Southern Georgia Regional Commission in Cooperation with Greater Lowndes County presents:

Lowndes County

(Dasher, Hahira, Lake Park, Remerton, Valdosta)

Hazard Mitigation Plan Update

Adopted

2016

TABLE OF CONTENTS

CHAPTER 1 – INTRODUCTION

I. PROBLEM STATEMENT, PURPOSE, AUTHORITY, AND NEED

Purpose and Need

This document, referred to as the Lowndes County Hazard Mitigation Plan, is an official update of the Lowndes County Pre-Disaster Mitigation Plan, submitted to and approved by the Georgia Emergency Management Agency (GEMA) in 2011.

The contents of this document are intended to provide the framework for hazard mitigation strategies and actions undertaken by local governments within Lowndes County. The purpose of completing these proposed hazard mitigation actions is ultimately the reduction of the overall level of exposure and risk to the citizens of Lowndes County as well as to government-owned facilities and infrastructure.

This plan will meet the requirements of the Disaster Mitigation Act of 2000 Public Law 106-390, October 30, 2000. Meeting the regulations will allow Lowndes County, including each of the local municipalities, to maintain eligibility and qualify to secure all federally declared disaster assistance, including certain types of public assistance and hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288, as amended).The referenced amendment establishes an additional eligibility requirement; after November 1, 2004, to be eligible for federal financial disaster assistance, a community must not only have been declared a disaster area by the president of the United States, but must have prepared and adopted a federally approved pre-disaster mitigation plan.

The prior 2011 plan identified numerous local hazards, for each of the communities within Lowndes County and for the county as a whole, and significant events that occurred which reinforced the need for an effective countywide mitigation strategy. To some extent these events also served to reshape our priorities when it came to choosing mitigation projects and identifying areas of greatest concern. The most glaring example was the epic Flooding event in April 2009. Prior to this event, Flooding was not considered to be one of our top-rated hazards. Flooding of this magnitude had not occurred since 1948. This Flood renewed the emphasis on Floodplain management practices, effective mitigation actions to reduce the impact of future Flooding events, and the need for educating the public on mitigation actions they can take (such as purchasing Flood insurance).

Since that time, not much has changed with respect to the types of natural hazards we face. However, in this new plan, some prior listed natural hazards were clarified and “Public Health Emergency” has been added to both the natural and manmade hazards, after consultation with the members of the Lowndes County Hazard Mitigation Planning Committee (Lowndes County HMPC).

The current economy continues to limit the resources available to local governments even as they must still provide vital services to the community. It is extremely important for community leaders and the public to work together in developing a strategy to address hazard-related issues in a variety of different ways. The purpose of this plan is to provide local officials with a decision-making tool to help them prioritize and make best use of a limited amount resources in order to safeguard the community to the greatest extent possible from future disasters. Everyone is a stakeholder in this plan, from the local governments to local businesses to the individual homeowners, because whatever affects one segment of the community ultimately has an impact on all of us and no one group can or should address the local hazard issues alone. This fact is the basis for our need to review our past strategies and develop a new, updated strategy for Lowndes County through this planning effort.

Authority

In 2014, the Lowndes County Emergency Management Agency (EMA) submitted a funding application for the update of the Lowndes County Multi-Jurisdictional Hazard Mitigation Plan. As part of the application, each of the municipal governments within Lowndes County signed a letter of intent to participate in the update. Lowndes County's funding request was subsequently approved. Upon execution of the appropriate documentation in December 2014, Lowndes County EMA became the coordinating entity for the update process, utilizing a committee structure to accomplish the task.

Statement of Problem

Lowndes County and its citizens are vulnerable to a broad range of hazards, both natural and man-made. It is the goal of all of the member governments within Lowndes County to limit, to the maximum extent possible, the effects of these hazards on the lives and property of the citizens and businesses within Greater Lowndes County and to create a more disaster-resilient community to live and work in. To accomplish this, a strategy was utilized that combines risk assessment, planning efforts, Floodplain management measures, and mitigation studies to develop a comprehensive and coordinated mitigation policy for local governments to utilize in order to make Lowndes County less vulnerable to the effects of the many hazards that pose an immediate threat to our area.

This plan is not intended as a comprehensive identification and assessment of all potential hazards, but only of those hazards deemed most likely to occur. It is recognized that the community could be assailed by a disaster not addressed herein. Nor does it address the local impacts which may result from a disaster occurring elsewhere, such as the burden placed on a community because of its location on a hurricane evacuation route.

Community Data

Lowndes County was incorporated on December 23, 1825. It was named for William Lowndes, a South Carolina statesman who died shortly after being nominated for Vice President of the United States. Although Franklinville was the original county seat, that distinction

was changed to Troupville in 1837, and in 1860 Troupville was renamed Valdosta. Valdosta has since remained the county seat and is the largest municipality within Lowndes County.

Lowndes County encompasses 511 square miles and has a population of 113,523 based on 2014 US Census Bureau Estimates. It is the largest of the four counties that make up the Valdosta Metropolitan Statistical Area. In addition to the unincorporated areas within Lowndes County, there are five incorporated municipalities within Lowndes County. They are, in order of population size, Valdosta, Hahira, Remerton, Dasher, and Lake Park.

Some noteworthy statistics are that Lowndes County has seen a steady increase in population, growing by 7.2% between 2010 and 2014. About 1 in 4 Lowndes County citizens live at or below the poverty line (25.3%). Employment has been down, as in most of the country, due to the recession; however, the unemployment rate decreased between September 2014 and September 2015, from 7.2% to 5.9% in Lowndes County and from 7.6% to 6.2% in Valdosta. These figures underscore the critical need for effective mitigation planning and preparedness while also highlighting the challenge of preparing a significant portion of the population with little or no means to implement the appropriate strategies.

Additional detailed information is available in Appendix B of this plan. It contains a snapshot of the community, which includes historical and demographic information obtained from the US Census Bureau and the Georgia Department of Community Affairs.

II. METHODOLOGY, PARTICIPANTS, PROCESS

In August 2015, Lowndes County contracted with the Southern Georgia Regional Commission to work with Lowndes County and its communities to update the 2011 Hazard Mitigation Plan.

Methodology

Just as was done with the initial plan development, Lowndes County chose to form a planning committee to perform this plan update. In order to make sure that all requirements were met and that all of the necessary elements were included in the updated version of the plan, GEMA's Hazard Mitigation Planning Division provided a crosswalk to be used by the committee throughout the planning process. The committee was formed from a diverse group that included representatives from several departments within Lowndes County, as well as the cities of Dasher, Hahira, Lake Park, Remerton and Valdosta. Each of these jurisdictions also participated in the original planning process. The Planner for the City of Valdosta also provides planning services for the City of Hahira under an intergovernmental agreement and therefore attended meetings and provided information on behalf of both municipalities to meet their requirement for participation. The cities of Dasher, Lake Park, and Remerton all utilize contract services from the Southern Georgia Regional Commission (SGRC) so their participation was facilitated through SGRC staff providing needed information at group meetings as well as through telephone and email correspondence. Prior to adoption each of the local governments were also contacted to ensure

that they were satisfied with the draft and their level of input. Also included were various members from many of the other local response agencies, state agencies, volunteer organizations, local businesses, and other boards and agencies with a vested interest in local planning efforts. A more detailed list of participants is provided in a later section.

Since this was an update to the plan, subcommittees would not be necessary because most of the data had already been assembled from the 2011 plan and needed minor updating and clarification to be usable. The committee that had worked on the previous plan was a diverse group consisting of members from most of the jurisdictions, so the product they had developed was a good basis for this update.

Each section of the plan was scrutinized by the SGRC and the committee to assess the current content and offer additions/alternatives based on the new requirements of FEMA and community goals. Other local documents, studies, and plans were scrutinized to determine if any inconsistencies exist. These documents include Greater Lowndes County's Comprehensive Plan, Lowndes County's Emergency Operations Plan, and the Southern Georgia Regional Commission Regional Plan.

The comprehensive plan addressed community facilities; most, if not all, of these are identified in this document as critical facilities. The local comprehensive plan is scheduled for update by October 31st, 2016, and both updates have been closely coordinated.

Numerous other sources were used in the course of plan preparation, including the Georgia Forestry Commission, National Climatic Data Center, National Weather Service, the State of Georgia Hazard Mitigation Strategy, the Lowndes County Community Wildfire Protection Plan, newspaper articles, and interviews with numerous local sources. The information gathered from these sources filled in the gaps and details that tables of data could not provide. The Lowndes County Community Wildfire Protection Plan was used to inform the Wildfire sections (Chapter 2, Section IV and Chapter 4, Section IV), particularly the Action Steps listed in Chapter 4, Section IV. The State of Georgia Hazard Mitigation Strategy was used to inform the overall goals and objectives of the Hazard Mitigation Plan. By interviewing local sources about conditions during and after storms, planners acquired an "eyes on the ground" perspective that could not have been obtained otherwise. A Flood Insurance study was completed in 2008 to establish the actuarial Flood insurance rates and to assist the community in its efforts to promote sound Floodplain management. FIRMs were updated in 2008 and there have been 11 Letters of Map Amendments issued since. The Cities of Dasher and Remerton are not participating in the NFIP. Lowndes County has no Flood Mitigation Assistance Plan.

In August 2015, the Lowndes County HMPC was convened, consisting of various department heads and personnel representing Greater Lowndes County and its communities. This group began examining the current HMP and analyzing its contents. Each section of the plan was reviewed and analyzed to determine if the contents are still valid and whether the contents need to be updated. The Local Hazard, Risk, and Vulnerability section was scrutinized to determine the top disasters that face Lowndes County, and it was

found that Floods are the biggest threat. The list of hazards affecting Lowndes County and its communities has changed only slightly, with the exception of the inclusion of Public Health Emergency as a natural and man-made hazard, as follows:

Natural: Flood, High Winds (Hurricane/Tornado/Tropical Storms/Thunderstorm), Lightning, Wildfire, Extreme Heat/Cold, Drought, Sinkholes, Dam Failure, Hail and Public Health Emergency.

Man-Made: Public Health Emergency, Aircraft accidents, Chemical, biological, radiological, and explosive incidents

The goals and objectives were reviewed by the committee to first determine whether the goals had changed and, if so, to what degree. The objectives and tasks were then reviewed based on the following basic criteria:

- Is the objective or task still in line with the goals?
- Are the objectives and tasks appropriate for accomplishing the goal?
- Are the tasks associated with each objective cost-effective?
- Are there more efficient ways to accomplish the stated goal and objective?

The Plan Maintenance section was reviewed based on the following criteria:

- Are action steps being overlooked?
- Is measurable progress being made towards goals?
- Is the plan maintenance section cost effective?

List of Participants

The following were the members of the HMPC:

Lowndes County Emergency Management Agency
(Ashley Tye, Director)
Lowndes County Planning Dept.
(Jason Davenport, County Planner)
Lowndes County Extension Agent
(Jake Price, Extension Agent)
City of Hahira Fire Dept.
(Dwight Bennett, Chief)
Valdosta Regional Airport
(Tim Register, Operations Supervisor)

City of Valdosta Engineering
(Anthony Musgrove, Operations Superintendent)
City of Hahira
(Bruce Cain, Mayor)
City of Valdosta Planning Dept.
(Matt Martin, Director)
Lowndes County Animal Control
(Linda Patelski, Director)
City of Hahira Police Dept.
(Terry Davis, Chief)

Valdosta State University
(Meredith Lancaster, Associate Director for Environmental and Occupational Safety)
Lowndes County Fire/Rescue
(Lloyd Green, Fire Marshal)
Lowndes County Board of Commissioners
(Paige Dukes, County Clerk)
Lowndes County Sheriff's Office
(R. L. Crosby, Captain)
ERCO Worldwide
(Andy Frost, Environmental Manager)
City of Valdosta Utilities Dept.
(David Frost, Assistant Director)
City of Valdosta Fire Dept.
(Brian Boutwell, Assistant Fire Chief)
City of Valdosta Police Dept.
(Bernard Robinson, Commander)
City of Valdosta Public Works
(Richard Hardy, Director)
Home Depot
(Tony Rengel, Asset Protection Manager)
Jacuzzi Company
(Rebekah Trapp, Safety Manager)

Salvation Army (Robin Starr, Major)
South Georgia Medical Center
(Pam Jones, Emergency Preparedness Manager)

Moody Air Force Base
(Bill Hebert, Medical Readiness Manager)
South GA Health District
(Tad Williams, Program Manager)
Langdale Forest Products
(Ronald Lowery, Technical Supervisor)
Dept. of Family and Children Services
(Shauneen Moss, Contract Coordinator)
Southern Georgia Regional Commission
(Michael Jacobs, Senior Planner)
GA Forestry Commission
(Stephen Spradley, Chief Ranger)

The Southern Georgia Regional Commission assisted the committee with data collection, research and analysis, facilitated all committee meetings and public hearings, compiled an extensive cartographic digital database including GPS collection of critical facilities, and compiled the final written document.

Notices on the local government websites, emails and phone calls were used to contact each jurisdiction and invite them to participate in the Hazard Mitigation Planning process and at the very least send a representative to be a part of the committee. An invitation by email to neighboring EMA directors was also sent. Neighboring counties were invited to provide input at public hearings and before the plan was submitted to GEMA. Documentation of this effort, in the form of e-mail communication sent to all neighboring jurisdictions, is included in Appendix E.

Two publicly advertised meetings were held during plan development. The first hearing was held during the plan development phase on October 2, 2015 at the Southern Georgia Regional Commission to inform the general public of the effort and to invite comment

and participation. The second hearing was held on August 15, 2016 once the plan had been approved by GEMA/FEMA as part of the adoption of the plan.

III. SUMMARY OF CHANGES

This plan will be reviewed annually by each of the stakeholders involved in the original development. They will provide updates as to each of the action steps under their responsibility.

Several changes were made during this update process. These changes include adding new action steps to reflect changes in hazard assessments and newly identified mitigation options as well as removal of numerous action steps from the previous version of the plan. Several of the deletions are a result of action steps that were accomplished and continuation is unnecessary. A majority of the steps however, were deferred to the new plan.

Public Health Emergency was added to both the natural and man-made hazards sections of the plan. Aircraft Accident was dropped from the list of man-made hazards.

Critical Facilities were also updated and replacement values were changed using square footage and the cost estimates from McCall & Associates Architects, in most cases, unless insurance values were available.

It was unclear how some hazard frequencies were determined in the prior plan(s), however with the information that was provided by GEMA at the beginning of the planning process, NCDC storm event data and additional available information, these frequencies were updated. This sometimes resulted in marked differences between old and new data. This frequency compilation is the same that has been used by numerous area communities and places Lowndes County in a position to be compared to others on the same level using the same data.

A list of all changes is provided in Chapter 4 & 5 under each section heading.

IV. ORGANIZATION

This plan is composed of seven chapters, beginning with this introductory chapter as Chapter 1. A detailed analysis of each of the ten natural hazards is presented in Chapter 2. The analyses consist of a description of the hazard and the damage potential; historical frequency and probability of future occurrence; an inventory of assets exposed to the hazard and an estimate of the loss which the community could reasonably be expected to incur; land use patterns as they relate to each hazard; and any aspects of hazards which may be unique to any of the jurisdictions. Man-made, technological hazards are addressed in Chapters 3 and 5 in this plan. Presented

in Chapter 4 is an itemized list of goals, objectives, tasks and action steps which are proposed for implementation to mitigate likely adverse impacts of specific hazard events. This part of the plan also identifies, prioritizes, and suggests funding sources for hazard mitigation activities. Chapter 6 describes the implementation strategy for this plan. Chapter 7 consists of a concluding statement, followed by appendices describing additional data by hazard, including critical facility data and documentation.

V. HAZARD RISK VULNERABILITY (HRV) SUMMARY

This plan identifies and assesses community risks to certain natural and man-made hazards and identifies how to reduce exposure to them. The assessment provides the factual basis for activities proposed to reduce losses, including a description of the type, location, and extent of natural and man-made hazards deemed most likely to befall Lowndes County. Reference was made to the historical record to compile information on previous events and for use in estimating the probability of hazard recurrence.

Vulnerability includes a summary of past events and their impacts. This is quantified by describing the types and numbers of existing and future buildings, infrastructure, and critical facilities located in identified hazard prone/susceptible areas. Estimates of the potential dollar losses that could reasonably be expected to result from another specified hazard event are also presented.

Land uses and development trends were reviewed for the purpose of identifying mitigation options that can be considered in future land use decisions to reduce each jurisdiction's specific risk.

a. Local Hazard Risk and Vulnerability Summary

As noted above, Chapters 2 and 3 are the local hazard, risk, and vulnerability summaries for natural and man-made hazards, respectively. These summaries are intended to evaluate each hazard in terms of each jurisdiction's vulnerability to the hazard and the hazard's impact on the jurisdiction, based on the review of the historical record and probability of future occurrence. This review includes an analysis of assets exposed to the hazard, potential losses, land use and development trends, and jurisdictional differences. According to the available historic data, Lowndes County and its municipalities are at risk from the following natural hazards:

1. Flooding (localized Flooding, created by heavy rains associated with Hurricanes, Tropical Storms, Thunderstorms, and potential Dam Failures; or river Flooding, attributed to Hurricanes, Tropical Storms, Thunderstorms, and extended rainfall)
2. High Winds (including Hurricanes, Tornadoes, Tropical Storms and Thunderstorms)
3. Lightning

4. Wildfires
5. Extreme Heat (heat exacerbated by high humidity) and Extreme Cold (under 26 degrees)
6. Droughts
7. Sinkholes
8. Dam Failures
9. Hail
10. Public Health Emergencies

According to the available historic data, Lowndes County and its municipalities are at risk from the following man-made hazards:

1. Public Health Emergencies
2. Chemical, Biological, Radiological, Nuclear and Explosive Incidents

b. Local Mitigation Goals and Objectives

Chapters 4 and 5 describe the local mitigation strategies, composed of goals, objectives, tasks, and action steps developed for each hazard as a result of the HRV summary. The mitigation strategies are designed to include activities and projects that, when implemented, will reduce the threat of loss to property and life resulting from a natural or man-made hazard event. Using the findings from the Risk Assessment as a guide for the update process, the Lowndes County HMPC has collectively developed the following overall community hazard mitigation goals:

Goal # 1: Protect the public health and safety;

Goal #2: Eliminate, or reduce, exposure of critical community facilities to the hazards identified in the community risk assessment;

Goal #3: Where exposure to hazards cannot be limited, implement, to the extent resources are available, the action steps needed to reduce potential losses as they relate to life, property, and the local economy;

Goal #4: Maintain and/or enhance the community's capacity to issue and receive warnings in advance of a hazard event;

Goal #5: Maintain and/or increase self-sustaining capabilities to allow for a timely, efficient response and recovery effort to any hazard event;

Goal #6: Increase community preparedness levels in advance of a hazard event.

VI. MULTI-JURISDICTIONAL CONSIDERATIONS

This plan has been developed for Lowndes County and the municipalities of Dasher, Hahira, Lake Park, Remerton and Valdosta. In general, all six of the jurisdictions are equally vulnerable to the same natural and man-made hazards addressed in this plan, and the mitigation action steps are intended to be undertaken by all six jurisdictions. However, special considerations unique to a specific jurisdiction are noted where or if applicable.

VII. ADOPTION, IMPLEMENTATION, MONITORING AND EVALUATION

The Greater Lowndes County Hazard Mitigation Plan will be formally adopted by the Lowndes County Board of Commissioners and each City Council or Commission after receiving notification from the Georgia Emergency Management Agency that the plan complied with applicable federal regulations.

Chapter 6 details an implementation action plan that identifies who will have authority and responsibility for implementing and coordinating this plan, and for prioritizing projects when applying for funding. This chapter also includes the methodology for evaluating the plan on an annual basis, and meeting the DMA 2000 requirement that the plan be updated every five years.

VIII. PAST AND CURRENT MITIGATION PROJECTS

Since the adoption of the plan in 2011, the governing bodies of Greater Lowndes County and each of the municipalities have taken on several projects to reduce the vulnerability to a wide range of identified hazards and their associated risks. Below is a list of mitigation projects that have either already been completed, are ongoing, or are awaiting approval.

2011 Plan

Jurisdiction	Funding Source	Project Description	Cost	Status
City of Valdosta	EPA Brownfields Grant		$400,000	Complete
City of Valdosta	NRCS Emergency Watershed Program	Bank Restoration and Improvement	$1,376,927	Complete
City of Valdosta	Hazard Mitigation Section 406 Grant Program	Disaster Related Mitigation Projects	$90,000,000	Not Received
City of Hahira	Hazard Mitigation Section 404 Grant Program	Outdoor Warning Sirens	$18,459	Complete
Lowndes County	EMPG Grant and Local Funding	Mass Notification System	$39,000	Ongoing
Lowndes County	Citizens Corp Grant	CERT Equipment	$15,000	Complete
Lowndes County	Hazard Mitigation Section 404 Grant Program	Mitigation Plan Update	$28,000	Ongoing
Lowndes County	Hazard Mitigation Section 404 Grant Program	Weather Radio Distribution	$144,028	Complete
Lowndes County	State Homeland Security Grant Program	Interoperability Communications	$350,000	Complete
Lowndes County & City of Valdosta	Local Funding	Stream Gauge Monitoring	$40,800	Ongoing

Interim and New Plan Update

Jurisdiction	Funding Source	Project Description	Cost	Status
Lowndes County	EMPG Grant/Local Funding	EOC Upgrades & Training	$100,000	Complete
City of Valdosta	GOHS	Highway Safety	$46,800	Complete
City of Valdosta	GOHS	Highway Safety	$28,800	Complete
City of Valdosta	Local Funding	Park Ave. Box Culvert Replacements	$500,000	Complete
City of Valdosta	Local Funding	North Valdosta Rd. Emergency Ditch Repair	$500,000	Complete
City of Valdosta	Local Funding	Madison Highway Drainage Improvements	$500,000	Complete
City of Valdosta	Local Funding	Lamar Street Bridge Repairs	$500,000	Complete
City of Valdosta	Local Funding	Lake Laurie Dr. Culvert Improvements	$500,000	Complete
City of Valdosta	Local Funding	Country Club Culvert Improvements	$500,000	Complete
City of Valdosta	Local Funding	Buena Vista Water Main Ext.	$500,000	Complete
City of Valdosta	Local Funding	Brown's Canal Streambank Restoration	$500,000	Complete
City of Valdosta	Local Funding	Traffic Management Center Upgrades	$500,000	Complete
City of Valdosta	Local Funding	Ashley Street Culvert @ 2 Mile Branch	$500,000	Complete
City of Valdosta	Local Funding	Traffic Camera Installation	$500,000	Complete
City of Valdosta	Local Funding	Fry Street Ditch Piping	$500,000	Complete
City of Valdosta	Local Funding	Collin, Kelly, Maude Area Water/Sewer	$500,000	Complete
City of Valdosta	Local Funding	Hightower Area Water/Sewer	$500,000	Complete
City of Valdosta	Local Funding	Pineridge Subdivision Area Water/Sewer	$500,000	Complete
City of Valdosta	Local Funding	Highland Heights Area Water/Sewer	$500,000	Complete
City of Valdosta	Local Funding	St. Augustine NE Area Water/Sewer	$500,000	Complete
City of Valdosta	Local Funding	Millpond Concrete Ditch Repair	$500,000	Complete
City of Valdosta	Local Funding	Rouse, Lankford Area Water/Sewer	$500,000	Complete
EMA	FEMA/GEMA	Ebola Public Health Plan	$25,000	Complete

City of Valdosta	FAA Airport Dev. Aid Program	ARFF Station/FAA Bldg. Const./ Wildlife Hazards Assessment	$3,058,586	Complete
City of Valdosta	DOHS-GEMA State HSGP	Airport Screening	$43,800	Complete
City of Valdosta	DOHS-GEMA State HSGP	Airport Screening	$22,060	Complete
City of Valdosta	DOHS-GEMA State HSGP	Equipment	$16,000	Complete
City of Valdosta	DOHS-GEMA State HSGP	Equipment	$15,457	Complete
City of Valdosta	DOHS-GEMA State HSGP	Hazmat Equipment	$23,000	Complete
City of Valdosta	DOHS-GEMA State HSGP	GSAR Equipment	$20,000	Complete
City of Valdosta	DOHS-GEMA State HSGP	Bomb Dog	$3,500	Complete
City of Valdosta	DOHS-GEMA State HSGP	Bomb Dog	$3,000	Complete
City of Valdosta	DOHS-GEMA State HSGP	Bomb Dog	$3,000	Complete
City of Valdosta	DOHS-GA DNR Cooperating Tech. Partners	LIDAR	$130,000	Complete
City of Valdosta	HUD CDBG	Housing	$564,566	Complete
City of Valdosta	HUD CDBG	Housing	$545,473	Complete
City of Valdosta	DOJ-JAG Program	Law Enforcement Equipment	$23,067	Complete
City of Valdosta	DOJ-JAG Program	Law Enforcement Equipment	$22,400	Complete
City of Valdosta	DOJ-JAG Program	Law Enforcement Equipment	$24,416	Complete
City of Valdosta	DOJ Bulletproof Vest Partnership	Vests	$1,050	Complete
City of Valdosta	DOJ Bulletproof Vest Partnership	Vests	$6,566	Complete
City of Valdosta	FEMA Assistance to Firefighters Grant	Airpacks	$198,308	Complete
City of Valdosta	FEMA Assistance to Firefighters Grant	Turnout Gear	$144,720	Complete
City of Valdosta	Local Funding	Hickory Rd./Harmon Dr. Water/Sewer	$ 500,000	Ongoing
City of Valdosta	GA Power	Street Light Fixture LED	$ Unknown	Ongoing
City of Valdosta	Local Funding	Brown's Canal Ponds Drainage Improvements	$500,000	Ongoing
City of Valdosta	Local Funding	Hightower Creek Control Structure Drainage Improvements	$ 500,000	Ongoing
City of Valdosta	FAA Airport Dev. Aid Program	Airport Improvements, Electrical, SGD Plan, Wildlife Hazard Plan	$546,976	Ongoing
City of Valdosta	FAA Airport Dev. Aid Program	Airport Improvements, Bridge, Taxiway, Apron, Elec. Improv.	$299,790	Ongoing
City of Valdosta	FAA Airport Dev. Aid Program	Airport Midfield Drainage Improvements, Station Design	$1,000,000	Ongoing
City of Valdosta	FAA Airport Dev. Aid Program	Airport Midfield Drainage Improvements	$2,000,000	Ongoing
City of Valdosta	FAA Airport Dev. Aid Program	Airport Midfield Drainage Improvements	$514,000	Ongoing
City of Valdosta	HUD CDBG	Housing	$560,352	Ongoing
City of Valdosta	HUD CDBG	Housing	$550,525	Ongoing
City of Valdosta	DOJ-JAG Program	Law Enforcement Equipment	$18,035	Ongoing
City of Valdosta	DOJ Bulletproof Vest Partnership	Vests	$20,623	Ongoing
City of Valdosta	US EPA GEFA Clean Water Program	Water Main	$36,781,448	Ongoing
City of Valdosta	DOHS-GEMA State HSGP	Bomb Dog	$3,000	Ongoing

CHAPTER 2 - NATURAL HAZARD, RISK AND VULNERABILITY (HRV) SUMMARY

Summary of changes:

- All Hazard event tables have been updated to account for events in the years since creation of the plan.
- Values for critical facilities have been updated.
- GMIS report data has been updated/included in the appendix
- New disasters have been added

I. NATURAL HAZARD – FLOOD

A. Hazard Identification and Description

Uncontrolled water (Flooding) has been the costliest, repetitive natural hazard to Lowndes County and its municipalities. Riverine Flooding, which includes the overflow of streams and creeks designated as Floodplains on the local FIRM maps due to heavy rain, have caused the most damage to government infrastructure and to individual property. In addition to riverine Flooding, Lowndes County also experiences localized Flooding during brief periods of locally heavy rainfall, such as is commonly experienced during some thunderstorms and tropical storm events. This is particularly a problem in the urbanized areas, where storm drainage systems can become overwhelmed by the intense amount of rainfall in a short period of time. While more frequent in nature, it is fortunate that this type of Flooding accounts for very little damage to local property and infrastructure.

B. Hazard Profile

The current rainfall intensity table, used by local engineers for planning and design purposes, indicates the 100-year return event would be 9.53 inches of rain over a 24-hour period. Fortunately, Lowndes County rarely receives amounts this high in a single period, but the term “100-year return” can be misleading since it has happened more than once in the last 100 years. In fact, forecasters are beginning to move away from using the “100-year” terminology and instead prefer to say that there is a 1% chance in any given year that we will experience rainfall amounts that equate to this level.

The most recent significant Flood events to impact Lowndes County was in March 2012, June 2012 and in September 2014 in which a Flash Flood caused $30,000 in damage. Historically, in August 2008 from Tropical Storm Fay and in April 2009 there were major events. While the 2008 storm exceeded the 100-year return, it did not result in any widespread flooding or significant damage as it was isolated primarily to an area in Lowndes County and to the South and West. Local drainage infrastructure was capable of handling the runoff, and because of a severe Drought during the preceding months the local river basins were able to distribute the accumulation adequately.

During the 2009 flood, the stream gauge located on the Withlacoochee River at Skipper Bridge Rd reached 145.9 feet above sea level. This equated to downstream impacts of up to 8 feet of water actually inside homes. The majority of the affected homes had 2-4 feet. Further downstream the gauge over the Withlacoochee River at US Hwy 84 reached 118.17 feet above sea level and was the highest recorded crest at that location in history. Water actually covered Hwy 84 causing it to be closed for several days and 2 other bridges downstream and numerous roods were flooded to the point of closure. Close to 20 homes downstream from that point were also affected to varying degrees by flood waters.

The table below shows the average flood depths in the event of a 1-percent-annual-change flood for waterways profiled in the Lowndes County FEMA Flood Insurance Study.

Stream	**Average Flood Depths During 1-Percent-Annual-Chance Flood (Feet)**
Airport Tributary	6
Dukes Bay Drainage Canal	9.25
Dukes Bay Drainage Canal East	7.88
Dukes Bay Drainage Canal West	6
Knights Creek	8.38
Little River	28.69
Mud Swamp Creek	10.75
One Mile Branch	10.5
Sugar Creek	13.33
Three Mile Branch	3.5
Two Mile Branch	1.19
Withlacoochee River	32.25

Conversely, the rain storm that affected us in late March and early April 2009 produced less cumulative rainfall but resulted in Flooding throughout Lowndes County and Valdosta that exceeded the 100-year designation and caused record river levels in each of the three rivers that run through Lowndes County. The reason for the differing outcomes was that this particular event affected a much wider area of Southwest Georgia and produced rainfall totals throughout the entire river basin that eventually found their way down to Lowndes County. Combined with the rainfall that fell locally, it produced a 100-year Flood event which caused damage into the tens of millions of dollars range. No further 100-year flood events have occurred since the previous Hazard Mitigation Plan was completed. However, in February 2013 there was a significant flooding event that inundated many of the same properties that were affected during the 2009 event with the exception being that during this event the water level was not sufficient to cause water to actually enter any structures.

According to the hazard frequency table for Lowndes County (see table in Appendix D), which was completed using information from the National Climatic Data Center (copy of historical data included in Appendix A) and local records, there is nearly a 100% chance (96.97%) that there will be a Flood/Flash Food event during a given year. Much effort has gone into ensuring that minimal development occurs near these Flood-prone areas. Insufficient data are available to provide a detailed breakdown by jurisdiction, but the greatest probability of Flooding occurs within the City of Valdosta and unincorporated Lowndes County. While historical data are not broken down by jurisdiction, local knowledge provides evidence that the Cities of Dasher, Lake Park, Hahira and Remerton are at a much lower risk of Flooding than the other two jurisdictions. This is due primarily to the fact that the local rivers that contribute the most to local Flooding are located within the unincorporated area and Valdosta and do not have an immediate effect on the other municipalities. A map showing the Special Flood Hazard Areas for Lowndes County is provided in the Appendix.

C. Assets Exposed to Flood Hazard – Community Exposure

The majority of the damage done during Flooding events is to local infrastructure, such as the hundreds of miles of roads as well as dozens of local bridges that can quickly become inundated during an extreme rain event. Although it is not possible to definitively determine the assessed value of every road and bridge in Lowndes County, the value of infrastructure exposed to Flooding is in the tens of millions of dollars.

Very few critical facilities are located within the designated Flood zones. According to information compiled in the GMIS database, there are currently 10 structures located within the 100-year Flood plain. The combined total value of these structures is $81,438,230. It should be noted that of that number over $46 million is the cost of the Oak St Parking Deck, which, while within the Flood zone, would likely not sustain any structural damage due to Flooding. The primary loss would be in the loss of use of the facility.

Using data obtained from the VALOR GIS staff, it has been determined that there are a total of 2,676 parcels within Lowndes County that are touched by the designated 100-year Flood zone, either in part or in whole. These parcels represent an estimated $440 million in property exposed to the effects of Flooding (not including Moody Air Force Base, small portions of which are within Flood Zone A). This is roughly 5.4% of the parcels and 8.5% of the building value currently in Lowndes County.

According to data from obtained through GEMA, there are also 8 residential properties within Lowndes County that are classified as repetitive loss properties under the current NFIP guidelines. These are the only repetitive loss properties in Lowndes County. Of these, six are located in the City of Valdosta and two are located in unincorporated Lowndes County.

A detailed inventory of exposed assets is provided on GEMA Worksheet 3A and is included in Appendix A. This worksheet provides county-level data as there were insufficient resources to further break the information down to the level of each individual jurisdiction.

Also, please see the Hazard Risk Analyses Supplement to the Lowndes County Joint Hazard Mitigation Plan in Appendix H for information on Flood Risk Assessments.

D. Estimated Potential Losses

Based on figures from the historic Flooding event of April 2009, it can be reasonably anticipated that a significant Flooding event (100-year Flood or greater) would likely cause damages to local homes and businesses of at least $3-4 million. Local governments should also expect repair costs to damaged infrastructure to be in the $8-10 million range. As mitigation actions are performed and infrastructure strengthened to withstand the effects of Flooding, these numbers may be reduced in future years. There are currently no known developments or buildings being constructed that would require any special mitigation actions or considerations.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Floods.

<u>Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):</u>

Approximately 6% of the Residential properties (1,911 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $165,369,773. Approximately 5% of Commercial properties (190 of 3,742) may be affected, with a value of $60,022,161. Approximately 23% of Industrial properties (84 of 364) may be affected, with a value of $52,395,034. Approximately 14% of Agricultural properties (182 of 1,237) may be affected, with a value of $17,562,077. Approximately 10% of Religious/Non-Profit properties (40 of 401) may be affected, with a value of $15,587,585. Approximately 23% of Government properties (78 of 338) may be affected, with a value of $55,329,783. Approximately 4% of Education properties (3 of 83) may be affected, with a value of $4,518,970. Approximately 11.8% of Utilities properties (13 of 111) may be affected, with a value of $1,786,655.

According to the inventory database reports and maps, 10 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Floods. The total area of these facilities is 455,098 square feet. The total value of these 10 Critical Facilities is $81,438,230. All of these Critical Facilities are located within the City of Valdosta.

Also, please see the Hazard Risk Analyses Supplement to the Lowndes County Joint Hazard Mitigation Plan in Appendix H for information on Flood Risk Assessments. The Hazard Risk Analyses Supplement shows potential inundation, UDF losses, building damage, flood shelter requirements, and flood debris weight from a 1% annual chance riverine flood event.

E. Land Use and Development Trends

Lowndes County and all of its municipalities, with Remerton being the exception, have adopted a comprehensive Flood Damage Prevention Ordinance to regulate land use and development activities inside areas designated as Special Flood Hazard Areas. These ordinances were drafted using the template provided to each governing body by the State Floodplain Management Office and FEMA. While the ordinances do not expressly prohibit the development of lands within the current Flood plain boundaries, they do provide limitations and give staff the opportunity to work with the developers to take the necessary steps to mitigate the likelihood of damage during the development. Examples include Flood-proofing measures, elevation, etc.

F. Multi-Jurisdictional Differences

With regards to Flooding, Lowndes County, Hahira, Remerton and Valdosta are the only jurisdictions with areas of Flood hazard identified on the current FIRM maps. Historically, the cities of Dasher, Hahira, Lake Park and Remerton have not experienced a significant amount of Flood-related damage. The City of Valdosta experiences more flash Flooding because it is more urbanized and has a greater amount of impervious surface area. Since the overwhelming majority of the rivers flow through the unincorporated areas of Lowndes County, these areas are usually the most impacted by the effects of riverine Flooding. Detailed maps showing the identified Flood zones for each jurisdiction are provided in Appendix A. Currently the only communities within Lowndes County that do not participate in the NFIP are the cities of Dasher and Remerton. Their participation in the future is a mitigation strategy identified later within this plan. Lowndes County as well as the Cities of Hahira, Lake Park and Valdosta have all adopted Flood plain ordinances and have expressed their intent to continue their participation in the NFIP. The City of Dasher has adopted a Flood plain management ordinance and has begun applying to the NFIP.

G. Hazard Risk and Vulnerability Summary

Localized Flooding caused from excessive storm water runoff is a major cause of Flood damage in Lowndes County and its municipalities. During periods of unusually heavy rainfall, the local storm water infrastructure can quickly become overwhelmed and cause local creeks and streams to overflow their banks, causing property damage in designated Floodplains and beyond. While river Flooding is a less common occurrence, it affects larger bodies of water and a broader area, Therefore, it is often costlier in terms of property damage than localized Flood events. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

II. NATURAL HAZARD – HIGH WIND – HURRICANE, TORNADO, THUNDERSTORMS

A. Hazard Identification and Description

Lowndes County is frequently at risk of damage to life and property as well as economic losses due to the impacts of High Winds. The primary sources of these High Wind events are Hurricanes or Tropical Storms, Tornadoes and Thunderstorms.

The most prevalent occurrence of wind damage is from the frequent Thunderstorms that Lowndes County and the surrounding areas experience on a regular basis throughout the year. The National Weather Service classifies a Severe Thunderstorm as one capable of producing winds of 58 mph or greater, Hailstones 1 inch or larger, or a tornado. However, it is not uncommon for Lowndes County to receive storms with winds slightly below this threshold but still capable of producing significant damage, so the lack of a Severe Thunderstorm Warning is not always indicative of damage potential.

Secondary causes of wind damage in our area are Tropical Storms and Hurricanes. The National Weather Service uses the Saffir-Simpson Hurricane Wind Scale to categorize Hurricanes based on their intensity. A chart of the associated wind speeds is listed below. While several factors influence the amount of damage caused by a particular storm, more intense storms typically inflict a greater amount of damage to the affected areas.

Saffir-Simpson Hurricane Scale			
Category	*Winds (MPH)*	*Damage*	*Storm Surge*
1	74 - 95	**Minimal**: Damage to unanchored mobile homes, vegetation & signs. Coastal road flooding. Some shallow flooding of susceptible homes.	4 - 5 feet
2	96 - 110	**Moderate**: Significant damage to mobile homes & trees. Significant flooding of roads near the coast & bay.	6 - 8 feet
3	111 - 130	**Extensive**: Structural damage to small buildings. Large trees down. Mobile homes largely destroyed. Widespread flooding near the coast & bay.	9 - 12 feet
4	131 - 155	**Extreme**: Most trees blown down. Structural damage to many buildings. Roof failure on small structures. Flooding extends far inland. Major damage to structures near shore.	13 - 18 feet
5	More than 155	**Catastrophic**: All trees blown down. Some complete building failures. Widespread roof failures. Flood damage to lower floors less than 15 feet above sea level.	Greater than 18 feet

The next section will provide more detail with regard to past history and probability of occurrence of future events. As a general rule, Lowndes County has at least a slight risk of being impacted by at least one tropical storm each year during the Atlantic Hurricane Season, which runs from June 1 to November 30. This is due in large part to its proximity to coastal waters. While officially Lowndes County is considered an inland county, it is within 50 miles of Florida's Gulf Coast and within 95 miles of Georgia's Atlantic coastline. Considering many tropical storms and hurricanes are several hundred miles wide and are capable of producing damaging winds well inland, it is highly likely that a storm striking the Florida panhandle or the eastern coast of Georgia, from Savannah south to the Florida

coast in St Augustine, would pose a threat to Lowndes County as it moves inland. Historically, the greatest threat to this area has been from storms in the Gulf of Mexico.

Lastly, Lowndes County has to be prepared for the threat of wind damage caused by Tornado activity. While historically it is the least common cause of damage in our area, it has the potential to be the costliest and devastating. This is due mainly to the fact that tornados occur with little to no warning. Tornados are a year-round threat and often accompany Thunderstorms or spawn off of Tropical Storms or Hurricanes that pass in close proximity to the area. Unlike Tropical Storms and Thunderstorms, which tend to blanket a wide area at one time, Tornadoes usually affect a smaller area but the damage is often more destructive in nature due to High Wind speeds. An EF2 tornado struck a portion of northern Lowndes County in March 2012 and destroyed several residential structures causing $250,000 in damage and $100,000 in crop damage. In December, 2014 an EF0 tornado also struck a portion of Lowndes County but did not result in any damage. Also, in December, 2014 an EF2 Tornado struck Valdosta/Lowndes County causing 9 injuries and $750,000 in damages. The NWS uses the Enhanced Fujita Scale outlined below to categorize Tornados.

Enhanced Fujita (EF) Scale Rating System for Tornado Strength

Scale	Wind speed		Relative frequency	Potential damage	
	mph	km/h			
EF0	65–85	105–137	53.5%	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0.	
EF1	86–110	138–178	31.6%	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.	
EF2	111–135	179–218	10.7%	Considerable damage. 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.	
EF3	136–165	219–266	3.4%	Severe damage. 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.	
EF4	166–200	267–322	0.7%	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.	
EF5	>200	>322	<0.1%	Explosive damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (300 ft); steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.	

In the USA and some other countries, on February 1, 2007, the Fujita scale was decommissioned in favor of what scientists believe is a more accurate Enhanced Fujita Scale, which replaces it. The EF Scale is thought to improve on the F-scale on many counts—it accounts for different degrees of damage that occur with different types of structures, both man-made and natural. The expanded and refined damage indicators and degrees of damage standardize what was somewhat ambiguous. It also is thought to provide a much better estimate for wind speeds, and sets no upper limit on the wind speeds for the strongest level, EF5. *Source: NOAA's National Weather Service, Storm Prediction Center*

B. Hazard Profile

All of Lowndes County is vulnerable to the damaging effects of High Winds, regardless of the source of the winds. With regard to Wind activity, GMIS mapping data currently splits Lowndes County into two categories. The northern portion of the county, which includes most of the City of Dasher as well as all of the Cities of Valdosta, Remerton, and Hahira, is in hazard zone 2. Hazard zone 2 corresponds to a wind range of 90-99 mph. The southern portion, which encompasses the southernmost section of the Dasher City limits as well as Lake Park and the unincorporated areas of Clyattville and Twin Lakes, is in hazard zone 3, which indicates a slightly higher risk of wind-related damage. Hazard zone 3 is representative of winds ranging between 100 and 109 mph. This is substantiated by local data which shows that these areas have a higher frequency of thunderstorm activity.

According to the hazard frequency table for Lowndes County (see table in Appendix D), which was completed using information from the National Climatic Data Center (copy of historical data included in Appendix A) and local records, there is a 40.82% chance that there will be a Hurricane/Tropical Storm Wind event during a given year.

Based on the current record, in terms of extent, Lowndes County is not normally subject to hurricane force winds from tropical systems. Most tropical systems are downgraded to tropical storms or below by the time they reach Lowndes County. While possible, hurricane force winds in Lowndes County would be an extremely rare occurrence.

According to the hazard frequency table for Lowndes County (see table in Appendix D), which was completed using information from the National Climatic Data Center (copy of historical data included in Appendix A) and local records, there is a 39.66% chance that there will be a Tornado Wind event during a given year. As noted in Appendix A, there have been several high wind, strong wind, and tornado events in the community since the previous plan was completed, including 1 hurricane/typhoon event day, 6 tropical storm event days, 1 strong wind event day, and 19 tornado event days. For more information, see Appendix A.

Tornado activity is relatively low, with the recurrence interval being 2.52 years on average. Local officials and the NWS usually receive several tornado reports each year, and tornado warnings may be issued quite often, but the statistical numbers and recurrence intervals are based on tornado reports that are later verified. Based on data available in the historical record, Lowndes County is most likely to be struck by an EF-1 or lesser tornado, with an EF-0 being the most common occurrence.

According to the hazard frequency table for Lowndes County (see table in Appendix D), which was completed using information from the National Climatic Data Center (copy of historical data included in Appendix A) and local records, there is a 320.37% chance that there will be a Thunderstorm Wind event during a given year.

Thunderstorms are one of the most common weather products of our atmosphere. They can create a dazzling display of light and sound, but do not underestimate these storms. They can cause serious injury, substantial property damage, even death. Dangers associated with Thunderstorms include Lightning, Hail, heavy rain, Flooding and strong winds. The straight line Winds in a Thunderstorm can exceed 100 mph and can be as damaging as a Tornado.

C. Assets Exposed to Hazard - Community Exposure

Lowndes County in its entirety is exposed to the hazardous effects of a High Wind event. Current codes require all structures to be built capable of withstanding 100 mph wind gusts. Due to the dense vegetation covering a large portion of Lowndes County, damage from storm generated debris presents the greatest hazards to persons and property.

Also, please see the Hazard Risk Analyses Supplement to the Lowndes County Joint Hazard Mitigation Plan in Appendix H for information on Hurricane and Tornado Risk Assessments.

D. Estimate of Potential Losses

The strength of the storm and other factors play a role in the amount of damage realized during a severe wind event, but historically Lowndes County has not experienced significant damage due to wind events. The storms that have impacted the area have usually been a combination of wind and other factors, such as Flooding, resulting in damage to property.

The strength of the storm and the area affected will be the determining factor in the amount of damage sustained. Data is not readily available that would allow us to break down the loss potential accurately at the individual jurisdiction level. There are currently no known developments or buildings being constructed that would require any special mitigation actions or considerations.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to High Wind.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by High Winds. 212 facilities are located in the 90 mph-99 mph (Hazard Score of 2) area, with a total area of 7,752,077 square feet, and a total value of $1,080,657,875. 17 critical facilities are located in the 100 – 109 mph area (Hazard Score of 3), with a total area of 130,010 square feet, and a total value of $17,403,849. (See GMIS Critical Facilities Inventory Database Reports contained in Appendix G Section II and Maps contained in Appendix A Section I Part C).

Critical Facility reports by jurisdiction are shown in Appendix A, Table 2.

Also, please see the Hazard Risk Analyses Supplement to the Lowndes County Joint Hazard Mitigation Plan in Appendix H for information on Hurricane and Tornado Risk Assessments. The Hazard Risk Analyses Supplement includes a probabilistic hurricane scenario modeling a Category 1 storm with maximum winds of 83 mph and shows potential wind-related building damages and debris generated from hurricane wind.

E. Land Use and Development Trends

Lowndes County and each of its municipalities currently adopt the nationally recognized codes and standards with regards to wind loading. Beyond the wind loading requirements, there are no known land use and/or development trends that relate to the effects of High Winds on property.

F. Multi-Jurisdictional Differences

Due to the random nature of Hurricanes, Tropical Storms, Tornadoes and Thunderstorms that are the primary producers of wind related damage, Lowndes County and each of the municipalities are all at equal risk of sustaining damage related to this particular hazard. As such, there are no known differences found from one jurisdiction to another. Maps detailing the wind hazard zones for each jurisdiction can be found in Appendix A.

G. Hazard, Risk and Vulnerability Summary

Historically, Lowndes County has been impacted by some type of High Wind event several times annually. Often times this is due to a severe thunderstorm but could also be related to tropical storm or tornado activity. During these events that segment of the population residing in manufactured housing and/or older homes that may not have been designed and built according to current wind loading standards are especially vulnerable. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

III. NATURAL HAZARD – LIGHTNING

A. Hazard Identification

Lightning is the discharge of electricity from cloud to ground and is most commonly associated with thunderstorms. The discharge is usually vertical from the cloud to ground, but can occur at angles from the storm, extending a good distance from the storm. Lightning results in an average of 51 deaths nationwide each year.

B. Hazard Profile

Thunderstorms can occur year round in Lowndes County. In terms of extent, Lowndes County averages 8,176 Lightning strikes from cloud to ground per year, which equates to about 16 Lightning strikes per square mile per year. The frequency of occurrence of Lightning in Lowndes County makes the risk to individuals and to property high. Unfortunately, insufficient data exists to provide detailed information on Lightning strike statistics for each individual jurisdiction.

The climate in Lowndes County supports year-around outdoor activities, exposing many individuals, sometimes in large numbers, to the threat of Lightning. Though often times it is not reported, Lightning frequently damages electronic equipment and electrical power transmissions.

In August 2012, Lightning caused $30,000 in damage in Valdosta/Lowndes County. In September 2014, Lightning killed 1 person in Lowndes County.

C. Assets Exposed to Hazard - Community Exposure

There is no one area that is more or less vulnerable to Lightning damage than any other, so all assets within Lowndes County are equally exposed to the hazards of Lightning during a storm event. With that being said, many of the public buildings have incorporated Lightning suppression systems in their design to reduce the threat of damage due to a Lightning strike.

D. Estimate of Potential Losses

In reviewing the historical record, there is no history of significant damage to any property as a result of Lightning in Lowndes County. Most of the damage is isolated and only affects a few properties per event. However, a Lightning strike has the potential to cause significant damage, especially if it were to spark a Wildfire that might consume a large area of the forested land that is part of the local timber industry. Nationally, fire departments respond to an average of 22,600 fires per year caused by Lightning, resulting in an annual $451 million of property damage, according to the National Fire Protection Association.

While it is unlikely that we would be affected by a widespread event due to Lightning, the statistics mentioned above still apply. Data are not readily available that would allow us to break down the loss potential accurately at the individual jurisdiction level.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Lightning.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Lightning. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $1,098,061,724.

E. Land Use and Development Trends

There are currently no land use or development regulations in Lowndes County or any of its municipalities that deal with Lightning hazards.

F. Multi-Jurisdictional Differences

Due to the random nature of Lightning strikes, the probability of Lightning affecting any particular jurisdiction is equal to that of any other. Based on this fact, there are no differences related to any one particular jurisdiction as a result of Lightning hazards.

G. Hazard, Risk and Vulnerability Summary

Lightning is a killer in Lowndes County and is very dangerous to those individuals outdoors near thunderstorms. The high frequency of thunderstorms in Lowndes County increases the risk of individuals being struck and of property being damaged. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

IV. NATURAL HAZARD – WILDFIRE

A. Hazard Identification

Wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. Naturally occurring and non-native species of grasses, brush, and trees fuel the spread of Wildfires. Of its 511 square miles, Lowndes County has about 345 square miles of forested land. When a residential area, whether it be a single home or an entire subdivision, is adjacent to an area containing vegetative fuels, such as a forest or other wooded area, this is referred to as a wildland-urban interface area. These are the areas at greatest risk for property damage due to Wildfire. Because a large portion of Lowndes County's forested land is planted and harvested as a crop and/or used by wild game hunting outfitters, Wildfire in Lowndes County also poses a significant risk of economic loss in addition to any potential property losses.

B. Hazard Profile

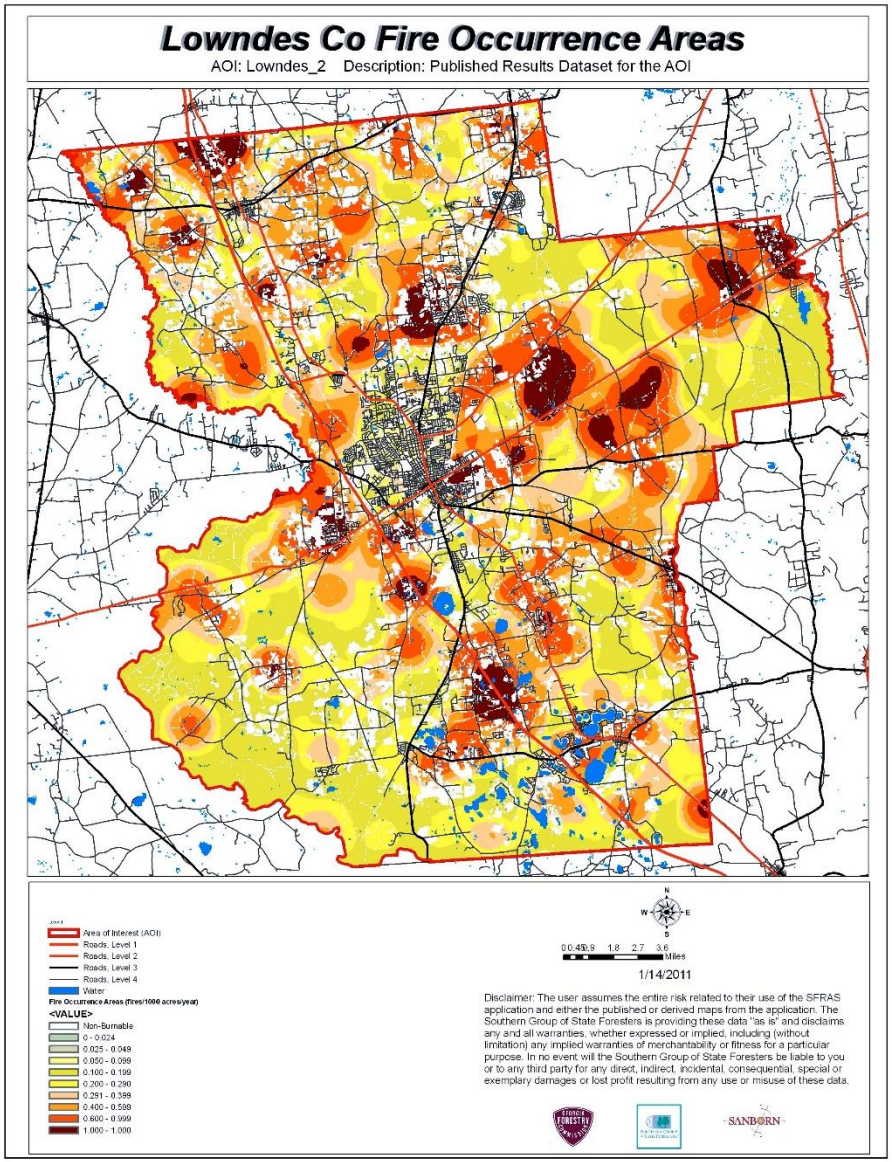
Over the past ten years, Lowndes County has averaged about 76 Wildfires per year, with the majority of these being small in terms of extent (5 acres or less). Lowndes County land-base is primarily considered to be a heavy fuel, referred to as Southern Rough Fuel. There are many areas in Lowndes County where Wildfire control efforts may be hampered due to the homes in and around the wildland area, commonly referred to as the wildland-urban interface. Lowndes County experiences about 22 Critical Fire Weather days per year. Critical Fire Weather is a set of weather conditions, usually a combination of low relative humidity and wind, whose effects on fire behavior make fire control difficult and threaten firefighter safety.

According to the 2011 Lowndes County Community Wildfire Protection Plan, the following factors (most of which are closely related to the wildland urban interface) contribute to the Wildfire hazard score for Lowndes County:

- Unpaved roads and private driveways
- Narrow roads without drivable shoulders
- Inadequate driveway access
- Minimal defensible space around structures
- Homes with wooden siding
- Unmarked septic tanks in yards
- Lack of pressurized or non-pressurized water systems available
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildup in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities.
- High occurrence of Wildfires in the several locations
- Lack of homeowner or community organizations

Considerable fire control assets and good citizen-public safety emergency communications help control the spread and threat of Wildfires in Lowndes County. Additionally, Lowndes County governments have shown a desire to maintain a cooperative partnership with the Georgia Forestry Commission in encouraging local landowners and residents to employ proactive measures to help safeguard the community from the effects of Wildfire that have had devastating impacts to other communities in the Southern Georgia area. These include measures such as enforcing local burn ordinances, educating citizens on Firewise practices to create a safer environment around their homes, and working with local land owners to implement effective prescribed burning practices to reduce the threat of catastrophic Wildfire.

According to the Hazard Frequency Table found in Appendix D, the recurrence interval (in years) for Wildfire is .01, which correlates to an 11914.04% chance that a Wildfire will occur in Lowndes County in any given year. Insufficient data are available to completely break down the probability of occurrence by individual jurisdictions. However, the overwhelming majority, and by inference the greatest probability, of Wildfires occur in the unincorporated areas of Lowndes County since there is very little agricultural or forested land within the municipalities. The map on the following page, reproduced from the 2011 Lowndes County Community Wildfire Protection Plan, shows Fire Occurrence Areas in Lowndes County.



Fire Occurrence Areas in Lowndes County
(Source: Lowndes County 2011 Community Wildfire Protection Plan)

C. Assets Exposed to Hazard - Community Exposure

According to hazard data compiled in GMIS, just over 61% of Lowndes County is at some risk due to Wildfire. Due to the large presence of timber and forested land in Lowndes County, there is a substantial wildland-urban interface area present. The majority of the facilities at risk are residential in nature but it is also estimated that approximately 1,000 commercial structures could be at some risk of damage during a Wildfire.

D. Estimate of Potential Losses

The numbers included in this plan do not take into account the planted timber that would represent an economic loss if it were damaged by Wildfire prior to harvest. While no concrete numbers have been provided for this crop value, it is safe to estimate that the resulting losses could range into the tens of millions of dollars. Data are not readily available that would allow us to break down the loss potential accurately at the individual jurisdiction level.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that 31% of Lowndes County, including the cities, is vulnerable to Wildfire.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 30% of the Residential properties (9,447 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $817,424,35. Approximately 22% of Commercial properties (811 of 3,742) may be affected, with a value of $256,901,009. Approximately 33% of Industrial properties (119 of 364) may be affected, with a value of $74,034,392. Approximately 100% of Agricultural properties (1,237 of 1,237) may be affected, with a value of $119,283,276. Approximately 32% of Religious/Non-Profit properties (126 of 401) may be affected, with a value of $49,045,533. Approximately 32% of Government properties (108 of 338) may be affected, with a value of $76,694,820. Approximately 52% of Education properties (43 of 83) may be affected, with a value of $58,746,608. Approximately 29% of Utilities properties (33 of 111) may be affected, with a value of $4,466,561

According to the inventory database reports and maps, 156 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Wildfire. The total area of these facilities is 6,203,194 square feet. The total value of these 156 Critical Facilities is $858,290,668.

E. Land Use and Development Trends

At this time, the land use and development ordinances of Lowndes County and its municipalities do not deal with Wildfires. There are no known existing land use or development trends that would be affected by Wildfires.

F. Multi-Jurisdictional Differences

The City of Remerton is the only jurisdiction identified as being completely within a zone with a risk score of 0. The rest of the jurisdictions have at least a marginal area identified as being at risk of damage resulting from Wildfire. The primary concern within the municipalities is from the wildland-urban interface areas, while Lowndes County has the greatest amount of forested area. In the Lowndes County Community Wildfire Protection Plan, all areas of the county were assigned an equal Wildfire risk assessment score of 44, placing Lowndes County in the "Low" hazard range.

G. Hazard, Risk and Vulnerability Summary

Wildfire is a constant threat within Lowndes County. The large area of forested woodlands combined with a large wildland-urban interface area makes Lowndes County and its municipalities especially vulnerable to Wildfire damage. Lowndes County firefighters respond to dozens of Wildfires annually, and with an increasing number of Critical Fire Weather days each year, the efforts to control these Wildfires become increasingly difficult. Since the previous plan was completed, the County Board of Commissioners adopted a resolution encouraging landowners to utilize prescribed burning techniques in order to reduce fuel load. Other than this resolution, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

V. NATURAL HAZARD – EXTREME HEAT/EXTREME COLD

A. Hazard Identification

As a general rule, Lowndes County can be considered to have a moderate climate for the majority of the year. However, it is not immune to occasional temperature extremes and the inherent risks that accompany them.

The most prevalent temperature extreme is the high heat and humidity that often occurs beginning in late spring and sometimes occurring as late as the early fall months. The frequency and duration of these conditions varies, but in general they are a constant

threat for several months out of every year. These elevated temperatures pose a number of significant risks, such as heat exhaustion and/or stroke, to those exposed to their effects.

The other extreme, severe cold, is not as prevalent in Southern Georgia, but is an ever-present hazard nonetheless. Historically, the southern part of the state has been known for its milder winter climate. However, in the past few years it has become more common for our region to experience abnormally cold periods, which have ranged from a few days to a couple of weeks. By abnormally cold, we are referring to hard freezes when temperatures drop well below freezing (26 degrees or lower) for several hours per day. These temperatures are usually the result of a cold front moving through the area, and the speed with which the front passes determines the length and severity of the extreme temperatures. The fact that it is a more uncommon occurrence has a tendency to make it more of a risk since people are consequently less prepared for it. Especially at risk are the low-income, elderly, and homeless, who often do not have adequate means of heating to protect themselves from the dangerous effects of freezing temperatures.

B. Hazard Profile

Being located in the Southeastern part of the United States, Lowndes County is more often affected by heat waves than by extreme periods of cold. In terms of extent, the outside air temperature reaches or exceeds 95 degrees Fahrenheit on average 45 days out of the year. Often times these temperatures, when combined with the high humidity, cause heat indices to soar above 100 degrees. However, the National Weather Service uses a heat index of 110 degrees as the trigger point for issuing a Heat Advisory, and these are rare occurrences in our area. The majority of residents are accustomed to the area's climate conditions and are adept at taking the necessary precautions to protect themselves from the adverse effects of extreme heat situations.

We have used the NOAA's National Weather Service Heat Index as a guide for any combination of heat and humidity that exceeded the Danger category in combination with 5 years of daily data from the nearest GA Forestry Commission's Automated Weather Data Center to determine the Hazard Frequency for Extreme Heat.

Instances of extremely low temperatures are a rare occurrence in this area. In terms of extent, Lowndes County averages less than 20 days per year in which the temperature drops below the freezing mark of 32 degrees Fahrenheit. Even rarer are the times when it drops below the 26-degree mark that triggers a Hard Freeze Warning. According to data collected by the CDC, of the nearly 40,000 households in Lowndes County, less than 300 have no source for providing heat during the cold weather months.

We have used 5 years of daily data from the nearest GA Forestry Commission's Automated Weather Data Center to determine the Hazard Frequency for Extreme Cold.

Because temperatures are usually constant countywide, there are not any discernable differences in the probability of extreme heat or cold occurring from one jurisdiction to another. Each jurisdiction is equally at risk from this hazard.

According to the Hazard Frequency Table found in Appendix D, the recurrence interval (in years) for Extreme Heat is .01, which correlates to a 9620% chance that Extreme Heat will occur in Lowndes County in any given year.

According to the Hazard Frequency Table found in Appendix D, the recurrence interval (in years) for Extreme Cold is .13, which correlates to a 780% chance that Extreme Cold will occur in Lowndes County in any given year.

C. Assets Exposed to Hazard - Community Exposure

Since temperatures do not vary significantly within Lowndes County, an Extreme Heat or Extreme Cold event would equally affect the entire countywide area.

D. Estimate of Potential Losses

Extreme heat and/or cold events do not pose a significant risk to real property. The primary property damage would be from pipes that may freeze and burst, causing secondary water damage. The main economic loss associated with extreme temperatures is to crops and livestock. Since Lowndes County is not considered a large producer of either of these, the anticipated losses are minimal. As of 2015, agriculture, forestry, fishing, and hunting represented 0.9% of businesses and 0.3 percent of jobs in the county (ESRI Business Analyst). About 20% of land in Lowndes County is in farms, and the 2012 total income from farm-related sources was $1,370,000 (USDA Agricultural Census). Although an extreme temperature event could cause significant damage to the agricultural sector, it represents only a small portion of the County's total economy.

The main concern during these types of events would be from injury or loss of life to individuals who are not adequately able to protect themselves from the effects of the temperature extremes. Due to the difficulty of determining the numbers of such individuals and the difficulty of determining which deaths are directly heat- or cold-related, it is not possible to precisely quantify this type of potential loss.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Extreme Heat and Extreme Cold.

<u>Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):</u>

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial,

Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Extreme Heat or Extreme Cold. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $1,098,061,724, plus a content value of $3,824,584.

E. Land Use and Development Trends

At this time, the land use and development ordinances of Lowndes County and its municipalities do not deal with Extreme Heat or Extreme Cold. There are no known existing land use or development trends that would be affected by these extreme temperatures.

F. Multi-Jurisdictional Differences

Since temperature and climate are widespread factors and not localized to a particular jurisdiction, Lowndes County and each of the municipalities are equally affected by the effects of extreme temperatures. As such, there are no major differences affecting one jurisdiction more than another.

G. Hazard, Risk and Vulnerability Summary

Extreme heat, high humidity, and extremely cold temperatures have been and will continue to be a hazard to the entire population of Lowndes County for a number of years. Those that are required to be outside for extended periods of time, such as outdoor workers and the homeless, are especially vulnerable to the effects of these temperature extremes. Also at increased risk are the young, elderly, and those who have existing medical conditions which predispose them to the hazardous effects of extreme weather. This is often exacerbated for people with low income levels, who may not have homes with adequate heating and cooling to provide protection from these hazards. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

VI. NATURAL HAZARD – DROUGHT

A. Hazard Identification

A Drought is a prolonged period without rain, particularly during the planting and growing season in agricultural areas. It can range from two weeks to six months or more, and affects water availability and quality. Drought conditions pose a hazard in that they could cause disruption to public and private underground water sources for domestic use. The primary source of domestic water in Lowndes County comes from underground sources. The Floridian Aquifer provides a significant amount of domestic water to the public in Lowndes County. Water levels in the aquifer vary depending on the amount of recharge. Thus, during long periods of Drought, water levels may drop below the levels of the wells, causing disruption in the water supply.

B. Hazard Profile

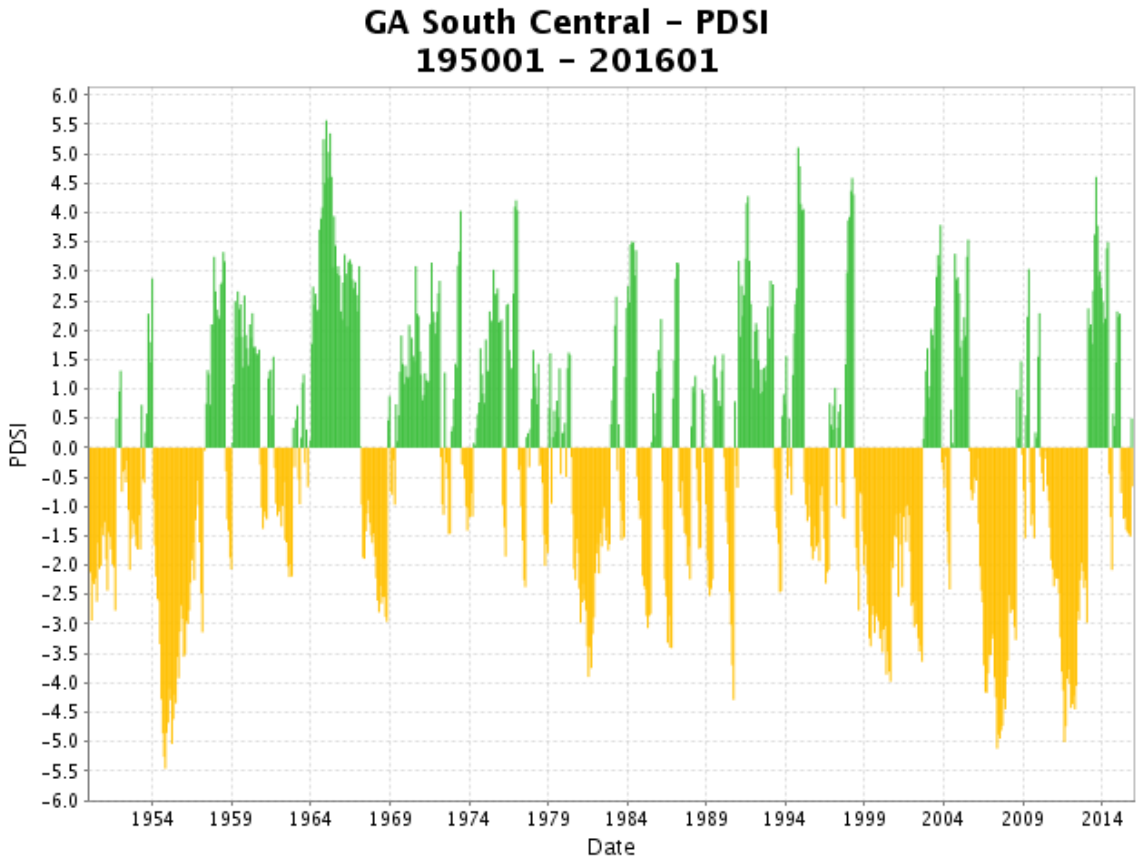
Insufficient data and analysis are readily available to determine the degree of domestic water shortages in Lowndes County caused by a long-term Drought and continued high usage rates of the underground water supply. In 1954, severe Drought conditions were experienced in South Central Georgia. However, sufficient data and analysis are unavailable from this period to accurately project such a recurrence in the future. In 2000, several domestic wells (single home wells and wells serving multiple homes) went dry, leaving these homes without their normal water supply. Concern was expressed regarding other domestic wells serving larger groups of homes.

According to the Hazard Frequency Table in Appendix D, the recurrence interval for Drought in Lowndes County is 1.08 years. The 3 most recent Droughts to occur in Lowndes County started in approximately November, 2012, November, 2013 and August, 2014.

Because Lowndes County is supplied by an underground aquifer, it is not as susceptible to Drought as other areas served by surface water supplies. However, a recent period of several years of below-normal rainfall and noticeable decreases in the underground water table levels have prompted local communities to take proactive conservation measures and develop contingency plans designed to prevent and respond to Drought conditions should they develop.

According to the Hazard Frequency Table found in Appendix D, there is a 92.86% chance of Drought occurring in any given year. Because Drought is a widespread condition, it equally affects all jurisdictions within the county. The Palmer Drought Severity Index (PDSI), plotted in the figure below, is a measurement of overall dryness based on a supply-and-demand model of soil moisture. More effective for measuring long-term drought, the Palmer index is helpful in showing the historical times during which dryness conditions in the community have been most severe. Negative index numbers (shown in yellow in the graph below) indicate periods of drought. In recent years, the community saw extended periods of drought, as measured by the Palmer index, during the early 2000s and again

during approximately 2006-2008 and 2010-2012. A PDSI value of -4 corresponds to a state of extreme drought. There have been four periods of extreme drought (with a PDSI value of -4 or lower) since 1950; two of these have occurred within the last ten years. Thus, drought is a significant hazard in Lowndes County that must not be overlooked.



Palmer Drought Severity Index for South Central Georgia Region, 1950 – 2016
Source: NOAA National Climatic Data Center (http://www7.ncdc.noaa.gov/CDO/CDODivisionalSelect.jsp#)

C. Assets exposed to Hazard - Community Exposure

Since Droughts are typically widespread events and do not target specific areas within a particular county, Lowndes County is equally exposed to the effects of Drought on a countywide basis.

D. Estimate of Potential Loss

The most significant losses associated with Drought would be agriculture-related. A severe countywide Drought has the potential to cause in excess of $15 million in crop-related damage.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Drought.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Drought. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $1,098,061,724.

E. Land Use and Development Trends

The land use and development ordinances of Lowndes County and its municipalities do not deal with the assurance of domestic water sources. There are no known existing land use or development trends that would be affected by Drought.

F. Multi-Jurisdictional Differences

A potential Drought would affect Lowndes County and each of its municipalities equally as there are no known multi-jurisdictional differences.

G. Hazard, Risk and Vulnerability Summary

Currently there is an adequate supply of water for Lowndes County and its residents to draw on. As Lowndes County and surrounding areas continue to grow, the adequacy of that supply will need to be constantly and consistently monitored to ensure that remains to be true. Recent temporary disruptions to local water supplies have proven that people are poorly prepared and/or unwilling to sustain themselves without the supply of water they become accustomed to having. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

VII. NATURAL HAZARD – SINKHOLES

A. Hazard Identification

Sinkholes are natural depressions in the ground caused by the collapse of the surface into a void. The void is normally attributed to the dissolving of subsurface material by the movement of water. Sinkholes occur more readily in regions with limestone subsurfaces. The final collapse of the ceiling over a cavern, developing a sinkhole, is normally precipitated by heavy rains.

B. Hazard Description

Sinkholes are prevalent in Lowndes County, particularly in the southern part of the county. Historically, in terms of extent, some Sinkholes in Lowndes County are quite large, measuring hundreds of yards across. Others are small, with diameters of 30 to 40 feet. However, the degree of threat of potential Sinkholes to Lowndes County is unknown. Based on limited data, the Hazard Frequency Table indicates there is a 24.62% chance of a sinkhole event in Lowndes County each year. There are, however, no data available at this time to predict when or where a sinkhole might occur in Lowndes County. Due to the lack of data, it is not possible to provide a more detailed probability of occurrence for each individual jurisdiction.

C. Assets Exposed to Hazard - Community Exposure

Since no one area can be identified as being immune to or more susceptible to sinkhole formation, it is assumed that all assets within Lowndes County are equally exposed.

D. Estimate of Potential Loss

In the historical record of Lowndes County there are no data to indicate any significant damage to real property as a result of sinkhole formation. The most recent instance of a sinkhole forming, in August 2015, resulted in a road closure, and an earlier sinkhole event caused a county-maintained road to collapse and resulted in the road being realigned, costing the local government $300,000. Data are not readily available that would allow us to break down the loss potential accurately at the individual jurisdiction level.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Sinkholes.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, none of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas likely to be affected by Sinkholes.

E. Land Use and Development Trends

The land use and development regulations of Lowndes County and its municipalities do not address sinkhole potential. There are no known existing land use or development trends that would be affected by Sinkholes.

F. Multi-Jurisdictional Differences

Because the location of potential sinkhole formation cannot be predicted with any degree of certainty or accuracy, they remain a threat to each jurisdiction within Lowndes County equally.

G. Hazard, Risk and Vulnerability Summary

The risk of developing caverns underground and close to the surface is unknown in Lowndes County. In the southern part of Lowndes County, several sizable lakes were created from Sinkholes. Smaller Sinkholes have occurred in Valdosta. Because of the lack of data and analysis, the true risk is unknown. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

VIII. NATURAL HAZARD – DAM FAILURE

A. Hazard Identification

Dam Failure is the unplanned release of stored water in a lake causing rapid Flooding conditions downstream. The flow of water is normally rather rapid after the collapse of the dam, putting downstream structures and people at risk.

B. Hazard Description

In the recorded history for Lowndes County there have been no reported failures of local dams. However, due to the number of dams present and their proximity to infrastructure and/or real property, they do pose a risk to the community in many cases. Many of the dams fall under the inspection and regulatory control of the Georgia Safe Dams Program, but there are many other private dams that are unregulated. Fortunately, the overwhelming majority of these pose no significant risk to life or property. Three of the most high-risk structures are the Millpond Dam structure, Jo Ree Lake Dam and the Gung Lake Dam. Due to their high-risk status, all are closely monitored and have undergone extensive rehabilitation in recent years. Additional mitigation measures have also been implemented at these locations to ensure a minimal impact to the public in the event of failure. Other structures with some risk include the retention pond at Target, the retention pond at the Industrial Park, and the lift station on Gordon Road, which holds approximately 6 million gallons. According to the Hazard Frequency Table found in Appendix D, since there has never been a reported Dam Failure in Lowndes County, the probability of this occurring in the future remains at 0%.

C. Assets Exposed to Hazard - Community Exposure

Since the majority of dams have not had studies conducted to assess the potential downstream impacts, the extent, including the potential Flood depths, of risk posed from Dam Failure is not clear. Based on available information, it is assumed that approximately 1% of the total properties and population are in the inundation zone should Dam Failure occur at all of the local dams that have been studied. Due to the lack of a formal inundation study, these assumptions are based on the fact that these structures lie within the Flood zones and are in close proximity to the dam structures. It is further assumed that if the dam at either location was to fail it would result in Flooding at least to the 100-year Flood mark.

D. Estimate of Potential Loss

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Dam Failure.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 0.91% of the Residential properties (290 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $25,132,017. Approximately 0.06% of Commercial properties (2 of 3,742) may be affected, with a value of $710,882. Approximately 2.01% of Industrial properties (7 of 364) may be affected, with a value of $4,555,893. Approximately 4.12% of Agricultural properties (51 of 1,237) may be affected, with a value of $4,908,507. Approximately 0.98% of Religious/Non-Profit properties (4 of 401) may be affected, with a value of $1,520,816. Approximately 1.6% of Government properties (5 of 338) may be affected, with a value of $3,834,381. No Education properties are expected to be affected. Approximately 11.76% of Utilities properties (13 of 111) may be affected, with a value of $1,786,655.

According to the inventory database reports and maps, none of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Dam Failure.

E. Land Use and Development Trends

Staff with the Planning and Engineering Departments of the various jurisdictions make available any and all information related to potential developers. However, there are no specific regulations in place in any jurisdiction with regard to land use and/or development near dams.

F. Multi-Jurisdictional Differences

The Cities of Dasher, Hahira, and Remerton have no identified dams within their jurisdiction. This leaves Lake Park, Valdosta and unincorporated Lowndes County as the sole jurisdictions at risk of damage resulting from a Dam Failure.

G. Hazard, Risk and Vulnerability Summary

While the complete picture is unclear, studies conducted by inspectors with the Georgia Safe Dams Program show that the threat to persons, structures, and other property within Lowndes County are minimal. In recent years, in areas with the highest risk potential, such as the Jo Ree Lake Dam, measures have been implemented to reduce the negative impacts to the surrounding areas in the event of Dam Failure. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

A. Hazard Identification

Hail is formed when updraft currents within a Thunderstorm carry water droplets to an altitude where freezing occurs. When these frozen ice particles become too heavy, they fall to the ground in the form of Hail stones. Hail can range in size from very small (pea sized) to large stones in excess of an inch in diameter. Generally speaking, the larger stones are associated with more severe storms.

Hail causes over $1 billion in crop and property damage across the US each year. Fortunately, it has not historically been the cause of high amounts of damage in Lowndes County, but with each storm the potential is still present. The greatest threat to crops is mainly to the numerous pecan orchards and cotton fields present in this and surrounding areas.

B. Hazard Description

As mentioned previously, Lowndes County experiences at least a few Hail-producing storm events each year. In terms of extent, the Hail produced is usually smaller in size, but on occasion we have seen damaging, quarter-sized Hail.

Since 2011, there have been 6 reports of Hail occurring in Lowndes County ranging in size from 0.75” to 1.75” with no reported large scale damage. There are at least a handful of reports each year of Hail damage to local vehicles and homes.

According to the Hazard Frequency Table in Appendix D, there is a 156.52% chance in any given year of a Hail event occurring in Lowndes County. This is a countywide probability statistic and insufficient data exist to further break this down by individual jurisdiction.

C. Assets Exposed to Hazard - Community Exposure

Damage from Hail is equally likely to occur in any area of the county so all assets are exposed to potential Hail damage to some degree.

D. Estimate of Potential Loss

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Hail.

<u>Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):</u>

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial,

Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Hail. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $1,098,061,724.

E. Land Use and Development Trends

None of the jurisdictions within Lowndes County currently have any land use or development regulations that pertain to Hail.

F. Multi-Jurisdictional Differences

Since Hail is no more common to one area than another, there are no major jurisdictional differences related to this hazard.

G. Hazard, Risk and Vulnerability Summary

While not the greatest threat within Lowndes County, Hail is another of the many threats faced annually from the numerous Thunderstorms that impact the local area. Hail has the potential to cause large amounts of damage alone, but it is also often a precursor to damaging Thunderstorm Winds and, on occasion, Tornadoes. Since the previous plan was completed, there have not been any changes that would either increase or decrease the community's overall vulnerability to this hazard.

CHAPTER 3 – LOCAL TECHNOLOGICAL (MAN-MADE) HAZARD, RISK AND VULNERABILITY (HRV) SUMMARY

Summary of changes:

- All Hazard event tables have been updated to account for events in the years since creation of the plan.
- Values for critical facilities have been updated.
- GMIS report data has been updated/included in the appendix
- Public Health Emergency has been added and Aircraft Accident deleted

I. MANMADE HAZARD – PUBLIC HEALTH EMERGENCY

A. Hazard Identification and Description

A public health emergency is an event that impacts the health of a significant portion of the population. Public Health emergencies can occur at any time without warning. Examples of public health emergencies arising from natural causes include disease outbreaks (including pandemics and food-borne illnesses) and poisoning from naturally occurring environmental factors. Public health emergencies may occur by themselves or may occur secondary to other natural hazards, for example when Flooding leads to contamination of drinking water supplies. Public health emergencies may also be man-made (for example, chemical spills, radiation incidents, and bioterrorism).

Public Health Emergency Hazard Description–The National Disaster Medical System Federal Partners Memorandum of Agreement defines a public health emergency as "an emergency need for health care [medical] services to respond to a disaster, significant outbreak of an infectious disease, bioterrorist attack or other significant or catastrophic event. For purposes of NDMS activation, a public health emergency may include but is not limited to, public health emergencies declared by the Secretary of HHS [Health and Human Services] under 42 U.S.C. 247d, or a declaration of a major disaster or emergency under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5121-5206).

Source: Wikipedia “Public Health Emergency-United States”

A Public Health Emergency from the Perspective of the U.S. National Disaster Medical System (NDMS)". 2007-04-10.

NATIONAL DISASTER MEDICAL SYSTEM MEMORANDUM OF AGREEMENT AMONG THE DEPARTMENTS OF HOMELAND SECURITY, HEALTH AND HUMAN SERVICES, VETERANS AFFAIRS, AND DEFENSE" (PDF). 2005-09-26.

B. Hazard Profile

Many identified natural hazards in Lowndes County have the potential to lead to secondary public health emergencies. These include but are not limited to:

- Large numbers of injuries requiring treatment after an extreme weather event
- Contamination of drinking water, food supplies, and/or living spaces due to Flooding
- Health effects resulting from extreme heat/cold events
- Health effects resulting from people being displaced/homeless due to a natural hazard event

Lowndes County is also vulnerable to public health emergencies that may occur naturally on their own, including but not limited to:

- Communicable disease outbreaks
- Pandemic influenza
- Mosquito-borne illness
- Food-borne illness

Diseases that cause a public health emergency may have a rapid onset or a slow onset. They may be highly localized or may be widespread in nature. Depending on the nature of the public health emergency, treatment may or may not be immediately available.

Some examples of recent public health emergencies include:

H1N1

2009 H1N1 was first detected in the United States in April 2009. This virus was a unique combination of influenza virus genes never previously identified in either animals or people. The virus genes were a combination of genes most closely related to North American swine-lineage H1N1 and Eurasian lineage swine-origin H1N1 influenza viruses. Because of this, initial reports referred to the virus as a swine origin influenza virus. However, investigations of initial human cases did not identify exposures to pigs and quickly it became apparent that this new virus was circulating among humans and not among U.S. pig herds.

Infection with this new influenza A virus (then referred to as 'swine origin influenza A virus') was first detected in a 10-year-old patient in California on April 15, 2009, who was tested for influenza as part of a clinical study. Laboratory testing at CDC confirmed that this virus was new to humans. Two days later, CDC laboratory testing confirmed a second infection with this virus in another patient, an 8-year-old living in California about 130 miles away from the first patient who was tested as part of an influenza surveillance project. There was no known connection between the two patients. Laboratory analysis at CDC determined that the viruses obtained from these two patients were very similar to each other, and different from any other influenza viruses previously seen either in humans or animals. Testing showed that these two viruses were resistant to the two antiviral drugs amantadine and rimantadine, but susceptible to the antiviral drugs oseltamivir and zanamivir. CDC began an immediate investigation into the situation in coordination with state and local animal and human health officials in California.

The cases of 2009 H1N1 flu in California occurred in the context of sporadic reports of human infection with North American-lineage swine influenza viruses in the United States, most often associated with close contact with infected pigs. (During December 2005 – January 2009, 12 cases of human infection with swine influenza were reported; five of these 12 cases occurred in patients who had direct exposure to pigs, six patients reported being near pigs, and the source of infection in one case was unknown). Human-to-human spread swine influenza viruses had been rarely documented and had not been known to result in widespread community outbreaks among people. In mid-April of 2009, however, the detection of two patients infected with swine origin flu viruses 130 miles apart, raised concern that a novel swine-origin influenza virus had made its way into the human population and was spreading among people.

CDC worked closely with state and local animal and human health officials on epidemiological investigations by tracing contacts of both patients to try to determine the source of their infection and by examining whether there was any link between the patients and pigs. Surveillance also was enhanced to try to detect additional cases of human illness with this virus. Based on the geographic location of the first cases, lack of contact between these cases and swine, and data collected through contact tracing and laboratory testing, CDC epidemiologists suspected that human-to-human transmission of this virus had taken place. In an article entitled Swine Influenza A (H1N1) Infection in Two Children --- Southern California, March-April 2009 published on April 21, 2009 in the Morbidity and Mortality Weekly Report (MMWR), CDC described the cases and requested that state public health laboratories send to CDC all influenza A specimens that could not be subtyped. That same day CDC responded to media inquiries related to the MMWR from medical reporters. Within a day, three additional samples of this new virus were identified in San Diego County and Imperial County California hospitals and sent to CDC for further testing. CDC laboratory testing confirmed that these samples also were positive for the virus that would come to be called "2009 H1N1."

On April 23, 2009, samples submitted by Texas revealed two additional cases of human infections with 2009 H1N1, transforming the investigation into a multistate outbreak and response. At the same time, CDC was testing 14 samples from Mexico, some of which had been collected from patients who were ill before the first 2 U.S. (California) patients. Results from seven of the samples were positive for 2009 H1N1 and similar findings were reported for specimens submitted by Mexico to Canada. It had now become clear that cases were occurring in multiple countries and human to human spread of the virus appeared to be ongoing. That same day

CDC held the first formal full press briefing to inform the media and guide the public and health care response to the rapidly evolving situation. CDC held nearly 60 press briefings during the 2009 H1N1 response.

On April 24, 2009, CDC uploaded complete gene sequences of the 2009 H1N1 virus to a publicly-accessible international influenza database, which enabled scientists around the world to use the sequences for public health research and for comparison against influenza viruses collected elsewhere, and an updated report on the outbreak was published online in the MMWR.

On Saturday, April 25, 2009, under the rules of the International Health Regulations, the Director-General of WHO declared the 2009 H1N1 outbreak a Public Health Emergency of International Concern and recommended that countries intensify surveillance for unusual outbreaks of influenza-like illness and severe pneumonia. Also on April 25, 2009, New York City officials reported an investigation into a cluster of influenza-like illness in a high school, and CDC testing confirmed two cases of 2009 H1N1 influenza infection in Kansas, and another case in Ohio shortly after.

On April 26, 2009, the United States Government determined that a public health emergency existed nationwide; CDC's Strategic National Stockpile (SNS) began releasing 25% of the supplies in the stockpile that could be used to protect and treat influenza. This included 11 million regimens of antiviral drugs, and personal protective equipment including over 39 million respiratory protection devices (masks and respirators), gowns, gloves and face shields, to states (allocations were based on each state's population). On April 27, the WHO Director-General raised the level of influenza pandemic alert from phase 3 to phase 4, based primarily on epidemiological data demonstrating human-to-human transmission and the ability of the virus to cause community-level outbreaks. Based on reports of widespread influenza-like-illness and many severe illnesses and deaths in Mexico, CDC issued a travel health warning recommending that United States travelers postpone all non-essential travel to Mexico. As in past influenza seasons, CDC urged the public and especially those people at highest risk of influenza-related complications, to protect themselves by taking antiviral drugs early in their illness when recommended by their doctor; CDC also advised that everyone take every day preventive actions like covering coughs and sneezes and staying home from work and school when ill to help reduce the spread of illness.

On April 29, 2009 WHO raised the influenza pandemic alert from phase 4 to phase 5, signaling that a pandemic was imminent, and requested that all countries immediately activate their pandemic preparedness plans and be on high alert for unusual outbreaks of influenza-like illness and severe pneumonia. The U.S. Government was already implementing its pandemic response plan. CDC continued to post and update guidance for states, clinicians, laboratories, schools, partners and the public on topics ranging from the non-pharmaceutical measures communities could take to limit spread of disease, to how to evaluate a patient for possible infection with 2009 H1N1 influenza, to how to care for children who might be sick with 2009 H1N1 influenza.

On April 30, 2009, CDC issued an MMWR Dispatch describing the initial outbreak of 2009 H1N1 influenza in Mexico. Findings in Mexico indicated that transmission in Mexico involved person-to-person spread with multiple generations of transmission. CDC also issued an MMWR Dispatch on the outbreak of 2009 H1N1 influenza infection in a high school in New York City, that was, at the time, the largest reported cluster of 2009 H1N1 cases in the United States. The Dispatch suggested that the high school age students had respiratory and fever symptoms similar to those caused by a seasonal flu, but in addition, about half had diarrhea, which is more than

expected with seasonal flu. As the details of the outbreak unfolded, the Federal response continued in high gear. Also on April 30, 2009, HHS announced that the Federal government would purchase an additional 13 million treatment courses of antiviral drugs to help fight influenza. The additional treatment courses would be added to the SNS.

As the outbreak spread, CDC began receiving reports of school closures and implementation of community-level social distancing measures meant to slow the spread of disease. School administrators and public health officials were following their pandemic plans and doing everything they could to slow the spread of illness. (Social distancing measures are meant to increase distance between people. Measures include staying home when ill unless to seek medical care, avoiding large gatherings, telecommuting, and implementing school closures).

Enterovirus D68

In 2014, the United States experienced a nationwide outbreak of EV-D68 associated with severe respiratory illness. From mid-August 2014 to January 15, 2015, CDC or state public health laboratories confirmed a total of 1,153 people in 49 states and the District of Columbia with respiratory illness caused by EV-D68. Almost all of the confirmed cases were among children, many whom had asthma or a history of wheezing. Additionally, there were likely millions of mild EV-D68 infections for which people did not seek medical treatment and/or get tested.

CDC received about 2,600 specimens for enterovirus lab testing during 2014, which is substantially more than usual. About 36% of those tested positive for EV-D68. About 33% tested positive for an enterovirus or rhinovirus other than EV-D68.
EV-D68 was detected in specimens from 14 patients who died and had samples submitted for testing. State and local officials have the authority to determine and release information about the cause of these deaths.

In general, infants, children, and teenagers are most likely to get infected with enteroviruses and become ill. That's because they do not yet have immunity (protection) from previous exposures to these viruses. We believe this is also true for EV-D68. Adults can get infected with enteroviruses, but they are more likely to have no symptoms or mild symptoms.

Children with asthma may have a higher risk for severe respiratory illness caused by EV-D68 infection.

MERS

Middle East Respiratory Syndrome (MERS) is an illness caused by a virus (more specifically, a coronavirus (http://www.cdc.gov/coronavirus/index.html)) called Middle East Respiratory Syndrome Coronavirus (MERS-CoV). MERS affects the respiratory system (lungs and breathing tubes). Most MERS patients developed severe acute respiratory illness with symptoms of fever, cough and shortness of breath. About 3-4 out of every 10 patients reported with MERS have died.

Health officials first reported the disease in Saudi Arabia in September 2012. Through retrospective investigations, health officials later identified that the first known cases of MERS occurred in Jordan in April 2012. So far, all cases of MERS have been linked

through travel to or residence in countries in and near the Arabian Peninsula. The largest known outbreak of MERS outside the Arabian Peninsula occurred in the Republic of Korea in 2015. The outbreak was associated with a traveler returning from the Arabian Peninsula.

MERS-CoV has spread from ill people to others through close contact, such as caring for or living with an infected person. MERS can affect anyone. MERS patients have ranged in age from younger than 1 to 99 years old.

CDC continues to closely monitor the MERS situation globally and work with partners to better understand the risks of this virus, including the source, how it spreads, and how infections might be prevented. CDC recognizes the potential for MERS-CoV to spread further and cause more cases globally and in the U.S. We have provided information for travelers and are working with health departments, hospitals, and other partners to prepare for this. In May 2014, CDC confirmed two unlinked imported cases of MERS in the United States – one to Indiana, the other to Florida. Both cases were among healthcare providers who lived and worked in Saudi Arabia. Both traveled to the U.S. from Saudi Arabia, where they are believed to have been infected. Both were hospitalized in the U.S. and later discharged after fully recovering.

CDC and other public health partners continue to closely monitor the MERS situation. We recognize the potential for MERS-CoV to spread further and cause more cases in the United States and globally. In preparation for this, we have

- Continued to collaborate with international partners on epidemiologic and laboratory studies to better understand MERS
- Improved the way we collect data about MERS cases
- Increased lab testing capacity in states to detect cases
- Developed guidance and tools for health departments to conduct public health investigations when MERS cases are suspected or confirmed
- Provided recommendations for healthcare infection control and other measures to prevent disease spread
- Provided guidance for flight crews, Emergency Medical Service (EMS) units at airports, and U.S. Customs and Border Protection (CPB) officers about reporting ill travelers to CDC
- Disseminated up-to-date information to the general public, international travelers, and public health partners
- Used Advanced Molecular Detection (AMD) methods to sequence the complete virus genome on specimens from the two U.S. MERS cases to help evaluate and further describe the characteristics of MERS-CoV.

Ebola Virus Disease

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus species. Ebola can cause disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees).

Ebola viruses are found in several African countries. Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa.

The natural reservoir host of Ebola virus remains unknown. However, on the basis of evidence and the nature of similar viruses, researchers believe that the virus is animal-borne and that bats are the most likely reservoir. Four of the five virus strains occur in an animal host native to Africa.

People get Ebola through direct contact (through broken skin or mucous membranes in, for example, the eyes, nose, or mouth) with

- blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is sick with or has died from Ebola,
- objects (like needles and syringes) that have been contaminated with body fluids from a person who is sick with Ebola or the body of a person who has died from Ebola,
- infected fruit bats or primates (apes and monkeys), and
- possibly from contact with semen from a man who has recovered from Ebola (for example, by having oral, vaginal, or anal sex)

Ebola Virus Disease has no cure or vaccine and due to the high mortality rate and highly infectious nature of the virus, planning efforts in the United States have been focused on controlling exposure for potentially exposed travelers from the countries where the outbreaks have been rampant. Because the timeframe between a person contracting the disease and exhibiting symptoms can be up to 21 days, combined with the ease of international travel, prevention and planning have become a focal point in public health preparedness.

2014: Ebola Outbreak in West Africa

The 2014 Ebola epidemic, the largest in history, has affected multiple countries in West Africa. Two imported cases, including one death, and two locally acquired cases in healthcare workers were reported in the United States. CDC and partners are taking precautions to prevent additional cases of Ebola in the United States. CDC is working with other U.S. government agencies, the World Health Organization, and other domestic and international partners and has activated its Emergency Operations Center (EOC) to help coordinate technical assistance and control activities with partners. CDC has deployed teams of public health experts to West Africa and will continue to send experts to the affected countries.

- **October 23, 2014** - The New York City Department of Health and Mental Hygiene reported a case of Ebola in a medical aid worker who had returned to New York City from Guinea, where the medical aid worker had served with Doctors Without Borders.
  - The diagnosis was confirmed by CDC on October 24.
  - The patient has recovered and was discharged from Bellevue Hospital Center on November 11.
- **October 15, 2014** – A second healthcare worker who provided care for the index patient at Texas Presbyterian Hospital tested positive for Ebola.
  - This second healthcare worker was transferred to Emory Hospital in Atlanta, Georgia.

- The healthcare worker had traveled by air from Dallas to Cleveland on October 10 and from Cleveland to Dallas on October 13. CDC worked to ensure that all passengers and crew on the two flights were contacted by public health professionals to answer their questions and arrange follow up as necessary.
- The patient has since recovered and was discharged on October 28.
- By November 3, all passengers on both flights completed the 21-day monitoring period.

- **October 10, 2014** – A healthcare worker at Texas Presbyterian Hospital who provided care for the index patient tested positive for Ebola.
- The healthcare worker was isolated after the initial report of a fever and subsequently moved to the National Institutes for Health (NIH) Clinical Center.
- The patient has since recovered and was discharged on October 24.

- **September 30, 2014** – CDC confirmed the first laboratory-confirmed case of Ebola to be diagnosed in the United States in a man who had traveled to Dallas, Texas from Liberia.
- The man did not have symptoms when leaving Liberia, but developed symptoms approximately four days after arriving in the United States.
- The man sought medical care at Texas Presbyterian Hospital of Dallas after developing symptoms consistent with Ebola. Based on his travel history and symptoms, CDC recommended testing for Ebola. The medical facility isolated the patient (i.e., index patient) and sent specimens for testing at CDC and at a Texas laboratory.
- Local public health officials identified all close contacts of the index patient for daily monitoring for 21 days after exposure.
- The patient passed away on October 8.
- By November 7, all contacts of the patient completed the 21-day monitoring period.

CDC recognizes that any case of Ebola diagnosed in the United States raises concerns, and any death is too many. Medical and public health professionals across the country have been preparing to respond to the possibility of additional cases. CDC and public health officials in Texas, Ohio, and New York took precautions to identify people who had close personal contact with the patients, and healthcare professionals have been reminded to use meticulous infection control at all times.

Zika

Zika virus disease (Zika) is a disease caused by Zika virus that is spread to people primarily through the bite of an infected *Aedes* species mosquito. The most common symptoms of Zika are fever, rash, joint pain, and conjunctivitis (red eyes). The illness is usually mild with symptoms lasting for several days to a week after being bitten by an infected mosquito. People usually don't get sick enough to go to the hospital, and they very rarely die of Zika. For this reason, many people might not realize they have been infected. Once a person has been infected, he or she is likely to be protected from future infections. Zika virus can be spread from a pregnant woman to her fetus and has been linked to a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant. CDC recommends special precautions for pregnant women. Pregnant women should consider delaying travel to areas with Zika

Zika virus was first discovered in 1947 and is named after the Zika forest in Uganda. In 1952, the first human cases of Zika were detected and since then, outbreaks of Zika have been reported in tropical Africa, Southeast Asia, and the Pacific Islands. Zika

outbreaks have probably occurred in many locations. Before 2007, at least 14 cases of Zika had been documented, although other cases were likely to have occurred and were not reported. Because the symptoms of Zika are similar to those of many other diseases, many cases may not have been recognized.

- In May 2015, the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed Zika virus infection in Brazil and on Feb 1, 2016, the World Health Organization (WHO) declared Zika virus a public health emergency of international concern (PHEIC). Local transmission has been reported in many other countries and territories. Zika virus likely will continue to spread to new areas. As an arboviral disease, Zika virus is nationally notifiable.

This update from the CDC Arboviral Disease Branch includes provisional data reported to ArboNET for January 1, 2015 – March 2, 2016.

US States

- Travel-associated Zika virus disease cases reported: 153
- Locally acquired vector-borne cases reported: 0

US Territories

- Travel-associated cases reported: 1
- Locally acquired cases reported: 107

C. Assets Exposed to Hazard - Community Exposure

The areas of the county with the highest population density would likely be most vulnerable to diseases that spread from person to person. Areas of high population density in Lowndes County include Valdosta State University and parts of the City of Remerton; Moody Air Force Base; and several areas of higher density (mostly apartment complexes) throughout the near south side and the far north side of the City of Valdosta. In addition, facilities that serve large volumes of people could potentially be vehicles for the transmission of communicable disease, as in an influenza pandemic; such areas include the Valdosta Mall and other high-volume business districts. Facilities receiving large numbers of people coming from outside the region could also be transmission points for disease, such as the Valdosta Airport and rest areas on I-75.

Due to Lowndes County's humid subtropical climate, mosquito-borne illness is a greater hazard here than in many other parts of the country. Levels of exposure to mosquito-borne illness depend on several factors, including:

- Presence and prevalence of an illness-causing mosquito-borne virus;
- Presence of mosquitoes, which may be exacerbated both by natural standing water (such as lakes and ponds) and by standing water in man-made structures, such as old tires, buckets, and other containers;
- Human exposure to mosquito bites, which may be influenced by factors such as the use of insect repellent, the amount of time spent outside, and the availability of air conditioning and window screens in residences.

Both Lowndes County and the City of Valdosta operate mosquito control programs, which include spraying, surveillance, and public education. Mosquito-borne disease is an especially great concern as of early 2016 due to a Zika virus outbreak based in South and Central America that has included some cases in Florida.

Public health emergencies involving food-borne illness are typically quite localized because the illness affects those people who have consumed food from a contaminated source, e.g. a certain product from a grocery store or restaurant. Consequently, no single part of Lowndes County is more or less vulnerable to such an emergency. A public health emergency involving illness transmitted through water can affect the entire population of a city, in cases where that city's entire water supply is affected. In rural areas where drinking water is obtained from wells, the effects of such an emergency may be more localized.

Damage from Public Health Emergencies is equally likely to occur in any area of the county so all assets are exposed equally to potential Public Health Emergency damage to some degree.

D. Estimate of Potential Loss

The potential loss from a public health emergency depends entirely on the scope and severity of the emergency and the capacity of emergency management agencies and health care facilities to respond. Public health emergencies may be small and highly localized in nature, or may affect an entire community and result in many fatalities. Due to the wide variety of possible public health emergencies, it is impossible to make precise generalized estimates of the potential loss.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to Public Health Emergencies.

<u>Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):</u>

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by Public Health Emergencies. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $2,166,046,933, plus a content value of $3,824,584.

E. Land Use and Development Trends

A wide range of land use and development regulations act to protect public health in Lowndes County, such as animal control ordinances, plumbing codes, solid waste management regulations, and zoning regulations that minimize incompatible land uses. All such regulations contribute to reducing the likelihood of a public health emergency.

F. Multi-Jurisdictional Differences

Jurisdictional differences in vulnerability to public health emergencies depend on the nature and severity of the emergency, and on the mitigation measures in place. For example, communities not covered by any active mosquito control program may be more vulnerable to outbreaks of mosquito-borne illness. The Cities of Valdosta and Remerton are generally more vulnerable to public health emergencies that are exacerbated by higher population density.

G. Hazard, Risk and Vulnerability Summary

The entire population of Lowndes County is conceivably at risk from a public health emergency. The level of risk depends on the emergency type and severity and the measures that are in place to control and respond to it. Some types of public health emergency are impossible to predict and occur swiftly, leaving little or no time to respond. Others are more gradual in their onset, and mitigation measures can be put in place ahead of time.

II. MANMADE HAZARD – CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR AND EXPLOSIVE (CBRNE) INCIDENTS

A. Hazard Identification and Description

The threat of CBRNE has been chosen by Lowndes County as a likely man-made hazard to occur & cause damage in Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta based on past experience, the FEMA described methodology and other factors. Historic data has been examined from various sources, as well as from local history and personal accounts, if applicable, in order to determine frequency of events.

CBRNE: Chemical, Biological, Radiological, Nuclear and Explosives

Chemical: A **chemical weapon** (CW) is a device that uses chemicals formulated to inflict death or harm to human beings. They may be classified as weapons of mass destruction, and have been "condemned by the civilized world". They are separate from biological weapons (diseases), nuclear weapons (which use sub-nuclear fission) and radiological weapons (which use radioactive decay of elements). Chemical weapons can be widely dispersed in gas, liquid and solid forms and may easily afflict others than the intended targets. Nerve gas and tear gas are two modern examples

For our purposes, this category could also include ant wide variety of chemicals (including gasoline/diesel fuels), pesticides, etc. that are transported by rail, truck, or other means through the area, or are stored/used for business, manufacturing or agricultural purposes.

There have been several reports of LUST (Leaking Underground Storage Tanks), chemical spills, or vehicle accidents that could potentially cause damage to individuals or the environment.

In May, 1991, approximately 1/3 of the population of the City of Ashburn was evacuated due to a Chemical Fire at Wilbur Ellis Company burning various pesticides and herbicides

Biological: A **biological agent** — also called **bio-agent** or **biological threat agent** — is a bacterium, virus, prion, or fungus that can be used purposefully as a biological weapon in bioterrorism or biological warfare (BW). In addition to these living and/or replicating pathogens, biological toxins are also included among the bio-agents. More than 1,200 different kinds of potentially weaponizable bio-agents have been described and studied to date.

Biological agents have the ability to adversely affect human health in a variety of ways, ranging from relatively mild allergic reactions to serious medical conditions, including death. Many of these organisms are ubiquitous in the natural environment where they are found in water, soil, plants, or animals. Bio-agents may be amenable to "weaponization" to render them easier to deploy or

disseminate. Genetic modification may enhance their incapacitating or lethal properties, or render them impervious to conventional treatments or preventives. Since many bio-agents reproduce rapidly and require minimal resources for propagation, they are also a potential danger in a wide variety of occupational settings.

For our purposes, this category could also include significant events/threats from viruses, diseases, or other medical occurrences that are either natural or man-made in origin, such as the “Flu/Influenza”.

Radiological: A **radiological weapon** or **radiological dispersion device** (**RDD**) is any weapon that is designed to spread radioactive material with the intent to kill and cause disruption.

One version, known as a dirty bomb, is not a true nuclear weapon and does not yield the same explosive power. It uses conventional explosives to spread radioactive material, most commonly the spent fuels from nuclear power plants or radioactive medical waste.

Another version is the salted bomb, a true nuclear weapon designed to produce larger amounts of nuclear fallout than a regular nuclear weapon.

For our purposes, this category could also include radiological materials that are transported through the community by truck or train, accidents caused by radiotherapy and accidents resulting from material stored (or improperly disposed of) in medical devices or medical waste.

Nuclear: A **nuclear weapon** is an explosive device that derives its destructive force from nuclear reactions, either fission or a combination of fission and fusion.

Explosives: An **explosive weapon** generally uses high explosive to project blast and/or fragmentation from a point of detonation.

Explosive weapons may be subdivided by their method of manufacture into explosive ordnance and improvised explosive devices (IEDs).

Certain types of explosive ordnance and many improvised explosive devices are sometimes referred to under the generic term bomb.

When explosive weapons fail to function as designed they are often left as unexploded ordnance (UXO).

An **explosive material**, also called an **explosive**, is a reactive substance that contains a great amount of potential energy that can produce an explosion if released suddenly, usually accompanied by the production of light, heat, sound, and pressure. An **explosive charge** is a measured quantity of explosive material.

This potential energy stored in an explosive material may be

- chemical energy, such as nitroglycerin or grain dust
- pressurized gas, such as a gas cylinder or aerosol can.
- nuclear energy, such as in the fissile isotopes uranium-235 and plutonium-239

Explosive materials may be categorized by the speed at which they expand. Materials that detonate (explode faster than the speed of sound) are said to be "high explosives" and materials that deflagrate are said to be "low explosives". Explosives may also be categorized by their sensitivity. Sensitive materials that can be initiated by a relatively small amount of heat or pressure are primary explosives and materials that are relatively insensitive are secondary or Tertiary explosives.

Because of its location, Lowndes County and the Cities therein are vulnerable to the effects of CBRNE events. The effect may vary depending on the severity of the CBRNE and the duration of the event.

B. Hazard Profile The historic record for CBRNE events is spotty at best with many unreported and underreported events. All of Lowndes County and the Cities of Dasher, Hahira, lake Park, Remerton and Valdosta are vulnerable to CBRNE events due to their proximity to the I-75 Corridor, various state highways and local roadways, railroad corridors, commercial, industrial and, in particular, agricultural based farms & businesses that may use hazardous chemicals. The effects of the hazard may be substantial.

Members of the Lowndes County Hazard Mitigation Plan Update Committee have witnessed many unreported and underreported CBRNE events occurring in Lowndes County.

The possible extent of CBRNE events is unknown due to the numerous types and strengths of events that may occur.

C. Assets Exposed to Hazard - Community Exposure

The areas of the county with the highest population density would likely be most vulnerable to CBRNE Events. Areas of high population density in Lowndes County include Valdosta State University and parts of the City of Remerton; Moody Air Force Base; and several areas of higher density (mostly apartment complexes) throughout the near south side and the far north side of the City of Valdosta. In addition, facilities that serve large volumes of people could potentially be vehicles for a CBRNE event, such areas include the Valdosta Mall and other high-volume business districts. Facilities receiving large numbers of people coming from outside the region could also be targets, such as the Valdosta Airport and rest areas on I-75.

Damage from CBRNE is equally likely to occur in any area of the county so all assets are exposed equally to potential CBRNE damages to some degree.

D. Estimate of Potential Loss

The potential loss from CBRNE depends entirely on the scope and severity of the event and the capacity of emergency management agencies and health care facilities to respond. CBRNE Events may be small and highly localized in nature, or may affect an entire community and result in many fatalities. Due to the wide variety of possible CBRNE Events, it is impossible to make precise generalized estimates of the potential loss.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Lowndes County and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta are vulnerable to CBRNE events.

Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta):

Approximately 100% of the Residential properties (31,847 of 31,847) in Lowndes County (which includes the Residential properties in the individual cities) may be affected. Their total value is $2,755,703,596. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (6,276 of 6,276) in Lowndes County (which includes those property types in the individual cities) may be affected. Their total value is $2,054,360,241.

According to the inventory database reports and maps, all 229 of the Critical Facilities and Infrastructure for Lowndes County (including the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta) are located in areas that may be affected by CBRNE Events. The total area of these facilities is 7,882,087 square feet. The total value of these 229 Critical Facilities is $2,166,046,933, plus a content value of $3,824,584.

E. Land Use and Development Trends

A wide range of laws and regulations act to protect the public in Lowndes County from CBRNE Events. All such regulations contribute to reducing the likelihood of a CBRNE Events.

Land Use is an important tool that provides local government the opportunity to inventory existing land use patterns and trends; to determine future patterns of growth, based on community needs and desires; and to develop goals, policies and strategies that strike a balance between effective and efficient delivery of public services, protection/preservation of vulnerable natural and historic resources, and respect for individual property rights. The planning process in any community involves making decisions between alternatives in various phases of the community's development. As an essential component of the Land Use Plan, it is necessary to

formulate general objectives and recommendations that embody the community's goals, as well as sound planning principles and concepts.

The periodic addition of an industry which handles hazardous chemicals is typically limited to designated industrial locations. All quadrants of the county are potentially affected because of the presence of state highways.

F. Multi-Jurisdictional Differences

Jurisdictional differences in vulnerability to CBRNE depend on the nature and severity of the emergency, and on the mitigation measures in place. The Cities of Valdosta and Remerton are generally more vulnerable to CBRNE that are exacerbated by higher population density.

G. Hazard, Risk and Vulnerability Summary

The entire population of Lowndes County is conceivably at risk from a CBRNE Event. The level of risk depends on the emergency type and severity and the measures that are in place to control and respond to it. CBRNE are impossible to predict and occur swiftly, leaving little or no time to respond.

CHAPTER 4 – NATURAL HAZARD MITIGATION GOALS AND OBJECTIVES

Summary of changes:

- Revised Language
- GOAS have been updated
- New disasters have been added

OVERALL COMMUNITY MITIGATION GOALS, POLICIES AND VALUES NARRATIVE

While each of the communities within Lowndes County operates autonomously, there is a high level of cooperation exhibited when it comes to mitigation and emergency planning efforts. Each of the local governments have mutual aid agreements to assist each other when their individual resources are overwhelmed or insufficient to respond to a certain emergency situation. Each of the local governments have also designated representatives to participate in the emergency management process, whether it be during the planning, response or recovery phases. The local Emergency Management Agency hosts regular meetings to gather all of the relevant local, regional and state partners together to develop effective plans and strengthen relationships among all of the stakeholders. In addition, due to their larger size and prominence within the region, the City of Valdosta and Lowndes County are both looked to by surrounding communities, both within and outside of Lowndes County, to provide assistance during large scale events. In addition to the normal resources possessed by each of these governments they also play host to a number of assets that are routinely used for regional response. Among these are a Hazardous Materials Response Team, Urban Search and Rescue Team, Dive Team, Water Rescue Team, CBRNE Response Team, Mobile Command/Communications Vehicle and Tactical Response Teams to name a few. Lowndes County and other area communities have also worked closely with the City of Valdosta in addressing regional flooding and storm water related issues. Working together, the City of Valdosta and Lowndes County have been able to access resources available through several state and federal sources that have allowed their communities, as well as neighboring communities, to acquire updated data, such as LIDAR and elevation data, that have been instrumental in improving the technical capabilities of these communities to more effectively mitigate flooding hazards and provide more accurate warning and preparatory information to their citizens.

Overall, the priorities for each of the local communities has remained relatively unchanged. The hazards and risks associated with each have not changed and many of the action steps identified during previous versions of this plan are still relevant and remain a priority in this plan as well.

I. FLOOD

A. Community Mitigation Goals

Throughout Lowndes County, the greatest risk of Flooding occurs during periods of heavy rainfall, as a result of Thunderstorms, Hurricanes or Tropical Storms. During these events, storm water runoff will cause rivers, creeks and tributaries to overflow and roadways to be overtopped. The goals of this plan include minimizing Flood damage by identifying Flood-prone areas, upgrading drainage facilities, and developing an interactive Flood model to better project levels of Flooding at various water levels of the major rivers in the County.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – Structural options included in this plan include upgrading drainage facilities and acquisition of potential Flood containment areas and properties in Flood prone areas. Non-structural options include the development of an interactive Flood model, and updating local FIRM maps.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes are utilized. Projects that involve disturbing more than one acre of land, such as unit developments, churches, multi-family developments, commercial developments, industrial developments, and planned developments, are required to have approved storm water management plans. Lowndes County, Dasher, Hahira, Lake Park, Remerton and Valdosta also enforce land use restrictions through their respective zoning ordinances.

3. Community values, historic & special considerations - None identified.

4. New buildings and Infrastructure – The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of Flooding.

5. Existing Buildings and Infrastructure - The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of Flooding.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #1 – Minimize Flood damage in Lowndes County.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Minimize losses to existing and future structures, especially critical facilities, due to Flooding caused by excessive rainfall.							
Petition FEMA to conduct a detailed Flood study county-wide and update local Flood Insurance Rate (FIRM) Maps.	EMA, Engineering, Board of Commissioners and City Councils	Staff Time	Annual Budget	Lowndes County, all municipalities	2017	High	Deferred
Identify areas within Lowndes County that are prone to localized Flooding and identify cost-effective options to protect structures from Flood damage	EMA, Public Works, Engineering, Utilities	Staff Time	Annual Budget	Lowndes County, all municipalities	2018	Medium	Deferred

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Identify critical facilities vulnerable to the effects of future Flooding events and incorporate the necessary measures to protect these facilities.	EMA, Engineering, Utilities, Public Works	$5 Million	Annual Budget, SPLOST, FEMA	Lowndes County and City of Valdosta	2017	High	Deferred
Review data on storm events to determine where repetitive Flooding occurs as a result of inadequate drainage infrastructure.	Engineering and Public Works	Staff Time	Annual Budgets	All jurisdictions	2016-2021	Medium	Ongoing
Use available data to develop plan for correcting known deficiencies in these Flood prone areas.	Public Works and Engineering	$5 million	Annual Budget, SPLOST, FEMA	All jurisdictions	2019	Medium	Deferred
Identify alternative retention strategies.	Engineering	$500,000	Annual Budget, FEMA,	Lowndes County, Valdosta, Remerton, Hahira	2017	Medium	New
Explore Army Corps of Engineers recommendation to construct a levee and culvert structure at the confluence of the Withlacoochee River and Sugar Creek.	Public Works and Engineering	Staff Time	Annual Budget	Lowndes County	2018	Medium	New
Objective #2 - Make Flood insurance available to every resident of Lowndes County.							

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Continue enforcing floodplain ordinances in the participating communities of Lowndes County, Hahira, lake Park and Valdosta	EMA	None	N/A	All Jurisdictions	2016-2021	High	Ongoing
Adopt Floodplain ordinance to cover the jurisdictions of Dasher & Remerton.	EMA, Dasher City Council, Remerton City Council	None	N/A	Dasher Remerton	2017	High	Deferred
Provide information to each of the participating communities on the benefits of participating in the Community Rating System.	EMA	None	N/A	All jurisdictions	2018	Medium	Deferred
Objective #3 - Develop Interactive Flood model for the major rivers within Lowndes County and Valdosta.							
Work with SGRC staff to collect GIS data on local impacts along rivers at various stream gauge levels.	EMA, Engineering	$250,000	Annual Budget, USGS, FEMA	Lowndes County, City of Valdosta	2018	Medium	Deferred
Utilize historical data to develop projected Flood impact model to be used for planning and warning purposes.	EMA, VALOR	$50,000	Annual budget	All jurisdictions	2019	Medium	Deferred
Utilize river gauges to establish Flood data.	EMA, Engineering, VALOR	Staff Time	Annual Budget	All jurisdictions	2016-2021	Medium	Ongoing

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #4 - Protect and preserve Flood-prone areas for greenspace use, such as community parks and recreation areas.							
Monitor comprehensive land use plans to ensure mapping of lands to be permanently protected.	Planning	Staff Time	Annual budget	All jurisdictions	2016-2021	Low	Ongoing
Monitor existing subdivision regulations to promote conservation of Floodplains, wetlands, and groundwater recharge areas.	Planning	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Educate public and private organizations on methods for preserving parks and recreation areas.	EMA, Planning, Public Information	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Objective #5 - Promote acquisition of Flood-prone areas.							
Identify and purchase Flood-prone and high-risk properties as a method of reducing future Flood damage losses.	EMA, Engineering, Board of Commissioners, Valdosta City Council	$10 million	Annual budget, SPLOST, FEMA	Lowndes County, Valdosta	2021	Low	Deferred
Objective #6 - Explore incorporation of increased buffers around natural features in Lowndes County.							
Evaluate existing regulations to determine if buffering around natural features is adequate.	Planning	Staff Time	Annual Budget	All Jurisdictions	2016-2021	Low	Ongoing

D. Special Multi-Jurisdictional Strategy and Considerations

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table. An example of such an action step is the acquisition of Flood prone properties. Since historically, only the City of Valdosta and Lowndes County have experienced Flooding that substantially damaged local residences, this action step would not apply to the other jurisdictions.

E. Local Public Information and Awareness Strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and Deleted Action Steps

Objective #1, Action Step #6 ("Conduct assessment to determine the feasibility of developing retention areas to alleviate Flooding in Flood prone areas") has been completed. Objective #3, Action Step #3 ("Work with SGRC to obtain LIDAR data necessary for development of interactive Flood model by USGS and NWS") has been completed.

G. Unchanged action steps

A number of the action steps included in the original plan were included in this updated plan. A variety of factors contributed to their continued inclusion but the majority of them remain because they are steps that are ongoing and have no definitive ending date. The others were deferred mainly due to lack of funding and resources. Each of these actions were evaluated using the STAPLEE criteria and were deemed to still be valid mitigation measures.

It is still the desire of the community to petition FEMA to conduct a detailed study of Lowndes County in its entirety to produce more accurate Flood zone maps. Identifying Flood prone areas and any critical facilities at risk are also continuing priorities. It is still our intention to review data to determine areas where drainage improvements can be made. Education for the general public will remain a top priority and will likely never be removed from this or future updates. Lack of funding and resources made it impractical to look at

acquiring Flood-prone properties, but that remains a valid mitigation option in this plan. Additionally, local planners will continue to consider the need for increased or revised land use regulations and buffering requirements in future developments.

II. HIGH WIND – HURRICANES, TORNADOS, THUNDERSTORMS

A. Community Mitigation Goals

Public officials in Lowndes County realize that improving the ability to provide early, effective warnings of High Wind threats to citizens should be one of the highest priorities of this mitigation plan, as well as educating the public about safety precautions. In addition, steps should be taken to ensure that existing and new residences and infrastructure are made more resistant to wind damage, and that all public buildings in the county, particularly schools, should be assessed to determine their ability to withstand winds of up to 100 miles per hour, which might be experienced during a hurricane, thunderstorm, or tornado.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural - Among the structural mitigation options in this plan is the installation of auxiliary generators for all designated community water systems, and securing funding to retrofit public buildings deemed to be at risk of severe damage from winds up to 100 miles per hour. Non-structural options include making the public more aware of steps they can take to protect themselves and their property in the event of a High Wind event, such as installing safe rooms and utilizing NOAA weather radios.

2. Existing policies, regulations, ordinances and land use - As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures are utilized to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes.

3. Community values, historic, and special considerations – None identified.

4. New buildings and Infrastructure – The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of damage due to High Winds.

5. Existing Buildings and Infrastructure – The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of damage due to High Winds.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #2 - Minimize damage caused by High Winds of Hurricanes and Tornadoes in Lowndes County.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Educate the public about Hurricane and Tornado safety precautions.							
Provide education to homeowners, businesses and builders on the function and importance of safe rooms in the home and workplace.	EMA, Public Information, Inspections	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Offer emergency preparedness training to citizens through programs such as the Community Emergency Response Team (CERT) training and the American Red Cross Citizen's Disaster Course.	EMA, ARC	$10,000	Annual Budget, FEMA, ARC	All jurisdictions	2016-2021	Medium	Ongoing
Provide education to local business owners on the importance of emergency plans for their businesses and provide assistance with developing their plans.	EMA, Public Information	Staff Time	Annual Budget	All jurisdictions	2016-2021	Medium	Ongoing
Work with NWS to develop local Storm Ready Supporter program to help recognize businesses that meet established guidelines for emergency preparedness measures.	EMA	Staff Time	Annual Budget	All jurisdictions	January 2018	Low	Deferred
Objective #2 - Reduce the potential impact of High Winds resulting from hurricanes and tornadoes on new and existing residences, buildings, and infrastructure.							

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Work with local Public Works and Utilities to ensure that plans are in place to keep right of ways free of overhanging or dead limbs and other debris.	Public Works, Utilities	$100,000	Annual Budget	All jurisdictions	2016-2021	High	Ongoing
Objective #3 - Ensure all existing and new institutional/public buildings are adequate to withstand sustained winds up to 109 mph.							
Conduct assessment of all public facilities, especially schools and large assemblies, to determine their ability to meet current wind load standards.	Engineering, Building Inspections	Staff Time	Annual Budget	All Jurisdictions	2016-2021	Medium	Ongoing
Install auxiliary generators for all designated community water and sewer systems.	Utilities, EMA, Public Works	$1 Million	FEMA/Local Budgets	All Jurisdictions	2020	Medium	Deferred
For structures that are deemed unsafe during High Winds, but retrofitting is not feasible, provide separate structure for emergency sheltering that meets the guidelines for community safe rooms.	Engineering	$3 Million	FEMA/Local Budgets	All Jurisdictions	2020	Medium	Deferred
Encourage local governments and other public agencies to consider using the FEMA guidelines for Community Safe Rooms when designing new structures.	Planning, Engineering	Staff Time	Annual Budget	All Jurisdictions	2016-2021	Medium	Ongoing
Consider relocating utilities underground.	Planning, Engineering	Staff Time	Annual Budget	All Jurisdictions	2016-2021	Medium	New

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Prewire manual transfer switches for generator use in infrastructure.	Utilities, EMA, Public Works	$1,000,000	FEMA/Local Budgets	All Jurisdictions	2016-2021	Medium	New

D. Special Multi-Jurisdictional Strategy and Considerations

Most of the strategies outlined above apply to, and are intended to be carried out by, each of the local jurisdictions. In certain cases, where the actions step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

The educational elements have been accomplished, but they are also continually ongoing, so for the purposes of this plan they remain as valid mitigation steps. “Evacuation and emergency shelters” were deleted from Objective #3, Action Step #2.

G. Unchanged action steps

Due to lack of funding and available staffing resources, many of the suggested mitigation action steps from the original plan were held over and included in this plan as well. The need for safe rooms still exists, so that option was written into this update along with the various educational elements from the original plan. Generator installation on critical utilities has not been completed and remains a mitigation option also.

III. LIGHTNING

A. Community Mitigation Goals

While Lightning can cause significant property damage, the potential for personal injury is also high for an unprepared public. Ensuring that the citizenry is aware of these dangers and the community is able to quickly issue warnings of possible severe Lightning events is a very important goal of the community's emergency preparedness.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – The non-structural mitigation options for mitigating this hazard include improving educational and awareness activities to increase the public's knowledge of the danger and actions to take when they occur. The installation of Lightning detection devices at recreational facilities is a structural option that could save lives due to the improved early warning capability.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures are utilized to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances, and building codes.

3. Community values, historic, and special considerations – None identified.

4. New buildings and Infrastructure – As noted in Chapter 2, the risk of Lightning is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of Lightning, rather than new buildings and infrastructure. However, nationally, a considerable amount of property damage occurs each year due to fires caused by Lightning, so there is also some risk to new buildings.

5. Existing Buildings and Infrastructure - As noted above, the risk of Lightning is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of Lightning, rather than existing buildings and infrastructure. However, as noted in Chapter 2, at the national level, fires caused by Lightning are also responsible for a substantial amount of property damage. Residential Lightning protection systems can mitigate this danger.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #3 – Protect the citizens of Lowndes County from the threat of injury and other risks associated with Lightning strikes.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 – Conduct needs assessment and development implementation plan for installation of Lightning detection equipment for all public outdoor recreation facilities.							
Install Lightning detection and warning equipment at all public outdoor recreation facilities.	Public Works, Parks and Rec, Schools	$200,000	FEMA/Annual Budget	All jurisdictions	2019	Medium	Deferred
Provide technical and educational assistance to local businesses and organizations, which involve significant outdoor activity, on the feasibility and benefits of the installation of Lightning detection equipment.	EMA	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Objective #2 – Educate public on risks associated with Lightning and proper safety measures during Lightning storms.							
Incorporate Lightning safety into presentations and materials presented to public.	EMA	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing

D. Special Multi-Jurisdictional Strategy and Considerations

The strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None: The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

G. Unchanged action steps

The action steps from the original plan are of an ongoing nature that necessitated their continued inclusion. Due to budget constraints, the action steps regarding the installation of Lightning detection equipment requires resources that have not been available since it was not high enough on the priority list.

IV. WILDFIRE

A. Community Mitigation Goals

While Lowndes County still remains a mostly rural community outside the city limits of Valdosta, development has increased in the county in areas surrounded by forests populated with pines, oaks and dense ground vegetation. Especially during prolonged periods of Drought, Wildfire is a potential disaster that could cause much property damage and injury. This plan addresses this threat by including options to better identify where the threat is the greatest due to urbanization of the county, and reducing the threat through public awareness.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – Options to mitigate possible losses due to Wildfires in Lowndes County include non-structural action steps such as the development of an Urban/Wildland Interface Fire Map and the implementation of the Fire-Wise program in the county.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development are utilized, including Flood plain management ordinances, capital improvement planning, zoning ordinances, and building codes.

3. Community values, historic, and special considerations – None identified.

4. New buildings and Infrastructure – Each of the action steps listed below are designed to protect new buildings and infrastructure from the effects of Wildfire.

5. Existing Buildings and Infrastructure - Each of the action steps listed below are designed to protect existing buildings and infrastructure from the effects of Wildfire.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #4 – Protect the citizens and property in Lowndes County from damage as a result of Wildfire.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 – Develop a comprehensive mapping system to identify areas at risk of Wildfire and incorporate this mapping into existing planning and land use regulations to provide greater protection in the wildland-urban interface areas.							
Continue to provide mapping data from the GMIS Critical Facilities Database to local Planning Agencies for incorporation into current planning documents.	EMA, VALOR	Staff time	Annual Budget	All jurisdictions	2016-2021	Medium	Ongoing
Request the Greater Lowndes County Planning Commission to consider the use of Urban/Wildland Interface in the development of its comprehensive plan.	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Objective #2 – Follow the priorities set forth by the Georgia Forestry Commission CWPP to provide Education and Outreach for the Lowndes County community							
Encourage local developers and homeowner's associations to incorporate Firewise practices into new and existing developments.	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	Medium	Ongoing
Conduct "How to Have a Firewise Home" Workshop for Lowndes County Residents	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Conduct "Firewise" Workshop for Community Leaders	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Hold a Spring Clean-up Event for removing flammable vegetation and debris	EMA, Planning, Fire	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Develop and distribute informational packets on Firewise practices	EMA, Planning, Fire	$10,000	Annual Budget	All jurisdictions	2016-2021	High	New
Create and exhibit a Wildfire Protection Display for the general public at Safety Day	EMA, Planning, Fire	$5,000	Annual Budget	All jurisdictions	2016-2021	High	New
Hold an Open house at individual Fire Stations to promote Community Firewise Safety and develop community support and understanding of local fire departments and current issues	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Invite the news media to community “Firewise” functions for news coverage and regularly submit press releases documenting Wildfire risk improvements in Lowndes County	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Objective #3 – Following the priorities set forth by the Georgia Forestry Commission CWPP to provide Community Hazard and Structural Ignitability Reduction for the Lowndes County community							
Create a minimum of 30 feet of defensible space around all structures	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Reduce structural ignitability around applicable structures	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Hold Community Cleanup Days and cut, prune and mow vegetation in shared community spaces	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New
Ensure Right of Way clearance for emergency vehicles by maintaining vertical & horizontal clearance and seeing that adequate lengths of culvert are installed for driveway access.	EMA, Planning, Fire	Staff time	Annual Budget	All jurisdictions	2016-2021	High	New

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Identify needed road improvements and, as roads are upgraded, widen to minimum standards with at least a 50-foot diameter cul-de-sac or turnaround	Planning	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New
Amend and enforce existing building codes as they relate to skirting, propane tank location, public nuisances (trash/debris on property), Property address marking standards and other relevant concerns; Review Subdivision ordinances for public safety concerns; and Enforce the uniform addressing ordinance	Planning	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New
Provide greater Burn Permit enforcement and education from the GA Forestry Comm.	Planning	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New
Objective #4 – Following the priorities set forth by the Georgia Forestry Commission CWPP to provide Wildland Fuel Reduction for the Lowndes County community							
Reduce hazardous fuels in adjacent WUI lands by encouraging prescribed burning, particularly adjacent to residential areas, and Seeking grants for prescribed burning and a WUI Mitigation Team	EMA, Planning, Fire	$35 an acre	Annual Budget	All jurisdictions	2016-2021	High	New
Reduce hazardous fuels along railroad corridors by encouraging railroads to better maintain their ROW by elimination brush and grass through herbicide and mowing and Maintaining firebreaks along their ROW adjacent to residential areas.	EMA, Planning, Fire	$35 an acre	Annual Budget	All jurisdictions	2016-2021	High	New

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Reduce hazardous fuels along existing fire lines by cleaning and re-harrowing existing lines.	Fire	$35 an acre	Annual Budget	All jurisdictions	2016-2021	High	New
Objective #5 – Following the priorities set forth by the Georgia Forestry Commission CWPP to Improve Community Wildland Fire Response for Lowndes County							
Inspect, maintain and improve access to existing dry hydrants; Add signage along road to mark dry hydrants; Locate additional dry hydrants as needed; and Locate and pre-clear helicopter dip sites.	EMA, Fire	$25,000	Annual Budget	All jurisdictions	2016-2021	High	New
Continue to support VALOR GIS updates to mapping of roads and water sources.	Planning	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New
Improve road signage at crossroads and install “Dead End”, “No Outlet” and other signage on road signs.	Public Works, Road Dept.	$100 each	Annual Budget	All jurisdictions	2016-2021	High	New
Objective #6 – Improve Community Fire Response by providing necessary equipment, education and training							
Per the CWPP, Obtain Wildland hand tools, lightweight PPE and Wildland Fire Suppression Training for fire personnel	EMA, Fire	$300k	FEMA AFG	All jurisdictions	2016-2021	High	New
Per the CWPP, Create Lowndes County WUI Fire Council	EMA/Fire	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	New
Provide additional first responder & fire training, air unit chargers, PPE, SCBAs, Class A Pumpers & Fire Knocker trucks and other equipment to all Fire Departments for Wildfire use	EMA, Fire	$1.5 M	FEMA AFG	All jurisdictions	2016-2021	High	New

D. Special Multi-Jurisdictional Strategy and Considerations

The strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and how citizens can best assist and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

None: The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

G. Unchanged action steps

The action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

V. EXTREME HEAT/COLD

A. Community Mitigation Goals

The South Georgia area is subject to extreme high temperatures and humidity during the summer months, and heat-induced illness can be very serious and even fatal for many population groups in the community, including the homeless and the elderly. Likewise, the extreme cold temperatures that periodically occur during the winter months pose an equal risk to those who face prolonged exposure to the hazardous conditions. The goal of the community is to prevent such injuries and deaths by providing those at risk with timely warnings of danger to ensure their ability to take precautions.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – There are no structural options considered, since there are appropriate facilities available throughout the county to serve as shelters when needed. Non-structural options include properly disseminating warnings to the public.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton, Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards

promulgated by the Georgia Department of Community Affairs. State regulations apply to the operations of emergency shelters. There are currently no local ordinances or regulations affecting emergency shelters.

3. Community values, historic & special considerations – none identified.

4. New buildings and Infrastructure – As noted in Chapter 2, the risk of exposure to extreme temperatures is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of extreme heat and cold, rather than new buildings and infrastructure.

5. Existing Buildings and Infrastructure - As noted above, the risk posed from extreme temperatures is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of extreme heat and cold, rather than existing buildings and infrastructure.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #5 – Ensure that the citizens of Lowndes County are adequately warned of and protected from conditions which involve extremely high or low temperatures.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 – Develop plans for providing suitable sheltering options during events involving extreme temperatures.							
Identify facilities that may be used for sheltering during extreme temperature events.	EMA, ARC	Existing Staff	Annual budget	All jurisdictions	2016-2021	Medium	Ongoing
Develop plan to establish guidelines governing the criteria for opening and operating shelters during extreme temperature related events.	EMA, ARC	Existing Staff	Annual budget	All jurisdictions	2018	High	Deferred
Objective #2 – Educate the public on issues related to these temperature extremes.							
Provide information to the public when extreme conditions are forecast by NWS officials to include information on signs, symptoms, and precautions to be taken as a result of	EMA, PIO, Public Health	Existing Staff	Annual budget	All jurisdictions	2016-2021	Medium	Ongoing

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
extremely hot or cold conditions.							

D. Special Multi-Jurisdictional Strategy and Considerations

The strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

None: The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

G. Unchanged action steps

The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion. Due to budget constraints, the action steps to develop a plan for opening shelters is of a nature that necessitated its deferment to this new plan.

VI. DROUGHT

A. Community Mitigation Goals - The goal of this plan is to reduce the effects of long-term Drought on the public health and safety by ensuring the availability of adequate drinking water supplies.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural - Negating the effects of Drought on the supply of drinking water will require mostly non-structural mitigation options. These options include acquiring funds to study the effect of Drought on public and domestic underground water systems, and determining the conditions that place such systems at risk.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes are utilized. Currently, the Georgia Department of Natural Resources issues water use restrictions when conservation procedures are deemed necessary. Lowndes County, Valdosta, Dasher, Remerton, Hahira and Lake Park observe the DNR mandatory restrictions.

3. Community values, historic & special considerations - None identified.

4. New buildings and Infrastructure – As noted in Chapter 2, the risk of Drought is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of Drought, rather than new buildings and infrastructure.

5. Existing Buildings and Infrastructure - As noted above, the risk of Drought is mainly to the citizens of Lowndes County. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of Drought, rather than existing buildings and infrastructure.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #6 - Ensure adequate drinking water supply is available during Drought conditions.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Provide temporary water supplies for domestic consumption as needed during Drought conditions.							
Develop a tiered plan to provide temporary water supplies for domestic consumption.	EMA, Utilities	Existing Staff	Annual budget	All jurisdictions	2018	High	Deferred
Develop tiered response plan to implement additional water restrictions when it is identified that Drought conditions exist.	EMA, Utilities	Existing Staff	Annual budget	All jurisdictions	2018	High	Deferred

D. Special Multi-Jurisdictional Strategy and Considerations

Each of the strategies outlined above apply to and are intended to be carried out by all of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

None: The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

G. Unchanged action steps

Due to budget constraints, the action steps from the original plan are of a nature that necessitated their deferment to this new plan.

VII. SINKHOLES

A. Community Mitigation Goals

The goal of this plan is to minimize the loss of life and property from Sinkholes by better identification of the areas of risk.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – The non-structural option recommended in this plan is to undertake a comprehensive study of Lowndes County to better determine areas subject to Sinkholes.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes are utilized.

3. Community values, historic, and special considerations – none identified.

4. New buildings and Infrastructure – The action step in the mitigation strategy and recommendation that follows is specifically designed to more accurately determine the degree and location of risk to new buildings and infrastructure from the effects of Sinkholes so preventative measures can be taken.

5. Existing Buildings and Infrastructure - The action step in the mitigation strategy and recommendation that follows is specifically designed to more accurately determine the degree and location of risk to existing buildings and infrastructure from the effects of Sinkholes so preventative measures can be taken.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #7 - Protect Lowndes County from the threat of Sinkholes.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Minimize the loss of life and property from Sinkholes.							
Conduct ground study of areas identified as being at risk for potential sinkhole formation.	Engineering	$10 million	Annual Budget	All jurisdictions	2020	Low	Deferred
Include sinkhole study information in planning phase of new developments which may be affected by potential sinkhole formation.	Engineering, Planning	Existing Staff	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing

D. Special Multi-Jurisdictional Strategy and Considerations

The strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

None: The majority of the action steps from the original plan are of an ongoing nature that necessitated their continued inclusion.

G. Unchanged action steps

Both of the original steps were evaluated and determined to still remain relevant as legitimate mitigation options so they were kept in the updated plan in the hopes that the resources and funding required to implement them will become available.

VIII. DAM FAILURE

A. Community Mitigation Goals

The community goals regarding dams in Lowndes County range from minimizing the risk of failure of high-risk dams in Valdosta to assessing the structural integrity of all dams in the county and making needed improvements.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – Non-structural options include inventorying all dams in Lowndes County and assessing their risk of failure; structural options include reinforcing existing dams found subject to risk of failure.

2. Existing policies, regulations, ordinances and land use - As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes are utilized.

3. Community values, historic, and special considerations – none identified.

4. New buildings and Infrastructure – All of the tasks and action steps in the mitigation strategy and recommendations that follow will more accurately determine the degree and location of the risk to new buildings and infrastructure from the effects of Dam Failure. Preventative measures can then be taken.

5. Existing Buildings and Infrastructure - All of the tasks and action steps in the mitigation strategy and recommendations that follow will more accurately determine the degree and location of the risk to existing buildings and infrastructure from the effects of Dam Failure. Preventative measures can then be taken.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #8 - Minimize losses to existing and future structures, especially critical facilities, due to Flooding caused by Dam Failure.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Ensure dams within Lowndes County are adequate to withstand stress from natural hazards.							
Evaluate the structural integrity of dams and implement projects to repair and/or upgrade dam and spillway structures to prevent future damages.	Engineering	$5 million	Annual Budget	All jurisdictions	2020	Low	Deferred
Acquire or develop downstream impact studies for all high risk dam structures in Lowndes County.	Engineering, EMA	$150,000	FEMA/Annual Budget	All Jurisdictions	2020	Low	Deferred
Provide study information to Planning Departments for inclusion in planning maps.	Engineering, EMA	Staff Time	Annual Budget	All jurisdictions	2016-2021	Low	Ongoing
Identify dams in need of repair or that would benefit the surrounding areas by being upgraded and initiate projects to facilitate the necessary repairs.	Engineering	$5 million	FEMA/Annual Budget	All jurisdictions	2020	Low	Deferred

D. Special Multi-Jurisdictional Strategy and Considerations

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the actions step may not apply to all jurisdictions the applicable jurisdictions are noted in the table.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

Due to limited resources and other actions receiving higher priority, none of the previously identified action steps were fully completed, but they still remain realistic mitigation strategies so none of them were deleted either.

G. Unchanged action steps

All of the previously mentioned action steps remain unchanged in this update. They were re-evaluated and determined to adequately meet the criteria for inclusion and hopefully resources will become available to see them carried out.

IX. HAIL

A. Community Mitigation Goals

The goal of this plan is to prevent or reduce damage and injury caused by Hail in Lowndes County.

B. Identification & Analysis of Range of Mitigation Options

1. **Structural and non-structural** – Structural options included in this Plan include storm windows and/or ballistic film on new and existing Critical Facilities, encouraging the public to include Hail damage under insurance coverage, and encouraging the storage of equipment and vehicles under adequate shelters.

2. **Existing policies, regulations, ordinances and land use** – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including capital improvement planning, zoning ordinances and building codes, are utilized.

3. **Community values, historic & special considerations** – none identified.

4. **New buildings and Infrastructure** – Install storm windows and/or ballistic film on new and existing Critical Facilities and promote their installation on new and existing private buildings in Lowndes County and the cities of Dasher, Hahira, Lake Park, Remerton, and Valdosta. Encourage the public to include Hail damage under insurance coverage and to store equipment and vehicles under shelters.

5. **Existing Buildings and Infrastructure** – New buildings and Infrastructure – Install storm windows and/or ballistic film on new and existing Critical Facilities and promote their installation on new and existing private buildings in Lowndes County and the cities of Dasher, Hahira, Lake Park, Remerton, and Valdosta. Encourage the public to include Hail damage under insurance coverage and to store equipment and vehicles under shelters.

C. Mitigation Strategy and Recommendation

1. Mitigation goal #9 – Prevent or reduce damage and injury caused by Hail in Lowndes County.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 – Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Hail.							
Install storm windows and/or ballistic film on new and existing Critical Facilities and promote their installation on new and existing private buildings	Public Works	$750,000	General Funds, GEMA, FEMA, Red Cross	All jurisdictions	2017-2018	Medium	New
Encourage the public to include Hail damage under insurance coverage and to store equipment and vehicles under shelters	EMA	Staff time	General Funds	All jurisdictions	2016-2020	High	New

In addition, strategies identified to address hazards associated with Hail events are covered in the following section for All Hazards. These are primarily the actions steps dealing with community outreach and providing public warning services.

D. Special Multi-Jurisdictional Strategy and Considerations

All of Lowndes County and the five cities may be significantly affected by Hail events. There are no special considerations with regard to jurisdictional differences.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology

(social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None (action steps are new as of the 2016 plan update).

G. Unchanged action steps

None (action steps are new as of the 2016 plan update).

X. PUBLIC HEALTH EMERGENCY

A. Community Mitigation Goals

The goal of this plan is to reduce the potential loss of life, health, and productivity that may arise from a public health emergency.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – The non-structural mitigation options for mitigating this hazard include improving educational and awareness activities to increase the public's knowledge of the danger and actions to take when they occur. Increase mosquito control efforts, including public awareness with regard to the hazards posed by standing water in containers, tires, etc., is a non-structural option that could help to reduce the likelihood of a severe mosquito-borne illness outbreak.

2. **Existing policies, regulations, ordinances and land use** – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. State and federal laws and regulations are applicable with regard to matters of public health.

3. **Community values, historic & special considerations** – none identified.

4. **New buildings and Infrastructure** – The risk from a public health emergency is mainly to the residents of Lowndes County and not to buildings and infrastructure. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public, rather than new buildings and infrastructure.

5. **Existing Buildings and Infrastructure** – As noted above, the risk from a public health emergency is mainly to the residents of Lowndes County and not to buildings and infrastructure.

C. Mitigation Strategy and Recommendation

1. **Mitigation Goal #10 – Protect the population of Lowndes County from the effects of a public health emergency.**

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective 1 – Minimize loss of life and harm to public health due to a public health emergency.							
Increase Immunization education, prevention and pre-planning efforts, particularly for the homeless and low-income individuals in the community, and host flu shot and other immunization clinics.	Health Department	$100,000	General Funds, GEMA, FEMA, Health Department	Lowndes County and all cities	2016-2020	High	New
Identify vulnerable populations (homeless, migrants, low income, etc.) and identify community groups to work with in order to reach and educate these populations effectively regarding health issues.	EMA, Health Department	Staff time	General Funds, GEMA, FEMA	Lowndes County and all cities	2016-2020	High	New
Develop plan to identify community locations to obtain and distribute Water, Food, Ice, Tarps, medical countermeasures, etc.	EMA	Staff time	General Funds, GEMA	Lowndes County and all cities	2016-2017	Medium	New
Develop Local Emergency Planning Committee	EMA	Staff time	General Funds	Lowndes County and all cities	2016-2017	Medium	New
Approach large businesses about working with the EMA on developing public health emergency plans.	Health Dept.	Staff time	General Funds	Lowndes County and all cities	2016-2018	Medium	New

D. Special Multi-Jurisdictional Strategy and Considerations

All of Lowndes County and the five cities could be significantly affected by a public health emergency. There are no special considerations with regard to jurisdictional differences. The Action Steps above are to be implemented county-wide and there is no difference in strategy between jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None (action steps are new as of the 2016 plan update).

G. Unchanged action steps

None (action steps are new as of the 2016 plan update).

XI. ALL HAZARDS

A. Community Mitigation Goals

Ensuring that essential services are provided and critical facilities continue to operate during and following a hazard event is a primary goal of this plan. This includes ensuring that emergency services providers have the necessary resources to carry out their functions as needed. In addition, it is recognized that the public must have the ability to receive and act upon hazard warnings and information quickly, if lives and property are to be protected.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – Structural options include retrofitting critical facilities to ensure redundancy in the event of service failure, improving warning signage on I-75, and possibly acquiring new warning systems such as outdoor sirens and reverse 911. Non-structural options include identifying shelters and transportation options for special needs populations, and improving warning information access and distribution, such as website links, ham radio networks, radar, and emergency email.

2. Existing policies, regulations, ordinances and land use – As required by Georgia law, Lowndes County, and the cities of Valdosta, Dasher, Remerton, Hahira, and Lake Park have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. In addition, other measures to guide development, including Flood plain management ordinances, capital improvement planning, zoning ordinances and building codes are utilized.

3. Community values, historic, and special considerations – None identified.

4. New buildings and Infrastructure – The mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of all hazards by improving warning systems, public knowledge, and emergency response procedures. Such steps indirectly protect new buildings and infrastructure from all hazards by ensuring advance preparation for the possibility of hazard events, and rapid emergency response to such events.

5. Existing Buildings and Infrastructure - The mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public from the effects of all hazards by improving warning systems, public knowledge, and emergency response procedures. Such steps indirectly protect existing buildings and infrastructure from hazards by ensuring advance preparation for the possibility of hazard events, and rapid emergency response to such events.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #11 - Ensure the provision of essential utilities and the operation of critical facilities during a natural hazard event in Lowndes County.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Minimize loss to levels of service, especially with critical facilities, due to any identified natural hazard.							
Create database of critical utilities within Lowndes County.	EMA	Existing Staff	Annual Budget	All jurisdictions	2018	Low	Deferred
Provide backup utility systems for all critical facilities.	Engineering, Public Works	$5,000,000	FEMA/Annual Budget	All Jurisdictions	2020	Medium	Deferred

2. Mitigation Goal #12 - Enhance the ability of the public to receive timely warnings and information about hazard events in Lowndes County.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1- Provide necessary and timely hazard warnings and information to the public.							
Educate public on the need for having a NOAA Weather Radio in every home and business and emphasize the NOAA Weather Radio System as the primary means to receive timely and accurate natural hazard warning information.	EMA, PIO	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	Ongoing
Increase public awareness of the warning and notification systems available community-wide such as NOAA weather radios, Code Red	EMA, PIO	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	Ongoing

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Conduct educational campaign to assist residents with programming and operation of NOAA Weather Radios.	EMA	Staff Time	Annual Budget	All jurisdictions	2016-2021	Medium	Ongoing
Maintain agreements with local radio and television outlets to allow for immediate dissemination of emergency information.	EMA, PIO	Staff Time	Annual Budget	All jurisdictions	2016-2021	High	Ongoing
Provide signage and/or billboard advertisements along I-75 and US Highways in Lowndes County to inform travelers which radio stations may provide emergency information.	EMA, PIO	$25,000	Annual Budget	All jurisdictions	2021	Low	Deferred
Research the availability of Interstate Radio in Lowndes County.	EMA	Staff Time	Annual Budget	All jurisdictions	2021	Low	Deferred
Objective #2 - Bring warning information to special needs individuals and community.							
Incorporate methods for delivering emergency messaging to the special needs community (i.e. deaf, blind, non-English speaking, etc.) into emergency alert systems.	EMA, PIO	Staff Time	Annual Budget	All jurisdictions	Ongoing	High	Deferred
Objective # 3 – Evaluate the feasibility of alternative warning systems.							
Assess the feasibility of outdoor warning sirens.	EMA, Parks and Rec, Schools	$2,000,000	FEMA/Annual Budget	All Jurisdictions	2019	Medium	Deferred

D. Special Multi-Jurisdictional Strategy and Considerations

The strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps from original plan

Due to limited resources and other actions receiving higher priority, none of the previously identified action steps were fully completed, but they still remain realistic mitigation strategies so none of them were deleted either.

G. Unchanged action steps

All of the previously mentioned action steps remain unchanged in this update. They were re-evaluated and determined to adequately meet the criteria for inclusion and hopefully resources will become available to see them carried out.

CHAPTER 5 – MAN-MADE HAZARD MITIGATION GOALS AND OBJECTIVES

Summary of changes:

- Revised Language
- GOAS have been updated
- New disasters have been added

OVERALL COMMUNITY MITIGATION GOALS, POLICIES AND VALUES NARRATIVE

I. PUBLIC HEALTH EMERGENCY

A. Community Mitigation Goals

The goal of this plan is to reduce the potential loss of life, health, and productivity that may arise from a public health emergency.

B. Identification & Analysis of Range of Mitigation Options

1. Structural and non-structural – The non-structural mitigation options for mitigating this hazard include improving educational and awareness activities to increase the public's knowledge of the danger and actions to take when they occur. Increase mosquito control efforts, including public awareness with regard to the hazards posed by standing water in containers, tires, etc., is a non-structural option that could help to reduce the likelihood of a severe mosquito-borne illness outbreak.

2. **Existing policies, regulations, ordinances and land use** – As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. State and federal laws and regulations are applicable with regard to matters of public health.

3. **Community values, historic & special considerations** – none identified.

4. **New buildings and Infrastructure** – The risk from a public health emergency is mainly to the residents of Lowndes County and not to buildings and infrastructure. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public, rather than new buildings and infrastructure.

5. **Existing Buildings and Infrastructure** – As noted above, the risk from a public health emergency is mainly to the residents of Lowndes County and not to buildings and infrastructure.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal – Protect the population of Lowndes County from the effects of a public health emergency.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Increase Immunization education, prevention and pre-planning efforts, particularly for the homeless and low-income individuals in the community, and host flu shot and other immunization clinics.	Health Department	$100,000	General Funds, GEMA, FEMA, Health Department	Lowndes County and all cities	2016-2020	High	New
Identify vulnerable populations (homeless, migrants, low income, etc.) and identify community groups to work with in order to reach and educate these populations effectively regarding health issues.	EMA, Health Department	Staff time	General Funds, GEMA, FEMA	Lowndes County and all cities	2016-2020	High	New
Develop plan to identify community locations to obtain and distribute Water, Food, Ice, Tarps, medical countermeasures, etc.	EMA	Staff time	General Funds, GEMA	Lowndes County and all cities	2016-2017	Medium	New
Develop Local Emergency Planning Committee	EMA	Staff time	General Funds	Lowndes County and all cities	2016-2017	Medium	New
Approach large businesses about working with the EMA on developing public health emergency plans.	Health Dept.	Staff time	General Funds	Lowndes County and all cities	2016-2018	Medium	New

D. Special Multi-Jurisdictional Strategy and Considerations

All of Lowndes County and the five cities could be significantly affected by a public health emergency. There are no special considerations with regard to jurisdictional differences. The Action Steps above are to be implemented county-wide and there is no difference in strategy between jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None (action steps are new as of the 2016 plan update).

G. Unchanged action steps

None (action steps are new as of the 2016 plan update).

II. CBRNE

A. Community Mitigation Goals

Much of the existing mitigative technology and equipment employed during CBRNE incidents is portable and cost prohibitive for medium to small communities. For these reasons it is important that the community not only develop local capacity as appropriate, but coordinate capacity-building with other communities to share the associated expenses among a larger user base.

B. Identification and Analysis of Range of Mitigation Options

1. Structural and Non-structural – Although structural and non-structural options are available, structural measures are primarily private sector options while non-structural mitigation options are the public sector's primary option. The type and mobility of most measures available to the public sector classifies them as non-structural.

2. Existing Policies, Regulations, Ordinances and Land Use – Very little in the way of existing policies and regulations could be identified which affects hazardous materials handling by the private sector. Local entities are required to file Material Safety Data Sheets with the host jurisdiction informing local officials of the types of hazardous chemicals on site. The community does have traffic laws which, when rigidly enforced, are a mitigation tool. Most commercial carriers including railroads employ hazard materials routing software, but any such transport is usually not shared with the jurisdiction they traverse.

3. Community Values, Historic and Special Considerations – Quality of life is a primary concern to residents, and the threats posed by hazardous materials compromise, and if serious enough, jeopardize local conditions.

4. New Buildings and Infrastructure -- Any new buildings and infrastructure should be built with man-made/technological hazards mitigation incorporated in the design. The mitigative actions for man-made/technological hazards include maintaining contact with other state and local emergency agencies to share expertise on handling man-made/technological hazard events.

5. Existing Buildings and Infrastructure -- Any existing buildings and infrastructure should be improved with technological hazards mitigation incorporated into any renovations. The mitigative actions for technological hazards include maintaining contact with other state and local emergency agencies to share expertise on handling technological hazard events.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal #1 - Be prepared to respond appropriately to any foreseeable CBRNE hazard event.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Secure external sources of funding and training to help prepare for and respond to events.							
Network with emergency personnel staff at state and federal levels to help identify the "full range" of CBRNE risks and local needs in preparation for the availability of outside funding.	EMA	Staff Time	Annual Budget	All Jurisdictions	2016 ongoing	Medium	NEW
Submit competitive applications to fund equipment/training needs when potential funding sources are identified in Lowndes County	EMA	Staff Time	Annual Budget	All Jurisdictions	2016 ongoing	Medium	NEW
Continue to be involved with Moody Air Force Base to increase readiness for CBRNE disasters	EMA	Staff Time	Annual Budget	All Jurisdictions	2016 ongoing	Medium	NEW
Develop a relationship with owners of hazardous materials storage (tires etc.) to educate/encourage them to develop a plan for hazardous events.	EMA	Staff Time	Annual Budget	All Jurisdictions	2016 ongoing	High	NEW
Annually review & update mutual aid agreements with neighboring jurisdictions	EMA	Staff Time	Annual Budget	All Jurisdictions	2016 ongoing	High	NEW
Provide first responders, fire, EMS and law enforcement with the equipment needed to prepare for and respond to events	EMA, Fire, Law Enforcement, EMS	$1 M a year	DOJ, GEMA, FEMA	All Jurisdictions	2016 Ongoing	High	NEW

D. Special Multi-Jurisdictional Strategy

These action steps are applicable communitywide but are needed especially where most development occurs and where transportation networks, such as major highways and railroads, intersect.

E. Public Information and Awareness

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None (action steps are new as of the 2016 plan update).

G. Unchanged action steps

None (action steps are new as of the 2016 plan update).

CHAPTER 6 – MITIGATION PLAN EXECUTION

Summary of changes:

- Revised and Updated Language

I. IMPLEMENTATION

A. Administrative Actions

Following final approval and adoption of the Lowndes County Multi-Jurisdictional Hazard Mitigation Plan by the Georgia Emergency Management Agency, Lowndes County and its municipalities, and the Federal Emergency Management Agency, the Director of the Lowndes County Emergency Management Agency will distribute copies of the plan to all affected stakeholders. The implementation of this plan began in earnest once the mitigation options were identified.

B. Authority and Responsibility

The Lowndes County Emergency Management Agency (EMA) has been designated by the local governments in Lowndes County as the local entity with the overall responsibility for emergency planning and response in Lowndes County. This responsibility includes the coordination of federal, state and local resources in the event of a disaster in Lowndes County. Accordingly, Lowndes County EMA was responsible for the convening of the Policy Committee to guide the development of the county's multi-jurisdictional plan. While overall coordination of the county's Hazard Mitigation Plan will continue to be the responsibility of the EMA, the local chief elected officials (Mayors of Dasher, Hahira, Lake Park, Remerton, Valdosta and Chairman of the Lowndes County Board of Commissioners), through their chief appointed officials (Lowndes County Manager, Dasher City Manager, Hahira City Manager, Lake Park City Manager, Remerton City Manager, Valdosta City Manager), will be responsible for the day-to-day administrative operations of their respective local governments, and for the implementation of the specific mitigation activities proposed in this plan.

C. Prioritization

1. Methodology for prioritization

In prioritizing the implementing of action steps identified in this plan, those hazards deemed to pose the greatest threat will be given the primary consideration. In prioritizing the implementation feasibility of the action steps and projects, local governments will take into

consideration the additional factors of cost and time. Those activities requiring little cost and staff time to implement will be given highest implementation priority. Those steps requiring additional funding for equipment or staff time beyond the normal budgets of the communities will be incorporated into the budget process when possible based on the cost-benefit analysis described below.

Lowndes County and the municipalities will strive to meet the following implementation schedule: High-priority action steps will be implemented in the first 18 months following adoption of this plan; Medium priority action steps will be implemented in 18 to 36 months; and Low priority action steps will be implemented in 36 to 60 months. The final implementation schedule will ultimately be determined by the availability of resources such as federal and state grant funds and local funds.

2. Use of cost-benefit analysis

The data provided in Worksheet #3 will be utilized to quantify the number of persons and/or property at risk from each hazard. Combined with the criteria in Worksheet #4 this will allow local governments to assess the potential value of at risk properties and the resulting benefit from the proposed action steps.

In prioritizing projects, the local governments will also utilize cost benefit analysis (CBA) to evaluate the feasibility of a major project. CBA is a well-established method for quantitatively comparing the benefits and costs of mitigation projects. The end result is a Benefit-Cost Ratio (BCR), which is derived from a project's total net present value of benefits divided by the total project cost estimate, which must include all documented project and maintenance costs. The benefits of mitigation projects are avoided damages, disruptions, losses, and casualties. Examples of common benefits include avoided or reduced damages to buildings, contents or infrastructure; economic impacts of loss of function of buildings; displacement costs for temporary quarters; loss of public services; loss of net business income; economic impacts of loss of function of infrastructure; road or bridge closures; loss of utility services; and deaths and injuries.

3. Use of other calculations

No other calculations were used.

4. Use of other review structure

In addition to the cost benefit analysis, other factors that may affect the prioritization of projects include the availability of special tax, grant and/or loan funds which become available on a limited basis to finance implementation, such as SPLOST funds or FEMA Pre-Disaster Mitigation Program funds.

D. Incorporation of Local PDM Plan into Other Plans/Planning Measures

As required by Georgia law, Lowndes County, and the Cities of Dasher, Hahira, Lake Park, Remerton and Valdosta have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community

Affairs. In addition, other measures to guide development are utilized, including Flood plain management ordinances, capital improvement planning, zoning ordinances, and building codes. Upon approval of the Lowndes County Hazard Mitigation Plan, a review will be conducted to identify any changes that need to be incorporated into these existing plans. As these plans are scheduled for revisions and/or updates, any necessary changes will be incorporated at that time.

Based on recommendations from the previous plan, changes were made to the Land Development Codes and/or Regulations of participating jurisdictions through incorporation of Flood plain ordinances into these plans.

II. MONITORING AND EVALUATION

The Lowndes County EMA Director will be charged with ensuring that this plan is monitored and periodically updated in subsequent years. An analysis of the previously approved plan's method and schedule for monitoring, evaluating, and updating the plan has indicated a high degree of success and satisfaction among local officials and community stakeholders. The method of evaluation employed, as agreed upon by the Hazard Mitigation Planning Committee, will consist of utilizing a report of accomplishments to illustrate what actions/projects were undertaken, the completion date (or current status) of those actions/projects, the cost of the actions/projects, and whether the actions/projects were deemed to be successful.

Pursuant to the requirements set forth in the Disaster Mitigation Act of 2000, the community is again required to update and evaluate the plan no more than five years after its adoption. At the direction of the Lowndes County EMA Director, the committee that is designated to review and update the plan will convene in order to evaluate progress within the community. The EMA Director will hold meetings at least annually to monitor the progress of the plan implementation. At least one year prior to the end of the required five-year update period, the EMA Director will begin the planning process for a new update to this plan. This will consist of establishing a new planning committee that will be tasked with completing the update following the same process used for this update.

No later than the conclusion of the five-year period following approval of the plan update, the Lowndes County EMA Director shall submit a revised Hazard Mitigation Plan to GEMA for its approval. It is important to note that the plan update process, as established by the planning committee, is subject to change, depending upon subsequent regulations and/or requirements set forth by GEMA and FEMA.

Public involvement

Because the Hazard Mitigation Plan is intended to help ensure a safe and livable environment for all Lowndes County citizens, it is imperative that citizen involvement be an integral part of the planning process. Since adoption of the original Lowndes County Pre-Disaster Mitigation Plan in 2006, citizens have been kept involved and apprised of plan progress through such forums as regularly scheduled Commissioner meetings, public hearings, and applicable newspaper coverage. This same level of public education and awareness and citizen involvement will continue over the next five years until the next required update of the Lowndes County Hazard Mitigation Plan. When specific issues dictate, public hearings will be conducted, and all other community planning efforts (Comprehensive Plan, Regional Plan, etc.) will afford citizens the opportunity to participate in and comment on the need to incorporate hazard mitigation initiatives.

To facilitate the goal of continued public involvement in the planning process, the EMA will assure that the following steps are taken:

- The public will be directly involved in the update and review of the plan as members of the Pre-Disaster Mitigation Planning Committee.
- Copies of the plan will be kept on hand at appropriate agencies throughout Lowndes County.
- The plan will be available on the Cities' and County's websites, and will contain an e-mail address and phone number the public can use for submitting comments and concerns about the plan.
- A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas. The EMA will set meeting schedules and dates and use County resources to publicize and host this meeting.

CHAPTER 7 – CONCLUSION

Summary of changes:

- Revised and Updated Language

I. SUMMARY

The definition of mitigate is "…to relieve; to alleviate; to temper." Natural hazards cannot be prevented; however, with proper planning, the destruction that often accompanies a natural hazard event can be mitigated. Planning ahead and undertaking structural and nonstructural action steps before a disaster occurs can save lives and property. This philosophy has been the driving force behind the preparation of the Lowndes County Hazard Mitigation Plan.

Lowndes County and its municipalities have suffered considerable repetitive damages, due primarily to localized Flooding. Hurricanes, Tornadoes and severe Thunderstorms have also affected Lowndes County. Very strong winds have caused damage in Lowndes County in the past and continue to threaten Lowndes County. In addition, heavy rains from Thunderstorms can create damaging Flooding. Because of a favorable outdoor environment, several individuals each year are struck by Lightning and large numbers are affected by heat stress caused by Extreme Heat.

Education of the population and enhanced warning can decrease the vulnerability of the county's citizens and visitors. Continued and improved public information and communication with the population are important parts of this plan.

Several gaps exist in our understanding of the threats facing Lowndes County. These include a lack of understanding of the effect of Drought on the subsurface water supply and the extent of potential Sinkholes in the county. More study is required on both of these subjects. The current impact of the historically high river Flood levels is not precisely known. Efforts to refine our understanding are included in this plan.

Because of this planning process, Lowndes County officials have gained a better understanding of the natural and man-made hazards affecting our county. The National Weather Service data, recently made readily available on the internet, was very helpful in this planning effort.

As a result of the planning process described in Chapter 1 and the natural and man-made hazard, risk, and vulnerability assessment in Chapters 2 and 3, Lowndes County and its municipalities have a realistic perspective on the natural and man-made hazard risks

that the county is exposed to on a daily basis. With the mitigation strategy outlined in Chapters 4 and 5, and the implementation plan included in Chapter 6, the local leaders of Lowndes County, Dasher, Hahira, Lake Park, Remerton and Valdosta have an "action plan" to follow when allocating resources to reduce their communities' vulnerability to such natural and man-made hazards.

II. REFERENCES

Publications

Numerous publications were utilized in compiling information for this plan. Publications used include:

1. Flood Insurance Rate Maps (FIRM)
2. Greater Lowndes County 2030 Comprehensive Plan
3. Lowndes County Community Wildfire Protection Plan (2011)
3. Lowndes County Emergency Operations Plan
4. Valdosta State University Hazard Mitigation Plan

Web Sites

- National Oceanic and Atmospheric Administration (NOAA) (http://coast.noaa.gov/hurricanes/report.html)
- National Climatic Data Center Storm Events Database (www.ncdc.noaa.gov)
- FEMA (www.fema.gov)
- Georgia Office of Homeland Security – Georgia Emergency Management Agency (OHS-GEMA) (www.gema.ga.gov)
- Georgia Forestry Commission (www.gfc.state.ga.us)
- Georgia Forestry Commission Automated Weather Data (http://weather.gfc.state.ga.us)
- FireWise Communities (www.firewise.org/usa)
- US Census Bureau (quickfacts.census.gov)
- GA Department of Community Affairs (www.dca.state.ga.us)
- Unisys Weather Hurricane Tropical Storm Data (http://weather.unisys.com/hurricane/atlantic)
- U.S. Drought Monitor (http://droughtmonitor.unl.edu)
- Vaisala Lightning Detection Network (www.vaisala.com)
- Wikipedia "Public Health Emergency-United States" (www.wikipedia.com)

Additional sources of information

The additional sources of information used in compiling this research were records identifying past hazard events.

- GEMA SHELDUS Map-Flood Events 1960-2012
- GEMA SHELDUS Map-Thunderstorm/Lightning/Hail Events 1960-2012
- GEMA SHELDUS Map-Tropical Cyclone Events 1960-2012
- GEMA Map-Georgia Hurricane Wind Extent 50 Year Return Event
- GEMA SHELDUS Map-Wind Events 1960-2012
- GEMA ASCE Data Map-Average Hazard Wind Score
- GEMA Map-Wind Risk 50 Year Gust Return Intervals
- GEMA SHELDUS Map-Tornado Events 1952-2012
- GEMA SVRGIS Map-Tornado Tracks 1950-2011
- GEMA SHELDUS Map-Winters Storm Events 1960-2012
- GEMA NOAA Map-February 9-11, 1973 Winter Storm
- GEMA NOAA Map-March 12-15, 1993 Winter Storm
- GEMA SHELDUS Map-Drought Events 1960-2012
- GEMA US Geological Survey Map-Sinkhole Potential for Georgia
- GEMA SHELDUS Map-Dam Failure Events 1960-2012
- GEMA GA Safe Dams Data Map-Category I Dams per County
- GEMA NRCS Data Map-Dam Impact Potential
- GEMA Map-Federal Declared Disasters in Georgia 1990-2014
- GEMA List-Presidential Major Disaster Declarations
- GEMA List-Emergency Declarations
- GEMA List-Fire Management Assistance Declarations
- GEMA SHELDUS Map-Total Hazard Events 1952-2012
- GEMA SHELDUS Map-Hazard Induced Losses 1952-2012
- GEMA SHELDUS Map-Average Loss Per Event 1952-2012
- GEMA Map-Two Percent Probability of Exceedance in 50 Years
    - GEMA Map-Ten Percent Probability of Exceedance in 50 Years