

Baldwin County FHMP Risk Assessment Meeting Minutes

August 2, 2018
10:00 AM to 12:00 PM CDT

**Action items are bold and underlined.

Present: Wood E&IS Cindy Popplewell
Baldwin County Mike Howell
Kim Nelson
Jennifer Forsman
Peggy Summerville

This memorandum presents the meeting minutes from the August 2, 2018, risk assessment meeting for the *Baldwin County Flood Hazard Management Plan Update*. It provides an update on the planning progress and public engagement process; a review of hazard identification and risk assessment; and next steps. The sign-in sheet is included as Appendix A and the powerpoint presentation is included as Appendix B.

Introductions

The meeting began with Mike Howell welcoming and thanking the attendees and introductions all around.

Update on Hazard Mitigation Planning Progress

Wood E&IS's approach to the planning process is structured around CRS's four-phase guidance for developing a flood hazard management plan: 1) organize resources, 2) assess risks, 3) develop a mitigation plan, and 4) implement the plan and monitor progress and will thus position Baldwin County to seek maximum credit under the CRS Program. As demonstrated in Table 1, the planning tasks are also consistent with FEMA's Flood Mitigation Assistance (FMA) and Local Mitigation Planning Tasks. Current planning progress is also presented in red text in Table 1.

Planning for Public Involvement

Potential methods for involving the public in the planning process were discussed at the Kickoff Meeting using a tiered format geared to inform, educate, and engage the public. Thus far, information has been added to community websites and a public survey is available for community participation: <https://www.surveymonkey.com/r/5PHJDDC>.

The survey is posted to the Baldwin County website and will be distributed via community Facebook pages and the Baldwin County Association of Realtors.



Documentation of distribution will be included within an appendix to the final *Baldwin County Flood Hazard Management Plan Update* document.

Table 1. 10-Step Planning Process

| 10-Step Mitigation Planning Process FEMA 4 Phase Guidance | Community Rating System (CRS) Planning Steps (Activity 510) | FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201) |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Phase I Organize Resources | Step 1. Organize to Prepare the Plan Completed | Task 1: Determine the Planning Area and Resources |
| | | Task 2: Build the Planning Team 44 CFR 201.6(c)(1) |
| | Step 2. Involve the public Ongoing with survey, and public meetings | Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1) |
| | Step 3. Coordinate with Other Agencies Ongoing with letter distribution | Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3) |
| Phase II Assess Risks | Step 4. Assess the hazard(s) Discussion Today | Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii) |
| | Step 5. Assess the problem(s) Discussion Today | |
| Phase III Develop a Mitigation Plan | Step 6. Set goals Completed | Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii) |
| | Step 7. Review possible activities Next FHMP Meeting | |
| | Step 8. Draft an action plan Next FHMP Meeting | |
| Phase IV Implement the Plan and Monitor Progress | Step 9. Adopt the plan | Task 8: Review and Adopt the Plan |
| | Step 10. Implement, evaluate, revise | Task 7: Keep the Plan Current |
| | | Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4) |



Goals and Objectives

The goals of the existing Flood Hazard Management Plan for Baldwin County were reviewed with the FPMC and updated to be broader, more encompassing, and align with the goals of state and local hazard mitigation plans. The updated goals are as follows:

- Reduce the vulnerability of the people, property, environment, and economy of unincorporated Baldwin County to the impacts of flood hazards.
- Strengthen protection critical facilities and infrastructure from flood hazards to create a safer, more sustainable community.
- Increase citizen awareness and preparedness by providing information describing all types of flood hazards, flood insurance, methods for preventing flood damage, and how to protect their property.
- Maintain and enhance the County's ability to manage a comprehensive flood hazard program.

Hazard Identification and Risk Assessment

Hazard profiles were developed and presented for those flood hazards that can affect the County. Each profile described the hazard and its potential impacts, its location in the planning area, previous occurrences, and its probability of future occurrences. Profiles also explore vulnerability and potential losses. The magnitude of the impact of a hazard event is related directly to the vulnerability of the people, property, and the environment it affects. Table 2, on the following page, identifies the hazards and planning significance for Baldwin County.

Hazards discussed during the presentation of the hazard profiles include:

- Flood: 100/500-year
- Flood: Localized/Stormwater – **Kim Nelson will check with the Baldwin County Highway Department and/or provide contact information to Wood E&IS**
- Hurricane/Tropical Storm, including storm surge – the probability and magnitude/severity were discussed by the FHMP and updated to moderate and significant, respectively. This updated is noted in red in Table 2.
- Coastal/Canal Bank Erosion – no canals identified in Baldwin County; no know beach nourishment projects in Baldwin County
- Dam/Levee Failure – no levees identified in Baldwin County; only one dam is classified as a significant hazard – JP Bertolli Dam on the Styx River in Steelwood. The remaining dams in Baldwin County are low hazard.
- Sea Level Rise



Table 2. Hazard Profile Information and Planning Significance

| Hazard | Spatial Extent | Probability of Future (Frequency) | Magnitude/Severity | Point Totals | Hazard Rating | | | |
|-------------------------------------------------------|----------------|-----------------------------------|-----------------------------|--------------|---------------------------------------|---|---------------------------|-----------------|
| Flood: 100-/500-year | Partial | 2 | Very High | 5 | Significant | 3 | 10 | High |
| Flood: Stormwater/Localized Flooding | TBD | | TBD | | TBD | | | Moderate |
| Hurricane and Tropical Storms (including Storm Surge) | Community-Wide | 3 | High Moderate | 4 | Devastating Significant | 4 | 11 9 | High |
| Coastal/Canal Bank Erosion | Minimal | 1 | Very High | 5 | Moderate | 2 | 8 | Moderate |
| Dam/Levee Failure | Minimal | 1 | Very Low | 1 | Slight | 1 | 3 | Low |
| Changing Future Conditions and Sea Level Rise | Minimal | 1 | High | 4 | Slight | 1 | 6 | Moderate |

| Hazard | Spatial Extent | Probability of Future (Frequency) | Magnitude/Severity | Point Totals | Hazard Rating | | | |
|-------------------------------------------------------|----------------|-----------------------------------|-----------------------------|--------------|---------------------------------------|---|---------------------------|-----------------|
| Flood: 100-/500-year | Partial | 2 | Very High | 5 | Significant | 3 | 10 | High |
| Hurricane and Tropical Storms (including Storm Surge) | Community-Wide | 3 | High Moderate | 4 | Devastating Significant | 4 | 11 9 | High |
| Flood: Stormwater/Localized Flooding | TBD | ? | TBD | ? | TBD | ? | ? | Moderate |
| Coastal/Canal Bank Erosion | Minimal | 1 | Very High | 5 | Moderate | 2 | 8 | Moderate |
| Changing Future Conditions and Sea Level Rise | Minimal | 1 | High | 4 | Slight | 1 | 6 | Moderate |
| Dam/Levee Failure | Minimal | 1 | Very Low | 1 | Slight | 1 | 3 | Low |



Critical Facilities

The FHMP Committee reviewed the critical facilities identified within the FEMA Hazus Software, see Table 3. From this table, the FHMP identified critical facilities to remove and to add.

Table 3. Critical Facilities

| Tract | Name | Street Address |
|------------------------------------|--------------------------------------------|-------------------------------------------------------------|
| 01003011403 | Huggerlanding/ Oyster Bay Volunteer Fire | 4590 CO RD 6 |
| 01003011000 | Fish River Marlow Fire & Rescue Department | 13355 CO RD 32 |
| 01003010100 | Alliance Resources Co., Oswell Loading F | South Carlton, AL Oil Fields. |
| 01003011401 | SWIFT CONSOLIDATED ELEMENTARY SCHOOL | 6330 BON SECOUR HWY |
| 01003011408 | POLLUTION CONTL SYS FT MORGAN | |
| 01003010300 | TENSAW ISLAND LAND SHORES WWTP | TENSAW ISLAND LAND OWNERS ASSC |
| 01003010100 | LANDING INCORPORATION THE WWTP | LANDING INCORPORATION THE |
| Added Critical Facilities | | |
| | Perdida Elementary | 23589 County Road 47 |
| | Elsanor Elementary | 23440 US Highway 90 |
| | Rosinton Elementary | 19757 County Road 64 |
| | Stapleton Elementary | 35480 Harriot Avenue |
| | Volunteer Fire Departments | <u>Kim Nelson and/or Jennifer Forsman to provide</u> |
| | East Baldwin WWTP | |
| Removed critical facilities | | |
| 01003011407 | BALDWIN COUNTY ELECTRIC COOP. | Outside of the Unincorporated Area |
| 01003011408 | Fort Morgan | Outside of the Unincorporated Area |
| 01003010100 | Kimberly-Clark Corp., Dixie Wood Yard Ba | Outside of the Unincorporated Area |
| 01003010300 | Tensaw River Docks and Storage Yard Whar | Outside of the Unincorporated Area |
| 01003010705 | LAKE FOREST WASTE WATER TREATMENT PLANT | Outside of the Unincorporated Area |

Mitigation Actions

Mitigation actions from the existing Flood Hazard Management Plan, the existing Local Hazard Mitigation Plan, and the Flood Risk Report were provided to the FHMP for review and status update in preparation of the next FHMP meeting. These mitigation actions are also provided in Appendix C.



Next Steps

Planning Committee:

- Publicize the public outreach survey
- Mail letters to other agencies/stakeholders
- Review mitigation actions and provide status update for next FHMP Meeting

Wood Environment & Infrastructure Solutions, Inc.:

- Complete Chapters 1 (Planning Process), 2 (Community Profile), and 3 (Risk Assessment) – submit to committee members by August 20th.

Next Committee and Public Meeting:

- Committee Meeting on Thursday, September 13th, 1pm – 3pm
- LEPC Meeting on Monday, September 17th, 10:30am – 12pm



Attachment A – Sign-In Sheets



BALDWIN FLOOD HAZARD MANAGEMENT PLAN UPDATE

| | | | |
|--------------------------|--------------------|----------------------|-----------------------|
| Meeting Location: | Baldwin County EOC | Meeting Date: | 08/03/2018 |
| Facilitator: | | Place/Room: | Large Conference Room |

| | | | |
|---|---------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------|
| 1 | Name: Kim Nelson Company: BCC | Email: Knelson @ baldwin county al . gov Phone: 917h-6837 | Job: Hazard Mitigation Coord |
| 2 | Name: Peggy Summerville Company: Coastal Real Estate + Dev | Email: Peggy @ The Land Lady . org Phone: 251-229-3430 | Job: Realtor |
| 3 | Name: Mike Howell Company: BCC | Email: Mhowell @ baldwin County . AL . Gov Phone: 251-972-6837 | Job: Building Official |
| 4 | Name: Cindy Poppewell Company: Wood | Email: Cindy . Poppewell @ woodplc . com Phone: 615-333-0630 | Job: PM |
| 5 | Name: Jennifer Forsman Company: BEEMA | Email: jennifer . forsman @ baldwin county al . gov Phone: (251) 972-8510 | Job: Planning & Grants |
| 6 | Name: Company: | Email: Phone: | Job: |
| 7 | Name: Company: | Email: Phone: | Job: |
| 8 | Name: Company: | Email: Phone: | Job: |
| 9 | Name: Company: | Email: Phone: | Job: |

Attachment B – PowerPoint Presentation



Baldwin County
Flood Hazard Management Plan UPDATE
Risk Assessment Meeting
August 2, 2018



Cindy Popplewell and Clay Campbell
Wood Environment & Infrastructure Solutions, Inc.



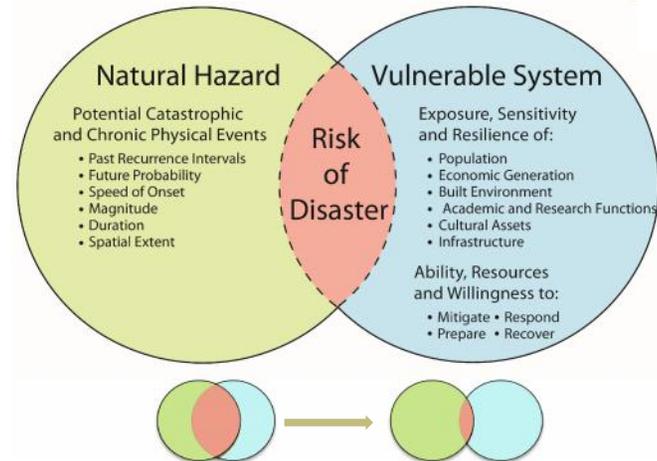
Introductions

- Name
- Organization



Agenda

- 1. Review**
 - ✓ Overview - Why flood management planning?
 - ✓ Planning process and progress
 - ✓ Review and update goals
- 2. Hazard Identification and Risk Assessment (HIRA)**
 - ✓ Review hazard profiles
 - ✓ Consensus on planning significance/relative risk
 - ✓ Discuss data gaps and analysis needs
 - ✓ Review critical facilities
- 3. Next Steps of Planning Process**
 - ✓ Confirm date for next FMPC and public meeting
 - ✓ Get started on mitigation actions



Why Floodplain Management Planning?



Goals of the CRS

1. Reduce flood damage to insurable property,
2. Strengthen and support the insurance aspects of the NFIP, and
3. Encourage a comprehensive approach to floodplain management.



10-Step Planning Process



ORGANIZE RESOURCES

1. Get Organized
2. Plan for Public Involvement
3. Coordinate with Other Departments and Agencies

DEVELOP MITIGATION PLAN

6. Set Planning Goals
7. Review Possible Activities
8. Draft an Action Plan

ASSESS HAZARDS AND RISK

4. Identify Hazards
5. Assess the Risks

IMPLEMENT THE PLAN

9. Adopt the Plan
10. Implement the Plan, Evaluate Work, Revise as Needed



Why Floodplain Management Planning?



NFIP Community Rating System (CRS)

- Communities are rewarded for doing more than the NFIP minimum requirements with a reduction in flood insurance premiums

| CRS Class | Credit Points | Flood Insurance Premium Discount | |
|-----------|---------------|----------------------------------|--------------|
| | | In SFHA ¹ | Outside SFHA |
| 1 | 4,500+ | 45% | 10% |
| 2 | 4,000-4,499 | 40% | 10% |
| 3 | 3,500-3,999 | 35% | 10% |
| 4 | 3,000-3,499 | 30% | 10% |
| 5 | 2,500-2,999 | 25% | 10% |
| 6 | 2,000-2,499 | 20% | 10% |
| 7 | 1,500-1,999 | 15% | 5% |
| 8 | 1,000-1,499 | 10% | 5% |
| 9 | 500-999 | 5% | 5% |
| 10 | 0-499 | 0% | 0% |

Class 7 Savings:
\$860,036.00

Class 6 Savings:
\$1,178,073.00



Summary of Plan Elements



10-Step Planning Process



ORGANIZE RESOURCES

1. Get Organized
2. Plan for Public Involvement
3. Coordinate with Other Departments and Agencies

DEVELOP MITIGATION PLAN

6. Set Planning Goals
7. Review Possible Activities
8. Draft an Action Plan

ASSESS HAZARDS AND RISK

4. Identify Hazards
5. Assess the Risks

IMPLEMENT THE PLAN

9. Adopt the Plan
10. Implement the Plan, Evaluate Work, Revise as Needed



B08

Baldwin County, Alabama 2018 Flood Hazard Management Plan Update

Public Questionnaire

Baldwin County is beginning the process to update the existing Flood Hazard Management Plan to better protect the people and property of the unincorporated areas of Baldwin County from the effects of flood hazard events. The plan will be updated pursuant to the requirements of the National Flood Insurance Program (NFIP) Community Rating System (CRS). Participation in CRS provides steel insurance premium rate reductions to policyholders in Baldwin County in recognition of the fact that the County implements activities that exceed the minimum NFIP requirements and is working towards the three goals of the CRS:

- Reduce and avoid flood damage to insurable property.
- Strengthen and support the insurance aspects of the NFIP, and
- Foster comprehensive floodplain management.

It is important for anyone to become involved in flood hazard management planning to their community. The Baldwin County Flood Hazard Planning Committee requests your participation in this short 10 question survey. The Committee would like your input on past flood events and the types of flood hazards that are your primary concern.

Thank you for your participation!

1. As a Resident within the unincorporated area of Baldwin County, are you a homeowner or renter?

Home Owner

Renter

2. Do you have flood insurance?

Yes

No



Public Survey Update



- ✓ 0 completed surveys so far—[help publicize survey](#)
- ✓ Survey Monkey—notify public, provide link in newsletters, on websites, in utility mailers, via social media, etc.
<https://www.surveymonkey.com/r/5PHJDC>
- ✓ Hard Copy Surveys? Any returns?
- ✓ Survey – set close date, September 7th or other?



3. Have you ever experienced or been impacted by a flood event?

Yes No

4. If you have experienced flooding in the past, could you please provide the approximate date and event description?

5. How concerned are you about the possibility of being impacted by a future flood event?

Not concerned Somewhat concerned Extremely concerned

6. What flood hazards do you feel pose a threat to Baldwin County? Please check all that apply:

Riverine Flooding

Tropical Cyclone Flooding

Storm surge and tropical storm (including storm surge)

Coastal/Sloped Backwash

Dam Failure

Climate Change and Sea Level Rise

7. Is there a non-flood-related hazard, not listed above, that you think is a threat to Baldwin County? Please explain:

8. How prepared do you feel for a flood hazard event?

Not at all prepared Somewhat prepared Prepared Very prepared



4. Identify the Hazards

➤ Identify all the possible hazards affecting the planning area.

- AL State Hazard Mitigation Plan
- Previous Disaster Declarations
- Local Hazard Mitigation Plan

➤ Profile the hazards

- Hazard Description
- Spatial Extent
- Past Occurrences
- Frequency/Likelihood of future occurrences
- Magnitude/Severity
- Define Planning Significance

| |
|-------------------------------------------------------|
| Flood: 100-/500-year |
| Flood: Stormwater/Localized Flooding |
| Hurricane and Tropical Storms (including Storm Surge) |
| Coastal/Canal Bank Erosion |
| Dam/Levee Failure |
| Changing Future Conditions and Sea Level Rise |

*** See Handout ***



Hazard Profiles

▪ Magnitude/Severity

- **Devastating (4):**
 - Devastating casualties, business losses and structure damage;
 - Complete shutdown of facilities for 30 or more days, more than 50 percent of property is severely damaged
- **Significant (3):**
 - Potential for some casualties and significant, but less than devastating, business losses and structure damage,
 - Complete shutdown of critical facilities for at least two weeks, 25–50 percent of property is severely damaged.
- **Moderate (2):**
 - Moderate potential for economic losses and structure damage,
 - Complete shutdown of critical facilities for more than one week, 10–25 percent of property is severely damaged.
- **Slight (1):**
 - Slight or minimal potential for economic losses and structure damage
 - Shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged



Hazard Profiles

▪ Spatial Extent

- **Community Wide (3):** 50-100% of planning area
- **Partial (2):** 10-50% of planning area
- **Minimal (1):** Less than 10% of planning area

▪ Likelihood of future occurrence

- **Very High (5):** Occurs annually, 100% probability in next year.
- **High (4):** Occurs every 2-3 years; Between 30 and 100% probability in next year or at least one chance in ten years.
- **Moderate (3):** Occurs every 3-10 years; Between 10 and 30% probability in next year or at least one chance in next 100 years.
- **Low (2):** Occurs every 10 years; Between 1% and 10% probability in next 100 years.
- **Very Low (1):** Rare; less than 1% probability



Flood

Floods are among the most frequent and costly natural disaster in terms of human hardship and economic loss

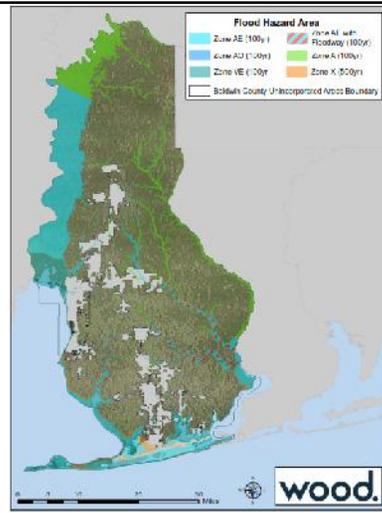
- ✓ **Riverine** – an event when a watercourse exceeds its “bank-full” capacity and is the most common type of flood event. Riverine floods result from precipitation over large areas.
- ✓ **Coastal (Tidal) Flooding** - Coastal floods usually occur as a result of abnormally high tides or tidal waves, storm surge and heavy rains in combination with high tides, tropical storms and hurricanes.
- ✓ **Flash Flooding** – localized floods of great volume and short duration



Flood

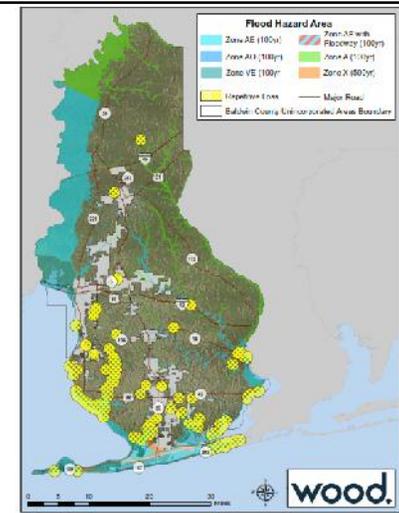
Special Flood Hazard Area

- 353.6 sq.mi.
- Floodprone Areas Along:**
 - Magnolia River
 - Fish River
 - Hollinger Creek
 - Mobile River and Tributaries
 - Perdido River and Tributaries
 - Styx River



Repetitive Loss Areas

- ✓ RL Properties – 1,227
- ✓ SRL Properties - 55

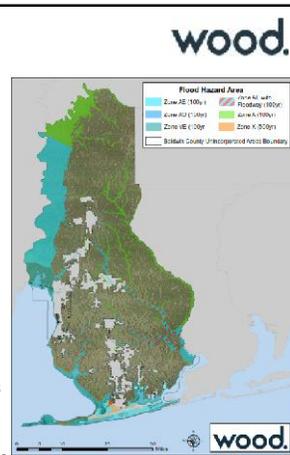


Flood

Flood Risk Report

Noted Problem Areas:

- Dams w/o EAPs
- Coastal Seawalls – Grand Hotel and Hancock Lane
- Coastal Structure at Grand Hotel Marina is overtopped
- Weeks Bay Inlet – Boat Launch
- Undersized culverts – Backwater
- Undersized culverts – Overtopped
- West Fort Morgan Road (Hwy180) overtops
- Riveria Utilities Wastewater Treatment plant located is SFHA
- Sedimentation issues north of confluence of Polecat Creek and Fish River

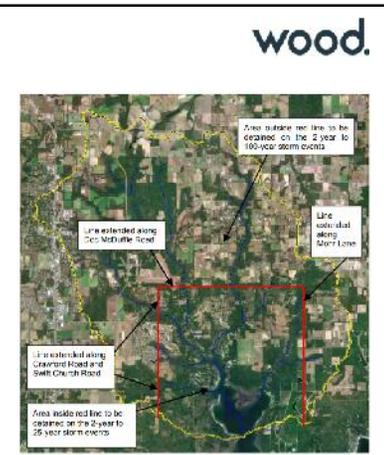


*** See Handout ***



Local Flood Studies

- ✓ Wolf Bay Watershed
- ✓ Fish River & Magnolia River Watershed Study
- ✓ Both studies recommended detention ponds to offset peak discharges



Flood

wood.

- ✓ **Location:** 353.6 sq. mi. in SFHA; Partial – Between 10% to 50% of the planning area
- ✓ **Previous Occurrences:** - 50 flood events (Riverine, Coastal, Flash) since 1995; 2 Presidential Disaster Declarations (1978, 1979)
- ✓ **Probability:** Very High – occurs annually, 2.2 events per year (Note, LHMP has “moderate”)
Magnitude/Severity: 1 death in 2014 in Lillian; \$2.7M in damages, \$116K annually; Significant – potential for some casualties and significant, but less than devastating business losses and structure damage. (Note, LHMP has “slight”)



Localized/Stormwater

wood.

- ✓ **Location:** NEED TO IDENTIFY
- ✓ **Previous Occurrences:** - NEED TO IDENTIFY
- ✓ **Probability:** NEED TO IDENTIFY
Magnitude/Severity: Moderate – moderate potential for economic losses and structure damage



Localized/Stormwater

wood.

Floods are among the most frequent and costly natural disaster in terms of human hardship and economic loss

- ✓ **Urban Stormwater** – land loses its ability to absorb rainfall as it is converted from fields or woodlands to roads, buildings, and parking lots
 - Clogged inlets
 - Blocked Drainage Outfalls
 - Improper Grading



Hurricane/Tropical Storm

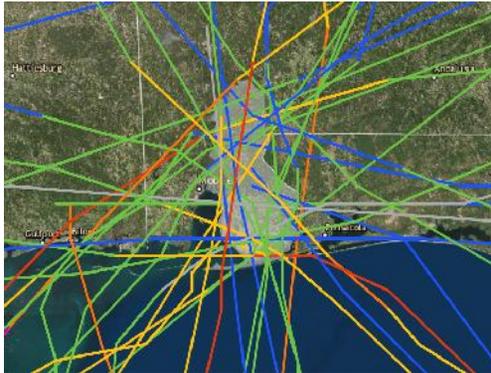
wood.

- A hurricane is a type of tropical cyclone or severe tropical storm that forms in the southern Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and in the eastern Pacific Ocean.
- A typical cyclone is accompanied by thunderstorms, and in the Northern Hemisphere, a counterclockwise circulation of winds near the earth’s surface. All Atlantic and Gulf of Mexico coastal areas are subject to hurricanes.
- Atlantic hurricane season lasts from June to November, with the peak season from mid-August to late October.
- The greatest potential for loss of life related to a hurricane is from the storm surge. Storm surge is water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level to heights impacting roads, homes and other critical infrastructure.



Hurricane/Tropical Storm

wood.



Hurricane/Tropical Storm

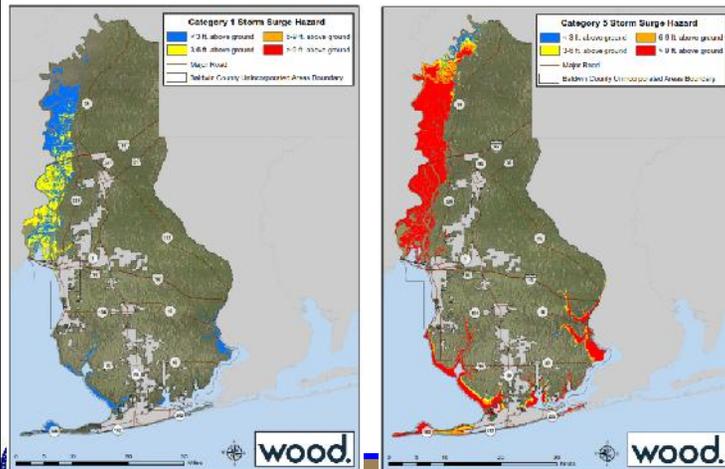
wood.

- ✓ **Location:** Community-wide, 50-100% of the planning area
- ✓ **Previous Occurrences:** - 19 Presidential Disaster Declarations since 1969
- ✓ **Probability:** High – occurs every 2-3 years; between 30-100% probability
(Note, LHMP has “moderate”)
- Magnitude/Severity:** Devastating – devastating casualties business losses and structure damage



Storm Surge

wood.

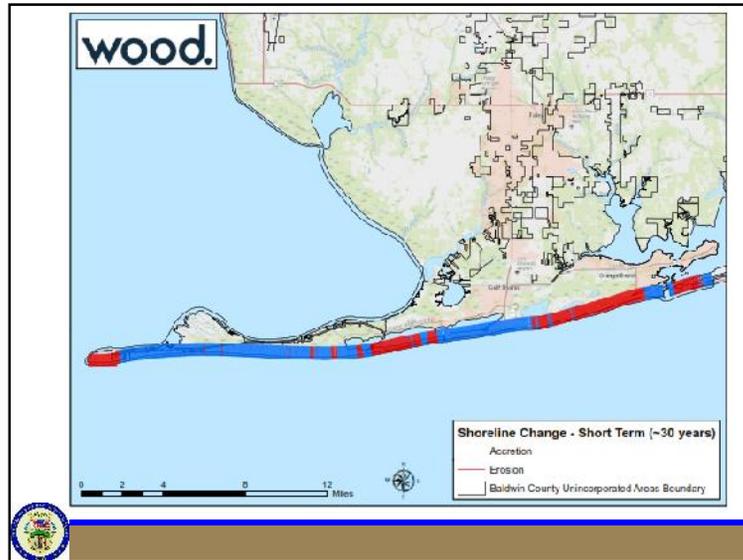


Coastal Bank Erosion

wood.

- A process whereby large storms, flooding, strong wave action, sea level rise, and human activities, such as inappropriate land use, alterations, and shore protection structures, wears away the beaches and bluffs along the coast.
- Erosion undermines and often destroys homes, businesses, and public infrastructure and can have long-term economic and social consequences.
- According to NOAA, coastal erosion is responsible for approximately \$500 million per year in coastal property loss in the United States, including damage to structures and loss of land.
- To mitigate coastal erosion, the federal government spends an average of \$150 million every year on beach nourishment and other shoreline erosion control measures.

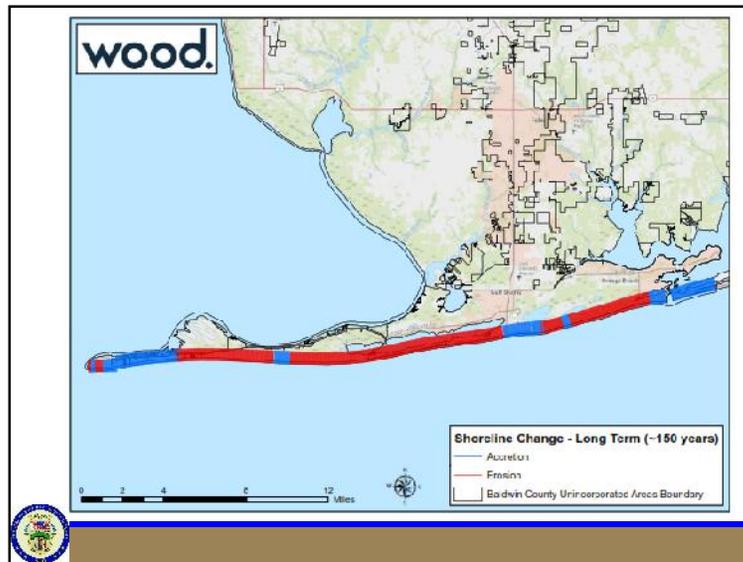




wood.

Coastal Bank Erosion

- ✓ **Spatial Extent:** 104.7 sq.mi. Coastal High Hazard Area (CHHA); Minimal, less than 10% of the planning area
- ✓ **Previous Occurrences:** 1,457 transects, 74% measured erosion at average rate of -0.5 m/yr
- ✓ **Probability:** Very High – occurs annually, 10% probability in the next year
- ✓ **Magnitude/Severity:** Moderate — moderate potential for economic losses and structure damage



wood.

Dam/Levee Failure

DAMS

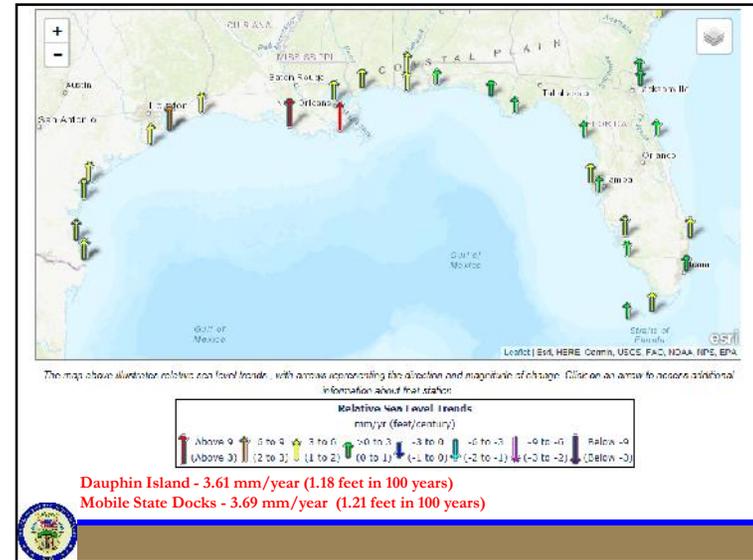
- 23 dams Countywide
- 20 within Unincorporated
- High Hazard = 0
- Significant Hazard = 1
- Low Hazard = 22

Levees

- None located within Baldwin County

Dam/Levee Failure

- ✓ **Spatial Extent:** Minimal, less than 10% of the planning area
- ✓ **Previous Occurrences:** No dam failures reported
- ✓ **Probability:** Very Low - 0 occurrences; Less than 1%; perceived as the least likely event to occur
- ✓ **Magnitude/Severity:** Slight — slight or minimal potential for economic losses and structure damage.

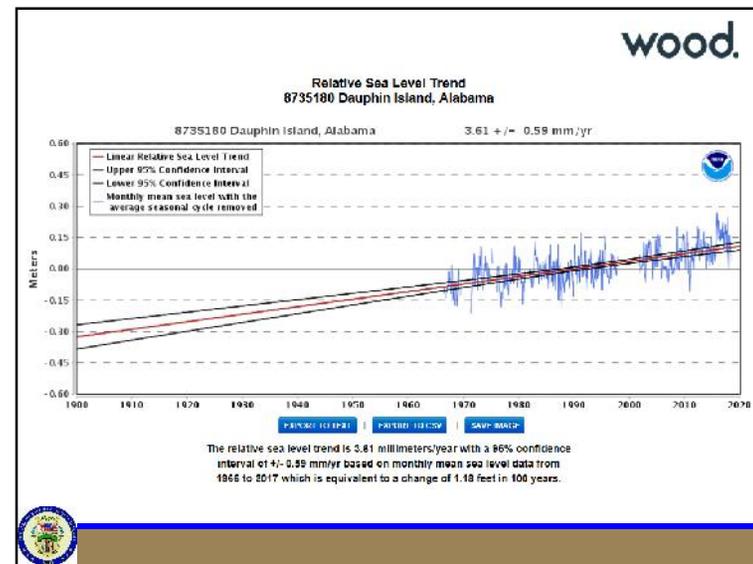


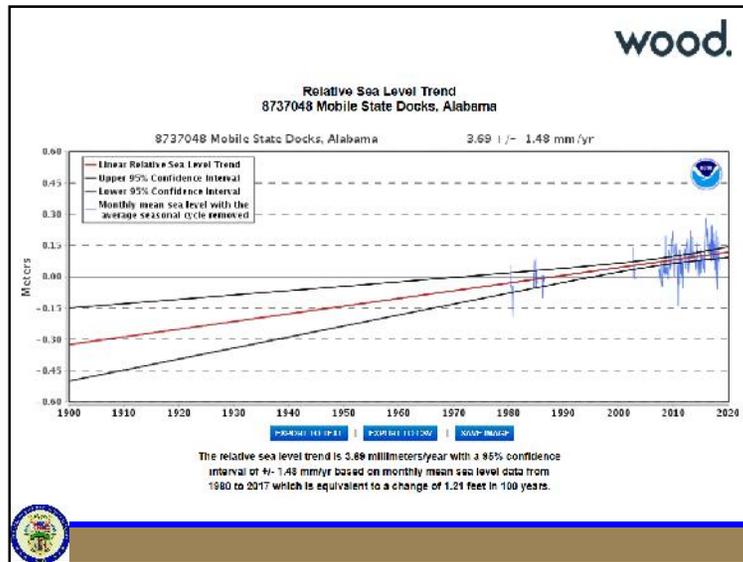
Changing Future Conditions and Seal Level Rise

- Change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.
- Natural occurrence in which the earth has warmed and cooled periodically over geologic time.
- Recent and rapid warming of the earth over the past century has been cause for concern, as this warming is very likely due to the accumulation of human-caused green house gases, such as CO₂, in the atmosphere
- This warming is occurring almost everywhere in the world, which suggests a global cause rather than changes in localized weather patterns.

Sea Level Rise

- Local relative sea level (RSL) trends from NOAA



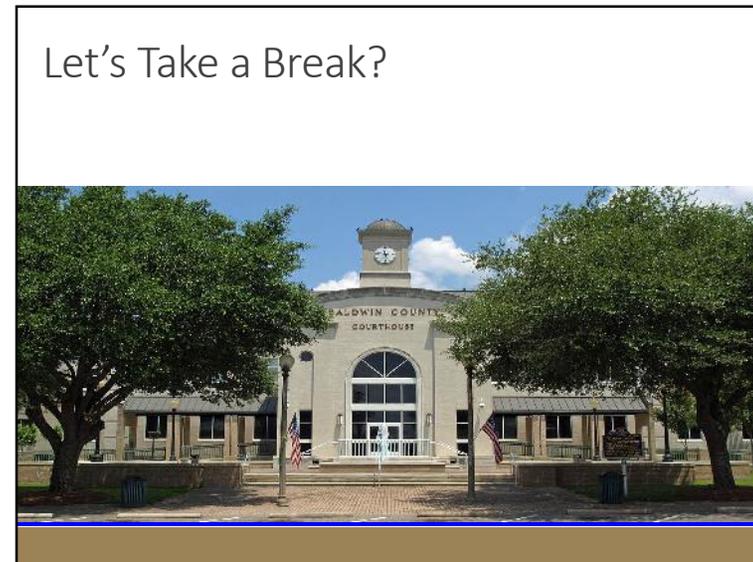


Hazard Summary

| Hazard | Spatial Extent | Probability | Magnitude/Severity | Planning Significance |
|-------------------------------------------------------|----------------|-------------|--------------------|-----------------------|
| Flood: 100-/500-year | Partial | Very High | Significant | High |
| Flood: Stormwater/Localized Flooding | TBD | TBD | TBD | Moderate |
| Hurricane and Tropical Storms (including Storm Surge) | Community-Wide | High | Devastating | High |
| Coastal/Canal Bank Erosion | Minimal | Very High | Moderate | Moderate |
| Dam/Levee Failure | Minimal | Very Low | Slight | Low |
| Changing Future Conditions and Sea Level Rise | Minimal | High | Slight | Moderate |

Changing Future Conditions and Seal Level Rise

- ✓ **Spatial Extent:** 104.7 sq.mi. Coastal High Hazard Area (CHHA); Minimal, less than 10% of the planning area
- ✓ **Previous Occurrences:** 3.6-3.7mm/year
- ✓ **Probability:** High - Between 30-100% probability in next year
- ✓ **Magnitude/Severity:** Slight — slight or minimal potential for economic losses and structure damage



5. Assess the Risk

- Inventory residential & commercial structures
- Inventory critical facilities
- Determine # and value of structures
- Determine # of people in area
- Identify vulnerable infrastructure
- Identify development trends and constraints
- Identify cultural, natural and historic resource areas
- Estimate the \$ losses



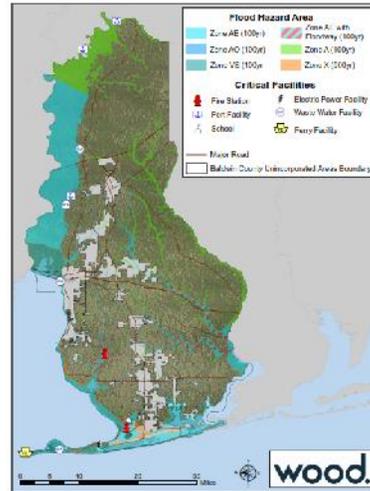
Flood - Risk Assessment

| Type | 1% (100-yr) Dollar Loss | 0.2% (500-yr) Dollar Loss | Annualized Loss |
|---------------------------------------|-------------------------|---------------------------|--------------------|
| Residential Bldg & Contents | \$1,329,500,000 | \$143,900,000 | \$4,500,000 |
| Commercial Bldg & Contents | \$20,660,000 | \$700,000 | \$10,000 |
| Other Bldg & Contents | \$20,500,000 | \$4,000,000 | \$100,000 |
| Total Bldg & Contents | \$1,370,660,000 | \$148,600,000 | \$4,610,000 |
| Business Disruption | \$10,400,000 | \$2,900,000 | \$70,000 |
| TOTAL | \$1,381,060,000 | \$151,500,000 | \$4,680,000 |



Critical Facilities

- Electric Power Facility
- Fire Stations (2)
- Port Facility (3)
- School (1)
- Wastewater Facility (4)
- Ferry Facility



*** See Handout ***



Localized/Stormwater – Risk Assessment

| Type | 10% (10-yr) Dollar Loss | 4% (25-yr) Dollar Loss |
|---------------------------------------|-------------------------|------------------------|
| Residential Bldg & Contents | \$175,00,000 | \$34,800,000 |
| Commercial Bldg & Contents | \$10,000 | \$40,000 |
| Other Bldg & Contents | \$300,000 | \$500,000 |
| Total Bldg & Contents | \$17,810,000 | \$35,340,000 |
| Business Disruption | \$200,000 | \$500,000 |
| TOTAL | \$18,010,000 | \$35,840,000 |



Risk Assessment

| Type | Methodology |
|---------------------------|-----------------------------------------------------------|
| Hurricane/Tropical Storms | Overlay identified storm surge areas on local parcel data |
| Coastal Bank Erosion | Overlay identified erosion areas on local parcel data |
| Dam/Levee Failure | Need dam inundation mapping |



Mitigation Strategy

- Action Items – Next HMPC Meeting
 - Status Update of Previous Action Items – *homework!*
 - Status Update of Existing Action Items from the Local Hazard Mitigation Plan – *homework!*
 - THINK ABOUT - Additional Action Items
 - Prioritization of all Action Items

*** See Handout ***



Sea Level Rise – Risk Assessment

| | < 1ft | < 2ft | < 3ft | < 4ft | < 5ft | < 6ft | < 7ft |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Homes (#) | 396 | 1133 | 2664 | 4756 | 7424 | 10227 | 13280 |
| Property Value (\$M) | 466 | 1027 | 2402 | 4129 | 5931 | 7721 | 9750 |
| Population (#) | 238 | 767 | 1874 | 3329 | 4992 | 6628 | 8301 |
| Roads (miles) | 2 | 7 | 27 | 57 | 92 | 125 | 160 |



Next Steps of Planning Process



Next Steps



- Planning Committee
 - Review mitigation actions and provide status update
 - Publicize the outreach survey
 - Mail letters to other agencies/stakeholders
- Wood Environment & Infrastructure Solutions, Inc.
 - Finalize and email Chapters 1 (Planning Process), 2 (Community Profile), and 3 (Risk Assessment)
 - Prepare 2nd Public Outreach Flyer
- Next Committee and Public Meeting – September ??
- Contact ANYTIME with questions or concerns

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(303) 704-8939



Attachment C – Mitigation Actions



Review of Existing Actions

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------|----------------------------------------|--------|
| 2000 Flood Hazard Management Plan | | | | | | | |
| 1a | Continue to comply with the NPDES permitting requirements and insist on compliance by the development community. | • Highway Department | • Planning & Zoning Department • Building Inspections Department | Staff Time | | Continuous | |
| 1b | Assure compliance with the existing stormwater and erosion control measures contained in the zoning and subdivision regulations. | • Highway Department | • Planning & Zoning Department • Building Inspections Department | Staff Time | | Continuous | |
| 1c | Continue program to pave County dirt roads giving priority to dirt roads with known erosion problems. | • Highway Department | | Annual Budget Appropriation | | | |
| 1d | Complete the COE planning assistance drainage project and construct a demonstration regional drainage facility. | • Planning & Zoning Department | • Budget & Purchasing Department | Staff Time, HUD Disaster Response grant funds, Project Impact Funds | | Complete by end of 2002 | |
| 1e | Locate and inventory all existing stormwater detention facilities in the unincorporated area. | • Planning & Zoning Department | • Highway Department | Staff time, subdivision construction plans, GIS resources | | Complete by end of second quarter 2002 | |
| 1f | Evaluate current annual drainage system maintenance program to determine its' effectiveness and propose program changes as necessary. | • Highway Department | | Staff Time | | Complete by end of first quarter 2002 | |
| 1g | Research the feasibility of a storm water utility to maintain drainage facilities and pursue appropriate action. | • Planning & Zoning Department | | Staff Time | | Complete by end of 2002 | |
| 1h | Research the feasibility of establishing and funding a stream maintenance and restoration program and pursue appropriate action. | • Highway Department | • Planning & Zoning Department | Staff Time | | Complete by end of third quarter 2002 | |
| 1i | Seek legislative authority to prepare and adopt stormwater management and erosion control regulations as recommended in the Baldwin County Erosion Control Decision Maker's Guide. | • Planning & Zoning Department | | Staff Time | | 2002 Legislative Session | |
| 2a | Continue participation in the CRS program to reduce flood hazards. | • Planning & Zoning Department | • Building Inspections Department • Emergency Management Department | Staff Time | | Continuous | |
| 2b | Strictly administer existing flood hazard regulations (Flood Damage Prevention Ordinance) and review said regulations to determine their adequacy and whether revisions are needed. | • Planning & Zoning Department | • Building Inspections Department | Staff Time | | Continuous | |
| 2c | Strengthen the Flood Damage Prevention Ordinance by incorporating zoning measures into the regulations as authorized by the Comprehensive Land-Use Management in Flood-Prone Areas Act of 1971 (Section 11-19-1 et seq. Code of Alabama). | • Planning & Zoning Department | • Building Inspections Department | Staff Time | | End of 2004 | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------|------------------------------------------------------|----------------------|---------------------------------------|--------|
| 2000 Flood Hazard Management Plan | | | | | | | |
| 2d | Continue to assist unincorporated areas to implement planning and zoning in accordance with the provisions of Act No. 91-719, as amended. | • Planning & Zoning Department | | Staff Time | | Continuous | |
| 2e | Provide public infrastructure in flood hazard areas consistent with that needed to support the density and intensity of development established through land use plans adopted per actions c and d above. | • Planning & Zoning Department | • Highway Department | Staff Time | | Continuous | |
| 3a | Assure compliance with the wetlands protection provisions contained in the zoning and subdivision regulations and utilize the ADID study findings in the land development review process. | • Planning & Zoning Department | • Highway Department • Building Inspections Department | Staff Time | | Continuous | |
| 3b | Continue to review and comment upon ADEM and COE permit applications for dredge and fill. | • Planning & Zoning Department | | Staff Time | | Continuous | |
| 3c | Implement ADID study recommendations including the recommendations to pursue the purchase and preservation of highly functioning wetlands and to encourage the participation in programs that may contribute to wetland conservation (i.e. National Conservation Wetland Grants, Forever Wild, Wetland Reserve Program, Conservation Reserve Program, and Partners for Fish and Wildlife). | • Planning & Zoning Department | • Budget & Purchasing Department • Public Lands Department | Grant funds to purchase wetlands | | Continuous | |
| 3d | Develop a countywide Wetlands Conservation Plan through comprehensive inventory and assessment of area wetland resources. | • Planning & Zoning Department | | Staff time, GIS, EPA Grant and County matching funds | | Complete by end of 2002 | |
| 4a | Develop a program to accept and maintain conservation easements. | • Planning & Zoning Department | • Public Lands Department | Staff Time | | Complete by end of first quarter 2002 | |
| 4b | Continue participation in the FEMA hazard mitigation program to purchase properties which repeatedly flood. | • Building Inspections Department | • Public Lands Department • Budget & Purchasing Department | Staff time, County matching funds | | Continuous | |
| 4c | Identify significant open space and wetland resources and pursue public and private grants for purchase as appropriate. | • Planning & Zoning Department | • Budget & Purchasing Department • Public Lands Department | Staff time, County matching funds | | Continuous | |
| 4d | Complete the Baldwin County Parks, Public Access and Recreation Plan as Part 3 of the Baldwin County Master Plan. | • Planning & Zoning Department | | Staff Time | | Complete by first quarter 2001 | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------|-------------------------|--------|
| 2000 Flood Hazard Management Plan | | | | | | | |
| 5a | Continue to coordinate flood hazard activities with state and federal environmental agencies including Health Department, ADCNR, ADEM, EPA, NRCS, FEMA, USFWS and COE. | • Building Inspections Department | • Planning & Zoning Department • Emergency Management Department | Staff Time | | Continuous | |
| 5b | Continue to coordinate flood hazard activities with municipal governments involved in flood hazard management. | • Building Inspections Department | • Planning & Zoning Department • Emergency Management Department | Staff Time | | Continuous | |
| 5c | Utilize the County's geographic information system (GIS) to identify and protect flood hazard areas. | • Planning & Zoning Department | • Communication & Information Systems Dept | Staff time, GIS resources including LIDAR (Light Detection and Ranging) | | Continuous | |
| 5d | Develop and maintain an environmentally sensitive land use matrix in conjunction with the GIS as recommended in the Baldwin County Erosion Control Decision Maker's Guide. | • Planning & Zoning Department | | Staff Time, GIS resources | | Continuous | |
| 5e | Maintain an inventory of county-maintained roads and bridges which become partially or wholly submerged during rainfall events. | • Highway Department | | Staff Time | | Continuous | |
| 5f | Research and evaluate the impact of a buyout only hazard mitigation program within the floodway and pursue appropriate action. | • Building Inspections Department | • Planning & Zoning Department | Staff Time | | Complete by end of 2002 | |
| 6a | Coordinate with public libraries to maintain publications and materials about flood protection. Information available will include FIRM and Floodway Maps and an explanation of their use; flood insurance information; information on measures to protect buildings from flood damage and; information about floodplain management and flood hazard mitigation. | • Planning & Zoning Department | • Building Inspections Department • Emergency Management Department | Materials furnished by FEMA | | Continuous | |
| 6b | Strengthen flood warning activities by developing programs including a flood threat recognition system, flood prediction models and a system to disseminate flood warnings to the public. | • Emergency Management Department | | Staff time; instruments required for flood detection; computer model | | Continuous | |
| 6c | Furnish FIRM map determinations upon request. | • Planning & Zoning Department | • Building Inspections Department | Staff Time, materials required by FEMA | | Continuous | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------|------------|--------|
| 2000 Flood Hazard Management Plan | | | | | | | |
| 6d | Provide annual notification of flood hazard determination service to lending institutions, insurance companies, real estate companies and title insurance companies. | <ul style="list-style-type: none"> • Planning & Zoning Department | <ul style="list-style-type: none"> • Building Inspections Department | Staff Time | | Annually | |
| 6e | Maintain computer database of all Elevation Certificates through computer software provided by FEMA. | <ul style="list-style-type: none"> • Planning & Zoning Department | | Staff Time | | Continuous | |
| 6f | Distribute outreach materials to floodplain residents at county offices and special events. | <ul style="list-style-type: none"> • Planning & Zoning Department | <ul style="list-style-type: none"> • Building Inspections Department • Emergency Management Department | Outreach materials, staff time | | Continuous | |

Review of Existing Mitigation Actions

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------|-----------------------------|----------------------|---------------------|--------|
| 2015 Local Hazard Mitigation Plan | | | | | | | |
| 1.1.1 | Maintain up-to-date comprehensive plans | • Emergency Management Department | • Planning & Zoning Department | Local Funds | | Short- Range | |
| 1.1.3 | Prepare a five-year capital improvements plan (CIP) to include capital projects | • Emergency Management Department | • Planning & Zoning Department | Local Funds | | Short- Range | |
| 1.2.1 | Maintain a centralized, countywide natural hazards and risk assessment database in GIS | • Emergency Management Department | • GIS Department • Engineering Department | HMA | | Mid-Range | |
| 1.3.2 | Identify existing culturally or socially significant structures and critical facilities within Baldwin County | • Planning & Zoning Department | • Building Inspections Department | Local Funds | | Mid-Range | |
| 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 & Zoning Department | • Building Inspections Department | Local Funds | | Mid-Range | |
| 1.3.5 | Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding. | • Planning & Zoning Department | • Building Inspections Department | HMA | | Mid-Range / Ongoing | |
| 1.4.1 | Consider large lot size restriction on flood prone areas designated on Flood Insurance Rate Maps. | • Planning & Zoning Department | • Building Inspections Department | Local Funds | | Mid-Range | |
| 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 & Zoning Department | • Building Inspections Department | Local Funds | | Mid-Range | |
| 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 & Zoning Department | • Building Inspections Department | Local Funds | | Mid-Range | |
| 1.5.1 | Examine regulatory options and feasibility of requiring open space areas for recreation, landscaping, and drainage control. | • Planning & Zoning Department | • Building Inspections Department • Engineering Department | Local Funds | | Mid-Range | |
| 1.6.1 | Train local flood plain managers | • County Commission | | Local Funds | | Mid-Range | |
| 1.6.2 | Maintain a library of technical assistance and guidance materials to support the local floodplain manager. | • Floodplain Manager | | Local Funds | | Mid-Range | |
| 1.6.3 | Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. | • Floodplain Manager | | HMA | | Mid-Range | |
| 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 | | Local Funds | | Mid-Range | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|-----------------------------|----------------------|-------------|--------|
| 2015 Local Hazard Mitigation Plan | | | | | | | |
| 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 | | Local Funds | | Mid-Range | |
| 1.6.6 | Improve flood risk assessment by documenting high water marks | • Floodplain Manager | | TBD | | Mid-Range | |
| 1.7.1 | Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events. | • Building Official | | Local Funds | | Mid-Range | |
| 1.7.2 | Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes; encourage installation of "hurricane clips." | • Building Official | | Local Funds | | Mid-Range | |
| 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 & Zoning Department | | Local Funds | | Mid-Range | |
| 1.9.1 | Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates. | • Planning & Zoning Department | | Existing | | Ongoing | |
| 1.9.2 | Develop, adopt and implement subdivision regulations that require proper storm water infrastructure design and construction. | • Planning & Zoning Department | | Existing | | Ongoing | |
| 1.9.3 | Establish urban forestry program to help mitigate storm water runoff common in areas with large impervious surfaces. | • Planning & Zoning Department | | Existing | | Ongoing | |
| 1.11.1 | Apply for/maintain membership in the CRS Program; continue to upgrade rating. | • Floodplain Manager | | Local Funds | | Short Range | |
| 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 | | HMA | | Ongoing | |
| 2.2.1 | Pursue grant funds to acquire and demolish flood prone or substantially damaged structures and replace with permanent open space. | • Building Official | | HMA | | Short Range | |
| 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 | | TBD | | Short Range | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------|-----------------------------|----------------------|-------------|--------|
| 2015 Local Hazard Mitigation Plan | | | | | | | |
| 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. | <ul style="list-style-type: none"> • Building Official | | HMA | | Mid-Range | |
| 2.3.2 | Pursue grant funds to repair, elevate and weatherize existing homes for low- to moderate-income families. | <ul style="list-style-type: none"> • Building Official | | HMA | | Mid-Range | |
| 2.5.1 | Examine use of minor structural projects (small berm or floodwalls) in areas that cannot be mitigated through nonstructural mitigation techniques. | <ul style="list-style-type: none"> • Building Official | | HMA | | Long Range | |
| 2.7.1 | Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas. | <ul style="list-style-type: none"> • Floodplain Manager | | Local Funds | | Mid-Range | |
| 2.9.1 | Pursue grant funding for the installation of back-up power generators for critical facilities. | <ul style="list-style-type: none"> • Emergency Management Department | | HMA | | Mid-Range | |
| 3.1.1 | Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements. | <ul style="list-style-type: none"> • Planning & Zoning Department | | Existing | | Mid-Range | |
| 3.2.1 | Continue to participate in environmental awareness events | <ul style="list-style-type: none"> • Planning & Zoning Department | | Local Funds | | Short Range | |
| 3.2.2 | Conduct materials distribution | <ul style="list-style-type: none"> • Planning & Zoning Department | | Local Funds | | Short Range | |
| 3.2.3 | Promote disaster resilience within the business community through workshops, educational materials and planning guides, | <ul style="list-style-type: none"> • Emergency Management Department | | Local Funds | | Short Range | |
| 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. | <ul style="list-style-type: none"> • Floodplain Manager | | Local Funds | | Short Range | |
| 3.3.2 | Consider the enactment of a local ordinance or state law to require floodplain disclosure when a property is for sale. | <ul style="list-style-type: none"> • Floodplain Manager | | Local Funds | | Mid-Range | |
| 3.4.1 | Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies. | <ul style="list-style-type: none"> • Floodplain Manager | | Local Funds | | Long-Range | |
| 3.5.2 | Educate homeowners about structural and non-structural retrofitting of vulnerable homes. | <ul style="list-style-type: none"> • Emergency Management Department | | Local Funds | | Long-Range | |
| 3.7.1 | Provide technical assistance to homeowners, builders, and developers on flood protection alternatives. | <ul style="list-style-type: none"> • Floodplain Manager | | Local Funds | | Short Range | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------|-----------------------------|----------------------|------------|--------|
| 2015 Local Hazard Mitigation Plan | | | | | | | |
| 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. | <ul style="list-style-type: none"> Local Government | | HMA | | Mid-Range | |
| 4.4.1 | Restore and protect wetlands to enhance storm water drainage. | <ul style="list-style-type: none"> County Commission | | Local Funds | | Mid-Range | |
| 4.4.2 | Develop a coastal renourishment program | <ul style="list-style-type: none"> County Commission | | Local Funds | | Mid-Range | |
| 5.1.1 | Prepare and implement standard operating procedures and guidelines for drainage system maintenance. | <ul style="list-style-type: none"> Building Official | | Local Funds | | Long Range | |
| 5.2.1 | Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas. | <ul style="list-style-type: none"> Planning & Zoning Department | | HMA | | Mid-Range | |

Identifying New Mitigation Actions

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|-----------------------------|----------------------|-----------|--------|
| OTHER SOURCES – Flood Risk Report; Local Stormwater Studies | | | | | | | |
| | Emergency Action Plans for Dams | | | | | | |
| | Two of the identified coastal structures are seawalls located along the eastern shore of Mobile Bay. The Grand Hotel seawall takes up a large portion of the shoreline and needs to be kept monitored. Another seawall located near Hancock Lane just south of Fairhope could cause erosion due to the hardening of the shoreline. | | | | | | |
| | A coastal structure located at the Grand Hotel Marina along Scenic U.S. Highway 98 is overtopped in a hydraulic model. | | | | | | |
| | The Weeks Bay inlet is bounded with a seawall and riprap on one side. Since this is a popular boat launch, it should be monitored closely for erosion, deposition, and trash. | | | | | | |
| | The jetty, pier, and ferry dock located along the western end of Fort Morgan needs to be monitored for its impact on the coast. | | | | | | |
| | Multiple culverts and bridges within the county are undersized and cause backwater flooding upstream. See database for specific locations. | | | | | | |
| | Multiple culverts and bridge openings within the county are undersized and overtop during the less significant flooding events. | | | | | | |
| | West Fort Morgan Road (State Highway 180) overtops during the less significant flooding events. The amount of flooding during frequent storms can prevent access to the number of residential and commercial properties in the western portion of Fort Morgan peninsula | | | | | | |
| | There are multiple repetitive loss and severe repetitive loss properties in Baldwin County. | | | | | | |

| Action ID | Mitigation Action | Responsible Office | Partners | Potential Resources/Funding | Estimated Cost Level | Timeframe | Status |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|-----------------------------|----------------------|-----------|--------|
| OTHER SOURCES – Flood Risk Report; Local Stormwater Studies | | | | | | | |
| | A significant landuse change from 2006 to 2011 occurred when several homes and a Wal-Mart Supercenter were developed along Steele Creek's floodplain | | | | | | |
| | The Riveria Utilities Wastewater Treatment Plant is an essential facility located in a SFHA that is subject to flooding during less frequent flooding events. | | | | | | |
| | Flood prone areas in Baldwin County Unincorporated Areas include areas along the Magnolia River, south of U.S. Highway 98 as well as areas along the Fish River, Hollinger Creek, the Mobile River and its tributaries, the Perdido River and its tributaries, and the Styx River. | | | | | | |
| | There is a beaver dam along Sandy Creek just downstream of the Foley Beach Express that can cause backwater flooding upstream. | | | | | | |
| | Just north of the confluence of Polecat Creek and Fish River there are some significant sedimentation issues. | | | | | | |