center;"><b>Seminole</b></p> <p>An F1 tornado touched down just west of Seminole and damaged several homes near the Styx and Perdido rivers. Most of the damage was to roofs with numerous trees blown down. The tornado tracked east and moved into Escambia County Florida. No injuries were reported.</p>
2004	11	27	1145	F0	0.1	0	0	<p style="text-align: center;"><b>1 S Elsanor</b></p> <p>A weak tornado briefly touched down just west of County Road 87 south of Elsanor. The tornado turned over a couple of trailers that were damaged during Hurricane Ivan. Trees were also blown down. The tornado went back into the clouds near County Road 87.</p>
2004	11	27	1135	F0	1.5	0	0	<p style="text-align: center;"><b>2 NW Robertsdale</b></p> <p>A weak F0 tornado touched down just northeast of Robertsdale. The tornado first touched down along County Road 55 and moved northeast before dissipating just west of U. S. Highway 90. Trees were blown down with some minor structural damage along the track of the storm. A truck was also blown over. No injuries occurred. This weak tornado actually split from the same storm that spawned the tornado in Summerdale at about the same time.</p>
2004	11	27	1135	F2	4.5	0	4	<p style="text-align: center;"><b>Summerdale</b></p> <p>An F2 touched down just west of Summerdale along County Road 32. The tornado then tracked east northeast and moved through downtown Summerdale. The tornado continued moving east and went back into the clouds east of Summerdale. Most of the damage from the tornado occurred in downtown Summerdale. Bleachers from a new ball field were found about a quarter mile away next to a house. A school bus was pushed sideways 15 to 20 feet by the winds. Five homes were destroyed with 35 to 40 homes suffering damage. Four minor injuries were reported. People heard the warning and took cover before the tornado hit. This same area was hit hard by Hurricane Ivan in September.</p>
2004	11	24	755	F0	0.1	0	0	<p style="text-align: center;"><b>Fairhope</b></p>

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								The large waterspout that moved across Mobile Bay moved ashore near Fairhope and quickly dissipated. No damage from the weak tornado was found.
2004	9	15	1302	F0	3	0	0	<p><b>3 SE Josephine-1 SW Josephine</b></p> <p>A weak tornado entered Baldwin county from Escambia county in Florida near Ono Island and moved rapidly west northwest and dissipated just southwest of Josephine. The weak tornado caused minor damage. Most of the area had been evacuated due to Hurricane Ivan.</p>
2002	11	5	1340	F0	0.1	0	0	<p><b>Barnwell</b></p> <p>A weak tornado downed trees and power lines near the Barnwell community. The same storm produced some minor roof damage and downed more trees near Elsanor a few minutes later.</p>
2002	9	25	1906	F0	0.1	0	0	<p><b>Gulf Shores</b></p> <p>A weak tornado damaged a building near the Gulf of Mexico in Gulf Shores. The storm that spawned the tornado moved in from the Gulf. The building suffered minor roof damage and several windows were blown out.</p>
2002	9	25	1825	F0	0.1	0	0	<p><b>Gulf Shores</b></p> <p>A weak tornado moved across part of Gulf State Park. The tornado was spawned from a storm that moved in from the Gulf of Mexico. The weak tornado flipped a couple of trailers and also blew down trees and power lines in the Park.</p>
2001	10	13	1345	F0	0.3	0	0	<p><b>Spanish Fort</b></p> <p>An F0 tornado touched down along the eastern portions of Meaher Park on the Causeway just west of Spanish Fort. The tornado jumped across the Causeway and touched down in the Pineda Island subdivision. Several trees were damaged along the tornado path.</p>
2001	10	13	1244	F2	0.7	0	0	<p><b>Robertsdale</b></p> <p>An F2 tornado touched down southeast of Robertsdale. The tornado first touched down just south of County Road 83 and Hubbard road intersection where it tracked north and damaged seventeen manufactured homes and completely destroyed three others. Several large Pecan trees were also blown down. No injuries were reported.</p>
2001	10	13	1240	F0	0.2	0	0	<p><b>Foley</b></p> <p>Another tornado briefly touched down, about 20 minutes after the first one, near the Grove Home Park. The F0 blew down several trees and a large fence near the Park along County Road 65.</p>
2001	10	13	1225	F3	0.2	0	0	<p><b>Foley</b></p> <p>An F3 tornado initially touched down just south of the Grove Home Park on County Road 16. The tornado then tracked north just east of County Road 65 to County Road 12, just southwest of Foley. The tornado blew down numerous trees, destroyed a manufactured home and damaged several others in the Grove Home Park. The tornado destroyed two large cement block buildings and damaged another three near County Road 12. A large panel truck filled with heavy tools was picked up and carried about 60 feet, and several other cars were thrown 15 to 25 feet. No injuries were reported.</p>
2001	10	13	1200	F0	0.2	0	0	<p><b>Gulf Shores</b></p> <p>A strong waterspout moved ashore in Gulf Shores near State Highway 59 where it damaged several small booths associated with the Shrimp Festival. The tornado tracked north and damaged some roofs to homes along 6th avenue.</p>
2001	10	13	635	F0	0.1	0	0	<p><b>Montrose</b></p>

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								An F0 tornado briefly touched down along U. S. Highway 98 near Montrose. The tornado blew several trees down.
2001	10	13	630	F1	0.1	0	0	<b>Fairhope</b>
								An F1 tornado touched down for a short time near Fairhope. The tornado caused major damage to a warehouse roof and two large metal doors were blown in. Several trees and a fence were also blown down.
2000	11	8	1245	F0	0.1	0	0	<b>Elsanor</b>
								Two off duty meteorologists observed a tornado that briefly touched down in a field just north of Elsanor and south of I-10. No damage from the tornado was found. After briefly touching down, the tornado quickly dissipated. This was the fourth tornado to touch down in Baldwin county in a two hour period.
2000	11	8	1150	F1	2.5	0	0	<b>Fairhope</b>
								A tornado, the third in Baldwin county in a 45 minute time period, developed and followed a path very similar to a weaker tornado that occurred about 20 minutes earlier. This tornado touched down near the intersection of Highway 27 and Highway 32, moved northeast into the Woodmere subdivision (the same subdivision affected by a weaker tornado some 20 minutes earlier). This tornado produced moderate roof and structural damage to several homes in the Woodmere subdivision. The tornado then continued northeast into the Quail Creek subdivision, where it produced minor damage to a few homes, mainly to garage doors. The damage path through the two subdivisions was intermittent, suggesting that the tornado skipped across the ground. As the tornado moved out of the Quail Creek subdivision, it lifted off the ground, but continued moving northeast as a funnel cloud. Reports of a funnel cloud, not in contact with the ground, were received as the parent thunderstorm moved northeast toward Interstate 10 and then east of Bay Minette.
2000	11	8	1125	F0	1	0	0	<b>Fairhope</b>
								A tornado, the second in Baldwin county in a 20 minute time period, formed just south of Fairhope. The tornado touched down just south of the intersection of Highway 27 and Highway 32, narrowly missing a trailer park and a nearby school, but producing some tree damage and minor damage to one trailer just south of the intersection. The tornado then skipped along Highway 27 for about one mile, where it caused minor damage to one home in the Woodmere subdivision.
2000	11	8	1105	F1	1	0	0	<b>Foley</b>
								A low topped thunderstorm produced a brief F1 tornado about 1 mile Southeast of the community. The tornado first touched down in the Leisure Lakes subdivision causing minor roof damage to a few homes. The tornado then moved Northeast into the neighboring Glen Lakes subdivision, where it intensified and caused moderate roof and structural damage to several homes. The tornado then lifted back into the thunderstorm cloud.
1999	7	12	915	F0	0.1	0	0	<b>Point Clear</b>
								A waterspout moved ashore near Point Clear and quickly dissipated over land. No damage was found.
1999	5	31	1442	F0	0.1	0	0	<b>Gulf Shores</b>
								A waterspout moved over the marshlands between Little Lagoon and Oyster Bay. The storm dissipated over the marshlands and no damage was found. No injuries were reported.
1999	5	29	1900	F0	0.1	0	0	<b>Fort Morgan</b>

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								A waterspout came ashore along State Highway 180 about three miles east of Fort Morgan. The waterspout quickly dissipated but a building under construction had building material scattered and minor roof damage from the storm.
1999	2	23	1745	F0	2	0	0	<b>Summerdale</b>  An F0 tornado briefly touched down around Alabama 59 near Summerdale in a trailer park. Several trailers had minor damage to skirting and one was shifted off its blocks. One tree had a branch blown off and an abandoned trailer on blocks was turned over. The tornado then moved east and skipped along the ground briefly touching down along County Road 38 where small trees and a fence were blown down. A Weather Service employee followed the storm east and said the funnel was rotating but it never appeared to touch down. The tornado then went back into the cloud before reaching Seminole.
1998	9	27	1655	F0	0.1	0	0	<b>3 N Loxley</b>  A tornado briefly touched down just north of I-10 near the Loxley exit. The only damage was to trees and power lines.
1998	9	19	1300	F0	0.1	0	0	<b>Gulf Shores</b>  A waterspout moved ashore near Gulf Shores and rapidly dissipated. No damage was found.
1995	4	22	1705	F0	0.1	0	0	<b>Loxley</b>  A brief tornado touched down between Loxley and Stapleton. No damage was found.
1994	12	3	2130	F0	2	0	0	<b>Bay Minette</b>  A weak tornado touched down on the south side of Bay Minette damaging the roof on one house, the roof on a lumber company, and destroying one mobile home. Several trees and power lines were also blown down.
1992	11	24	500	F1	2.5	0	1	<b>Bon Secour</b>  A tornado briefly touched down near Bon Secour. One mobile was destroyed and one was damaged.
1991	4	29	1406	F0	0.3	0	0	<b>2 E Robertsdale</b>  Several homes were extensively damaged.
1991	4	29	1402	F0	0.3	0	0	<b>Robertsdale</b>  Minor residential damage was reported.
1991	3	1	1320	F0	0.3	0	0	<b>Orange Beach</b>  Minor roof damage was reported.
1990	5	17	1610	F0	0.5	0	0	<b>6 SW Magnolia Springs</b>  A waterspout moved onshore with no damage reported.
1990	3	15	1628	F0	0.3	0	0	<b>Elsanor</b>  Several trees were uprooted.
1990	3	15	1612	F0	0.3	0	0	<b>Summerdale</b>  Several mobile homes were damaged or knocked off their foundations.
1990	3	15	1545	F0	0.3	0	0	<b>Weeks Bay</b>  A waterspout moved inland and damaged the roof of a home.
1989	11	7	100	F0	0.3	0	0	<b>20 SE Bay Minette</b>  One barn was damaged, trees were uprooted, and the roof was blown off a trailer.
1989	6	8	855	F0	0.3	0	0	<b>3 NW Lillian</b>

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								8 homes and 2 barns were damaged.
1989	6	8	851	F1	2	0	10	<b>Alabama Point-Orange Beach</b>
								One home was totally destroyed and 5 sustained major damage. 17 homes received minor damage. One mobile home was destroyed and one mobile home was damaged.
1989	5	19	1340	F0	0.3	0	0	<b>Weeks Bay</b>
								Little or no damage as a waterspout came ashore.
1985	10	29	950	F1	0.1	0	0	<b>Orange Beach</b>
								Brief tornado damaged a car and a store.
1985	9	23	630	F0	0.2	0	0	<b>Loxley</b>
								One truck was overturned and one building had its roof removed. Shingle damage was reported on 3 homes.
1985	7	6	300	F0	1	0	0	<b>Daphne</b>
								A waterspout moved onshore and damaged one home and knocked a few trees down.
1985	5	1	1755	F0	NA	0	0	<b>Fort Morgan</b>
								A small tornado touched down and blew down some trees and power lines along the Fort Morgan Highway.
1985	2	11	450	F1	2	0	0	<b>Loxley</b>
								Several outbuildings were destroyed, one home was unroofed, and one barn was unroofed. Several other homes sustained roof damage.
1983	11	15	705	F1	0.1	0	0	<b>Robertsdale</b>
								The roof of a coliseum was damaged and windows were broken out of one home.
1983	7	20	1545	F1	0.2	0	0	<b>Robertsdale</b>
								Extensive tree damage occurred and two structures were damaged by falling trees.
1983	4	14	612	F1	0.25	0	0	<b>2 E Fairhope</b>
								Several trees were snapped off or uprooted. Minor damage occurred to a few outbuildings.
1982	5	7	1238	F1	2	0	0	<b>Gulf Shores</b>
								A waterspout moved onshore near the state park. Some buildings sustained minor roof damage. 3 cars had their windows blown out. Other minor damage occurred in the vicinity.
1982	4	25	530	F1	1	0	0	<b>Elberta</b>
								Brief tornado touchdown damaged a wheat crop and several outbuildings. Many trees were uprooted.
1981	8	18	1420	F0	0.1	0	0	<b>Spanish Fort</b>
								Brief tornado touched down causing only tree damage.
1981	3	22	1730	NA	NA	0	0	<b>8 N Loxley</b>
								Little or no damage occurred with this brief tornado.
1981	2	10	840	F2	1.5	0	62	<b>Bay Minette</b>
								The tornado struck the middle school where most of the injuries occurred. The school suffered major damage and 7 homes were totally destroyed. 1 business was destroyed.
1980	11	23	1430	NA	NA	0	0	<b>Gulf Shores</b>
								Tornado touched down along Highway 182 where one motel and a small cottage were damaged. One houseboat was destroyed.

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Year	Month	Day	Time (CST)	Damage Scale	Path Length (Miles)	Fatalities	Injuries	Location/Damage Description
1980	5	17	745	F1	1.2	0	0	Near Gulf Shores No tornado details available.
1980	5	17	245	NA	5	0	0	Hubbard's Landing Many trees were snapped or uprooted. 3 homes were damaged and 2 pecan orchards were heavily damaged.
1980	4	13	1200	NA	0.25	0	0	8 W Bay Minette Brief tornado touchdown at Cliff's Landing. 3 mobile homes were demolished and 9 others were damaged. Several trees were blown down.
1979	6	30	1955	F0	0.25	0	0	6 SE Fairhope Brief tornado touched down near the Fish River and Highway 33. Numerous trees were uprooted. Minor damage occurred to a large chicken house.
1978	6	29	2010	F0	NA	0	0	Near Foley A tornado briefly touched down near Foley with little or no damage.
1977	10	25	700	NA	15	0	0	Foley-Robertsdale-Loxley Several homes sustained minor damage and one mobile home was overturned.
1975	11	6	1550	NA	NA	0	0	Lillian Several trees were blown down. Barns and outbuildings were damaged.
1975	3	13	1755	NA	NA	0	0	Daphne One mobile home was severely damaged.
1975	2	16	1005	F2	1	0	0	Pine Grove Six chicken houses were destroyed. A feedmill and garage were destroyed. Several homes, a warehouse, and 3 barns were unroofed.
1975	2	16	1015	F1	0.3	0	0	6 SW Bay Minette No tornado details were available.
1975	1	10	1615	F1	0.3	0	0	Near Loxley No tornado details were available.
1974	9	7	1804	F0	0.3	0	0	Daphne No tornado details were available.
1974	3	19	1630	F0	0.25	0	0	Stockton Several trees and power lines were blown down.
1974	2	7	315	F0	NA	0	0	Pine Grove A few trees were blown down and one barn was damaged.
1973	12	31	1050	F1	3	0	0	Near Loxley No tornado details were available.
1972	11	13	1440	F2	1	0	0	Rosinton The Rosinton School was damaged. The roof was removed from the gym. One barn was destroyed and several other buildings were damaged.
1971	9	16	1622	F2	1	0	0	4 E Fairhope At least 2 homes were torn apart. Several additional homes were damaged.
1971	9	16	1525	F2	8	0	0	4 S Stockton

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Year	Month	Day	Time (CST)	Damage Scale	Path Length (Miles)	Fatalities	Injuries	Location/Damage Description
								At least 2 mobile homes were demolished. At least 10 homes suffered damage. A few barns were destroyed.
1970	6	2	700	NA	NA	0	0	<b>Daphne</b>
								One trailer was demolished.
1969	8	22	1615	F1	3	0	0	<b>Near Spanish Fort</b>
								No tornado details were available.
1969	7	8	1730	NA	NA	0	0	<b>5 E Spanish Fort</b>
								A tornado briefly touched down in a wooded area knocking trees down.
1968	11	3	1755	F2	70	0	18	<b>8 NW Mobile-Saraland-Bay Minette-Canoe-</b>
								This event may have been more than one tornado. At least 18 homes were destroyed and another 259 homes were damaged. 5 mobile homes were demolished and 10 others were damaged. Many other structures sustained damage along the path.
1967	12	10	1615	F2	14	0	0	<b>Bon Secour-Mifflin-Josephine</b>
								A waterspout moved inland and unroofed or tore apart several homes. A boat works and a trailer were also damaged.
1967	10	30	930	F2	3	0	1	<b>Near Gulf Shores</b>
								No tornado damage details available.
1966	11	10	1210	NA	6	0	0	<b>Ranbun-Perdido</b>
								2 large poultry houses were destroyed in Ranbun. A church was demolished in Perdido. Several farm buildings were destroyed along the path.
1964	12	24	1935	F2	2	0	3	<b>W Foley</b>
								5 planes were destroyed at Wilson Airport. 2 homes were demolished and 12 others were damaged. Several commercial buildings were damaged.
1962	3	31	800	F2	10	0	0	<b>SE Bon Secour-E Mifflin</b>
								Several summer homes were destroyed and many other buildings were damaged.
1950	4	18	145	F2	2	0	14	<b>Spanish Fort</b>
								One home was unroofed and 3 other buildings were damaged.

National Weather Service

## Past Occurrences of Tornadoes

**Table E-5. Baldwin County Tornado Events, 1995-2014**

35 TORNADO(s) were reported in Baldwin County, Alabama between 01/01/1995 and 07/31/2014.

Mag: Magnitude  
 Dth: Deaths  
 Inj: Injuries  
 PrD: Property Damage  
 CrD: Crop Damage

Location	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
<b>Totals:</b>						0	4	2.090M	0.00K
<a href="#">Loxley</a>	4/22/95	17:05	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">ORANGE BEACH</a>	7/18/97	17:02	CST	Tornado	F0	0	0	20.00K	0.00K
<a href="#">GULF SHRS</a>	9/19/98	13:00	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	9/27/98	16:55	CST	Tornado	F0	0	0	3.00K	0.00K
<a href="#">SUMMERDALE</a>	2/23/99	17:45	CST	Tornado	F0	0	0	10.00K	0.00K
<a href="#">FT MORGAN</a>	5/29/99	19:00	CST	Tornado	F0	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	5/31/99	14:42	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">POINT CLEAR</a>	7/12/99	9:15	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">FOLEY</a>	11/8/00	11:05	CST	Tornado	F1	0	0	150.00K	0.00K
<a href="#">FAIRHOPE</a>	11/8/00	11:25	CST	Tornado	F0	0	0	10.00K	0.00K
<a href="#">FAIRHOPE</a>	11/8/00	11:50	CST	Tornado	F1	0	0	200.00K	0.00K
<a href="#">ELSANOR</a>	11/8/00	12:45	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	10/13/01	6:30	CST	Tornado	F1	0	0	50.00K	0.00K
<a href="#">MONTROSE</a>	10/13/01	6:35	CST	Tornado	F0	0	0	10.00K	0.00K
<a href="#">GULF SHRS</a>	10/13/01	12:00	CST	Tornado	F0	0	0	20.00K	0.00K
<a href="#">FOLEY</a>	10/13/01	12:25	CST	Tornado	F3	0	0	250.00K	0.00K
<a href="#">FOLEY</a>	10/13/01	12:40	CST	Tornado	F0	0	0	15.00K	0.00K
<a href="#">ROBERTSDALE</a>	10/13/01	12:44	CST	Tornado	F2	0	0	200.00K	0.00K
<a href="#">SPANISH FT</a>	10/13/01	13:45	CST	Tornado	F0	0	0	25.00K	0.00K
<a href="#">GULF SHRS</a>	9/25/02	18:25	CST	Tornado	F0	0	0	25.00K	0.00K
<a href="#">GULF SHRS</a>	9/25/02	19:06	CST	Tornado	F0	0	0	15.00K	0.00K
<a href="#">BARNWELL</a>	11/5/02	13:40	CST	Tornado	F0	0	0	10.00K	0.00K
<a href="#">JOSEPHINE</a>	9/15/04	13:02	CST	Tornado	F0	0	0	3.00K	0.00K
<a href="#">FAIRHOPE</a>	11/24/04	7:55	CST	Tornado	F0	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	11/27/04	11:35	CST	Tornado	F0	0	0	15.00K	0.00K
<a href="#">SUMMERDALE</a>	11/27/04	11:35	CST	Tornado	F2	0	4	400.00K	0.00K
<a href="#">ELSANOR</a>	11/27/04	11:45	CST	Tornado	F0	0	0	30.00K	0.00K
<a href="#">SEMINOLE</a>	11/27/04	11:55	CST	Tornado	F1	0	0	200.00K	0.00K
<a href="#">FT MORGAN</a>	8/28/05	18:04	CST	Tornado	F0	0	0	4.00K	0.00K
<a href="#">RABUN</a>	11/15/06	8:48	CST-6	Tornado	F0	0	0	50.00K	0.00K
<a href="#">DYAS</a>	11/15/06	9:09	CST-6	Tornado	F1	0	0	100.00K	0.00K

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<a href="#">ELBERTA</a>	9/1/08	12:05	CST-6	Tornado	EF0	0	0	20.00K	0.00K
<a href="#">ELSANOR</a>	10/24/10	20:10	CST-6	Tornado	EF1	0	0	45.00K	0.00K
<a href="#">SILVERHILL</a>	3/9/11	9:17	CST-6	Tornado	EF2	0	0	0.00K	0.00K
<a href="#">LILLIAN</a>	9/4/11	2:22	CST-6	Tornado	EF1	0	0	200.00K	0.00K
<b>Totals:</b>						0	4	2.090M	0.00K

Source: National Climatic Data Center

**Past Occurrences of Floods**

**Table E-6. Baldwin County Flood Events, 1995-2014**

**79 FLOOD** event(s) were reported in **Baldwin County, Alabama** between **01/01/1995** and **12/31/2014**.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<b>Totals:</b>					2	1	29.442M	0.00K
<a href="#"><u>DAPHNE</u></a>	4/14/96	21:00	CST	Flash Flood	0	0	200.00K	0.00K
<a href="#"><u>STAPLETON</u></a>	8/30/96	18:30	CST	Flash Flood	0	0	2.00K	0.00K
<a href="#"><u>FAIRHOPE</u></a>	7/19/97	21:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#"><u>CENTRAL PORTION</u></a>	1/7/98	10:00	CST	Flash Flood	0	0	20.00K	0.00K
<a href="#"><u>SOUTH PORTION</u></a>	1/7/98	17:00	CST	Flash Flood	0	0	10.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	2/15/98	15:00	CST	Flood	0	0	25.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	2/22/98	6:30	CST	Flood	0	0	20.00K	0.00K
<a href="#"><u>COUNTYWIDE</u></a>	3/8/98	0:30	CST	Flash Flood	0	0	1.000M	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	3/8/98	2:00	CST	Flood	0	0	15.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	3/17/98	10:00	CST	Flood	0	0	5.00K	0.00K
<a href="#"><u>COUNTYWIDE</u></a>	9/28/98	5:15	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#"><u>FT MORGAN</u></a>	3/13/99	12:00	CST	Coastal Flood	0	0	5.00K	0.00K
<a href="#"><u>COUNTYWIDE</u></a>	3/3/01	12:00	CST	Flash Flood	0	0	15.00K	0.00K
<a href="#"><u>LOWER BALDWIN (ZONE)</u></a>	6/11/01	10:15	CST	Flood	0	0	3.00K	0.00K

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<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<a href="#">POINT CLEAR</a>	9/14/02	7:20	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">FOLEY</a>	9/25/02	4:45	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">SOUTH PORTION</a>	9/25/02	21:40	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">CENTRAL PORTION</a>	4/7/03	16:30	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">CENTRAL PORTION</a>	5/18/03	5:50	CST	Flash Flood	0	0	500.00K	0.00K
<a href="#">CENTRAL PORTION</a>	5/19/03	5:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">CENTRAL PORTION</a>	6/6/03	13:40	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">COUNTYWIDE</a>	6/30/03	21:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">COUNTYWIDE</a>	7/1/03	0:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">FOLEY</a>	7/22/03	18:30	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	5/17/04	14:30	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">EAST PORTION</a>	9/16/04	3:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">CENTRAL PORTION</a>	3/31/05	19:00	CST	Flash Flood	0	0	10.00K	0.00K
<a href="#">SOUTH PORTION</a>	4/1/05	0:00	CST	Flash Flood	0	0	100.00K	0.00K
<a href="#">SOUTH PORTION</a>	4/6/05	17:30	CST	Flash Flood	0	0	150.00K	0.00K
<a href="#">CENTRAL PORTION</a>	4/30/05	8:15	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">WEST PORTION</a>	7/6/05	5:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">COUNTYWIDE</a>	8/29/05	12:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">CENTRAL PORTION</a>	5/29/06	15:30	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">EAST PORTION</a>	6/16/06	14:00	CST	Flash Flood	0	0	0.00K	0.00K
<a href="#">LOWER BALDWIN (ZONE)</a>	10/17/06	4:00	CST-6	Coastal Flood	0	0	20.00K	0.00K
<a href="#">PERDIDO</a>	11/15/06	12:00	CST-6	Flash Flood	0	0	0.00K	0.00K

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<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<a href="#">VAUGHN</a>	4/1/07	11:00	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">LILLIAN</a>	5/30/07	12:15	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	10/19/07	7:30	CST-6	Flash Flood	0	0	100.00K	0.00K
<a href="#">LITTLE RIVER</a>	10/23/07	0:00	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">STOCKTON</a>	1/31/08	21:00	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	4/5/08	2:00	CST-6	Flash Flood	0	0	10.00K	0.00K
<a href="#">MONTROSE</a>	5/16/08	8:30	CST-6	Flash Flood	0	0	10.00K	0.00K
<a href="#">SPANISH FT</a>	8/25/08	1:10	CST-6	Flash Flood	0	0	2.00K	0.00K
<a href="#">MONTROSE</a>	9/1/08	15:30	CST-6	Flash Flood	0	0	5.00K	0.00K
<a href="#">GULF SHRS</a>	10/7/08	4:45	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	12/10/08	7:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">LOXLEY</a>	3/28/09	4:45	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">ORANGE BEACH</a>	11/9/09	23:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	12/14/09	17:42	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">CROSSROADS</a>	12/14/09	19:55	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BAY MINETTE</a>	12/14/09	19:55	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">PERDIDO</a>	12/15/09	19:55	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">GASQUE</a>	5/16/10	8:00	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">GASQUE</a>	5/16/10	14:10	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">DAPHNE</a>	5/2/12	21:47	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">RIVER PARK</a>	6/9/12	13:33	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FOLEY</a>	7/4/13	1:45	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FAIRHOPE MUNI ARPT</a>	7/11/13	9:40	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">YUPON</a>	7/11/13	9:40	CST-6	Flash Flood	0	0	0.00K	0.00K

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<a href="#">MONTROSE</a>	7/11/13	10:07	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BARNWELL</a>	7/11/13	10:07	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	7/11/13	10:10	CST-6	Flood	0	0	0.00K	0.00K
<a href="#">HOUSTONVILLE</a>	7/11/13	11:00	CST-6	Flash Flood	0	0	75.00K	0.00K
<a href="#">JOSEPHINE</a>	7/28/13	9:32	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">ROBERTSDALE</a>	3/28/14	9:02	CST-6	Flood	0	0	15.00K	0.00K
<a href="#">POINT CLEAR</a>	3/28/14	9:05	CST-6	Flood	0	0	0.00K	0.00K
<a href="#">SUMMERDALE</a>	3/28/14	9:05	CST-6	Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	25.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	100.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	19:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/14/14	21:00	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">BALDWIN CO.</a>	4/29/14	15:50	CST-6	Flash Flood	1	1	27.000M	0.00K
<a href="#">LILLIAN</a>	5/2/14	8:00	CST-6	Flood	1	0	0.00K	0.00K
<a href="#">MAGNOLIA SPGS</a>	5/14/14	13:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<a href="#">FAIRHOPE</a>	5/14/14	13:30	CST-6	Flash Flood	0	0	0.00K	0.00K
<b>Totals:</b>					2	1	29.442M	0.00K

Source: National Climatic Data Center

**Past Occurrences of Winter Storms/Freeze**

**Table E-7. Baldwin County Extreme Cold and Winter Storm Events, 1995-2014**

**10 SNOW & ICE** event(s) were reported in **Baldwin County, Alabama** between **01/01/1995** and **07/31/2014**.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<b>Totals:</b>					0	0	10.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/3/96	1:00	CST	Winter Weather	0	0	10.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	1/2/02	0:30	CST	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/12/10	0:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/12/10	0:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/12/10	0:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/12/10	0:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	2/12/10	0:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	1/28/14	9:00	CST-6	Ice Storm	0	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	1/28/14	11:00	CST-6	Ice Storm	0	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	1/28/14	14:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	1/28/14	14:00	CST-6	Winter Storm	0	0	0.00K	0.00K
<b>Totals:</b>					0	0	10.00K	0.00K

**Past Occurrences of Drought/Heat Wave Events**

**Table E-8. Baldwin County Drought and Extreme Heat Events, 1995-2014**

**6TEMPERATURE EXTREMES** event(s) were reported in **Baldwin County, Alabama** between **01/01/1995** and **05/31/2014**.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<b>Totals:</b>					1	1	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	6/25/00	1/0/00	CST	Heat	1	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	6/25/00	1/0/00	CST	Heat	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	7/1/00	1/0/00	CST	Heat	0	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	7/1/00	1/0/00	CST	Heat	0	0	0.00K	0.00K
<u>UPPER BALDWIN (ZONE)</u>	8/8/07	1/0/00	CST-6	Heat	0	0	0.00K	0.00K
<u>LOWER BALDWIN (ZONE)</u>	8/8/07	1/0/00	CST-6	Heat	0	1	0.00K	0.00K
<b>Totals:</b>					1	1	0.00K	0.00K

Source: National Climatic Data Center

**Past Occurrences of Transportation-related Hazardous Materials Incidents**

**Table E-9. Baldwin County Hazardous Materials Incidents, 1995-2014**

<b>Carrier/Reporter Name</b>	<b>Incident City</b>	<b>Date of Incident</b>	<b>Mode of Transportation</b>	<b>Commodity Long Name</b>	<b>Hazardous Class</b>	<b>Quantity Released (Liquid Gallon)</b>	<b>Damages</b>
Missouri Investments, LLC.	Bay Minette	10/27/1997	Highway	Resin Solution Flammable	Flammable - Combustible Liquid	0.5	\$0
Dana Transport System, Inc.	Bay Minette	7/17/1995	Highway	Combustible Liquid N.O.S.	Combustible Liquid	2.5	\$50
CSX Transportation, Inc.	Bay Minette	8/31/2010	Rail	Sulfur Molten	Misc.	0.1	\$0
Dana Transport System, Inc.	Bay Minette	9/11/1995	Highway	Combustible Liquid N.O.S.	Combustible Liquid	156	\$5,500
Water and Waste Specialties, LLC	Daphne	12/15/2005	Highway	Sodium Hypochlorite Solution with 16 % or More Available Chlorine	Corrosive Material	660	\$35,534
R&L Carriers Shared Services, LLC	Elberta	5/29/2012	Highway	Corrosive Liquid Basic Inorganic N.O.S.	Corrosive Material	1	\$0
Kenan Transport, LLC	Elberta	1/14/2000	Highway	Gasoline	Flammable-Combustible Liquid	25	\$25
Blossman Gas, Inc.	Fairhope	3/22/2001	Highway	Petroleum Gases Liquefied	Flammable Gas	100	\$50,100
Averitt Express, Inc.	Foley	8/25/1997	Highway	Combustible Liquid N.O.S.	Combustible Liquid	55	\$0
Clean Harbors Environmental Services, Inc.	Loxley	6/23/2010	Highway	Flammable Liquids N.O.S.	Flammable - Combustible Liquid	1	\$2,500
Davison Fuels, Inc.	Loxley	12/10/2002	Highway	Diesel Fuel	Flammable - Combustible Liquid	5	\$26
Southeastern Transport, Inc.	Loxley	6/15/1995	Highway	Flammable Liquids N.O.S.	Flammable - Combustible Liquid	5	\$3,062

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Carrier/Reporter Name	Incident City	Date of Incident	Mode of Transportation	Commodity Long Name	Hazardous Class	Quantity Released (Liquid Gallon)	Damages
Initial DSI Transports, Inc.	Orange Beach	3/31/1997	Highway	Gasoline	Flammable - Combustible Liquid	15	\$0
Kenan Transport, LLC	Orange Beach	5/14/1996	Highway	Fuel Oil	Combustible Liquid	10	\$10
United Parcel Service, Inc.	Robertsdale	10/3/2007	Highway	n/a	n/a	0.3125 (Solid Pound)	\$0
Air Products & Chemical Services, Inc.	Robertsdale	8/21/2002	Highway	Hydrogen Refrigerated Liquid (Cryogenic Liquid)	Flammable Gas	20	\$122
Conway Southern Express	Robertsdale	4/12/2003	Highway	Petroleum Distillates N.O.S.	Flammable - Combustible Liquid	55	\$500
United Parcel Service, Inc.	Robertsdale	7/10/2006	Highway	Corrosive Liquid Acidic Inorganic N.O.S.	Corrosive Material	0.007812	\$0
United Parcel Service, Inc.	Robertsdale	12/12/2007	Highway	Paint	Flammable - Combustible Liquid	0.015625	\$0
Davison Fuels, Inc.	Spanish Fort	2/8/2008	Highway	Gasoline	Flammable - Combustible Liquid	4	\$0
The McPherson Companies, Inc.	Spanish Fort	7/31/2014	Highway	Gasoline Casinghead	Flammable - Combustible Liquid	8200	\$565,000
CSX Transportation, Inc.	Summerdale	4/17/2006	Rail	Acetone	Flammable - Combustible Liquid	2	\$0
Southeastern Freight Lines, Inc.	Summerdale	5/3/1995	Highway	Organophosphorous Pesticides Solid Toxic	Poisonous Materials	11 (Solid Pound)	\$375

Source: U.S. Department of Transportation HAZMAT Intelligence Portal

**Appendix F**  
**Identification and Analysis of**  
**Mitigation Measures**



## **App. F – Identification and Analysis of Mitigation Measures**

- 1.0 Alternative Mitigation Measures
- 2.0 Types of Mitigation Measures

### **1.0 Alternative Mitigation Measures**

This appendix documents the range of alternative mitigation measures considered by the Hazard Mitigation Planning Committee (HMPC) in the development of its mitigation strategy and its selection of final action programs for each participating community. This documentation supports the Federal requirement that the plan must identify and analyze “a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure” (44 CFR Section 201.6 (c)(3)(ii)). Included here are the following supporting documents:

1. Types of Mitigation Measures. This list describes the comprehensive range of mitigation measures by program area type (Prevention, Protection, Public Outreach and Awareness, Natural Resources Protection, and Structural Projects types), which was one resource to the HMPC in completing the exercise listed above.
2. Table of Alternative Mitigation Measures. This summary table identifies a measure as an action or project, whether new or existing buildings and infrastructure are affected, and the hazard effects that would be reduced by the measure.

The alternative measures described here are all intended to affect the built environment and thereby reduce loss of life and damages to buildings and infrastructure. Excluded from these alternatives are measures which might propose to establish disaster response procedures. The mitigation plan is not an emergency response, recovery, or preparedness plan. Consequently, all emergency services measures designed to prepare emergency operations plans, train or equip emergency personnel, programs to reduce mobile technological hazards, plans to counter terrorism and the like are not included in the range of alternatives considered for adoption in this plan. Rather, the purpose of these mitigation measures is to decrease the need for response and recovery through long-term mitigation actions and projects; the intent is not to increase capabilities for response to disasters and recovery from the effects.

According to recent FEMA guidance (Local Multi-Hazard Mitigation Planning Guidance, FEMA, July 1, 2008, page 59), “hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to people and property from hazards and their effects.” All of the mitigation measures presented here have been evaluated for compatibility with this recent FEMA definition.

## 2.0 Types of Mitigation Measures

**Prevention Measures.** Prevention measures involve adopting and administering ordinances, regulations, programs, and plans that can influence the development of land and buildings to minimize risks of loss due to natural and man-made hazards.

- *Comprehensive Plans and Smart Growth.* Comprehensive plans guide future development over a long-range framework through land use, community facilities, economic development, environmental conservation, public infrastructure, and related planning. Effective comprehensive planning can help create safer and more sustainable communities with improved disaster resistance. By incorporating “Smart Growth” principles in a community’s comprehensive plan, a community can improve the effectiveness and responsiveness of its comprehensive plan to hazards identified in the mitigation planning process. Smart Growth can result in safe growth through these fundamental principles of sustainable community development: (a) promote compact infill development vs. urban sprawl, (b) preserve open space and protect the natural and beneficial functions of flood plains, coastal zones, wetlands, hillsides, and other vulnerable locations; and (c) steer growth away from hazardous areas. A comprehensive plan can designate vulnerable lands for open space uses that would not be incompatible with occasional hazard events. For instance, vulnerable areas subject to flooding, dam failure inundation, landslide risk, and land subsidence could be planned for parks, greenways, wildlife refuges, and other open space uses. For a comprehensive plan to be truly effective, the hazard vulnerability of lands and buildings assessed through the mitigation planning process should influence a community’s comprehensive plan for future land use and development patterns, community facilities, and infrastructure. The comprehensive plan should direct growth toward the most suitable land areas and avoid exposure of new buildings and infrastructure to high risk hazard locations assessed in the mitigation plan. Equally important to the effectiveness of a comprehensive plan, is the integration of planning strategies. A community’s mitigation strategy should be carried over into the goals, objectives and policies of its comprehensive plan.
- *Capital Improvements Plans (CIP).* A CIP can recommend the setting aside of funds for public improvements, including water and sewer service extensions, new community facilities, land acquisitions for open space, emergency service facilities, improvements to retrofit or relocate vulnerable critical facilities, and other capital improvements that can be tied to both the comprehensive plan and the mitigation plan. The CIP schedules capital projects over a 5-6 year time frame, with funding identified. The capital expenditure requirements of high priority projects within a hazard mitigation plan may be included in a CIP. A CIP for public infrastructure improvements, when combined with zoning and land development controls, can establish a growth management program to direct the

location and timing of new development in accordance with a comprehensive plan and smart growth principles to avoid hazard areas.

- *Zoning and Land Development Controls.* The zoning ordinance is the primary tool to regulate development in vulnerable areas by limiting development. Zoning can be combined with a variety of related land development controls and special purpose ordinances. Growth management controls of density and infrastructure improvements may reduce risks in areas exposed to severe hazards, such as flooding, landslides, sinkholes, and other location specific hazards. Limited density controls could be applied to certain zones to discourage future development, or vulnerable areas could be zoned for recreation or agricultural uses or other uses that are compatible with the natural restrictions of the location. Landscaping standards can be incorporated into zoning ordinances to set aside minimum areas for tree and vegetation plantings. Planting areas can be used for drainage and help cool urban environments, as well as improve appearances. Tolerant species can be used to mitigate the effects of drought conditions, often referred to as “xeriscapes.” Other special purpose ordinances might address hillside development by placing limits or setting minimum standards for building construction in steeply-sloped areas that are prone to landslides. Transfer of development rights (TDR) programs are another tool for growth management by allowing landowners to transfer the right to develop one parcel of land to a different parcel of land. This could benefit the developer if incentives are given for building in suitable land areas and not building in hazardous areas.
- *Subdivision Regulations.* These regulations govern how land can be divided into separate lots or sites. Subdivision plats can be required to show hazard areas, such as flood zones, areas subject to landslides, and potential sinkhole locations. The regulations should establish minimum buildable lot areas that are sufficient to meet property protection objectives. Requiring new subdivisions to space buildings, install fire hydrants, and provide adequate access are some of the measures available to reduce the risks of fires.
- *Building and Technical Codes.* Standards can be incorporated into building and technical codes that address resistance against natural hazard threats for all new and substantially improved or repaired buildings. The International Code Series are the latest available codes. Building codes can prohibit loose masonry, overhangs, etc. that might be affected by earthquakes. Building code standards for roof materials and spark arrestors can mitigate fires. Standards can be set for roof construction to protect against wind damage from hurricanes, tornadoes, and severe storms. Performance standards for foundation supports, utility protection, also add to building protection. Design standards can mandate that quality building products and construction applications are used. These codes can better assure quality constructed structures, which are more likely to withstand high winds, severe storms, and other natural hazards. A site plan review process as part of local building permitting can ensure that site elements are organized and planned to lessen the effects of potential hazards on new development.

- *Flood Plain Management Programs.* Participation in the NFIP (National Floodplain Insurance Program) is based on a community agreement with FEMA to meet minimum program requirements, including the adoption and continuing enforcement of a flood plain management ordinance. Flood Insurance Rate Maps (FIRM) are not only a tool for managing flood plain development, but the maps also create broad-based awareness of flood hazards. Flood Insurance Studies and accompanying FIRMs provide the data needed to administer floodplain management programs and to establish flood insurance rates for new and existing buildings. Often, Flood Insurance Rate Maps need updates to reflect changing developing in a given watershed. This may require comprehensive and detailed hydrologic and hydraulic modeling and improved topographic mapping to modernize existing maps. Updated FIRMs may also be needed in “Approximate” flood zones where no flood elevations or profiles are available. DFIRMS or Digital FIRMS can be created for computer and on-line access to maps and data. The Community Rating System (CRS) Program of the (NFIP) is an option that covers all flood hazard mitigation program elements. The CRS rewards communities for conducting a full range of flood mitigation programs that exceed the minimum NFIP requirements by awarding points to achieve a rating classification. Total points determine the class of a community. The higher the class, the more savings to flood insurance holders and more recognition to the successes of the local flood plain management program. With or without CRS participation, a community can establish “Higher Regulatory Standards” for flood plain management. Floodplain management regulations do not prohibit development in the special flood hazard area; instead, the regulations impose construction standards to minimize damages. Communities may adopt more stringent standards than those set forth by the NFIP, such as additional building elevation requirements, additional limitations on building enclosures, and other standards designed to better mitigate flood damages. Another method to improve the effectiveness of flood plain management programs is to appoint a Certified Floodplain Manager (CFM) who has passed minimum criteria of the Association of State Floodplain Managers to administer the community’s ordinance and program.
- *Storm Water Management Regulations.* Development outside of a floodplain can contribute significantly to flooding by creating impervious surfaces or altering natural drainage management systems, which increase storm water runoff. Storm water management is usually addressed in subdivision regulations or other land development controls. Developers are typically required to build retention or detention basins to minimize any increase in runoff rates caused by new or expanded impervious surfaces, or new drainage systems. Generally, there is a prohibition against storm water leaving the site at a rate higher than it did before the development based on a given design storm. One technique is to use wet basins as part of the landscaping plan of a development. It might even be possible to site these basins based on a watershed analysis. Since detention only controls the runoff rates and not volumes, other measures may be applied

for storm water infiltration, such as, swales, infiltration trenches, vegetative filter strips, and permeable paving blocks for parking areas. Erosion and sedimentation control regulations not only assure improved water quality but help preserve the carrying capacity of drainage ways and reduce localized flooding. These regulations are typically a component of a larger storm water management program or included in a storm water management ordinance.

- *Dam Safety Management.* A comprehensive dam safety program should begin with dam failure inundation maps. These areas should be kept clear of new development and preserved as open space to prevent future damages. Flood plain regulations could establish minimum building elevations based on predicted flood elevation in the event of dam failure. Regular dam safety inspections identify risks of failures.
- *Coastal Zone Management Regulations.* The physical factors that have the greatest influence on coastal land loss are reductions in sediment supply, relative sea level rise, and frequent storms. The most important human activities are sediment excavation, river modification, and coastal construction. As a result of these agents and activities, coastal land loss is manifested most commonly as beach/bluff erosion and coastal submergence. Implementation of Coastal Zone Management Plans helps to alleviate some of these problems.
- *Open Space Requirements.* Preserving open space is the most effective method for preventing damages. Open space preservation for flood control should not, however, be limited to the flood plain, since other areas within the watershed may contribute to runoff that exacerbates flooding. Comprehensive plans can identify areas to be preserved by acquisition. Other means, such as purchasing easements or accepting donations of land are also available. Open space can also be protected through maintenance agreements with the landowners, or by requiring developers to dedicate land for parks, public facilities, and drainage.
- *Open Burning Regulations.* Open burning restrictions can be enforced to prevent the spread of wild fires, especially during times of drought when emergency measures could be enacted.
- *Safe Room/Shelter Requirements.* Some communities have enacted safe room or shelter requirements for new housing construction and require community shelters for manufactured home parks, apartment complexes, and other planned residential communities.
- *Public Right-of-Way Maintenance Regulations.* An effective drainage system maintenance program should also include regulations that prevent dumping and littering in ditches and stream channels and require adjoining property owners to keep these areas clear of fallen trees, limbs, dead brush, and any other debris. These efforts not only prevent obstructions to drainage but can also help mitigate wild fires.
- *Critical Facilities Assessments.* Assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) can address building and site vulnerabilities to hazards and

identify damage control measures in the event of severe weather and other natural hazards. This type of assessment can result in a plan to identify a variety of mitigation retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.

- *Geographic Information Systems (GIS)*. GIS applies computer technology to hazard mitigation planning by linking data to maps. Detailed property information, socioeconomic data, critical facilities inventories, and hazard locations, among other relevant information, can be continuously updated to provide a complete assessment resource for mitigation planning and other planning studies. HAZUS-MH is a risk assessment tool developed by FEMA to apply loss estimation models for earthquakes, hurricane winds, and flooding within a GIS framework.
- *Technology Programs*. Modern technology has created new opportunities for improving planning systems to support hazard mitigation. These systems can serve dual functions - to monitor hazard events as they happen for disaster warning purposes and to forecast and simulate events for advance planning purposes. The U.S. Geologic Survey (USGS) ALERT gage networks for select rivers and streams allow the National Weather Service (NWS) to handle early recognition of flooding. Local gages to cover high risk flood areas can be integrated into these systems with local EMA access. New technology has become available to monitor tornado activities. A comprehensive system can tie a variety of gages into a single automated network to monitor rainfall, river/stream stages, icy bridges and highways, tornadoes, winds, water quality, chemical spills into water ways, and hazardous air emissions. Remote cameras can enhance the monitoring capabilities of the system. These systems when used to simulate events can test a variety of mitigation alternatives, such as flood simulations, evaluation of structural alternatives on flood levels, and damage estimates from simulated events.
- *Planning Studies*. Planning for areas of special consideration might be considered in certain situations. These planning studies might evaluate the feasibility of various mitigation alternatives to address a specific hazard concern, such as a detailed flood hazard mitigation plan for a stream that updates hydrology, generates new flood profiles, and evaluates economic feasibility of structural and non-structural alternatives using sophisticated economic models. Another example would be geologic investigations to identify areas subject to landslides and recommendations for corrective measures.

**Property Protection Measures.** Property protection measures protect structures and their occupants and contents from the damaging effects of natural hazard occurrences, including retrofitting existing structures to increase their resistance to damage and exposure of occupants to harm; relocating vulnerable structures and occupants from hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.

- *Acquisition Projects.* Acquisition of land in a highly vulnerable zone protects against damages and casualties and converts problem areas into community assets, with accompanying environmental benefits. Acquisition, followed by demolition and conversion of land to permanent open space, is the most appropriate strategy for those buildings that have experienced recurring flood damages and flood insurance claims. This method might also be considered for older buildings with finish floor elevations several feet below predicted flood elevation. Often buildings are too expensive to move or are dilapidated and not worth saving or protecting. Acquisition, like relocation, can be very expensive. Benefit-cost analysis must be used to be certain the damages avoided outweigh the acquisition costs. Less costly alternatives might also be investigated.
- *Building Elevations.* Elevating a flood-prone building above the base flood elevation is sometimes the best flood mitigation strategy. The building could be raised above the flood elevation to prevent interior water damage. This approach could be less costly than relocation or acquisition, and if properly designed the elevated buildings could be less disruptive than creating vacant lots as a result of relocations or acquisitions. Elevation is required by local flood plain regulations for new and substantially improved buildings in a floodplain, and is a commonly-practiced flood hazard prevention method.
- *Flood Proofing.* If a building cannot be elevated, it may be flood proofed. This approach works well in areas of low flood threat and with nonresidential buildings. Flood proofing can be accomplished through barriers to flooding, or by treatment to the structure itself.
  - ✓ *Dry flood proofing* seals a building against the water by coating the walls with waterproofing compounds or plastic sheeting. Openings, such as doors, windows, etc. are closed. Sometimes, manual intervention may be required to implement dry flood proofing, such as installing removable flood shields at doorways.
  - ✓ *Wet flood proofing* is usually considered a last resort measure, since water is intentionally allowed into the building in order to minimize pressure on the structure. This is best applied to unfinished areas, such as warehouses and garages where contents are elevated.
  - ✓ *Barriers*, such as small levees, floodwalls, and berms can keep floodwaters from reaching a building. These are most useful in areas subject to shallow flooding.
  - ✓ *Other flood proofing approaches* range from moving valuable items to higher floors to rebuilding the floodable area. An advantage over other approaches is that simply by moving household goods out of the range of floodwaters, thousands of dollars can be saved in damages.
- *Building Retrofits.* Existing buildings can be retrofitted to safeguard against possible damages. In addition to flood proofing or elevating existing buildings in a flood plain, other retrofits could protect buildings against natural hazards. Retrofitting to add braces/ roof straps and remove overhangs protects against high winds. Storm shutters and applying Mylar to windows and glass surfaces

protects from shattering glass during hurricanes and severe storms. Tie downs of major appliances and other contents may reduce earthquake damage.

- *Building Relocations.* Moving structures out of vulnerable areas, such as high-risk flood plains, dam inundation areas, landslide zones, and land subsidence areas, is a sure way to protect against damage. Relocation is expensive, however, so this approach should not be used except in extreme circumstances, where there are no practical alternatives.
- *Critical Facilities Protection.* Protecting critical facilities is vital. Efforts should be made to retrofit or relocate existing facilities located in high-risk zones or construct new facilities for maximum protection from hazards. Protection of facilities includes not only buildings but also utilities, bridges, and other critical infrastructure.
- *Emergency Power Generation.* Maintaining power in the event of loss during severe storms and other natural hazards is vital for the continuing operation of critical facilities, especially, emergency services, hospitals, elderly housing, water distribution, sewer treatment, and other facilities. Power shut downs could cause major disruptions and consequential damages. Relatively low cost portable generations can supply temporary power to small critical facilities, households, and small businesses.
- *Sewer Backup Protection.* Storm water overloads can cause backup into basements through sanitary sewer lines. Houses that have any kind of connection to a sanitary sewer system - whether it is downspouts, footing drain tile, and/or sump pumps, can be flooded during a heavy rain event. To prevent this, there should be no such connections to the system, and all rain and ground water should be directed onto the ground, away from the building. Floor drain plugs and floor drain standpipes keep water from flowing out of the lowest opening in the house. Overhead sewer keeps water in the sewer line during a backup. Backup valves allow sewage to flow out while preventing backups from flowing into the house.

**Public Education and Awareness.** Public education and awareness methods educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.

- *Community Hazard Mitigation Plan Distribution.* Internet downloads and CDs are some of the means for mass distribution of the mitigation plan to the public. A fold-out, poster-size summary document could be printed for mass mailings or a special summary document could be published in the Sunday edition of the local newspaper.
- *Flood Map Information.* Flood Insurance Rate Maps (FIRM) developed by FEMA outline the boundaries of the flood hazard areas and provide other valuable information on flooding conditions. These maps can be used by anyone interested in a particular property to determine if it is flood-prone. NFIP

communities can provide this information to the real estate agents, builders, developers and homeowners as a public service.

- *Outreach Projects.* Outreach projects are proactive; they give the public information even if they have not asked for it. Outreach projects are designed to encourage people to seek out more information and take steps to protect themselves and their properties. Outreach programs work, although awareness is not enough. People need to know what they can do about the hazards, so projects should include information on protection measures. Locally designed and run programs are often more effective than national advertising. The following are just a few of the examples of outreach activities:
  - ✓ City or county government newsletters with articles on hazard mitigation.
  - ✓ Notices directed to floodplain residents encouraging the purchase of flood insurance.
  - ✓ Displays in public buildings, malls, festivals, fairs, and other public assembly places, including colorful GIS maps, brochures, and information handouts.
  - ✓ Newspaper articles and special sections addressing hazards.
  - ✓ Radio and TV news releases and interviews shows.
  - ✓ A flood proofing video for cable TV programs and for loan to organizations.
  - ✓ A detailed property owner handbook tailored for local conditions.
  - ✓ Presentations at meetings of neighborhood groups.
- *Hazard Insurance Awareness.* Above and beyond standard property insurance, coverage may be available to property owners for protection against flood damages, if the property is in a community that participates in the National Flood Insurance Program. Any local insurance agent is able to sell flood insurance policies under rules and rates set by FEMA. Flood insurance may also be advisable for properties located in dam inundation areas. Flood insurance is also available for areas outside of mapped flood zones. Flood damage may still occur outside of a flood plain as a result of poor drainage or other causes. Property owners may also purchase additional insurance riders for specific hazard coverages, such as insurance riders for earthquake, landslides, or sinkhole damage.
- *Real Estate Disclosure.* Disclosure of information regarding flood-prone properties is important if potential buyers are to be in a position to mitigate damage. Federally regulated lending institutions are required to advise applicants that a property is in the floodplain. However, this requirement needs to be met only days prior to closing, and by that time, the applicant is typically committed to the purchase. State laws and local real estate practice can help by making this information available to prospective buyers early in the process.
- *Library.* Your local library can serve as a repository for pertinent information on hazards and methods of protection. Some libraries also maintain their own public information campaigns, augmenting the activities of the various governmental agencies involved in hazard mitigation.

- *Technical Assistance.* Certain types of technical assistance are available from the local technical and professional staff to advise on various mitigation alternatives to property owners. Community officials can also set up a service delivery program to provide one-on-one sessions with property owners. An example of technical assistance is the hazard audit, in which a specialist visits a property. The specialist advises the owner of alternative protection measures.
- *Education Programs.* Education can be a great mitigation tool. The earlier education begins the better. Education programs for children can be taught in the schools, park and recreation departments, conservation associations, or youth organizations. An activity can be as involved as course curriculum development or as simple as an explanatory sign near a river. Education programs do not have to be limited to children. Adults can benefit from knowledge of hazards and mitigation measures, and local officials, loaded with this knowledge, can make more informed decisions on mitigation actions.
- *Mass Media Relations.* Newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking are some of the ever changing mass media tools available for increasing public awareness and distributing public information on hazard mitigation topics. Effective media relations are essential to a comprehensive outreach program.
- *NOAA Weather Radio Programs.* The use of inexpensive weather radios in homes and businesses are another means for advance warning and can be promoted as a public service. Some localities may choose to purchase these radios in bulk and distribute them to residents at little or no cost. A corporate sponsor can bear some or all of the costs.

**Natural Resources Protection Measures.** Natural resources protection measures preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.

- *Wetlands Protection.* Wetlands are capable of storing large amounts of floodwaters, slowing and reducing downstream flows, and filtering the water. Any development that is proposed in a wetland is regulated by either federal and/or state agencies. Depending on the location, the project might fall under the jurisdiction of the U.S. Army Corps of Engineers, which in turn, calls upon several other agencies to review the proposal. Communities may also have local wetland ordinances. Generally, the goal is to protect wetlands by preventing development that would adversely affect them. Mitigation techniques are often employed, which might consist of creating a wetland on another site to replace what would be lost through the development.
- *Open Space Easements and Acquisitions.* Acquiring easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands, assures permanent protection. Acquisitions can be made by a land

trust or a public agency to benefit the public welfare. Often, property owners may be willing to dedicate lands and easements for tax advantages.

- *River/Stream Corridor Restoration and Protection.* Restoration and protection of stream or river banks and riparian zones help restore the natural and beneficial functions to manage floods and filter runoff. Streams should also be protected from dumping. Often, greenways or linear parks along these corridors provide amenities that are compatible with natural functions.
- *Urban Forestry Programs.* A number of cities nationwide have participated in formal urban forestry programs. Urban forestry programs which follow Tree City USA guidelines for public lands and rights-of-way help maintain healthy tree cover for multiple mitigation purposes. Protection and maintenance of the urban forest is especially helpful for the mitigation of wild fires, hillside erosion and landslides, and restoration of stream and river corridors. Combined with effective landscaping regulations, both private and public spaces can be addressed.
- *Water Resources Conservation Programs.* Protection of water quantity and quality through water conservation programs can help mitigate the effects of droughts.
- *Dune and Beach Restoration.* Dune and beach restoration and maintenance can alleviate flooding from hurricanes or severe storms in coastal areas. The dunes provide a natural barrier from the waves and wind which can travel inward causing flooding and major damage to structures.

**Structural Projects Measures.** Structural projects measures are engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a hazard on a community.

- *Reservoirs.* Reservoirs control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate the river downstream can handle. Reservoirs are suitable for protecting existing development, and they may be the only flood control measure that can protect development close to a watercourse. They are most efficient in deeper valleys or on smaller rivers where there is less water to store. Reservoirs might consist of man-made holes dug to hold the approximate amount of floodwaters, or even abandoned quarries. As with other structural projects, reservoirs projects have drawbacks, as follows:
  - expensive
  - occupy a lot of land
  - require periodic maintenance
  - may fail to prevent damage from floods that exceed design levels
  - may eliminate the natural and beneficial functions of the floodplain.

Reservoirs should only be used after a thorough watershed analysis that identifies the most appropriate location, and ensures that they would not cause flooding somewhere else. Because they are so expensive and usually involve

more than one community, they are typically implemented with the help of state or federal agencies, such as the Army Corps of Engineers.

- *Levees/Floodwalls.* A commonly known structural flood control measure is either a levee (a barrier of earth) or a floodwall made of steel or concrete erected between the watercourse and the land.
- *Diversions.* A diversion is simply a new channel that sends floodwater to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During flood flows, the stream spills over the diversion channel or tunnel, which carries the excess water to the receiving water body.
- *Channel Modifications.* Channel modifications include making a channel wider, deeper, smoother, or straighter. These techniques will result in more water being carried away, but as with other structural techniques, it is important to ensure that the modifications do not create or increase a flooding problem downstream.
- *Dredging.* Dredging involves removal of sediment and other deposits in a river or stream bed to restore flood conveyance. It can be costly because the dredged material must be hauled away and disposed of in another location, and the stream or river bed could quickly fill back in with sediment.
- *Drainage Modifications.* These include man-made ditches and storm sewers that help drain areas where the surface drainage system is inadequate or where underground drainage ways may be safer or more attractive. These approaches are usually designed to carry the runoff from smaller, more frequent storms.
- *Storm Sewers.* Mitigation techniques for storm sewers include installing new sewers, enlarging small pipes, street improvements, and preventing back flow. Because drainage ditches and storm sewers convey water faster to other locations, improvements are only recommended for small local problems where the receiving body of water can absorb the increased flows without increased flooding. In many developments, streets are used as part of the drainage system, to carry or hold water from larger, less frequent storms. The streets collect runoff and convey it to a receiving sewer, ditch, or stream. Allowing water to stand in the streets and then draining it slowly can be a more effective and less expensive measure than enlarging sewers and ditches.
- *Drainage System Maintenance.* Ongoing maintenance of streams and drainage channels is necessary if these facilities are to function effectively and efficiently over time. Maintenance of channel growth within or near stream and river channels is important for bank stabilization and to prevent obstructions of drainage flows. Often sediment buildup can impede stream flow. Regular maintenance is necessary for public drainage systems, including constructed components, such as, ditches, culverts, and bridges and natural components, such as swales, intermittent and perennial streams, and stream and river overbank areas. Maintenance assures adequate conveyance of storm and flood

waters. Other maintenance programs to clear dead and dry brush and fallen trees can not only prevent obstructions to drainage but also mitigate wild fires.

- *Dam Modifications.* Unsafe dams can be removed or modified to lessen the risks of dam failure, such as spillway enlargements to lessen hydraulic loads.
- *Ground Stabilization.* Unstable areas susceptible landslides or sinkholes may be stabilized to lessen risk of failure.
- *Community Storm Shelter/Safe Room Construction.* Freestanding, single-purpose community storm shelters or safe rooms within a building used for other purposes can be constructed to provide temporary shelter from hurricanes, tornadoes, and severe storms.

**Table F-1. Alternative Types of Mitigation Measures**

TYPES OF MITIGATION MEASURES	Action or Project														
	Affects New or Existing Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms/Freezes	Hurricanes	Droughts/Heat Waves	Earthquakes	Wildfires	Dam/Levee Failures	Landslides	Sinkholes	Tsunamis	Manmade/ Technical Hazards	
<b>PREVENTION MEASURES</b>															
<i>Comprehensive Plans and Smart Growth</i>	Action	Both		X			X			X	X	X	X	X	
<i>Capital Improvements Plans</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Zoning and Land Development Controls</i>	Action	Both		X			X			X	X	X	X	X	
<i>Subdivision Regulations</i>	Action	Both		X			X			X	X	X	X	X	
<i>Building &amp; Technical Codes</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Flood Plain Management Programs</i>	Action	Both		X						X					
<i>Storm Water Management Regulations</i>	Action	Both		X	X										
<i>Dam Safety Management</i>	Action	Both		X						X					
<i>Coastal Zone Management Regulations</i>	Action	Both		X	X		X								
<i>Open Space Requirements</i>	Action	Both		X			X			X		X	X	X	
<i>Open Burning Regulations</i>	Action	Both								X					
<i>Safe Room/Shelter Requirements</i>	Action	Both	X		X		X		X						
<i>Public Right-of-Way Maintenance Regulations</i>	Action	Both		X	X					X					
<i>Critical Facilities Assessments</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Geographic Information Systems</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Technology Programs</i>	Action	Both	X	X			X		X						
<i>Planning Studies</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

TYPES OF MITIGATION MEASURES	Action or Project	Affects Existing or New Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms/Freezes	Hurricanes	Droughts/Heat Waves	Earthquakes	Wildfires	Dam/Levee Failures	Landslides	Sinkholes	Tsunamis	Manmade/ Technical Hazards
<b>PROPERTY PROTECTION MEASURES</b>															
<i>Acquisitions Projects</i>	Project	Existing		X			X					X	X		
<i>Building Elevations</i>	Project	Existing		X											
<i>Flood Proofing</i>	Project	Existing		X											
<i>Building Retrofits</i>	Project	Existing	X	X	X	X	X	X	X	X				X	
<i>Building Relocations</i>	Project	Existing		X			X					X	X		
<i>Critical Facilities Protection</i>	Project	Existing	X	X	X	X	X	X	X	X					
<i>Emergency Power Generation</i>	Project	Both	X		X	X	X		X						
<i>Sewer Backup Protection</i>	Project	Both		X											
<b>PUBLIC EDUCATION AND AWARENESS MEASURES</b>															
<i>Community Hazard Mitigation Plan Distribution</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Flood Map Information</i>	Action	Both		X			X								
<i>Outreach Projects</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Hazard Insurance Awareness</i>	Action	Both	X	X			X		X	X		X	X	X	
<i>Real Estate Disclosure</i>	Action	Both		X											
<i>Library</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Technical Assistance</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Education Programs</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Mass Media Relations</i>	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>NOAA Weather Radio Programs</i>	Action	Existing	X	X	X	X	X	X	X						

# APPENDICES

# 2015 Baldwin County Multi-Hazard Mitigation Plan

## TYPES OF MITIGATION MEASURES

	Action or Project	Affects New or Existing Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms/Freezes	Hurricanes	Droughts/Heat Waves	Earthquakes	Wildfires	Dam/Levee Failures	Landslides	Sinkholes	Tsunamis	Manmade/ Technical Hazards
<b>NATURAL RESOURCES PROTECTION MEASURES</b>															
<i>Wetlands Protection</i>	Both	Both		X				X					X		
<i>Open Space Easements and Acquisitions</i>	Both	Both		X			X			X		X	X		
<i>River/Stream Corridor Restoration and Protection</i>	Both	Both		X											
<i>Urban Forestry Programs</i>	Both	Both								X					
<i>Water Resources Conservation Programs</i>	Action														
<i>Dune and Beach Restoration</i>	Project	Both		X			X								
<b>STRUCTURAL MEASURES</b>															
<i>Reservoirs</i>	Project	Both		X											
<i>Levees/Floodwalls</i>	Project	Both		X							X				
<i>Diversions</i>	Project	Both		X											
<i>Channel Modifications</i>	Project	Both		X											
<i>Dredging</i>	Project	Both		X											
<i>Drainage Modifications</i>	Project	Both		X											
<i>Storm Sewers</i>	Project	Both		X											
<i>Drainage System Maintenance</i>	Project	Both		X						X					
<i>Dam Modifications</i>	Project	Both		X							X				
<i>Ground Stabilization</i>	Project	Both										X	X		
<i>Community Shelter/Safe Room Construction</i>	Project	Both	X		X		X								

**Appendix G**  
**Committee Meeting Documentation**



## **App. G - Committee Meeting Documentation**

- 1.0 Establishment of Hazard Mitigation Planning Committee
- 2.0 Committee Meetings
- 3.0 Meeting Agendas and Sign-in Sheets

### **1.0 Establishment of Hazard Mitigation Planning Committee**

The Hazard Mitigation Planning Committee (HMPC) was first established to oversee the development of the 2004 plan and was reorganized for the 2015 plan update. It provides opportunities for direct involvement by participating jurisdictions and interested organizations and agencies in the planning process. The HMPC convened regularly throughout the drafting phase of the 2015 plan update. The HMPC meetings served as open public forums for discussing hazard risks to Baldwin County communities and developing effective strategies to respond to those risks. HMPC membership included representatives from all participating jurisdictions. Membership and meeting participation was expanded to also include other agencies. This enlarged membership created additional opportunities for interagency coordination among other stakeholders in the mitigation planning process. All meetings were open to public participation. Each Baldwin County jurisdiction had direct representation on the HMPC, which was one of many alternatives for their participation in this multi-jurisdictional planning process (see Appendix I Multi-Jurisdictional Participation Activities).

### **2.0 Committee Meetings**

This appendix documents the HMPC's meeting activities during the drafting phase of this plan, including who was involved in these meetings. Included here are the meeting agendas and sign-in sheets.

Prior to the plan update period, the HMPC periodically to review the mitigation plan in accordance with the maintenance guidelines established in "Chapter 7 - Plan Maintenance" of the 2004 Baldwin County, Alabama Natural Hazards Mitigation Plan. Documentation of these meetings is included in this appendix, and minutes are maintained in the offices of the Baldwin County EMA.

Following the award of FEMA PDM planning funds in late 2014 the HMPC initiated a schedule of HMPC meetings to oversee the development of this 2015 update. Before beginning the drafting phases, the Hazard Mitigation Planning Committee convened on January 9, 2015, to select its planning consultant to prepare the 2015 plan update. Afterwards, the HMPC held five meetings from April through December 2015 to draft the 2015 plan. During these meetings the attendees were informed about mitigation planning and the various steps required for preparing the plan update. These were interactive meetings, where members completed a

series of written exercises related to the various components of this plan and discussed a range of issues, among other meeting activities. These activities and discussions addressed, among other topics: identifying hazards, profiling hazards, examining the locations of hazards, rating the probability and extents of each hazard, assessing risk and vulnerabilities of buildings and populations, updating goals, reviewing mitigation action alternatives, and updating each community's action program. The completed exercises and results of meeting discussions were used in the formation of this plan update. All of the completed exercises are maintained on file in the Baldwin County EMA offices. The agendas and sign-in sheets are included in this appendix. For a more in-depth discussion of the composition and role of the HMPC, see Chapter 4 "The Planning Process."

### **3.0 Meeting Agendas and Sign-in Sheets**

This section documents the HMPC's 2015 meeting activities during the drafting phase of this plan. Included here are the meeting minutes for the January meeting and the agendas and sign-in sheets for all other 2015 HMPC meetings. Next, the documentation includes the interim HMPC meetings held after the adoption of the 2010 plan.

1. 2015 Drafting Phase Meeting Agendas and Sign-In Sheets

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**BALDWIN COUNTY  
HAZARD MITIGATION PLANNING COMMITTEE  
EXECUTIVE COMMITTEE MEETING  
MINUTES  
JANUARY 9, 2015  
BALDWIN COUNTY EMERGENCY MANAGEMENT AGENCY  
ROBERTSDALE, ALABAMA**

**ATTENDANCE**

Members present were: Landon (Lannie) Smith, City of Orange Beach; Mike Howell, Baldwin County Building Official; Patsy Parker, Town of Perdido Beach; Teresa Porter, Alabama Department of Public Health; Erik Cortinas, City of Fairhope; Charlie Jones, Baldwin County Sheriff’s Office

Members not present were: Brandan Franklin, City of Gulf Shores

Guests present: Danon Hoagland, Baldwin County EMA (HMPC Member); Jenni Guerry, Baldwin County EMA

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Landon Smith called the meeting to order at 8:30am

After opening comments, Danon Hoagland introduced each of the proposals submitted by three consultants - True North, AMEC, and Lehe Planning, LLC – vying for the contract for consulting services regarding the 2015 update of the Baldwin County Hazard Mitigation. Danon also summarized the process by which the proposals would be ranked and scored.

**OLD BUSINESS**

There was no old business as this was the first meeting of the Executive Committee.

**NEW BUSINESS**

There was a roundtable discussion of each of the proposals submitted. Each member was given a form to rank and score the proposals. Scores were tallied by Lannie Smith and Danon Hoagland.

**ADJOURNMENT**

The outcome of the decision-making process of the Executive Committee was the selection of Lehe Planning, LLC, as the primary choice and AMEC Foster Wheeler as the secondary choice of consultant to execute the 2015 update to the Baldwin County Hazard Mitigation Plan.

Ayes: 6

No: 0

Abstain: 0

*MOTION PASSED*

Minutes for this meeting were adopted by the Baldwin County Hazard Mitigation Planning Committee on 06/19/15 during the Full Body Meeting.

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Chairperson Landon K. Smith

Date

Baldwin County  
*Hazard Mitigation Planning Committee*  
Hazard Mitigation Plan Revision Kick-Off Meeting

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Upstairs Training Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
April 24, 2015  
2:00pm-3:30pm

*Agenda*

- I. Call to Order
- II. Welcome and Opening Remarks
- III. Introduction of Consultant Team
- IV. Scope of 2015 Plan Update
- V. Organization of 2015 Plan
  - A. Part I – Comprehensive Plan
    - Chapter 1 Introduction
    - Chapter 2 Prerequisites
    - Chapter 3 Community Profiles
    - Chapter 4 The Planning Process
    - Chapter 5 Risk Assessment
    - Chapter 6 Mitigation Strategy
    - Chapter 7 Plan Maintenance Process
  - B. Part II – Community Action Programs
  - C. Appendices - Evidence and Supporting Documentation
- VI. Review Draft Updates
  - A. Introduction - Chapter 1 and App. A Federal Requirements
  - B. Prerequisites - Chapter 2 and App. J Adopting Resolutions
  - C. Plan Maintenance - Chapter 7
- VII. HMPC Exercise – Hazard Identification and Ratings
- VIII. Meeting Dates and Topics
- IX. Internet Access: [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com)
- X. Questions and Answers
- XI. Other Business
- XII. Adjourn

Baldwin County EMA  
 Hazard Mitigation Planning Committee Meeting  
 April 24, 2015

Name	Jurisdiction/Organization	Email Address	Phone Number
Damon Hoagland	BEEMA	dhoagland@baldwincountypalga.gov	251-972-6807
Ellen Mc Donald-Leslie	Perdido Beach Council	leslie@townofperdidobeach.org	251-309-1444
Richard ROBERT	Town of LOXLEY	loxleypd@townofloxley.org	251-747-1662
Joseph H. Bouzau	City of Foley	jbouzau@cityoffoley.org	251-970-5024
Rachel Keith	City of Foley	rkeith@cityoffoley.org	251-970-2418
LANNIE SMITH	CITY OF ORANGE BEACH	lsmith@cityofforangebeach.com	251-981-2610
Raymond Franklin	Coastal Gulf Shores	franklin@gulfshoresal.gov	251-269-7353
Tatsy Walker	Town of Perdido Beach	mayor@townofperdidobeach.org	251-
Reggie Whitcomb	BEEMA	REGWITCOMB@BEEMA.GOV	251-972-6007
Bruce Reuland	COSPOUNT	buildingofficial@cosf.com	251-626-4993
Anthony Sampson	BCBOE	ASampson@bcboe.org	251-463-1452

**Baldwin County EMA  
Hazard Mitigation Planning Committee Meeting  
April 24, 2015**

Name	Jurisdiction/Organization	Email Address	Phone Number
Ashley Campbell	City of Doane	acampbell@doanewa.com	851 621 3080
Tiffany Lynn	Town of Summerdale	tlynn@summerdalealabama.com	251-989-6935
Tom Grogan	Supers Consulting	tgrogan@supersllc.com	(251) 544-7906
Leigh Anne Ryals	Crawder Gulf	lryals@crawdergulf.com	251-751-8660
Jim Lake	Lake Plann	jrlake@lakeplans.com	205-978-3673

Baldwin County  
*Hazard Mitigation Planning Committee*  
Hazard Mitigation Plan Revision Meeting

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Upstairs Training Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
Friday, June 19, 2015  
10:00 am - 11:30 am

*Agenda*

- I. Call to Order
- II. Welcome and Opening Remarks
- III. <http://baldwin.hazardmitigationplan.com/> updates
- IV. Review Draft Plan Updates
  - A. Community Profiles – Chapter 3
  - B. Risk Assessment Part A – Chapter 5A (sections 5.1-5.5)
  - C. Appendix D Hazard Ratings and Descriptions
  - D. Appendix E Hazard Profile Data
- V. Questions and Answers
- VI. Next Meeting Dates and Topics
- VII. Other Business
- VIII. Adjourn

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:	BCEMA	Meeting Date:	Friday, June 19, 2015
Facilitator:	Lannie Smith	Place/Room:	EOC Ops Room

1	Name: Damon Hoagland Company: BCEMA	Email: dhoagland@baldwincounty.al.gov Phone: 251-972-0207	Job: Planning & Events Coordinator
2	Name: Teresa Portere Company: ADPH/PHH 9	Email: teresa.portere@aph.state.al.us Phone: 251-937-5859	Job: EP Coordinator
3	Name: Scott Wallace Company: BCEMA	Email: swallace@baldwincounty.al.gov Phone: 251-972-8517	Job: Training Shelter Coordinator
4	Name: Tom Granger Company: Sumpco LLC	Email: tgranger@sumpsco.com Phone: 251-544-7900	Job: Consultant
5	Name: Mike Howell Company: B.C.	Email: mhowell@baldwincounty.al.gov Phone: 972-6837	Job: Building Official
6	Name: Jim Leck Company: Leck Planning	Email: jlecker@leckplanning.com Phone: 205-978-3633	Job: Consultant
7	Name: Rachel Beth Company: City of Foley	Email: rkeith@cityoffoley.org Phone: 251-970-2418	Job: Asst. Em Coordinator
8	Name: Joseph A. Bouzau Company: City of Foley	Email: jbouzau@cityoffoley.org Phone: 251-970-5024	Job: EMA Board
9	Name: Erik Coninas Company: City of Fairhope	Email: erikc@cofairhope.com Phone: (251) 990-0141	Job: Building Official

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:	BCEMA	Meeting Date:	Wednesday 10/08/14
Facilitator:	Mitchell Sims / Damon Hoagland	Place/Room:	EOC Upstairs Training Room

10	Name: Jimmy Davis Company: Summerdale	Email: chief@summerdalebaldwin.com	Phone: 251 989 2838	Job: Chief of Police
11	Name: Christian Miller for Robert Swann Company: Mobile Bay National Estuary Prog. Name: RICHARD R. DEET	Email: rswann@mobilebaynep.com	Phone: 251 431 6409	Job: Director
12	Company: Town of Loxley Public Works	Email: loxleypud@townofloxley.com	Phone: 251, 964, 5762	Job: PUBLIC WORKS SUPERINTENDENT
13	Name: Ellen McDonald-Leslie Company: Town of Perdido Beach	Email: leslie@townofperdidobeach.org	Phone: (251) 209-1446	Job: <del>Perdido</del> Town Council Person
14	Name: Bobby Purvis Company: Daphne UTILITIES	Email: (251) 654-7803	Phone: bobby@DaphneUtilities.com	Job: <del>Perdido</del> Natural Gas Master
15	Name: J. Bradford Key Company: OAPHE UTILITIES	Email: jbradkey@oapheutilities.com	Phone: (251) 543-5645	Job: PHU UTILITIES MANAGER
16	Name: Ken McILwain Company: BCC	Email: kmilwain@baldwincountyga.gov	Phone: 251-752-5641	Job: GIS Manager
17	Name: Brandon Franklin Company: City of Gulf Shores	Email: bfranklin@gulfshoresal.gov	Phone: 251 968 1149	Job: City Official
18	Company:	Phone:	Job:	

Baldwin County  
*Hazard Mitigation Planning Committee*  
Hazard Mitigation Plan Revision Meeting

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Ops Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
Friday, August 14, 2015  
10:00 am - 11:30 am

*Agenda*

- I. Call to Order
- II. Welcome and Opening Remarks
- III. <http://baldwin.hazardmitigationplan.com/> updates
- IV. Review Risk Assessment Part B – Chapter 5B (sections 5.5 – 5.10)
- V. HMPC Exercises
  - A. Capabilities
  - B. Plan Implementation Status
- VI. Questions and Answers
- VII. Next Meeting Dates and Topics
- VIII. Other Business
- IX. Adjourn

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Friday, August 14, 2015
Facilitator:	Daron Hoagland	Place/Room:	EOC Ops Room

Name:	Daron Hoagland	Email:	dhoagland@baldwincountyfl.gov
Company:	BCEMA	Phone:	(251) 972-9570
Job:	Planning & Grants Coordinator		
Name:	Tiffany Lynn	Email:	townclerk@summerdalealabama.com
Company:	Town of Summerdale	Phone:	251-989-6935
Job:	Town Clerk		
Name:	Ken Linserwood	Email:	kdl1941@gmail.com
Company:	Town of Mendenhall Springs	Phone:	251/965-7582, 979-5570
Job:	Mayor		
Name:	Rachel Keith	Email:	rkeith@cityof Foley.org
Company:	City of Foley	Phone:	251-970-2418
Job:	Assist. Emerg. Mgmt. Coord.		
Name:	Richard Ricketts	Email:	lox10yr.dcf@townof Foley.org
Company:	Town of Foley	Phone:	251 964 5162
Job:	Public works superintendent		
Name:	Joseph A. Bouzard	Email:	jbouzar@cityof Foley.org
Company:	City of Foley	Phone:	251-970-5024
Job:	EMR		
Name:	Rebecca Brinkwood	Email:	RBrinkwood@BaldwinCountyAL.com
Company:	BCEMA	Phone:	251.972.4807
Job:	Director		
Name:	Leigh Anne Ryals	Email:	LRYALS@CROWDERGUILF.COM
Company:	CROWDERGUILF/LEIHE	Phone:	251-751-8660
Job:	Project Mgr. Consultant		
Name:	Eric Cortinas	Email:	eric.cortinas@cofairhope.com
Company:	City of Fairhope	Phone:	980-0141
Job:	Building Official		

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Friday, August 14, 2015
Facilitator:	Damon Hoagland	Place/Room:	EOC Ops Room

Name:	WADE STEVENS	Email:	wstevens@bfc.org	Job:	
Company:	Orange Beach	Phone:	251-747-5510	Job:	Admin CLERK
Name:	Jenni Guerry	Email:		Job:	
Company:	BCEMA	Phone:		Job:	
Name:	John Frank	Email:	john.frank@baldwincountyfl.gov	Job:	
Company:	BCEMA	Phone:	251-972-6807	Job:	Deputy Director
Name:	Erin Fratcher	Email:		Job:	
Company:	City of Gulf Shores	Phone:	259-7363	Job:	EM Coordinator
Name:	Ellen Stevie	Email:	ellev@emergencyplanning.com	Job:	
Company:	Town of Gulf Breeze	Phone:		Job:	Emergency Liaison
Name:	Foley Jackson	Email:	mjackson@emergencyplanning.com	Job:	
Company:	Town of Fort St. Vrain	Phone:		Job:	
Name:	Jim Lehe	Email:	jlehe@leheplanning.com	Job:	
Company:	Lehe Planning	Phone:	205-978-3633	Job:	Consultant
Name:		Email:		Job:	
Company:		Phone:		Job:	
Name:		Email:		Job:	
Company:		Phone:		Job:	

Baldwin County  
*Hazard Mitigation Planning Committee*  
Hazard Mitigation Plan Revision Meeting

**Meeting Location & Time:**

Baldwin County Central Annex  
22251 Palmer Street  
Robertsdale, AL 36567  
Thursday, October 22, 2015  
3:00 pm – 4:00 pm

*Agenda*

- I. Call to Order
- II. Welcome and Opening Remarks
- III. <http://baldwin.hazardmitigationplan.com/> updates
- IV. Review Plan Updates
  - A. Mitigation Strategy – Chapter 6
  - B. Appendix B - Community Mitigation Capabilities
  - C. Appendix C - 2010 Plan Implementation Status
  - D. Appendix F – Alternative Mitigation Measures
- V. HMPC Exercise
  - Community Action Program
- VI. Questions and Answers
- VII. Final Meeting Date and Topic
- VIII. Other Business
- IX. Adjourn to Community Event

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:	BCEMA	Meeting Date:	Thursday, October 22, 2015 (3pm-4pm, with Community Open House to Follow)
Facilitator:	Danon Hoagland / Lethe Planning, LLC	Place/Room:	BCC Central Annex Auditorium
Name: Danon Hoagland		Email: dhoagland@baldwincourtyal.gov	
Company: BCEMA		Phone: 951-972-6807	Job: Planning & Grants Coordinator
Name: Reggie Rhinard		Email: RRhinard@BaldwinCountyAla.gov	
Company: BCEMA		Phone: 251-972-4807	Job: Director
Name: John Frank		Email: john.frank@baldwincourtyal.gov	
Company: BCEMA		Phone: 251-972-4807	Job: Deputy Director
Name: Scott Wallace		Email: swallace@baldwincourtyal.gov	
Company: BCEMA		Phone: 251-972-6807	Job: Sheriff/Treasury Coordinator
Name: Mike Howell		Email: mhowell@baldwincourtyal.gov	
Company: BMD Co.		Phone: 972-1837	Job: Building Official
Name: Valerie Redditt		Email: vredditt@baldwincourtyal.gov	
Company: BCEMA		Phone: 972-6807	Job: Tech Specialist
Name: Joseph Q. Pougas		Email: jpougas@cityoflethe.org	
Company: City of Lethe		Phone: 951-970-5024	Job: EM Grand
Name: Justin A. Pogue		Email: JPogue@CRAUDEEQUIL.COM	
Company: Lethe Planning		Phone: 751-8660	Job: Consultant
Name: Chadie Jones		Email:	
Company: Baldwin Co. SC		Phone: 857-937-0210	Job: Chief Deputy

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:	BCEMA	Meeting Date:	Thursday, October 22, 2015 (3pm-4pm, with Community Open House to follow)
Facilitator:	Damon Hoagland / Lehe Planning, LLC	Place/Room:	BCC Central Annex Auditorium

Name:	Eric Cortinas	Email:	eric@cofairhope.com	Job:	Building Official
Company:	City of Fairhope	Phone:	(251) 990-0141		
Name:	TERESA PORTER	Email:	teresa.porter@odph.state.al.us	Job:	FP Guard
Company:	ADPH - Area 9	Phone:	251-931-5859		
Name:	Rachel Keith	Email:	rkeith@cityof Foley.org	Job:	Emergency Coord. Asst
Company:	City of Foley	Phone:	251-970-2418		
Name:	Daphny Campbell	Email:	acampbell@daphnea1.com	Job:	Env. Programs Manager
Company:	City of Daphne	Phone:	251 691 3080		
Name:	Dorsey Parker	Email:	mayor@townof PerdidoBeach.org	Job:	Mayor
Company:	Town of Perdido Beach	Phone:	251-962-2201		
Name:	LAVON R SMITH	Email:	lsmith@cityof Fairhope.com	Job:	EM Coordinator
Company:	City of Fairhope	Phone:	251 981 2610		
Name:	Jeani Guerey	Email:	guerey@baldwincountyl.com	Job:	
Company:	BCEMA	Phone:	251 992-6807		
Name:	Jamieson Black	Email:	jblack@leheplanning.com	Job:	
Company:	Lehe Planning	Phone:	205-978-3633		
Name:		Email:		Job:	Consultant
Company:		Phone:			

Baldwin County  
*Hazard Mitigation Planning Committee*  
Hazard Mitigation Plan Revision Meeting

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Ops Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
Friday, December 11, 2015  
10:00 am - 11:30 am

*Agenda*

- I. Call to Order
- II. Welcome and Opening Remarks
- III. <http://baldwin.hazardmitigationplan.com/> updates
- IV. Review Draft Plan Updates
  - A. Chapter 4. Planning Process
  - B. Part II: Community Action Programs
- V. FEMA Approval Procedures
- VI. Local Plan Adoption
- VII. Questions and Answers
- VIII. Other Business
  - A. Approve Minutes
- IX. Adjourn

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:		BCEMA		Meeting Date:		Friday, 12/11/15, 10:00-11:30	
Facilitator:		Lehe Planning, LLC / Damon Hoagland		Place/Room:		Baldwin County EOC	
Name:	Damon Hoagland	Email:	dhogland@baldwincountypa.gov	Job:	Planning + Grants Coordinator		
Company:	BCEMA	Phone:	(912) 978-4807				
Name:	Laddus K. Smith	Email:	lsmith@cityoforangebeach.com	Job:	EM COORDINATOR		
Company:	DRAUGE BEACH	Phone:	251-981-6826				
Name:	TERESA PORTER	Email:	teresa.porter@adph.state.fl.us	Job:			
Company:	ADPH - Area 9	Phone:	251-939-5859	Job:	EP Coordinator		
Name:	Greg Smith	Email:	gregsmith@robertsdale.org	Job:	City Engineer		
Company:	City of Robertsdale	Phone:	(251) 747-7374				
Name:	Joseph A. Bouzan	Email:	jbouzan@cityoffoley.org	Job:	EM Coord		
Company:	City of Foley	Phone:	251-970-5024				
Name:	Rachel Feith	Email:	rfeith@cityoffoley.org	Job:	Asst EM Coord.		
Company:	City of Foley	Phone:	251-970-2418				
Name:	Graham Green	Email:	graham@smarthomeamerica.org	Job:	Communications and Development Dir.		
Company:	Smart Home America	Phone:	251-295-0235				
Name:	Richard R. Greer	Email:	loxygreer@townofley.org	Job:			
Company:	Town of Foley	Phone:	251-964-5162	Job:	Pulls up Sports Department.		
Name:	Colbyne Riddell	Email:	criddell@baldwincountypa.gov	Job:			
Company:	BCEMA	Phone:	251-978-1887	Job:			

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:	BCEMA	Meeting Date:	Friday, 12/11/15, 10:00-11:30
Facilitator:	Lebe Planning, LLC / Damon Hoagland	Place/Room:	Baldwin County EOC

Name:	Brandon Franklin	Email:	branklin@guilford.com
Company:	City of Guilford Shores	Phone:	251-968-1150
Name:	Mike Howell	Email:	Mhowell@baldwincounty41.gov
Company:	Bald Co.	Phone:	972-6837
Name:	Erik Cortinas	Email:	erik.cortinas@co.fairhope.com
Company:	City of Fairhope	Phone:	(251) 960-0141
Name:	Scott Walker	Email:	swalker@baldwincounty.gov
Company:	BCEMA	Phone:	251-979-8517
Name:	Patsey Parker	Email:	mayor@townofperdidobeach.org
Company:	Town of Perdido Beach	Phone:	251-962-2201
Name:	Ellen Jenkins	Email:	ellen.jenkins@townofperdidobeach.org
Company:	Town of Perdido Beach	Phone:	251-209-1446
Name:	Arlene Campbell	Email:	acampbell@bcpma.com
Company:	City of Daphne	Phone:	251-621-3080
Name:		Email:	
Company:		Phone:	
Name:		Email:	
Company:		Phone:	
Name:		Email:	
Company:		Phone:	

2. Agenda and Sign-in Sheets for Interim HMPC meetings (2013-2014)

Baldwin County  
*Hazard Mitigation Planning Committee*  
*08/14/2013 Meeting*

**Meeting Location & Time:**

Baldwin County Emergency Management Agency  
Upstairs Training Room  
23100 McAuliffe Dr.  
Robertsdale, AL 36567  
9:00am

**Agenda**

- I. **Call to Order**
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. **Approval of Minutes**
  - A. No minutes – this is the preliminary meeting of the “old” Committee
- III. **Old Business**
  - A. No old Business
- IV. **New Business**
  - A. Hazard Mitigation Grant Program discussion
- V. **Adjournment**
  - A. Next Meeting Date and Time: Wednesday, September 11, 2013 at 09:00
  - B. Location – Baldwin County Central Annex  
2251 Palmer Street  
Robertsdale, AL 36567  
Map: [http://www.co.baldwin.al.us/Uploads/Robertsdale\\_Map.pdf](http://www.co.baldwin.al.us/Uploads/Robertsdale_Map.pdf)

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	August 14, 2013
Facilitator:	Danon Hoagland / Mitchell Sims	Place/Room:	Up-Stairs Training Room

Name:	Rachel Keith	Email:	rkeith@cityoffoley.org
Company:	City of Foley	Phone:	251-970-2418
Name:	Joseph A. Bouzan	Email:	jbouzan@cityoffoley.org
Company:	City of Foley	Phone:	251-970-5024
Name:	Gary Patrick	Email:	cpstunadio@acol.com
Company:	Silverhill UFD	Phone:	251-945-5133
Name:	Dario Wilson	Email:	mayor@summersalabama.com
Company:	Town of Summersville	Phone:	989-6202
Name:	Tiffany Lynn	Email:	townchief@summersalabama.com
Company:	Town of Summerdale	Phone:	989-6935
Name:	James Davis	Email:	chief@summersalabama.com
Company:	Town of Summerdale	Phone:	989-6065
Name:	Greg Smith	Email:	gregsmith@robertsdale.org
Company:	City of Robertsdale	Phone:	947-8955
Name:	Scott Gilbert	Email:	scotgilbert@robertsdale.org
Company:	City of Robertsdale	Phone:	947-8951
Name:	Ashtley Campbell	Email:	epma@daphnepal.com
Company:	City of Daphne	Phone:	251 621 3080
		Job:	Environmental Programs Manager

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	August 14, 2013
Facilitator:	Danon Hoagland / Mitchell Sims	Place/Room:	Up-Stairs Training Room

Name:	Eric Cortinas	Email:	eric.cortinas@cofairhope.com
Company:	City of Fairhope, AL	Phone:	(904) 940-0141
Name:	Reecie Chitwood	Email:	RChitwood@BaldwinCountyAL.gov
Company:	BCEMA	Phone:	251.974.6807
Name:	Scott Wallace	Email:	swallace@baldwincountyal.gov
Company:	BCEMA	Phone:	(251) 974-8517
Name:	BRANDY FENLIND	Email:	branklin@julfstorsal.gov
Company:	City of Orange Beach	Phone:	251.968.1149
Name:	LAURON K. SMITH	Email:	lsmith@cityoforangebeach.com
Company:	CITY OF ORANGE BEACH	Phone:	251.747.5541
Name:	MIKE HOWELL	Email:	Mhowell@BaldwinCo.gov
Company:	BALD CO.	Phone:	972-6837
Name:	TERESA PORTER	Email:	teresa.porter@adph.state.al.us
Company:	AL Dept of Public Health - Area 9	Phone:	251-937-5259
Name:	JENN GUERRY	Email:	jg@baldwincountyal.gov
Company:	BCEMA	Phone:	251-972-6809
Name:	Ellen McDonald-Leslie	Email:	leslie@townofperdido-beach.org
Company:	Perdido Beach	Phone:	986-3477
			Job: Councilwoman



Baldwin County  
*Hazard Mitigation Planning Committee*

**Meeting Location & Time:**

Baldwin County Emergency Management Agency  
Upstairs Training Room  
23100 McAuliffe Dr.  
Robertsdale, AL 36567  
September 11, 2013  
9:00am

**Agenda**

- I. Call to Order
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. Approval of Minutes
  - A. Last meeting – August 14, 2013
- III. Old Business
  - A. Update on plan and timeline for Hazard Mitigation Planning Committee Restructuring and Baldwin County Commission Recognition
- IV. New Business
  - A. Hazard Mitigation Grant Program eligibility criteria discussion
    - 1. Alabama Department of Insurance / Alabama Emergency Management Agency list of eligibility criteria
- V. Adjournment
  - A. Next Meeting Date and Time: Wednesday, October 30, 2013 from 9am-10:30am
  - B. Location – Baldwin County Central Annex
    - 2251 Palmer Street
    - Robertsdale, AL 36567
    - Map: [http://www.co.baldwin.al.us/Uploads/Robertsdale\\_Map.pdf](http://www.co.baldwin.al.us/Uploads/Robertsdale_Map.pdf)

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 09/11/2013 - 09:00-10:00
Facilitator:	Mitchell Sims / Damon Hoagland	Place/Room:	Upstairs Training Room

1	Name: Damon Hoagland Company: BCEMA	Email: dhoagland@baldwincountyal.gov Phone: 251-972-8510	Job: Planning & Grants Coordinator
2	Name: Mitchell Sims Company: BCEMA	Email: MSims@BaldwinCountyAL.gov Phone: 251-972-6807	Job: Director
3	Name: Ellen Leslie Company: Town of Perdido Beach	Email: elleslie@townofperdido-beach.org Phone: 251-209-1444	Job: Council Woman
4	Name: Ashley Gagnon Company: City of Daphne	Email: agn@daphe91.com Phone: 251 691 3080	Job: Environmental Programs
5	Name: Rachel Keith Company: City of Foley	Email: rkeith@cityoffoley.org Phone: 251-970-2418	Job: Asst. to Emergency Mgmt Coord.
6	Name: Joseph A. Bouzard Company: City of Foley	Email: jbouzard@cityoffoley.org Phone: 251-970-5024	Job: EM Board
7	Name: Reggie Chitwood Company: BCEMA	Email: RChitwood@BaldwinCountyAL.gov Phone: 251-572-6801	Job: Deputy Director
8	Name: Lavonne Switzel Company: City of Orange Beach	Email: lswitzel@orangebeachsc.gov Phone: 251-747-5504	Job: EM Coordinator
9	Name: Allison L. Kilby Company: BCC - Fairhope	Email: skilby@baldwincountyal.gov Phone: 251-504-9426	Job: Office Admin

HAZARD MITIGATION PLANNING COMMITTEE					
Meeting Location:		BCEMA		Meeting Date:	
Facilitator:		Mitchell Sims / Damon Hoagland		Wednesday 09/11/2013	
Place/Room:			Upstairs Training Room		
10	Name:	<i>MIKE HOWELL</i>	Email:		
	Company:	<i>BALDWIN COUNTY,</i>	Phone:		Job: <i>Buildings OFFICIAL</i>
11	Name:		Email:		
	Company:		Phone:		Job:
12	Name:		Email:		
	Company:		Phone:		Job:
13	Name:		Email:		
	Company:		Phone:		Job:
14	Name:		Email:		
	Company:		Phone:		Job:
15	Name:		Email:		
	Company:		Phone:		Job:
16	Name:		Email:		
	Company:		Phone:		Job:
17	Name:		Email:		
	Company:		Phone:		Job:
18	Name:		Email:		
	Company:		Phone:		Job:

Baldwin County  
*Hazard Mitigation Planning Committee*

**Meeting Location & Time:**

Baldwin County Central Annex Auditorium  
22251 Palmer Street  
Robertsdale, AL 36567  
October 30, 2013  
9:00am

**Agenda**

- I. Call to Order
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. Approval of Minutes
  - A. Last meeting – September 11, 2013
- III. Old Business
  - A. Update status of Hazard Mitigation Planning Committee-composition and Baldwin County Commission Resolution adoption
- IV. New Business
  - A. Discussion of the HMPC meeting schedule and location for FY 2014 and beyond
  - B. Discussion on the Election of Officers
  - C. Discussion and adoption of revised bylaws
  - D. Open Discussion / Comments
- V. Adjournment
  - A. Next Meeting Date and Time: TBD
  - B. Location – TBD

**Baldwin County  
Hazard Mitigation Planning Committee  
Full Body Meeting**

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
23100 McAuliffe Dr  
Robertsdale, AL 36567  
January 29, 2014 at 9:00am

**Agenda**

- I. **Call to Order**
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. **Approval of Minutes**
  - A. Last meeting – October 30, 2013
- III. **Old Business**
  - A. Discuss Draft Bylaws and make any necessary revisions
  - B. Discuss the 2016 Hazard Mitigation Plan Update Timeline and Meeting Schedule
- IV. **New Business**
  - A. Elect Officers (Chairperson, Co-Chairperson, and Secretary)
  - B. Select the Executive Committee Members
  - C. Approve and Adopt Bylaws
  - D. Approve/Adopt Tentative 2014 Meeting Schedule
- V. **Adjournment**
  - A. Next Meeting Date and Time:  
April 9, 2014 at 9:00am
  - B. Location – Baldwin County Emergency Operations Center

**Baldwin County  
Hazard Mitigation Planning Committee  
Full Body Meeting**

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
23100 McAuliffe Dr  
Robertsdale, AL 36567  
April 2, 2014 at 9:00am

**Agenda**

- I. Call to Order
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. Approval of Minutes
  - A. Last meeting – October 30, 2013
- III. Old Business
  - A. Discuss Draft Bylaws and make any necessary revisions
  - B. Discuss the 2016 Hazard Mitigation Plan Update Timeline and Meeting Schedule
- IV. New Business
  - A. Elect Officers (Chairperson, Co-Chairperson, and Secretary)
  - B. Select the Executive Committee Members
  - C. Approve and Adopt Bylaws
  - D. Approve/Adopt Tentative 2014 Meeting Schedule
- V. Adjournment
  - A. Next Meeting Date and Time:  
*To Be Determined*
  - B. Location – Baldwin County Emergency Operations Center

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 04/02/2014
Facilitator:	Daron Hoagland	Place/Room:	Upstairs Training Room

1	Name:	Daron L. Hoagland	Email:	dhoagland@baldwincountyal.gov
	Company:	BCEMA	Phone:	251-972-6807
2	Name:	Kevin Kiser	Email:	Kevin.Kiser@ADPH.state.al.us
	Company:	ADPH	Phone:	251-937-5859
3	Name:	Richard Reese	Email:	loxleyrud@townofloxley.org
	Company:	Town of Loxley Public Works	Phone:	251-964-7444
4	Name:	Teresa Porter	Email:	teresa.porter@adph.state.al.us
	Company:	ADPH - Area 9	Phone:	251-937-5859
5	Name:	Louisa K. Smith	Email:	lsmith@cityofsangebardh.com
	Company:	CITY OF ORANGE BEND	Phone:	251-981-2610
6	Name:	Mike Howell	Email:	Mhowell@BaldwinCountyAL.gov
	Company:	Baldwin County	Phone:	972-6837
7	Name:	Joseph A. Bouzau	Email:	jbouzau@cityoffoley.org
	Company:	CITY of Foley	Phone:	251-970-5024
8	Name:	Rachel Keith	Email:	rkeith@cityoffoley.org
	Company:	City of Foley	Phone:	251-970-2418
9	Name:	Kim Frank	Email:	KFrank@baldwinemc.com
	Company:	Baldwin EMC	Phone:	251-747-0276

HAZARD MITIGATION PLANNING COMMITTEE			
<b>Meeting Location:</b>	BCEMA	<b>Meeting Date:</b>	Wednesday 01/08/2014
<b>Facilitator:</b>	Mitchell Sims / Damon Hoegland	<b>Place/Room:</b>	Upstairs Training Room

10	Name: Eric Cortinas Company: City of Fairhope	Email: erik.cortinas@cofairhope.com Phone: (251) 990-0111	Job: Building Official
11	Name: Teddy King Company: Baldwin Co. Health Dept.	Email: teddy.king@adph.state.al.us Phone: 251-947-3618	Job: ENV. Supervisor
12	Name: Charlie Jones Company: Baldwin Co. Sheriff's Office	Email: cjones@baldwinca.gov Phone: 251-937-0210	Job: Chief Deputy
13	Name: Keri Green Company: BCG - (Minutes)	Email: kgreen@baldwincounty.al.gov Phone: 972-8555	Job: Chief Administrative Asst.
14	Name: Tiffany Lynn Company: Town of Summerdale	Email: Summerdale@guifiel.com Phone: (857) 989-6935	Job: Town Clerk
15	Name: One Island FPA Company: Pats Stritzinger	Email: RPS@STRITZINGER@gmail.com Phone: 990-6094	Job: Chairwoman
16	Name: Ellen McDonald-Leslie Company: Town of Perdido Beach	Email: leslie@TownofPerdidoBeach.org Phone: (251) 905-1446	Job: Counsel Woman
17	Name: Denita Hill Company: Baldwin County Public Schools	Email: dhill@bebe.org Phone: 334 328 9323	Job: Safety, Security Attendance Sponsor
18	Name: Kellee Chitwood Company: BCEMA	Email: kchitwood@baldwincounty.al.gov Phone: 251-972-4807	Job: Deputy Director

Baldwin County  
*Hazard Mitigation Planning Committee*

**Meeting Location & Time:**

Baldwin County Emergency Operations Center (Ops Room)  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
July 9, 2014  
9:00am

**Agenda**

- I. **Call to Order**
  - A. Welcome and Introductions – Mitchell Sims, EMA Director
- II. **Approval of Minutes**
  - A. Last meeting – April 2, 2014
- III. **Old Business**
  - A. Bylaws – Adoption of final draft
  - B. Officer Nominations
  - C. Election of Chairperson, Co-Chairperson, and Secretary
  - D. HMPC Meeting Schedule and plan update timeline
  - E. Threat and Hazard Identification and Risk Assessment
- IV. **New Business**
  - A. DR-4176 – Hazard Mitigation Grant Program
  - B. Open Discussion / Comments
- V. **Adjournment**
  - A. Next Meeting: Wednesday, 09/24/2014, at 09:00 at the Baldwin County EOC

HAZARD MITIGATION PLANNING COMMITTEE			
<b>Meeting Location:</b>	BCEMA	<b>Meeting Date:</b>	Wednesday 07/09/14
<b>Facilitator:</b>	Mitchell Sims / Damon Hoagland	<b>Place/Room:</b>	EOC Ops Room

1	Name: Damon Hoagland Company: BCEMA	Phone: 251-972-4877	Email: dhoagland@baldwincountypol.gov	Job: Planning & Grants Coordinator
2	Name: TERESA PORTER Company: ADPP - Area 9	Phone: 251-937-5558	Email: tporter@adpp.stateal.us	Job: EP Coordinator
3	Name: Joseph Bauzan Company: City of Foley	Phone: 251-970-5024	Email: jbauzan@cityoffoley.org	Job: EM Coord.
4	Name: Rachel Keith Company: City of Foley	Phone: 251-970-2418	Email: rkeith@cityoffoley.org	Job: Asst. EM Coordinator
5	Name: Mike Howell Company: Baldwin County	Phone: 912-6837	Email: mhowell@baldwincountypol.gov	Job: Building Official
6	Name: Kerri Green Company: Baldwin County	Phone: 251-972-4703	Email: kgreen@baldwincountypol.gov	Job: Chief Administrative Asst.
7	Name: Charlie Jones Company: Baldwin Co. Sheriff's Office	Phone: 251-939-0210	Email: cjones@baldwincountypol.gov	Job: Chief Deputy
8	Name: LAURIE SMITH Company: City of Orange Beach	Phone: 251-981-2610	Email: lsmith@cityoforangebeach.com	Job: EM Coordinator
9	Name: Erik Cortinas Company: City of Fairhope	Phone: (251) 990-0141	Email: erik.cortinas@cfairhope.com	Job: Building Official

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 01/08/2014
Facilitator:	Mitchell Sims / Damon Hoagland	Place/Room:	Upstairs Training Room
10	Name: <i>Rebbie Chitwood</i> Company: <i>BCEMA</i>	Email: <i>RChitwood@BaldwinCountyAL.gov</i> Phone: <i>251-972-6801</i>	Job: <i>Deputy Director</i>
11	Name: <i>Richard Riser II</i> Company: <i>Town of Lorley</i>	Email: <i>lonley@townoflorley.org</i> Phone: <i>251-984-7644</i>	Job: <i>SARASOTA COUNTY</i>
12	Name: <i>Jenni Guebley</i> Company: <i>BCEMA</i>	Email: <i>jguebley@baldwincounty.al.gov</i> Phone:	Job:
13	Name: <i>Mitchell Sims</i> Company: <i>BCEMA</i>	Email: <i>M52ms@BaldwinCountyAL.gov</i> Phone: <i>251-972-6807</i>	Job: <i>Director</i>
14	Name: <i>Meorn Puckett</i> Company: <i>USFA</i>	Email: <i>mmp1103@jagmail.com</i> Phone: <i>251-597-4510</i>	Job: <i>Student</i>
15	Name: <i>Dakley Campbell</i> Company: <i>City of Daphne</i>	Email: <i>dcampbell@daphneal.com</i> Phone: <i>691 3080</i>	Job: <i>Env. Programs Manager</i>
16	Name: <i>Richard Merchant</i> Company: <i>City of Daphne</i>	Email: <i>RMerchant@daphneal.com</i> Phone: <i>251-421-3050</i>	Job: <i>Building Official/CMA</i>
17	Name: <i>Carrie Robbitt</i> Company: <i>Baldwin Co. EMA</i>	Email: <i>crobbit@baldwincounty.al.gov</i> Phone: <i>251-972-0893</i>	Job:
18	Name: Company:	Email: Phone:	Job:

Baldwin County  
*Hazard Mitigation Planning Committee*

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Upstairs Training Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
October 8, 2014  
9:00am

**Agenda**

**I. Call to Order**

- A. Welcome and Introductions – Landon Smith, Chairperson

**II. Approval of Minutes**

- A. Last meeting – July 9, 2014

**III. Old Business**

- A. HMPC Meeting Schedule and plan update timeline
- B. DR-4176 – Hazard Mitigation Grant Program

**IV. New Business**

- A. 2014-2015 Threat and Hazard Identification and Risk Assessment (THIRA)
- B. 2015 Emergency Operations Plan Revision
- C. Pre-Disaster Mitigation Grant Program – planning grant application status
- D. Open Discussion / Comments

**V. Adjournment**

- A. Executive Committee Meetings will be as needed and announced at least one full week prior to the date of the meeting.
- B. Next Full Body Meeting: Wednesday, 01/07/2014, at 09:00 at the Baldwin County EOC

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 10/08/14
Facilitator:	Mitchell Sims / Damon Hoagland	Place/Room:	EOC Upstairs Training Room

1	Name: Damon Hoagland Company: BCEMA	Email: dhoagland@baldwincountyfl.gov Phone: 251-972-1680-1	Job: Planning + Grants Coordinator
2	Name: Lauran K. Smith Company: CITY OF ORANGE BEACH	Email: lsmith@cityoforangebeach.com Phone: 251-981-2610	Job: EM COORDINATOR/OFFICIAL
3	Name: Wesley Ray Company: MSVFD	Email: murrbr11@yahoo.com Phone: (251) 942-2650	Job:
4	Name: Kaylan Driskell Company: MSVFD	Email: Kdriskell23@kbr.com Phone: 251-269-8714	Job:
5	Name: Joseph A. Bourzau Company: City of Foley	Email: jbourzau@cityoffoley.org Phone: 251-970-5024	Job: EM Co-ord
6	Name: Rachel Keith Company: City of Foley	Email: rkeith@cityoffoley.org Phone: 251-970-2418	Job: ASST EM Coord.
7	Name: CHAD CHRISTIAN Company: CITY OF FOLEY	Email: CCHRISTIAN@CITYOFFOLEY.ORG Phone: 251-970-1104	Job: CITY ENGINEER
8	Name: Erik Cortinas Company: City of Fairhope	Email: erikc@cofairhope.com Phone: 251-990-0141	Job: Building Official
9	Name: Sebastian Fernandez Company: GOLF SHORES	Email: sfernandez@golfshoresal.gov Phone: 257 968 1149	Job: REG OFFICIAL / Coordinator

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 10/08/14
Facilitator:	Mitchell Sims / Danon Hoagland	Place/Room:	EOC Upstairs Training Room
10	Name: Denise Perry Company: City of Daphne	Email: dperry@daphneal.com Phone: 251-421-3182	Job: PW Accountant
11	Name: Melvin McFarley Company: City of Daphne	Email: mwfcmf@cityofdaphne.com Phone: 421-3152	Job: PWD
12	Name: Mitchell Sims Company: BC EMA	Email: msims@BALDWINCOUNTYAL.GOV Phone: 251-972-6807	Job: Director
13	Name: Keni Sheen Company: BCC	Email: ksheen@baldwincountyal.gov Phone: 972-8555	Job: Chief Admin. Asst.
14	Name: Bruce Reuvert Company: CO SP FONT	Email: bruce.reuvert@cityofspanishfort.com Phone: 941-4302	Job: BZO
15	Name: Reggie Chitwood Company: BC EMA	Email: rchitwood@baldwincountyal.gov Phone: 251-972-6801	Job: Deputy Director
16	Name: Staff Walker Company: BC EMA	Email: swalker@baldwincountyal.gov Phone: 251-972-8517	Job: Training / Staff Coordinator
17	Name: Mike Cooper Company: Compass 360	Email: mcooper@compass360.com Phone: 905-943-1876	Job: MHS/SPRING.COM
18	Name: Company:	Email: Phone:	Job:

Baldwin County  
*Hazard Mitigation Planning Committee*

**Meeting Location & Time:**

Baldwin County Emergency Operations Center  
Upstairs Training Room  
23100 McAuliffe Drive  
Robertsdale, AL 36567  
October 22, 2014  
2:00pm

**Agenda**

**I. Call to Order**

- A. Welcome and Introductions – Landon Smith, Chairperson

**II. Approval of Minutes**

- A. Both July 9, 2014 and October 8, 2014 meeting minutes need to be approved

**III. Old Business**

- A. Pre-Disaster Mitigation Planning Grant and possible use of consultant for plan revision
- B. Baldwin County Hazard Mitigation Planning Committee prioritization of the Baldwin County Letters of Intent for DR-4176 Hazard Mitigation Grant Program
  - 1. Master Letter of Intent will be submitted with HMPC's prioritization of LOIs shown

**IV. New Business**

- A. Open Discussion / Comments

**V. Adjournment**

- A. Executive Committee Meetings TBA
- B. Next Full Body Meeting: Wednesday, 01/07/2015, at 09:00 at the Baldwin County EOC.

HAZARD MITIGATION PLANNING COMMITTEE			
Meeting Location:	BCEMA	Meeting Date:	Wednesday 10/22/14
Facilitator:	Lannie Smith	Place/Room:	EOC Upstairs Training Room

1	Name: Damon Hoagland Company: Baldwin County EMA	Email: dhoagland@baldwincountyal.gov Phone: 251-972-4807	Job: Planning & Grants Coordinator
2	Name: Kevin Shivers Company: BCC	Email: kshivers@baldwincountyal.gov Phone: 251-533-4204	Job: Chief Admin. Asst.
3	Name: CHAD CHRISTIAN Company: COF	Email: CCHRISTIAN@CITYOFFOLEY.ORG Phone: 251-970-1104	Job: CITY ENGINEER
4	Name: Tiffany Lynn Company: Town of Summerdale	Email: townclerk@summerdalealabama.com Phone: 251-989-6935	Job: Town Clerk
5	Name: Rachel Kerth Company: City of Foley	Email: rkerth@cityoffoley.org Phone: 251-970-2418	Job: Asst. EM Coord.
6	Name: Joseph Bouzard Company: City of Foley	Email: sbouzard@cityoffoley.org Phone: 251-970-5024	Job: EM Coord.
7	Name: Erik Cortinas Company: City of Fairhope	Email: erik.cortinas@co-fairhope.com Phone: (251) 990-0141	Job: Building Official
8	Name: Bruce Bevcant Company: CO SF	Email: buildingofficial@cityofspanishfort.com Phone: 626-4993	Job: BFO
9	Name: Mike Howell Company: B.C.	Email: mhowell@baldwincountyal.gov Phone: 972-6837	Job: Building Official

HAZARD MITIGATION PLANNING COMMITTEE

Meeting Location:		BCEMA		Meeting Date:		Wednesday 10/29/14	
Facilitator:		Mitchell Sims / Damon Hoagland		Place/Room:		EOC Upstairs Training Room	
10	Name: <i>Cherie Jones</i>	Email: <i>ajones@baldwincountyga.gov</i>	10	Name: <i>Cherie Jones</i>	Phone: <i>251-939-0210</i>	Job: <i>Chief Deputy</i>	Company: <i>Baldwin Co. S.O.</i>
11	Name: <i>John Campbell</i>	Email: <i>acampbell@daphne91.com</i>	11	Name: <i>Richard Merchants</i>	Phone: <i>251 621 3080</i>	Job: <i>EPM</i>	Company: <i>City of Daphne</i>
12	Name: <i>Richard Merchants</i>	Email: <i>Rmerchants@daphne91.com</i>	12	Name: <i>Taylor Ribber</i>	Phone: <i>251-621-3080</i>	Job: <i>CSO-CEM</i>	Company: <i>City of Daphne</i>
13	Name: <i>Taylor Ribber</i>	Email: <i>trribber@baldwincountyga.gov</i>	13	Name: <i>Mitchell Sims</i>	Phone: <i>251-572-8576</i>	Job: <i>Director</i>	Company: <i>BCE - BRATS</i>
14	Name: <i>Mitchell Sims</i>	Email: <i>msims@baldwincountyga.gov</i>	14	Name: <i>ADDIE SURTH</i>	Phone: <i>251-492-6807</i>	Job: <i>Director</i>	Company: <i>BCEMA</i>
15	Name: <i>ADDIE SURTH</i>	Email: <i>msurth@baldwincountyga.gov</i>	15	Name: <i>ORANCE REACH</i>	Phone: <i>251.747.5547</i>	Job: <i>EM Coordinator</i>	Company: <i>ORANCE REACH</i>
16	Name:	Email:	16	Name:	Phone:	Job:	Company:
17	Name:	Email:	17	Name:	Phone:	Job:	Company:
18	Name:	Email:	18	Name:	Phone:	Job:	Company:

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**BALDWIN COUNTY  
HAZARD MITIGATION PLANNING COMMITTEE  
EXECUTIVE COMMITTEE MEETING  
MINUTES  
JANUARY 9, 2015  
BALDWIN COUNTY EMERGENCY MANAGEMENT AGENCY  
ROBERTSDALE, ALABAMA**

**ATTENDANCE**

Members present were: Landon (Lannie) Smith, City of Orange Beach; Mike Howell, Baldwin County Building Official; Patsy Parker, Town of Perdido Beach; Teresa Porter, Alabama Department of Public Health; Erik Cortinas, City of Fairhope; Charlie Jones, Baldwin County Sheriff's Office

Members not present were: Brandan Franklin, City of Gulf Shores

Guests present: Danon Hoagland, Baldwin County EMA (HMPC Member); Jenni Guerry, Baldwin County EMA

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Landon Smith called the meeting to order at 8:30am

After opening comments, Danon Hoagland introduced each of the proposals submitted by three consultants - True North, AMEC, and Lehe Planning, LLC – vying for the contract for consulting services regarding the 2015 update of the Baldwin County Hazard Mitigation. Danon also summarized the process by which the proposals would be ranked and scored.

**OLD BUSINESS**

There was no old business as this was the first meeting of the Executive Committee.

**NEW BUSINESS**

There was a roundtable discussion of each of the proposals submitted. Each member was given a form to rank and score the proposals. Scores were tallied by Lannie Smith and Danon Hoagland.

**ADJOURNMENT**

The outcome of the decision-making process of the Executive Committee was the selection of Lehe Planning, LLC, as the primary choice and AMEC Foster Wheeler as the secondary choice of consultant to execute the 2015 update to the Baldwin County Hazard Mitigation Plan.

Ayes: 6

No: 0

Abstain: 0

*MOTION PASSED*

Minutes for this meeting were adopted by the Baldwin County Hazard Mitigation Planning Committee on 06/19/15 during the Full Body Meeting.

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Chairperson Landon K. Smith

Date

**Appendix H**  
**Community Involvement Documentation**



## **App. H - Community Involvement Documentation**

- 1.0 Community Involvement Opportunities
- 2.0 Documentation

### **1.0 Community Involvement Opportunities**

This Appendix includes additional documentation of the community involvement opportunities in the planning process for the Baldwin County 2015 plan update, which are summarized as follows (see Section 4 Planning Process for a complete discussion of community involvement in the planning process):

1. The Baldwin County Hazard Mitigation Planning Committee (HMPC). This Committee, which was first established in 2004 to oversee the original plan, was reorganized for the 2010 update and activated again in April 2015 to prepare for the 2015 update. Its primary purposes are to oversee all hazard mitigation planning activities and ensure the plan's ongoing monitoring and implementation. The HMPC represents all Baldwin County jurisdictions, as well as interested stakeholder organizations, and meets at least annually. (For complete documentation of HMPC meetings, refer to Appendix G – "Committee Meeting Documentation", and for a more detailed discussion of the HMPC, refer to Chapter 4 – "Planning Process").
2. The 2015 Baldwin County Multi-Hazard Mitigation Plan Website. This website – [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com) - was active during the drafting phase of the 2015 update. Its purpose, as presented on the website, was "to encourage the public, government agencies, colleges and universities, neighboring jurisdictions, businesses and industries, and others concerned with hazard mitigation to become involved in the process of updating the 2015 Baldwin County Hazard Mitigation Plan." This website maintained the most recent draft sections of the plan and encouraged public comments through a dedicated email account at [Baldwin@hazardmitigationplan.com](mailto:Baldwin@hazardmitigationplan.com). The website provided background information to the public and interested agencies on mitigation planning and the Federal requirements. It also provided public information on the HMPC membership, meeting announcements, and contact information for the Baldwin County EMA and the consulting team. The most recently adopted plan is maintained on the Baldwin County EMA Website at [www.co.baldwin.al.us](http://www.co.baldwin.al.us).
3. Social Media. The public could also participate in the planning process and keep abreast of events through Facebook and Twitter.
4. Community Meeting. A general community meeting was held in Baldwin County in October 2015 during the drafting stage of this plan. The community meeting included various displays of the different hazards that had been identified in the planning process. Each display showed the various threats that exist and what could

be done to help prevent or at least lessen the impact of a hazard. There were also documents and materials provided to educate the public on what to do in the case of such a hazard event occurring. Many of the materials were made available for the public to take with them.

5. Community Survey. A community survey allowed the public to report their concerns and suggestion. The survey questionnaires were posted on the plan website and distributed at the community meeting. Responses were posted to the website for review and consideration by the HMPC members.
6. Interagency Involvement. Invitations were delivered to agencies and organizations representing neighboring counties, Federal and State governmental agencies, businesses, educational institutions and school boards, and other interested private and non-profit stakeholders in the hazard mitigation planning process. A survey form to report written comments on the plan accompanied each invitation. A copy of the invitation and survey are included in this Appendix.
7. Public Hearings Prior to Adoption. A final opportunity for public comment was afforded immediately before adoption by each local governing body as required by Alabama public hearing and notice laws.
8. Baldwin County EMA Community Relations. The Baldwin County EMA has a longstanding record of strong and effective community relations, which further facilitated community interest and involvement in the 2015 plan update.

## **2.0 Documentation**

This Appendix includes the following documentation of community involvement activities and opportunities:

- An image of the 2015 plan update website at [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com).
- Images of the Facebook and Twitter pages.
- The public invitation by the Baldwin County EMA to attend the October 2015 community meeting.
- A news report on the community meeting.
- Sign in sheets documenting attendance at the community meetings.
- The community survey form.
- Photos of the Community Meeting.
- The invitation to interested agencies, organizations, and stakeholders, including the survey form.

Figure H-1. Image of website at [baldwin.hazardmitigationplan.com](http://baldwin.hazardmitigationplan.com)

**Figure H-2. Images of Facebook and Twitter Pages**



Figure H-3. Public Invitation from Baldwin County EMA to Attend Community Meeting

# Baldwin EMA seeks public input for Hazard Mitigation Plan

Story   Comments

Share   Print   Font Size:

Tweet 0



**BALDWIN COUNTY EMA**



Posted: Wednesday, October 21, 2015 10:33 am

Submitted | 0 comments

ROBERTSDALE, Alabama — The Baldwin County Emergency Management Agency in partnership with the Hazard Mitigation Planning Committee will hold an open house meeting from 4 to 6 p.m. Thursday, Oct. 22, in the auditorium at the Baldwin County Central Annex, 22251 Palmer St., Robertsdale.

The purpose of the meeting is to provide an opportunity for community discussion and input regarding the Hazard Mitigation Plan Revision.

Hazard Mitigation Plans helps communities lessen the effects of future disasters by identifying ways to strengthen structures and infrastructure by assisting communities seeking federal funding to support mitigation measures and projects.

For more information contact Sterling Grimes at the Baldwin County EMA office in Robertsdale, 251-972-6807 or email [sgrimes@baldwincountval.gov](mailto:sgrimes@baldwincountval.gov).

Figure H-4. News Report on the Community Meeting

### Baldwin EMA officials make changes to Hazard Mitigation Plan

Posted: Oct 22, 2015 5:28 PM CDT

Updated: Oct 22, 2015 5:28 PM CDT

By Hal Scheurich, FOX10 News Reporter [CONNECT](#)

ROBERTSDALE, AL (WALA) – A meeting was held Thursday, October 22, 2015 in Baldwin County where EMA and community officials welcomed public input on a new hazard mitigation plan. Every five years FEMA requires counties to update their plan to address any changes to the area.

While floods, hurricanes and other natural or man-made disasters can cause wide-spread damage and loss of life, good planning can lessen those chances and can help bring things back to normal more quickly. When disaster strikes, emergency crews jump into action. Their response follows a well laid emergency response plan. Planning for hazard mitigation is just as important because it lays out a strategy and takes pre-emptive measures.

"It's important to have a plan, a hazard mitigation plan so we can figure out ways to lessen the effects of the storm through either drainage projects or home elevations or any of those other things that a storm may affect," said Baldwin County Emergency Management Director, Reggie Chipwood.

As infrastructure changes, such as new highways or schools, plans like this have to be adjusted accordingly. Periodically FEMA offers funding for mitigation projects to be delegated through the state. In 2013, Governor Robert Bentley offered deep savings for those who would reinforce roof structures or install storm windows. The incentive offered to pay for 75 percent of the cost. You may very well see improvements every day as a result of FEMA hazard mitigation money and not even realize it.

"A lot of people are familiar with the Bear Point area of Orange Beach. It's a very low-lying area and it's very flat so storm water does not run off as it does in others so we had a very complex pump system installed," said Orange Beach EMA Director, Landon Keith Smith.

Representatives from throughout the county have provided input to the plan based on their own needs and the public was invited to do the same. Chitwood said it's important to get input from all sides.

"It's beyond the municipalities. It's also other representatives from other communities and we try to invite as many people as we can," Chitwood explained. "We use a whole community approach as to how we do our emergency management here in Baldwin County, so we try to include as many people as we can."

Residents can also go to Baldwin County online and fill out a hazard mitigation survey. EMA officials say the new plan should be finalized by March of 2016. It will then be sent to the state for final approval.

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**Figure H-5. Sign-in Sheets for Community Meeting**

**Baldwin County Community Meeting  
2015 Baldwin County Multi-Hazard Mitigation Plan  
October 22, 2015**

Name	Baldwin County Resident Y/N?	City/Town/Community	Business/Organization (if applicable)
LAVONIA K SMITH	Y	ORANGE BEACH	N/A
JENNI GUERREY	Y	FAYETTE AL	BCEMA
John Underwood	Y	Summerville, AL	Gulf Coast Media
Christel Carpenter	Y	Silverhill AL	BCC
Hal Schewich	Y	WALKER AL	→
leigh Anne Ryals	Y	Robertsdale	N/A
Debra Coak	Y	Bay Minette, AL	ADPH
Sammye Parks	Y	Robertsdale, AL	ADPH
Cathy LaCourse	Y	Fairhope, AL	ADPH
Yolby King	Y	Foley, AL	ADPH

**Baldwin County Community Meeting  
2015 Baldwin County Multi-Hazard Mitigation Plan  
October 22, 2015**

Name	Baldwin County Resident Y/N?	City/Town/Community	Business/Organization (if applicable)
Scott Walker	Y	Bona Vista	
John Fenske	Y	Fairhope	
Wayne Radloff	Y	Foley	
Dawn Hoagland	Y	Foley	
Charlie Jones	Y	Spartanburg	
Joan Foster	Y	Sibley	
Elizabeth Franklin	Y	Lowell Shore	
Robert Foster	Y	Foley	
Lesley Campbell	Y	Daphne	
Patricia Parker	Y	Town of Perdido Beach	

**Baldwin County Community Meeting  
2015 Baldwin County Multi-Hazard Mitigation Plan  
October 22, 2015**

Name	Baldwin County Resident Y/N?	City/Town/Community	Business/Organization (if applicable)
JERRY STAPLETON	Y	KOKLEY	N/A
ROBBIE KRYDEN	Y	FOLEY	N/A

**Figure H-6. Community Survey Form**

**Baldwin County Community Event  
2015 Baldwin County Multi-Hazard Mitigation Plan**

Name of your community: \_\_\_\_\_

Of the following hazards, please circle the ones that are of most concern to you.

- |                       |                                 |
|-----------------------|---------------------------------|
| Tornadoes             | Hurricanes                      |
| Severe Storms         | Sinkholes                       |
| Floods                | Landslides                      |
| Droughts/Heat Waves   | Wildfires                       |
| Winter Storms/Freezes | Earthquakes                     |
| Dam/Levee Failures    | Manmade & Technological Hazards |

Do you have any specific concerns for any of the above hazards?

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Do you have any recommendations on how to mitigate (lessen the effects of) one or more of the above hazards?

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**Thank you for your comments.**

**Figure H-7. Photos of the Community Meeting**



## Figure H-8. The Invitation to Interested Agencies, Organizations, and Stakeholders, Including the Survey Form

**From:** Kay Jones [mailto:kayjones@leheplanning.com]  
**Sent:** Friday, November 06, 2015 3:38 PM  
**To:**  
**Subject:** 2015 Baldwin County Multi-Hazard Mitigation Plan Update Review

To all concerned:

We have concluded the drafting of the update to the 2015 Baldwin County Multi-Hazard Mitigation Plan and would like to invite you to review the plan and provide any additional information or comments you may have pertinent to the mitigation measures set forth in the plan.

The Baldwin County Hazard Mitigation Planning Committee met from April through December 2015 to update the 2010 plan and is ready to submit it to the state EMA office for their review and approval.

You can find the entire plan at <http://baldwin.hazardmitigationplan.com/> and may provide any feedback you have to us at [Baldwin@hazardmitigationplan.com](mailto:Baldwin@hazardmitigationplan.com).

We appreciate your participation in this planning process.

**Kay Jones**  
Project Administrator

Lehe Planning, LLC  
300 Century Park South, Ste. 216  
Birmingham, AL 35226-3924  
205-978-3633 Office  
205-978-3634 Fax  
[leheplanning.com](http://leheplanning.com)

**Appendix I**  
**Multi-Jurisdictional Participation Activities**



## **App. I - Multi-Jurisdictional Participation Activities**

- 1.0 Participation Requirements
- 2.0 Participation Documentation
- 3.0 HMPC Exercises

### **1.0 Participation Requirements**

According to 44 CFR Section 201.6(a)4, “Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process...” The table in this Appendix illustrates each jurisdiction’s participation within Baldwin County in the plan update; qualifying it as a Multi-Jurisdictional Plan.

Each jurisdiction was given the opportunity to participate in every step of the plan update, from the kick-off meeting on April 24, 2015 to the signing and adoption of the resolutions. Whenever a jurisdiction’s representative was unable to attend a meeting, meeting materials were forwarded to that representative so they would have every opportunity to participate.

### **2.0 Participation Documentation**

Table I-1 included in this Appendix lists each jurisdiction within Baldwin County and the various meetings and activities that each jurisdiction could participate in. An X indicates the events in which the jurisdiction chose to participate. Examples and conclusions of the activities are shown in Appendices B through F, and information on the meetings is included in Appendices G and H.

**Table I-1. Multi-Jurisdictional Participation Activities**

*Multi-Jurisdictional Participation Activities Baldwin County 2015 Plan Update	Baldwin Co.	Bay Minette	Daphne	Elberta	Fairhope	Foley	Gulf Shores	Loxley	Mag. Springs	Orange Beach	Perdido Beach	Robertsdale	Silverhill	Spanish Fort	Summerdale
HMPC Kick-off Meeting - April 24, 2015	X		X			X	X	X		X	X			X	X
Hazard Identification and Ratings	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HMPC Meeting 2 –June 19, 2015	X		X		X	X	X	X			X				X
HMPC Meeting 3 –August 14, 2015	X				X	X	X	X	X	X	X				X
Community Capabilities Assessment	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Plan Implementation Status	X	X	X	X		X	X	X	X	X	X	X		X	X
HMPC Meeting 4 –October 22, 2015	X		X		X	X				X	X				
Multi-Jurisdiction Mitigation Action Program	X	X	X			X				X					
HMPC Meeting 5–December 11, 2015	X		X		X	X	X	X		X	X	X			

**X** Denotes participation in activity

\* All communities were given opportunities to participate in missed HMPC meetings through access to the plan website at <http://baldwin.hazardmitigationplan.com/>.

**3.0 HMPC Exercises**

The HMPC Exercises included in this section have been completed by participating jurisdictions, school boards, and other interested stakeholders that serve on the Hazard Mitigation Planning Committee (HMPC). The results have been compiled and incorporated into the contents throughout this plan. Included here are the following exercises:

- (1) **HMPC Hazard Identification and Ratings Exercise.** The results of this exercise are reported in Appendix D “Hazard Ratings and Descriptions” and have been incorporated into Chapter 5 “Risk Assessment” for the hazard identifications and profiles in Sections 5.3 and 5.4.
- (2) **Baldwin County Communities Capabilities Assessment.** This exercise helped the planning team determine the capabilities of each jurisdiction to carry out alternative mitigation measures. The results, as reported in Appendix B “Community Mitigation Capabilities,” were used to support the selection of mitigation measures in each of the Community Action Programs.
- (3) **2010 Plan Implementation Status Survey.** This exercise demonstrated compliance with FEMA criteria to evaluate the implementation status of the previous plan. The results were used to identify which mitigation measures to carry over into the 2015 Community Action Programs. See Appendix C “2010 Plan Implementation Status.”
- (4) **Multi-Jurisdictional Mitigation Action Program Exercise** This exercise was used to select mitigation measures to be included in Part II “Community Action Programs” for each jurisdiction.

**Baldwin County 2015 Multi-Hazard Mitigation Plan  
Update**

**HMPC Hazard Identification and Ratings Exercise**

Completed by (insert your name and title): \_\_\_\_\_

Representing (insert your organization): \_\_\_\_\_

Today's date: \_\_\_\_\_

**Instructions.** Please complete the ratings for your jurisdiction(s) of interest, according to the following key.

**Key:**

<b>LOCATION</b> - WHETHER THE JURISDICTION IS AFFECTED BY THE HAZARD
1 = YES
0 = NO
<b>PROBABILITY</b> - THE LIKELIHOOD THAT THE HAZARD WOULD OCCUR IN THIS JURISDICTION
5 - VERY HIGH
4 - HIGH
3 - MEDIUM
2 - LOW
1 - MINIMUM OR NONE
<b>EXTENT</b> - THE SEVERITY OR MAGNITUDE OF THE HAZARD SHOULD IT OCCUR IN THIS JURISDICTION
5 - VERY HIGH
4 - HIGH
3 - MEDIUM
2 - LOW
1 - MINIMUM OR NONE

**Hazard Identification and Ratings Exercise**

<b>Hazard</b>	<b>Geographic Area</b>	<b>Location (2015)</b>	<b>Probability (2015)</b>	<b>Extent (2015)</b>
Hurricanes	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
Summerdale				
Severe Storms	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Foley			
Severe Storms (cont'd)	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
Tornadoes	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Robertsdale			
	Silverhill			
	Spanish Fort			
Tornadoes (cont'd)	Summerdale			
Floods	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
Wildfires	Baldwin County			
	Bay Minette			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Daphne			
	Elberta			
	Fairhope			
Wildfires (cont'd)	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
Droughts/Heat Waves	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
Droughts/Heat Waves (cont'd)	Silverhill			
	Spanish Fort			
	Summerdale			
Winter Storms/Freezes	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Summerdale			
Earthquakes	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
Earthquakes (cont'd)	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
Dam/Levee Failures	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
Dam/Levee Failures (cont'd)	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
	Baldwin County			
Landslides	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			
Sinkholes (Land Subsidence)	Baldwin County			
	Bay Minette			
Sinkholes/Land Subsidence (cont'd)	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Hazard	Geographic Area	Location (2015)	Probability (2015)	Extent (2015)
Tsunamis	Baldwin County			
	Bay Minette			
	Daphne			
	Elberta			
	Fairhope			
	Foley			
	Gulf Shores			
	Loxley			
Tsunamis (cont'd)	Magnolia Springs			
	Orange Beach			
	Perdido Beach			
	Robertsdale			
	Silverhill			
	Spanish Fort			
	Summerdale			

**Comments:**

**2015 Baldwin County Communities Capabilities Assessment Exercise**

This table shows a range of criteria that demonstrate the capabilities of each community to undertake various hazard mitigation activities. Please review the responses for your jurisdiction and mark any corrections needed. Return the completed exercise to Danon Hoagland. We need one response for each jurisdiction. Y = Yes and N = No

JURISDICTION	enforce zoning ordinance	administer subdivision regulations	enforce building and technical codes	up-to-date comprehensive plan adopted in last 5 years	5-6 year capital improvements plan updated annually	experience with FEMA grant programs for hazard mitigation projects	professional urban planner on staff	professional engineer on staff	certified floodplain manager on staff	full-time building inspector on staff
Baldwin County										
Bay Minette										
Daphne										
Elberta										
Fairhope										
Foley										
Gulf Shores										
Loxley										
Magnolia Springs										
Orange Beach										
Perdido Beach										
Robertsdale										
Silverhill										
Spanish Fort										
Summerdale										

## 2015 Baldwin County Multi-Hazard Mitigation Plan

**2010 PLAN IMPLEMENTATION STATUS SURVEY**

Completed by:

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Name and TitleInstructions

1. Please return completed survey to Danon Hoagland by August 21, 2015.
2. Please limit your response to one per community. If your community has more than one representative on the Hazard Mitigation Planning Committee, you will need to agree on a single response.
3. Please note the status of each mitigation measure your community approved in your Community Action Program from the 2010 Plan. Use the following abbreviations:
  - C** = Completed this 2010 mitigation measure.
  - O** = Completed this ongoing measure and will continue in the 2015 Plan.
  - D** = This 2010 mitigation measure was not completed but defer to the 2015 Plan.
  - X** = Delete: this 2010 mitigation measure was not completed or will no longer be ongoing for the 2015 Plan.
4. If a mitigation measure from the 2010 Plan was not completed, provide the primary reason for not completing it, using one of the following categories:
  - Lack of Funding** – Lack of funding or budget constraints impeded the implementation of the mitigation measure.
  - Administrative** – Inadequate staff resources to implement and maintain the mitigation measure.
  - Political** – Lacks local political support of the mitigation measure.
  - Technical** – Mitigation measure was not technically feasible.
  - Legal** – Lacks the legal authority to implement the mitigation measure.

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.		
1.1.2	Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.		
1.1.3	Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.		
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.		
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimates within local GIS program. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.		
1.2.3	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.		
1.2.4	Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.		
1.3.2	Identify existing culturally or socially significant structures and critical facilities within Mobile County that have the most potential for losses from natural hazard events and identify needed structural upgrades.		
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.		
1.3.4	Inventory and map existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.		
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.		
1.4.1	Consider large lot size restriction on flood prone areas designated on Flood Insurance Rate Maps.		
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.		
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.		
1.4.4	Enact local ordinance that require community storm shelters within sizeable mobile home parks and subdivisions.		
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.		
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator or FEMA's training center in Emmitsburg, Maryland.		
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
1.6.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.		
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.		
1.6.5	Participate in the "Turn Around, Don't Drown" program by purchasing and installing signs in known flash flood overpass locations.		
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.		
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."		
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.		
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.		
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.		
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.		
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.		
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.		
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
	costs.		
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.		
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.		
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.		
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.		
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.		
1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.		
2.1.1	Pursue FEMA grant funds to relocate buildings and infrastructure out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.		
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.		
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.		
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.		
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.		
2.5.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.		
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.		
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.		
2.7.1	Install lightning and/or surge protection on existing critical facilities.		
2.7.2	Conduct ongoing tree trimming programs along power lines.		
2.8.1	Pursue grant funding for the installation of back up power generators for critical facilities.		
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.		
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.		
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.		
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.		
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain disclosure when a property is for sale.		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.		
3.5.1	Distribute hazard mitigation brochures to students through area schools.		
3.6.1	Distribute the 2010 plan to local officials, stakeholders, and interested individuals through internet download.		
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.		
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.		
3.9.1	Promote the use of weather radios in households and businesses.		
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.		
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.		
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.		
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.		
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.		
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.		
3.10.5	Upgrade critical communications infrastructure.		
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.		
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.		
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.		
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).		
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.		

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

#	Mitigation Measures	Status	Reason Why Measure was not Completed
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.		
4.4.1	Restore and protect wetlands to enhance storm water drainage.		
4.4.2	Develop a coastal renourishment program.		
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.		
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.		
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.		
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.		
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.		
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.		

**Multi-Jurisdictional Mitigation Action Program Exercise  
Baldwin County Hazard Mitigation Planning Committee**

**Name of Community (town, city, or county), School Board, or Agency:**

---

**Prepared**

**by:** \_\_\_\_\_  
**(name and position)**

Instructions for selecting mitigation measures.

1. For Communities, which include all municipalities and the county government, place an X in the column under the Communities column for all those measures your jurisdiction would like to include in your five-year Community Action Program. Mark through those you want to exclude.
2. For School Boards, place the name of the community next to the mitigation measures to be undertaken within the selected community. Only address those measures that will be undertaken by your school board.
3. For Agencies (State, local, non-profit, etc.), place the name of the community next to the mitigation measure recommended for the selected community. These measures are not necessarily the responsibility of your agency.

If you have additional measures to include, please write them down on the back of this page. Please keep in mind your capabilities to carry out the measure.

Some of the measures might be carried out jointly through the Baldwin County EMA (e.g., outreach activities), Baldwin County (e.g., shared GIS resources), or other agencies.

You do not need to identify the funding source at this time.

**2015-2020 Baldwin County Multi-Jurisdictional Mitigation Action Program**

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
<p><b>1</b>     <u>Goal for Prevention.</u> Manage the development of land and buildings to minimize risks of loss due to natural hazards.</p>					
<p><b>1.1</b>     <u>Comprehensive Plans and Smart Growth.</u> Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.</p>					
1.1.1	<p>Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long-term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.</p>	All	Both	Action	Existing
1.1.2	<p>Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.</p>	All	Both	Action	Existing
1.1.3	<p>Prepare a five-year capital improvements plan (CIP) to include capital projects that implements the natural hazards element of the community's comprehensive plan or projects identified in the Community Mitigation Action Program of this multi-hazard mitigation plan.</p>	All	Both	Action	Existing
<p><b>1.2</b>     <u>Geographic Information Systems (GIS).</u> Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories.</p>					
1.2.1	<p>Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.</p>	All	Both	Action	HMA
1.2.2	<p>Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.</p>	All	Both	Action	HMA
1.2.3	<p>Mark depths of flooding and storm surge immediately after each event. Enter and maintain these historical records in GIS.</p>	Flooding	Both	Action	Existing

# APPENDICES

## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
<b>1.3 <u>Planning Studies.</u> Conduct special studies, as needed, to identify hazard risks and mitigation measures.</b>					
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Flooding	Both	Action	HMA
1.3.2	Identify existing culturally or socially significant structures and critical facilities within the jurisdiction that have the most potential for losses from natural hazard events and identify needed structural upgrades.	All	Existing	Action	TBD
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	Flooding	Existing	Action	TBD
1.3.4	Inventory and map existing fire hydrants throughout the jurisdiction, and identify areas in need of new fire hydrants.	Wildfires	Existing	Action	TBD
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Flooding	Both	Action	HMA
<b>1.4 <u>Zoning.</u> Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.</b>					
1.4.1	Consider large lot size restrictions on flood prone areas designated on Flood Insurance Rate Maps.	Flooding	Both	Action	Existing
1.4.2	Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Flooding	Both	Action	Existing
1.4.3	Require delineation of flood plain fringe, floodways, and wetlands on all plans submitted with a permit for development within a flood plain.	Flooding	Both	Action	Existing
1.4.4	Enact local ordinance that requires community storm shelters within sizeable mobile home parks and subdivisions.	Tornadoes, Hurricanes, Severe Storms	New	Action	Existing

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
<b>1.5</b> <u>Open Space Preservation.</u> Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for parks, conservation areas, landscaping, and drainage.					
1.5.1	Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control.	Flooding	New	Action	Existing
<b>1.6</b> <u>Flood Plain Management Regulations.</u> Effectively administer and enforce local floodplain management regulations.					
1.6.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Flooding	Both	Action	Existing
1.6.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Flooding	Both	Action	Existing
1.6.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	Flooding	Both	Action	Existing
1.6.5	Participate in the "Turn Around Don't Drown" program by purchasing and installing signs in known flash flood bridge overpass locations.	Flooding	Existing	Project	Other
1.6.6	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	Both	Project	HMA
<b>1.7</b> <u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from natural hazard damages.					
1.7.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.	All	New	Action	Existing
1.7.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."	Tornadoes, Hurricanes, Severe Storms	New	Action	Existing
1.7.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.	Tornadoes, severe storms, winter storms/freezes, hurricanes	Both	Action	HMA

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
1.7.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.		Wildfires	Both	Action	Existing
1.7.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.		All	Existing	Action	Existing
1.7.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.		Tornadoes, Hurricanes, Severe Storms	New	Project	HMA
<b>1.8</b>	<b><u>Landscape Ordinances.</u> Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.</b>					
1.8.1	Review and revise as necessary, landscaping standards for parking lots that reduce the size of impervious surfaces and encourage natural infiltration of rainwater.		New	Action	Action	Existing
1.8.2	Establish ordinances to help mitigate fire hazards related to fuel buildup due to recent hurricanes, by raising tree canopies close to homes, thinning forests near urban areas, and removing trees that are too close to homes.		Wildfires	Both	Action	Existing
1.8.3	Establish ordinance for the planting of new urban forests or replacement of hurricane damaged urban forests using hurricane resistant tree species to mitigate wind and erosion problems, help beautify and promote healthy urban environments and reduce heating, cooling and storm runoff costs.		Wildfires	Both	Actions	Existing
<b>1.9</b>	<b><u>Storm Water Management.</u> Manage the impacts of development on storm water runoff rates and to natural drainage systems.</b>					
1.9.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.		Flooding	Existing	Action	Existing
1.9.2	Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction.		Flooding	Existing	Action	Existing
1.9.3	Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces.		Flooding	Both	Action	TBD

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
<b>1.10</b> <u>Dam Safety Management.</u> Establish a comprehensive dam safety program.					
1.10.1	Support legislation to establish a State dam safety program.	Dam/Levee Failure	Both	Action	Existing
<b>1.11</b> <u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.					
1.11.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Flooding	Both	Action	Existing
<b>1.12</b> <u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.					
1.12.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	Flooding, Tornadoes, Hurricanes, Severe Storms and Earthquakes	Existing	Action	HMA
1.12.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	Both	Project	HMA
<b>2</b> <u>Goal for Property Protection:</u> Protect structures and their occupants and contents from the damaging effects of natural hazards.					
<b>2.1</b> <u>Building Relocation.</u> Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.					
2.1.1	Pursue FEMA grant funds to relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Flooding	Existing	Project	HMA
<b>2.2</b> <u>Acquisition.</u> Acquire flood prone buildings and properties and establish permanent open space.					

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
2.2.1	Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.		Flooding	Existing	Project	HMA
2.2.2	Utilize the the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.		Flooding	Existing	Project	HMA
<b>2.3</b>	<b><u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.</b>					
2.3.1	Pursue grant funds to subsidize the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.		Flooding	Existing	Project	HMA
2.3.2	Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families.		Flooding	Existing	Project	HMA
<b>2.4</b>	<b><u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.</b>					
2.4.1	Pursue FEMA grant funds for flood proofing pre-FIRM non-residential buildings, where feasible.		Flooding	Existing	Project	HMA
<b>2.5</b>	<b><u>Flood Control Measures.</u> Small flood control measures built to reduce/prevent flood damage</b>					
2.5.1	Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through non-structural mitigation techniques.		Flooding	Both	Project	HMA
<b>2.6</b>	<b><u>Building Retrofits.</u> Retrofit vulnerable buildings to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.</b>					
2.6.1	Pursue FEMA grant funds to retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.		Flooding, Tornadoes, Hurricanes, Severe Storms and Earthquakes	Existing	Action	HMA

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
2.6.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.		Flooding, Tornadoes, Hurricanes, Severe Storms and Earthquakes	Existing	Action	Existing
2.7	<b>Hazard Insurance Awareness.</b> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.					
2.7.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.		All	Existing	Action	Existing
2.7.2	Promote the purchase of crop insurance to cover potential losses due to drought.		Drought	Existing	Action	Existing
2.8	<b>Critical Facilities Protection.</b> Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones or construction of new facilities for maximum protection from all hazards.					
2.8.1	Install lightning and/or surge protection on existing critical facilities.		Severe storms	Existing	Project	TBD
2.9	<b>Back Up Power:</b> Assure uninterrupted power supplies during emergency events.					
2.9.1	Pursue grant funding for the installation of back up power generators for critical facilities.		Hurricanes, Tornadoes, Severe Storms	Existing	Project	HMA
3	<b>Goal for Public Education and Outreach.</b> Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.					
3.1	<b>Map Information.</b> Increase public access to Flood Insurance Rate Map (FIRM) information.					
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.		All	Both	Action	Existing
3.2	<b>Outreach Projects.</b> Conduct regular public events to inform the public of hazards and mitigation measures.					

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
3.2.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.		All	Both	Action	Existing
3.2.2	Conduct materials distribution, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.		All	Existing	Action	Existing
3.2.3	Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.		All	Both	Action	Existing
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.		Flooding	Both	Action	Existing
3.3	<b><u>Real Estate Disclosure.</u> Encourage real estate agents to disclose flood plain location for property listings.</b>					
3.3.2	Consider the enactment of a local ordinance or state law to require floodplain location disclosure when a property is listed for sale.		Flooding	Existing	Action	Existing
3.4	<b><u>Library.</u> Use local library resources to educate the public on hazard risks and mitigation alternatives.</b>					
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.		All	Both	Action	Existing
3.5	<b><u>Education Programs.</u> Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.</b>					
3.5.1	Distribute hazard mitigation brochures to students through area schools.		All	Both	Action	Existing
3.5.2	Educate homeowners about structural and non-structural retrofitting of vulnerable homes.		Earthquake	Both	Action	Existing
3.6	<b><u>Community Hazard Mitigation Plan Distribution.</u> Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.</b>					

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
3.6.1	Distribute the 2015 plan to local officials, stakeholders, and interested individuals through internet download.		All	Both	Action	Existing
3.6.2	Distribute the 2015 plan summary to the public through local jurisdictions, via the internet and other media.		All	Both	Action	Existing
<b>3.7</b>	<b><u>Technical Assistance.</u> Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.</b>					
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.		Flooding	Both	Action	Existing
<b>3.8</b>	<b><u>Mass Media Relations.</u> Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking to increase public awareness and distribute public information on hazard mitigation topics.</b>					
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.		All	Both	Action	Existing
<b>3.9</b>	<b><u>Weather Radios.</u> Improve public access to weather alerts.</b>					
3.9.1	Promote the use of weather radios in households and businesses.		All	Both	Action	Existing
3.9.2	Require the installation of weather radios in all public buildings and places of public assembly.		All	Both	Action	Existing
3.9.3	Pursue grant funding to distribute weather radios and emergency response instructions to municipal residents.		All	Both	Action	Existing
<b>3.10</b>	<b><u>Disaster Warning.</u> Improve public warning systems.</b>					
3.10.1	Establish an ALERT flood warning system at strategic locations in the county, including at a minimum, sensors that provide real-time access to stream flow, stream stage, and precipitation data.		Flooding	Both	Project	HMA

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
3.10.2	Ensure that the ALERT warning system links data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas.		Flooding	Both	Project	HMA
3.10.3	Evaluate the feasibility of a shared tri-county ALERT system covering Baldwin, Escambia, and Mobile counties.		Flooding	Both	Project	HMA
3.10.4	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.		All	Both	Project	HMA
3.10.5	Upgrade critical communications infrastructure.		All	Both	Project	HMA
4	<b>Goal for Natural Resources Protection.</b> Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.					
4.1	<b>Open Space Easements and Acquisitions.</b> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources.					
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.		Flooding	Existing	Project	HMA
4.2	<b>River/Stream Corridor Restoration and Protection.</b> Restore and protect river and stream corridors within areas.					
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.		Flooding	Both	Action	Other
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.		Flooding	Existing	Action	Existing
4.3	<b>Urban Forestry Programs.</b> Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.					

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).		Flooding	Existing	Action	Existing
4.3.2	Increase overall green spaces in cities by planting hurricane resistant trees with site and location taken into consideration.		Wildfire	Both	Action	Existing
4.3.3	Develop an urban forestry management plan to ensure a progressive urban forestry program aimed at increasing forestry canopy, increased safety and planting hurricane resistant tree species.		Wildfire	Both	Action	Existing
<b>4.4</b>	<b><u>Beach and Dune Protection/Renourishment.</u> Protect beaches and dunes from coastal and man-made erosion and renourish.</b>					
4.4.1	Restore and protect wetlands to enhance storm water drainage.		Flooding, Hurricanes	Existing	Action	Other
4.4.2	Develop a coastal renourishment program.		Flooding, Hurricanes	Existing	Action	Other
<b>4.5</b>	<b><u>Water Resources Conservation Programs.</u> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.</b>					
4.5.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.		Droughts/heat waves, wildfires	Both	Action	Existing
<b>5</b>	<b><u>Goal for Structural Projects.</u> Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.</b>					
<b>5.1</b>	<b><u>Drainage System Maintenance.</u> Improve maintenance programs for streams and drainage ways.</b>					
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.		Flooding	Both	Action	Existing
<b>5.2</b>	<b><u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.</b>					

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## 2015 Baldwin County Multi-Hazard Mitigation Plan

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Funding Source
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.		Flooding	Both	Project	HMA
5.2.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.		Drought	Both	Project	HMA
5.3	<b><u>Community Shelters and Safe Rooms:</u> Provide shelters from natural hazards for the safety of community residents.</b>					
5.3.1	Ensure the inclusion of storm shelters and/or safe rooms in public buildings such as schools and multi-purpose community centers.		Hurricanes, Tornadoes, Severe Storms	New	Project	HMA
5.3.2	Pursue grant funds to establish a program for subsidizing safe room and storm shelter construction in appropriate locations and facilities.		Tornadoes, Hurricanes, Severe Storms	Existing	Project	HMA
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.		Tornadoes, Hurricanes, Severe Storms	Both	Project	HMA

**Appendix J  
Adopting Resolution**



## **App. J – Adopting Resolution**

- 1.0 Purpose
- 2.0 Sample Adopting Resolution

### **1.0 Purpose**

The sample resolution presented here serves as a model for the governing bodies of the participating jurisdictions to adopt the 2015 plan update following a public hearing. Each jurisdiction may modify the sample to fit their particular legal form.

### **2.0 Sample Adopting Resolution**

**RESOLUTION OF THE (insert name of governing body)****A RESOLUTION ADOPTING THE 2015 BALDWIN COUNTY MULTI-HAZARD MITIGATION PLAN, IN FULFILLMENT OF THE FEDERAL DISASTER MITIGATION ACT OF 2000 AND THE LOCAL MITIGATION PLAN REQUIREMENTS OF 44 C.F.R. SECTION 201.6 AND FEMA LOCAL MULTI-HAZARD MITIGATION PLANNING GUIDANCE**

**WHEREAS**, The Federal Disaster Mitigation Act of 2000 (DMA 2000), as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) provides Federal assistance to local governments to alleviate suffering and damage from disasters, and broadens existing relief programs to encourage disaster preparedness plans and programs, coordination and responsiveness, insurance coverage, and hazard mitigation measures; and,

**WHEREAS**, the DMA 2000 requirements for local mitigation plans are set forth in 44 C.F.R. Section 201.6 and the Local Multi-Hazard Mitigation Planning Guidance, FEMA, July 1, 2008 (Federal planning criteria); and,

**WHEREAS**, as a prerequisite for each Baldwin County jurisdiction to continue to qualify for FEMA mitigation grant assistance programs, the DMA 2000 requires the five year update of the Baldwin County, Alabama, Natural Hazards Mitigation Plan, which was approved by FEMA on February 1, 2011; and,

**WHEREAS**, the AEMA had awarded a planning grant funded through the FEMA Hazard Mitigation Grant Program (HMGP) to the Baldwin County EMA to fund 75% of the total cost of the five year plan update for all jurisdictions within Baldwin County; and,

**WHEREAS**, the 2015 Baldwin County Multi-Hazard Mitigation Plan has been prepared in accordance with DMA 2000 requirements under the direction of the Baldwin County Hazard Mitigation Planning Committee with the support of the Baldwin County EMA, on behalf of all of the jurisdictions within Baldwin County; and,

**WHEREAS**, said mitigation plan addresses all natural hazards deemed to threaten property and persons within the unincorporated and incorporated areas of Baldwin County; and,

**WHEREAS**, the Federal planning criteria require formal adoption of the FEMA-approved plan update by each participating jurisdiction.

**NOW THEREFORE, BE IT RESOLVED** that the 2015 Baldwin County Multi-Hazard Mitigation Plan is hereby adopted and immediately made effective.

**ADOPTED** this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**APPROVED:** \_\_\_\_\_

ITS: \_\_\_\_\_

**ATTEST:** \_\_\_\_\_

ITS: \_\_\_\_\_