



Fulton County

2016 Multijurisdictional Hazard Mitigation Plan

Prepared by:



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Chapter 1. Introduction

Chapter Overview

- 1.1 Background
- 1.2 Authority
- 1.3 Overview of the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grants
- 1.4 Fulton County 2016 Multijurisdictional Hazard Mitigation Plan Update

1.1 Background

Fulton County is home to fourteen jurisdictions including the City of Atlanta, which is the major metropolitan city in the Southeast United States. There are thirteen Fortune 500 and twenty-four Fortune 1000 headquarters in Atlanta, as well as Hartsfield-Jackson Atlanta International Airport – the world’s busiest and most efficient airport¹. Direct flights to Europe, South America, and Asia have made Metro Atlanta easily accessible to the more than 1,000 international businesses that operate here and the more than 50 countries that have representation in the city through consulates, trade offices, and chambers of commerce. Atlanta also houses the State Capitol, numerous Federal offices and the Fulton County Courthouse, both of which are listed in the National Register of Historic Places. Considering the assets that Fulton County holds, in addition to its nearly 1 million residents, it is imperative that Fulton County make hazard mitigation a primary focus.

In 2004, the Atlanta-Fulton County Emergency Management Agency (AFCEMA) developed its first Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000. As required by law, the plan must be updated every five years. This plan has been updated to reflect compliance with regulations and requirements that have been enacted since 2004. As with the 2004 plan, this plan is a multi-jurisdictional guide for all communities that have participated in the preparation of this plan through the Hazard Mitigation Planning Committee (HMPC). It fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Georgia Emergency Management Agency (GEMA) and the FEMA Region IV.

Hazard Mitigation is any sustained action taken to reduce or eliminate the long-term risk and effects that can result from specific hazards.

FEMA defines a **Hazard Mitigation Plan (HMP)** as the documentation of a state or local government evaluation of natural hazards and the strategies to mitigate such hazards.

Communities, residents and businesses have been faced with continually increasing costs associated with both natural and man-made hazards. Hazard mitigation is the first step in reducing risk and is the most effective way to reduce costs associated with hazards. Fulton County, fourteen participating jurisdictions, and partners such as schools, hospitals, and transportation providers located therein have developed this Fulton County Multijurisdictional Hazard Mitigation Plan which is a multihazard mitigation plan. The plan includes countywide analysis and assessment of hazards, risk, and capabilities and represents both an update to the 2010 Atlanta-Fulton County Hazard Mitigation Plan as well as an update of single jurisdictional plans developed previously by the participating municipalities. The plan has been prepared following the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 amends the Stafford Act and

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is designed to improve planning for, response to, and recovery from, disasters by requiring state and local entities to implement pre-disaster mitigation planning and develop hazard mitigation plans (HMP). FEMA has issued guidelines for the development of multijurisdictional HMPs, and GEMA also supports plan development for jurisdictions in Georgia.

Specifically, DMA 2000 requires that states, with support from local government agencies, update HMPs on a five-year basis to prepare for and reduce the potential impacts of natural hazards. DMA 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. This enhanced planning will enable local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects.

1.1.1 DMA 2000 Origins - The Robert T. Stafford Disaster Relief and Emergency Assistance Act

In the early 1990s, a new federal policy regarding disasters began to evolve. Rather than simply reacting whenever disasters strike communities, the federal government began encouraging communities to first assess their vulnerability to various disasters and proceed to take actions to reduce or eliminate potential risks. The logic is simply that a disaster-resistant community can rebound from a natural disaster with less loss of property or human injury, at much lower cost and more quickly. Moreover, other costs associated with disasters, such as the time lost from productive activity by business and industries, are minimized.

The **Federal Emergency Management Agency** (FEMA) estimates that for every dollar spent on damage prevention (mitigation), twice that amount is saved through avoided post-disaster damage

DMA 2000 provides an opportunity for states, tribes and local governments to take a new and revitalized approach to mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions (Section 409) and replacing them with a new set of requirements (Section 322). This section sets forth the requirements that communities evaluate natural hazards within their respective jurisdictions and develop an appropriate plan of action to mitigate those hazards, while emphasizing the need for state, tribal, and local governments to closely coordinate mitigation planning and implementation efforts.

The amended Stafford Act requires that each local jurisdiction identify potential natural hazards to the health, safety and well-being of its residents and identify and prioritize actions that can be taken by the community to mitigate those hazards—before disaster strikes. For communities to remain eligible for hazard mitigation assistance from the federal government, they must first prepare, and then maintain and update an HMP (this plan).

1.1.2 Benefits of Mitigation Planning

Effective mitigation planning will help prepare citizens and government agencies to better prepare for and respond when disasters occur. In addition, mitigation planning allows Fulton County as a whole, including the participating Fulton County cities, towns, and planning partners to remain eligible for mitigation grant funding for mitigation projects that will reduce the impact of future disaster events. The long-term benefits of mitigation planning and implementation include:

- An increased understanding of hazards faced by Fulton County communities
- A more sustainable and disaster-resistant community
- Financial savings through partnerships that support planning and mitigation efforts
- Focused use of limited resources on hazards that have the biggest impact on the community
- Reduced long-term impacts and damages to human health and structures



- Reduced costs associated with response and recovery efforts, including repairs

1.2 Authority

The Fulton County Hazard Mitigation Plan has been prepared by AFCEMA, pursuant to Section 322 of the Disaster Mitigation Act of 2000 (Public Law 106-390).

Section 322 requires local governments to develop mitigation plans that include:

- (1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved;
- (2) A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards;
- (3) A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools;
- (4) A plan maintenance process that includes a monitoring and evaluation schedule based on a five-year cycle, a process for the plan's incorporation into other planning mechanisms, and public involvement in the plan maintenance process; and
- (5) Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan.

AFCEMA, through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County. In addition, Chapter 5 (Section 50.1-50.25) of the City of Atlanta ordinances designates AFCEMA as its primary emergency management organization.

1.3 Overview of the FEMA Hazard Mitigation Assistance Grants

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

1. **Hazard Mitigation Grant Program (HMGP).** The HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
2. **Pre-Disaster Mitigation Grant Program (PDM).** The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.
3. **Flood Mitigation Assistance Program (FMA).** The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist states and communities implement measures that reduce or



eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.

4. **Repetitive Flood Claims (RFC) Program.** The RFC grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Up to \$10 million is available annually for FEMA to provide RFC funds to assist states and communities reduce flood damages to insured properties that have had one or more claims to the NFIP.
5. **Severe Repetitive Loss (SRL) Program.** The SRL grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the NFIA of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to SRL structures insured under the NFIP.

1.4 Fulton County 2016 Multijurisdictional Hazard Mitigation Plan Update

The HMPC began the update process in August 2015. With the exception of dam-related flooding incidents, this update addresses natural hazards only. AFCEMA retained the firm of Tetra Tech, Inc., to prepare the plan under the direction of the HMPC and the Atlanta-Fulton County Emergency Management Director. The 2015-16 HMPC represents unincorporated Fulton County, its municipal jurisdictions which participated, regional entities such as water and wastewater, and transportation, as well as other stakeholders and interested agencies. The HMPC coordinated on a regular basis during the update process to oversee the drafting of the plan. Through a comprehensive planning process and risk assessment, the plan creates a unified approach among all Fulton County communities for dealing with identified hazards and associated risk issues. It serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities.



Chapter 2. Regulatory Requirements

Chapter Overview

- 2.1 Federal Prerequisites
- 2.2 Plan Approval Required for Mitigation Grants Eligibility
- 2.3 Multijurisdictional Participation
- 2.4 Public Participation
- 2.5 Multijurisdictional Plan Adoption

2.1 Federal Prerequisites

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

Section 201.6(a) Plan Requirements

- (1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.
- (2) Multijurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

Section 201.6(c) Plan Content

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

2.2 Plan Approval Required for Mitigation Grants Eligibility

FEMA approval of this plan will permit continued eligibility for the programs listed in Chapter 1, Section 1.3. Funding can provide assistance to participating jurisdictions and entities (i.e. water districts, school boards, etc.). Once the plan is approved pending adoption, the governing bodies of the participating jurisdictions, boards and other entities, must formally adopt the plan and submit their adopting resolutions to FEMA through the Georgia Emergency Management Agency to receive official FEMA approval. This process must take place within twelve months of FEMA’s notification of conditional approval pending adoption. If the plan is not approved by FEMA and locally adopted by resolution of the governing body, the entity will not be eligible to apply for and receive project grants under any of the FEMA hazard mitigation assistance programs. Hazard mitigation assistance programs have additional requirements for grant eligibility depending on the program’s funding source.

2.3 Multijurisdictional Participation

AFCEMA serves as the lead coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee (HMPC). AFCEMA and the cities of Alpharetta, Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain



Park, Palmetto, Roswell, Sandy Springs, Union City, and Unincorporated Fulton County participated in the 2016 plan update of the existing plan. School districts are defined as local governments, according to Federal regulations at 44 CFR Section 201.2, and are therefore required to have a FEMA-approved local mitigation plan to be eligible for project grants under FEMA hazard mitigation assistance programs. A school district may also demonstrate their participation as a separate government entity in another local government's approved mitigation plan to be eligible for project grants under FEMA hazard mitigation assistance programs.

The planning process presented many opportunities for multijurisdictional participation. These multijurisdictional participation opportunities included the following activities:

- Planning sessions in which participants
 - Selected a risk assessment methodology
 - Updated the hazard vulnerability assessment
 - Reviewed and revised existing goals and develop new goals as appropriate
 - Identified mitigation projects
 - Updated list of existing mitigation actions being undertaken throughout the County
- Individualized jurisdiction assessments
 - Reviewed risk assessment and hazard vulnerability specific to each jurisdiction
 - Discussed priority hazard mitigation issues facing each jurisdiction
 - Discussed potential mitigation actions and solutions for areas of the jurisdiction vulnerable to priority hazards
 - Discussed and capture mitigation actions, policies, and ordinances undertaken or enacted by the jurisdiction that support hazard mitigation.

2.4 Public Participation

The public was invited to participate in the process and provide comment on the draft of the hazard mitigation plan. The Atlanta Fulton County Emergency Management Agency issued press releases and social media announcements informing the public of the opportunity to comment. Three public meetings were conducted on October 22, 2015; January 20, 2016 and the last one on March 9, 2016. These meetings were held in different geographical locations of Fulton County (North, Central and South) to maximize the potential for the citizens to review the plan update process, discuss concerns and have the opportunity for input. Copies of the press releases are included in Appendix B – Meeting Documentation. The public was also encouraged to participate by completing a survey, which was posted online for easy access. The survey was also announced on AFCEMA's website and distributed to the community through the Fulton County Office of External Affairs, via emails, press releases, social media announcements, flyers and hard copies were also available at the public meetings. A copy of this survey can be found in Appendix F. AFCEMA received 893 responses and the information was collected, discussed and incorporated throughout the planning process. Each municipality was forwarded any responses which originated from their jurisdiction. A final draft of the updated HMP will also posted to the AFCEMA website for public review and comment.

2.5 Multijurisdictional Plan Adoption

To ensure that the plan both met the requirements of the DMA 2000, as well as to support the long term goal of having all jurisdictions in the County covered under a comprehensive and cohesive countywide DMA 2000 plan, an approach to the planning process and plan documentation was developed to achieve the following:



- The plan will be multijurisdictional, with the intention of including all municipalities in Fulton County. AFCEMA invited all jurisdictions in Fulton County to join in the planning process and all fourteen local municipal governments in the County plus Unincorporated South Fulton participated in the 2015-16 plan update process as indicated in Table 2-1 below.

Table 2.1. Participating Jurisdictions

Jurisdictions
Alpharetta
Atlanta
Chattahoochee Hills
College Park
East Point
Fairburn
Hapeville
Johns Creek
Milton
Mountain Park
Palmetto
Roswell
Sandy Springs
Unincorporated S. Fulton
Union City

- The plan considers all natural hazards potentially effecting Fulton County, thereby satisfying the natural hazards mitigation planning requirements specified in DMA 2000. In addition, non-natural hazards that pose significant risk were considered as well.
- The plan was developed following the process outlined by DMA 2000, FEMA regulations, and prevailing FEMA and GEMA guidance. Following this process ensures that all the requirements are met and support plan review. In addition, this plan will meet criteria for the National Flood Insurance Program (NFIP) Community Rating System (CRS) and the Flood Mitigation Assistance (FMA) programs. A copy of each jurisdictions resolution to adopt the Fulton County Multijurisdictional Hazard Mitigation Plan is included in Appendix A.



Chapter 3. County Profile

Chapter Overview

- 3.1 Federal Requirements
- 3.2 Summary of Plan Updates
- 3.3 Geographic Setting and History
- 3.4 General Building Stock
- 3.5 Climate
- 3.6 Population, Demographics and Land Use
- 3.7 Critical Facilities

3.1 Federal Requirements

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

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

3.2 Summary of Plan Updates

Table 3.1 summarizes changes made to the 2010 plan as a result of the 2016 plan update, as follows:

Table 3.1. Summary of Plan Updates for Planning Process

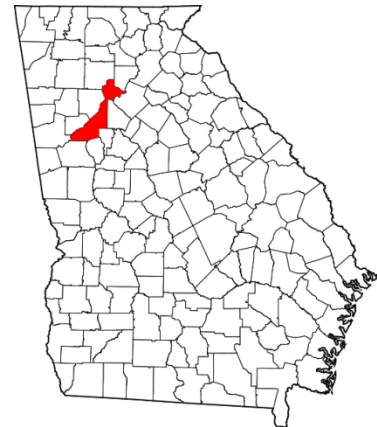
Section		Change
3.3	Geographic Setting and History	Updated data and added maps to show geographic setting.
3.4	General Building Stock	Added section 3.4 to include overview of general building stock plus estimated replacement values per jurisdiction.
3.5	Climate	Updated climate data
3.6	Population, Demographics and Land Use	Updated data. Moved overview of Countywide population and land use information to this chapter in 2016. Each municipality now has an individual annex designed to capture specific local population, demographic and land use data.



Section		Change
		Section was previously in Chapter 5.
3.7	Critical Facilities	Added section in 2010 and included maps to display locations within the County. Transportation data was updated and now includes maps of transportation facilities. Lifeline Utility Systems data and maps were added to Section 3.7 as well.

3.3 Geographic Setting and History

Located in Central Northwestern Georgia, Fulton County was established in 1856 and is the most populous of all Georgia counties. It consists of 14 incorporated cities, including Atlanta, which serves as the County seat. Long and narrow in shape, the total area is approximately 534.5 square miles. The 2014 total population estimate of Fulton County is approximately 996,319.² This represents an 8.2% increase since the 2010 Census.



According to Forbes.com³ Atlanta is considered to be a top business city and is a primary transportation hub of the Southeastern United States - via highway, railroad, and air. Atlanta contains the world headquarters of such large corporations as the Coca-Cola Company, Georgia-Pacific, AT&T Mobility, the Cable News Network, Delta Air Lines, and Turner Broadcasting. Atlanta has the country's third largest concentration of Fortune 500 companies and more than 75 percent of Fortune 1000 companies have business operations in the metropolitan area, helping Atlanta realize a gross metropolitan product of \$294 billion, accounting for more than 2/3 (67.8%) of the Georgian economy⁴. Hartsfield–Jackson Atlanta International Airport has been the world's busiest airport since 1998 (measured by number of passengers).

Atlanta is home to a large concentration of colleges and universities with more than 30 institutions of higher education. Some of these include prominent institutions such as: The Georgia Institute of Technology, Georgia State University, Spelman College, Morehouse College, Clark Atlanta University, Oglethorpe University, Atlanta Christian College, and Mercer University.

In addition to the City of Atlanta, which is the largest jurisdiction, there are 13 other municipal jurisdictions in Fulton County, with Mountain Park being the smallest. Within the County, there is wide variety in the character of the communities including industrial, agricultural, and equestrian. Some cities have been established for over a century while four communities (Milton,

² US Census QuickFacts, <http://quickfacts.census.gov/qfd/states/13/13121.html>

³ <http://www.forbes.com/places/ga/atlanta/>

⁴ U.S. Metro economies, November 2013 <http://www.usmayors.org/metroeconomies/2013/201311-report.pdf>



Chattahoochee Hills, Sandy Springs, and Johns Creek) have incorporated since the original 2004 version of the hazard mitigation plan.

Although there are many large businesses and entities within the City of Atlanta, there are other noteworthy businesses and features located within other jurisdictions. For example, College Park is home to the busiest airports in the world, Hartsfield-Jackson Atlanta International Airport⁵. The Georgia International Convention Center, owned and operated by the City of College Park, is also within the City limits.

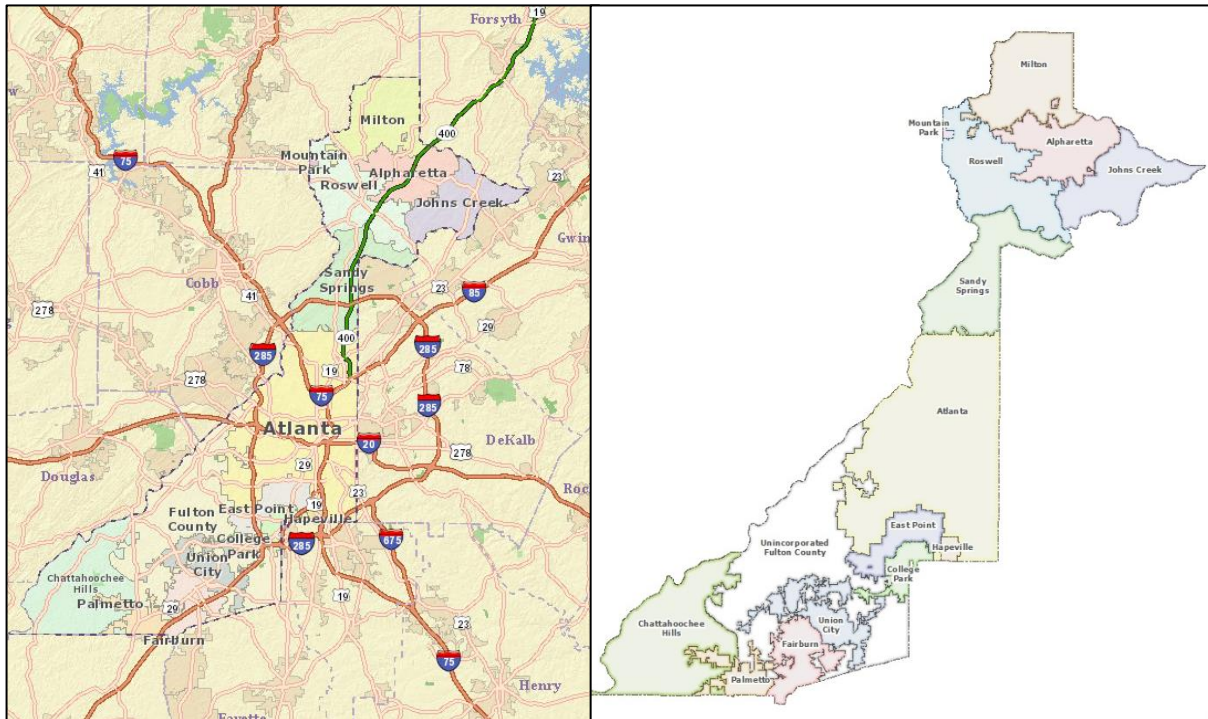
The 2015-16 HMPC represents Fulton County, the 14 incorporated jurisdictions and Unincorporated South Fulton County. The 14 municipalities and unincorporated areas include:

- Alpharetta
- Atlanta
- Chattahoochee Hills
- College Park
- East Point
- Fairburn
- Hapeville
- Johns Creek
- Milton
- Mountain Park
- Palmetto
- Roswell
- Sandy Springs
- Unincorporated S. Fulton
- Union City

Figures 3-1 and 3-2 show an overview of the planning area, including the participating jurisdictions. For additional maps of jurisdiction locations, see Annexes 1-15.

⁵ Source: Airports Council International <http://www.aci.aero/Data-Centre/Monthly-Traffic-Data/Passenger-Summary/Year-to-date>

Figure 3-2: Overview of Planning Area



Fulton County is governed by a seven member board of commissioners, and a County Manager form of government in which day-to-day operation of the County is handled by a manager appointed by the board.



3.4 General Building Stock

According to 2010 Census data, 376,377⁶ households are located in Fulton County. A household includes all the people who occupy a housing unit as their usual residence. The Census data identified 437,105 housing units in the County. A housing unit is a house, apartment, mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters (or if vacant, intended for occupancy as separate living quarters). According to the 2010-2014 American Community Survey, the largest share of housing units (48.6%) in Fulton County are classified as one-unit detached homes. The median price of a single-family home in Fulton County was estimated at \$237,600 based on the 2010-2014 American Community Survey (U.S. Census 2010; U.S. Census 2015).

For this update, the default general building stock in HAZUS-MH 2.2 was used at the census block level. The replacement cost values are calculated using 2015 RS Means valuations. For number of structures, the County provided a spatial layer with building footprints.

For the purposes of this plan, approximately 294,345 structures were identified by the spatial data available. These structures account for a replacement cost value of approximately \$133.6 billion. Estimated content value was calculated by using 50% of the residential replacement cost value, and 100% of the non-residential replacement values. Using this methodology, approximately \$87.7 billion in contents exist within these properties. Approximately 89.7% of the total buildings in the County are residential, which make up approximately 67.0% of the total building stock value. Table 3-2 presents building stock statistics by occupancy class for Fulton County.

⁶ Source: <https://www.census.gov/quickfacts/table/PST045215/13121>



Table 3-2. Building Stock Count and Replacement Cost Value (RCV) by Occupancy Class

Municipality	All Occupancies				Residential		Commercial		Industrial	
	Count	Replacement Cost Value	Estimated Contents	Total (RCV + Contents)	Count	Total Value	Count	Total Value	Count	Total Value
Alpharetta (C)	17,850	\$9,220,248,000	\$6,022,231,000	\$15,242,479,000	16,058	\$10,268,995,000	1,253	\$3,922,683,000	342	\$730,217,000
Atlanta (C)	118,176	\$58,500,959,000	\$40,169,309,000	\$98,670,268,000	102,629	\$60,369,493,000	10,979	\$27,974,527,000	1,863	\$3,958,927,000
Chattahoochee Hills (C)	1,084	\$280,119,000	\$153,014,000	\$433,133,000	996	\$384,336,000	49	\$25,242,000	24	\$9,649,000
College Park (C)	3,572	\$1,587,945,000	\$1,096,248,000	\$2,684,193,000	3,018	\$1,538,585,000	383	\$651,106,000	76	\$90,051,000
East Point (C)	12,222	\$4,022,401,000	\$2,638,375,000	\$6,660,776,000	11,035	\$4,606,007,000	840	\$1,473,520,000	164	\$249,737,000
Fairburn (C)	4,545	\$1,468,831,000	\$914,348,000	\$2,383,179,000	4,197	\$1,780,819,000	227	\$292,438,000	75	\$212,162,000
Fulton County (Unincorporated)	32,459	\$11,308,807,000	\$7,272,609,000	\$18,581,416,000	30,257	\$13,034,439,000	1,503	\$3,610,907,000	448	\$1,522,264,000
Hapeville (C)	2,444	\$783,900,000	\$544,775,000	\$1,328,675,000	2,107	\$750,904,000	258	\$468,148,000	31	\$38,411,000
Johns Creek (C)	25,840	\$10,774,974,000	\$6,077,381,000	\$16,852,355,000	24,446	\$14,330,739,000	941	\$1,886,216,000	262	\$311,071,000
Milton (C)	11,007	\$4,571,655,000	\$2,520,478,000	\$7,092,133,000	10,355	\$6,214,503,000	431	\$685,545,000	128	\$98,461,000
Mountain Park (C)	313	\$125,576,000	\$67,112,000	\$192,688,000	280	\$175,690,000	24	\$13,356,000	6	\$2,182,000
Palmetto (C)	1,817	\$518,738,000	\$313,701,000	\$832,439,000	1,659	\$637,875,000	105	\$122,875,000	25	\$37,976,000
Roswell (C)	29,545	\$12,946,365,000	\$8,051,158,000	\$20,997,523,000	26,935	\$15,432,150,000	1,771	\$4,038,905,000	508	\$918,940,000
Sandy Springs (C)	27,022	\$15,558,844,000	\$10,698,443,000	\$26,257,287,000	23,864	\$16,348,638,000	2,307	\$8,255,081,000	481	\$911,273,000
Union City (C)	6,449	\$1,981,070,000	\$1,169,448,000	\$3,150,518,000	6,049	\$2,495,406,000	296	\$488,310,000	45	\$92,442,000
Fulton County (Total)	294,345	\$133,650,432,000	\$87,708,630,000	\$221,359,062,000	263,885	\$148,368,579,000	21,367	\$53,908,859,000	4,478	\$9,183,763,000

Source: HAZUS-MH 2.2, Fulton County

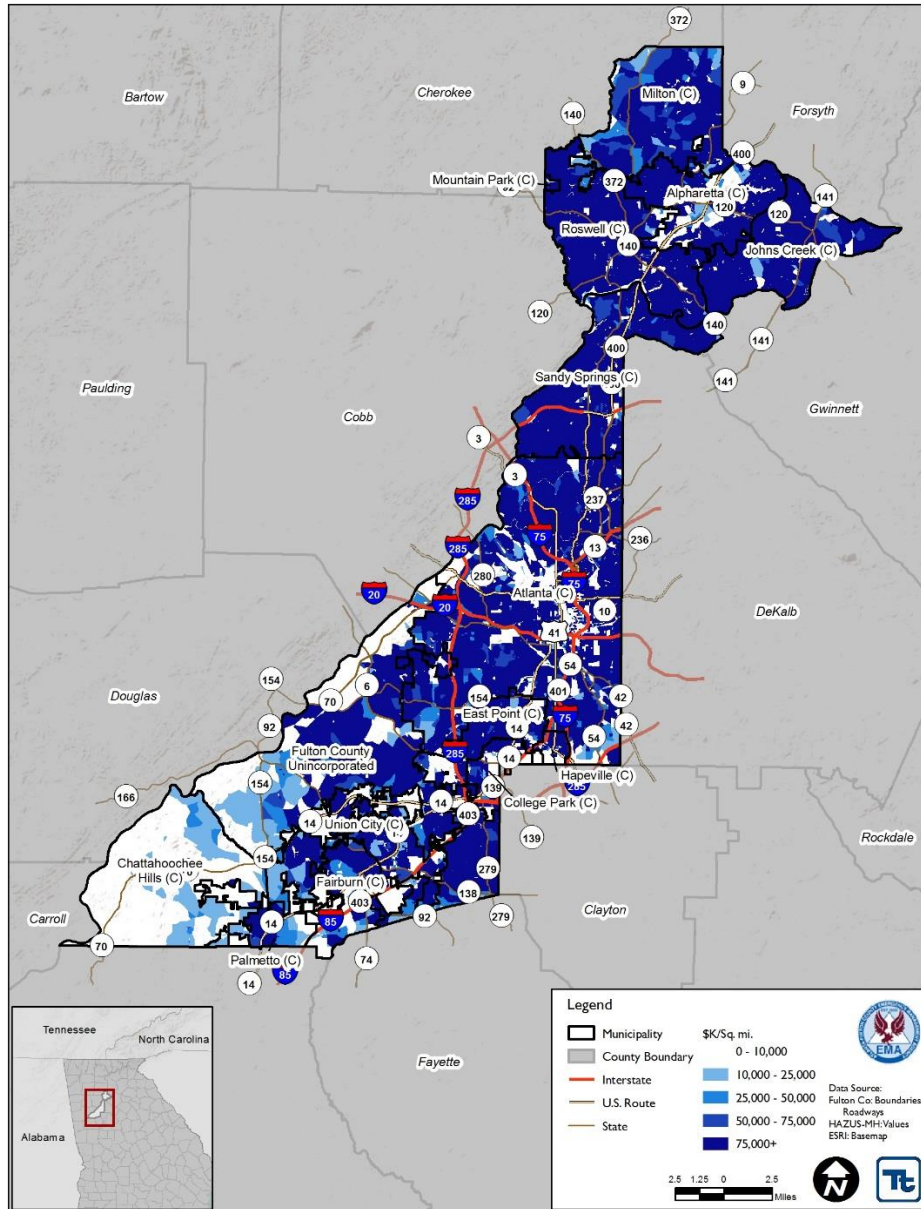
Notes: C: City



The 2014 American Community Survey data identified that the majority of housing units (48% or 215,389 units) in Fulton County are single-family detached units. The 2013 U.S. Census Bureau's County Business Patterns data identified 33,874 business establishments employing approximately 723,886 people in Fulton County. The professional, scientific, and technical services industry has the most number of establishments in the County, with 7,001. This is followed by the health care and social assistance industry with 3,617 establishments, and the retail trade industry with 3,394 establishments (U.S. Census 2013).

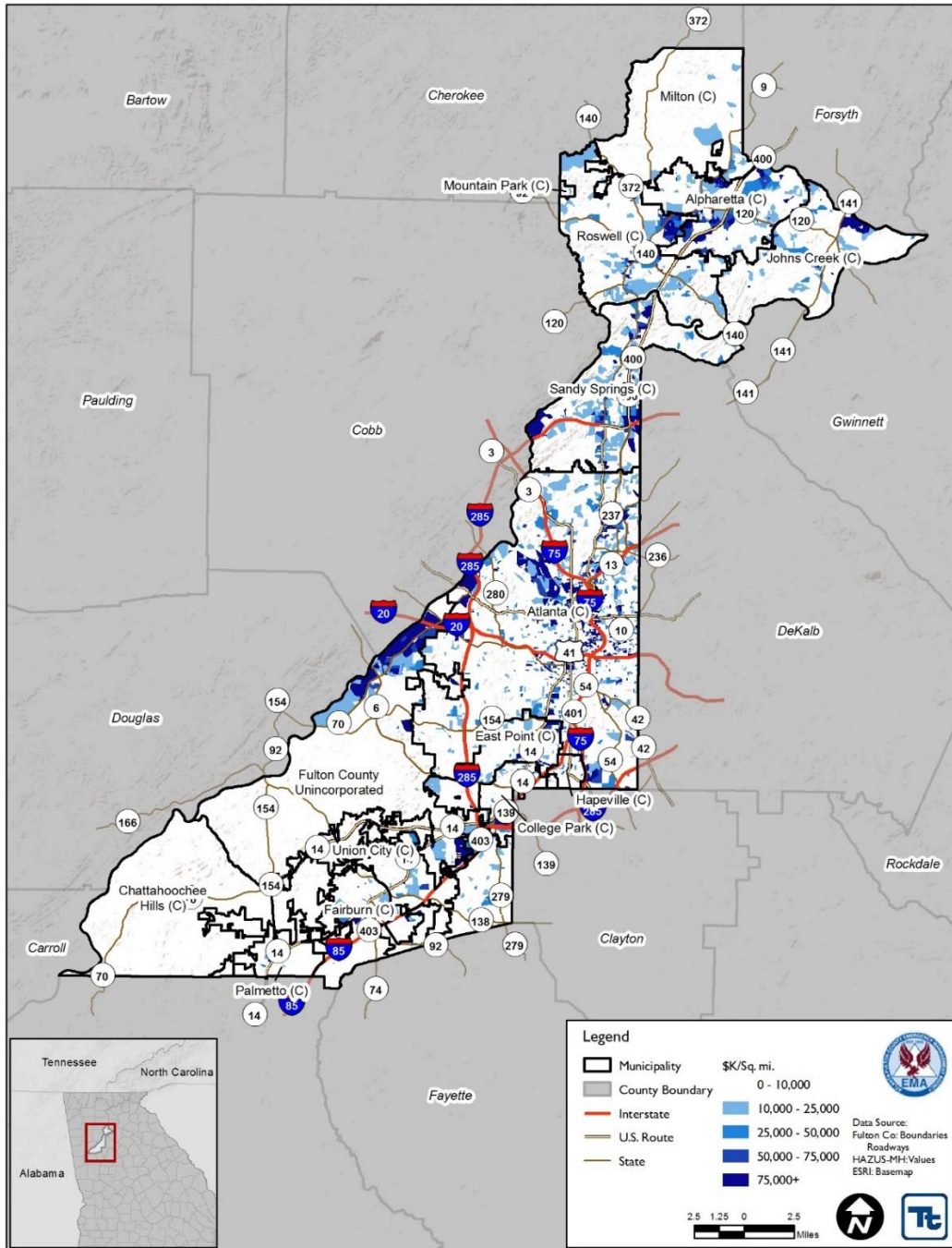
Figure 3-3 through Figure 3-5 shows the distribution and exposure density of residential, commercial, and industrial buildings in Fulton County based on the HAZUS Default data. Exposure density is the dollar value of structures per unit area, including building content value. The densities are shown in units of \$1,000 (\$K) per square mile. Viewing exposure distribution maps, such as those used for 3-3 through 3-5, can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.

Figure 3-3. Distribution of Residential Building Stock and Value Density in Fulton County



Source: HAZUS-MH 2.2

Figure 3-5. Distribution of Industrial Building Stock and Value Density in Fulton County



Source: HAZUS-MH 2.2



3.5 Climate

Fulton County is considered to be a humid, subtropical climate with the average minimum and maximum temperatures recorded as 53.1° F and 71.9° F respectively. The average annual rainfall amount is approximately 49.74 inches, which is distributed relatively evenly throughout the year. The average amount of snowfall is around 2 inches. Table 3.3 provides monthly averages as of March 2016⁷.

Table 3-3. Average monthly climate data

Month	Temperature (°F)		Rainfall (inches)	Snowfall (inches)
	Mean Low	Mean High		
January	34	52	4.21	1.0
February	38	57	4.69	0
March	44	65.0	4.8	1.0
April	51	73	3.35	0.0
May	60	80.0	3.66	0.0
June	68	86	3.3.94	0.0
July	71	89	5.28	0.0
August	71	88	3.9	0.0
September	65	82	4.49	0.0
October	54	73	3.43	0.0
November	44	64	4.09	0.0
December	37	54	3.9	0.0

3.6 Population, Demographics, and Land Use

As indicated by the County population in 2000 of 816,662 as compared to its current July 2015 estimate of 1,010,562 the County has experienced a substantial amount of growth.

According to the 2010 U.S. Census, Fulton County had a population of 920,581 people, which represents a 12.8 percent increase from the 2000 U.S. Census population. HAZUS-MH demographic data will be used in the loss estimation analyses in Chapter 5 of this plan. All demographic data in HAZUS corresponds to the 2000 U.S. Census data. Table 3-4 presents the population statistics for Fulton County based on the 2006 - 2010 and 2010 – 2014 U.S. Census American Community Survey data. Figure 3.4 shows the distribution of the general population density (persons per square mile) in 2010 by Census block. For the purposes of this plan, the 2010

⁷ U.S. Climate Data, Atlanta-Fulton County Airport Averages <http://www.usclimatedata.com/climate/atlanta-fulton-county-arpt/georgia/united-states/usga0029>



Census was used where the data was available and supplemented with HAZUS-MH data (representing 2000 data).

DMA 2000 requires that HMPs consider socially vulnerable populations. These populations can be more susceptible to hazard events, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. For the purposes of this study, vulnerable populations shall include (1) the elderly (persons aged 65 and over) and (2) those living in low-income households.

Table 3.4. Fulton County Vulnerable Population Statistics

Municipality	American Community Survey 2006-2010					American Community Survey 2010-2014				
	Population	Pop. 65+	% Pop. 65+	Low-Income Pop.*	% Low-Income Pop.	Population	Pop. 65+	% Pop. 65+	Low-Income Pop.*	% Low-Income Pop.
Alpharetta	54,590	3,708	6.8%	1,941	3.6%	60,903	4,994	8.2%	3,112	5.1%
Atlanta	388,512	39,057	10.1%	87,889	22.6%	440,641	44,505	10.1%	104,011	25.2%
Chattahoochee Hills	2,032	343	16.9%	165	8.1%	2,511	465	18.5%	375	15.2%
College Park	13,807	1,018	7.4%	4,333	31.4%	14,019	841	6.0%	5,573	39.9%
East Point	33,528	2,687	8.0%	6,264	18.7%	35,070	3,332	9.5%	9,345	27.1%
Fairburn	11,473	645	5.6%	1,071	9.3%	13,520	906	6.7%	2,013	15.0%
Hapeville	6,186	533	8.6%	2,124	34.3%	6,611	549	8.3%	1,989	30.1%
Johns Creek	72,654	4,319	5.9%	3,590	4.9%	80,979	6,478	8.0%	3,736	4.6%
Milton	29,115	1,570	5.4%	1,752	6.0%	34,874	2,685	7.7%	1,709	4.9%
Mountain Park	485	39	8.0%	19	3.9%	529	59	11.2%	42	7.9%
Palmetto	4,177	712	17.0%	584	14.0%	4,893	548	11.2%	1,029	21.2%
Roswell	85,260	7,993	9.4%	6,136	7.2%	92,364	10,899	11.8%	7,730	8.4%
Sandy Springs	90,413	9,148	10.1%	7,695	8.5%	98,480	11,128	11.3%	12,269	12.5%
Union City	17,615	1,178	6.7%	3,449	19.6%	20,200	2,040	10.1%	5,454	27.1%
County Total	858,784	74,893	8.7%	131,531	15.3%	967,100	93,809	9.7%	166,936	17.8%

Source: American Community Survey 2006-2010 and 2010-2014, S0101, S1701 (U.S. Census Bureau); HAZUS-MH (for 2000 U.S. Census data) Note: Pop. = population; * Individuals below poverty level

The 2014 U.S. Census American Community Survey data identified approximately 166,936 individuals in Fulton County as having an annual income below the poverty level.

Fulton County is also the home to the State’s capital, Atlanta, which is the most populous City in the State of Georgia. As of 2014, Atlanta had an estimated population of about over 440,000 people. Its metropolitan area, officially named the Atlanta Metropolitan Area is the ninth largest metropolitan area in the country, inhabited by about five and one-half million people. Moreover, the Atlanta Combined Statistical Area has a population approaching six million, making it the most populous



metropolis in the Southeastern United States. Like most areas in the Sun Belt, the Atlanta region has seen explosive growth since about 1976. In the past decade the metro population has grown by nearly 40 percent, from 2.9 million to 4.1 million people. A good measure of this growth is the ever-changing downtown skyline, along with skyscrapers constructed in the Midtown, Buckhead, and outer perimeter (fringing I-285) business districts.

3.6.1 Population Trends

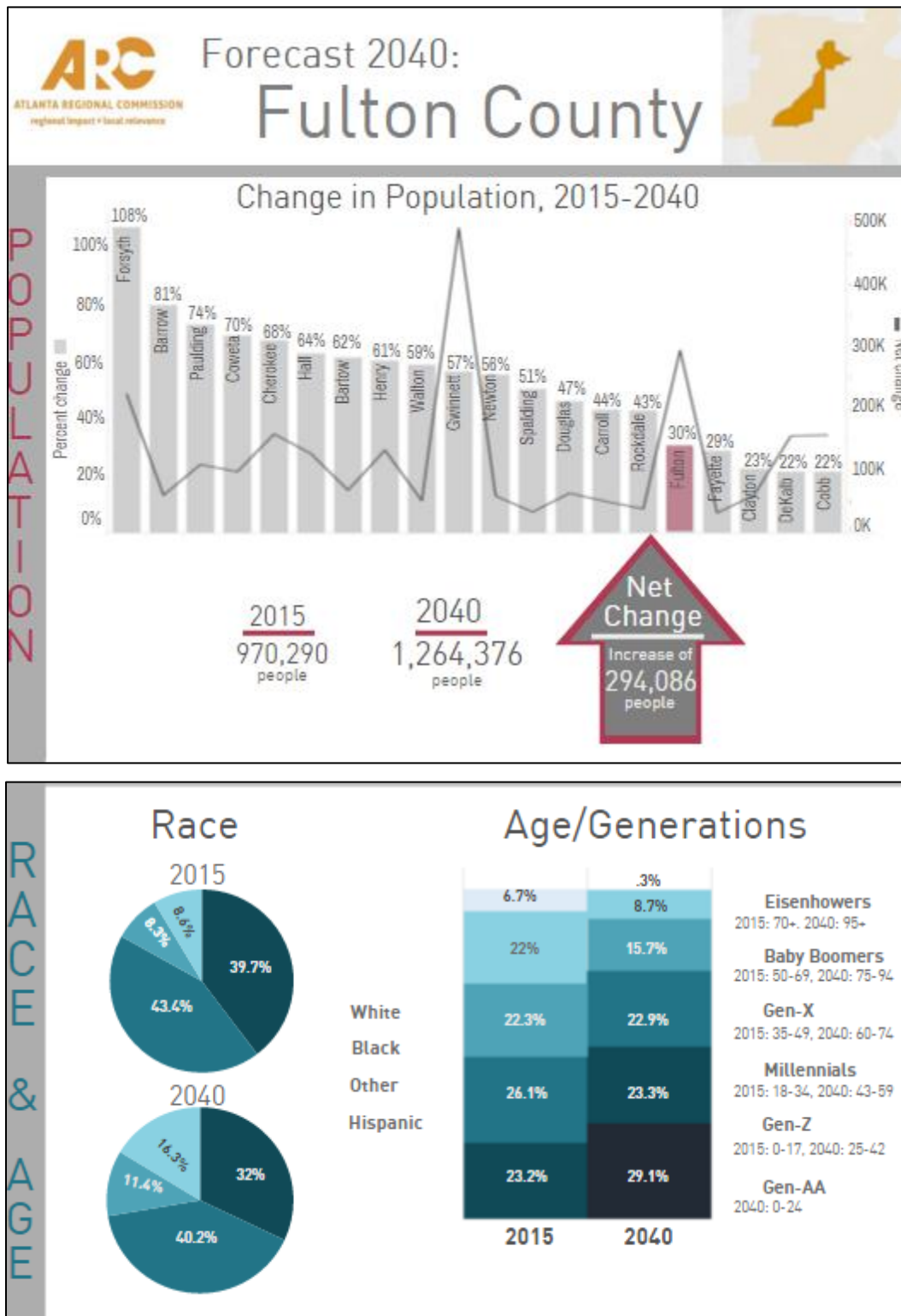
This section discusses population trends to use as a basis for estimating future changes that could significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support planning decisions regarding future development in vulnerable areas.

Fulton County's Department of Environment and Community Development (E&CD) uses a building permit model to estimate population. The forecasts are based on a gradual reduction in permits as the remaining vacant buildable land diminishes. This model was calibrated to the 1990 to 2000 US Census, but is different than the Census Bureau's Estimates and Atlanta Regional Commission's (ARC) County Forecasts.

ARC has developed a new series (called Series 15) of population and employment forecasts for the 20-County region through the year 2040. This data support the transportation project prioritization and land use planning that is the basis of The Atlanta Region's Plan, a long-range blueprint for sustainable growth over the next 30 years.

ARC's Series 15 forecasts anticipate, for 2040, just over 8 million persons in the 20-County area. From 2015 to 2040, the 20 County Atlanta Region is forecast to add 2.5 million residents. Average annual growth rate 2015-2040 is a modest 1.5%, which while strong (and higher than during the recession) is a departure from more robust historical trends. The average annual regional population growth rate between the 1950s and the 2000s was 3%. Employment for the 20 County Atlanta Region is projected to increase by 1.04 million jobs between 2015 and 2040. The average annual employment growth rate during this period is forecast at 1.2%.

Figure 3-6: Population and Demographic Forecast 2015-2040



Source: Atlanta Regional Commission- 2015 – 2040 Fulton County forecast.



According to 2014 Census population estimates, Fulton County is the most populous County in Georgia. At 534.5 square miles, Fulton ranks 21st (out of 159) in the state in area and is the largest in the 10-County Atlanta region. Fulton County’s estimated 2015 population is now listed as 1,010,562 with an estimated 2040 population of 1,264,376.8

Fulton County was identified as the 52nd largest County in the nation based on the 2000 Census Bureau population estimates and it contained 14% of the state’s population in 1960. Since 1980, Fulton County has held 10% of the state’s population growth. As shown in table 3-5, Fulton County has been growing at a rate of 2.08% with the region growing at a rate of 2.14% per year. Both are growing at a faster rate than the state’s growth rate of 1.68% and the United States growth rate of 0.92%.

Table 3-5. Fulton County, Georgia, Annual Demographic Counts, Estimates and Forecasts, 1990 to 2020

Year	Fulton County Population	Annual Fulton County Growth Rate	Fulton County Share of GA
2005	904,796	3.14%	10.14%
2006	911,334	0.72%	10.06%
2007	927,504	1.77%	10.09%
2008	943,116	1.68%	10.12%
2009	958,169	1.60%	10.13%
2010	972,678	1.51%	10.14%
2015	1,061,057	1.63%	10.37%
2020	1,140,576	1.35%	10.52%
2025	1,221,054	1.29%	10.67%
2030	1,294,612	1.11%	10.77%

U.S. Census Bureau

3.6.2 Population in Cities

According to the 2000 Census, approximately 73% of Fulton County’s population lived within its 10 cities that it had at the time. According to the 2014 American Community Survey, roughly 94 percent of the County’s population lives within its incorporated cities. The City of Atlanta, the State’s largest City, has been growing since the 1990s, after a declining population in the 1970s and 1980s. The City of Atlanta has a 2014 population of 456,002, of which 440,641 is in Fulton County. Mountain Park, the smallest City in Fulton County, has a population of 547, of which 529 is in Fulton County. Some of the growth in the cities has resulted from annexation of unincorporated portions of Fulton County. Since 2000 this has also accompanied by the incorporation of Sandy Springs in December

⁸ <http://documents.atlantaregional.com/research/20-County-data-dashboard/>



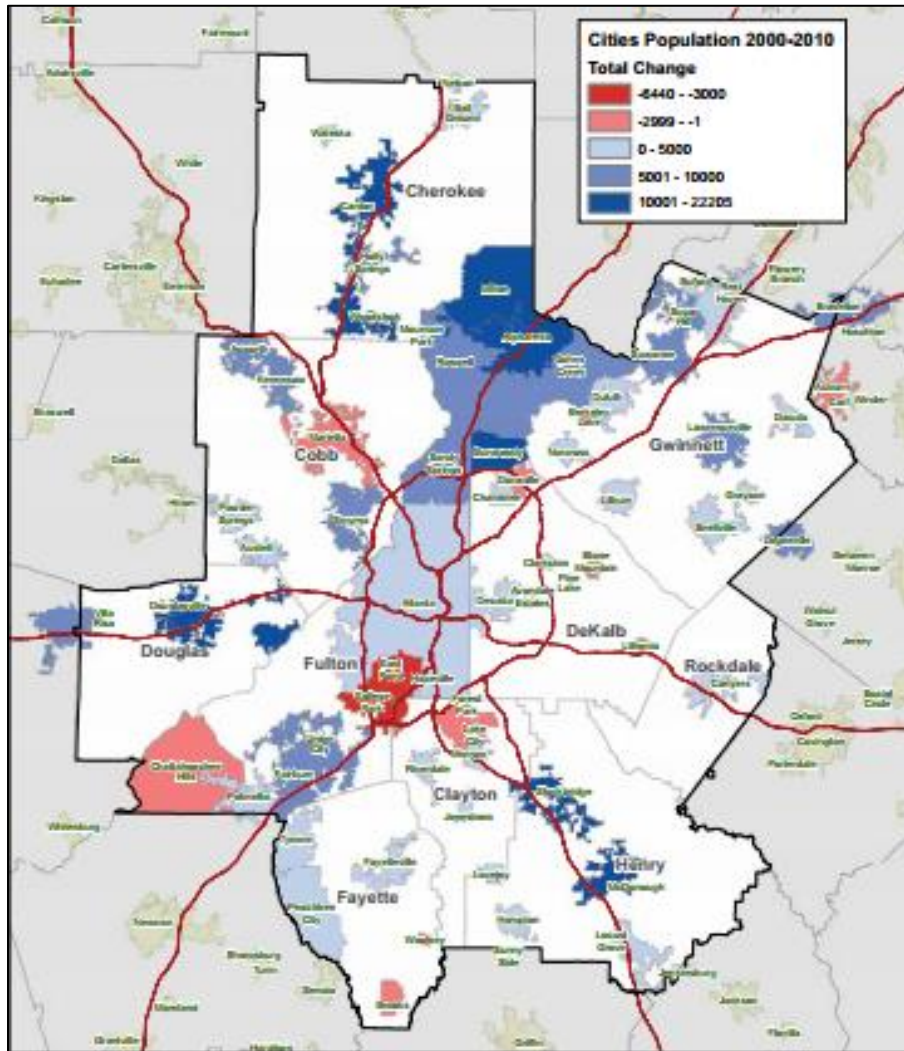
Fulton County experienced dramatic growth, growing by 144%. North Fulton, the fastest growing planning area, grew by 638% between 1980 and 2005. Unincorporated Fulton County was forecasted to grow by almost 44% between 2005 and 2025; however Unincorporated South Fulton County experienced 66.2% growth at a rate of 25% in spite of losing nearly 58% of its land mass between 2000 and 2010.

Table 3-6. 1980-2025 Population and Forecasts in Fulton County Cities and Unincorporated Areas

Area	2000	2005	2010	2015	2020	2025
Cities: (Only the Fulton County portions are shown)						
Alpharetta	34,854	37,132	42,120	44,027	45,509	47,194
Atlanta	386,699	447,245	462,908	505,054	542,985	582,678
Chatt Hills	N/A	N/A				
College Park	18,810	18,968	20,797	21,937	22,871	23,622
East Point	39,595	38,653	44,704	47,579	50,021	52,763
Fairburn	5,464	8,561	9,075	11,038	12,926	14,831
Hapeville	6,180	6,175	6,849	7,441	7,970	8,490
Johns Creek	N/A	N/A	NA	NA	NA	NA
Milton	N/A	N/A	NA	NA	NA	NA
Mountain Park	496	500	606	642	672	687
Palmetto	3,073	4,225	4,492	5,661	6,529	7,396
Roswell	79,334	82,912	90,587	94,911	98,325	101,274
Sandy Springs	85,835	86,698	92,529	97,546	101,678	105,861
Union City	11,621	15,250	15,264	17,008	18,620	20,003
City Total	586,126	659,621	696,643	755,367	807,366	859,997
Unincorporated Planning Areas:						
North Fulton	91,400	93,192	100,300	106,553	NA	NA
SW Fulton	11,300	12,851	15,152	17,368	19,446	21,541
South Fulton	41,345	52,439	66,639	80,611	94,000	107,489
Unincorporated Fulton Total	229,880	245,180	274,620	302,078	326,975	352,103
Fulton County Total	816,006	904,796	972,678	1,061,057	1,140,576	1,221,054

Latest figures available according to Fulton County 2025 comprehensive plan, much of the unincorporated lands have since been annexed. See municipality annexes for additional details.

Figure 3-8. Total Change in Population, 2000 - 2010



Source: ARC Cities and Towns. 2010 Yearbook of Growth and Change.

3.6.3 Land Use and Development Trends

It is important to note that significant changes have taken place to the jurisdictional boundaries within Fulton County the last 11 years. Four new municipalities were incorporated: the City of Sandy Springs in December of 2005, the cities of Johns Creek and Milton in December 2006 and the City of Chattahoochee Hills in December 2007. Additional annexations have taken place by the cities of Atlanta, Alpharetta, Fairburn, Palmetto and Union City. This activity has reduced the size of Unincorporated Fulton County from 191,701 acres in November 2005 to only 67,574 acres in

November 2010. Unincorporated portions of South Fulton County also shrank between 2005 and 2010¹⁰.

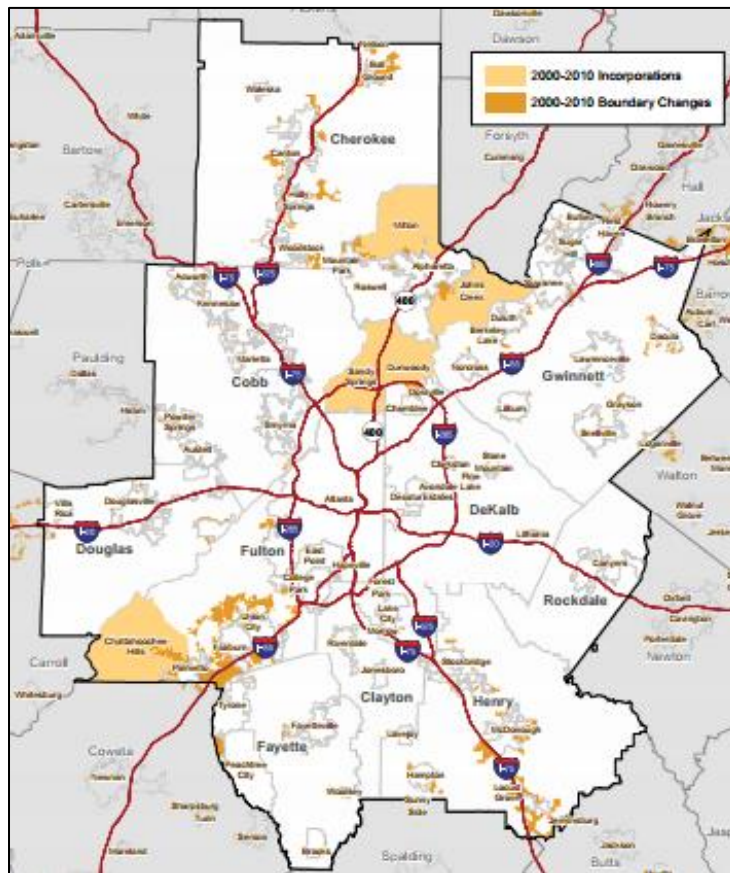
Table 3-7. Change in Unincorporated Fulton County Land Area

	2005 Acres	% of South Fulton County	2010 Acres	% of South Fulton County
Unincorporated Fulton County	117,110	80.0%	67,574	46.1%
Total Acres	146,467	100.0%	146,467	100.0%

Source: Fulton County 2030 Comprehensive Plan

Additionally the state of Georgia adopted new minimum planning standards in 2005 that require local governments to focus upon areas where they have land use planning authority. This meant that all municipalities within Fulton County had to adopt their own comprehensive plans. For Fulton County this resulted in a shift to focus primarily on Unincorporated South Fulton County and to develop a 2030 comprehensive plan.

Figure 3-9 Regional Annexation: 2000 - 2010



Source: ARC Cities and Towns. 2010 Yearbook of Growth and Change. P29

¹⁰ Fulton County 2030 Comprehensive Plan



Growth and development in unincorporated Fulton County are generally in accordance with the 2015 Land Use Map, the Fulton County Zoning Resolution (adopted in 1955) and other development regulations. Single family residential development has been the largest factor in shaping the development patterns of Fulton County.

Areas of rapid growth in Fulton County are tracked by monitoring water demand, sewer flows, the increase in number of new accounts added to the system, zonings, increases in population and households as well as population and household forecasts. The Georgia 400 corridor in North Fulton, located in the Big Creek Basin, and the Palmetto-Fairburn corridor in South Fulton County have been identified as two high growth areas.

There has also been an increase in redevelopment and transitional areas of older commercial and industrial properties from the 1960's, 1970's and 1980's. Sandy Springs along Roswell Road and GA 400, Fulton Industrial Boulevard, Roosevelt Highway, and Old National Highway are all locations where redevelopment of residential, commercial, and industrial uses have been taking place and are being encouraged to continue.

Major environmental problems associated with rapid land development has included the loss of trees and other vegetation, loss of wildlife habitat, reduced water quality, poor air quality, and creation of severe micro-climates such as urban heat islands. Atlanta estimates that 60% of Atlanta's natural tree cover has been removed over the last 20 years. In addition, conversion of undeveloped land to impervious surfaces has increased storm water runoff, which directly impacts the quality and flow of Fulton County's streams. In fact, nonpoint source pollution (runoff from parking lots, city streets, roofs, and lawns) is now responsible for 75% of the pollution in 3,400 stream miles in Georgia that do not meet water quality standards.¹¹

Fulton County Planning Areas

The following Planning Areas information contains the most recent countywide data available to the planning team during the update process¹². The information in this section is beneficial for understanding the trends within Fulton County; however, specific land use maps and future development trends are now primarily addressed in the fourteen individual municipality annexes plus the Unincorporated South Fulton County annex of the 2016 Fulton County Multijurisdictional Hazard Mitigation Plan. This change will allow for more focus on local planning efforts, new comprehensive planning methodology adopted by the state of Georgia, and addresses the many recent changes to the jurisdictional boundaries within Fulton County.

Fulton County Environment and Community Development Department created planning areas to recognize parts of the County which have very different characteristics. The planning areas are: North Fulton, an area of 79.5 square miles and located north of the Chattahoochee River, Sandy Springs, an area of 38.7 square miles north of the City of Atlanta and south of the Chattahoochee River, Southwest Fulton, the area west of the City of Atlanta and east of the Chattahoochee River with 25.6 square miles, and South Fulton, an area of 158 square miles south of the City of Atlanta.

North Fulton Planning Area

¹¹ 2025 Fulton County Comprehensive Plan, Land Use Element, p. 6-26.

¹² Fulton County 2025 Comprehensive Plan and 2010 Hazard Mitigation Plan.



The North Fulton Planning Area consists of 79 square miles and as of 2005 had approximately 94,995 residents. North Fulton is composed of Northeast (NE) Fulton, which is the unincorporated area of Fulton County east of GA 400 and the cities of Alpharetta, Mountain Park and Roswell, and Northwest (NW) Fulton, which is the portion of unincorporated Fulton County north of the Cities of Roswell and Alpharetta. Smaller unincorporated communities are located in NE and NW Fulton.

The Northwest portion of North Fulton is an emerging area of development. Once an area with primarily rural agricultural land, it is now a mix of rural/agricultural uses, residential subdivisions, golf courses and small commercial nodes. Regional employment corridors have formed along Georgia 400 and State Route 9. The northeast portion of North Fulton is characterized by medium density residential areas in the east and central part and by retail/office corridors. Portions of the western part of the area, in the Shakerag Community, retain some of their rural character. Johns Creek Technology Park, a regional employment center, is located along Medlock Bridge Road and McGinnis Ferry Road.

Residential North Fulton is forecasted to grow by 24,019 residents and 11,416 households between 2005 and 2025. If North Fulton develops in the same pattern as it has to date, the additional households and population would require between 4,766 and 5,783 acres. This is equal to about a third of the land identified as forest and agricultural in the existing land use inventory. Based on the employment forest, the number of jobs will increase by 31,106 between 2005 and 2025. Based on current development patterns, the forecasted employment may require almost 1,432 acres. Currently approximately 1,217 acres are used for institutional uses. An additional 313 acres may be needed for institutional uses. The 100 year floodplains are protected by current stream buffer ordinances.

The table below summarizes the existing land uses for North Fulton. This table provides the acres for the categories stated above as well as more detailed sub-categories.

Table 3-8. Existing Land Use North Fulton Planning Area

Land Use Classification	Area in Acres	Percent of Total
Low-Density Residential (less than 2 units per acre)	9,469	19.0%
Medium-Density Residential (2 to 5 units per acre)	7,818	15.7%
High-Density Residential (more than 5 units per acre)	1,207	2.4%
Office	467	0.9%
Retail	742	1.5%
Industrial	83	0.20%
Government	381	0.8%
Other Institutional	326	0.7%
School	429	1.01%



Land Use Classification	Area in Acres	Percent of Total
Communications/Utility/Transportation	4,748	9.5%
Private Recreation	1,805	3.6%
Public Recreation	303	0.6%
Forest	12,747	25.6%
Agricultural/Vacant	4,674	9.4%
Water bodies & Flood Plain	4,549	9.1%
Total	49,779	100%

Sandy Springs Planning Area

Sandy Springs is expected to grow from an estimated population of 86,698 in 2005 to 105,861 in 2025. This represents an additional 19,163 people and a growth rate of 22.1%. The number of households is forecasted to increase by 10,871 from 42,683 to 53,554. If Sandy Springs develops in the same pattern as it has to date, the additional households would require between 2,707 and 3,119 acres. This is more than the land currently designated as Forest in the existing land use inventory. The County plans to accommodate for this growth through a variety of options such as turnover in existing neighborhoods, infill and redevelopment of existing areas, and use of non-residential lands that are under-utilized and have suffered from disinvestment.

Population and business growth is anticipated primarily along the Roswell Road and GA 400 corridors. Fulton County forecasts that the four census tracts along these corridors will have a 57.5% increase in population between 2000 and 2030. The remaining 11 census tracts in Sandy Springs are expected to each have less than 10% increase in population.

The 100-year floodplains for stream bodies are protected by current stream buffer ordinances of 50 feet. There are steep slopes which need protection and a steep slope ordinance is under development. The Land Use Plan Map shows almost 16% of the land uses designated as private recreational space, stream and water bodies, and 100 year floodplain as open space. It is the intent of the Comprehensive Plan policies to maintain the integrity of undisturbed buffers and water courses in Sandy Springs. The Plan also encourages the reclamation of stream banks and piped streams to a more natural state. These efforts are needed to improve water quality and provide habitat for animals.

The Table below summarizes the existing land uses for Sandy Springs.

Table 3-9. Summary of Existing Land Use Sandy Springs Planning Area

Land Use Classification	Area in Acres	Percent of Total
Low-Density Residential	7,048	28.4%



Land Use Classification	Area in Acres	Percent of Total
Medium-Density Residential	4,201	16.9%
High-Density Residential	999	4.0%
Office	1,173	4.7%
Retail	715	2.9%
Industrial	17	0.1%
Government	57	0.2%
Other Institutional	292	1.2%
School	263	1.1%
Transportation, Communications & Utilities	3,797	15.3%
Private Recreational	401	1.6%
Public Recreational	678	2.7%
Forest	2,519	10.1%
Water Resources & Flood plain	2,071	8.3%
Vacant	585	2.4%
Total	24,822	100%

Southwest Fulton Planning Area

Southwest Fulton will have a population increase of 8,690 persons by 2025. Corresponding to population growth, the area is expected to add 5,255 more households. The area is also expected to add 4,442 jobs by 2025. If populations grows in a similar pattern, between 3,219 and 5,517 acres will be needed to accommodate the forecasted population growth.

Many areas adjacent to major transportation corridors are located within the 100-year floodplain. Land uses were changed to reflect protection and a limit to development in these natural hazard areas. The 2025 land use plan designates 16% of land uses as one of the open space categories.

The table below summarizes the existing land uses for Southwest Fulton. Southwest Fulton can be categorized as a suburban community. However, the Fulton Industrial District comprises a large portion of the area.

Table 3-10. Summary of Existing Land Use Southwest Fulton Planning Area

Land Use Classification	Area in Acres	Percent of Total
Low-Density Residential	606	3.7%



Land Use Classification	Area in Acres	Percent of Total
Medium-Density Residential	2,291	14%
High-Density Residential	19	0.1%
Office	47	0.3%
Retail	673	4.1%
Industrial	2,657	16.2%
Government	274	1.7%
Other Institutional	117	0.97%
School	34	0.2%
Utility	2,318	14.1%
Private Recreational	430	2.6%
Public Recreational	219	1.3%
Forest	2,922	17.8%
Agricultural/Vacant	1,589	9.7%
Water & Flood Plain	2,196	13.4%
Total	16,403	100%

South Fulton Planning Area

South Fulton has the greatest amount of undeveloped land in the heart of the Atlanta Region. In the last ten (10) years South Fulton has experienced unprecedented growth and development. In 2004, Fulton County led the Atlanta Metropolitan Statistical Area in residential building permits by issuing a sum of 16,921 permits. Sixty percent (60%) of the building permits were issued in South Fulton. The development boom occurring in South Fulton mirrors the development explosion that occurred in North Fulton twenty (20) years ago. Population projections for the next 25 years suggest an increase of 20,000 people or more in South Fulton.

South Fulton is expected to grow from an estimated population of 52,439 in 2005 to 107,489 residents in 2025. The number of households is forecasted to increase by 17,395. If South Fulton develops in the same pattern as it has to date, the additional households would require between 16,622 and 17,008 acres. This is equals to about a 28% of the land currently designated as forest and agricultural in the existing land use survey.

Based on the employment forecast, the workforce will increase by 16,282. Based on current development patterns, the forecasted workforce may require almost 2,861 acres. Currently approximately 1,601 acres are used for institutional uses, equal to 0.03 acres per person. An additional 1,682 acres may be needed for institutional uses by 2025.

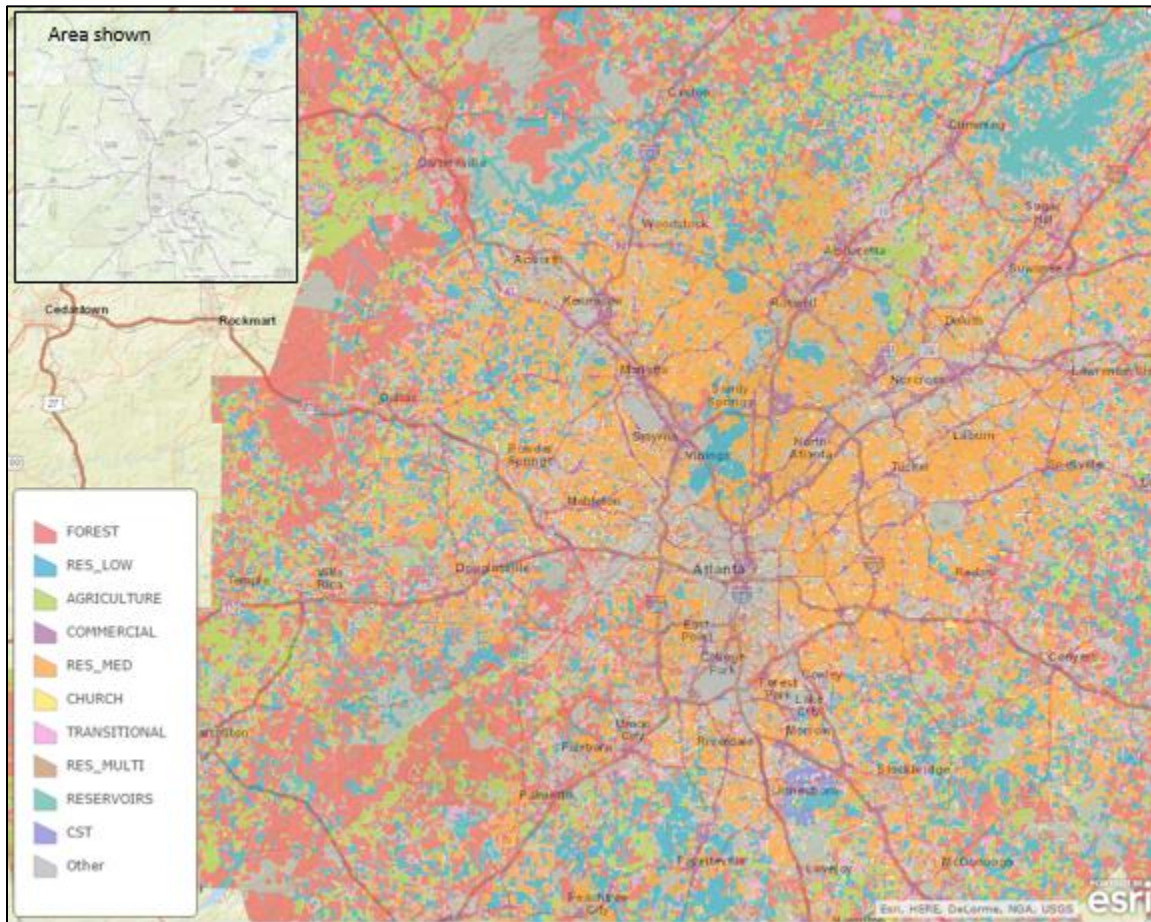


The Table below summarizes the existing land uses for South Fulton

Table 3-11. Summary of Existing Land Use South Fulton Planning Area

Land Use Classification	Area in Acres	Percent of Total
Low-Density Residential	11,194	11.1%
Medium-Density Residential	4,869	4.8%
High-Density Residential	139	0.1%
Office	80	0.1%
Retail	818	0.8%
Industrial	1,181	1.2%
Government	314	0.3%
Other Institutional	710	0.7%
School	579	0.6%
Utility	8,368	8.3%
Private Recreational	74	0.1%
Public Recreational	1,253	1.2%
Forest	47,454	47.1%
Agricultural/Vacant	12,190	15.72%
Water and Flood Plain	11,273	11.2%
Total	100,695	100%

Figure 3-10. Regional Land Use Map, 2012



Source: Atlanta Regional Commission, ArcGIS maps, LandPro 2012, Open Data



3.7 Critical Facilities

A comprehensive inventory of critical facilities in Fulton County was developed from various sources including input from the Planning Committees. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the HMP and was used for the risk assessment in Section 5. For detailed lists of the critical facilities, please refer to Appendix E.

Critical facilities are those facilities considered critical to the health and welfare of the population and that are especially important following a hazard. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities and hazardous material facilities.

Essential Facilities

This section provides information on emergency facilities, hospital and medical facilities, schools, shelters and senior care and living facilities. For the purposes of this Plan, emergency facilities include police, fire, emergency medical services (EMS) and emergency operations centers (EOC). Figure 3-11 displays the location of the essential facilities in Fulton County.

Essential facilities are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, EMS, EOCs, schools, shelters, senior facilities and medical facilities.

Emergency Facilities

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is the lead County organization responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities throughout Fulton County, and the primary Emergency Management agency for Fulton County and the City of Atlanta. AFCEMA is a joint agency, and conducts hazard mitigation as well as preparation and response planning in partnership with City/County agencies, regional and state level partners, non-profit entities, schools and the private sector.

All of the County's municipalities are serviced by fire departments either within their borders, supported by mutual aid departments throughout the County, or by the Fulton County Fire & Rescue (FCFR). Police enforcement and public safety is maintained by the Georgia State Patrol the Fulton County Police Department, Fulton County Sheriff's Office, and local departments. There are 87 fire facilities, 53 police facilities, and 1 Multi Agency Coordination Center (MAC) located in Fulton County.

Hospitals and Medical Facilities

The County also has multiple hospitals and health care facilities; these facilities range in size and primary function that include smaller primary care facilities and larger, regional hospitals. There are 10 hospitals in the County (two level 1 Trauma Centers), and numerous healthcare facilities that provide urgent walk-in care.



Schools

There are 274 primary educational facilities (elementary, middle and high schools) and 25 secondary educational facilities (15 colleges and 10 universities) located in Fulton County. In times of need, schools can function as shelters and are an important resource to the community. For information regarding shelters, see the Shelters subsection of this document.

Senior Care and Living Facilities

The County has an extensive system of programs and services for the senior population. This includes 15 nursing homes, senior centers, and senior housing facilities. These facilities are highly vulnerable to potential impacts from disasters, and knowing the location and numbers of these types of facilities will be effective in managing a response plan pre- and post-disaster.

Shelters

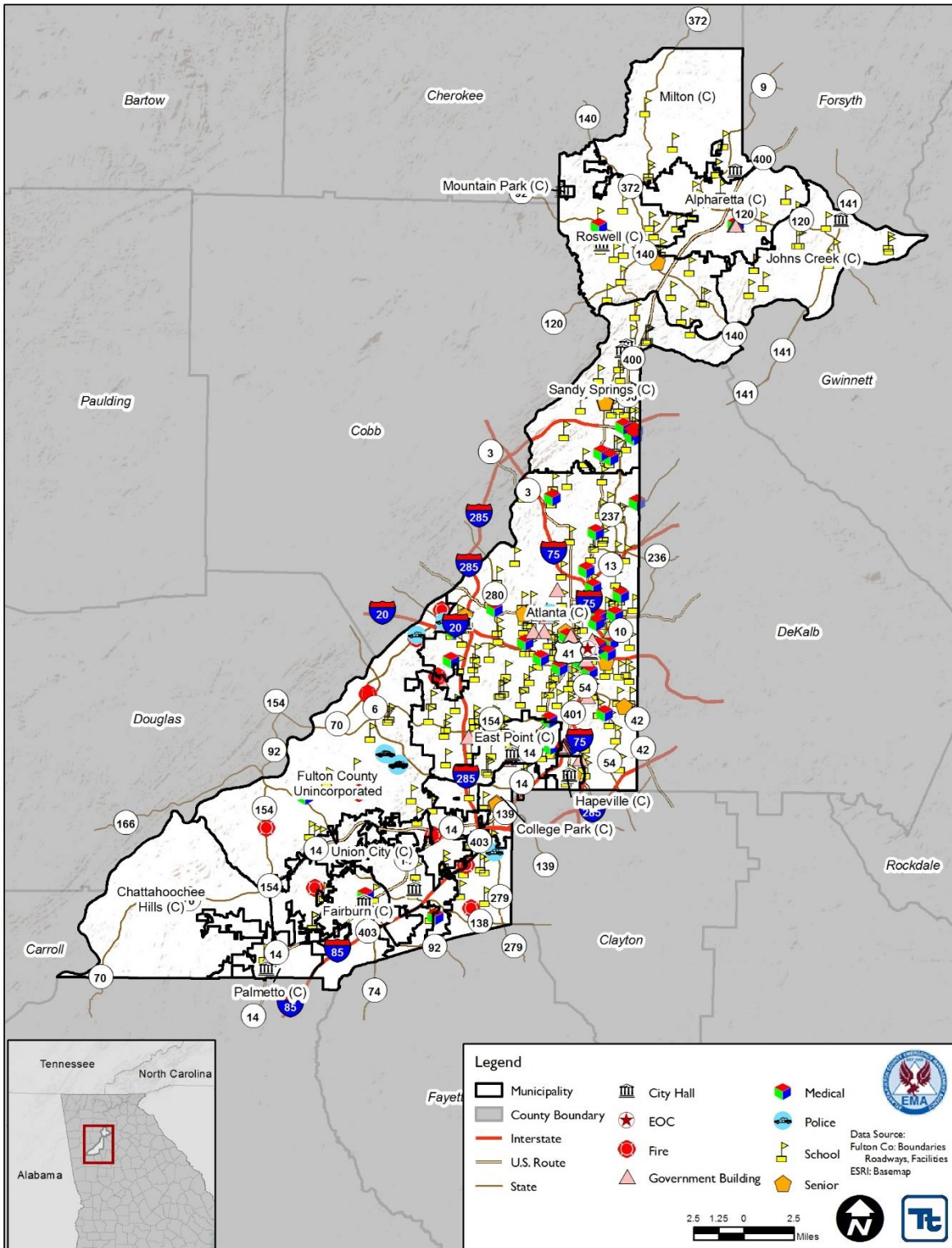
With support and cooperation of the American Red Cross and local jurisdictions, the County assists with the coordination and communication of shelter availability as necessitated by the execution of local municipal emergency operation plans.

Evacuation Routes

Specific evacuation plans are identified in the Hazardous Materials Plan and Dam Safety Plans (Emergency Operations Plans). The County assists with the coordination and communication of evacuation routing as necessitated by the execution of local municipal emergency operation plans.

The County and municipalities have identified mitigation actions within their jurisdictional annexes to protect critical facilities and critical infrastructure, including facilities available to support sheltering, and transportation routes that facilitate evacuation and the movement of emergency vehicles.

Figure 3-11. Essential Facilities in Fulton County



Source: Fulton County



3.7.1 Transportation Systems

Airports

Hartsfield-Jackson Atlanta International Airport (HJAIA) is located 7 miles south of the central business district of Atlanta. HJAIA serves 150 U.S. destinations and more than 75 international destinations in 50 countries. Since 1998, Hartsfield-Jackson Atlanta International Airport has been the busiest passenger airport in the world and the busiest operations airport in the world since 2005, averaging more than 250,000 passengers a day with almost 2,500 arrivals and departures daily. Atlanta is also within a two-hour flight of 80 percent of the United States entire population.

The airport is the primary hub of Delta Air Lines and includes other major carriers such as Alaskan Airlines, American Airlines, Express Jet Airlines, Frontier Airlines, Southwest Airlines, Spirit Airlines and United Airlines. In 2014 Delta Air Lines flew 74.15% of passengers from the airport, Southwest Airlines flew 10.18% and Express Jet Airlines flew 7.44%. The airport has 167 domestic and 40 international gates¹³. The airport is served by MARTA's Red/Gold rail line.

Fulton County Airport at Charlie Brown Field is a local Class D airport located just west of Atlanta, and operated by Fulton County. It is the nearest airport to Hartsfield-Jackson Atlanta International Airport and handles much of the general aviation traffic that would otherwise go there. The airport exists below and in close proximity to HJAIA's Class B airspace.

Public Transportation

The Metropolitan Atlanta Rapid Transit Authority or MARTA is the principal rapid-transit system in the Atlanta metropolitan area and the ninth-largest in the United States. Formed in 1971 as strictly a bus system, MARTA operates a network of bus routes linked to a rapid transit system consisting of 48 miles of rail track with 38 train stations. MARTA operates almost exclusively in Fulton, Clayton and DeKalb counties. It also maintains a single rail station at Hartsfield-Jackson Atlanta International Airport. MARTA also operates a separate paratransit service for disabled customers. As of November 2010, the average total daily ridership for the system (bus and rail) was 500,000 passengers.

Highways

With a comprehensive network of freeways that radiate out from the City of Atlanta, many rely on their cars as the dominant mode of transportation in the region. Atlanta is mostly encircled by Interstate 285, a beltway locally known as "the Perimeter" which has come to mark the boundary between the interior of the region and its surrounding suburbs.





























Three major interstate highways converge in Atlanta; I-20 runs east to west across town, while I-75 runs from northwest to southeast, and I-85 runs from northeast to southwest. The latter two combine to form the Downtown Connector (I-75/85) through the middle of the City. The combined highway carries more than 340,000 vehicles per day. The Connector is one of the ten most congested segments of interstate highway in the United States. Metropolitan Atlanta is approached by thirteen freeways. In addition to the aforementioned interstates, I-575, Georgia 400, Georgia 141, I-675, Georgia 316, I-985, Stone Mountain Freeway (US 78), and Langford Parkway (SR 166) all terminate

¹³ Department of Aviation, Hartsfield-Jackson Atlanta International Airport. Atlanta, Georgia 30320.



just within or beyond the Perimeter, with the exception of Langford Parkway, limiting the transportation options in the central City. This strong automotive reliance has resulted in heavy traffic and contributes to Atlanta's air pollution. Around 2008, the Atlanta metro area has ranked at or near the top of the longest average commute times in the U.S.

The following is a list of major highways and roadways:

- | | |
|--|---|
|  Interstate 20 |  State Route 13 |
|  Interstate 75 |  State Route 14 |
|  Interstate 85 |  State Route 42 |
|  Interstate 285 |  State Route 54 |
|  U.S. Route 19 |  State Route 70 |
|  U.S. Route 23 |  State Route 74 |
|  U.S. Route 29 |  State Route 92 |
|  U.S. Route 41 |  State Route 120 |
|  U.S. Route 78 |  State Route 138 |
|  U.S. Route 278 |  State Route 139 |
|  State Route 3 |  State Route 140 |
|  State Route 6 |  State Route 141 |
|  State Route 9 |  State Route 154 |
|  State Route 10 |  State Route 400 |

Rail Systems

Atlanta began as a railroad town and it still serves as a major rail junction, with several freight lines belonging to Norfolk Southern and CSX intersecting below street level in downtown. It is the home of major classification yards for both railroads, Inman Yard on the NS and Tilford Yard on the CSX. Long-distance passenger service is provided by Amtrak's Crescent train, which connects Atlanta with many cities between New Orleans and New York. The Amtrak station is located several miles north of downtown. Transportation facilities are shown in Figure 3-12.



3.7.2 Lifeline Utility Systems

This section presents potable water, wastewater, energy resource, and communication utility system data. Due to heightened security concerns, local utility lifeline data sufficient to complete the analysis have only partially been obtained. Figure 3-13 shows the locations of the facilities for these various lifeline utility systems.

Potable Water

In Fulton County, water is provided from various facilities as a public service or through private supplies, such as wells. Fulton County's drinking water supply comes from a surface water source, the Chattahoochee River. More than 450 million gallons per day (MGD) is pumped from the Chattahoochee River by many different local utilities, including the Atlanta-Fulton County drinking water plant, located in Johns Creek. Other jurisdictions served by this source include Alpharetta, Johns Creek, Milton, and 80% of Roswell. The Fulton County Water Services Division and the Atlanta Department of Watershed Management are two major suppliers of potable water in the region.

Wastewater Facilities

Wastewater treatment facilities, including combined pump stations, are located in the cities of Roswell, Atlanta, College Park, Palmetto, and Fairburn. Many areas of the County are served by the Fulton County Water Services Division which provides waste water and storm water services. Another major water provider is the City of Atlanta Department of Watershed Management, which also oversees waste water and storm water services in the City of Atlanta and a few areas outside the City limits.

Energy Resources

Power in Fulton County is transmitted and distributed by Georgia Power, Cobb EMC, College Park Power, Coweta-Fayette EMC, East Point Power, Fairburn Utilities, GreyStone Power, Palmetto Electric and Sawnee EMC. There are 4 power facilities in Fulton County.

Communications

Fulton County is served by a variety of communications systems, including traditional landline, fiber optic, and cellular provided by multiple companies. There are 12 communication facilities in Fulton County identified as critical facilities. Each carrier has individual plans for emergency situations during hazard events and post disaster recovery efforts. In addition to land line, fiber optic and cellular communications systems, Fulton County has an extensive radio communications network that is utilized by emergency services agencies, hospitals, law enforcement, public works, transportation and other supporting organizations.



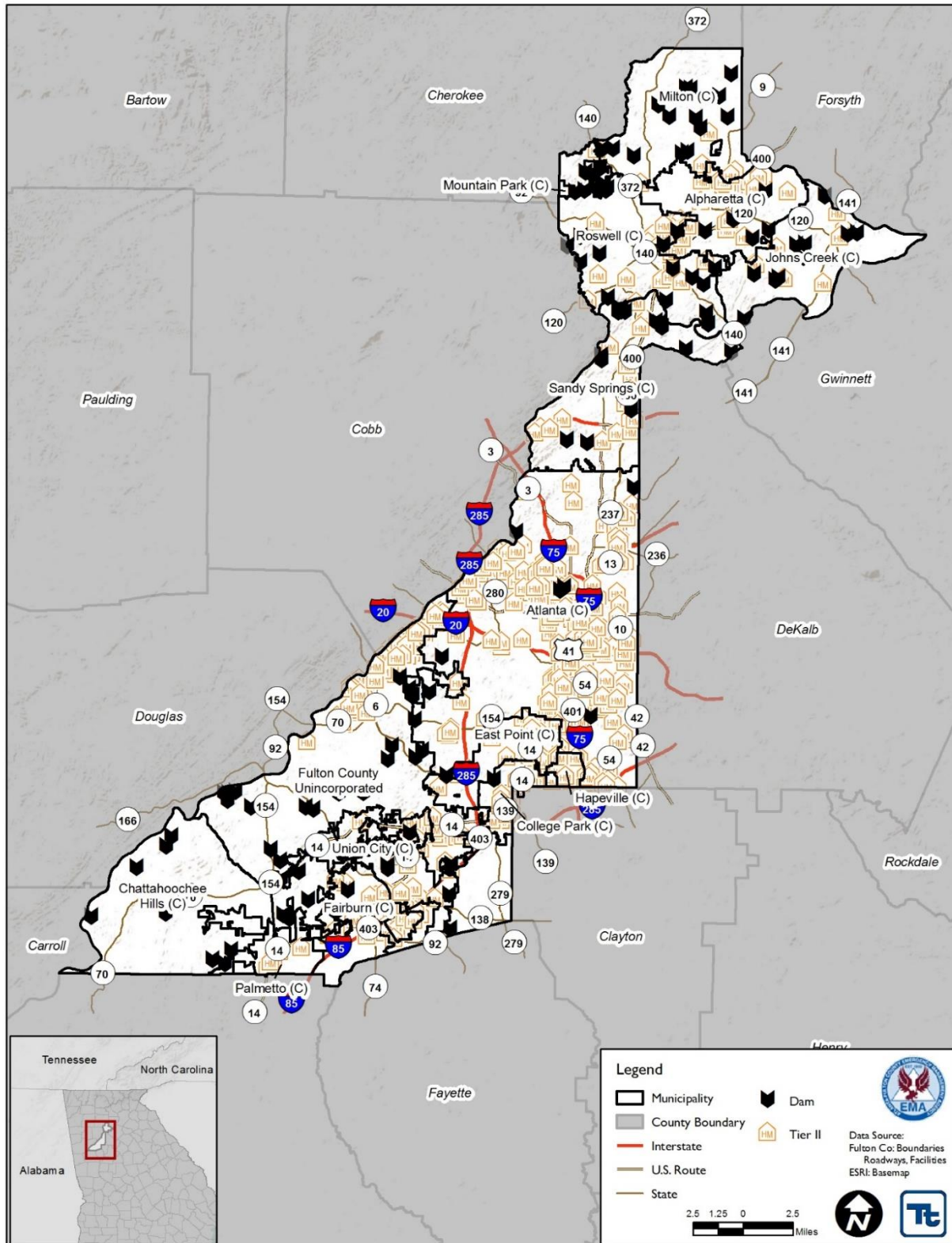
3.7.3 High-Potential Loss Facilities

High-potential loss facilities include dams, levees, hazardous materials facilities (HAZMAT), nuclear power plants, and military installations. There are 578 Tier II Haz Mat facilities located in Fulton County. Dams are discussed below. Figure 3-14 shows the locations of the High-Potential Loss Facilities in the County.

Dams and Levees

According to the U.S. Army Corps of Engineers National Inventory of Dams (NID), there are 130 dams located within Fulton County. These numbers differ slightly from the National Performance of Dams Program (NPDP) which indicates that there are 133 dams in Fulton County (17 high hazard, 3 significant hazard, 90 low hazard, and 23 Unknown). For the purpose of this plan, the Fulton County data will be used. According to County GIS data, there are 123 dams in Fulton County. Refer to Appendix E for the names and locations of the dams found in the County.

Figure 3-14. High-Potential Loss Facilities in Fulton County

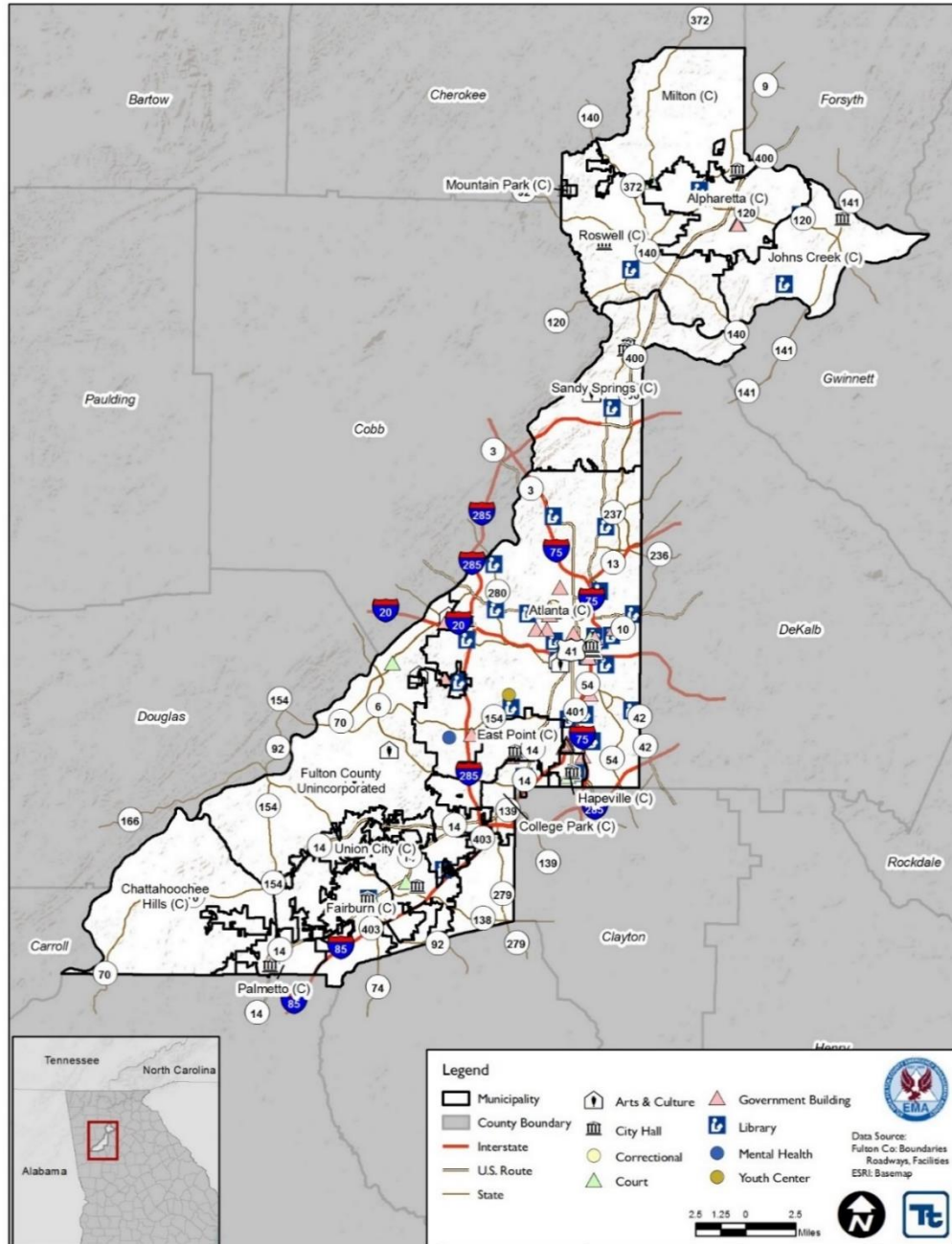


Source: Fulton County

3.7.4 Other Facilities

The Planning Committee identified 135 additional facilities (user-defined facilities) as critical including municipal buildings and other government facilities. These facilities were included in the risk assessment conducted for the County. Figure 3-15 shows the locations of these facilities in the County.

Figure 3-15. Additional Facilities in Fulton County



Source: Fulton County



Chapter 4. Planning Process

Chapter Overview

- 4.1 Federal Advisory Guidance for Community Profiles
- 4.2 Summary of Plan Updates
- 4.3 Public Comment and Involvement in the Planning Process
- 4.4 Multijurisdictional Participation in the Planning Process
- 4.5 Review and Incorporation of Applicable Plans and Documents
- 4.6 Plan Preparation
- 4.7 The Plan Review and Update Process

4.1 Federal Prerequisites

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

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

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

201.6(c) Plan Content. The plan shall include the following:

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

201.6(d) Plan Review.

- (2) A local jurisdiction must review and revise its plan to reflect in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for project grant funding.”



4.2 Summary of Plan Updates

Table 4.1 summarizes changes made to the 2010 plan as a result of the 2016 plan update

Table 4.1. Summary of Plan Updates for Planning Process

Section		Change
4.3	Public Comment and Involvement in the Planning Process	Updated public participation information.
4.4	Multijurisdictional Involvement in the Planning Process	Description of process used for multijurisdictional involvement and information gathering.
4.5	Review & Incorporation of Plans and Documents	Incorporated new or updated plans and scientific studies.
4.6	Plan Preparation	Description of the process used for the plan update.
4.7	Plan Review Process and Update	Updated to reflect actions taken in 2015 – 2016.

4.3 Public Comment and Involvement in the Planning Process

The public was invited to participate in the process and provide comment on the draft of the hazard mitigation plan. The Atlanta Fulton County Emergency Management Agency issued press releases and social media announcements informing the public of the opportunity to comment. Three public meetings were conducted on October 22, 2015; January 20, 2016 and the last one on March 9, 2016. These meetings were held in different geographical locations of Fulton County (North, Central and South) to maximize the potential for the citizens to review the plan update process, discuss concerns and have the opportunity for input. Copies of the press releases are included in Appendix B – Meeting Documentation. The public was also encouraged to participate by completing a survey, which was posted online for easy access. The survey was also announced on AFCEMA’s website and distributed to the community through the Fulton County Office of External Affairs, via emails, press releases, social media announcements, flyers and hard copies were also available at the public meetings. A copy of this survey can be found in Appendix F. AFCEMA received 893 responses and the information was collected, discussed and incorporated throughout the planning process. Each municipality was also forwarded any responses which originated from their jurisdiction. A final draft of the updated HMP will also be available for public review and comment.

4.4 Multijurisdictional Participation in the Planning Process

The original plan was drafted and reviewed by the Hazard Mitigation Planning Committee, which was composed of the following municipal membership: Alpharetta, Atlanta, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs Union City, and Unincorporated Fulton County.

Table 4.2. Municipal Participation in the Planning Process

Jurisdiction	Participated Original Plan	Participated 2010 Plan Update	Participated in Current Plan Update
Fulton County	Yes	Yes	Yes
Alpharetta	Yes	No	Yes



Jurisdiction	Participated Original Plan	Participated 2010 Plan Update	Participated in Current Plan Update
Atlanta	Yes	Yes	Yes
Chattahoochee Hills	No	Yes	Yes
College Park	Yes	Yes	Yes
East Point	Yes	Yes	Yes
Fairburn	Yes	Yes	Yes
Hapeville	Yes	Yes	Yes
Johns Creek	No	Yes	Yes
Milton	No	Yes	Yes
Mountain Park	Yes	Yes	Yes
Palmetto	Yes	Yes	Yes
Roswell	Yes	Yes	Yes
Sandy Springs	Yes	Yes	Yes
Union City	Yes	Yes	Yes

The Atlanta-Fulton County Emergency Management Agency served as the lead agency for coordination among Fulton County jurisdictions and other entities as it relates to the plan update. In order to ensure participation from neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process; the 2016 plan update project began with formal letter invitations and email notifications to such partner agencies and stakeholders within Fulton County. A kickoff meeting was held on August 5, 2015 in which representatives from all municipal jurisdictions as well as other entities such as health care, public schools, colleges, transit, and Georgia Emergency Management Agency (GEMA) were invited to participate. AFCEMA also included Emergency Management personnel from three neighboring counties (Clayton, Cobb and Douglas) in this planning process by asking them to review and comment on the draft plan update. Copies of the invitation letters, requests for feedback and meeting documentation can be found in Appendix B, Meeting Documentation. The purpose of the kickoff meeting was to provide information to new hazard mitigation plan committee members, partner agencies and stakeholders regarding the purpose of the plan and provide an update on new or revised regulatory requirements that had taken place since the 2010 plan. A representative from GEMA also provided an overview regarding state requirements and recommendations for the planning process.

Three multijurisdictional planning sessions were conducted during the update process, which took place from August 2015 to March 2016. The purpose of these meetings was to gather information and data from a countywide perspective, provide comment and feedback on draft sections the plan, and build consensus regarding various aspects of the planning process and methodology. A representative from GEMA was in attendance at several of these meetings to ensure planning methodologies were compatible with the state’s processes and requirements as well as federal requirements.



In addition to these meetings, guided discussions were conducted with all participating municipalities. These meetings consisted of city engineers, public works officials, land use planners, public information officers, emergency managers, zoning officials, GIS, and other interested parties as determined by the jurisdiction. The purpose of these individualized meetings was to support refinement of their hazard vulnerability analysis as it related specifically with the threats posed to their jurisdictions, and assist with identification of mitigation projects impacting their locales. Jurisdictions were also provided opportunities to participate in the planning process by their responsiveness through requests for data, information, and surveys. Appendix B – Meeting Documentation contains the templates that were used to guide these discussions. The information gathered during the individual jurisdiction meetings and subsequent data collection requests was used to develop individual municipality annexes that are a new feature of the 2016 plan.

The following jurisdictions, stakeholders and partner agencies actively participated in the process through a combination of activities such as expressing an interest in the process, coordinating the individual jurisdictions visits, attendance at the multijurisdictional planning meetings, and responding to requests for information, data, surveys and feedback on draft plan content:

- Alpharetta
- Atlanta
- Chattahoochee Hills
- College Park
- East Point
- Fairburn
- Hapeville
- Johns Creek
- Milton
- Mountain Park
- Palmetto
- Roswell
- Sandy Springs
- Unincorporated Fulton County
- Union City
- American Red Cross
- Atlanta Medical Center
- Atlanta Public Schools
- Hartsfield-Jackson International Airport
- Metro Atlanta Rapid Transit Authority (MARTA)
- Georgia Tech Institute
- Georgia State University

Notices inviting participation were also sent to:

- Fulton County Public Schools
- Grady Healthcare Systems

Neighboring jurisdictions that participated include:

- Clayton County Emergency Management Agency
- Cobb County Emergency Management Agency
- Douglas County Emergency Management Agency

Below is a list of the Steering Committee Members who served as the principal point of contact for their jurisdiction throughout the planning process. The steering committee was responsible for assembling the larger Hazard Mitigation Planning Committee for the respective departments within their jurisdiction or organization.



Table 4.3. Fulton County Hazard Mitigation Plan Steering Committee Members

Fulton County Jurisdictions		
Name	Position	Jurisdiction
Matthew Kallmyer	Director	AFCEMA
Donnie Reece	Operations Manager	AFCEMA
Destiny Ruffin	Hazard Mitigation Project Coordinator	AFCEMA
Joe Popadics	Emergency Management Coordinator	Alpharetta
Ria Aiken	Director of Emergency Preparedness	Atlanta
Greg Brett	Fire Chief	Chattahoochee Hills
Bruce Braxton	Lieutenant	College Park
Michael Webb	Provisional Deputy Chief	East Point
William Tate	Training Officer	East Point
Jon Fore	Division Chief	Fairburn
Michael Charlson	Planner	Fulton County
Larry Richardson	Emergency Plan Coordinator	Hapeville
Grant Hickey	Special Projects Coordinator	Johns Creek
Matthew Marietta	Fire Marshall	Milton
James Dame	Chief	Mountain Park
Henry Argo	Fire Chief	Palmetto
Tony Papoutsis	Deputy Fire Chief	Roswell
Mark Duke	Deputy Chief of Operations/ Emergency Management Coordinator	Sandy Springs
Jim McIntosh	Emergency Management Consultant	Tetra Tech
Joe Maddox	Fire Chief	Union City
Stakeholders		
Donna Lee	Senior Disaster Program Manager	American Red Cross
Carey Westgate	Director of Security and Emergency Management,	Atlanta Medical Center
Marquenta Sands-Hall Ph. D	Director of Security/Chief of Police	Atlanta Public Schools



Fulton County Jurisdictions		
Name	Position	Jurisdiction
Sam Shartar	Senior Administrator, Office of Critical Event Preparedness and Response	Emory University
Paul Hildreth	Response and Emergency Management Systems Grant Coordinator	Fulton County Schools
William Smith	Director of Emergency Preparedness	Georgia Institute of Technology
Keith Sumas	Emergency Operations Manager	Georgia State University
Lori Wood	Emergency Management Director	Grady Memorial Hospital
Augustus Hudson	Aviation Communications Manager	Hartsfield-Jackson Atlanta International Airport
Ashton Greene	Commander of Emergency Preparedness Unit	Metro Atlanta Rapid Transit Authority

Fulton County also reached out to neighboring jurisdictions to review and provide feedback on this HMP during the update process. Signed copies of the outreach letters to neighboring jurisdictions can be found in Appendix B. The following table shows the neighboring jurisdictions that participated in this HMP update.

Table 4.4. Participation from Neighboring Jurisdictions

Neighboring Jurisdictions		
Name	Position	Jurisdiction
Beth Durmire	Emergency Management Deputy Director	Clayton County
Sean Loughlin	Emergency Management Planner	Cobb County
Jason Milhollin	Emergency Management Director	Douglas County

4.5 Review and Incorporation of Applicable Plans and Documents

The participating jurisdictions discussed and/or provided copies of their plans, studies, reports, ordinances, regulations, and technical information to the planning team. The planning team reviewed the documents and noted relevant sections that pertained to hazard mitigation. These documents were examined to determine what mitigation measures were currently being pursued and what new measures could be included for future revisions and/or incorporation into this multijurisdictional hazard mitigation plan.



The 2016 planning team discovered that there was some variation in plan content and format. Some jurisdictions had their own hazard mitigations plans, while others had “hybrid” documents that incorporated a general hazard profile as part of their emergency response/continuity of operations plans.

The following documents were reviewed by the planning team:

- Alpharetta 2030 Comprehensive Plan
- College Park 2031 Comprehensive Plan
- Fulton County 2025 and 2030 Comprehensive Plans
- East Point 2036 Comprehensive Plan
- Fairburn 2035 Comprehensive Plan
- Milton Master Plan
- Roswell 2035 Comprehensive Plan
- Sandy Springs 2027 Comprehensive Plan
- Hapeville 2025 Comprehensive Plan
- Fulton County Flood Insurance Study, 2013
- Sandy Springs Hazard Mitigation Plan
- Johns Creek Emergency Response Framework
- EWP Dam Report on the September 2009 Floods
- Georgia Department of Natural Resources Guidance on Storm-Generated Debris
- GEMA Hazard Mitigation Plan, 2014
- Flood ordinances
- Storm water management plans
- Atlanta Regional Planning Commission studies and reports
- NOAA and NWS storm events records
- FEMA and local disasters reports
- Scientific and academic studies regarding climatic trends
- Camp Creek Flooding Modeling Study
- Dam Report
- Roswell Watershed Improvement Plan
- Atlanta-Fulton County Emergency Operations Plan

In 2015 additional information that was collected from each municipality was used to update the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan and to create individual annexes for each participating municipality in Fulton County. The municipality annexes contain lists of local plans that are incorporated into the mitigation planning process.

4.6 Plan Preparation

During the plan drafting process, the Hazard Mitigation Planning Committee held five multijurisdictional meetings and 15 individual municipality meetings between August 2015 and March 2016. Documentation of these meetings in the form of agendas, sign-in sheets, and meeting minutes are on file in the AFCEMA office and copies are included in Appendix B – Meeting Documentation. The committee’s tasks and document sharing were facilitated by a cloud based storage site managed by AFCEMA and a SharePoint site hosted by the consultant. Those committee members that were unable to attend a meeting received agendas and committee assignments via email, telephone, or personal meetings with the planning team.

As part of the previous 2010 Fulton County Hazard Mitigation Plan development process, the planning committee discussed the risk assessment methodology that should be used to conduct risk assessments for each jurisdiction. The advantages and disadvantages of each were discussed and the members ultimately voted to use the NFPA 1600 Risk Assessment Standard, which provided the foundation for the information reviewed and revised as, needed during the 2016 update.



On August 5, 2015, a kick off meeting was held to reactivate the HMPC and prepare for the upcoming five-year plan update. The kickoff meeting was a re-introduction to hazard mitigation planning. The meeting discussions covered a review of the 2010 plan, goals and objectives, mitigation strategies, the State's Hazard Mitigation Plan and the local update process.

During the first planning meeting for the 2016 update (held in conjunction with the kickoff meeting) representatives from AFCEMA and the consulting firm outlined the individual jurisdiction meetings that would take place during the course of the planning process and the necessity for participation by certain essential stakeholders such as public works, engineering, and urban planning. The committee also reviewed the guided discussion packet that would be used for the individualized site visits.

During September and October 2015, individual site visits were held with each participating municipality. These meetings were attended by representatives of AFCEMA, Tetra Tech and various stakeholders from the local jurisdiction. The meetings were used to review the mitigation planning process, countywide hazards, past events, specific local hazards, local planning documents, mitigation capabilities, planned future development, a review of past mitigation strategies and prioritization of ongoing and future strategies. A packet of worksheets was used to guide these meetings and promote discussion. In the weeks that followed, each municipality submitted their completed worksheets to the designated cloud based storage site hosted by AFCEMA. The information collected from these meetings was used to update the plan and to develop an annex for each municipality. This annex approach is a new feature of the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan and lends itself naturally to implementation. Each annex identifies those actions to be implemented by the jurisdiction, as well as county and regional initiatives the community had identified in which it may participate or support. Using this document organization structure, the community and responsible implementing personnel need only focus attention on the mitigation strategy clearly identified in their annex. Further, the annex provides a clear framework within which the communities can continue to update and improve their local annexes throughout plan implementation, greatly facilitating the 5-year plan update process.

The second multijurisdictional meeting was conducted on December 2, 2015 and was designed as a mitigation workshop with GEMA to help review, discuss, and prioritize mitigation strategies. Representatives from AFCEMA, GEMA, and Tetra Tech provided an update on the project status, then facilitated a discussion that included jurisdiction-wide hazards such as severe weather, flooding, and tornadoes. Potential multijurisdictional hazard mitigation strategies and actions were discussed that could be applied across multiple or even all jurisdictions. The discussion included strategy ideas for public education and awareness, mapping, real-time information gathering and dissemination, and greater collaboration and coordination with state and regional entities. Following the group discussion, planning representatives from each municipality broke out into groups based upon their geographic location in the county to begin identifying priority hazard mitigation issues specific to their jurisdiction. This portion of the workshop was used to discuss, review, revise, and prioritize the mitigation strategies that they had previously identified and some generated ideas for additional potential mitigation projects to include as part of their overall strategy.

On December 9, 2015, a meeting was held for all interested external stakeholders such as Hospitals, School Systems, Colleges, Universities, and Transit. This meeting was designed to mirror portions of the individual municipality annexes with a focus upon identifying and prioritizing current, ongoing, and future mitigation strategies. All who were unable to attend were given access to the meeting materials via email and SharePoint. During the weeks that followed this meeting the consultant and a representative from AFCEMA were available to answer questions and discuss the project with those who desired to participate.

On January 14, 2016, the third multijurisdictional planning meeting was held. Planning committee members participated in a webinar hosted by AFCEMA and the consultant (Tetra Tech). Committee members reviewed and discussed the status of the plan update, discussed the plans goals, objectives, and maintenance strategy, were introduced to the updated risk assessment and



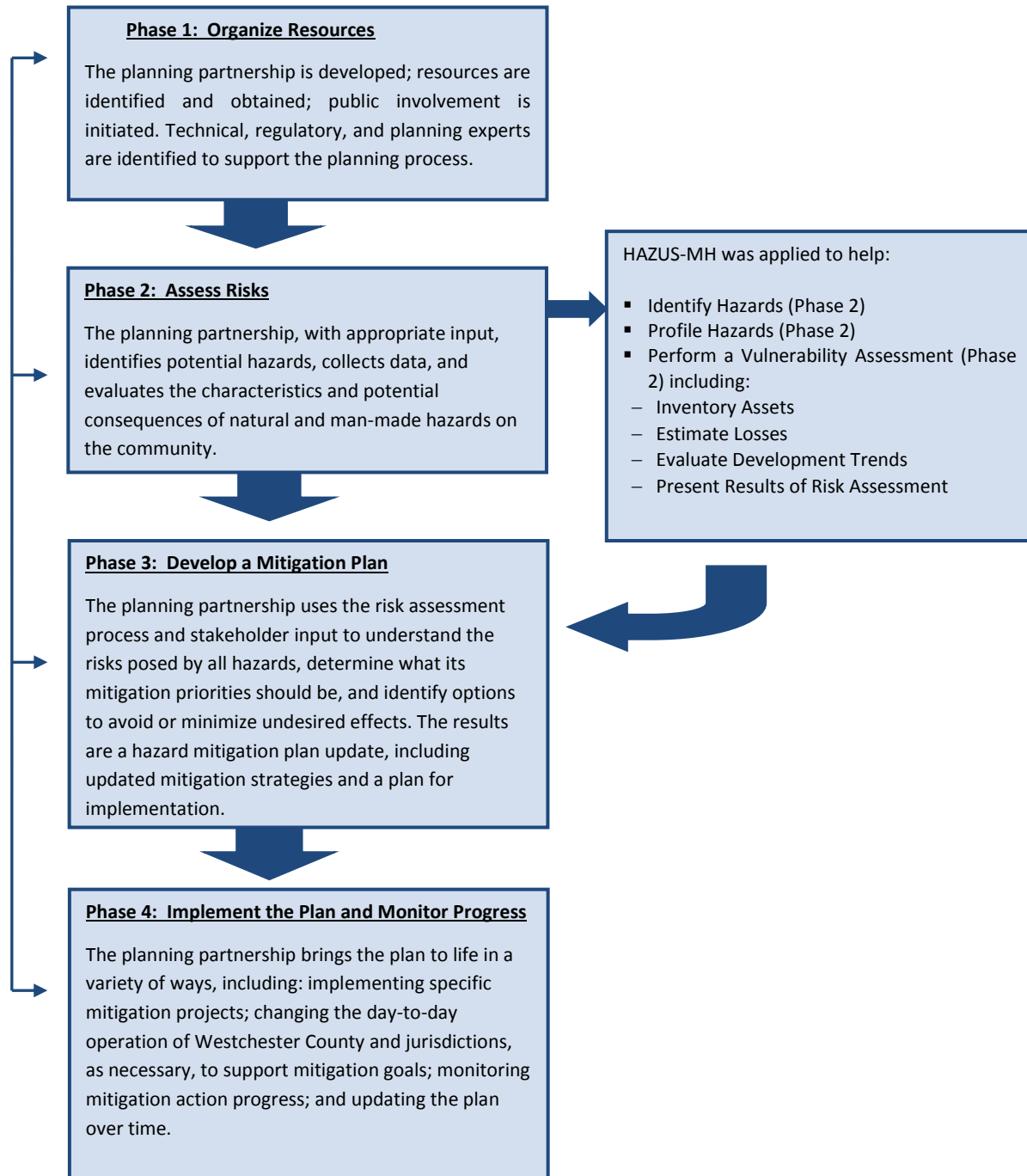
vulnerability analysis models that were available for review (Chapter 5) and were provided with a survey to verify and/or revise the local risk ranking values from 2010 if desired. This method provided an opportunity for jurisdictions to discuss and individually rank the various hazards facing their community, while at the same time, determining if there were changes since the previous plan update. The risk assessment was performed using two dimensions – Level of Severity and Probability/Likelihood of Event. This method allowed for a more accurate assessment of the risks posed to the jurisdiction by the hazard. During the weeks that followed this risk assessment ranking was then used in conjunction with any existing STAPLEE scores used in 2010 to verify and/or revise the potential mitigation actions and priorities that were being used to develop the mitigation strategy.

On March 16, 2016 the final multijurisdictional planning meeting was held. Committee members discussed the draft version of the plan and the individual municipality annexes. Final drafts of planning mitigation strategies were also discussed and feedback from the meeting was incorporated into the draft that was prepared for final comment and review.

Draft sections of the plan were uploaded to the project SharePoint and cloud based storage locations. Notices were sent to the Hazard Mitigation Planning Committee members requesting their review and comment by specified deadlines. After incorporating these revisions, a final draft of the plan was placed on the project SharePoint and cloud based storage sites for a complete review and approval by the committee members. Once approved, the planning team assembled the final plan for submission to the Atlanta-Fulton County Emergency Management Agency who in turn submitted it to the GEMA and FEMA for review and approval on March 30, 2016. The update took approximately 7 months to complete. Figure 4-1 on the following page helps to illustrate the planning process.



Figure 4-1. Fulton County Hazard Mitigation Planning Process





4.7 Plan Review and Update Process

The plan review and update process resulted in a comprehensive update of the entire 2016 plan elements, which was achieved through a process that involved the following tasks, among others:

- Update of the Community Profiles to reflect changed demographics, economic characteristics, and growth and development trends
- A detailed assessment of existing local mitigation actions and/or capabilities to carry out mitigation measures
- A reassessment of risks to include detailed research and analysis of hazards affecting the communities
- A thorough update of critical facilities and assessment of vulnerabilities
- A reexamination of development trends and exposure to risks
- A review and recommitment to the vision for disaster-resistant communities; modifications to the 2010 goals; and support of the State goals for hazard mitigation
- Identification and analysis of a comprehensive range of mitigation alternatives
- A reprioritization of mitigation actions and projects
- Revised mitigation action programs for each jurisdiction to better reflect the results of the plan update
- Review of the plan maintenance procedures to facilitate streamlined amendments and continuous monitoring and implementation of mitigation actions
- Development of individual annexes for each municipality in addition to the required update



Chapter 5. Risk Assessment

Chapter Overview

- 5.1 Federal Requirements for Risk Assessment
- 5.2 Summary of Plan Updates
- 5.3 Methodology and Tools
- 5.4 Identification of Hazards Affecting Each Jurisdiction
- 5.5 Description of Hazards, Hazard Profiles, Vulnerability Assessments and Loss Estimates
- 5.6 Summary of Hazards and Community Impacts
- 5.7 Summary of Vulnerability of Structures and Dollar Estimate of Losses
- 5.8 NFIP Insured Structures

5.1 Federal Requirements for Risk Assessment

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

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

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



5.2 Summary of Plan Updates

Table 5.1 summarizes changes made to the 2010 plan as a result of the 2016 plan update:

Table 5.1. Summary of Plan Updates for Planning Process

Section		Change
5.3	Methodology and Tools	Added methodology and tools section for ease of identification. Additional methodology references can be found within each hazard profile section.
5.4	Identification of Hazards Affecting Each Jurisdiction	Updated sources.
5.5	Description of Hazards and Hazard Profiles	<p>Each hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the drought hazard is discussed.</p> <p>A Profile was added For Dam Failure</p> <p>New and updated figures from federal and state agencies are incorporated.</p> <p>Previous occurrences were updated with events that occurred between 2010 and 2015.</p> <p>U.S. 2010 Census data was incorporated.</p> <p>Vulnerability assessments were conducted for the hazards and now directly follows the hazard profile.</p>
5.6	Summary of Hazards and Community Impacts	Updated based on HMPC survey data and input
5.7	Summary Vulnerability of Structures and Dollar Estimate of Losses	<p>Changed title to “Summary” because detailed Vulnerability Assessments for each hazard and jurisdiction are now included in section 5.5 immediately following the Hazard Profiles. Section 5.6 is used to provide an overall summary for each jurisdiction.</p> <p>Updated charts to provide a summary of all hazards for each jurisdiction.</p>
5.7(old)	General Description of Population and Development Trends	Removed from this chapter and added to Chapter 3 – County Profile. Additional data is now contained in the new municipality annexes.
5.8	NFIP-Insured Structures	Addresses NFIP participation and Repetitively Damaged NFIP-Insured Structures. Additional NFIP information can be found in the new municipality annexes.



5.3 METHODOLOGY AND TOOLS

This section describes the methodology and tools used to support the risk assessment process.

5.3.1 Methodology

The risk assessment process used for this plan is consistent with the process and steps presented in FEMA 386-2, State and Local Mitigation Planning How-to-Guide, Understanding Your Risks – Identifying Hazards and Estimating Losses (FEMA, 2001). This process identifies and profiles the hazards of concern and assesses the vulnerability of assets (population, structures, critical facilities and the economy) at risk in the community. A risk assessment provides a foundation for the community's decision makers to evaluate mitigation measures that can help reduce the impacts of a hazard when one occurs.

Step 1: The first step of the risk assessment process is to identify the hazards of concern. FEMA's current regulations only require an evaluation of natural hazards. Natural hazards are natural events that threaten lives, property, and many other assets. Often, natural hazards can be predicted, where they tend to occur repeatedly in the same geographical locations because they are related to weather patterns or physical characteristics of an area.

Step 2: The next step of the risk assessment is to prepare a profile for each hazard of concern. These profiles assist communities in evaluating and comparing the hazards that can impact their area. Each type of hazard has unique characteristics that vary from event to event. That is, the impacts associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Finally, each hazard will impact different communities in different ways, based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

Steps 3 and 4: To understand risk, a community must evaluate what assets it possesses and which assets are exposed or vulnerable to the identified hazards of concern. Hazard profile information combined with data regarding population, demographics, general building stock, and critical facilities at risk, located in Chapter 3, prepares the community to develop risk scenarios and estimate potential damages and losses for each hazard.

5.3.2 Tools

To address the requirements of DMA 2000 and better understand potential vulnerability and losses associated with hazards of concern, Fulton County used standardized tools, combined with local, state, and federal data and expertise to conduct the risk assessment. Our standardized tools used to support the risk assessment are described below.

5.3.3 Hazards U.S. – Multi-Hazard (HAZUS-MH)

In 1997, FEMA developed a standardized model for estimating losses caused by earthquakes, known as Hazards U.S. or HAZUS. HAZUS was developed in response to the need for more effective national-, state-, and community-level planning and the need to identify areas that face the highest risk and potential for loss. HAZUS was expanded into a multi-hazard methodology, HAZUS-MH with new models for estimating potential losses from wind (hurricanes) and flood (riverine and



coastal) hazards. HAZUS-MH is a Geographic Information System (GIS)-based software tool that applies engineering and scientific risk calculations, which have been developed by hazard and information technology experts, to provide defensible damage and loss estimates. These methodologies are accepted by FEMA and provide a consistent framework for assessing risk across a variety of hazards. The GIS framework also supports the evaluation of hazards and assessment of inventory and loss estimates for these hazards.

HAZUS-MH uses GIS technology to produce detailed maps and analytical reports that estimate a community's direct physical damage to building stock, critical facilities, transportation systems and utility systems. To generate this information, HAZUS-MH uses default HAZUS-MH provided data for inventory, vulnerability, and hazards; this default data can be supplemented with local data to provide a more refined analysis. Damage reports can include induced damage (inundation, fire, threats posed by hazardous materials and debris) and direct economic and social losses (casualties, shelter requirements, and economic impact) depending on the hazard and available local data. HAZUS-MH's open data architecture can be used to manage community GIS data in a central location. The use of this software also promotes consistency of data output now and in the future and standardization of data collection and storage. The guidance *Using HAZUS-MH for Risk Assessment: How-to Guide (FEMA 433)* was used to support the application of HAZUS-MH for this risk assessment and plan. More information on HAZUS-MH is available at <http://www.fema.gov/plan/prevent/hazus/index.shtm>.

In general, probabilistic analyses were performed to develop expected/estimated distribution of losses (mean return period losses) for the flood, wind and seismic hazards. The probabilistic model generates estimated damages and losses for specified return periods (e.g., 100- and 500-year). For annualized losses, HAZUS-MH calculates the maximum potential annual dollar loss resulting from various return periods averaged on a "per year" basis. It is the summation of all HAZUS-supplied return periods (e.g., 10, 50, 100, 200, 500) multiplied by the return period probability (as a weighted calculation). In summary, the estimated cost of a hazard each year is calculated.

Custom methodologies in HAZUS-MH versions 2.2 and 3.0 were used to assess potential exposure and losses associated with hazards of concern for Fulton County:

Inventory: The 2010 U.S. Census data at the Census-block level was used to estimate population exposure at the municipal level. Both HAZUS-MH 2.2 and 3.0's default demographic data is based on the 2010 U.S. Census and was used to estimate potential sheltering and injuries for the flood and earthquake vulnerability assessments and tropical systems vulnerability assessment, respectively.

To estimate exposure, both the County-provided building footprint spatial layer and the HAZUS-MH 2.2 dasymetric building layer (Census blocks) were used. To generate the dasymetric layer, FEMA removed undeveloped areas (such as area covered by bodies of water, parks, or forests) from the Census Blocks. The cumulative building exposure is distributed only in the developed sub- Census Block areas. Using the dasymetric dataset generates more accurate flood loss determinations than using the homogeneous dataset (utilized in the hurricane and earthquake models).

The critical facility inventory (essential facilities, utilities, transportation features and user-defined facilities) was updated beginning with all GIS data provided by Fulton County. The critical facility inventory was formatted to be compatible with HAZUS-MH and its Comprehensive Data Management System (CDMS).



Flood: The FEMA DFIRM, dated May 2013 with a Letter of Map Revision in January 2015, was used to evaluate exposure for the 1- and 0.2-percent annual chance flood events, and determine potential future losses for the 1-percent annual chance event in Fulton County. FEMA generated a 1-percent chance event depth grid in March 2014. There are additional flood hazard areas in the County that were not included in this FEMA depth grid. Flood depths were generated in these areas using the HAZUS-MH Enhanced Quick Look tool and the 1/3 arc-second Digital Elevation Map (DEM) model provided by the U.S. Geological Survey (USGS). The countywide depth grid was integrated into HAZUS-MH 2.2 and the flood model was run to estimate potential losses using the dasymetric building data.

Earthquake: A probabilistic assessment was conducted for Fulton County for the 100-, 500- and 2,500-year MRPs through a Level 2 analysis in HAZUS-MH 2.2 to analyze the earthquake hazard and provide a range of loss estimates for Fulton County. The probabilistic method uses information from historic earthquakes and inferred faults, locations and magnitudes, and computes the probable ground shaking levels that may be experienced during a recurrence period by Census tract.

As noted in the HAZUS-MH Earthquake User Manual '*Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate inventories of the built environment, demographics and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS Earthquake Model, possibly at best a factor of two or more.*' However, HAZUS' potential loss estimates are acceptable for the purposes of this HMP.

Ground shaking is the primary cause of earthquake damage to man-made structures and soft soils amplify ground shaking. One contributor to the site amplification is the velocity at which the rock or soil transmits shear waves (S-waves). The National Earthquake Hazard Reductions Program (NEHRP) has developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil classification system ranges from A to E, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses.

NEHRP soil classifications were not available for Fulton County at the time of this analysis. Soils were estimated as NEHRP soil Type D across Fulton County, as a conservative approach to this risk assessment. Groundwater was set at a depth of 5 feet (default setting). Damages and losses due to liquefaction, landslide, or surface fault rupture were not included in this analysis.

Tropical Systems: After reviewing historic data, the HAZUS-MH methodology and model were used to analyze the coastal hazards for Fulton County. Data used to assess this hazard include data available in the HAZUS-MH wind model, professional knowledge, information provided by the Steering and Planning Committees. While HAZUS-MH 2.2 was used for the Flood and Earthquake models, errors were encountered when using the HAZUS-MH 2.2 wind model; therefore, HAZUS version 3.0 was used for this analysis.

A probabilistic scenario was run for Fulton County for annualized losses and the 100- and 500-year MRPs were examined for the wind hazard using HAZUS version 3.0. HAZUS-MH contains data on historic hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support the modeling of wind



force across various types of land surfaces. Hurricane and inventory data available in HAZUS-MH were used to evaluate potential losses from the 100- and 500-year MRP events (wind impacts).

Wildfire: The WUI (interface and intermix) obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison was used to define the wildfire hazard areas. The University of Wisconsin-Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For the purposes of this risk assessment, the high-, medium- and low-density interface areas were combined and used as the 'interface' hazard area and the high-, medium- and low-density intermix areas were combined and used as the 'intermix' hazard areas.

The asset data (population, building stock and critical facilities) presented in the County Profile (Chapter 3) was used to support an evaluation of assets exposed and the potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available and appropriate GIS data was overlaid upon the hazard area. The limitations of this analysis are recognized, and as such the analysis is only used to provide a general estimate.

Geologic Hazards: The County's risk to landslides was assessed as part of this hazard analysis. The Landslide Incidence and Susceptibility GIS layer from the National Atlas was used to assess the vulnerability to landslides.

Other Hazards: For many of the hazards evaluated in this risk assessment, historic data is not adequate to model future losses at this time. For some of the other hazards of concern, areas and inventory susceptible to specific hazards were mapped and exposure was evaluated to help guide mitigation efforts discussed in Chapter 6. For other hazards, a qualitative analysis was conducted using the best available data and professional judgment.

For this risk assessment, the loss estimates, exposure assessments, and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

- 1) Approximations and simplifications necessary to conduct such a study
- 2) Incomplete or dated inventory, demographic, or economic parameter data
- 3) The unique nature, geographic extent, and severity of each hazard
- 4) Mitigation measures already employed by Fulton County and the amount of advance notice residents have to prepare for a specific hazard event

These factors can result in a range of uncertainty in loss estimates, possibly by a factor of two or more. Therefore, potential exposure and loss estimates are approximate. These results do not predict precise results and should be used to understand relative risk. Over the long term, Fulton County will collect additional data to assist in developing refined estimates of vulnerabilities to natural hazards.



5.4 Identification of Hazards Affecting Each Jurisdiction

Types of Hazards

The types of natural hazards affecting each Fulton County jurisdiction are listed in Table 5.2. This table of identified hazards also notes multiple natural hazards that may be associated with and caused by certain hazard events.

Table 5.2. Types of Hazards

Hazards	Associated Hazards
Dam Failure	Flooding Landslides
Droughts	Extreme Heat Wildfire Man-made Sinkholes
Earthquakes	
Flooding	Landslide Erosion Man-made sinkholes
Geological Hazards	Landslides Sinkholes
Heat Wave	
Tornadoes	High Winds Severe Storms
Severe Weather/Storms	Thunderstorms Hail Lightning High Winds Floods Tornadoes
Tropical Systems	Severe Storms High Winds Floods
Wildfire/Urban Interface	
Severe Winter Storms	Snow storms Ice Storms Extreme Cold High Winds



Sources for Identifying Hazards

The planning team used the following sources for identifying hazards in Atlanta-Fulton County:

1. **State of Georgia Hazard Mitigation Plan.** The 2014 update of the State's plan provided information regarding possible additional hazards. Hazards identified in the State plan were compared to local, historical event information.
2. **Risk Assessment Matrix.** A matrix was discussed with each participating jurisdiction to determine which hazards posed a risk, the likelihood of a hazard event, and the severity and magnitude of damage that would occur. This information is included in Section 5.5.
3. **Other Sources.** Other sources of information such as NOAA's National Climatic Data Center, US Geological Survey, University research, and other sources were utilized and have been referenced appropriately throughout this plan. Appendix C – Event Data contains tables summarizing past hazard event data.

5.5 Description of Hazards, Hazard Profiles, Vulnerability Assessments and Loss Estimates

5.5.1 Dam Failure

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the dam failure hazard in Fulton County.

2016 Specific Plan Update Changes for Dam Failure

- A separate hazard profile addressing dam failure has been provided in this section for specific information as an identified hazard of concern. This profile includes a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the dam failure hazard.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the dam failure hazard and it is included in this section. However, the County's inventory of dams was removed due to their sensitive nature and only a qualitative assessment was done.

5.5.1.1 Profile

Hazard Description

A dam is an artificial barrier that has the ability to store water, wastewater, or liquid-borne materials for many reasons (flood control, human water supply, irrigation, livestock water supply, energy generation, containment of mine tailings, recreation, or pollution control). Many dams fulfill a combination of the stated functions (Association of State Dam Safety Officials 2013). They are an important resource in the United States.

Man-made dams can be classified according to the type of construction material used, the methods used in construction, the slope or cross-section of the dam, the way the dam resists the forces of the water pressure behind it, the means used for controlling seepage, and, occasionally, according to the purpose of the dam. The materials used for construction of dams include earth, rock, tailings from mining or milling, concrete, masonry, steel, timber, miscellaneous materials (plastic or rubber), and any combination of these materials (Association of State Dam Safety Officials 2013).



More than a third of the country’s dams are 50 or more years old. Approximately 14,000 of those dams pose a significant hazard to life and property if failure occurs. There are also about 2,000 unsafe dams in the United States, located in almost every state. There are a total of 217 dams in Fulton County, of which, 11 are classified as high hazard dams.

Dam failures typically occur when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs. Complete failure occurs if internal erosion or overtopping results in a complete structural breach, releasing a high-velocity wall of debris-filled waters that rush downstream damaging and/or destroying anything in its path (FEMA 1996).

Dam failures can result from one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam
- Deliberate acts of sabotage
- Structural failure of materials used in dam construction
- Movement and/or failure of the foundation supporting the dam
- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate maintenance and upkeep (FEMA 2013a)

Location

According to the U.S. Army Corps of Engineers’ (USACE) National Inventory of Dams (NID), there are 5,132 dams in the State of Georgia, of which, 129 are located in Fulton County. This inventory only covers dams that meet minimum height and impoundment requirements and this total differs from information reported by the National Performance of Dams Program, which indicates that there are 86 dams in the County. Additionally, there are 11 NRCS watershed flood control structures located in northern Fulton. There are also numerous other dams and lakes distributed throughout the county that have varying degree of risk (217 total dams of various types have been identified in Fulton County). For the purpose of this Plan Update, the National Performance of Dams Program data provided inventory data. Table 5.5.-1 summarizes the number of dams and their hazard classifications in Fulton County.

Table 5.5-1. Number of Dams in Fulton County

County	High Hazard	Significant Hazard	Low Hazard	Unknown	Total
Fulton	17	3	90	23	133

Source: National Performance of Dams Program 2015

The State of Georgia has 357 watershed dams that provide flood control, water quality, recreation, and water supply benefits to residents of the state. However, this number does not include all the dams located within the State. According to the Georgia Watershed Dams Database, there are 10 watershed dams in Fulton County, of which, three are classified as Category I by the Georgia Safe Dams Act and seven are classified as Category II. The purpose of all these dams is for flood control. Figure 5.5-1 illustrates the locations of the dams that are found throughout Fulton County as per the National Inventory of Dams.



The Georgia Safe Dams Act has two categories for dams located in the state. The categories relate to the potential of property damage and/or loss of life should a dam fail. The categories are as follows:

- Category I – Improper operation or dam failure could result in probable loss of human life.
- Category II – Improper operation or dam failure would not be expected to result in probable loss of human life.

In addition to the Georgia Safe Dams Act Categories, the State also uses the Natural Resources Conservation Service Classifications for dams. These classifications are as follows:

- Class A - Dams located in rural or agricultural areas where failure may damage farm buildings, agricultural land, or township or country roads.
- Class B - Significant Hazard. Dams located in predominately rural or agricultural areas where failure may damage isolated homes, main highways or minor railroads, or cause interruption of use of service of relatively important public utilities.
- Class C - Dams located where failure may cause loss of life, serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads.

Previous Occurrences and Losses

In the State of Georgia, all of the major rivers are dammed at least once before leaving the boundaries. Also, numerous smaller dams, including agricultural dams, exist throughout the state. Therefore, the possibility of dam failure hazards exists throughout the state. The spatial extent of the dam failure event highly depends on the amount of water within the dammed reservoir and the downstream topography. Because of the high velocity of the water, flooding can strike beyond known floodplains (GEMA 2014).

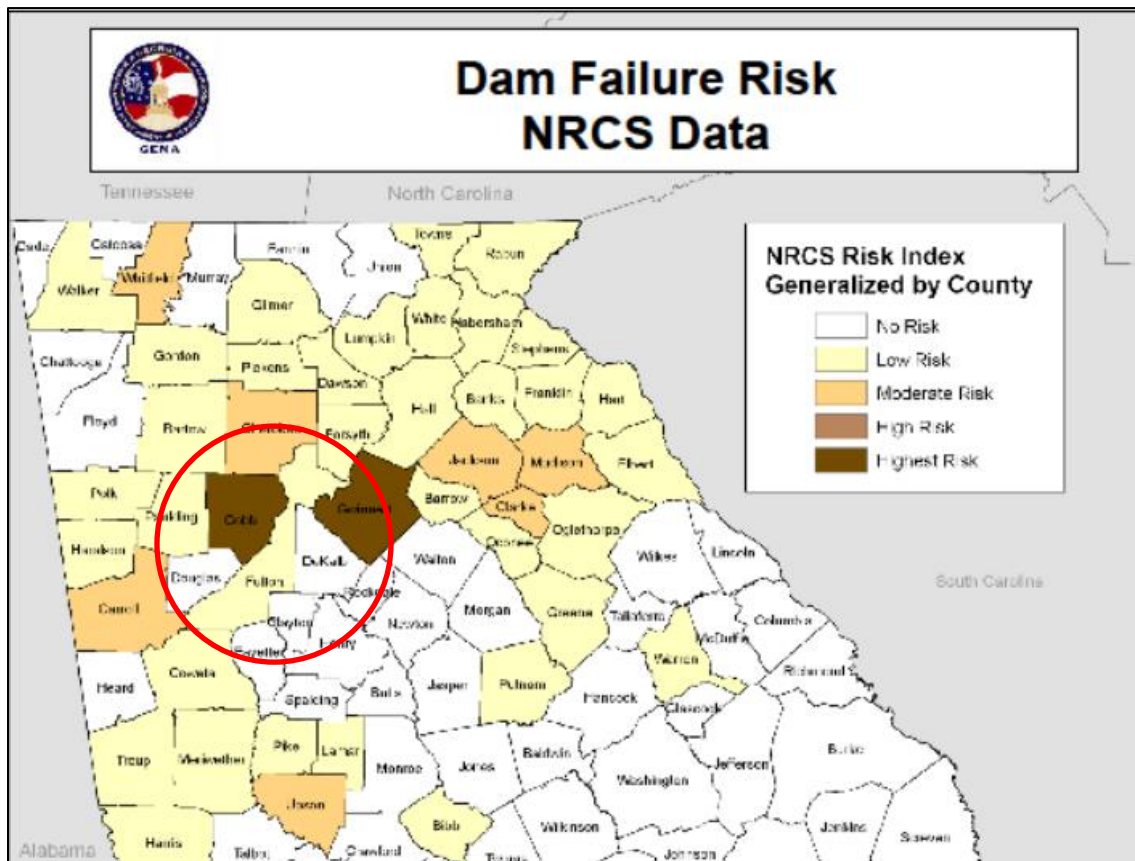
According to the Association of State Dam Safety Officials, there have been no recorded events of dam incidents in Fulton County. Between 1954 and 2016, the State of Georgia was included in one major disaster declaration for a dam/levee break. Fulton County was not included in the declaration. For this 2016 Plan Update, dam failure events occurring between January 1, 2010 and September 30, 2015 were researched; however, there were no dam failure events that impacted Fulton County during this time frame.

Please note that not all events that have occurred in Fulton County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based

Probability of Future Occurrences

Although there are no historical occurrences of dam failures in Fulton County, most of the jurisdictions with dams report that numerous dams in their jurisdictions are privately owned and are not being adequately maintained. Combined with the effects of other natural hazards such as heavy rainfall associated with severe weather or tropical systems, the added stress on dam systems indicate there is some probability of future dam failure events. GEMA determined in their 2014 Hazard Mitigation Strategy the total dam failure risk as calculated by NRCS was low (see Figure 5.5-2.). This was calculated by totaling the individual dam risk failure scores.

Figure 5.5-2. Dam Failure Risk in Georgia (NRCS Data)



Source:GEMA 2014

Note:The red circle indicates the approximate location of Fulton County.

Section 5.6, provides additional information on ranking the identified hazards of concern for Fulton County. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for dam failure in the County is considered ‘Possible’ (likely to occur within 100 years)

Climate Change Impacts

Dams are designed partly based on assumptions about a river’s flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the dam hydrograph. If the hydrograph changes, it is conceivable that the dam can lose some or its entire designed margin of safety, also known as freeboard. Loss of designed margin of safety may cause floodwaters more readily to overtop the dam or create unintended loads. Such situations could lead to a dam failure.

A changing climate has the potential to intensify rains and storms, damaging infrastructure, and causing injury, illnesses and death. Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. More intense events may increase the failure probability of low, significant and under-designed high hazard dams. The percentage of precipitation falling in very heavy events has increased by 27%



across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).

5.5.1.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. For the dam failure hazard, dam failure inundation areas are identified as the hazard areas. The following text evaluates and estimates the potential impact of dam failures for Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

As discussed above, dam failure events may occur suddenly, without warning, or during normal operating conditions. Additionally, events can occur as a result of a natural hazard event, including severe weather, earthquakes, landslides, and flooding. The direct and indirect losses associated with dam failures include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure and stress on community resources. The warning time for a dam failure event is often limited, which contributes to the direct and indirect losses.

Data and Methodology

Dam failure inundation maps and downstream hazard areas are considered sensitive information and were not available to conduct a quantitative risk assessment. The following discusses the County's vulnerability to the hazard in a qualitative nature.

Impact on Life, Health and Safety

The entire population residing within a dam failure inundation zone is considered exposed and vulnerable to an event. The potential for loss of life is affected by the capacity and number of evacuation routes available to populations living within these areas. Those most at risk include the economically disadvantaged and the population over the age of 65; economically disadvantaged populations are likely to evaluate their risk and make the decision to evacuate based upon the net economic impact to their family, while elderly populations are likely to seek or need medical attention. The availability of medical attention may be limited due to isolation during a flood event and other difficulties in evacuating.

Impact on General Building Stock, Critical Facilities and Economy

All buildings and infrastructure located in the dam failure inundation zone are considered exposed and vulnerable. Property located closest to the dam inundation area has the greatest potential to experience the largest, most destructive surge of water. All transportation infrastructure in the dam failure inundation zone is vulnerable to damage and potentially cutting off evacuation routes, limiting



emergency access, and creating isolation issues. Utilities such as overhead power lines, cable and phone lines could also be vulnerable. Loss of these utilities could create additional isolation issues for the inundation areas.

Dam failure can cause severe downstream flooding and may transport large volumes of sediment and debris, depending on the magnitude of the event. Widespread damage to buildings and infrastructure affected by an event would result in large costs to repair these locations. In addition to physical damage costs, businesses can be closed while flood waters retreat and utilities are returned to a functioning state.

Effect of Climate Change on Vulnerability

As discussed above, climate change can have great impacts upon the functionality of dams in the County. Dams are constructed based on assumptions about a river's flow, which is expressed as a hydrograph. Changes in precipitation will alter surface and groundwater flow, which will directly affect riverine flow. Climate change could cause these dams to become obsolete.

Change of Vulnerability

Overall, the County's vulnerability has not changed and the entire County will continue to be exposed and vulnerable to dam failure events, especially those located within or near flood hazard areas.

Future Growth and Development

As discussed in Chapter 3 and the annexes areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the dam failure hazard if located within an inundation area. Please refer to the specific areas of development indicated in tabular form and/or on the hazard maps included in the jurisdictional annexes.

Additional Data and Next Steps

Because of the sensitive nature of the dam failure inundation zones, potential losses have not been quantified and presented in this plan. To estimate potential losses to population, buildings, critical facilities and infrastructure, dam inundation areas and depths of flooding may be used to generate depth grids. HAZUS-MH may be used to estimate potential losses for the County and participating municipalities.

5.5.2 Drought

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the drought hazard in Fulton County.

2016 Specific Plan Update Changes for Drought

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the drought hazard is discussed. This section provides a description of the drought hazard.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- U.S. 2010 Census data was incorporated, where appropriate.



- A vulnerability assessment was conducted for the drought hazard and it now directly follows the hazard profile.

5.5.2.1 Profile

Hazard Description

As defined by the National Weather Service (NWS), drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. It is a normal, recurrent feature of climate that occurs in virtually all climate zones, from very wet to very dry. Drought is a temporary aberration from normal climatic conditions and can vary significantly from one region to another. Human factors, such as water demand and water management, can exacerbate the impact that a drought has on a region. There are four different ways that drought can be defined or grouped:

- Meteorological drought is a measure of departure of precipitation from normal. It is defined solely on the relative degree of dryness. Due to climatic differences, what might be considered a drought in one location of the country may not be a drought in another location.
- Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced ground water or reservoir levels, and other parameters. It occurs when there is not enough water available for a particular crop to grow at a particular time. Agricultural drought is defined in terms of soil moisture deficiencies relative to water demands of plant life, primarily crops.
- Hydrological drought is associated with the effects of periods of precipitation shortfalls (including snowfall) on surface or subsurface water supply. It occurs when these water supplies are below normal. It is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Socioeconomic drought is associated with the supply and demand of an economic good with elements of meteorological, hydrological, and agricultural drought. This differs from the aforementioned types of drought because its occurrence depends on the time and space processes of supply and demand to identify or classify droughts. The supply of many economic goods depends on weather (for example water, forage, food grains, fish, and hydroelectric power). Socioeconomic drought occurs when the demand for an economic good exceeds supply as a result of a weather-related shortfall in water supply (National Drought Mitigation Center 2012).

Scientists at this time do not know how to predict drought more than one month in advance for most locations. Predicting drought depends on the ability to forecast precipitation and temperature. Anomalies of precipitation and temperature may last from several months to several decades. How long they last depends on interactions between the atmosphere and the oceans, soil moisture and land surface processes, topography, internal dynamics, and the accumulated influence of weather systems on the global scale (NDMC Date Unknown).

Location

Climate divisions are regions within a state that are climatically homogenous. The National Oceanic and Atmospheric Administration (NOAA) has divided the U.S. into 359 climate divisions. The boundaries of these divisions typically coincide with the county boundaries, except in the western U.S., where they are based largely on drainage basins (U.S. Energy Information Administration, Date Unknown). According to NOAA, Georgia is made up of nine climate divisions: Northwest,



North Central, Northeast, West Central, Central, East Central, Southwest, South Central and Southeast; Fulton County is located in the North Central Climate Division (NOAA, 2012).

Since all location and geographic areas of Fulton County are dependent on adequate water supply, droughts affect all areas of Fulton County. Some areas, such as agricultural areas found in the Chattahoochee Hills area, may be more vulnerable to the effects of drought. High density, urban areas that demand large amounts of water may also be affected (Fulton County HMP 2010).

Extent

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts (NOAA Date Unknown). Droughts are not usually associated with direct impacts on people or property, but they can have significant impacts on agriculture, which can impact people indirectly. When measuring the severity of droughts, analysts typically look at economic impacts on a planning area.

Drought Indices

Drought can be measured through a variety of drought indices. The various scientific methodologies can be found in detail, along with the advantages and disadvantages for each at the NDMC's website at: <http://drought.unl.edu/MonitoringTools/DroughtMonitoringintheUS.aspx>

Previous Occurrences and Losses

Agriculture-related drought disasters are quite common. One-half to two-thirds of the counties in the U.S. have been designated as disaster areas in each of the past several years. The USDA Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. Between 2012 and 2015, Georgia has been included in 30 USDA drought declarations. Fulton County has been included in five of these declarations related to drought.

Between 1954 and 2015, the State of Georgia experienced one FEMA declared drought-related emergency (EM) classified as a drought on July 20, 1977 (EM-3044). Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Fulton County was included in this declaration (FEMA 2015). According to data from the United States Drought Monitor, between 2010 and 2015, all of Fulton County was abnormally dry for 113 weeks; moderate drought for 57 weeks; and severe drought for 21 weeks. In November 2012, half of the County was in exceptional drought. And a portion of the County was in extreme drought in December 2012.

For this 2016 Plan Update, known drought events that have impacted Fulton County between 2010 and 2015 are identified in Table 5.5-2. For events that occurred prior to 2010, see the 2010 Fulton County HMP. Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that all sources may not have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.



Table 5.5-2 Drought Incidents in Fulton County, 2010 to 2015

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
November 2010	Drought	N/A	N/A	The USDA designated 151 counties in Georgia as primary natural disaster areas due to damages and losses caused by a recent drought. This included Fulton County.
April – September 2011	Drought	N/A	N/A	A drought began on April 15 th and continued through September in the State of Georgia. Much of the southern half of the state was in extreme drought with the northern areas classified as being in minor to moderate drought. Rainfall deficits by the end of August ranged from five to 10 inches below normal throughout many central and northern counties. Fulton County was declared a primary natural disaster area due to excessive heat and drought. Crop loss was estimated to be at least 30%. The USDA designated 150 counties in Georgia, including Fulton County, as primary natural disaster areas due to damages and losses caused by a recent drought.
December 2012	Drought	N/A	N/A	This drought in Georgia caused significant problems for farmers in central Georgia and other parts of the state. In early December, approximately 14% of the state was experiencing exceptional drought. More than half of the state received less than half its usual rainfall in September, October and November. This caused stream flows to drop near-record levels and expanding the areas affected by drought.

Source: NOAA-NCDC 2015; FEMA 2015; Drought Reporter – University of Nebraska-Lincoln 2015
 FEMA Federal Emergency Management Agency
 NCDC National Climatic Data Center
 NOAA National Oceanic and Atmospheric Administration

Probability of Future Occurrences

Based upon risk factors for and past occurrences, it is likely that droughts will occur across the State of Georgia and Fulton County in the future. In addition, as temperatures increase (see below climate change impacts), the probability for future droughts will likely increase as well. Therefore, it is likely that droughts will occur throughout the County of varied severity in the future.

Due to the recent drought events that have affected the state, and in anticipation of continued growth that will affect the demand for water, the State of Georgia has recognized the need for drought awareness and water conservations actions. On June 2, 2010, the Governor signed into effect the “Water Stewardship Act” which is designed to help secure water supplies by preparing for future growth, protecting water-sensitive industries, and equipping the State to navigate future droughts.

It is estimated that Fulton County will continue to experience direct and indirect impacts of drought and its impacts on occasion, with the secondary effects causing potential disruption or damage to



agricultural activities and creating shortages in water supply within communities. The table below shows the probability of future drought events for Fulton County.

Table 5.5-3 Probability of Future Occurrence of Drought Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years)	Probability of Event in Any Given Year	% Chance of Occurrence in Any Given Year
Drought	43	0.66	1.5	0.67	67%

Source: NOAA-NCDC 2015

Section 5.6 provides additional details for ranking the identified hazards of concern for Fulton County based on Planning Committee input. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records the probability of a drought in Fulton County is likely (one who’s impact has a chance to occur within the next ten years) but input from the Planning Committee suggests the probability of experiencing impacts from the occurrence of drought in Fulton County is considered ‘possible’ (Ones whose potential impact is 1%-10%).

Climate Change Impacts

Water resources are important to both society and ecosystems. Humans depend on reliable, clean supply of drinking water to sustain their health. Water is also needed for agriculture, energy production, navigation, recreation, and manufacturing. These water uses put pressure on water resources and are most likely to be worsened by climate change in the future.

In the State of Georgia, average temperatures are already increasing, along with the frequency of extreme heat, storms and dry summers. With the projected rise in temperatures, droughts will become more frequent which may lead to a depletion in drinking water supplies, lower crop yields, and worsening water quality. Approximately 87% of the State's counties face a higher risk of water shortages by mid-century as a result of the climate changing.

Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. In addition to the increase in temperature, areas experiencing moderate to severe drought have also increased in the southeastern United States and Georgia. This part of the country could also experience more intense heat waves. These changes may result in an increase in droughts, decreased crop production and increased heat-related injuries and deaths.

Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F. Since 1970, droughts in Georgia have increased between 12% and 14%. Between 2000 and 2009, Fulton County had over 33 days each year of extreme low water flow. As temperatures rise due to global climate change, more moisture evaporates from land and water, leaving less water behind. Some places are getting more rain or snow to make up for it, but other places are getting less (U.S. EPA 2015). With these changes, the population of Georgia will face an increased probability of droughts.



5.5.2.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the drought hazard, all of Fulton County has been identified as exposed. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Chapter 3), are exposed and potentially vulnerable to a drought. The following text evaluates and estimates the potential impact of the drought hazard on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities,
 - (4) economy, and
 - (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Atlanta-Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

The entire County is vulnerable to drought. However, areas at particular risk are areas used for agricultural purposes (farms and cropland), open/forested land vulnerable to the wildfire hazard, densely-populated areas where communities rely on surface water supplies (above ground reservoirs) for industrial, commercial, and domestic purposes, and certain areas where elderly, impoverished or otherwise vulnerable populations are located. Vulnerable populations could be particularly susceptible to the drought hazard and cascading impacts due to age, health conditions, and limited ability to mobilize to shelter, cooling and medical resources.

Droughts conditions can cause a shortage of water for human consumption and reduce local fire-fighting capabilities. As noted in Table 5.5-3, most of the County's water suppliers use surface water for drinking water supplies, which will suffer drought impacts more quickly than groundwater resources. Fulton County is located within the northwestern region of the state, which according to the 2014 State of Georgia Hazard Mitigation Strategy, is more susceptible to the onset of a drought event due to the preexisting climatic conditions.

Data and Methodology

Data was collected from USDA, EPA, NOAA-NCDC, Fulton County, and the Planning Committee. Insufficient data was available to model the long-term potential impacts of a drought on the County. Over time, additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below.

Impact on Life, Health and Safety

Droughts may have devastating effects on communities and the surrounding environment. The amount of devastation depends on the strength and duration of a drought event. One impact of drought is its impact on water supply. When drought conditions persist with little to no relief, water restrictions may be put into place by local or state governments. These restrictions can include



watering of lawns, washing cars, etc. In exceptional drought conditions, watering of lawns and crops may not be an option. If crops are not able to receive water, farmland will dry out and crops will die. This can lead to crop shortages, which, in turn, increases the price of food.

Droughts also have the potential to lead to water pollution due to the lack of rain water to dilute any chemicals in water sources. Contaminated water supplies may be harmful to plants and animals. If water is not getting into the soils, the ground will dry up and become unstable. Unstable soils increase the risk of erosion and loss of top soil.

The impacts on public health from drought can be severe which includes increase in heat-related illnesses, waterborne illnesses, recreational risks, limited food availability, and reduced living conditions. Those individuals who rely on water, such as farmers, may experience financial-related stress. Decreased amounts and quality of water during drought events have the potential to reduce the availability of electricity (hydropower, coal-burning and nuclear) (State Climate Office of North Carolina 2015).

Drought conditions can affect people’s health and safety including health problems related to low water flows and poor water quality; and health problems related to dust. Droughts also have the potential to lead to loss of human life (NDMC 2014). Other possible impacts to health due to drought include increased recreational risks; effects on air quality; diminished living conditions related to energy, air quality, and sanitation and hygiene; compromised food and nutrition; and increased incidence of illness and disease. Health implications of drought are numerous. Some drought-related health effects are short-term while others can be long-term (CDC 2012).

Drought affects groundwater sources, but generally not as quickly as surface water supplies. Groundwater supplies generally take longer to recover. Reduced precipitation during a drought means that groundwater supplies are not replenished at a normal rate. This can lead to a reduction in groundwater levels and problems such as reduced pumping capacity or wells going dry. Shallow wells are more susceptible than deep wells. Reduced replenishment of groundwater affects streams also. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation and after snowmelt ends. Reduced groundwater levels mean that even less water will enter streams when steam flows are lowest. The following table provides the drinking water suppliers for Fulton County.

Table 5.5-4. Drinking Water Suppliers in Fulton County

Name	Population Served	Source Type
Atlanta	650,000	Surface water
Atlanta-Fulton Co Water Res Commission	500,000*	Surface water
College Park	20,382	Surface water purchased
East Point	33,712	Surface water
Fairburn	13,693	Surface water purchased
Hapeville	5,385	Surface water purchased



Name	Population Served	Source Type
Mountain Park	798	Surface water purchased
North Fulton County	172,533	Surface water purchased
Palmetto	3,965	Surface water
Roswell	14,300	Surface water
Union City	18,636	Surface water purchased
Chestnut Hill Academy	110	Groundwater

Source: EPA 2015

*The National Council for Public Private Partnerships

As previously stated, drought conditions can cause shortages in water for human consumption. Droughts can also lead to reduced local firefighting capabilities. The drought hazard is a concern for Fulton County because the County’s water is supplied by both surface water and groundwater. Surface water supplies are affected more quickly during droughts than groundwater sources.

Impact on General Building Stock

No structures are anticipated to be directly affected by a drought event. However, droughts contribute to conditions conducive to wildfires and reduce fire-fighting capabilities. Risk to life and property is greatest in those areas where forested areas adjoin urbanized areas (high density residential, commercial and industrial) also known as the wildfire urban interface (WUI). Therefore, all assets in and adjacent to, the WUI zone, including population, structures, critical facilities, lifelines, and businesses are considered vulnerable to wildfire. Refer Section 5.5.10 for the Wildfire risk assessment.

Impact on Critical Facilities

Water supply facilities may be affected by short supplies of water. As mentioned, drought events generally do not impact buildings; however, droughts have the potential to impact agriculture-related facilities and critical facilities that are associated with potable water supplies. Also, those critical facilities in and adjacent to the WUI zone are considered vulnerable to wildfire.

Impact on the Economy

Drought can produce a range of impacts that span many sectors of an economy and can reach beyond an area experiencing physical drought. This exists because water is integral to our ability to produce goods and provide services. Direct impacts of drought include reduced crop yield, increased fire hazard, reduced water levels, and damage to wildlife and fish habitat. The consequences of these impacts illustrate indirect impacts that include: reduction in crop, rangeland, and forest productivity that may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues due to reduced expenditures, increased crime, foreclosures, migration, and disaster relief programs. The many impacts of drought can be listed as economic, environmental, or social.

Economic impacts occur in agriculture and related sectors because of the reliance of these sectors on surface and subsurface water supplies. Environmental impacts are the result of damage to plant and animal species, wildlife habitat, and air and water quality, forest and grass fires, degradation of



landscape quality, loss of biodiversity, and soil erosion. Social impacts involve public safety, health, conflicts between water users, reduced quality of life, and inequities in the distribution of impacts and disaster relief. A summary of potential impacts associated with drought are identified in Table 5.5-5. This table includes only some of the potential impacts of drought.

Table 5.5-5 Economic, Environmental, and Social Impacts of Drought

(i) Economic	(ii) Environmental	(iii) Social
Loss of national economic growth, slowing down of economic development	Increased desertification - damage to animal species	Food shortages
Loss of national economic growth, slowing down of economic development	Reduction and degradation of fish and wildlife habitat	Loss of human life from food shortages, heat, suicides, violence
Damage to crop quality, less food production	Lack of feed and drinking water	Mental and physical stress
Increase in food prices	Disease	Water user conflicts
Increased importation of food (higher costs)	Increased vulnerability to predation	Political conflicts
Insect infestation	Loss of wildlife in some areas and too many in others	Social unrest
Plant disease	Increased stress to endangered species	Public dissatisfaction with government regarding drought response
Loss from dairy and livestock production	Damage to plant species, loss of biodiversity	
Unavailability of water and feed for livestock which leads to high livestock mortality rates	Increased number and severity of fires	Inequity in the distribution of drought relief
Disruption of reproduction cycles (breeding delays or unfilled pregnancies)	Wind and water erosion of soils	Loss of cultural sites
Increased predation	Loss of wetlands	Reduced quality of life which leads to changes in lifestyle
Increased fire hazard - range fires and wildland fires	Increased groundwater depletion	Increased poverty
Damage to fish habitat, loss from fishery production	Water quality effects	Population migrations
Income loss for farmers and others affected	Increased number and severity of fires	
Unemployment from production declines	Air quality effects	
Loss to recreational and tourism industry		
Loss of hydroelectric power		
Loss of navigability of rivers and canals		



A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages and a higher cost for these resources (FEMA 2005). Industries that rely on water for business may be impacted the hardest (e.g., landscaping businesses). Even though most businesses will still be operational, they may be impacted aesthetically. These aesthetic impacts are most significant to the recreation and tourism industry. In addition, droughts in another area could impact the food supply/price of food for residents in the County.

When a drought occurs, the agricultural industry is most at risk in terms of economic impact and damage. During droughts, crops do not mature leading to a lessened crop yield, wildlife and livestock are undernourished, land values decrease, and ultimately there is financial loss to the farmer (FEMA, 1997).

A drought directly or indirectly impacts all people in affected areas. A drought can result in farmers not being able to plant crops or the failure of already planted crops. This results in loss of work for farm workers and those in related food processing jobs. Based on the 2012 Census of Agriculture, there were 187 farms in Fulton County, with 14,105 acres of total land in farms. The average farm size was 75 acres. Fulton County farms had a total market value of products sold of \$4.57 million in crop sales and \$1.29 million in livestock sales), averaging \$24,461 per farm. The Census indicated that 106 of farm operators reported farming as their primary occupation (USDA 2012). Table 5.5-6 shows the acreage of agricultural land exposed to the drought hazard.

Table 5.5-6 Agricultural Land in Fulton County in 2012

Number of Farms	Land in Farms (acres)	Total Cropland (acres)	Harvested Cropland (acres)	Irrigated Land (acres)
187	14,105	3,012	2,775	840

Source: USDA 2012

The 2012 Census of Agriculture for Fulton County indicated that the top crop items, by acres, in the County are forage land used for all hay and all haylage, grass silage, and green chop (1,442 acres), corn for grain (182 acres), vegetables harvested for sale (45 acres) (USDA 2012).

Future Growth and Development

As discussed in Chapter 3 and the annexes, areas targeted for future growth and development have been identified across Fulton County. Future growth could impact the amount of potable water available due to a drain on the available water resources. Other areas that could be impacted include agriculture and recreational facilities such as golf courses, farms, and nurseries. Areas targeted for potential future growth and development in the next five years have been identified across the County at the municipal level. Refer to the jurisdictional annexes of this HMP.

Effect of Climate Change on Vulnerability

Nearly every region in the country is facing some increased risk of seasonal drought. Climate change can significantly affect the sustainability of water supplies in the future. As parts of the United States get drier, the amount and quality of water available will likely decrease, impacting people’s health and food supplies. The Western United States has already been experiencing water



shortages due to severe dry-spells. With climate change, the entire country will likely face some level of drought. A report by the Natural Resources Defense Council (NRDC) found that 1,100 counties (one-third of all counties in the contiguous 48 states) face higher risks of water shortages by mid-century as a result of climate change. More than 400 of these counties will face extremely high risks of water shortages.

Change of Vulnerability

When examining the change in the County's vulnerability to drought events from the 2010 HMP to this update, it is important to look at each entity that is exposed and vulnerable. The total population across the County has continued to increase over the past few years, which will place a greater stress on the water supply during a drought event. In terms of the agricultural industry for Fulton County, there has been an 8.3% decrease in the total number of farms and a 9.3% decrease in total farmland area (USDA 2012).

Additional Data and Next Steps

For the Plan Update, any additional information regarding localized concerns and past impacts will be collected and analyzed. This data will be developed to support future revisions to the plan. Mitigation efforts could include building on existing Georgia, Fulton County, and local efforts.

5.5.3 Earthquake

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the earthquake hazard in Fulton County.

Specific 2016 Plan Update Changes for Earthquakes

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the earthquake hazard is discussed.
- New and updated figures from federal and state agencies are incorporated. 2010 U.S. Census data has been incorporated, where appropriate.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the earthquake hazard and it is included in this section.

5.5.3.1 Profile

Hazard Description

An earthquake is the sudden movement of the Earth's surface caused by the release of stress accumulated within or along the edge of the Earth's tectonic plates, a volcanic eruption, or by a manmade explosion (Federal Emergency Management Agency [FEMA] 2001; Shedlock and Pakiser 1997). Most earthquakes occur at the boundaries where the Earth's tectonic plates meet (faults); less than 10% of earthquakes occur within plate interiors. As plates continue to move and plate boundaries change geologically over time, weakened boundary regions become part of the interiors of the plates. These zones of weakness within the continents can cause earthquakes in response to stresses that originate at the edges of the plate or in the deeper crust (Shedlock and Pakiser 1997).

According to the U.S. Geological Society (USGS) Earthquake Hazards Program, an earthquake hazard is any disruption associated with an earthquake that may affect residents' normal activities.



This includes surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches; each of these terms is defined below:

- **Surface faulting:** Displacement that reaches the earth's surface during a slip along a fault. Commonly occurs with shallow earthquakes—those with an epicenter less than 20 kilometers.
- **Ground motion (shaking):** The movement of the earth's surface from earthquakes or explosions. Ground motion or shaking is produced by waves that are generated by a sudden slip on a fault or sudden pressure at the explosive source and travel through the Earth and along its surface.
- **Landslide:** A movement of surface material down a slope.
- **Liquefaction:** A process by which water-saturated sediment temporarily loses strength and acts as a fluid, like the wet sand near the water at the beach. Earthquake shaking can cause this effect. Liquefaction susceptibility is determined by the geological history, depositional setting, and topographic position of the soil (Stanford 2003). Liquefaction effects may occur along the shorelines of the ocean, rivers, and lakes and they can also happen in low-lying areas away from water bodies in locations where the ground water is near the earth's surface. Tectonic Deformation: A change in the original shape of a material caused by stress and strain.
- **Tsunami:** A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major sub-marine slides, or exploding volcanic islands.
- **Seiche:** The sloshing of a closed body of water, such as a lake or bay, from earthquake shaking (USGS 2012a).

Location

There are no active faults within or near the State of Georgia. Distinct inactive faults are known within the State north of the Columbus, Macon, and Augusta fall line and running generally northeast-southwest. One of these is the Brevard Fault Line which last moved 185 million years ago and is not associated with ongoing seismic activity in Georgia (State of Georgia HMP 2014). The State of Georgia's greatest risks for earthquakes occur in three different seismic areas:

- New Madrid Fault Zone – centered on the Mississippi River north of Memphis, Tennessee
- Easter Tennessee Seismic Belt – runs west of the Appalachians between Knoxville, Tennessee and northeastern Alabama
- Charleston, South Carolina

Since all locations and geographic areas of Fulton County are within a potential seismic area, earthquakes affect all areas of Fulton County. Some areas such as high density, urban areas may be more vulnerable to the effects of earthquakes, particularly any buildings that were not constructed to withstand seismic activity (Fulton County HMP 2010).

Extent

An earthquake's magnitude and intensity are used to describe the size and severity of the event. Magnitude describes the size at the focus of an earthquake and intensity describes the overall felt severity of shaking during the event. The earthquake's magnitude is a measure of the energy released at the source of the earthquake and is expressed by ratings on the Richter scale and/or the moment magnitude scale. The Richter scale measures magnitude of earthquakes and has no upper limit; however, it is not used to express damage (USGS 2012c). The Richter scale is not commonly used anymore, as it has been replaced by the moment magnitude scale (MMS) which is a more accurate measure of the earthquake size (USGS 2012c). Table 5.5-7 presents the Richter scale



magnitudes and corresponding earthquake effects, followed by the description of the Modified Mercalli Intensity MMI scale.

Table 5.5-7 Richter Magnitude Scale

Richter Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but causes only minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can totally destroy communities near the epicenter

Source: Michigan Tech University Date Unknown

The MMS has replaced the Richter scale and is used to describe the size of an earthquake. It is based on the seismic moment and is applicable to all sizes of earthquakes (USGS 2012d). The MMS uses the following classifications of magnitude:

- Great—Mw > 8
- Major—Mw = 7.0 - 7.9
- Strong—Mw = 6.0 - 6.9
- Moderate—Mw = 5.0 - 5.9
- Light—Mw = 4.0 - 4.9
- Minor—Mw = 3.0 - 3.9
- Micro—Mw < 3

The intensity of an earthquake is based on the observed effects of ground shaking on people, buildings, and natural features, and varies with location. The Modified Mercalli (MMI) scale expresses intensity of an earthquake and describes how strong a shock was felt at a particular location in values. Table 5.5-8 summarizes earthquake intensity as expressed by the Modified Mercalli scale. Table 5.5-9 displays the MMI scale and its relationship to the areas peak ground acceleration.

Table 5.5-8 Modified Mercalli Intensity Scale

Mercalli Intensity	Shaking	Description
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like



Table5.5-8 Modified Mercalli Intensity Scale

Mercalli Intensity	Shaking	Description
		heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: USGS 2014

Table5.5-9 Modified Mercalli Intensity and PGA Equivalents

Modified Mercalli Intensity	Acceleration (%g) (PGA)	Perceived Shaking	Potential Damage
I	< .17	Not Felt	None
II	.17 – 1.4	Weak	None
III	.17 – 1.4	Weak	None
IV	1.4 – 3.9	Light	None
V	3.9 – 9.2	Moderate	Very Light
VI	9.2 – 18	Strong	Light
VII	18 – 34	Very Strong	Moderate
VIII	34 – 65	Severe	Moderate to Heavy
IX	65-124	Violent	Heavy
X	>124	Extreme	Very Heavy

Source: Freeman et al. (Purdue University) 2004

Note: PGA Peak Ground Acceleration



Most damage and loss caused by an earthquake is directly or indirectly the result of ground shaking. Modern intensity scales use terms that can be physically measured with seismometers, such as the acceleration, velocity, or displacements (movement) of the ground. The most common physical measure is peak ground acceleration (PGA). During an earthquake when the ground is shaking, it also experiences acceleration. The PGA is the highest increase in velocity recorded by a particular station during an earthquake. It is what is experienced by a particle on the ground (USGS 2015).

Unlike the Richter and MMI scales, the PGA measures how hard the earth shakes at a given location. PGA is measured by instruments such as accelerographs. PGA is expressed as a percent acceleration force of gravity (%g). For example, 1.0%g PGA in an earthquake (an extremely strong ground motion) means that objects accelerate sideways at the same rate as if they had been dropped from the ceiling. Damage levels experienced in an earthquake vary with the intensity of ground shaking and with the seismic capacity of structures, as noted in Table 5.5-8 and 5.5-9.

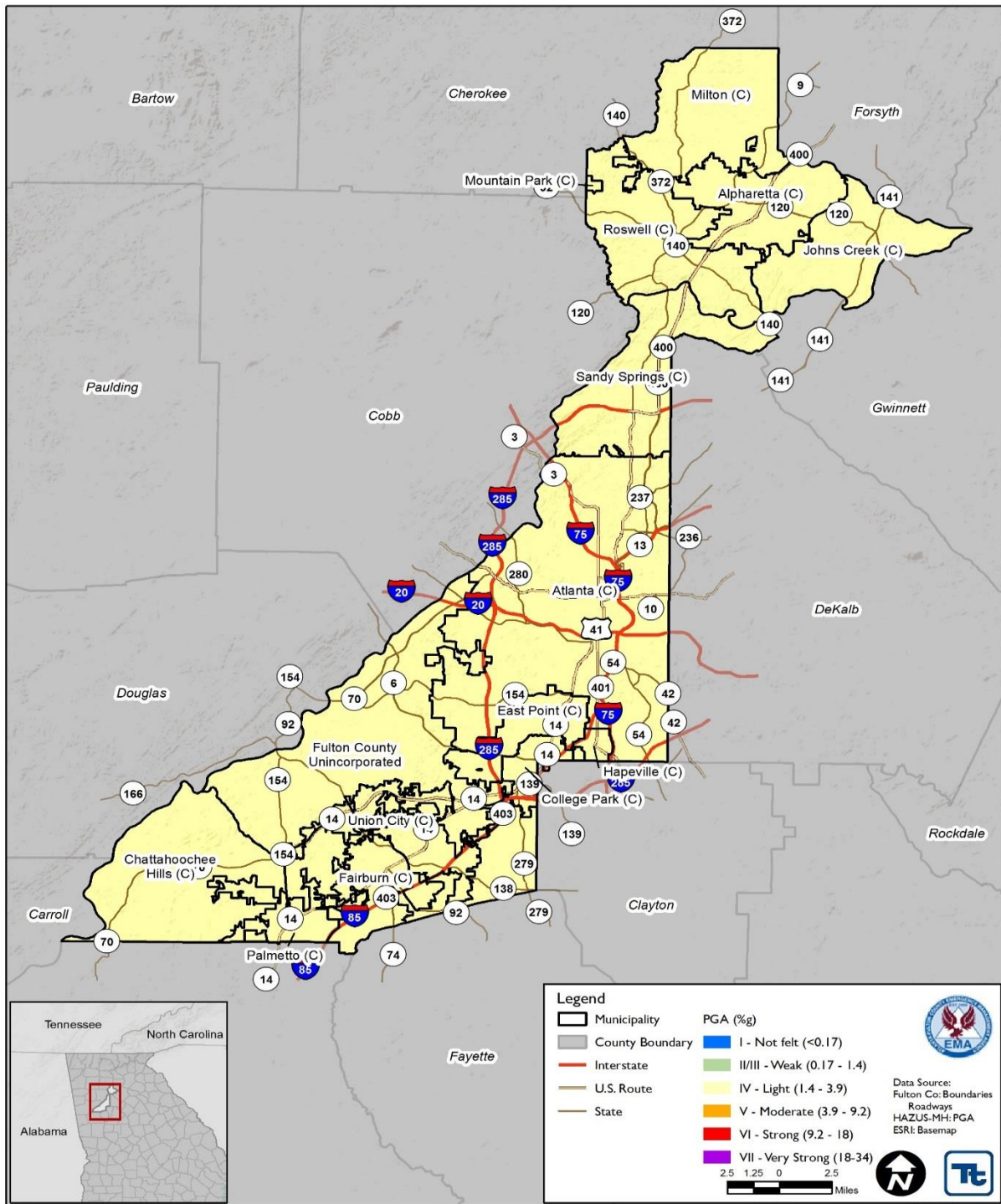
National maps of earthquake shaking hazards have been produced since 1948. They provide information essential to creating and updating the seismic design requirements for building codes, insurance rate structures, earthquake loss studies, retrofit priorities and land use planning used in the U.S. Scientists frequently revise these maps to reflect new information and knowledge. Buildings, bridges, highways and utilities built to meet modern seismic design requirements are typically able to withstand earthquakes better, with less damages and disruption. After thorough review of the studies, professional organizations of engineers update the seismic-risk maps and seismic design requirements contained in building codes (Brown et al., 2001).

The USGS updated the National Seismic Hazard Maps in 2014, which superceded the 2008 maps. New seismic, geologic, and geodetic information on earthquake rates and associated ground shaking were incorporated into these revised maps. The 2014 map represents the best available data as determined by the USGS. According to the data, Fulton County has a PGA between 3%g and 7%g. (USGS 2014). The 2014 PGA map can be found at <http://earthquake.usgs.gov/hazards/products/conterminous/2014/2014pga10pct.pdf>. A copy is also included in Appendix D - Maps.

A probabilistic assessment was conducted for the 100-, 500- and 2,500-year mean return periods (MRP) in HAZUS-MH 2.1 to analyze the earthquake hazard for Fulton County. The HAZUS analysis evaluates the statistical likelihood that a specific event will occur and what consequences will occur. Figure 5.5-3 through Figure 5.5-5 illustrates the geographic distribution of PGA (g) across the County or 100-, 500- and 2,500-year MRP events by Census-tract.



Figure 5.5-3 Peak Ground Acceleration 100-Year Mean Return Period for Fulton County

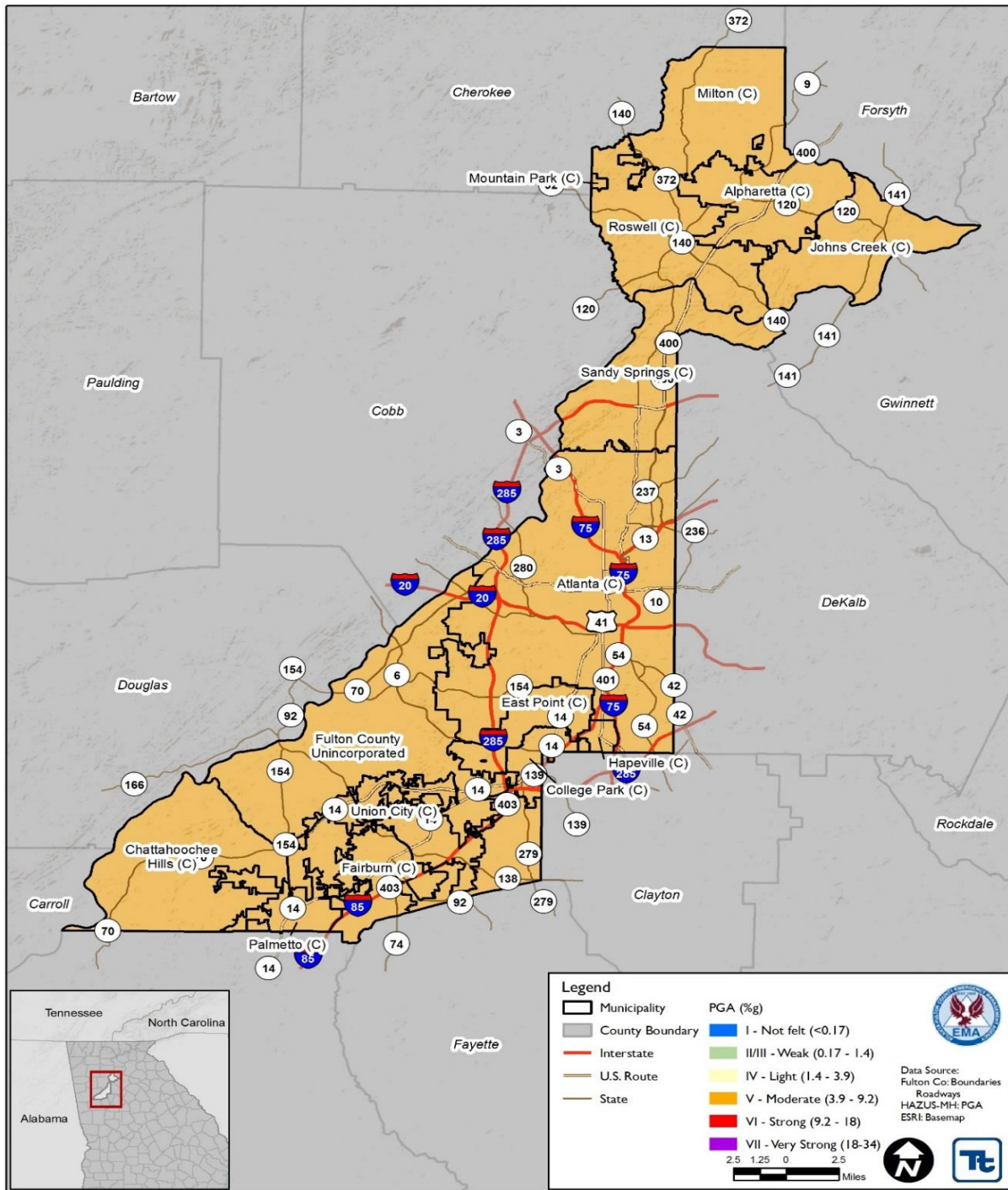


Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 100-year MRP is 2.0-2.6



Figure 5.5-4 Peak Ground Acceleration 500-Year Mean Return Period for Fulton County

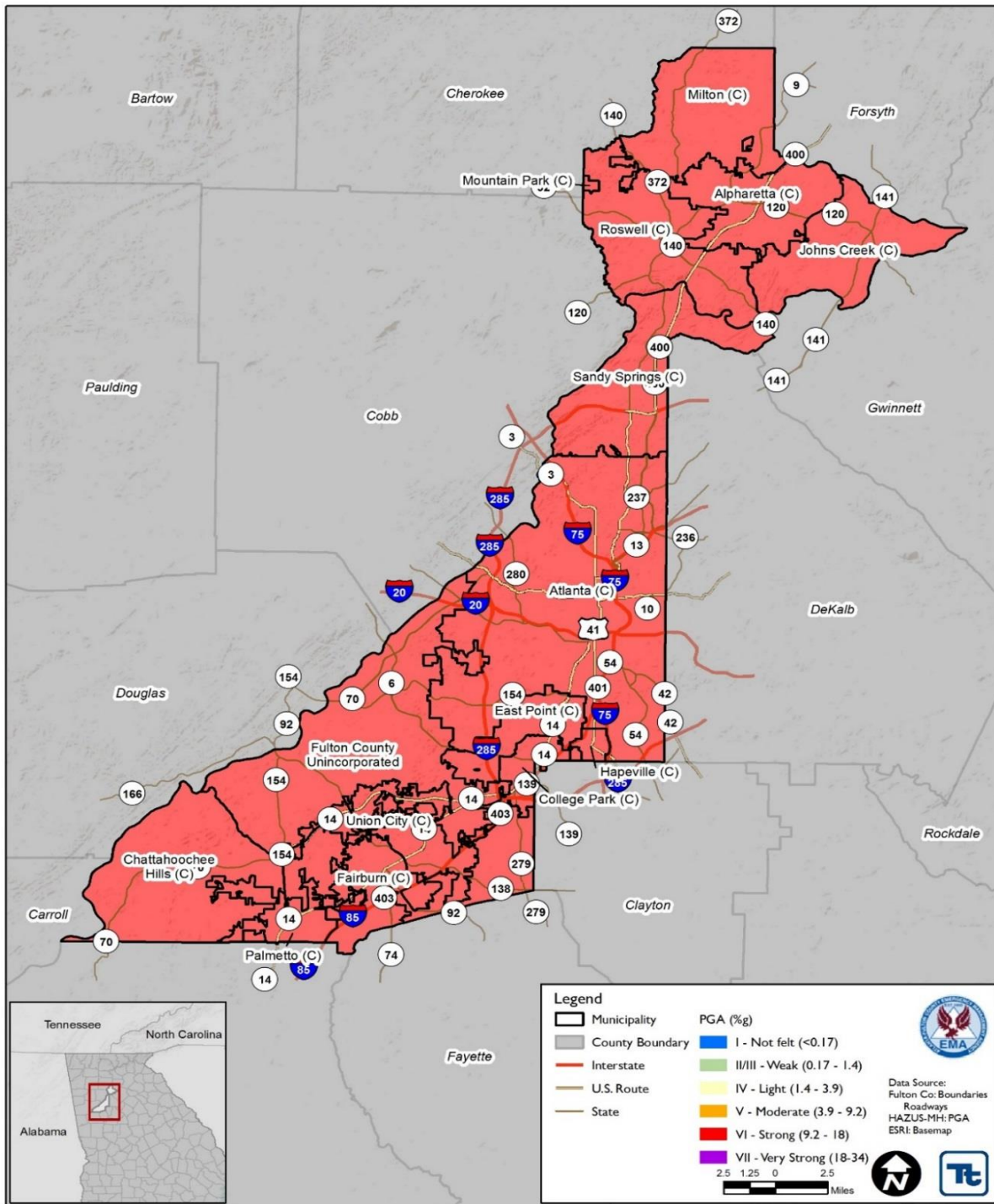


Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 500-year MRP is 4.97-6.58



Figure 5.5-5. Peak Ground Acceleration 2,500-Year Mean Return Period for Fulton County



Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 2,500-year MRP is 10.8-15.3



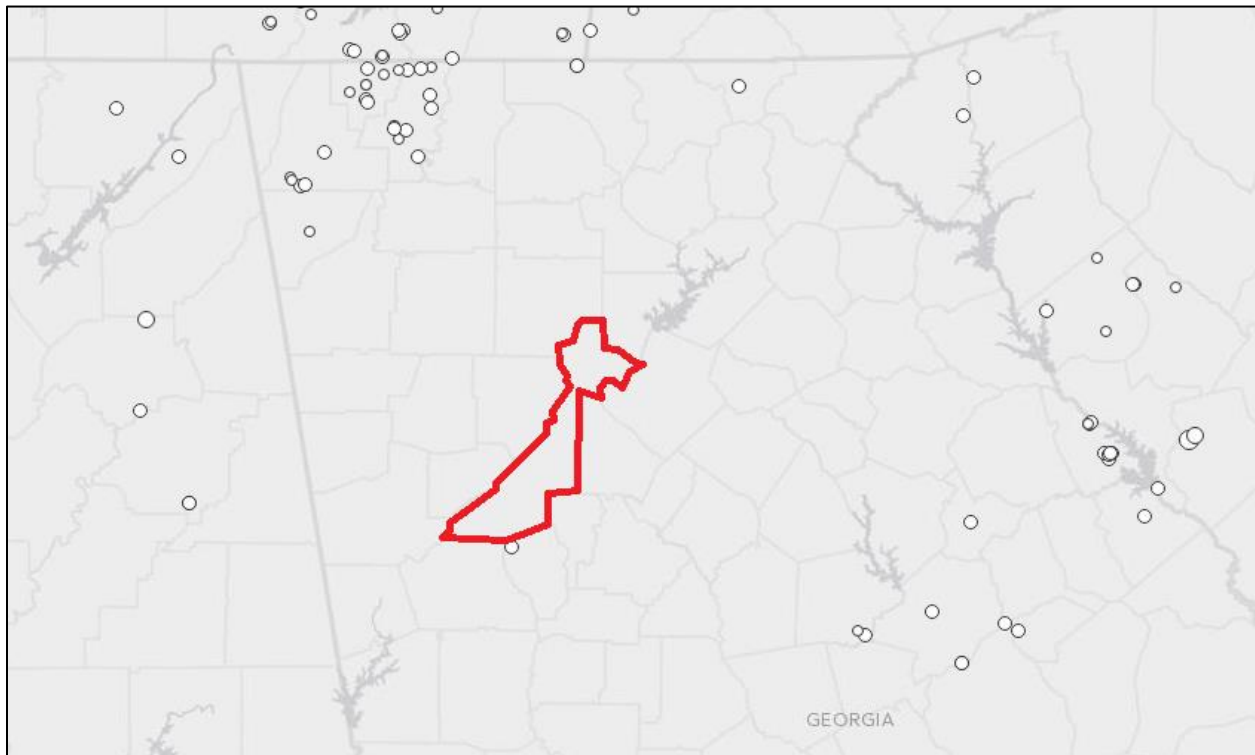
Previous Occurrences and Losses

Historically, there have been no major earthquakes in Georgia or Fulton County. However, the State has been seismically active with minor to light earthquakes occurring within the State. None of these events occurring in the State have had their epicenters in Fulton County, but some of these events have affected Fulton County.

For this 2016 Plan Update, known earthquake events that have impacted Fulton County or that have had its epicenter in Fulton County, between 2010 and 2015 are identified in Table 5.5-10. The State of Georgia has not been included in any FEMA major disaster (DR) or emergency (EM) declarations for earthquake events. For events that occurred prior to 2010, see the 2010 Fulton County HMP.

It is noted that not all events that have occurred in Fulton County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update. Figure 5.5-6 illustrates earthquake events where the epicenters were located in and around Fulton County. The figure shows that no earthquakes occurred in Fulton County and one occurred in the immediate area of Fulton County.

Figure 5.5-6 Earthquakes Occurring Around Fulton County, 2010 to 2015



Source: USGS 2015

Note: Fulton County is outlined in red. There have no earthquake epicenters in the County between 2010 and 2015.



Table 5.5-10. Earthquake Events in the Vicinity of Fulton County, 2010 to 2015

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
March 25, 2010	Earthquake (magnitude 2.5)	N/A	N/A	Georgia, USA
August 5, 2010	Earthquake (magnitude 2.2)	N/A	N/A	Georgia, USA
May 3, 2011	Earthquake (magnitude 2.6)	N/A	N/A	Epicenter in Mitchell, GA (Glascock County)
November 9, 2011	Earthquake (magnitude 2.7)	N/A	N/A	The epicenter for this earthquake was located in Dalton, GA (Whitefield County), north of Fulton County. There were no damages or injuries reported; however, there were numerous reports of people having felt the earthquake, including residents of Fulton County.
February 29, 2012	Earthquake (magnitude 1.7)	N/A	N/A	5km WNW of Dalton, Georgia
April 24, 2012	Earthquake (magnitude 2.3)	N/A	N/A	6km ENE of Appling, Georgia
June 2, 2012	Earthquake (magnitude 1.6)	N/A	N/A	10km NE of Varnell, Georgia
June 8, 2012	Earthquake (magnitude 2)	N/A	N/A	5km SSW of Ringgold, Georgia
June 8, 2012	Earthquake (magnitude 2)	N/A	N/A	6km SSW of Ringgold, Georgia
July 4, 2012	Earthquake (magnitude 2.7)	N/A	N/A	18km W of Sparks, Georgia
July 4, 2012	Earthquake (magnitude 2.7)	N/A	N/A	Georgia, USA
September 20, 2012	Earthquake (magnitude 2)	N/A	N/A	8km NW of Trion, Georgia
October 13, 2012	Earthquake (magnitude 2.5)	N/A	N/A	Georgia, USA
October 13, 2012	Earthquake (magnitude 2.5)	N/A	N/A	2km SE of McCaysville, Georgia
October 25, 2012	Earthquake (magnitude 2.4)	N/A	N/A	9km SSE of Dalton, Georgia
November 24, 2012	Earthquake (magnitude 1.4)	N/A	N/A	12km NW of Trion, Georgia
November 24, 2012	Earthquake (magnitude 1.7)	N/A	N/A	13km NW of Trion, Georgia



Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
December 2, 2012	Earthquake (magnitude 1.4)	N/A	N/A	7km NW of Trion, Georgia
December 23, 2012	Earthquake (magnitude 1.4)	N/A	N/A	8km WSW of Ringgold, Georgia
February 2, 2013	Earthquake (magnitude 2.5)	N/A	N/A	7km NNE of Varnell, Georgia
April 7, 2013	Earthquake (magnitude 2.5)	N/A	N/A	8km NNE of Lincolnton, Georgia
April 13, 2013	Earthquake (magnitude 1.9)	N/A	N/A	4km NE of Ringgold, Georgia
April 16, 2013	Earthquake (magnitude 2.2)	N/A	N/A	8km NNE of Lincolnton, Georgia
April 23, 2013	Earthquake (magnitude 1.9)	N/A	N/A	8km NNE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.1)	N/A	N/A	7km ESE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.2)	N/A	N/A	8km ESE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.8)	N/A	N/A	9km E of Lincolnton, Georgia
April 27, 2013	Earthquake (magnitude 2.2)	N/A	N/A	11km W of Gibson, Georgia
April 27, 2013	Earthquake (magnitude 2.3)	N/A	N/A	9km ESE of Lincolnton, Georgia
June 28, 2013	Earthquake (magnitude 2.1)	N/A	N/A	8km NNW of Trion, Georgia
August 13, 2013	Earthquake (magnitude 2.5)	N/A	N/A	6km N of Varnell, Georgia
November 19, 2013	Earthquake (magnitude 2.1)	N/A	N/A	1km N of Tyrone, Georgia
December 4, 2013	Earthquake (magnitude 2.2)	N/A	N/A	10km NE of Dalton, Georgia
December 12, 2013	Earthquake (magnitude 2)	N/A	N/A	5km W of Sparta, Georgia
February 14, 2014	Earthquake (magnitude 4.1)	N/A	N/A	This earthquake had its epicenter in South Carolina (seven miles west-northwest of Edgefield County). This was the second strongest earthquake to occur in South Carolina and it could be felt in South Carolina and Georgia. There were no reports of damages or injuries.



Chapter 5: Risk Assessment

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
August 9, 2014	Earthquake (magnitude 1.8)	N/A	N/A	however, bridge inspections were conducted. There were numerous of people having felt the earthquake in Fulton County, Georgia, including many reports of residents in the City of Atlanta.
August 9, 2014	Earthquake (magnitude 2.3)	N/A	N/A	9km NNW of McCaysville, Georgia
September 15, 2014	Earthquake (magnitude 2.2)	N/A	N/A	16km NNW of Evans, Georgia
November 22, 2014	Earthquake (magnitude 2.5)	N/A	N/A	7km ESE of Varnell, Georgia
January 3, 2015	Earthquake (magnitude 1.8)	N/A	N/A	2km SSE of Summerville, Georgia
March 5, 2015	Earthquake (magnitude 2.3)	N/A	N/A	4km S of Hiawassee, Georgia
May 11, 2015	Earthquake (magnitude 2.06)	N/A	N/A	3km E of Indian Springs, Georgia
May 18, 2015	Earthquake (magnitude 2.44)	N/A	N/A	0km NW of Crawfordville, Georgia
September 14, 2015	Earthquake (magnitude 1.81)	N/A	N/A	2km W of Ringgold, Georgia
September 14, 2015	Earthquake (magnitude 1.91)	N/A	N/A	2km W of Ringgold, Georgia
October 4, 2015	Earthquake (magnitude 1.96)	N/A	N/A	15km SE of Eatonton, Georgia

Source: FEMA 2015; USGS 2015

E East

Km Kilometers

HMP Hazard Mitigation Plan

N North

N/A Not Applicable/Not Available

S South

W West



Probability of Future Occurrences

Earthquakes cannot be predicted and may occur any time of the day or year. Since all of Fulton County is within a potential seismic area, earthquakes have the ability to affect all parts of the County. Some areas, such as high density, urban areas, may be more vulnerable to the affects. Earthquakes in the Fulton County area are typically deeper focus and are felt over a wider area, but not as strongly as some other types of earthquakes. Fulton County is likely to experience earthquake events about every 10 to 20 years. Major earthquakes are infrequent in the State and County and may occur only once every few hundred years or longer, but the consequences of major earthquakes would be very high.

According to the USGS, since 1950, Fulton County has had zero earthquakes with epicenters in the County; therefore, the County has very little probability of an earthquake occurring within the County in the future. However, the County may experience impacts from earthquakes occurring in surrounding areas.

In Section 5.4, the identified hazards of concern for Fulton County were listed. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for earthquake events in the County is 'unlikely'; however, the occurrence of earthquakes in the surrounding areas and their impacts on Fulton County is considered 'occasional' (hazard event is likely to occur within 100 years). See section 5.6 for additional information provided by the Planning Committee.

Climate Change Impacts

Providing projections of future climate change for a specific region is challenging. Some scientists feel that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity according to research into prehistoric earthquakes and volcanic activity. National Aeronautics and Space Administration (NASA) and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes.

Secondary impacts of earthquakes could be magnified by future climate change. Soils saturated by repetitive storms could experience liquefaction during seismic activity because of the increased saturation. Dams storing increased volumes of water from changes in the hydrograph could fail during seismic events. There are currently no models available to estimate these impacts.

5.5.3.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the earthquake hazard, the entire County is exposed to the hazard; therefore, all assets in Fulton County (population, structures, critical facilities and lifelines), as described in the County Profile (Chapter 3), are vulnerable. The following section includes an evaluation and estimation of the potential impact of the earthquake hazard on Fulton County including the following:

- Overview of vulnerability
- Data and methodology used for the evaluation



- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

Earthquakes usually occur without warning and can impact areas a great distance from their point of origin. The extent of damage depends on the density of population and building and infrastructure construction in the area shaken by the quake. Some areas may be more vulnerable than others based on soil type, the age of the buildings and building codes in place.

Ground shaking is the primary cause of earthquake damage to man-made structures. Damage can be increased when soft soils amplify ground shaking. Soils influence damage in different ways. One way is that soft soils amplify the motion of earthquake waves, producing greater ground shaking and increasing the stresses on structures. Another way is that loose, wet, sandy soils may lose strength and flow as a fluid when shaken, causing foundations and underground structures to shift and break (Stanford 2003).

Damage from earthquakes depends on the location, depth, and magnitude of the earthquake; the thickness and composition of soil and bedrock beneath the area in question; and the types of building structures. Soils influence damage in two ways. Soft soils amplify the motion of earthquake waves, producing greater ground shaking and increasing the stresses on structures. Loose, wet, sandy soils may lose strength and flow as a fluid when shaken (this is known as liquefaction). This causes foundations and underground structures to shift and break.

Data and Methodology

A probabilistic assessment was conducted for Fulton County for the 100-, 500- and 2,500-year MRPs in HAZUS-MH 2.2 to analyze the earthquake hazard and provide a range of loss estimates for Fulton County. The probabilistic method uses information from historic earthquakes and inferred faults, locations and magnitudes, and computes the probable ground shaking levels that may be experienced during a recurrence period by Census tract. The default assumption is a magnitude 7 earthquake for all return periods. National Earthquake Hazards Reduction Program (NEHRP) soil data was not available for Fulton County, so HAZUS-MH default data was used.

In addition to the probabilistic scenarios mentioned, an annualized loss run was conducted in HAZUS-MH 2.2 to estimate the annualized general building stock dollar losses for the County. The annualized loss methodology combines the estimated losses associated with ground shaking for eight return periods: 100, 250, 500, 750, 1000, 1500, 2000, 2500-year, which are based on values from the USGS seismic probabilistic curves. Annualized losses are useful for mitigation planning because they provide a baseline upon which to 1) compare the risk of one hazard across multiple jurisdictions and 2) compare the degree of risk of all hazards for each participating jurisdiction.

As noted in the HAZUS-MH Earthquake User Manual 'Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate



inventories of the built environment, demographics and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS Earthquake Model, possibly at best a factor of two or more. However, HAZUS' potential loss estimates are acceptable for the purposes of this HMP.

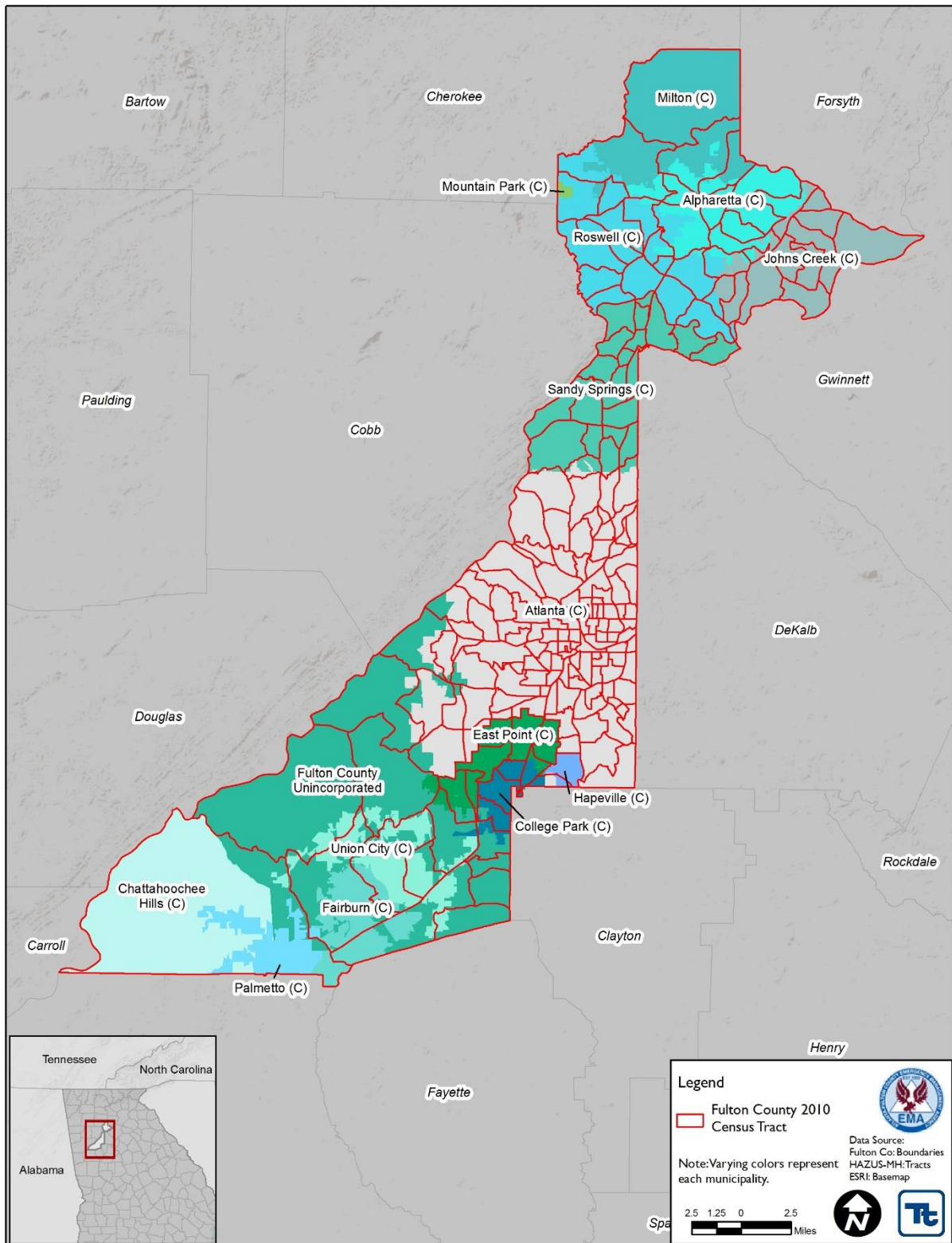
The HAZUS-MH earthquake model provides results at the U.S. Census-tract level only. Unfortunately, the U.S. Census tracts do not align with the municipal boundaries in Fulton County. Refer to Figure 5.5-7. In the figure, each municipality is represented by a different color to show where the tracts overlap. Therefore, HAZUS-MH modeling results are summarized at the County-level.

The occupancy classes available in HAZUS-MH 2.2 were condensed into the following categories (residential, commercial, industrial, agricultural, religious, government, and educational) to facilitate the analysis and the presentation of results. Residential loss estimates address both multi-family and single family dwellings. Impacts to critical facilities and utilities were also evaluated.

Data used to assess this hazard include data available in the HAZUS-MH 2.2 earthquake model and professional knowledge.



Figure 5.5-7 Fulton County 2010 Census Tract Boundaries and Cities





Impact on Life, Health and Safety

Overall, the entire population of Fulton County is exposed to an earthquake hazard event. The impact of earthquakes on life, health and safety is dependent upon the severity of the event. Risk to public safety and loss of life from an earthquake in Fulton County is minimal with higher risk occurring in buildings as a result of damage to the structure, or people walking below building ornamentation and chimneys that may be shaken loose and fall as a result of the quake.

Populations considered most vulnerable are those located in/near the built environment, particularly near unreinforced masonry construction. In addition, the vulnerable population includes the elderly (persons over the age of 65) and individuals living below the Census poverty threshold. These socially vulnerable populations are most susceptible, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. Refer to Chapter 3 (County Profile) for the vulnerable population statistics in Fulton County.

Residents may be displaced or require temporary to long-term sheltering due to the event. The number of people requiring shelter is generally less than the number displaced as some displaced persons use hotels or stay with family or friends following a disaster event. In HAZUS-MH, estimated sheltering needs for the earthquake hazard are summarized at the Census tract level. Table 5.5-11 summarizes the population HAZUS-MH estimates will be displaced or will require short-term sheltering for the 100-, 500-, and 2,500-year MRP by municipality.

Table 5.5-11 Estimated Displaced Households and Population Seeking Short-Term Shelter from 500- and 2,500-year MRP Events

Municipality	100-Year MRP		500-Year MRP		2,500-Year MRP	
	Displaced Households	People Requiring Short-Term Shelter	Displaced Households	People Requiring Short-Term Shelter	Displaced Households	People Requiring Short-Term Shelter
Fulton County (Total)	24	15	249	156	1,333	830

Source: HAZUS-MH 2.2

According to the 1999-2003 NYCEM Summary Report (Earthquake Risks and Mitigation in the New York / New Jersey / Connecticut Region), there is a strong correlation between structural building damage and the number of injuries and casualties from an earthquake event. Further, the time of day also exposes different sectors of the community to the hazard. For example, HAZUS considers the residential occupancy at its maximum at 2:00 a.m., where the educational, commercial and industrial sectors are at their maximum at 2:00 p.m., and peak commute time is at 5:00 p.m. Whether directly impacted or indirectly impact, the entire population will have to deal with the consequences of earthquakes to some degree. Business interruption could keep people from working, road closures could isolate populations, and loss of functions of utilities could impact populations that suffered no direct damage from an event itself.

Table 5.5-12 through 5.5-15 summarize the County-wide injuries and casualties estimated for the 100-, 500-, and 2,500-year MRP earthquake events, respectively.



Table 5.5-12 Estimated Number of Injuries and Casualties from the 100-Year MRP Earthquake Event

Level of Severity	Time of Day		
	2:00 AM	2:00 PM	5:00 PM
Injuries	5	9	6
Hospitalization	1	1	1
Casualties	0	0	0

Source: HAZUS-MH 2.2

Table 5.5-13. Estimated Number of Injuries and Casualties from the 500-Year MRP Earthquake Event

Level of Severity	Time of Day		
	2:00 AM	2:00 PM	5:00 PM
Injuries	46	72	59
Hospitalization	6	10	1
Casualties	1	1	1

Source: HAZUS-MH 2.2

Table 5.5-14 Estimated Number of Injuries and Casualties from the 2,500-Year MRP Earthquake Event

Level of Severity	Time of Day		
	2:00 AM	2:00 PM	5:00 PM
Injuries	214	362	263
Hospitalization	34	63	65
Casualties	6	11	10

Source: HAZUS-MH 2.2

Impact on General Building Stock

After considering the population vulnerable to the earthquake hazard, the value of general building stock exposed to and damaged by 100-, 500- and 2,500-year MRP earthquake events was evaluated. In addition, annualized losses were calculated using HAZUS-MH 2.2. The entire County's general building stock is considered at risk and exposed to this hazard.

The HAZUS-MH 2.2 model estimates the value of the exposed building stock and the loss (in terms of damage to the exposed stock). Refer to the County Profile (Chapter 3) for general building stock statistics (structure and contents).

For this plan update, a HAZUS-MH probabilistic model was run to estimate annualized dollar losses for Fulton County. Annualized losses are useful for mitigation planning because they provide a baseline upon which to 1) compare the risk of one hazard across multiple jurisdictions and 2) compare the degree of risk of all hazards for each participating jurisdiction. Please note that annualized loss does not predict what losses will occur in any particular year. The estimated annualized losses are approximately \$2.3 million per year (building and contents) for the County.



The HAZUS-MH model is based on the best available earthquake science and the HAZUS-MH 2.2 methodology and model were used to analyze the earthquake hazard for the general building stock for Fulton County. See Figure 5.5-3 through Figure 5.5-5 earlier in this profile that illustrates the geographic distribution of PGA (g) across the County for 100-, 500- and 2,500-year MRP events at the Census-tract level.

According to NYCEM, a building’s construction determines how well it can withstand the force of an earthquake. The NYCEM report indicates that un-reinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward, whereas steel and wood buildings absorb more of the earthquake’s energy. Additional attributes that contribute to a building’s capability to withstand an earthquake’s force include its age, number of stories and quality of construction. HAZUS-MH considers building construction and the age of buildings as part of the analysis.

Potential building damage was evaluated by HAZUS-MH 2.2 across the following damage categories (none, slight, moderate, extensive and complete). Table 5.5-15 provides definitions of these five categories of damage for a light wood-framed building; definitions for other building types are included in HAZUS-MH technical manual documentation. General building stock damage for these damage categories by occupancy class and building type on a County-wide basis is summarized below for the 100-, 500- and 2,500-year events.

Table 5.5-15. Example of Structural Damage State Definitions for a Light Wood-Framed Building

Damage Category	Description
Slight	Small plaster or gypsum-board cracks at corners of door and window openings and wall-ceiling intersections; small cracks in masonry chimneys and masonry veneer.
Moderate	Large plaster or gypsum-board cracks at corners of door and window openings; small diagonal cracks across shear wall panels exhibited by small cracks in stucco and gypsum wall panels; large cracks in brick chimneys; toppling of tall masonry chimneys.
Extensive	Large diagonal cracks across shear wall panels or large cracks at plywood joints; permanent lateral movement of floors and roof; toppling of most brick chimneys; cracks in foundations; splitting of wood sill plates and/or slippage of structure over foundations; partial collapse of room-over-garage or other soft-story configurations.
Complete	Structure may have large permanent lateral displacement, may collapse, or be in imminent danger of collapse due to cripple wall failure or the failure of the lateral load resisting system; some structures may slip and fall off the foundations; large foundation cracks.

Source: HAZUS-MH Technical Manual

Tables 5.5-15 through 5.5-18 summarize the damage estimated for the 100-, 500- and 2,500-year MRP earthquake events. Damage loss estimates include structural and non-structural damage to the building and loss of contents.



Table 5.5-16 Estimated Buildings Damaged by General Occupancy for 100-year and 500-year MRP Earthquake Events

Source: HAZUS-MH 2.2

Category	Average Damage State									
	100-Year MRP					500-Year MRP				
	None	Slight	Moderate	Extensive	Complete	None	Slight	Moderate	Extensive	Complete
Residential	263,165 (89.4%)	585 (<1%)	124 (<1%)	10 (<1%)	1 (<1%)	257,070 (87.3%)	5,629	1,054 (<1%)	123 (<1%)	10 (<1%)
Commercial	21,145 (7.2%)	174 (<1%)	44 (<1%)	4 (<1%)	0 (0%)	20,011 (6.8%)	965 (<1%)	342 (<1%)	46 (<1%)	3 (<1%)
Industrial	4,435 (1.5%)	34 (<1%)	8 (<1%)	1 (<1%)	0 (0%)	4,202 (1.4%)	195 (<1%)	72 (<1%)	9 (<1%)	1 (<1%)
Education, Government, Religious and Agricultural	4,571 (1.6%)	34 (<1%)	8 (<1%)	1 (<1%)	0 (0%)	4,346 (1.5%)	190 (<1%)	69 (<1%)	9 (<1%)	0 (0%)

Table 5.5-17 Estimated Buildings Damaged by General Occupancy for 2, 500-year MRP Earthquake Events

Category	Average Damage State				
	2,500-Year MRP				
	None	Slight	Moderate	Extensive	Complete
Residential	235,855 (80.1%)	22,138 (7.5%)	5,176 (1.8%)	651 (<1%)	65 (<1%)
Commercial	16,688 (5.7%)	2,810 (<1%)	1,553 (<1%)	286 (<1%)	29 (<1%)
Industrial	3,465 (1.2%)	586 (<1%)	358 (<1%)	64 (<1%)	6 (<1%)
Education, Government, Religious and Agricultural	3,714 (1.3%)	553 (<1%)	289 (<1%)	53 (<1%)	6 (<1%)

Source: HAZUS-MH 2.2

Table 5.5-18 Estimated Value (Building and Contents) Damaged by the 500- and 2,500-Year MRP Earthquake Events

Municipality	Total Improved Value (Building and Contents)	Estimated Total Damages*				Percent of Total Building and Contents *			
		Annualized Loss	100-Year	500-Year	2,500-Year	Annualized Loss	100-Year	500-Year	2,500-Year
Fulton County (Total)	\$221,359,062,000	\$2,312,268	\$16,999,003	\$236,021,388	\$1,500,871,453	<1%	<1%	<1%	<1%

Source: HAZUS-MH 2.2

*Total Damages is the sum of damages for all occupancy classes (residential, commercial, industrial, agricultural, educational, religious, and government).



Table 5.5-19 Estimated Value (Building and Contents) Damaged by the 100-, 500- and 2,500-Year MRP Earthquake Events (Continued)

Municipality	Total Improved Value (Building and Contents)	Estimated Residential Damage			Estimated Commercial Damage		
		100-Year	500-Year	2,500-Year	100-Year	500-Year	2,500-Year
Fulton County (Total)	\$221,359,062,000	\$9,776,907	\$140,478,768	\$896,890,948	\$5,596,178	\$72,257,794	\$454,234,371

Source: HAZUS-MH 2.1

HAZUS-MH estimates approximately \$17 million in damages for the 100-year earthquake event. It is also estimated that there may be \$236 million in damages to buildings in the County during a 500-year earthquake event. These includes structural damage, non-structural damage and loss of contents, representing less than 1% of the total replacement cost value for general building stock in Fulton County. For a 2,500-year MRP earthquake event, HAZUS-MH estimates greater than \$1.5 billion (<1%) of the total general building stock replacement value. Residential and commercial buildings account for most of the damage for earthquake events.

Earthquakes can cause secondary hazard events such as fires. Zero fires are anticipated as a result of the 100-, 500- and 2,500-year MRP events.

Impact on Critical Facilities

After considering the general building stock exposed to, and damaged by, 100-, 500- and 2,500-year MRP earthquake events, critical facilities were evaluated. All critical facilities (essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities and user-defined facilities) in Fulton County are considered exposed and potentially vulnerable to the earthquake hazard. Refer to subsection “Critical Facilities” in Chapter 3 (County Profile) of this Plan for a description of the critical facilities in the County.

HAZUS-MH 2.2 estimates the probability that critical facilities may sustain damage as a result of 100-, 500- and 2,500-year MRP earthquake events. Additionally, HAZUS-MH estimates percent functionality for each facility days after the event. As a result of a 100-Year MRP event, HAZUS-MH 2.2 estimates that emergency facilities (police, fire, EMS and medical facilities), schools, utilities and specific facilities identified by Fulton County as critical will be nearly 100% functional. Therefore, the impact to critical facilities is not significant for the 100-year event.

Tables 5.5-20 and 5.5-21 list the percent probability of critical facilities sustaining the damage category as defined by the column heading and percent functionality after the event for the 500-year and 2,500-year MRP earthquake events.

Table 5.5-20 Estimated Damage and Loss of Functionality for Critical Facilities and Utilities in Fulton County for the 500-Year MRP Earthquake Event

Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
Critical Facilities									
Medical	90-92	5-7	2-3	<1	0	90-92	97--98	100	100
Police	81-92	6-11	2-6	0.3-1	<1	81-92	92-98	99-100	99-100



Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
Fire	81-92	5-12	2-6	0.3-1	<1	81-92	93-98	99-100	99-100
EOC	91.5	6	2.2	<1	0	91	97	100	100
School	89-92	5-7	2-3	<1	0	89-92	96-98	100	100
Utilities									
Potable Water	0	0	0	0	100	3-10	6-11	15-39	29-100
Wastewater	95	3-4	1	0	0	96-97	100	100	100
Electric	96-97	2-3	<1	0	0	98	100	100	100
Communication	95-97	3-4	0.7-1	0	0	99-100	100	100	100

Source: HAZUS-MH 2.2

Table 5.5-21 Estimated Damage and Loss of Functionality for Critical Facilities and Utilities in Fulton County for the 2,500-Year MRP Earthquake Event

Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
Critical Facilities									
Medical	71-77	14-17	7-10	1-2	<1	71-77	88-91	98	99
Police	61-77	14-20	7-14	2-5	<1	61-77	80-91	95-98	97-99
Fire	61-77	14-20	7-14	1-5	<1	61-77	98-91	95-98	97-99
EOC	75.2	15.1	7.9	1.6	<1	75	90	98	99
School	70-77	14-18	7-10	1-2	<1	70-77	87-91	97-98	99
Utilities									
Potable Water	0	0	0	0	100	3-10	6-11	15-39	29-100
Wastewater	68-71	15-16	13-14	1	<1	74-77	97-99	99-100	100
Electric	76-81	12-13	7-10	<1	<1	84-87	100	100	100
Communication	68-80	12-16	8-14	0.5-1	<1	91-96	99-100	100	100

Source: HAZUS-MH 2.2

Impact on Economy

Earthquakes also have impacts on the economy, including: loss of business function, damage to inventory, relocation costs, wage loss and rental loss due to the repair/replacement of buildings. A Level 2 HAZUS-MH analysis estimates the total economic loss associated with each earthquake scenario, which includes building- and lifeline-related losses (transportation and utility losses) based on the available inventory (facility [or GIS point] data only). Direct building losses are the estimated costs to repair or replace the damage caused to the building. This is reported in the “Impact on General Building Stock” subsection discussed earlier in this section. Lifeline-related losses include the direct repair cost to transportation and utility systems and are reported in terms of the probability of reaching or exceeding a specified level of damage when subjected to a given level of ground motion. Additionally, economic loss includes business interruption losses associated with the inability to operate a business due to the damage sustained during the earthquake as well as temporary living expenses for those displaced. These losses are discussed below.



There will be \$9.3 million in losses to income and \$17 million in losses to capital as a result of the 100-year event. It is significant to note that for the 500-year event, HAZUS-MH 2.2 estimates the County will incur approximately \$76.3 million in income losses (wage, rental, relocation and capital-related losses) in addition to the 500-year event structural, non-structural, content and inventory losses (\$237 million).

For the 2,500-year event, HAZUS-MH 2.2 estimates the County will incur approximately \$378 million in income losses, mainly to the commercial and residential occupancy classes associated with wage, rental, relocation and capital-related losses. In addition, the 2,500-year event structural, non-structural, content and inventory losses equate to greater than an estimated \$1.5 billion.

Roadway segments and railroad tracks may experience damage due to ground failure and regional transportation and distribution of these materials will be interrupted as a result of an earthquake event. Losses to the community that result from damages to lifelines can be much greater than the cost of repair (HAZUS-MH 2.1 Earthquake User Manual, 2012).

Earthquake events can significantly impact road bridges. These are important because they often provide the only access to certain neighborhoods. Since softer soils can generally follow floodplain boundaries, bridges that cross watercourses should be considered vulnerable. A key factor in the degree of vulnerability will be the age of the facility or infrastructure, which will help indicate to which standards the facility was built. HAZUS-MH estimates the long-term economic impacts to the County for 15-years after the 2,500-year earthquake event. In terms of the transportation infrastructure, HAZUS-MH estimates \$19.5 million in direct repair costs to highway bridges and tunnels. There are no losses computed by HAZUS for business interruption due to transportation or utility lifeline losses.

HAZUS-MH 2.2 also estimates the volume of debris that may be generated as a result of an earthquake event to enable the study region to prepare and rapidly and efficiently manage debris removal and disposal. Debris estimates are divided into two categories: (1) reinforced concrete and steel that require special equipment to break it up before it can be transported, and (2) brick, wood and other debris that can be loaded directly onto trucks with bulldozers (HAZUS-MH Earthquake User's Manual).

For the 100-year MRP event, HAZUS-MH 2.2 estimates over 15 thousand tons of debris will be generated. For the 500-year MRP event, HAZUS-MH 2.2 estimates more than 110 thousand tons of debris will be generated. For the 2,500-year MRP event, HAZUS-MH 2.2 estimates greater than 465 thousand tons of debris will be generated. Table 5.5-22 summarizes the estimated debris generated as a result of these events by municipality.

Table 5.5-22 Estimated Debris Generated by the 100-, 500-, and 2,500-year MRP Earthquake Events

Municipality	100-Year		500-Year		2,500-Year	
	Brick/ Wood (tons)	Concrete/ Steel (tons)	Brick/ Wood (tons)	Concrete/ Steel (tons)	Brick/ Wood (tons)	Concrete/ Steel (tons)
Fulton County (Total)	12,183	3,295	80,380	31,176	282,624	183,430

Source: HAZUS-MH 2.2



Future Growth and Development

As discussed in Chapter 3 and the annexes, areas targeted for future growth and development have been identified across the County. It is anticipated that the exposure and vulnerability to earthquake impacts in newly developed areas will be similar to those that currently exist within the County. Fulton County uses the International Building Code as their minimum standard. Therefore, current building codes require seismic provisions that should render new construction less vulnerable to seismic impacts than older, existing construction that may have been built to lower construction standards. Refer to Chapter 3 and the annexes for potential new development in Fulton County.

Change of Vulnerability

Fulton County continues to be vulnerable to the earthquake hazard. However, there are differences between the potential loss estimates between this plan update to the results in the 2010 HMP. For the 2016 update, probabilistic scenarios were evaluated using an updated version of HAZUS-MH. In addition, a more current and accurate building stock inventory was used for this HMP update.

Effect of Climate Change on Vulnerability

Providing projections of future climate change for a specific region is challenging. Some scientists feel that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity according to research into prehistoric earthquakes and volcanic activity. National Aeronautics and Space Administration (NASA) and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes.

Secondary impacts of earthquakes could be magnified by future climate change. Soils saturated by repetitive storms could experience liquefaction during seismic activity because of the increased saturation. Dams storing increased volumes of water from changes in the hydrograph could fail during seismic events. There are currently no models available to estimate these impacts.

Additional Data and Next Steps

A HAZUS-MH earthquake analysis was conducted for Fulton County using the default model data. Additional data needed to further refine and enhance the County's vulnerability assessment includes identifying un-reinforced masonry critical facilities and privately-owned buildings (i.e., residences) using local knowledge and/or pictometry/orthophotos. The use of soil type data can also provide a more accurate estimate of potential losses to the County. These buildings may not withstand earthquakes of certain magnitudes and plans to provide emergency response/recovery efforts for these properties can be set in place. Further mitigation actions include training of County and municipal personnel to provide post-hazard event rapid visual damage assessments, increase of County and local debris management and logistic capabilities, and revised regulations to prevent additional construction of non-reinforced masonry buildings.

5.5.4 Flood

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the flood hazard in Fulton County.



Specific 2016 Plan Update Changes for Flood

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the flood hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the flood hazard and it now directly follows the hazard profile.

5.5.4.1 Profile

Hazard Description

Floods are one of the most common natural hazards in the U.S. They can develop slowly over a period of days or develop quickly, with disastrous effects that can be local (impacting a neighborhood or community) or regional (affecting entire river basins, coastlines and multiple counties or states) (Federal Emergency Management Agency [FEMA], 2008). Most communities in the U.S. have experienced some kind of flooding, after spring rains, heavy thunderstorms, coastal storms, or winter snow thaws (George Washington University, 2001).

Many floods fall into three categories: riverine, coastal and shallow (FEMA, 2005). Other types of floods may include ice-jam floods, alluvial fan floods, dam failure floods, and floods associated with local drainage or high groundwater. For the purpose of this HMP and as deemed appropriate by the Fulton County Steering Committee, riverine and flash flooding are the main flood types of concern for the County. These types of flood or further discussed below. For information regarding dam failure flooding, refer to Section 5.5.1 (Dam Failure).

- **Riverine floods** are the most common flood type. They occur along a channel and include overbank and flash flooding. Channels are defined, ground features that carry water through and out of a watershed. They may be called rivers, creeks, streams, or ditches. When a channel receives too much water, the excess water flows over its banks and inundates low-lying areas (FEMA 2008; The Illinois Association for Floodplain and Stormwater Management 2006).
- **Flash floods** are “a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). However, the actual time threshold may vary in different parts of the country. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters” (National Weather Service [NWS] 2009).

Other types of flooding that may impact Fulton County include stormwater flooding, high groundwater levels, and urban drainage flooding. Stormwater flooding described below is due to local drainage issues and high groundwater levels. Locally, heavy precipitation may produce flooding in areas other than delineated floodplains or along recognizable channels. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems. During winter and spring, frozen ground and snow accumulations may contribute to inadequate drainage and localized ponding. Flooding issues of this nature generally occur in areas with flat gradients and generally increase with urbanization which speeds the accumulation of floodwaters because of impervious areas. Shallow street flooding can occur unless channels have been improved to account for increased flows (FEMA 1997).



High groundwater levels can be a concern and cause problems even where there is no surface flooding. Basements are susceptible to high groundwater levels. Seasonally high groundwater is common in many areas, while elsewhere high groundwater occurs only after a long periods of above-average precipitation (FEMA 1997).

Urban drainage flooding is caused by increased water runoff due to urban development and drainage systems. Drainage systems are designed to remove surface water from developed areas as quickly as possible to prevent localized flooding on streets and other urban areas. They make use of a closed conveyance system that channels water away from an urban area to surrounding streams. This bypasses the natural processes of water filtration through the ground, containment, and evaporation of excess water. Since drainage systems reduce the amount of time the surface water takes to reach surrounding streams, flooding in those streams can occur more quickly and reach greater depths than prior to development in that area (FEMA 2008).

In the western and southern areas of the United States, there has been an increase in flood risk due to wildfires in the recent years. Wildfires change the landscape and ground increases. The charred ground where vegetation has burned away cannot easily absorb water. This increases the risk of flooding due to heavy rains, flash flooding and mudflows. The area's most at risk are properties directly affected by fires and areas located downstream to burn areas. This type of flood risk remains significantly higher until vegetation is restored, up to five years after a wildfire (Floodsmart 2015).

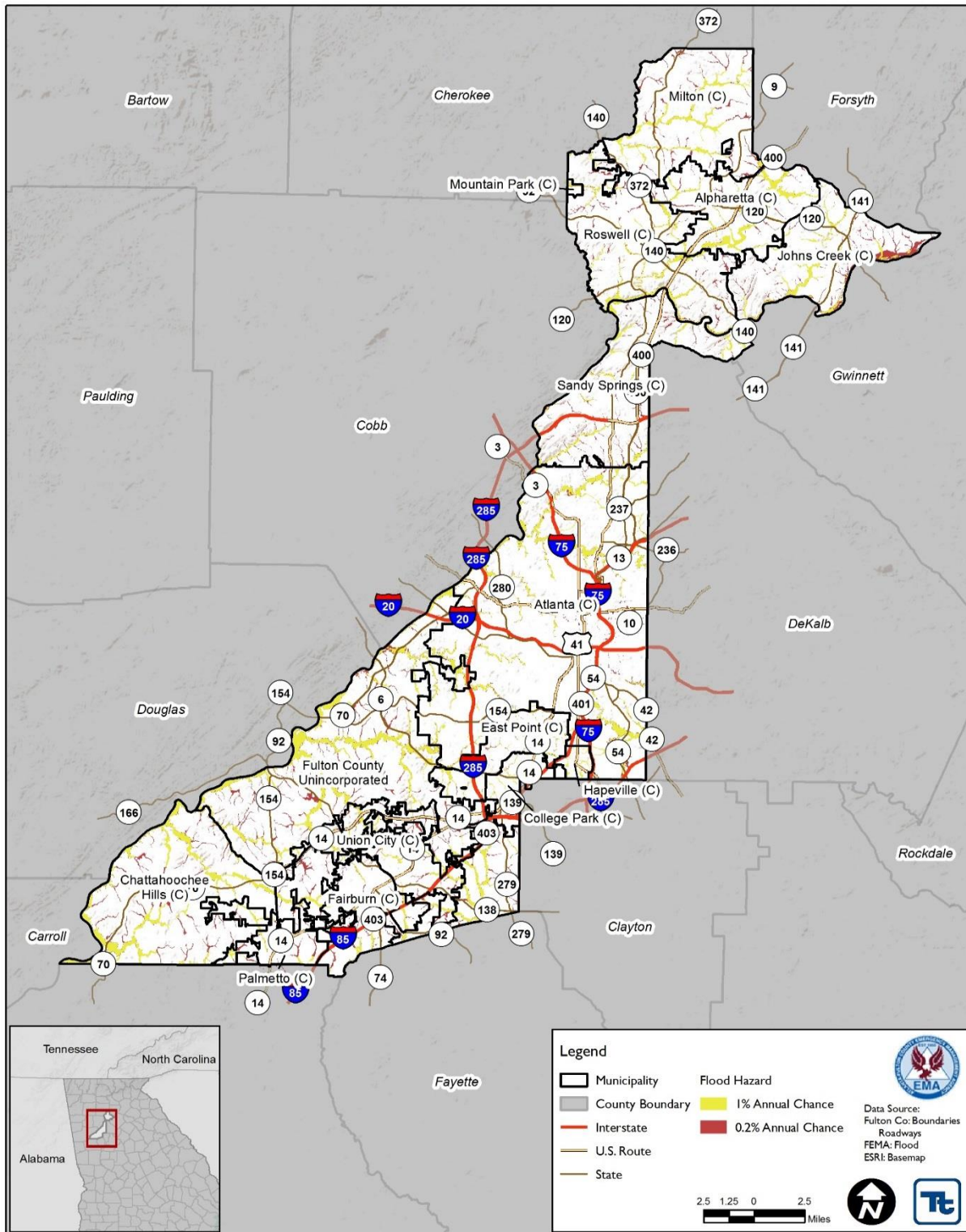
Location

A floodplain is defined as the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that becomes inundated with water during a flood. Most often floodplains are referred to as 100-year floodplains. A 100-year floodplain is not a flood that will occur once every 100 years, rather it is a flood that has a 1% chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time. Due to this misleading term, FEMA has properly defined it as the 1% annual chance flood. This 1% annual chance flood is now the standard used by most federal and state agencies and by the NFIP (FEMA 2002).

In Fulton County, floodplains line the rivers and streams of the County. The boundaries of the floodplains are altered as a result of changes in land use, the amount of impervious surface, placement of obstructing structures in floodways, changes in precipitation and runoff patterns, improvements in technology for measuring topographic features, and utilization of different hydrologic modeling techniques. Figure 5.5-8 illustrates the FEMA flood hazard zones in Fulton County.



Figure 5.5-8 FEMA Flood Hazard Areas in Fulton County



Source: FEMA, 2015 Federal Emergency Management Agency



Peachtree Creek is one of the most commonly affected areas in the County. Flood stage is 17.0 feet deep, and due to the heavy urbanization in the area, it often exceeds this mark during heavy storms. Peachtree Creek reacts very quickly when heavy rains occur. As is typical with smaller streams in urban areas, a heavy rain can cause the stream to rise in a matter of hours or even minutes. Also, as is typical with smaller urban streams, high water peaks quickly and then falls quickly; thus, streamflow at Peachtree Creek can go from base flow to flooding and back to near base flow in a single day. The USGS lists 18 streamflow data sites and can be accessed at: http://waterdata.usgs.gov/ga/nwis/current/?type=flow&group_key=basin_cd

Please refer to Jurisdictional Annexes for information regarding specific areas of flooding for each participating municipality in Fulton County.

Extent

Several factors determine the severity of floods, including rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also result in floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Frequency of inundation depends on the climate, soil, and channel slope. In regions where substantial precipitation occurs in a particular season each year, or in regions where annual flooding is derived principally from snowmelt, the floodplains may be inundated nearly every year. In regions without extended periods of below-freezing temperatures, floods usually occur in the season of highest precipitation. In areas where flooding is caused by melting snow, and occasionally compounded by rainfall, the flood season is spring or early summer (Fulton County HMP 2010). The worst flood to impact Fulton County occurred on September 21, 2009. It was a 500 year flood that claimed less than 11 deaths and cost \$48 million in damages. Jurisdictions within Fulton County received 10-15 inches of rain during this event.

The 100-year flood, which is the standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. A structure located within a SFHA shown on an NFIP map has a 26% chance of suffering flood damage during the term of a 30-year mortgage. The term “500-year flood” is the flood that has a 0.2% chance of being equaled or exceeded each year. The 500-year flood could occur more than once in a relatively short period of time. Statistically, the 0.2% (500-year) flood has a 6% chance of occurring during a 30-year period of time, the length of many mortgages.

In the case of riverine flood hazard, once a river reaches flood stage, the flood extent or severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat:

- Minor Flooding - minimal or no property damage, but possibly some public threat or inconvenience.
- Moderate Flooding - some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- Major Flooding - extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations. (NWS 2011)

The frequency and severity of flooding are measured using a discharge probability, which is the probability that a certain river discharge (flow) level will be equaled or exceeded in a given year. Flood studies use historical records to determine the probability of occurrence for the different



discharge levels. The flood frequency equals 100 divided by the discharge probability. For example, the 100-year discharge has a 1% chance of being equaled or exceeded in any given year. The “annual flood” is the greatest flood event expected to occur in a typical year. These measurements reflect statistical averages only; it is possible for two or more floods with a 100-year or higher recurrence interval to occur in a short time period. The same flood can have different recurrence intervals at different points on a river.

The extent of flooding associated with a 1% annual probability of occurrence (the base flood or 100-year flood) is used as the regulatory boundary by many agencies. Also referred to as the SFHA, this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the water elevation resulting from a given discharge level, which is one of the most important factors used in estimating flood damage.

Previous Occurrences and Losses

Many sources provided flooding information regarding previous occurrences and losses associated with flooding events throughout Fulton County. With a number of sources reviewed for the purpose of this Hazard Mitigation Plan (HMP), loss and impact information for events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2015, FEMA included the State of Georgia in 18 flood-related major disaster (DR) or emergency (EM) declarations classified as one or a combination of the following disaster types: severe storms, tornadoes, straight-line winds, heavy rains, high winds, tropical storm, rain, and mudslide. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Fulton County was included in four of these flood-related declarations.

For this 2015 Plan update, flood events were summarized from 2010 to 2015. Known flood events, including FEMA disaster declarations, which have impacted Fulton County between 2010 and 2015 are identified in Table 5.5-23. Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update. Please see Section 5.7 for detailed information regarding impacts and losses to each municipality.



Table 5.5-23 Flood Events in Fulton County, 2010-2015

Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
January 24, 2010	Flash Flood	N/A	N/A	<p>A system of storms moved from southern to northern Georgia. It brought heavy rain and flooding as showers and thunderstorms tracked from southwest to northeast in bands. Rainfall totals of two to three inches were common across central Georgia, with three to four inches falling across northwest Georgia. Many creeks, streams and rivers flooded. In addition to the rain, there were wind gusts of 43 to 51 mph.</p> <p>In Fulton County, the USGS stream gage on the upper portion of Peachtree Creek near the merger of the North and South Fork of Peachtree Creek indicated minor flooding. Damage was confined to minor debris removal from areas adjacent to the creek. The County had approximately \$3,000 in property damage.</p>
May 3, 2010	Thunderstorms and Flooding	N/A	N/A	<p>A slow moving system brought several rounds of showers and thunderstorms to parts of Georgia with a two-day rainfall total of three to four inches. Flash flooding was observed in several counties on the northwest and west side of the City of Atlanta, with some of the counties experiencing catastrophic flooding. In Fulton County, several creeks reached or exceeded flood stage during this event. Proctor Creek at Jackson Parkway in Atlanta reached its flood stage of 13 feet and crested at 19.2 feet. Nancy Creek at Rickenbacker Drive had major flooding as it crested at 13.2 feet (13 foot flood stage). The County OEM Director reported that at least 50 homes were affected by the flood waters of Nancy and Peachtree Creeks. A swift water rescue was required along Nancy Creek. Flood waters covered portions of Cochran Mill Road, Cascade-Palmetto Highway, and Vandiver Road at Amen Road in central Fulton County. Portions of I-20 west of Atlanta were closed during the height of flooding. Damages in the County were approximately \$500,000.</p>
April 15-16, 2011	Heavy Rain and Flash Flood	N/A	N/A	<p>A line of strong to severe thunderstorms moved into northwest Georgia, bringing hail, damaging winds and three tornadoes. In addition to the severe weather events, the heavy rain caused flash flooding along north Atlanta metropolitan area creeks and streams. The USGS stream gage on Big Creek at Alpharetta reached flood stage of 7 feet and remained above flood stage for two days.</p>



Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
May 19, 2013	Heavy Rain and Flash Flood	N/A	N/A	<p>Damage from this event was mainly minor debris around the creeks that flooded. The County had approximately \$5,000 in damages.</p> <p>Widespread showers and thunderstorms developed across a portion of northern Georgia. Rainfall amounts of three to seven inches occurred in less than six hours in an area from Dawsonville to Gainesville to Lawrenceville to Roswell. Significant flash flooding occurred with major damage to roads and bridges near Flowery Branch. Another three to seven inches of rain fell in northwest Georgia from Trenton to LaFayette to Calhou and Cartersville to Rome to Summerville. Both heavy rain events caused widespread flash flooding and minor river flooding.</p> <p>In Fulton County, Big Creek at Kimball Bridge Road near Alpharetta reached flood stage of seven feet and crested at 10.3 feet which caused minor flooding. The Chattahoochee River near Berkeley Lake and Norcross reached flood stage of 12 feet and crested at 12.4 feet, causing minor flooding. The Chattahoochee River overflowed its banks and flooded the paddocks and access road to the stables at the Huntcliff River Club near Sandy Springs. The County had approximately \$10,000 in property damage.</p>
June 5-6, 2013	Heavy Rain and Flash Flooding	N/A	N/A	<p>Numerous showers and thunderstorms produced flash flooding in the Atlanta area. Intense, heavy rainfall of 3.23 inches fell in 100 minutes at the Hartsfield-Jackson Atlanta International Airport. This caused significant flooding on portions of Interstate 285 at the Camp Creek Parkway intersection. There was a dam breach in Sandy Springs at the seven acre pond by Roswell Road. An access road over the dam was the only entrance into a neighborhood which was cutoff. Erosion caused severe damage to the access road. The County had approximately \$45,000 in property damages from this event.</p>
April 5-7, 2014	Severe Weather and Tornadoes	N/A	N/A	<p>A strong storm system impacted north and central Georgia, bringing widespread rain to the area. This resulted in extensive rainfall amounts. Over a 48 hour period, widespread two to four inches of rain fell across north and west-central Georgia. Isolated areas saw more than four inches of rain. Numerous flood warnings and flash flood warnings were issued. In Fulton County, between three and four inches of rain fell. In Atlanta, the heavy rains slowed cars on the interstates and traffic lights were knocked out. The storms caused</p>



Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
				flash flooding and downed trees and power lines. Nancy Creek near West Paces Ferry was also affected by the storm. Water gushed from creek for several hours.

Source: NOAA-NCDC 2015; FEMA 2015; SHELDUS 2015



Probability of Future Occurrences

Based on the historic and more recent flood events in Fulton County, it is clear that the County has a high probability of flooding for the future. The fact that the elements required for flooding exist and that major flooding has occurred throughout the County in the past suggests that many people and properties are at risk from the flood hazard in the future. It is estimated that Fulton County will continue to experience direct and indirect impacts of flooding events annually that may induce secondary hazards such as erosion, infrastructure deterioration or failure, utility failures, power outages, water quality and supply concerns, and transportation delays, accidents and inconveniences.

Table 5.5-24 Probability of Future Occurrence of Flooding Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of Event Occurring in Any Given Year	% Chance of Occurring in Any Given Year
Flash Flood	55	0.85	1.2	0.89	89%
Flood	19	0.29	3.47	0.29	29%
TOTAL:	74	1.13	0.89	1.12	112.4%

Source: NOAA-NCDC Storm Database 2015

Section 5.4 provides a summary of the identified hazards of concern for Fulton County. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for flood in the County is considered 'likely' (10 % to 100% in the next year, or one whose impact has a chance of occurring within the next 10 years). See section 5.6 for additional details and ranking by the Planning Committee.

Climate Change Impacts

A changing climate has the potential to intensify rains and storms, damaging infrastructure, and causing injury, illnesses and death. Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).



5.5.4.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. For the flood hazard, areas identified as hazard areas include the 1-percent and 0.2-percent annual chance flood event boundaries. The following text evaluates and estimates the potential impact of flooding for Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities,
 - (4) economy, and
 - (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

Flood is a significant concern for Fulton County. To assess vulnerability, exposure to the one- and 0.2-percent annual chance flood events was examined and potential losses were calculated for the one- percent annual chance flood event. The flood hazard exposure and loss estimate analysis is presented below.

Data and Methodology

The 1- and 0.2-percent annual chance flood events were examined to evaluate the County's risk to the flood hazard. These flood events are generally those considered by planners and evaluated under federal programs such as the NFIP. The risk and vulnerability assessment was completed using FEMA effective DFIRM data released in May 2013, with the latest Letter of Map Revision incorporated in January 2015.

To estimate exposure, both the County-provided building footprint spatial layer and the HAZUS-MH 2.2 dasymetric building layer (Census blocks) were used. The building footprint layer was used to estimate the number of buildings located in the floodplain; and the dasymetric building layer was used to estimate the replacement cost value of the buildings located in the floodplain. The dasymetric building layer is described further in the methodology section of this plan.

To estimate potential losses, the Hazards U.S. Multi-Hazard (HAZUS-MH) flood model was used. A 1-percent annual chance flood depth grid was generated by FEMA and made available on the FEMA Map Service Center in March 2014. There are additional flood hazard areas in the County that were not included in this FEMA depth grid. Flood depths were generated in these areas using the HAZUS-MH Enhanced Quick Look tool and the 1/3 arc-second Digital Elevation Map (DEM) model provided by the U.S. Geological Survey (USGS). The two depth grids were combined and integrated into HAZUS-MH 2.2 to estimate potential losses using the dasymetric building data. The HAZUS-MH 2.2 model also estimated displaced households and sheltering needs, and estimated debris as a result of the 1-percent annual chance flood event.



Impact on Life, Health and Safety

The impact of the hydrologic hazards on life, health and safety is dependent upon several factors including the severity of the event and whether or not adequate warning time is provided to residents. Exposure represents the population living in or near the hazard areas that could be impacted should an event occur. Additionally, exposure should not be limited to only those who reside in a defined hazard zone, but everyone who may be affected by the cascading impacts of a hazard event (e.g., people are at risk while traveling in flooded areas, or their access to emergency services is compromised during an event).

Cascading impacts may also include exposure to pathogens such as mold. After flood events, excess moisture and standing water contribute to the growth of mold in buildings. Mold may present a health risk to building occupants, especially those with already compromised immune systems such as infants, children, the elderly and pregnant women. The degree of impact will vary and is not strictly measurable. Molds can grow in as short a period as 24-48 hours in wet and damaged areas of buildings that have not been properly cleaned. Very small mold spores can easily be inhaled, creating the potential for allergic reactions, asthma episodes, and other respiratory problems. Buildings should be properly cleaned and dried out to safely prevent mold growth (CDC, 2015).

Molds and mildews are not the only public health risk associated with flooding. Floodwaters can be contaminated by pollutants such as sewage, human and animal feces, pesticides, fertilizers, oil, asbestos, and rusting building materials. Common public health risks associated with flood events also include:

- Unsafe food
- Contaminated drinking and washing water and poor sanitation
- Mosquitos and animals
- Carbon monoxide poisoning
- Secondary hazards associated with re-entering/cleaning flooded structures
- Mental stress and fatigue

Current loss estimation models such as HAZUS-MH are not equipped to measure public health impacts. The best level of mitigation for these impacts is to be aware that they can occur, educate the public on prevention, and be prepared to deal with these vulnerabilities in responding to flood events.

A spatial analysis was conducted to calculate the total land area located in the one-percent and 0.2-percent annual chance flood zones using the regulatory FIRM, as presented in Table 5.5-25.



Table 5.5-25 Total Land Area in the 1-Percent and 0.2-Percent Annual Chance Flood Zones (Acres)

Municipality	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
		Area (acres)	% of Total	Area (acres)	% of Total
Alpharetta (C)	17,457	1,860	10.7%	2,298	13.2%
Atlanta (C)	81,359	4,521	5.6%	5,474	6.7%
Chattahoochee Hills (C)	32,774	3,461	10.6%	4,571	13.9%
College Park (C)	4,758	172	3.6%	212	4.5%
East Point (C)	9,422	481	5.1%	610	6.5%
Fairburn (C)	10,928	413	3.8%	837	7.7%
Fulton County (Unincorporated)	67,172	7,134	10.6%	9,951	14.8%
Hapeville (C)	1,517	174	11.4%	174	11.5%
Johns Creek (C)	20,084	1,301	6.5%	2,478	12.3%
Milton (C)	25,039	1,629	6.5%	2,485	9.9%
Mountain Park (C)	302	55	18.2%	59	19.7%
Palmetto (C)	7,123	354	5.0%	612	8.6%
Roswell (C)	26,882	2,002	7.4%	2,807	10.4%
Sandy Springs (C)	24,667	1,582	6.4%	2,266	9.2%
Union City (C)	12,627	709	5.6%	1,187	9.4%
Fulton County (Total)	342,112	25,849	7.6%	36,022	10.5%

Source: FEMA 2015 Note: The area presented includes the area of inland waterways

To estimate the population exposed to the 1- and 0.2-percent flood events, the floodplain boundaries were overlaid upon the 2010 Census population data in GIS (U.S. Census 2010). The 2010 Census blocks with their centroid in the flood boundaries were used to calculate the estimated population exposed to this hazard. Census blocks do not follow the boundaries of the floodplain. As such, using the centroid or intersection of the Census blocks within these zones can grossly over- or under-estimate the population exposed. The limitations of these analyses are recognized; therefore, these results should only be used to provide a general estimate.

The calculation of the 0.2-percent annual chance flood event results is cumulative in nature, as the population exposed to the 1-percent flood event will also be exposed to the 0.2-percent annual chance flood event. Using this approach, it was estimated that 3,447 people are exposed to the one-percent annual chance event and 4,136 people are exposed to the 0.2-percent annual chance flood event. Refer to Table 5.5-26 for results by municipality.



Table 5.5-26 Estimated Population Exposed to the Flood Hazard

Municipality	Total Population	1-Percent Chance Event		0.2-Percent Chance Event	
		Total Number	% of Total	Total Number	% of Total
Alpharetta (C)	57,551	854	1.5%	1,532	2.7%
Atlanta (C)	391,711	4,558	1.2%	7,628	1.9%
Chattahoochee Hills (C)	2,378	77	3.2%	85	3.6%
College Park (C)	12,670	161	1.3%	187	1.5%
East Point (C)	33,712	381	1.1%	568	1.7%
Fairburn (C)	12,950	12	<1%	491	3.8%
Fulton County (Unincorporated)	87,478	168	<1%	2,875	3.3%
Hapeville (C)	6,373	254	4.0%	254	4.0%
Johns Creek (C)	76,728	4,100	5.3%	8,957	11.7%
Milton (C)	32,661	593	1.8%	1,271	3.9%
Mountain Park (C)	526	0	0.0%	0	0.0%
Palmetto (C)	4,188	0	0.0%	201	4.8%
Roswell (C)	88,346	2,190	2.5%	4,282	4.8%
Sandy Springs (C)	93,853	815	<1%	1,700	1.8%
Union City (C)	19,456	350	1.8%	354	1.8%
Fulton County (Total)	920,581	14,513	1.6%	30,385	3.3%

Sources: U.S. Census 2010; FEMA, 2015

The table above shows that approximately 1.6-percent of the total County population is exposed to the 1-percent annual chance flood event and that approximately 3.3-percent of the total County population is exposed to the 0.2-percent annual chance flood event. Johns Creek has the greatest population located in the floodplain; approximately 5.3% and 11.7% for the 1-percent and 0.2-percent chance events, respectively. For this project, the potential population exposed is used as a guide for planning purposes.

Of the population exposed, the most vulnerable include the economically disadvantaged and the population over the age of 65. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on the net economic impact to their family. The population over the age of 65 is also more vulnerable because they are more likely to seek or need medical attention which may not be available to due isolation during a flood event and they may have more difficulty evacuating. Special consideration should be taken when planning for disaster preparation, response, and recovery for these vulnerable groups.

Using 2010 U.S. Census data, HAZUS-MH 2.2 estimates the potential sheltering needs as a result of a 1-percent chance flood event. For the 1-percent flood event, HAZUS-MH 2.2 estimates 46,281 households will be displaced; and of those households, estimates 36,817 people will seek temporary shelter in public shelters. The estimated number of people seeking shelter is generally less than the total number displaced because those displaced persons using shelters will most likely be individuals with lower incomes and those who do not have family/friends within the immediate area. These statistics, by municipality, are presented in Table 5.5-27.



Table 5.5-27 Estimated Population Displaced or Seeking Short-Term Shelter from the 1-percent Annual Chance Flood Event

Municipality	U.S. Census 2010 Population	1-percent Annual Chance Event	
		Displaced Households	Persons Seeking Short-Term Sheltering
Alpharetta (C)	57,551	4,411	3,768
Atlanta (C)	391,711	11,079	9,018
Chattahoochee Hills (C)	2,378	220	25
College Park (C)	12,670	473	283
East Point (C)	33,712	504	105
Fairburn (C)	12,950	690	512
Fulton County (Unincorporated)	87,478	7,649	6,501
Hapeville (C)	6,373	460	154
Johns Creek (C)	76,728	5,013	4,056
Milton (C)	32,661	2,859	2,096
Mountain Park (C)	526	23	6
Palmetto (C)	4,188	198	125
Roswell (C)	88,346	6,068	4,959
Sandy Springs (C)	93,853	5,548	4,289
Union City (C)	19,456	1,086	920
Fulton County (Total)	920,581	46,281	36,817

Source: HAZUS-MH 2.2

The total number of injuries and casualties resulting from flooding is generally limited based on advance weather forecasting, blockades and warnings. Therefore, injuries and deaths generally are not anticipated if proper warning and precautions are in place. Ongoing mitigation efforts should help to avoid the most likely cause of injury, which results from persons trying to cross flooded roadways or channels during a flood.

Impact on General Building Stock

After considering the population exposed and vulnerable to the flood hazard, the built environment was evaluated. Exposure includes those buildings located in the flood zone. Potential damage is the modeled loss that could occur to the exposed inventory, including structural and content value.

To estimate the number of structures exposed, the DFIRM flood boundaries were overlaid upon the structure footprints from the County-provided spatial layer. To provide a general estimate of the structural/content replacement value exposure, the 1- and 0.2-percent DFIRM flood boundaries were overlaid upon the dasymetric Census Blocks from HAZUS-MH 2.2. The Census blocks and structures with their centroid in the hazard areas were totaled for each municipality. Table 5.5-28 and Table 5.5-29 summarize these results.

In summary, there are 2,590 buildings located in 1-percent annual chance flood boundary using the County-provided building footprint layer. Using the dasymetric Census blocks, there is



approximately \$4.1 billion of building/contents located in the 1-percent annual chance flood boundary. In total, this represents 1.9% of the County’s total general building stock replacement cost (approximately \$221 billion).

There are 4,128 buildings located in the 0.2-percent annual chance flood boundary using the County-provided building footprint layer. Using the dasymetric Census blocks, there is approximately \$7.7 billion of building/contents exposed. This represents approximately 3.5% of the County’s total general building stock replacement cost

The methodology using the dasymetric Census Blocks seems to be over-estimating the replacement value exposed to the flood hazard when compared to the number of buildings located in the floodplain using the County building footprint layer. For example, using the County building footprint layer there are 2,590 buildings in the 1-percent annual chance flood zone, compared to 4,909 buildings according to the dasymetric Census block layer. Please consider this when interpreting these results.

Table 5.5-28 Estimated General Building Stock Exposure to the 1-Percent Annual Chance Flood Event – All Occupancies

Municipality	Total # Buildings	Total Replacement Value (Structure and Contents)	Total (All Occupancies) in the 1-percent Annual Chance Event Flood Zone			
			# Buildings*	% Total	Total Replacement Value (Structure and Contents)**	% Total
Alpharetta (C)	16,680	\$15,242,479,000	24	<1%	\$239,402,000	1.6%
Atlanta (C)	140,031	\$98,670,268,000	1,495	1.1%	\$1,356,295,000	1.4%
Chattahoochee Hills (C)	2,361	\$433,133,000	9	<1%	\$10,795,000	2.5%
College Park (C)	3,859	\$2,684,193,000	51	1.3%	\$131,516,000	4.9%
East Point (C)	15,119	\$6,660,776,000	136	<1%	\$69,291,000	1.0%
Fairburn (C)	5,491	\$2,383,179,000	6	<1%	\$1,326,000	<1%
Fulton County (Unincorporated)	37,826	\$18,581,416,000	243	<1%	\$216,326,000	1.2%
Hapeville (C)	3,304	\$1,328,675,000	181	5.5%	\$72,978,000	5.5%
Johns Creek (C)	23,197	\$16,852,355,000	43	<1%	\$892,198,000	5.3%
Milton (C)	10,745	\$7,092,133,000	14	<1%	\$129,557,000	1.8%
Mountain Park (C)	325	\$192,688,000	3	<1%	\$2,033,000	1.1%
Palmetto (C)	2,119	\$832,439,000	3	<1%	\$0	0.0%
Roswell (C)	28,558	\$20,997,523,000	155	<1%	\$795,638,000	3.8%
Sandy Springs (C)	21,783	\$26,257,287,000	213	1.0%	\$116,209,000	<1%
Union City (C)	5,932	\$3,150,518,000	14	<1%	\$72,981,000	2.3%
Fulton County (Total)	317,330	\$221,359,062,000	2,590	<1%	\$4,106,545,000	1.9%

Source: Fulton County*; HAZUS-MH 2.2**



Table 5.5-29 Estimated General Building Stock Exposure to the 0.2-Percent Annual Chance Flood Event – All Occupancies

Municipality	Total # Buildings	Total Replacement Value	Total (All Occupancies)			
			0.2-Percent			
			# Buildings*	% Total	Total Replacement Value (Structure and Contents**)	% Total
Alpharetta (C)	16,680	\$15,242,479,000	84	<1%	\$411,133,000	2.7%
Atlanta (C)	140,031	\$98,670,268,000	2,248	1.6%	\$2,282,487,000	2.3%
Chattahoochee Hills (C)	2,361	\$433,133,000	30	1.3%	\$12,355,000	2.9%
College Park (C)	3,859	\$2,684,193,000	57	1.5%	\$148,542,000	5.5%
East Point (C)	15,119	\$6,660,776,000	235	1.6%	\$130,807,000	2.0%
Fairburn (C)	5,491	\$2,383,179,000	11	<1%	\$62,331,000	2.6%
Fulton County (Unincorporated)	37,826	\$18,581,416,000	458	1.2%	\$700,542,000	3.8%
Hapeville (C)	3,304	\$1,328,675,000	181	5.5%	\$72,978,000	5.5%
Johns Creek (C)	23,197	\$16,852,355,000	81	<1%	\$1,813,165,000	10.8%
Milton (C)	10,745	\$7,092,133,000	55	<1%	\$279,652,000	3.9%
Mountain Park (C)	325	\$192,688,000	10	3.1%	\$2,033,000	1.1%
Palmetto (C)	2,119	\$832,439,000	7	<1%	\$35,522,000	4.3%
Roswell (C)	28,558	\$20,997,523,000	273	1.0%	\$1,389,462,000	6.6%
Sandy Springs (C)	21,783	\$26,257,287,000	378	1.7%	\$348,441,000	1.3%
Union City (C)	5,932	\$3,150,518,000	20	<1%	\$82,115,000	2.6%
Fulton County (Total)	317,330	\$221,359,062,000	4,128	1.3%	\$7,771,565,000	3.5%

Source: Fulton County*; HAZUS-MH 2.2**

The potential damage estimated by HAZUS-MH to the general building stock inventory associated with the 1-percent annual chance flood is approximately \$1.6 billion or less than 1-percent of the total building stock replacement cost value. The potential damage estimated by HAZUS-MH to the residential general building stock inventory associated with the 1-percent annual chance flood is approximately \$1.04 billion or less than 1-percent of the total building stock replacement cost value. These loss estimates are based on the dasymetric Census block data.



Table 5.5-30 Estimated General Building Stock Potential Loss to the 1-percent Annual Chance Flood Event

Municipality	Total Replacement Cost Value	1% Annual Chance Event									
		All Occupancies		Residential		Commercial		Industrial, Religious, Education and Government		% of Total	% of Total
		Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total		
Alpharetta (C)	\$15,242,479,000	\$141,593,000	<1%	\$78,599,000	<1%	\$53,178,000	<1%	\$9,816,000	<1%	<1%	<1%
Atlanta (C)	\$98,670,268,000	\$532,779,000	<1%	\$354,866,000	<1%	\$124,925,000	<1%	\$52,988,000	<1%	<1%	<1%
Chattahoochee Hills (C)	\$433,133,000	\$7,412,000	1.7%	\$6,512,000	1.5%	\$626,000	<1%	\$274,000	<1%	<1%	<1%
College Park (C)	\$2,684,193,000	\$25,759,000	1.0%	\$8,983,000	<1%	\$14,596,000	<1%	\$2,180,000	<1%	<1%	<1%
East Point (C)	\$6,660,776,000	\$22,137,000	<1%	\$8,264,000	<1%	\$10,914,000	<1%	\$2,959,000	<1%	<1%	<1%
Fairburn (C)	\$2,383,179,000	\$9,136,000	<1%	\$7,469,000	<1%	\$506,000	<1%	\$1,161,000	<1%	<1%	<1%
Fulton County (Unincorporated)	\$18,581,416,000	\$216,648,000	1.2%	\$131,209,000	<1%	\$56,143,000	<1%	\$29,296,000	<1%	<1%	<1%
Hapeville (C)	\$1,328,675,000	\$31,916,000	2.4%	\$13,711,000	1.0%	\$14,783,000	1.1%	\$3,422,000	<1%	<1%	<1%
Johns Creek (C)	\$16,852,355,000	\$134,064,000	<1%	\$109,963,000	<1%	\$18,321,000	<1%	\$5,780,000	<1%	<1%	<1%
Milton (C)	\$7,092,133,000	\$107,344,000	1.5%	\$90,348,000	1.3%	\$13,410,000	<1%	\$3,586,000	<1%	<1%	<1%
Mountain Park (C)	\$192,688,000	\$1,017,000	<1%	\$524,000	<1%	\$333,000	<1%	\$160,000	<1%	<1%	<1%
Palmetto (C)	\$832,439,000	\$2,466,000	<1%	\$2,186,000	<1%	\$150,000	<1%	\$130,000	<1%	<1%	<1%
Roswell (C)	\$20,997,523,000	\$151,342,000	<1%	\$99,603,000	<1%	\$38,639,000	<1%	\$13,100,000	<1%	<1%	<1%
Sandy Springs (C)	\$26,257,287,000	\$201,280,000	<1%	\$114,969,000	<1%	\$69,556,000	<1%	\$16,755,000	<1%	<1%	<1%
Union City (C)	\$3,150,518,000	\$19,664,000	<1%	\$13,666,000	<1%	\$3,918,000	<1%	\$2,080,000	<1%	<1%	<1%
Fulton County (Total)	\$221,359,062,000	\$1,604,557,000	<1%	\$1,040,872,000	0.5%	\$419,998,000	<1%	\$143,687,000	<1%	<1%	<1%

Source: HAZUS-MH 2.2



Impact on Critical Facilities

HAZUS-MH was used to estimate the flood loss potential to critical facilities exposed to the flood hazard. Using depth/damage function curves, HAZUS estimates the percent of damage to critical facilities. Table 5.5-31 and Table 5.5-32 summarize the number of critical facilities located in the FEMA flood zones by type and by jurisdiction.

In cases where short-term functionality is impacted by a hazard, other facilities of neighboring municipalities may need to increase support response functions during a disaster event. Mitigation planning should consider means to reduce impact to critical facilities and ensure sufficient emergency and school services remain when a significant event occurs. Actions addressing shared services agreements are included in Chapter 6 (Mitigation Strategies) of this plan.

Table 5.5-31 Number of Critical Facilities Located in the 1-percent Annual Chance Flood Zone

Municipality	Facility Types						
	Government Building	Medical	Police	Potable Pump	Tier II (Hazmat)	Wastewater Facility	Wastewater Pump
Alpharetta (C)	0	0	0	0	0	0	0
Atlanta (C)	0	2	0	3	3	0	0
Chattahoochee Hills (C)	0	0	0	1	0	0	0
College Park (C)	0	0	0	0	0	0	0
East Point (C)	0	0	0	0	0	0	0
Fairburn (C)	0	0	0	0	0	0	0
Fulton County (Unincorporated)	0	0	3	0	3	0	0
Hapeville (C)	1	0	0	0	1	0	0
Johns Creek (C)	0	0	0	0	0	0	0
Milton (C)	0	0	0	0	0	0	0
Mountain Park (C)	0	0	0	0	0	0	0
Palmetto (C)	0	0	0	0	0	0	0
Roswell (C)	0	0	0	2	1	3	1
Sandy Springs (C)	0	0	0	0	0	0	0
Union City (C)	0	0	0	0	0	0	0
Fulton County (Total)	1	2	3	6	8	3	1

Source: FEMA 2015, Fulton County



Table 5.5-32 Number of Critical Facilities Located in the 0.2-Percent Annual Chance Flood Zone

Municipality	Facility Types								
	Communication	Government Building	Medical	Police	Potable Facility	Potable Pump	Tier II (Hazmat)	Wastewater Facility	Wastewater Pump
Alpharetta (C)	0	0	0	0	0	0	0	0	0
Atlanta (C)	0	0	2	0	0	3	3	0	0
Chattahoochee Hills (C)	0	0	0	0	0	1	0	0	0
College Park (C)	0	0	0	0	0	0	1	0	0
East Point (C)	0	0	0	0	0	0	0	0	0
Fairburn (C)	0	0	0	0	0	1	0	0	0
Fulton County (Unincorporated)	0	0	0	13	0	0	10	0	0
Hapeville (C)	0	1	0	0	0	0	1	0	0
Johns Creek (C)	0	0	0	0	0	1	0	0	0
Milton (C)	0	0	0	0	0	1	0	0	0
Mountain Park (C)	0	0	0	0	0	0	0	0	0
Palmetto (C)	0	0	0	0	0	0	0	0	0
Roswell (C)	0	0	0	0	1	2	3	5	2
Sandy Springs (C)	1	0	0	0	0	1	1	0	0
Union City (C)	0	0	0	0	0	0	0	0	0
Fulton County (Total)	1	1	2	13	1	10	19	5	2

Source: FEMA 2015, Fulton County

Impact on the Economy

For impact on economy, estimated losses from a flood event are considered. Losses include but are not limited to general building stock damages, agricultural losses, business interruption, impacts to tourism and tax base to Fulton County. Damages to general building stock can be quantified using HAZUS-MH as discussed above. Other economic components such as loss of facility use, functional downtime and social economic factors are less measurable with a high degree of certainty.

Flooding can cause extensive damage to public utilities and disruptions to the delivery of services. Loss of power and communications may occur; and drinking water and wastewater treatment facilities may be temporarily out of operation. Flooded streets and road blocks make it difficult for emergency vehicles to respond to calls for service. Floodwaters can wash out sections of roadway and bridges (Foster, Date Unknown). In addition to travel along the roadways, public transit will be greatly impacted, causing problems for emergency responders.

Direct building losses are the estimated costs to repair or replace the damage caused to the building. Refer to the 'Impact on General Building Stock' subsection which discusses these potential losses. These dollar value losses to the County's total building inventory replacement value, in addition to damages to roadways and infrastructure, would greatly impact the local economy.



HAZUS-MH estimated the amount of debris generated from the 1-percent annual chance flood event. The model breaks down debris into three categories: 1) finishes (dry wall, insulation, etc.); 2) structural (wood, brick, etc.) and 3) foundations (concrete slab and block, rebar, etc.). The distinction is made because of the different types of equipment needed to handle the debris. Table 5.5-33 summarizes the debris estimated for the 1-percent flood annual chance event.

Please note this table only represents estimated debris generated by riverine flooding and does not include additional potential damage and debris which may be generated with the presence of wind.

Table 5.5-33 Estimated Debris Generated from the 1-percent Flood Event

Municipality	1% Flood Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Alpharetta (C)	168	120	27	21
Atlanta (C)	21,803	10,971	5,696	5,136
Chattahoochee Hills (C)	700	328	187	186
College Park (C)	487	386	53	48
East Point (C)	548	503	22	23
Fairburn (C)	125	119	2	4
Fulton County (Unincorporated)	2,554	1,490	570	494
Hapeville (C)	3,212	1,188	1,063	960
Johns Creek (C)	7,366	5,376	1,065	925
Milton (C)	4,930	3,162	1,024	744
Mountain Park (C)	10	10	0	0
Palmetto (C)	42	42	0	0
Roswell (C)	682	425	138	119
Sandy Springs (C)	11,141	7,194	2,131	1,816
Union City (C)	470	361	55	55
Fulton County (Total)	54,239	31,673	12,034	10,532

Source: HAZUS-MH 2.2

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as flood events. While predicting changes of flood events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006).

Change of Vulnerability

Fulton County and its municipalities continue to be vulnerable to the flood hazard. However, there are several differences between the exposure and potential loss estimates between this plan update to the results in the 2010 HMP. Their differences are due to the new and updated population data (U.S. Census 2010 is now available) and building inventories used. The 2010 plan conducted an



exposure analysis, whereas for the 2016 Plan, potential loss estimates were also calculated using HAZUS-MH.

Future Growth and Development

As discussed in Chapter 3 and the annexes, areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the flood hazard if located within the identified hazard areas. It is the intention of the County and all participating municipalities to discourage development in vulnerable areas or to encourage higher regulatory standards on the local level.

Additional Data and Next Steps

A HAZUS-MH flood analysis was conducted for Fulton County using the most current and best available data including updated population data, building and critical facility inventories, and DFIRM. A more accurate analysis may be conducted in the future by generating a custom building stock inventory compatible with HAZUS-MH. Further, as additional FEMA Risk Mapping, Assessment, and Planning (Risk MAP) products become available, these may be used to further enhance this assessment (e.g. depth grids for additional recurrence intervals).

Specific mitigation actions addressing improved data collection and further vulnerability analysis is included in Chapter Six and individual municipality annexes of this plan.

5.5.5 Geological Hazards

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the geological hazards in Fulton County.

Specific 2016 Plan Update Changes for Geological Hazards

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the geological hazards is discussed. The geological hazards profile includes both landslides and sinkholes.
- New and updated figures from federal and state agencies are incorporated. U.S. 2010 Census data was incorporated, where appropriate.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the geological hazards and it is included in the hazard profile.

5.5.5.1 Profile

Hazard Description

Geological hazards are any geological or hydrological processes that pose a threat to humans and natural properties. Every year, severe natural events destroy infrastructure and cause injuries and deaths. Geologic hazards may include volcanic eruptions and other geothermal related features, earthquakes, landslides and other slope failures, mudflows, sinkhole collapses, snow avalanches, flooding, glacial surges and outburst floods, tsunamis, and shoreline movements. For the purpose of this HMP Update, landslides and sinkholes will be discussed in the Geological Hazard profile.



Landslides

Landslides are a geologic hazard common to almost every state in the United States and cause over \$1 billion in damages and between 25 and 50 deaths each year. According to the U.S. Geological Survey (USGS), the term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Landslides are the movement of a mass of rock, debris or earth down a slope. They develop when water rapidly accumulates in the ground, during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or "slurry". Landslides can flow rapidly, striking with little to no warning and can travel several miles from their source (USGS 2014; State of Georgia HMP 2014).

Gravity is typically the primary reason for a landslide to occur; however, there are other factors which include: (1) erosion by rivers, glaciers, or ocean waves which create over-steepened slopes; (2) rock and soil slopes weakened through saturation by snowmelt or heavy rains; (3) earthquakes which create stresses making weak slopes fail; and (4) excess weight from rain/snow accumulation, rock/ore stockpiling, waste piles, or man-made structures (USGS 2014; 2015).

Sinkholes

Sinkholes are common in areas where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes occur when the underground spaces get too big and there is not enough support for the land above the spaces, which causes a sudden collapse of the land surface. The size of a sinkhole can vary from a few feet to hundreds of acres and from less than one to more than 100 feet deep. Typically, sinkholes form so slowly that little change is noticeable, but they can form suddenly when a collapse occurs. Such a collapse can have a dramatic effect if it occurs in an urban setting (USGS 2015).

A change in the local environment affecting the soil mass initiates sinkhole collapses and areas of subsidence. This change is called the "triggering mechanism." Water, either surface or ground water, is generally the most important agent effecting environmental changes that cause subsidence. Triggering mechanisms for subsidence include water level decline, changes in ground-water flow, increased loading, and deterioration (relates to abandoned coal mines) (Atlanta-Fulton County HMP 2010).

Lowering water levels is one of the most significant triggering mechanisms for subsidence in a karst terrain. Water level decline may occur naturally or be induced by man. Factors leading to a decline in water levels include the pumping of water from wells, localized drainage from construction, dewatering from mining, and periods of drought (Atlanta-Fulton County HMP 2010).

Sinkholes also threaten water and environmental resources by draining streams, lakes, and wetlands, and creating pathways for transmitting surface waters directly into underlying aquifers. Where these pathways are developed, movement of surface contaminants into the underlying aquifer systems can persistently degrade ground-water resources. In some areas, sinkholes are used as storm drains, and because they are a direct link with the underlying aquifer systems it is important that their drainage areas be kept free of contaminants. Conversely, when sinkholes become plugged, they can cause flooding by capturing surface-water flow and can create new wetlands, ponds, and lakes (Atlanta-Fulton County HMP 2010).

In the State of Georgia, sinkholes occur due to the underlying carbonate rock beneath the area running along the fall line (border between coastal plain and piedmont region of Georgia) and the area of the southern Appalachian Mountains (State of Georgia HMP 2014).



Landslides

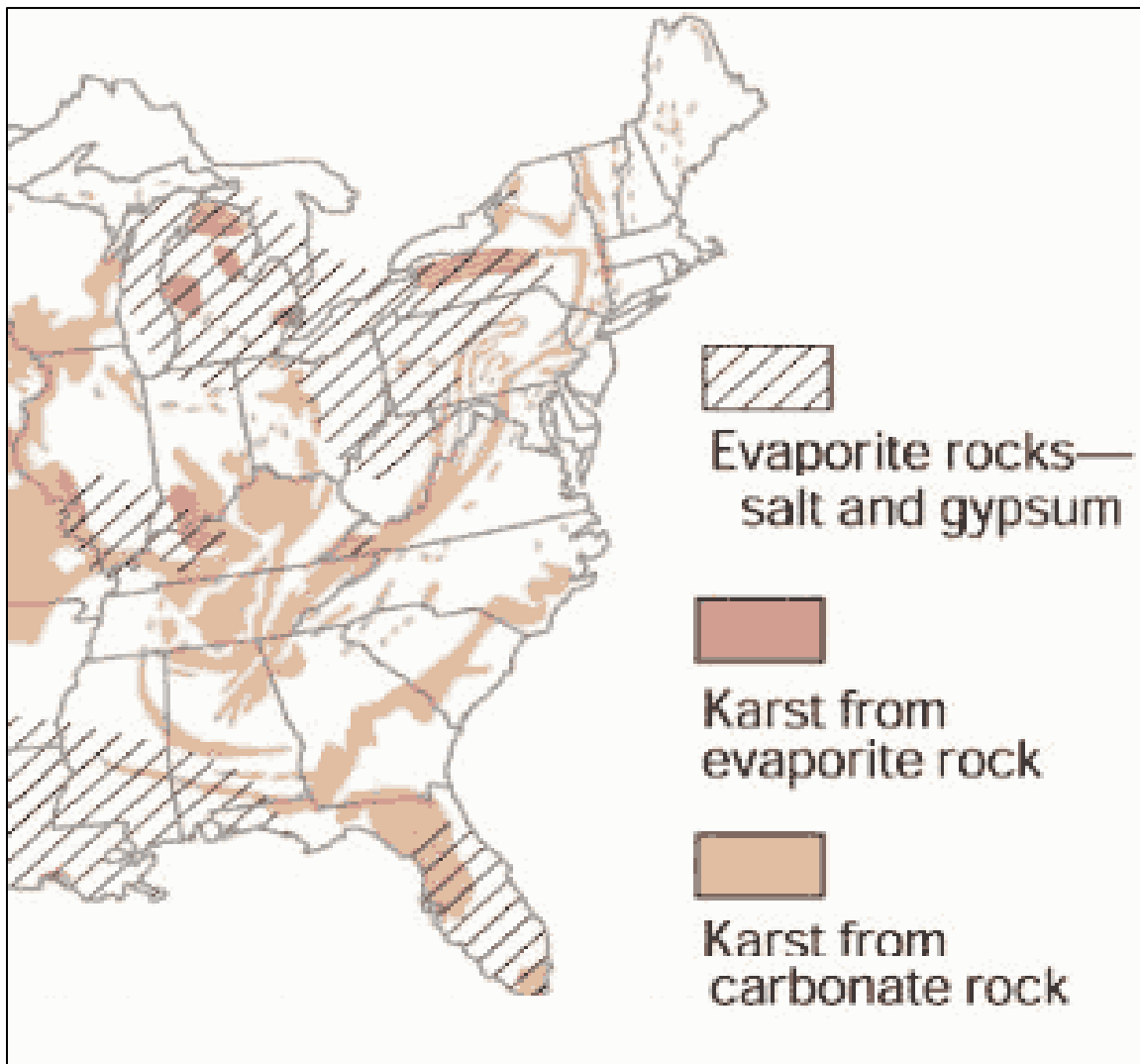
Due to the differences in geology, slope and moisture, some areas are more prone to landslides than others. Areas more susceptible to slope failure includes areas that are: near existing old landslides; on or at the base of slopes; in or at the base of minor drainage hollows; at the base or top of an old fill slope; at the base or top of a steep cut slope; or developed hillsides where leach filed septic systems are used (Geological Survey of Alabama 2015).

The entire U.S. experiences landslides, with 36 states having moderate to highly severe landslide hazards. Expansion of urban and recreational developments into hillside areas exposes more people to the threat of landslides each year. According to the USGS, Fulton County has a moderate to very high landslide potential. For a figure displaying the landslide potential of the conterminous United States, please refer to <http://pubs.usgs.gov/fs/2005/3156/2005-3156.pdf> (USGS 2005).

Sinkholes

There are certain rock types that are susceptible to dissolution in water and are found throughout the United States. These rock types include evaporates (salt, gypsum, and anhydrite) and carbonates (limestone and dolomite). Evaporite rocks underlie about 35 to 40% of the country. Figure 5.5-9 shows the areas in the United States that are more prone to sinkholes. In these areas, the formation of underground cavities can form and catastrophic sinkholes can occur. In Fulton County, groundwater accounts for only 1% of the total water source in the county. The figure shows that the county is not underlain by evaporates or carbonates.

Figure 5.5-9 Areas Prone to Sinkholes in the United States.



Source: USGS 2015 (<http://water.usgs.gov/edu/sinkholes.html>)

Extent

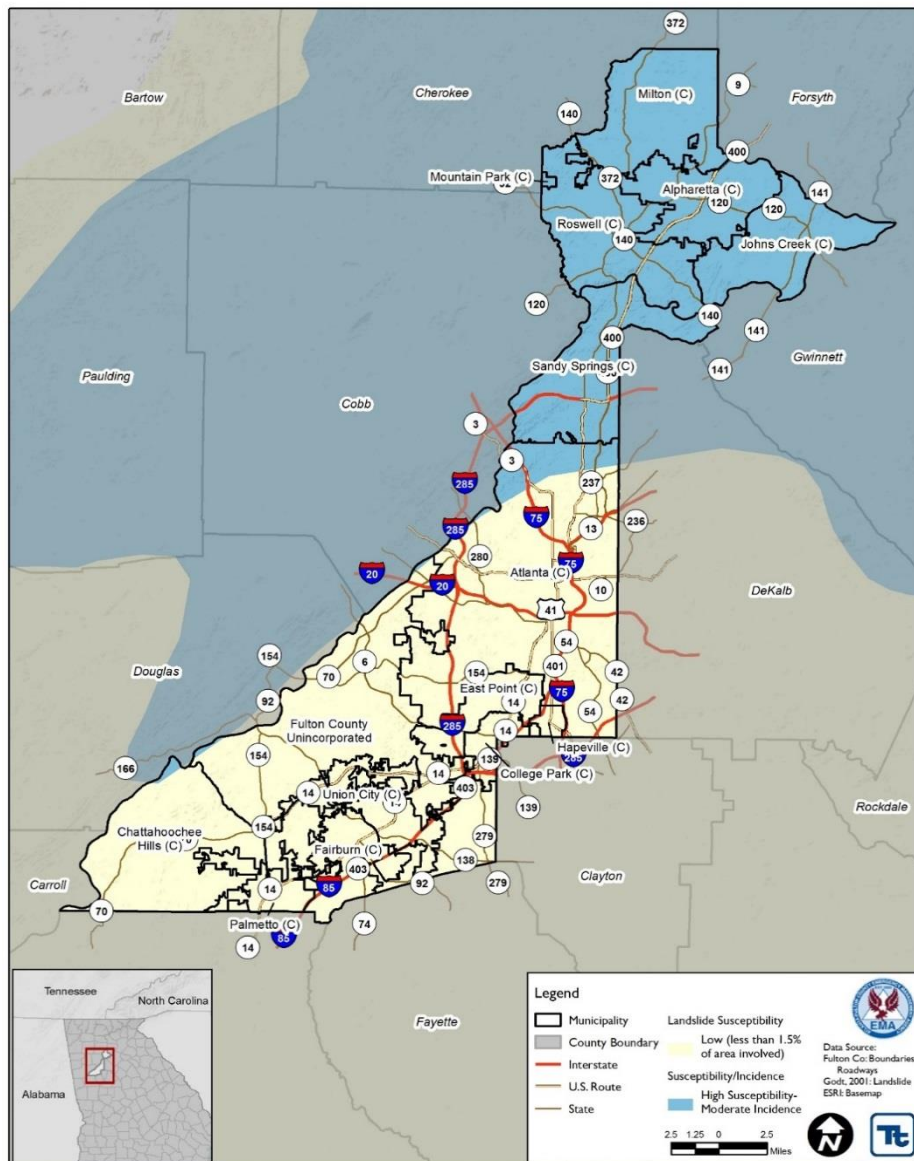
Landslide

To determine the extent of a landslide hazard, the affected areas need to be identified and the probability of the landslide occurring within some time period needs to be assessed. Natural variables that contribute to the overall extent of potential landslide activity in any particular area include soil properties, topographic position and slope, and historical incidence. Predicting a landslide is difficult, even under ideal conditions and with reliable information. As a result, the landslide hazard is often represented by landslide incidence and/or susceptibility, as defined below:

- Landslide incidence is the number of landslides that have occurred in a given geographic area. High incidence means greater than 15% of a given area has been involved in

- landsliding; medium incidence means that 1.5 to 15% of an area has been involved; and low incidence means that less than 1.5% of an area has been involved (State of Alabama 2015).
- Landslide susceptibility is defined as the probable degree of response of geologic formations to natural or artificial cutting, to loading of slopes, or to unusually high precipitation. It can be assumed that unusually high precipitation or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. Landslide susceptibility depends on slope angle and the geologic material underlying the slope. Landslide susceptibility only identifies areas potentially affected and does not imply a time frame when a landslide might occur. High, medium, and low susceptibility are delimited by the same percentages used for classifying the incidence of land sliding (State of Alabama 2015).

Figure 5.5-10 Landslide Susceptibility in Fulton County



Source: Godt, 2001



Sinkhole

Measures and scales of magnitude and intensity do not exist for sinkholes. However, the magnitude may be measured by the areal extent of the sinkhole where intensity may be estimated by the losses with the hazard event (State of Georgia HMP 2014). Based on the underlying geological composition in the Fulton County area, it does not appear that the County is at risk for very large or catastrophic, naturally occurring sinkholes due to the lack of salt and gypsum evaporate rock, karst from evaporate rock, or karst from carbonate rock. Fulton County, however, is at risk for localized, man-made sinkholes (Fulton HMP 2010). A recent example of a man made sinkhole in Fulton County happened on May 18, 2016 in Midtown Atlanta. This occurrence was caused by a water main break at the corner of State Street and 14th Street.

Previous Occurrences and Losses

Documentation for geological hazard events in Fulton County is scarce; however, there have been occurrences. Known geological hazard events that have impacted Fulton County between 2010 and 2015 are identified in 5.5-34 Events prior to 2010 can be found in the 2010 Atlanta-Fulton County HMP. Many sources were reviewed for the purpose of this HMP Update and loss and impact information could vary depending on the source. Therefore, the accuracy of event details and monetary figures, if any, is based only on the available information identified during research for this HMP.

Between 1954 and 2015, FEMA issued a disaster (DR) or emergency (EM) declaration for the State of Georgia for one geological hazard-related event, classified as severe storms, flooding and mudslide. This declaration did not include Fulton County (FEMA 2015).



Table 5.5-34. Geologic Hazard Events in Fulton County, 2010 to 2015

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
June 3, 2010	Sinkhole	N/A	N/A	A sinkhole has been forming in a southwest Atlanta subdivision due to an erosion control project undertaken by a developer that was ordered by the county. The project involved the installation of a retaining wall and a new drainage system.
June 8, 2010	Sinkhole	N/A	N/A	A sinkhole formed when an aging water pipe broke and caused a sinkhole in the center lanes of Centennial Olympic Park Drive.
August 5, 2013	Heavy Rains and Mudslide	N/A	N/A	Heavy rains created a mudslide in the City of Sandy Springs, forcing officials to close Lake Forrest Drive between Lake Summit and Chevaux Court. Tests showed a large wall bordering the street was no longer stable. Residents in the area have reported either other mudslides in this location over the last 12 months. Costs for repairs were estimated at \$1 million.
January 27, 2014	Sinkhole	N/A	N/A	A water main break flooded Collier Drive in northwest Atlanta and caused a sinkhole at least five feet deep and 12 feet wide. The water from the pipe caused the road to buckle in several areas. This area was closed between Valley Heart Drive and Chalmers Drive until the proper repairs were made.
February 5, 2014	Sinkhole	N/A	N/A	Due to a faulty stormwater line installed underneath a home in Atlanta that washed away soil, a sinkhole developed. The homeowner stepped outside and fell into the sinkhole. It was estimated to be eight feet deep and 12 feet wide. The woman suffered minor injuries.

Source: USGS 2013; Atlanta-Fulton County HMP 2010; NOAA-NCDC Storm Database 2015; FEMA 2015



Probability of Future Occurrences

Based upon risk factors for and past occurrences, it is likely that geological hazards will occur in Fulton County in the future. Landslide and sinkhole probabilities are largely a function of surface geology, but are also influenced by both weather and human activities. The County will continue to experience the direct and indirect impacts of geological hazards and its impacts on occasion, with the secondary effects causing potential disruption or damage to communities

In Section 5.4 the identified hazards of concern for Fulton County were listed. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for geological hazards in the County with significant impacts based on historical data is considered 'possible' (1% to 10% or has a chance of occurrence within 100 years). See section 5.6 for additional details provided by the Planning Committee.

Climate Change Impacts

Providing projections of future climate change for a specific region is challenging. Shorter term projections are more closely tied to existing trends making longer term projections even more difficult. The further out a prediction reaches the more subject to changing dynamics it becomes.

Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).

Landslides

Climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. Increase in global temperature could affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. All of these factors would increase the probability for landslide occurrences.

Sinkholes

Similar to landslides, climate change will affect sinkholes in the State of Georgia. As discussed throughout this profile, one of the triggers for sinkholes is an abundance of moisture which has the potential to permeate the bedrock causing an event. Climatologists expect an increase in annual precipitation amounts. This increase will coincide with an increased risk in subsidence and sinkholes in vulnerable areas.

More recently, sinkholes have been correlated to land use practices, especially from groundwater pumping and from construction and development practices. Sinkholes may also form when the land surface is changed, such as when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing



a sinkhole. Additionally, the overburden sediments that cover buried cavities in the aquifer systems are delicately balanced by groundwater fluid pressure. Groundwater is helping keep the surface soil in place. Pumping groundwater for urban water supply and for irrigation can produce new sinkholes in sinkhole-prone areas. If pumping results in a lowering of groundwater levels, then underground structural failure, sinkholes may occur as well (USGS 2014).

5.5.5.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the geological hazard, the high susceptibility-moderate incidence landslide areas have been identified as the hazard area. The following text evaluates and estimates the potential impact of geologic hazards on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Atlanta-Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

Vulnerability to ground failure hazards is a function of location, soil type, geology, type of human activity, use, and frequency of events. The effects of ground failure on people and structures can be lessened by total avoidance of hazard areas or by restricting, prohibiting, or imposing conditions on hazard-zone activity. Local governments can reduce ground failure effects by educating themselves on past hazard history of the site and by making inquiries to planning and engineering departments of local governments (National Atlas, 2007).

To determine vulnerability, a spatial analysis was conducted in GIS using the landslide susceptibility dataset discussed below. When the analysis determined the hazard area would impact an area in a jurisdiction, or the location of critical facilities, these locations were deemed vulnerable to the hazard.

Data and Methodology

According to Radbruch-Hall et al., the Landslide Incidence and Susceptibility GIS layer from National Atlas "...was prepared by evaluating formations or groups of formations shown on the geologic map of the United States (King and Beikman 1974) and classifying them as having high, medium, or low landslide incidence (number of landslides) and being of high, medium, or low susceptibility to landsliding. Thus, those map units or parts of units with more than 15 percent of their area involved in landsliding were classified as having high incidence; those with 1.5 to 15 percent of their area involved in landsliding, as having medium incidence; and those with less than 1.5 percent of their area involved, as having low incidence. This classification scheme was modified where particular lithofacies are known to have variable landslide incidence or susceptibility. In continental glaciated areas, additional data were used to identify surficial deposits that are susceptible to slope movement. Susceptibility to landsliding was defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting or loading of slopes or to anomalously high precipitation. High, medium, and low susceptibility are delimited by the same percentages used in classifying the incidence of landsliding. For example, it was estimated that a rock or soil unit characterized by high landslide susceptibility would respond to widespread artificial cutting by some movement in 15



percent or more of the affected area. We did not evaluate the effect of earthquakes on slope stability, although many catastrophic landslides have been generated by ground shaking during earthquakes. Areas susceptible to landslides under static conditions would probably also be susceptible to failure during earthquakes” (Redbrick-Hall 1982).

In an attempt to estimate Fulton County’s vulnerability to landslides, the Landslide Incidence and Susceptibility GIS layer was used to coarsely define the general landslide susceptible area. The area noted as ‘high susceptibility-moderate incidence landslide area’ was used to define the hazard area for this plan update. This layer was overlaid upon the Fulton County 2010 Census population data, HAZUS-MH 2.2 general building stock data, the County’s building footprint layer, and the updated critical facility inventory to estimate exposure.

The limitations of this analysis are recognized and are only used to provide a general estimate of exposure and vulnerability. Over time additional there is an expectation that data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below.

Impact on Life, Health and Safety

To estimate the population located within the hazard areas, the hazard area boundaries were overlaid upon the 2010 Census population data (U.S. Census, 2010). The Census blocks with their center (centroid) within the boundary of the landslide incidence hazard areas were used to calculate the estimated population considered exposed to this hazard. Please note the Census blocks do not align exactly with the hazard areas and, therefore, these estimates should be considered for planning purposes only. Table 5.5-35 summarizes the population within the identified hazard area by municipality (U.S. Census 2010). Specifically, the population located downslope of the landslide hazard areas are particularly vulnerable to this hazard. Due to the nature of Census block data, it is difficult to determine demographics of populations vulnerable to mass movements of geological material.

Table 5.5-35. Estimated Population Located in the Landslide Hazard Area

Municipalities	Total Population (2010 U.S. Census)	High Susceptibility/Moderate Incidence Landslide Hazard Area	
		Population Exposed	% Total
Alpharetta (C)	57,551	57,551	100%
Atlanta (C)	391,711	17,691	4.5%
Chattahoochee Hills (C)	2,378	64	2.7%
College Park (C)	12,670	0	0.0%
East Point (C)	33,712	0	0.0%
Fairburn (C)	12,950	0	0.0%
Fulton County (Unincorporated)	87,478	0	0.0%
Hapeville (C)	6,373	0	0.0%
Johns Creek (C)	76,728	76,728	100%
Milton (C)	32,661	32,661	100%
Mountain Park (C)	526	526	100%
Palmetto (C)	4,188	0	0.0%



Municipalities	Total Population (2010 U.S. Census)	High Susceptibility/Moderate Incidence Landslide Hazard Area	
		Population Exposed	% Total
Roswell (C)	88,346	88,346	100%
Sandy Springs (C)	93,853	93,853	100%
Union City (C)	19,456	0	0.0%
Fulton County (Total)	920,581	367,420	39.9%

Source: United States Census 2010; Godt, 2001

Impact on General Building Stock

In general, the built environment located in the high susceptibility-moderate incidence zones and the population, structures and infrastructure located downslope are vulnerable to this hazard. To provide a general estimate of the structural/content replacement value exposure, the hazard area boundary was overlaid upon the Census blocks from HAZUS-MH 2.2. To estimate the number of structures exposed, the hazard area boundary was overlaid upon the structure footprints from the County-provided spatial layer. Table 5.5-36 summarize the exposed building stock in the landslide susceptibility hazard area by municipality.

Table 5.5-36 Estimated Building Exposure in the Landslide Hazard Area

Municipality	Total Number of Buildings	Total Replacement Value (Structure and Contents)	High Susceptibility/Moderate Incidence Landslide Hazard Area			
			# Buildings	% Total	Improvement Value	% Total
Alpharetta (C)	16,680	\$15,242,479,000	16,680	100%	\$15,242,479,000	100%
Atlanta (C)	140,031	\$98,670,268,000	7,010	5.0%	\$5,289,082,000	5.4%
Chattahoochee Hills (C)	2,361	\$433,133,000	0	0.0%	\$9,614,000	2.2%
College Park (C)	3,859	\$2,684,193,000	0	0.0%	\$0	0.0%
East Point (C)	15,119	\$6,660,776,000	0	0.0%	\$0	0.0%
Fairburn (C)	5,491	\$2,383,179,000	0	0.0%	\$0	0.0%
Fulton County (Unincorporated)	37,826	\$18,581,416,000	0	0.0%	\$918,000	<1%
Hapeville (C)	3,304	\$1,328,675,000	0	0.0%	\$0	0.0%
Johns Creek (C)	23,197	\$16,852,355,000	23,197	100%	\$16,852,355,000	100%
Milton (C)	10,745	\$7,092,133,000	10,745	100%	\$7,092,133,000	100%
Mountain Park (C)	325	\$192,688,000	325	100%	\$192,688,000	100%
Palmetto (C)	2,119	\$832,439,000	0	0.0%	\$0	0.0%
Roswell (C)	28,558	\$20,997,523,000	28,558	100%	\$20,997,523,000	100%
Sandy Springs (C)	21,783	\$26,257,287,000	21,783	100%	\$26,257,287,000	100%
Union City (C)	5,932	\$3,150,518,000	0	0.0%	\$0	0.0%
Fulton County (Total)	317,330	\$221,359,062,000	108,298	34.1%	\$91,934,079,000	41.5%

Source: Fulton County, HAZUS-MH 2.2, Godt, 2001

Impact on Critical Facilities

To estimate exposure, the approximate hazard areas were overlaid upon the essential and municipal facilities. In addition to critical facilities, a significant amount of infrastructure can be exposed to mass movements of geological material:



- Roads—Access to major roads is crucial to life-safety after a disaster event and to response and recovery operations. Landslides can block egress and ingress on roads, causing isolation for neighborhoods, traffic problems, and delays for public and private transportation. This can result in economic losses for businesses.
- Bridges—Landslides can significantly impact road bridges. Mass movements can knock out bridge abutments or significantly weaken the soil supporting them, making them hazardous for use.
- Power Lines—Power lines are generally elevated above steep slopes; but the towers supporting them can be subject to landslides. A landslide could trigger failure of the soil underneath a tower, causing it to collapse and ripping down the lines. Power and communication failures due to landslides can create problems for vulnerable populations and businesses.
- Rail Lines – Similar to roads, rail lines are important for response and recovery operations after a disaster. Landslides can block travel along the rail lines, which would become especially troublesome, because it would not be as easy to detour a rail line as it is on a local road or highway.

Several other types of infrastructure may also be exposed to landslides, including water and sewer infrastructure. At this time all critical facilities, infrastructure, and transportation corridors located within the hazard areas are considered vulnerable until more information becomes available. The following table notes the critical facilities located within the landslide hazard area.

Table 5.5-37 Critical Facilities in the Landslide Hazard Area

Municipality	Facility Types												
	Arts & Culture	City Hall	Communication	Court	Government Building	Library	Medical	Potable Facility	Potable Pump Station	Senior	Tier II (Hazmat)	Wastewater Facility	Wastewater Pump Station
Alpharetta (C)	0	1	0	0	3	1	1	0	0	0	40	0	0
Atlanta (C)	0	0	0	0	0	0	2	0	7	0	4	0	0
Chattahoochee Hills (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
College Park (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
East Point (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairburn (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Fulton County (Unincorporated)	0	0	0	0	0	0	0	0	0	0	0	0	0
Hapeville (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Johns Creek (C)	0	1	2	0	0	2	0	3	6	0	11	0	0
Milton (C)	0	1	0	2	0	0	0	6	5	0	7	0	0
Mountain Park (C)	0	1	0	1	0	0	0	0	0	0	0	0	0
Palmetto (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Roswell (C)	0	1	1	1	0	1	2	26	7	1	22	24	3
Sandy Springs (C)	2	2	5	3	0	1	6	2	12	3	27	0	0



Municipality	Facility Types												
	Arts & Culture	City Hall	Communication	Court	Government Building	Library	Medical	Potable Facility	Potable Pump Station	Senior	Tier II (Hazmat)	Wastewater Facility	Wastewater Pump Station
Union City (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Fulton County (Total)	2	7	8	7	3	5	11	37	37	4	111	24	3

Source: Fulton County, Godt, 2001

Impact on the Economy

Geologic hazards can impose direct and indirect impacts on society. Direct costs include the actual damage sustained by buildings, property and infrastructure. Indirect costs, such as clean-up costs, business interruption, loss of tax revenues, reduced property values, and loss of productivity are difficult to measure. Additionally, ground failure threatens transportation corridors, fuel and energy conduits, and communication lines (USGS 2003). Estimated potential damages to general building stock can be quantified as discussed above. For the purposes of this analysis, general building stock damages are discussed further.

A landslide or sinkhole/subsidence event will alter the landscape. In addition to changes in topography, vegetation and wildlife habitats may be damaged or destroyed, and soil and sediment runoff will accumulate downslope potentially blocking waterways and roadways and impacting quality of streams and other water bodies. Additional environmental impacts include loss of forest productivity. Sinkhole and subsidence events can cause major damage to buildings if they occur on the property. There are over 108 thousand buildings located within the high susceptibility-moderate incidence landslide hazard area and account for \$91.9 billion, or 41.5% of the County’s total building cost. These dollar value losses to Fulton County’s total building inventory would impact Fulton County’s tax base and the local economy.

Many of the major transportation routes in the County could be affected by a landslide event in the designated susceptible areas. These include I-285 and I-75, US-19, and GA-92, GA-120, GA-372, and GA-400. Refer to Figure 5.5-10 above.

Future Growth and Development

As discussed in Chapter 3 and the annexes areas targeted for future growth and development have been identified across Fulton County. It is anticipated that new development within the identified hazard area will be exposed to such risks.

Change of Vulnerability

Fulton County and all plan participants continue to be vulnerable to the geological hazards. The 2010 HMP detailed did not provide a quantitative vulnerability assessment for the landslide hazard. For this plan update, updated population data, an updated general building stock based upon 2014 RS Means, and an updated critical facility inventory were used to assess the County’s risk to the hazard areas.



Effect of Climate Change on Vulnerability

Providing projections of future climate change for a specific region is challenging. Some scientists feel that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity according to research into prehistoric earthquakes and volcanic activity. National Aeronautics and Space Administration (NASA) and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes and potentially increased landslide events.

As noted earlier, climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. Increase in global temperature could affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. All of these factors would increase the probability for landslide occurrences.

Additional Data and Next Steps

Obtaining historic damages to buildings and infrastructure incurred due to ground failure will help with loss estimates and future modeling efforts, given a margin of uncertainty. More detailed landslide susceptibility zones can be generated so that communities can more specifically identify high hazard areas. Further, research on rainfall thresholds for forecasting landslide potential may also be an option for Fulton County.

New analyses of NASA airborne radar data collected in 2012 showed the radar detected indications of a huge sinkhole before it collapsed and forced evacuations in Louisiana. The findings suggest that such radar data, if collected routinely from airborne systems or satellites, could at least, in some cases, foresee sinkholes before they happen. Researchers analyzed interferometric synthetic aperture radar (InSAR) imagery which is used to detect and measure very subtle deformations in the earth's surface. In the case of the Louisiana sinkhole, analyses showed the ground surface layer deformed significantly at least a month before the collapse. This research has shown that InSAR and other remote sensing could offer a monitoring technique for identifying at least some sinkholes before their surface collapse (NASA 2014).

5.5.6 Heat Wave

This section provides a profile and vulnerability assessment for the heat wave hazard.

Specific 2016 Plan Update Changes for Heat Wave

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the heat wave hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the heat wave hazard and it included in this section.

5.5.6.1 Hazard Profile

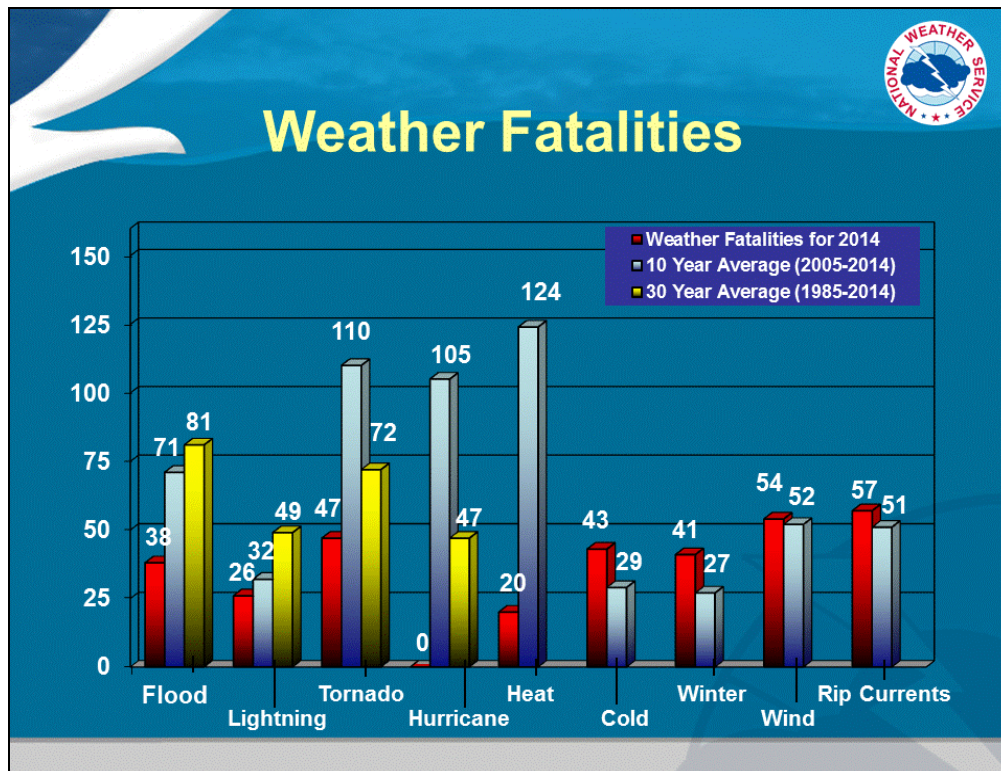
This section provides profile information including description, extent, location, previous occurrences and losses and the probability of future occurrences.

Description

Extreme heat is defined as temperatures which hover 10 degrees or more above the average high temperature for a region and that last for several weeks (Centers for Disease Control and Prevention [CDC] 2009). Humid or muggy conditions occur when a 'dome' of high atmospheric pressure traps hazy, damp air near the ground. An extended period of extreme heat of three or more consecutive days is typically called a heat wave and is often accompanied by high humidity (NWS 2013). Depending on severity, duration and location; extreme heat events can create or provoke secondary hazards including, but not limited to, dust storms, droughts, wildfires, water shortages and power outages (CDC 2009). This could result in a broad and far-reaching set of impacts throughout a local area or entire region. Impacts could include significant loss of life and illness; economic costs in transportation, agriculture, production, energy and infrastructure; and losses of ecosystems, wildlife habitats and water resources (Adams Date Unknown; Meehl and Tebaldi 2004; CDC 2009).

Extreme heat is the number one weather-related cause of death in the United States. Figure 5.5-11 shows the number of weather fatalities based on a 10 year average and 30 year average. Heat has the highest average of weather related fatalities between 2005 and 2014.

Figure 5.5-11 Average Number of Weather Related Fatalities in the U.S.



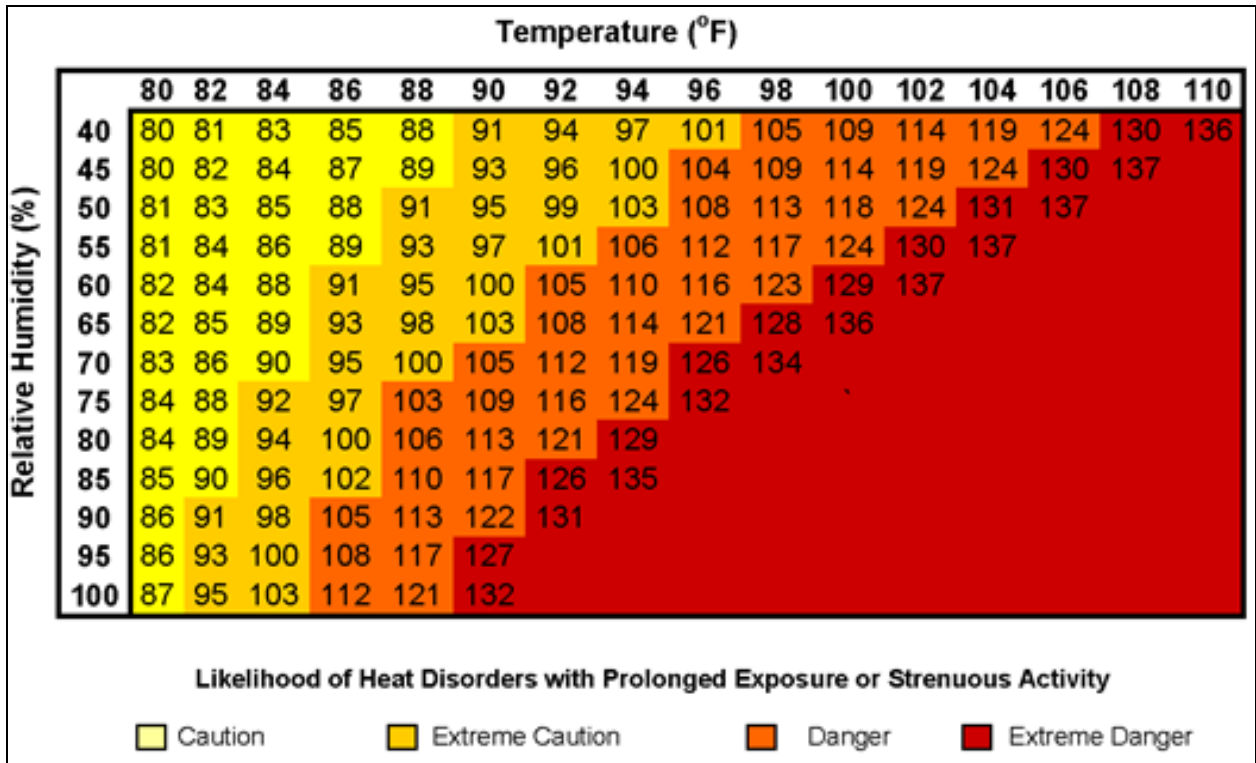
Source: NWS 2015



Extent

The extent of extreme heat temperatures are generally measured through the Heat Index, identified in Table 5.5-38 Created by the NWS, the Heat Index is a chart which accurately measures apparent temperature of the air as it increases with the relative humidity. To determine the Heat Index, the temperature and relative humidity are needed. Once both values have been identified, the Heat Index is the corresponding number of both the values (as seen in Table 5.5-38). This provides a measure of how temperatures actually feel; however, the values are devised for shady, light wind conditions. Exposure to full sun can increase the Index by up to 15 degrees (NWS 2015).

Table 5.5-38. Heat Index Chart



Source: NWS 2013

Table 5.5-39 describes the adverse effects that prolonged exposure to heat and humidity can have on an individual.

Table 5.5-39. Adverse Effects of Prolonged Exposures to Heat on Individuals

Likelihood of Heat Disorder	Heat Index	Health Hazards
Extreme Danger	130°F – Higher	Heat Stroke / Sunstroke is likely with continued exposure.
Danger	105°F – 129°F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Extreme Caution	90°F – 105°F	Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.



Likelihood of Heat Disorder	Heat Index	Health Hazards
Caution	80°F – 90°F	Fatigue possible with prolonged exposure and/or physical activity.

Source: NWS 2015

Each NWS Forecast Office issues some or all of the following heat-related products as conditions warrant. NWS local offices often collaborate with local partners to determine when an alert should be issued for a local area. 5.5-40 explains these alerts.

Table 5.5-40 National Weather Service Alerts

Alert	Criteria
Excessive Heat Warning/Advisory	This is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least two days and night time air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you become seriously illness or even die.
Excessive Heat Watch	This is issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
Excessive Heat Outlooks	This is issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

Source: NWS 2015

Location

All areas of Fulton County are subject to temperature extremes and heat waves have the ability to affect all areas of the County. The City of Atlanta is an urbanized section of the County and, as such, is prone to the heat island effect. Areas particularly prone to extreme heat temperatures are those located within an urban heat island. The term "urban heat island" (UHI) describes built up areas that are hotter than nearby rural areas. The annual mean air temperature of a city with one million people or more can be 1.8°F to 5.4°F warmer than its surroundings. In the evening, the difference can be as high as 22°F. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, heat-related illness and mortality, and water quality. The main cause of the urban heat island is modification of the land surface by urban development which uses materials which effectively retain heat. Waste heat generated by energy usage is a secondary contributor. As population centers grow they tend to modify a greater and greater area of land and have a corresponding increase in average temperature. Other causes of a UHI are due to geometric effects. The tall buildings within many urban areas provide multiple surfaces for the reflection and absorption of sunlight, increasing the efficiency with which urban areas are heated. This is called the "urban canyon effect". Another effect of buildings is the blocking of wind, which also inhibits cooling by convection. Waste heat from automobiles, air conditioning, industry, and other sources also contributes to the UHI. High levels of pollution in urban areas can also increase the UHI, as many forms of pollution change the radiative properties of the atmosphere. Areas of dense populations of elderly and low income residents exist, which are more vulnerable to the effects of extreme heat (Fulton County HMP 2010).



Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with heat waves throughout Fulton County. With so many sources reviewed for the purpose of this HMP, loss and impact information for many events could vary. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

The Midwest Regional Climate Center (MRCC) operates the MRCC's Application Tools Environment (cli-MATE) which provides access to climate data and value-added tools. This application can be used to look up information that includes raw climate data, rankings of climate information, thresholds, growing season tool, maps, graphs, etc. For the purpose of this hazard profile, the maximum and minimum temperatures and the maximum average and minimum average for the stations in Fulton County were queried for information between January 1, 1879 and October 25, 2015. Based on the cli-MATE application, there are three stations in Fulton County with temperature data. Based on the data provided by MRCC, Table 5.5-41 presents the minimum and maximum temperature records for Fulton County from 1878 to 2015.

Table 5.5-41. MRCC Temperature Extremes – Fulton County

Name	Begin	End	Max (°F)	Max Date	Min (°F)	Min Date	Avg Max (°F)	Avg Min (°F)
ALPHARETTA 4 SSW (GA)	10/1/1901	7/8/2011	102° F	7/22/1986	-10°F	1/21/1985	70.1°F	46.8°F
ATLANTA FULTON CO AP	11/1/1998	Present	104° F	6/30/2012	5°F	1/30/2014	73.2°F	51.2°F
ATLANTA WB CITY	10/1/1878	4/30/1954	102° F	9/8/1925	-9°F	2/13/1899	70.0°F	52.8°F

Source: MRCC 2015

Notes: Begin Year is when the data collection began; End Year is when the data collection stopped.

Between 1954 and 2015, the State of Georgia has not been included in any major disaster (DR) or emergency (EM) declarations due to heat events. In addition to FEMA declarations, there are agriculture-related disasters which are quite common. The Secretary of Agriculture from the U.S. Department of Agriculture (USDA) is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. Between 2012 and 2015, Fulton County was included in only one USDA declaration involving excessive heat (S3457).

The worst heat wave on record for Fulton County occurred between August 1-27, 2007. This was one of the hottest months on record combined with abnormally dry conditions. During this time the county reached 100 degrees 8 times with 104 degrees as the highest temperature recorded. One death was recorded on August 12 as a result of this heat wave. Information regarding specific details of heat waves and other heat events in Fulton County is scarce; therefore, previous occurrences and losses associated with extreme temperature events are limited. For this 2016 HMP, heat wave events were summarized from 2010 to 2015 and are identified in Table 5.5-42. Please note that not all events that have occurred in Fulton County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.



Table 5.5-42 Heat Wave/Extreme Heat Events in Fulton County, 2010-2015

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
June 29-July 1, 2012	Heat	N/A	N/A	This was one of the hottest events in Georgia state history, with multiple all-time heat records tied or broken. This included Athens (Clarke County) at 109°F, Macon (Bibb County) at 108°F, Atlanta (Fulton County) at 106°F, and Columbus (Muscogee County) at 106°F. A heat advisory was issued for the Atlanta area.
June 23, 2015	Heat Wave	N/A	N/A	For the second time in two weeks, parts of Georgia dealt with a heat wave. Temperatures were in the mid to upper 90s for much of the week in the Atlanta area.
July 21, 2015	Heat Wave	N/A	N/A	The NWS issued heat advisories for the east coast and southern states as temperatures were predicted to reach up to 105°F.

Source(s): NOAA-NCDC 2015

FEMA Federal Emergency Management Agency

NOAA-NCDC National Oceanic Atmospheric Administration – National Climate Data Center

Probability of Future Events

Several heat wave events occur each year throughout Fulton County. It is estimated that the County will continue to experience heat waves annually that may induce secondary hazards such as drought, human health impacts, and utility failures. Table 5.5-43 summarizes the occurrences of heat wave events and its annual occurrence (on average).

Table 5.5-43. Probability of Occurrences of Heat Events

Event Type	Number of Occurrences between 1950 and 2015	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years)	Probability of Event in any given year	% chance of occurrence in any given year
Extreme Heat	22	0.34	3	0.33	33.3%

Source: NOAA-NCDC 2015

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

Based on historical records the probability of a heat wave in Fulton County is ‘likely’ (10% to 100% in the next year, or one whose impact has a chance of occurring within the next 10 years). However; input from the Planning Committee found the probability of experiencing impacts from the occurrence for heat waves in Fulton County is considered “possible” (or has a 1% to 10% chance of occurring. see Section 5.6 for additional details).



Climate Change Impacts

In the State of Georgia, average temperatures are already increasing, along with the frequency of extreme heat, storms and dry summers. Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of heat waves, droughts and severe storms. In addition to the increase in temperature, areas experiencing moderate to severe drought have also increased in the southeastern United States and Georgia. This part of the country could also experience more intense heat waves. These changes may result in decreased crop production and increased heat-related injuries and deaths.

Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F. Since 1970, droughts in Georgia have increased between 12 and 14%. Between 2000 and 2009, Fulton County had over 33 days each year of extreme low water flow. With these changes, the population of Georgia will face more public health risks from storms, flooding, waterborne illness, drought, extreme heat waves and declining air quality.

5.5.6.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For heat wave events, the entire County is exposed. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Chapter 3), are exposed and potentially vulnerable. The following text evaluates and estimates the potential impact of heat waves on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities
 - (4) economy and
 - (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Effect of climate change on vulnerability
- Additional Data and Next Steps

Overview of Vulnerability

Extreme heat temperatures generally occur for a short period of time but can cause a range of impacts, particularly to vulnerable populations that may not have access to adequate cooling. This natural hazard can also cause impacts to agriculture (crops and animals), infrastructure (e.g., power failure) and the economy. The entire inventory of the County is at risk of being damaged or experience loss due to impacts of heat waves. Certain populations, areas, and infrastructure are at greater risk than other areas of the County.

Data and Methodology

At the time of this Plan, insufficient data is available to model the long-term potential impacts of heat waves on Fulton County. Over time, additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below.



Impact on Life, Health and Safety

For the purposes of this HMP, the entire population of Fulton County (920,581 people) is exposed to heat wave events (U.S. Census, 2010). Socially vulnerable populations are most susceptible, based on a number of factors including their physical and financial ability to react or respond during a hazard and the quality of their housing conditions. Please refer to table 3.4 Fulton County Vulnerable Population Statistics in Chapter 3 for more details.

Heat wave events have potential health impacts including injury and death. According to the Centers for Disease Control and Prevention, populations most at risk to extreme heat events include the following: 1) the elderly, who are less able to withstand temperatures extremes due to their age, health conditions and limited mobility to access shelters; 2) infants and children up to four years of age; 3) individuals who are physically ill (e.g., heart disease or high blood pressure), 4) low-income persons that cannot afford proper cooling; and 5) the general public who may overexert during work or exercise during extreme heat events (CDC, 2007; CDC 2009).

Meteorologists can accurately forecast extreme heat event development and the severity of the associated conditions with several days of lead time. These forecasts provide an opportunity for public health and other officials to notify vulnerable populations, implement short-term emergency response actions and focus on surveillance and relief efforts on those at greatest risk. Adhering to extreme temperature warnings can significantly reduce the risk of temperature-related deaths.

The increase in the number of extreme heat days will lead to more heat related illness. Also, with an increase in severe weather events there will be an increase in stormwater runoff which may be polluted and sicken individuals (Kaplan and Herb 2012). The effect on public health will likely increase the need for vulnerable population planning and may place heavier burdens on the healthcare system.

Impact on General Building Stock and Critical Facilities

The entire building stock and all critical facilities in the County are exposed to heat waves. Extreme heat generally does not impact buildings. Losses may be associated with ventilation and air conditioning (HVAC) systems. Additionally, manufactured homes (mobile homes) and antiquated or poorly constructed facilities may have inadequate capabilities to withstand extreme temperatures.

It is essential that critical facilities remain operational during natural hazard events. Extreme heat events can sometimes cause short periods of utility failures, commonly referred to as “brown-outs”, due to increased usage from air conditioners, appliances, etc. Backup power is recommended for critical facilities and infrastructure.

Impact on Economy

As discussed, heat wave events can impact structures and the economy. Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to the population.

Business-owners may be faced with increased financial burdens due to unexpected repairs caused to the building, including higher than normal utility bills or business interruption due to power failure (i.e., loss of electricity, telecommunications).



The agricultural industry is most at risk in terms of economic impact and damage due to extreme temperature events. Extreme heat events can result in drought and dry conditions and directly impact livestock and crop production. See the Impact on the Economy section of the drought hazard profile (Section 5.5.2) for information regarding the impact on the agriculture as result of a drought in the County.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of events like hurricanes. While predicting changes to the prevalence or intensity of hurricanes and the events affects under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006).

As noted earlier, in the State of Georgia, average temperatures are already increasing, along with the frequency of extreme heat, storms and dry summers. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F. With these anticipated changes, the population of Georgia will face more public health risks from storms, flooding, waterborne illness, drought, extreme heat waves and declining air quality.

Change of Vulnerability

Overall, the County's vulnerability has not changed since the 2010 HMP, and the entire county will continue to be exposed and vulnerable to extreme heat events.

Future Growth and Development

As discussed and illustrated in Chapter 3 and the annexes, areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the heat wave hazard because the entire Planning Area is exposed and vulnerable to the impacts associated with these events. Areas targeted for potential future growth and development in the next five (5) years have been identified across the County at the jurisdiction level. Refer to the jurisdictional annexes of this HMP.

Additional Data and Next Steps

Over time, the County will obtain additional data to support the analysis of this hazard. Data that will support the analysis would include additional detail on past hazard events. For future plan updates, the County can track data on extreme temperature events, obtain additional information on past and future events, particularly in terms of any injuries, deaths, shelter needs, agricultural losses and other impacts. This will help to identify any concerns or trends for which mitigation measures should be developed or refined. In time, quantitative modeling of estimated extreme heat events may be feasible as data is gathered and improved.



5.5.7 Tornado

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the tornado hazard in Fulton County.

Specific 2016 Plan Update Changes for Tornado

- The hazard profile has been enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the tornado hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the tornado hazard and it is included in this section.

5.5.7.1 Profile

Hazard Description

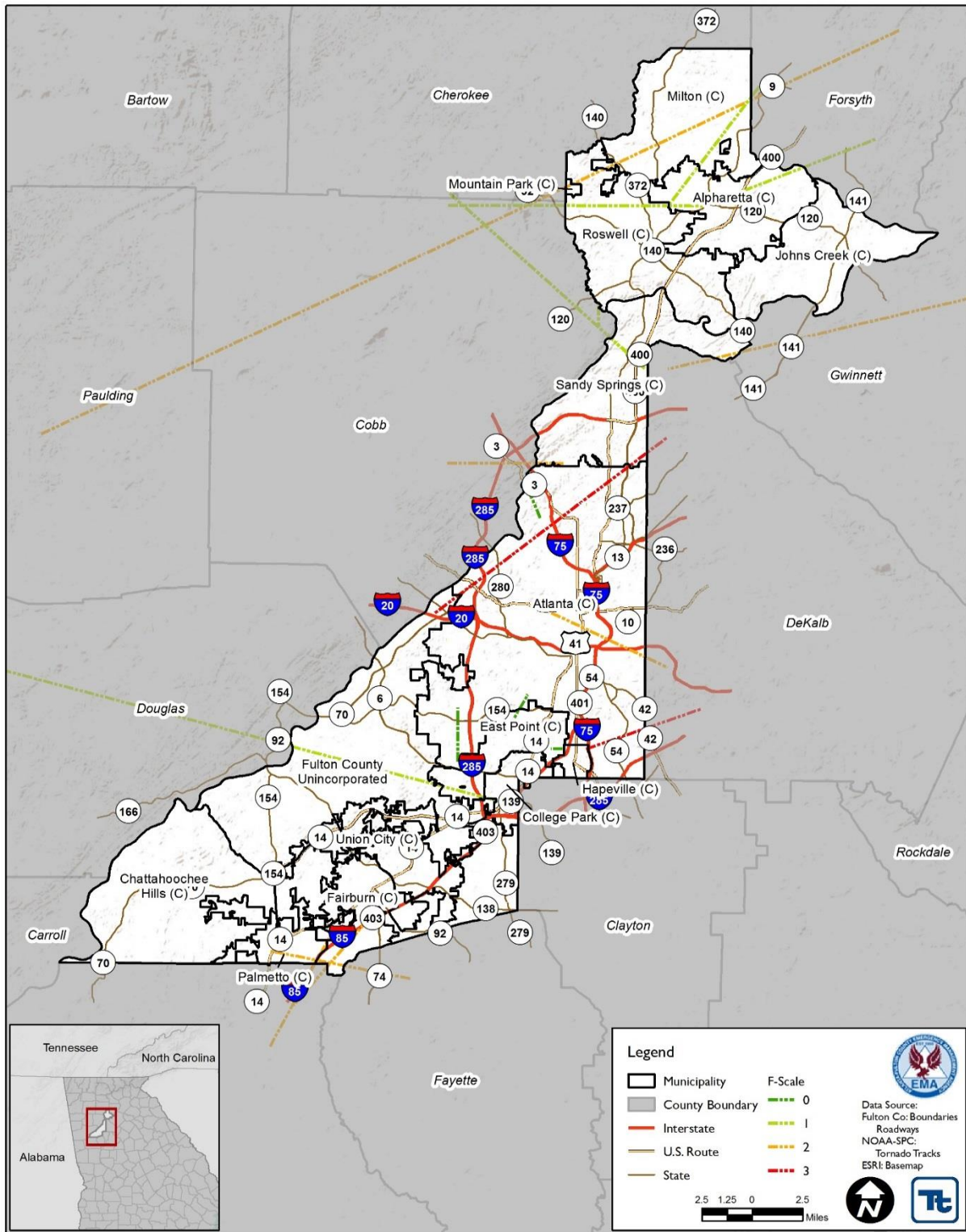
Tornadoes are nature's most violent storms and can cause fatalities and devastate neighborhoods in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 250 mph. Damage paths can be greater than one mile in width and 50 miles in length. Tornadoes typically develop from either a severe thunderstorm or hurricane as cool air rapidly overrides a layer of warm air. Tornadoes typically move at speeds between 30 and 125 mph and can generate internal winds exceeding 300 mph. The lifespan of a tornado rarely is longer than 30 minutes (FEMA 1997).

Location

Tornadoes have been documented in every state in the United States; however, most of the tornado activity occurs in the Midwest and Southeast. There are two regions with a disproportionately high frequency of tornadoes. Florida is one region and "Tornado Alley" in the south-central United States is the other. Tornado Alley is a nickname given to an area in the southern plains of the central United States that consistently experience a high frequency of tornadoes each year. The Gulf Coast area has a separate tornado maximum nicknamed "Dixie Alley" with a relatively high frequency of tornadoes occurring in the late fall (October through December). Tornadoes occur anywhere in the State of Georgia and all of Fulton County's municipalities are equally at risk for tornadoes (State of Georgia HMP 2014).

Approximately 1,200 tornadoes occur in the United States each year, with the central portion of the country experiencing the most. Tornadoes can occur at any time of the year, with peak seasons at different times for different states (NSSL 2014). In the State of Georgia, most tornadoes occur during early spring to middle summer (February to June) (State of Georgia HMP 2014). Based on statistics from 1991 to 2010, the State of Georgia has experienced an average of 30 tornadoes annually (NCDC 2013). For Fulton County, between 1950 and 2014, the County experienced 29 tornadoes, which averages less than one tornado each year (SPC 2014).

Figure 5.5-12 Historic Tornado Tracks for Fulton County (1950-2014)



Source: NOAA-SPC, 2015



Extent

The magnitude or severity of a tornado was originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale introduced in 1971. This used to be the standard measurement for rating the strength of a tornado. The F-Scale categorized tornadoes by intensity and area and was divided into six categories, F0 (gale) to F5 (incredible). Table 5-44 explains each of the six F-Scale categories.

Table 5.5-44. Fujita Damage Scale

Scale	Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena occur.

Source: Storm Prediction Center (SPC) Date Unknown

Mph miles per hour

The Enhanced Fujita Scale (EF-Scale) is now the standard used to measure the strength of a tornado. It is used to assign tornadoes a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DI) and Degree of Damage (DOD), which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, similar to that of the F-Scale, with six categories from EF0 to EF5, representing increasing degrees of damage. The EF-Scale was revised from the original F-Scale to reflect better examinations of tornado damage surveys. This new scale considers how most structures are designed (NOAA 2008). Table 5.5-45 displays the EF-Scale and each of its six categories.

Table 5.5-45 Enhanced Fujita Damage Scale

EF-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF0	Light tornado	65–85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	Moderate tornado	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	Significant tornado	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely



EF-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
			destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	136-165	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	Devastating tornado	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	Incredible tornado	>200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); high-rise buildings have significant structural deformation; incredible phenomena occur.

Source: SPC Date Unknown

EF-Scale Enhanced Fujita Scale

Mph miles per hour

Tornado watches and warnings are issued by the local NWS office. A tornado watch is released when tornadoes are possible in an area. A tornado warning means a tornado has been sighted or indicated by weather radar. The current average lead time for tornado warnings is 13 minutes. Occasionally, tornadoes develop so rapidly, that little, if any, advance warning is possible (NOAA 2013; FEMA 2013). The worst tornado on record for Fulton County occurred on March 14, 2008. This was an EF-2 that traveled through the heart of Downtown Atlanta. This tornado caused one death and injured dozens more that were trapped among debris in the downtown area. This was the first tornado to touchdown in the City of Atlanta and it cost \$2.5 million in property damage.

Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with tornado events throughout Fulton County. With many sources reviewed for the purpose of this HMP, loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2015, the State of Georgia was included in 21 FEMA declared tornado-related disaster (DR) or emergency (EM) declarations classified as one or a combination of the following hazards: severe storms, straight-line winds, flood, heavy rain, and tropical storm. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Of those declarations, Fulton County has been included in four declarations (FEMA 2015).

For this 2016 Plan, tornado events that have impacted Fulton County between 2010 and 2015 are identified in Table 5.5-46. For detailed information on damages and impacts to each municipal, refer to the jurisdictional annexes. Please note that not all events that have occurred in Fulton County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this plan.



Table 5.5-46 Tornado Events Between 2010-2015

Dates of Event	Event Type	FEIMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
October 25-28, 2010	Thunderstorms and Lightning	N/A	N/A	Severe thunderstorms and several tornadoes moved from east Texas eastward to Georgia. Two tornadoes were confirmed in northwest Georgia including an EF1 in southern Dade County. Another series of storms moved across east-central and southeast Georgia producing large hail and damaging wind gusts. In Fulton County, there were reports of three structure fires caused by lightning, causing approximately \$75,000 in property damage.
April 5, 2011	Thunderstorms and Strong Winds	N/A	N/A	An intense line of thunderstorms brought wind gusts of 60 to 70 mph as it impacted northern Georgia. Nearly every county in the area, including Fulton County, received at least one severe thunderstorm warning and these counties experienced extensive wind damage from the storms. There were two brief EF0 tornadoes in Glimmer County. The storms downed trees on homes and vehicles, caused power outages and resulted in seven fatalities. In Fulton County, there was one fatality when a tree fell on a car in the Howell Station neighborhood of Atlanta. Wind gusts of 30 to 35 mph were common in the County. Approximately \$20,000 in property damage was reported in the County.
April 15-16, 2011	Thunderstorms and Hail	N/A	N/A	A line of strong to severe thunderstorms began to move into northwest Georgia during the late afternoon of April 15 th . As the line moved further into the State, it evolved more in a large area of showers and thunderstorms with supercells. These supercells produced damaging winds, hail, and three tornadoes. During the early morning of April 16 th , the severity of these storms decreased but widespread rain and thunderstorms continued. The prolonged and heavy rain resulted in flash flooding along north Atlanta metropolitan area creeks and streams. In Sandy Springs, quarter to golf ball-sized hail was observed. Hail as large as ping-pong balls was observed around Roswell. Fulton County had approximately \$4.27 million in property damage from this event.
September 4-5, 2011	Remnants of Tropical Storm Lee	N/A	N/A	Remnants of Tropical Storm Lee brought heavy rain, flooding and possible tornadoes to north and central Georgia. The most extensive damage was reported in Cherokee County where an EF1 tornado touched down and damaged/destroyed 400 homes and injured one person. Rainfall amounts totaled seven to 10 inches over the northwest corner of Georgia. The heaviest rain was in Dade, Walker, Catoosa,



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
January 21, 2012	Thunderstorms and Hail	N/A	N/A	Whitfield and Chatoga Counties. Several flash flood warnings and river flood warnings were issued due to widespread flooding. Between one and two inches of rain fell in the Atlanta area.
June 13, 2013	Tornado (EF1)	N/A	N/A	Thunderstorms developed in northern Georgia with many of them becoming severe. Three tornadoes touched down with this system along with multiple reports of hail and wind damage. Flash flooding was also reported in the Atlanta area as a result of heavy rainfall. There were reports of 1.75 inch hail southwest of Atlanta in Ben Hill. The County had approximately \$3.8 million in damages from this event.
October 14, 2014	Tornadoes	N/A	N/A	<p>Numerous severe thunderstorms developed over northern and central Georgia which downed trees and brought large hail. In addition, two small tornadoes touched down. A tornado began in Cherokee County and passed through Cobb County and lifted in Fulton County. It moved over the Chattahoochee River near Morgan Falls (Sandy Springs), retaining its EF1 strength as it snapped and uprooted dozens of trees along the riverbank. It damaged roofs at the Laurel at Overlook Park Apartments. Netting polls at the driving range at a golf club were damaged as well. The tornado continued southeast, snapping or uprooting trees until it finally lifted just short of the DeKalb County line, where it snapped and uprooted a few trees along Twin Branch Road. Damages from this event were estimated at \$60,000.</p> <p>A line of thunderstorms brought damaging winds, tornadoes, heavy rain and flash flooding. There were multiple tornado touchdowns in Fulton County. The first was a EF0 tornado and touched down near Camp Creek Parkway and traveled north across Campbellton Road to Fairburn Road in the Ben Hill community. This tornado had maximum wind speeds of around 75 mph and a path width of 75 yards. Damage was confined to trees snapped or uprooted. This event caused approximately \$10,000 in property damage.</p> <p>The second event was an EF0 tornado that touched down on the west side of East Point around Ben Hill Road and traveled north-northeast crossing Langford Parkway before lifting in the Adams Park area. This event had maximum wind speeds of 80 mph and a path width of 75 mph. Damage was confined to mainly snapped or uprooted trees. This event caused approximately \$10,000 in property damage.</p>



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				<p>A third tornado, a EF0, touched down in Bolton near Nancy Creek Road NW and West Paces Ferry Road NW then traveled north-northwest lifting near Paces Ferry Road NW and Parian Ridge Road NW. This event had maximum wind gusts of 75 mph and a path width of 75 mph. Damage was mainly to snapped or uprooted trees; however, several homes sustained damage from falling trees. This event caused approximately \$40,000 in property damage.</p> <p>An EF1 tornado touched near Willow Point Parkway in east Cobb County and traveled north-northeast into Fulton County in Roswell north of Timber Ridge Road before lifting along Willeo Road near the Chattahoochee River. When the tornado entered Fulton County, it was downgraded to an EF0 and damage was confined to trees snapped or uprooted with some damage to homes from falling trees. The county had approximately \$15,000 in property damage from this tornado.</p> <p>An EF1 tornado touched down in Fulton County near Rucker Road west of Alpharetta and traveled northeast crossing into Forsyth County north of Francis Road before lifting near Campground Road and Wills Orchard Road. EF1 damage was indicated in Fulton County with maximum wind speeds around 105 mph and a path wide of 100 yards. Damage was confined mainly to trees with numerous large hardwood trees snapped or uprooted. Some damage to homes occurred from falling trees. Damage from this event was approximately \$80,000.</p>

Source: FEMA 2015; NOAA-NCDC 2015; SPC 2015; SHELUDS 2015

FEMA Federal Emergency Management Agency

NOAA National Oceanic and Atmospheric Administration

NCDC National Climatic Data Center

SPC Storm Prediction Center

SHELUDS Spatial Hazard Events and Losses Database for the United States



Probability of Future Occurrences

It is estimated that Fulton County will continue to experience the direct and indirect impacts of tornadoes each year which may include secondary hazards such as power failures, damage to properties and buildings, and hazardous material spills if a holding tank is damaged by the event (SPC 2015).

The following table provides the probability of occurrences of tornado events in Fulton County. Based on historic occurrences, the County has a 41% chance of a tornado occurring each year. However, the information used to calculate the probability of occurrences is only based on using NOAA-NCDC storm events database results.

Table 5.5-47 Probability of Occurrence of Severe Storm Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of Event Occurring in Any Given Year	% Chance of Occurring in Any Given Year
Tornado	27	0.42	2.44	0.41	41%

Source: NOAA-NCDC 2015

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

The identified hazards of concern for Fulton County are provided in Section 5.4. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for tornadoes in the County is considered “likely” (10% to 100% within the next year, or ones whose impact has a chance of occurring within the next 10 years). See section 5.6 for additional information provided by the Planning Committee.

Climate Change Impacts

Since tornadoes are associated with severe weather, variables such as the Urban Heat Island and other climate change issues may have the potential to affect the frequency and intensity of these events (Atlanta-Fulton County HMP 2010). However, it is unclear how climate change may affect tornado frequency, intensity, or the geographic range where tornadoes are most likely to form (Union of Concerned Scientists 2011).

A changing climate has the potential to intensify rains and storms, damaging infrastructure, and causing injury, illnesses and death. Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).



5.5.7.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the tornado hazard, all of Fulton County is exposed and vulnerable. Therefore, this includes all assets in the County (population, structures, critical facilities and lifelines), as described in Chapter 3 (County Profile). The following text evaluates and estimates the potential impact of tornado events on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities
 - (4) economy and
 - (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

The high winds and air speeds associated with tornado events often result in power outages, disruptions to transportation corridors and equipment, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals impacted by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people. Tornado events may also be accompanied by strong thunderstorms, straight-line winds, and hail, which can cause significant property damage in their own right.

The entire inventory of Fulton County is at risk of being damaged or lost due to impacts of tornadoes. Certain areas, infrastructure, and types of building are at greater risk than others due to their manner of construction. According to the 2014 State of Georgia Hazard Mitigation Strategy, Fulton County, Atlanta and the surrounding areas were most vulnerable to losses as a result of a tornado event. This may be the result of high urbanization in the region. The impacts on population, existing structures and critical facilities on the County are presented below, following a summary of the data and methodology used.

Table 5.5-48 Tornado Data Analysis for Fulton County

Enhanced Fujita Scale	Number of Events	Probability (% annual chance)	Total Length (Miles)	Average Length (Miles)	Total Width (Yards)	Average Width (Yards)	Maximum Length (Miles)*	Maximum Width (Yards)*
0	7	10.8	7.2	1.0	302.0	43.1	46.8	800
1	12	18.5	83.0	6.9	1,220.0	101.7		
2	9	13.9	94.6	10.5	2,437.0	270.8		
3	3	4.6	21.6	7.2	800.0	266.7		
Total	31	50.8	206.3	6.7	4,759.0	153.5		

Source: NOAA-SPC, 2015

Notes: Period of record: 1954 – 2014 (60 years)

* The maximum length or width of one tornado from any of the Enhanced Fujita Scale categories.



Data and Methodology

Data from the US Census, NOAA, and Planning Committee was used to support an evaluation of assets exposed to this hazard and the potential impacts associated with this hazard. The following discusses the County's vulnerability to the hazard in a qualitative nature.

Impact on Life, Health and Safety

For the purposes of this HMP, the entire population of Fulton County (920,581 people) is exposed to the tornado hazard (U.S. Census 2010). The impact on life, health, and safety is dependent upon several factors including the severity of the event and whether or not adequate warning time was provided to residents. The following populations face isolation and exposure during tornado events and could suffer more secondary effects of the hazard:

- People with functional needs and/or over the age of 65 because they have more difficulty evacuating or seeing shelter
- Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate.
- People in communities with no early warning systems or ineffective systems
- People with a language barrier unable to follow warning messages
- People in mobile homes
- People in automobiles at the time of a tornado.

The elderly and functional needs populations are considered most vulnerable because they require extra time or outside assistance during evacuations and are more likely to seek or need medical attention which may not be available due to isolation during a storm event. Please refer to Chapter 3 for the statistics of these populations.

People located outdoors (i.e., recreational activities and farming) are also considered highly vulnerable to tornadoes. This is because there is little to no warning and shelter may not be available. Moving to a lower risk location will decrease a person's vulnerability.

Impact on General Building Stock, Critical Facilities and Economy

The entire building stock and infrastructure of Fulton County is vulnerable during a tornado event. Damage to buildings is dependent upon several factors, including wind speed and duration. Buildings that may be in poor condition are particularly vulnerable to a tornado event. As discussed above, tornadoes can cause downed trees and power lines which can cause direct damage to structures and critical infrastructure, or cause delays along transportation routes. Delays caused by fallen debris along roadways and additional transportation routes can impede necessary responses to and from emergency facilities. Downed power and communication lines can also leave various areas isolated without a means to call for help or receive emergency notifications.

As discussed, tornado events can impact structures and the economy. Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to the population.

The environmental impacts of tornadoes are consistent with impacts of other hazards discussed in this plan. The debris accumulated with tornado events can overwhelm a planning area's ability to



manage. A tornado's area of impact tends to be smaller than that of a thunderstorm or other severe storm event but its higher wind speeds can cause much more destruction.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of events like tornadoes. While predicting changes to the prevalence or intensity of hurricanes and the events affects under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006). Refer to 'Climate Change Impacts' which is discussed earlier in this section for information regarding climate change and tornado events.

Future Growth and Development

As discussed in Chapter 3 and the annexes areas targeted for future growth and development have been identified across the Planning Area. Any areas of growth could be potentially impacted by the severe storm hazard because the entire planning area is exposed and vulnerable. Please refer to the specific areas of development indicated in tabular form and/or on the hazard maps included in the jurisdictional annexes of this plan.

Change of Vulnerability

Overall, the County's vulnerability to tornado events remains unchanged. However, continual increases in total population and development can lead to an increase in potential future losses for the County.

Additional Data and Next Steps

The collection of additional/actual valuation data for general building stock, critical infrastructure and economic losses would further support future estimates of potential exposure and damage for these inventories and the economy.

5.5.8 Severe Weather

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the severe weather hazard in Fulton County.

Specific 2016 Plan Update Changes for Severe Weather

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the severe weather hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the severe weather hazard and it now directly follows the hazard profile.



5.5.8.1 Profile

Hazard Description

For the purpose of this HMP and as deemed appropriated by the Fulton County Steering and Planning Committees, the severe storm hazard includes: hail, high winds, thunderstorms and lightning, which are defined below.

Hailstorms

Hail forms inside a thunderstorm where there are strong updrafts of warm air and downdrafts of cold water. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. Water droplets freeze when temperatures reach 32°F or colder. As the frozen droplet begins to fall, it may thaw as it moves into warmer air toward the bottom of the thunderstorm. However, the droplet may be picked up again by another updraft and carried back into the cold air and re-freeze. With each trip above and below the freezing level, the frozen droplet adds another layer of ice. The frozen droplet, with many layers of ice, falls to the ground as hail. Most hail is small and typically less than two inches in diameter (NWS 2010).

High Winds

High winds, other than tornadoes, are experienced in all parts of the United States. Areas that experience the highest wind speeds are coastal regions from Texas to Maine, and the Alaskan coast; however, exposed mountain areas experience winds at least as high as those along the coast (FEMA 1997). Wind begins with differences in air pressures. It is rough horizontal movement of air caused by uneven heating of the earth’s surface. Wind occurs at all scales, from local breezes lasting a few minutes to global winds resulting from solar heating of the earth (Illicak 2005). High winds have the potential to down trees, tree limbs and power lines which lead to widespread power outages and damaging residential and commercial structures throughout Fulton County. High winds are often associated by other severe weather events such as thunderstorms, tornadoes, hurricanes and tropical storms (all discussed further in this section). The following table provides the descriptions of winds used by the NWS.

Table 5.5-49 NWS Wind Descriptions

Descriptive Term	Sustained Wind Speed (mph)
Strong, dangerous, or damaging	≥40
Very Windy	30-40
Windy	20-30
Breezy, brisk, or blustery	15-25
None	5-15 or 10-20
Light or light and variable wind	0-5

Source: NWS 2010

Mph miles per hour

Thunderstorms

A thunderstorm is a local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder (NWS 2009). A thunderstorm forms from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm and cold front, a sea breeze, or a mountain. Thunderstorms form from the equator to as far north as Alaska. Although thunderstorms generally affect a small area when they occur, they have the potential to become dangerous due to their ability



in generating tornadoes, hailstorms, strong winds, flash flooding, and lightning. The NWS considers a thunderstorm severe only if it produces damaging wind gusts of 58 mph or higher or large hail one-inch (quarter size) in diameter or larger or tornadoes (NWS 2010).

Lightning is a bright flash of electrical energy produced by a thunderstorm. The resulting clap of thunder is the result of a shock wave created by the rapid heating and cooling of the air in the lightning channel. All thunderstorms produce lightning and are very dangerous. It ranks as one of the top weather killers in the United States and kills approximately 50 people and injures hundreds each year. Lightning can occur anywhere there is a thunderstorm. Georgia is the eighth highest state in terms of density of lightning strikes per square mile. Between 2000 and 2007, over 175 people were injured or killed by lightning in the State with property damages estimated at \$50 million from lightning. Lightning strikes in June, July and August account for over half of all injuries and deaths and over 75% of property damage each year (NWS Peachtree City 2008).

Downbursts are also occasionally associated with severe thunderstorms. A downburst is a strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can even occur with showers too weak to produce thunder. Strong squall lines can also produce widespread severe weather, primarily very strong winds and/or microbursts (Atlanta-Fulton County Hazard Mitigation Plan 2010).

Thunderstorms can lead to flooding, landslides, strong winds, and lightning. Roads may become impassable from flooding, downed trees or power lines, or a landslide. Downed power lines can lead to utility losses, such as water, phone and electricity. Lightning can damage homes and injure people. In the U.S., an average of 300 people are injured and 80 people are killed by lightning each year. Typical thunderstorms are 15 miles in diameter and last an average of 30 minutes. An estimated 100,000 thunderstorms occur each year in the U.S., with approximately 10% of them classified as severe. During the warm season, thunderstorms are responsible for most of the rainfall.

Location

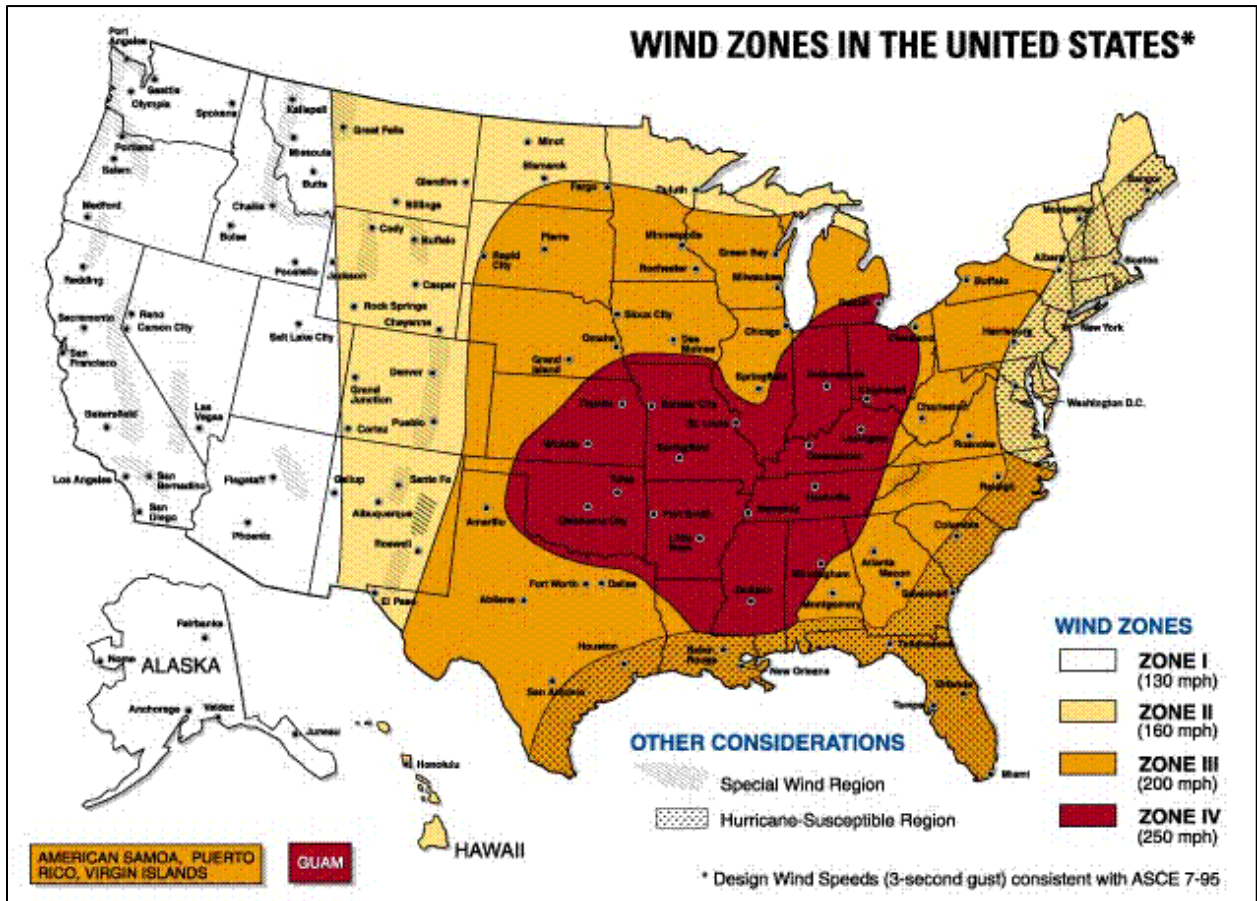
Hailstorms

Hailstorms can occur anywhere in Fulton County either independently or during a tornado, thunderstorm or lightning event. Hailstorms are most frequent in the southern and central plains states in the United States, where warm moist air off of the Gulf of Mexico and cold dry air from Canada collide, and thereby spawning violent thunderstorms. This area of the United States is known as hail alley and lies within the states of Texas, Oklahoma, Colorado, Kansas, Nebraska, and Wyoming.

High Winds

All of Fulton County is subject to high winds from thunderstorms, hurricanes/tropical storms, tornadoes, and other severe weather events. According to the FEMA Wind Zones of the United States map, Fulton County is located in Wind Zone III, where wind speeds can reach up to 200 mph. This figure indicates how the frequency and strength of windstorms impacts the United States and the general location of the most wind activity. This is based on 40 years of tornado data and 100 years of hurricane data, collected by FEMA.

Figure 5.5-13. Wind Zones of the United States



Thunderstorms

Thunderstorms affect relatively small localized areas, rather than large regions like winter storms and hurricane events. Thunderstorms can strike in all regions of the United States; however, they are most common in the central and southern states. The atmospheric conditions in these regions of the country are ideal for generating these powerful storms. It is estimated that there are as many as 40,000 thunderstorms each day worldwide. The most thunderstorms are seen in the southeast United States, with Florida having the highest incidences (80 to over 100 thunderstorm days each year). According to NOAA, Fulton County can experience between 50 and 60 thunderstorms each year (NOAA 2010).

Extent

Hailstorms

The severity of hail is measured by duration, hail size, and geographic extent. All of these factors are directly related to thunderstorms, which creates hail. There is wide potential variation in these severity components. The most significant impact of hail is damage to crops. Hail also has the potential to damage structures and vehicles during hailstorms.

Hail can be produced from many different types of storms. Typically, hail occurs with thunderstorm events. The size of hail is estimated by comparing it to a known object. Most hailstorms are made



up of a variety of sizes, and only the very largest hail stones pose serious risk to people, when exposed. Table 5.5-50 shows the different sizes of hail and the comparison to real-world objects. On March 15, 2008 the largest hail was recorded in Fulton county as baseball sized hailstones were spotted in downtown Atlanta, golf ball sized hail was spotted in Western Fulton County (Southwest of Six Flags), penny sized hail was spotted in the Grant Park area and quarter sized hail was spotted in Centennial Park causing over \$5 million in damages.

Table 5.5-50. Hail Size

Size	Inches in Diameter
Pea	0.25 inch
Marble/mothball	0.50 inch
Dime/Penny	0.75 inch
Nickel	0.875 inch
Quarter	1.0 inch
Ping-Pong Ball	1.5 inches
Golf Ball	1.75 inches
Tennis Ball	2.5 inches
Baseball	2.75 inches
Tea Cup	3.0 inches
Grapefruit	4.0 inches
Softball	4.5 inches

Source: SPC 2015

High Winds

The following table provides the descriptions of winds used by the NWS during wind-producing events.

Table 5.5-51 NWS Wind Descriptions

Descriptive Term	Sustained Wind Speed (mph)
Strong, dangerous, or damaging	≥40
Very Windy	30-40
Windy	20-30
Breezy, brisk, or blustery	15-25
None	5-15 or 10-20
Light or light and variable wind	0-5

Source: NWS 2010

Mph miles per hour

The NWS issues advisories and warnings for winds. Issuance is normally site-specific. High wind advisories, watches and warnings are products issued by the NWS when wind speeds may pose a hazard or is life threatening. Although stronger wind gusts have been recorded, an example of a



high wind event for Fulton County occurred on April 16 and 17th, 2007 when the county experienced strong 40 mph winds as the result of a slow moving coastal low that developed on the back side of a storm system that brought tornadoes to central Georgia on the 15th. These strong winds effected a number of trees and powerlines in Fulton County. The criterion for each of these varies from state to state. Wind warnings and advisories for the Atlanta area are as follows:

- High Wind Warnings are issued when sustained wind speeds of 40 mph or greater lasting for one hour or longer or for winds of 58 mph or greater for any duration or widespread damage are possible.
- Wind Advisories are issues when sustained winds of at least 20 mph or gusts to 35 mph or stronger are expected (NWS 2015).

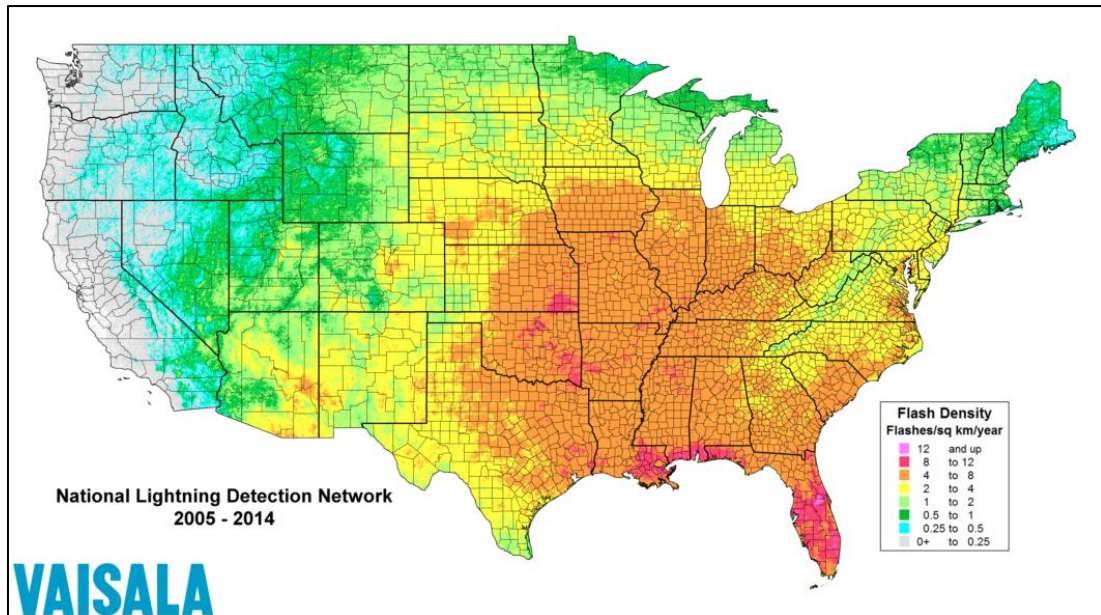
Thunderstorms

Severe thunderstorm watches and warnings are issued by the local NWS office and SPC. The NWS and SPC will update the watches and warnings and will notify the public when they are no longer in effect. Watches and warnings for tornadoes in the Atlanta area are as follows:

- Severe Thunderstorm Warning is issued to warn the public of an existing, imminent or suspected severe thunderstorm. A severe thunderstorm is a thunderstorm that produces a tornado, winds of at least 50 knots (58 mph) and/or hail at least 1 inch in diameter (the size of pennies). Note: Structural wind damage may imply the occurrence of a severe thunderstorm. (NWS 2013).
- Significant Weather Advisory is issued for strong thunderstorms producing frequent or excessive amounts of cloud-to-ground lightning, and/or heavy downpours that may result in minor nuisance flooding or street flooding. Also issued for strong thunderstorms producing hail or strong wind, but not meeting official "severe" criteria (NWS 2013).

An example of a significant thunderstorm in Fulton County was recorded by the National Climactic Data Center on February 26, 2008. During this storm a squall line of storms developed after midnight. The thunderstorms intensified and brought wind gusts in excess of 60 mph in the early morning hours. This event caused two injuries and extensive wind damage in North Fulton County (Milton, Atlanta, Sandy Springs, Johns Creek, College Park and Fairburn). Lightning is an extremely dangerous aspect of thunderstorms in the region. The figure below illustrates the frequency of lightning from these storms.

Figure 5.5-14. National Lightning Frequency Map



Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with severe storm events throughout Fulton County. With many sources reviewed for the purpose of this HMP, loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based on the available information identified during research for this HMP.

Between 1954 and 2015, the State of Georgia was included in 23 FEMA declared severe storm-related disasters (DR) or emergencies (EM) classified as one or a combination of the following hazards: severe storms, tornadoes, straight-line winds, flooding, heavy rains, high winds, rain and mudslides. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Of those declarations, Fulton County has been included in six declarations (FEMA 2015).

For this 2015 Plan, known severe storm events, including FEMA disaster declarations, which have impacted Fulton County between 2010 and 2015 are identified in Table 5.5-52. For detailed information on damages and impacts to each municipal, refer to Chapter 3 (jurisdictional annexes). Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this plan.



Table 5.5-52 Severe Weather Events in Fulton County, 2010-2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 22, 2010	Thunderstorm and Lightning	N/A	N/A	A strong line of thunderstorms moved into Georgia during the early morning, bringing lightning, heavy rain and hail. In Fulton County, lightning struck a gas line in Ocee near Abbotts Bridge Road. The home caught fire and sustained damage as a result of the fire. The home had approximately \$50,000 in damages.
April 15, 2010	Thunderstorms and Lightning	N/A	N/A	Thunderstorms developed over parts of Georgia with many of them becoming strong to severe. Damaging downburst winds were noted with these storms. As the storms moved into east Georgia, several of the storms produced quarter to golf ball-sized hail. In Fulton County, the 911 center reported two commercial buildings that caught fire after being struck by lightning. The buildings were located in Alpharetta and Milton. Damages were approximately \$50,000.
June 16, 2010	Thunderstorms and Lightning	N/A	N/A	Strong to severe thunderstorms impacted the area with one storm producing a significant downburst across Lumpkin County that downed over 200 trees and damaged homes, businesses and schools. In Fulton County, a home on Tullgean Drive in Birmingham was completely destroyed by a lightning strike. A firefighter was injured when the roof collapsed on him, suffering first and second degree burns on his legs. There was another home struck by lightning in Milton in the Oxford Lake subdivision. The strike damaged the roof and two rooms. This event caused approximately \$2.25 million in property damage.
October 25-28, 2010	Thunderstorms and Lightning	N/A	N/A	Severe thunderstorms and several tornadoes moved from east Texas eastward to Georgia. Two tornadoes were confirmed in northwest Georgia including an EF1 in southern Dade County. Another series of storms moved across east-central and southeast Georgia producing large hail and damaging wind gusts. In Fulton County, there were reports of three structure fires caused by lightning, causing approximately \$75,000 in property damage.
April 5, 2011	Thunderstorms and Strong Winds	N/A	N/A	An intense line of thunderstorms brought wind gusts of 60 to 70 mph as it impacted northern Georgia. Nearly every county in the area, including Fulton County, received at least one severe thunderstorm warning and these counties experienced extensive wind damage from the storms. There were two brief EF0 tornadoes in Glimmer County. The storms downed trees on homes and vehicles, caused power



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
April 15-16, 2011	Thunderstorms and Hail	N/A	N/A	<p>outages and resulted in seven fatalities. In Fulton County, there was one fatality when a tree fell on a car in the Howell Station neighborhood of Atlanta. Wind gusts of 30 to 35 mph were common in the County. Approximately \$20,000 in property damage was reported in the County.</p> <p>A line of strong to severe thunderstorms began to move into northwest Georgia during the late afternoon of April 15th. As the line moved further into the State, it evolved more in a large area of showers and thunderstorms with supercells. These supercells produced damaging winds, hail, and three tornadoes. During the early morning of April 16th, the severity of these storms decreased but widespread rain and thunderstorms continued. The prolonged and heavy rain resulted in flash flooding along north Atlanta metropolitan area creeks and streams. In Sandy Springs, quarter to golf ball-sized hail was observed. Hail as large as ping-pong balls was observed around Roswell. Fulton County had approximately \$4.27 million in property damage from this event.</p>
June 27, 2011	Thunderstorms and Lightning	N/A	N/A	<p>Scattered thunderstorms impacted west central, southwest, and western portions of middle Georgia. In Fulton County, the County OEM director reported that a home in west-central Fulton County was struck by lightning and set on fire. The home sustained moderate damage. The County had approximately \$150,000 in property damage from this event.</p>
July 20, 2011	Thunderstorms and Heavy Rain	N/A	N/A	<p>Thunderstorms brought heavy rainfall over the Atlanta area and caused flooding of the downtown connector (Interstate 75/85) near the Grady Curve portion of the Interstate. The flooding was largely caused by stopped up drains. Several cars become stranded due to the flooding. The heavy rain also damaged the roof of Grady Hospital. Rainfall totals ranged from two to 2.5 inches in this part of Atlanta. This event caused approximately \$500,000 in property damage.</p>
January 21, 2012	Thunderstorms and Hail	N/A	N/A	<p>Thunderstorms developed in northern Georgia with many of them becoming severe. Three tornadoes touched down with this system along with multiple reports of hail and wind damage. Flash flooding was also reported in the Atlanta area as a result of heavy rainfall. There were reports of 1.75 inch hail southwest of Atlanta in Ben Hill. The County had approximately \$3.8 million in damages from this</p>



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
July 17, 2013	Thunderstorms and Hail	N/A	N/A	<p>Numerous showers and thunderstorms developed over the Atlanta-Fulton County area bringing damaging winds, large hail and isolated flash flooding. Golf ball-sized hail was reported west of Fairburn in the County. There was approximately \$3.87 million in property damage in the County.</p> <p>event.</p>
August 5, 2013	Heavy Rains and Mudslide	N/A	N/A	<p>Heavy rains created a mudslide in the City of Sandy Springs, forcing officials to close Lake Forrest Drive between Lake Summit and Chevaux Court. Tests showed a large wall bordering the street was no longer stable. Residents in the area have reported either other mudslides in this location over the last 12 months. Costs for repairs were estimated at \$1 million.</p>
April 20, 2015	Severe Thunderstorms and Hail	N/A	N/A	<p>Widespread severe thunderstorms moved across northern Georgia. There were numerous reports of large hail and damaging winds associated with this event. In Fulton County, there was golf ball-sized hail reported at Georgia Highway 400 and Holcomb Bridge Road. The County had approximately \$4 million in property damage from this event.</p>
June 24, 2015	Thunderstorms and Hail	N/A	N/A	<p>There were numerous reports of damaging thunderstorm winds and large hail across northern Georgia. Heavy rain associated with one of the storms produced isolated flash flooding in western portions of Gwinnett County. In Fulton County, the Emergency Manager reported golf ball size hail in East Point. Damages in the County were approximately \$4 million.</p>

Source: NOAA NCDC 2015; FEMA 2015; WSBTV 2013

FEMA Federal Emergency Management Agency

NOAA National Oceanic and Atmospheric Administration

NCDC National Climatic Data Center

SPC Storm Prediction Center

SHELDUS Spatial Hazard Events and Losses Database for the United States



Probability of Future Occurrences

The following table provides the probability of occurrences of severe storm events. Based on historic occurrences, thunderstorm events are the most common in Fulton County, followed by hail events. However, the information used to calculate the probability of occurrences is only based on using NOAA-NCDC storm events database results.

Table 5.5-53 Probability of Occurrence of Severe Storm Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of Event Occurring in Any Given Year	% Chance of Occurrence in Any Given Year
Hail	205	3.15	0.32	3.11	310.6
Heavy Rain	200	3.08	0.33	3.03	303.0
High Wind	7	0.11	9.43	0.11	10.6
Lightning	37	0.57	1.78	0.56	56.1
Strong Wind	22	0.34	3.00	0.33	33.3
Thunderstorms	287	4.42	0.23	4.35	434.8
TOTAL	758	11.66	0.09	11.48	1,148.5

Source: NOAA-NCDC 2015

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

It is estimated that Fulton County will continue to experience direct and indirect impacts of severe storms annually that may induce secondary hazards such as flooding, infrastructure deterioration or failure, utility failures, power outages, water quality and supply concerns, and transportation delays, accidents and inconveniences.

In Section 5.4, the identified hazards of concern for Fulton County were listed. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for severe storms in the County is considered “likely” (one whose impact is probable within the next year). See section 5.6 for additional information provided by the Planning Committee.

Climate Change Impacts

A changing climate has the potential to intensify rains and storms, damaging infrastructure, and causing injury, illnesses and death. Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).



5.5.8.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the severe weather hazard, all of Fulton County is exposed and vulnerable. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in Chapter 3 (County Profile), are exposed and potentially vulnerable. The following text evaluates and estimates the potential impact of severe weather on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities
 - (4) economy and
 - (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Atlanta-Fulton County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

People and property in virtually the entire United States are exposed to damage, injury, and loss of life from severe storm events (thunderstorms, lightning, wind, hail). Everywhere they occur; thunderstorms are responsible for significant structural damage to buildings, forest and wildfires, downed power lines and trees, and loss of life. For the purposes of this HMP, the entire County is exposed to severe weather events. Refer to Section 5.5.9 (Tropical Systems) for a detailed and quantitative assessment on the wind hazards. The section below discusses severe weather events in a qualitative nature.

The high winds and air speeds of a hail, or wind storm often result in power outages, disruptions to transportation corridors and equipment, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals impacted by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people.

The entire inventory of the County is at risk of being damaged or lost due to impacts of severe weather. Certain areas, infrastructure, and types of buildings are at greater risk than others due to proximity to flood waters, falling hazards, and their manner of construction.

Data and Methodology

After reviewing historic data, the HAZUS-MH methodology and model were used to analyze the wind hazard for Fulton County. The 2010 U.S. Census population and general building stock data were used to support an evaluation of assets exposed to this hazard and the potential impacts associated with this hazard. Refer to Section 5.5.9 (Tropical Systems) for additional information on the methodology pertaining to the wind impacts.

Impact on Life, Health and Safety

For the purposes of this HMP, the entire population of Fulton County 1,010,562 people (920,581, U.S. Census, 2010) is exposed to severe weather events. Residents may be displaced or require temporary to long-term sheltering due to severe weather events. In addition, downed trees,



damaged buildings, and debris carried by high winds can lead to injury or loss of life. Socially vulnerable populations are most susceptible, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing.

People located outdoors (i.e., recreational activities and farming) are considered most vulnerable to hailstorms, thunderstorms and tornadoes. This is because there is little to no warning and shelter may not be available. Moving to a lower risk location will decrease a person's vulnerability.

Impact on General Building Stock and Critical Facilities

Damage to buildings is dependent upon several factors including wind speed and duration, and building construction. Refer to Section 5.5.9 (Tropical Systems) for a presentation on potential wind losses associated with 100- and 500-year mean return period events. Damage will result from hail stones themselves and will have a specific impact on roofs. The extent of damage will depend on the size and duration of the hailstorm.

Utility structures could suffer damage associated with falling tree limbs or other debris, resulting in the loss of power, which can impact business operations and can impact heating or cooling provision to citizens (including the young and elderly, who are particularly vulnerable to temperature-related health impacts). Backup power is recommended for critical facilities and infrastructure.

Impact on Economy

As discussed, severe storm events can impact structures and thus the economy. Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to the population.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of events like hurricanes. While predicting changes to the prevalence or intensity of hurricanes and the events affects under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006).

Change of Vulnerability

Fulton County and its municipalities continue to be vulnerable to the severe weather hazard. See Section 5.5.9 (Tropical Systems) for a description on the differences between the risk assessment for the wind hazard for the 2010 HMP and 2015 HMP Update.

Future Growth and Development

As discussed and illustrated in Chapter 3 and the annexes areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the severe weather hazard because the entire Planning Area is exposed and vulnerable to the impacts associated with these events. The development of new buildings in these areas must meet or exceed the standards of the International Building Code (IBC) Section R301.2.1.1 which will assist with mitigating future potential damages and losses. Any areas of growth could be potentially



impacted by the severe storm hazard because the entire County is exposed and vulnerable. Areas targeted for potential future growth and development in the next five (5) years have been identified across the County at the jurisdiction level. Refer to the jurisdictional annexes of this HMP.

Additional Data and Next Steps

Over time, the County will obtain additional data to support the analysis of this hazard. Data that will support the analysis would include additional detail on past hazard events and impacts, and specific building information such as details on protective features (for example, hurricane straps). Additional information on past and future events could include, any injuries, deaths, shelter needs, and other impacts. This will help to identify any concerns or trends for which mitigation measures should be developed or refined.

5.5.9 Tropical Systems

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the tropical systems hazard in Fulton County.

Specific 2016 Plan Update Changes for Tropical Systems

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrences, and potential change in climate and its impacts on the tropical systems hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the tropical systems hazard and it is included in this section.

5.5.9.1 Profile

Hazard Description

A tropical cyclone is a rotating, organized system of clouds and thunderstorms that originates over tropical or sub-tropical waters and has a closed low-level circulation. Tropical systems include several types of tropical cyclones: hurricanes, tropical storms, and tropical depressions. These storms rotate counterclockwise around the center in the northern hemisphere and are accompanied by heavy rain and strong winds (NWS 2013). Almost all tropical storms and hurricanes in the Atlantic basin (which includes the Gulf of Mexico and Caribbean Sea) form between June 1 and November 30 (hurricane season). August and September are peak months for hurricane development (NOAA 2013). For the purpose of this HMP and as deemed appropriated by the Steering and Planning Committees, tropical systems in the County include hurricanes, tropical storms and tropical depressions.

A hurricane is a tropical storm that attains hurricane status when its wind speed reaches 74 or more miles an hour. Tropical systems may develop in the Atlantic between the Lesser Antilles and the African coast, or may develop in the warm tropical waters of the Caribbean and Gulf of Mexico. These storms may move up the Atlantic coast of the United States and impact the eastern seaboard, or move into the United States through the states along the Gulf Coast, bringing wind and rain as far north as New England before moving offshore and heading east.

A tropical storm system is characterized by a low-pressure center and numerous thunderstorms that produce strong winds and heavy rain (winds are at a lower speed than hurricane-force winds, thus



gaining its status as tropical storm versus hurricane). Tropical storms strengthen when water evaporated from the ocean is released as the saturated air rises, resulting in condensation of water vapor contained in the moist air. They are fueled by a different heat mechanism than other cyclonic windstorms such as Nor'Easters and polar lows. The characteristic that separates tropical cyclones from other cyclonic systems is that at any height in the atmosphere, the center of a tropical cyclone will be warmer than its surroundings; a phenomenon called "warm core" storm systems (NOAA 1999).

A tropical depression forms when a low pressure area is accompanied by thunderstorms that produce a circular wind flow with maximum sustained winds below 39 mph. Most tropical depressions have maximum sustained wind speeds between 25 and 35 mph (NOAA 1999).

The National Weather Service (NWS) issues hurricane and tropical storm watches and warnings. These watches and warnings are issued or will remain in effect after a tropical cyclone becomes post-tropical, when such a storm poses a significant threat to life and property. The NWS allows the National Hurricane Center (NHC) to issue advisories during the post-tropical stage. The following are the definitions of the watches and warnings:

- *Hurricane/Typhoon Warning* is issued when sustained winds of 74 mph or higher are expected somewhere within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the warning is issued 36 hours in advance of the anticipated onset of tropical storm force winds (24 hours in the western north Pacific). The warning can remain in effect when dangerously high water or combination of dangerously high water and waves continue, even though winds may be less than hurricane force.
- *Hurricane Watch* is issued when sustained winds of 74 mph or higher are possible within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours prior to the anticipated onset of tropical storm force winds.
- *Tropical Storm Warning* is issued when sustained winds of 39 to 73 mph are expected somewhere within the specified area within 36 hours (24 hours for the western north Pacific) in association with a tropical, subtropical, or post-tropical storm.
- *Tropical Storm Watch* is issued when sustained winds of 39 to 73 mph are possible within the specified area within 48 hours in association with a tropical, sub-tropical, or post-tropical storm
- An Advisory is the official information issued by tropical cyclone warning centers describing all tropical cyclone watches and warnings in effect along with details concerning tropical cyclone locations, intensity and movement, and precautions that should be taken. Advisories are also issued to describe: tropical cyclones prior to issuance of watches and warnings; and subtropical cyclones (NWS 2013).

Location

Fulton County is located approximately 230 miles from Georgia's coastline. While the County may not likely be affected by hurricane-force events, it can still be affected by tropical systems. The County can also be impacted by tropical cyclone winds, which have the ability to extend inland for hundreds of miles and spawn tornadoes. Hurricanes can also trigger inland floods and landslides (Atlanta-Fulton County HMP 2010).

NOAA's Historical Hurricane Tracks tool is a public interactive mapping application that displays Atlantic Basin and East-Central Pacific Basin tropical cyclone data. This interactive tool catalogs



tropical cyclones that have occurred from 1842 to 2014 (latest date available from data source). During this timeframe, 32 tropical cyclones passed over Fulton County within 65 nautical miles. Between 2010 and 2014, there have been no tropical cyclones tracked within 65 nautical miles of Fulton County.

Extent

The extent of a hurricane is categorized in accordance with the Saffir-Simpson Hurricane Scale. The Saffir-Simpson Hurricane Wind Scale is a 1-to-5 rating based on a hurricane’s sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous and require preventative measures (NOAA 2013b). Table 5.5-54 presents this scale, which is used to estimate the potential property damage and flooding expected when a hurricane makes landfall. In 1994 Tropical Storm Alberto was the costliest storm of the 1994 Atlantic hurricane season. It hit Florida and moved across the Southeast United States in July, causing a massive flooding disaster while stalling over Georgia and Alabama. Alberto caused \$1 billion in damage (1994 USD) and 30 deaths. \$750 million of those damages were just in Georgia. One year later Hurricane Opal brought sustained tropical storm conditions to the area one night in early October 1995, uprooting hundreds of trees and causing widespread power outages, after soaking the area with rain for two days prior. The western metro area caught the worst of the storm. The peak wind gust in Georgia was a 69 mph gust in Marietta, a 61 mph gust in Columbus, and a 56 mph gust in the Atlanta-Hartsfield area. The peak rainfall in Georgia was 8.66 inches in Marietta, 8.08 inches in Peachtree City and 7.17 in in west Atlanta.¹⁴

Table 5.5-54 The Saffir-Simpson Scale

Category	Wind Speed (mph)	Expected Damage
1	74-95 mph	Very dangerous winds will produce some damage: Homes with well-constructed frames could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	Extremely dangerous winds will cause extensive damage: Homes with well-constructed frames could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph	Devastating damage will occur: Homes with well-built frames may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph	Catastrophic damage will occur: Homes with well-built frames can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	>157 mph	Catastrophic damage will occur: A high percentage of framed homes

¹⁴ Source: ncdc.noaa.gov/pub/data/



Table 5.5-54 The Saffir-Simpson Scale

Category	Wind Speed (mph)	Expected Damage
(major)		will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: NOAA 2013b

Notes: mph = Miles per hour

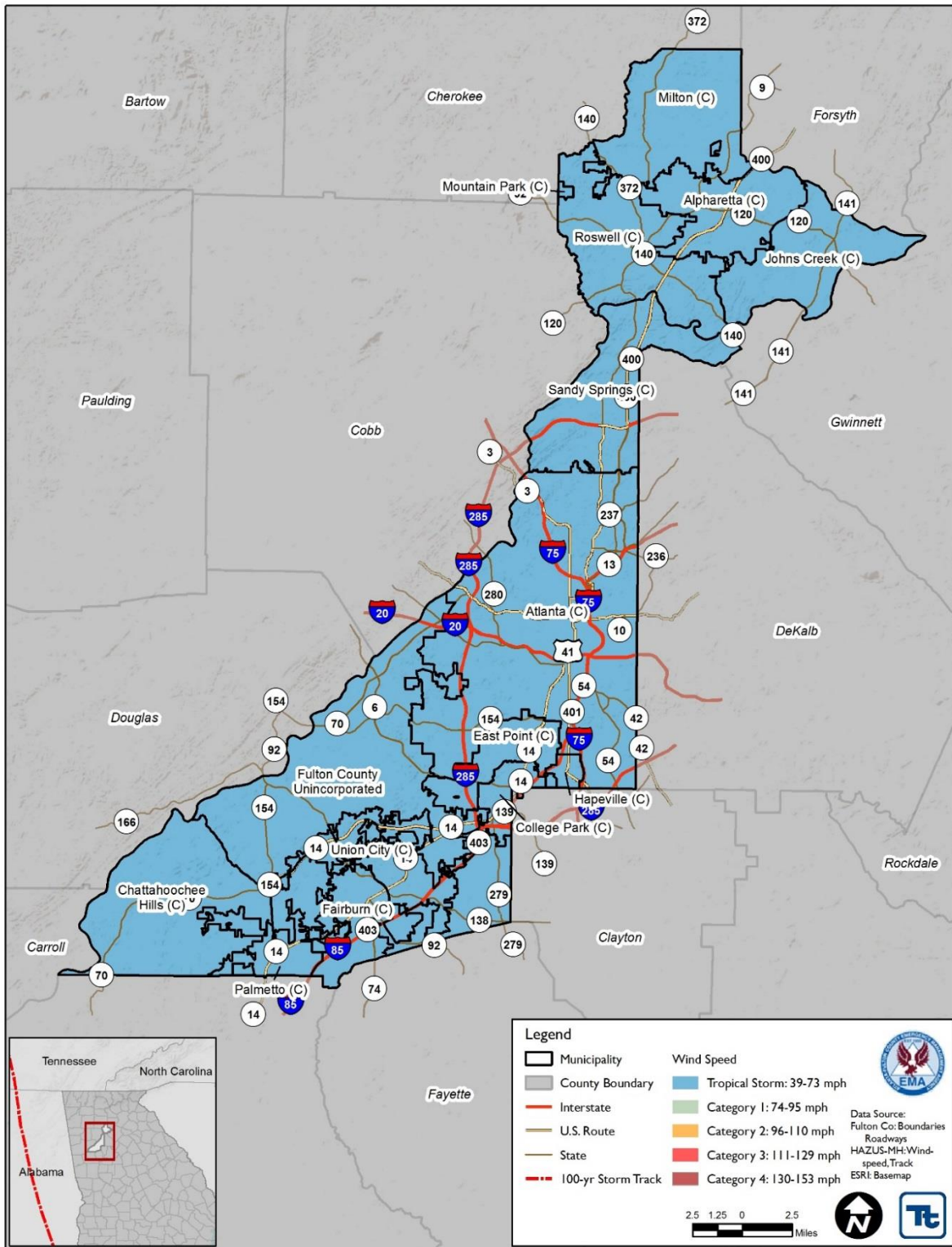
> = Greater than

Mean Return Period

In evaluating the potential for hazard events of a given magnitude, a mean return period (MRP) is often used. The MRP provides an estimate of the magnitude of an event that may occur within any given year based on past recorded events. MRP is the average period of time, in years, between occurrences of a particular hazard event, equal to the inverse of the annual frequency of exceedance (Dinicola 2009).

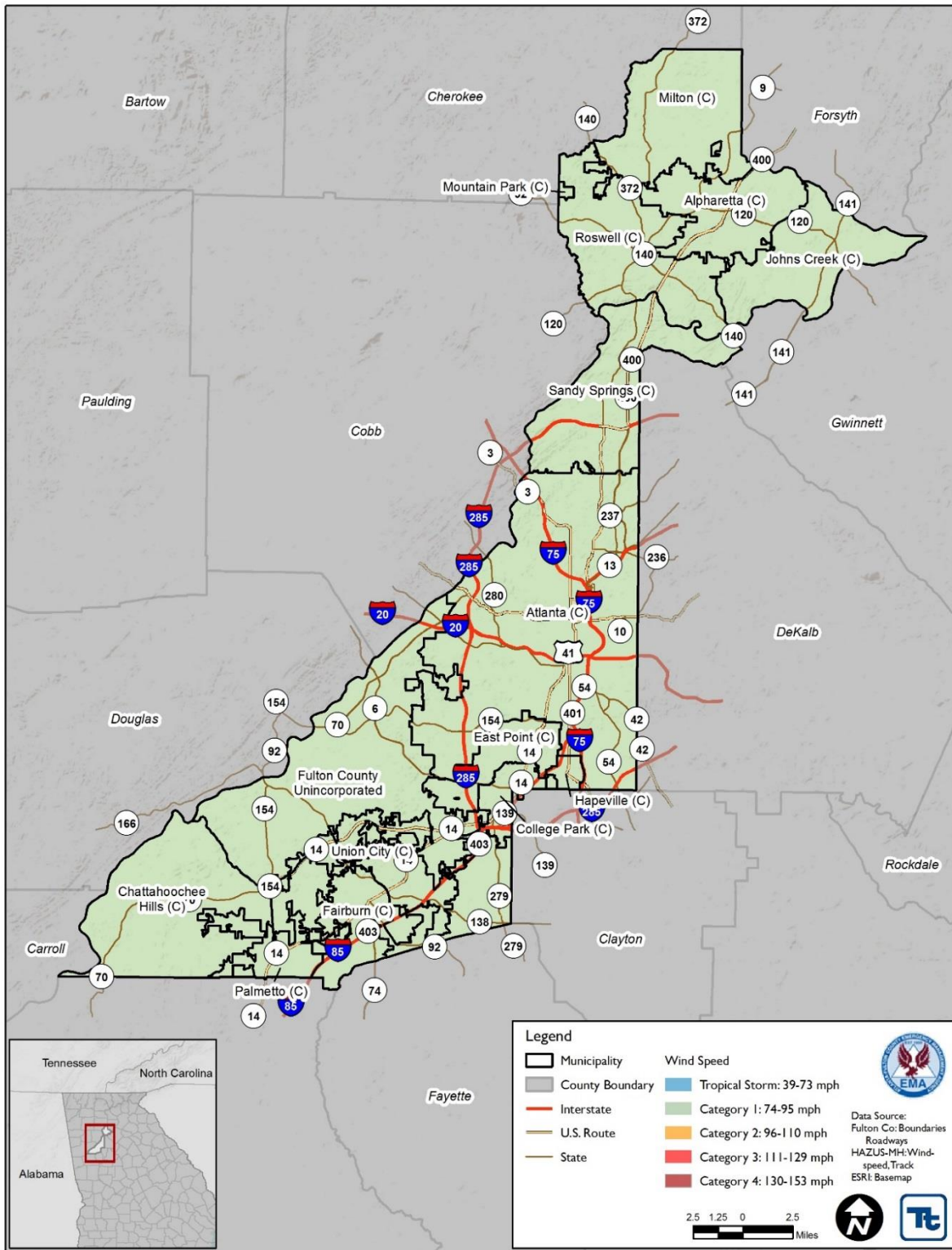
Figure 5.5-15 and Figure 5.5-16 show the estimated maximum 3-second gust wind speeds that can be anticipated in the study area associated with the 100- and 500-year MRP events. These peak wind speed projections were generated using Hazards U.S. Multi-Hazard (HAZUS-MH) model runs. The estimated hurricane track used for the 100-year event is also shown; the hurricane track for the 500-year event is not available in HAZUS-MH 3.0. The maximum 3-second gust wind speeds for Fulton County range from 59 to 67 mph for the 100-year MRP event (Tropical Storm). The maximum 3-second gust wind speeds for Fulton County range from 74 to 82 mph for the 500-year MRP event (Category 1 hurricane). The associated impacts and losses from the 100-year and 500-year MRP hurricane events are reported in the Vulnerability Assessment.

Figure 5.5-15 Wind Speeds for the 100-Year Mean Return Period Event



Source: Hazus-MH 3.0

Figure 5.5-16 Wind Speeds for the 500-Year Mean Return Period Event



Source: Hazus-MH 3.0



Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with tropical systems events throughout Fulton County. With so many sources reviewed for the purpose of this HMP, loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2015, the State of Georgia was included in six FEMA declared tropical system-related disasters (DR) or emergencies (EM) classified as one or a combination of the following hazards: tropical storm, hurricane, tornadoes, flooding, and heavy rain. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Of those declarations, Fulton County has been included in three declarations (FEMA 2015).

For this 2016 Plan Update, known tropical system hazard events, including FEMA disaster declarations, which have impacted Fulton County between 2010 and 2015 are identified in Table 5.5-55. For detailed information on damages and impacts to each municipal, refer to the jurisdictional annexes. Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.



Table 5.5-55. Tropical System Events Between 2010 and 2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
September 4-5, 2011	Remnants of Tropical Storm Lee	N/A	N/A	Remnants of Tropical Storm Lee brought heavy rain, flooding and possible tornadoes to north and central Georgia. The most extensive damage was reported in Cherokee County where an EF1 tornado touched down and damaged/destroyed 400 homes and injured one person. Rainfall amounts totaled seven to 10 inches over the northwest corner of Georgia. The heaviest rain was in Dade, Walker, Catoosa, Whitfield and Chattooga Counties. Several flash flood warnings and river flood warnings were issued due to widespread flooding. Between one and two inches of rain fell in the Atlanta area.
May 20, 2012	Tropical Storm Alberto	N/A	N/A	Tropical Storm Alberto developed off the coast of South Carolina which caused thunderstorms to develop over Georgia. One storm became severe in Fulton County and large hail was reported. There were reports of dime to quarter size hail from Langford Parkway, south of Downtown Atlanta, to Lakewood Heights.
June 7, 2013	Tropical Storm Andrea	N/A	N/A	As a result of Tropical Storm Andrea, showers and thunderstorms impacted north and Central Georgia, including Fulton County. Several thunderstorms reached severe levels with downed trees. The heaviest rain was confined to mainly east-central Georgia. A couple of the storms produced enough rain that resulted in flash flooding. In Fulton County, there were numerous downed trees in the City of Alpharetta and wind gusts reached 63 mph. Damages in the County were approximately \$5,000.

Sources: NOAA-NCDC 2015; FEMA 2015

FEMA Federal Emergency Management Agency

NOAA National Oceanic and Atmospheric Administration

NCDC National Climatic Data Center

SPC Storm Prediction Center

SHELDUS Spatial Hazard Events and Losses Database for the United States



Probability of Future Occurrences

Historic data indicates the impacts of tropical depressions directly passing through or near Fulton County would be damages resulting from high wind gusts around 50 to 65 mph, heavy rainfall causing localized flooding of streams and drainage ways, and possible tornadoes. Fulton County can expect to experience at least one tropical system event each year. However, the historical records cannot determine future outcomes; frequency of these events is unpredictable. Tropical systems are associated with high wind, severe weather, flooding, and tornadoes and variables such as changes in building codes, future land use regulations may have an effect on the damages sustained from these events while climate change issues may have the potential to affect the frequency and intensity of these events. Additionally, it is estimated that Fulton County will continue to experience direct and indirect impacts of tropical systems annually that may induce secondary hazards such as flooding, extreme wind, infrastructure deterioration or failure, utility failures, power outages, water quality and supply concerns, transportation delays, accidents and inconveniences to the public.

The following table provides the probability of occurrence of tropical system events. Based on historic occurrences, tropical storms are the most common type of tropical systems in Fulton County. However, the information used to calculate the probability of occurrences is only based on using NOAA-NCDC storm events database results.

Table 5.5-56. Probability of Occurrence of Tropical System Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of Event Occurring in Any Given Year	% Chance of Occurrence in Any Given Year
Tropical Depression	0	0	0	0	0
Tropical Storm	22	0.34	3.00	0.33	33.3%
Hurricane	6	0.09	11.00	0.09	9.09%
Total	28	0.43	2.36	0.42	42.42%

Source: NOAA-NCDC 2015

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records the probability of a tropical system occurring in Fulton County would be considered “likely” (one whose impact has a chance to occur within the next ten years). However; input from the Planning Committee found the probability of being impacted by the occurrence of tropical systems in the County is considered “Possible” (1% to 10% or has a chance of occurring in the next 100 years). See section 5.6 for additional information provided by the Planning Committee.

Climate Change Impacts

Research has shown that climate change has the potential to cause tropical systems to become more intense – lasting longer, producing stronger winds, and causing more damage. Warmer ocean temperatures may be the main reason for this, since hurricanes and tropical storms get their energy from warm water. Other factors such as rising sea levels, disappearing wetlands, and increased coastal development also threaten to intensify the damage caused by tropical systems (Nature 2015).



Since the 1970s, the average temperature in the southeastern United States, including Georgia, has risen, especially during the winter. The increased temperature has been accompanied by other changes including the frequency of droughts and severe storms. Temperatures are projected to rise 4.5°F to 9°F by 2080 in the State of Georgia. In Fulton County, the average summer temperature high is estimated to be 96°F by the 2080s and extreme temperatures are predicted to reach 115°F.

In addition to the increase in temperature, precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of floods and droughts. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014). The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).

5.5.9.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the tropical systems hazard, all of Fulton County is exposed and vulnerable. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in Chapter 3 (County Profile), are exposed and potentially vulnerable. The following text evaluates and estimates the potential impact of tropical systems on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on:
 - (1) life, health and safety of residents,
 - (2) general building stock,
 - (3) critical facilities
 - (4) economy and
 - (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Atlanta-Fulton Hazard Mitigation Plan
- Effect of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

People and property in virtually the entire United States are exposed to damage, injury, and loss of life from high winds and air speeds of a tropical system. Everywhere they occur, tropical storms and hurricanes are responsible for significant structural damage to buildings, forest and wildfires, downed power lines and trees, and loss of life.

The high winds often result in power outages, disruptions to transportation corridors and equipment, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals impacted by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people.

The entire inventory of the County is at risk of being damaged or destroyed due to wind impacts from tropical systems. Certain areas, infrastructure, and types of buildings are at greater risk than others due to proximity to flood waters, falling hazards, and their manner of construction. Potential losses associated with high winds were calculated for Fulton County for the 100-year and 500-year MRP wind events.



Data and Methodology

After reviewing historic data, the HAZUS-MH methodology and model were used to analyze the wind hazard for Fulton County. Data used to assess this hazard include data available in the HAZUS-MH 3.0 wind model, professional knowledge, information provided by the Planning Committee.

A probabilistic model was run for the County for the 100- and 500-year MRPs; in addition, annualized losses were examined. These results are shown in Figures 5.5.8-1 and 5.5.8-2, earlier in this section, which show the HAZUS-MH maximum peak gust wind speeds that can be anticipated in the study area associated with the 100-year event (Tropical Storm wind speeds) and 500-year MRP event (Category 1 hurricane wind speeds).

HAZUS-MH contains data on historic hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support the modeling of wind force across various types of land surfaces. Hurricane and inventory data available in HAZUS-MH were used to evaluate potential losses from the 100- and 500-year MRP events (severe wind impacts).

Impacts to life, health, and safety and structures are discussed further below. Updated critical facility inventories were also used in the evaluation of this hazard.

Impact on Life, Health and Safety

For the purposes of this HMP, the entire population of Fulton County (920,581 people) is exposed to tropical system events (U.S. Census, 2010). Residents may be displaced or require temporary to long-term sheltering. In addition, downed trees, damaged buildings and debris carried by high winds can lead to injury or loss of life. Socially vulnerable populations are most susceptible, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. HAZUS-MH estimates there will be 0 displaced households and 0 people will require temporary shelter due to a 100-year MRP event or 500-year MRP event.

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate. The population over the age of 65 is also more vulnerable and, physically, they may have more difficulty evacuating. The elderly are considered most vulnerable because they require extra time or outside assistance during evacuations and are more likely to seek or need medical attention which may not be available due to isolation during a storm event. Please refer to Chapter 3 for the statistics of these populations.

Impact on General Building Stock

After considering the population exposed and vulnerable to the tropical system hazard, the general building stock was considered. Potential damage is the modeled loss that could occur to the exposed inventory, including damage to structural and content value based on the wind-only impacts associated with a tropical storm/hurricane. The entire study area is considered at risk to the tropical system hazard. Please refer to Chapter 3 (County Profile) which presents the total exposure value for general building stock by occupancy class for Fulton County.

Expected building damage was evaluated by HAZUS across the following wind damage categories: no damage/very minor damage, minor damage, moderate damage, severe damage, and total destruction. Table 5.5-57 summarizes the definition of the damage categories.



Table 5.5-57 Description of Damage Categories

Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
No Damage or Very Minor Damage little or no visible damage from the outside. No broken windows, or failed roof deck. Minimal loss of roof over, with no or very limited water penetration.	≤2%	No	No	No	No	No
Minor Damage Maximum of one broken window, door or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.	>2% and ≤15%	One window, door, or garage door failure	No	<5 impacts	No	No
Moderate Damage Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Some resulting damage to interior of building from water.	>15% and ≤50%	> one and ≤ the larger of 20% & 3	1 to 3 panels	Typically 5 to 10 impacts	No	No
Severe Damage Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interior from water.	>50%	> the larger of 20% & 3 and ≤50%	>3 and ≤25%	Typically 10 to 20 impacts	No	No
Destruction Complete roof failure and/or, failure of wall frame. Loss of more than 50% of roof sheathing.	Typically >50%	>50%	>25%	Typically >20 impacts	Yes	Yes

Source: HAZUS-MH Hurricane Technical Manual

Table 5.5-58 summarizes the building value (structure only) damage estimated for the 100- and 500-year MRP wind-only events. Damage estimates are reported for the County’s probabilistic HAZUS-MH model scenarios. The data shown indicates total losses associated with wind damage to building structure.



Table 5.5-58 Estimated Building Value (Structure Only) Damaged by the 100-Year and 500-Year MRP Hurricane-Related Winds

Municipality	Total RCV (Structure Only)	Estimated Total Damages*			Percent of Total Building Replacement Cost Value		
		Annualized Loss	100-Year	500-Year	Annualized Loss	100-Year	500-Year
Alpharetta (C)	\$9,220,248,000	\$232,427	\$6,196,083	\$24,676,903	<1%	<1%	<1%
Atlanta (C)	\$58,500,959,000	\$1,301,624	\$16,546,161	\$132,076,141	<1%	<1%	<1%
Chattahoochee Hills (C)	\$280,119,000	\$13,165	\$210,249	\$850,002	<1%	<1%	<1%
College Park (C)	\$1,587,945,000	\$34,165	\$230,021	\$3,421,588	<1%	<1%	<1%
East Point (C)	\$4,022,401,000	\$113,718	\$1,150,012	\$12,437,572	<1%	<1%	<1%
Fairburn (C)	\$1,468,831,000	\$48,957	\$472,369	\$5,225,619	<1%	<1%	<1%
Fulton County (Unincorporated)	\$11,308,807,000	\$355,141	\$4,306,011	\$35,422,562	<1%	<1%	<1%
Hapeville (C)	\$783,900,000	\$19,062	\$113,586	\$1,750,029	<1%	<1%	<1%
Johns Creek (C)	\$10,774,974,000	\$338,675	\$7,734,606	\$33,893,343	<1%	<1%	<1%
Milton (C)	\$4,571,655,000	\$121,580	\$3,603,075	\$12,231,373	<1%	<1%	<1%
Mountain Park (C)	\$125,576,000	\$4,285	\$127,710	\$302,780	<1%	<1%	<1%
Palmetto (C)	\$518,738,000	\$19,718	\$310,904	\$1,275,523	<1%	<1%	<1%
Roswell (C)	\$12,946,365,000	\$340,604	\$9,636,305	\$33,984,566	<1%	<1%	<1%
Sandy Springs (C)	\$15,558,844,000	\$335,022	\$6,982,035	\$36,272,193	<1%	<1%	<1%
Union City (C)	\$1,981,070,000	\$56,493	\$509,002	\$6,307,256	<1%	<1%	<1%
Fulton County (Total)	\$133,650,432,000	\$3,334,635	\$58,128,127	\$340,127,448	<1%	<1%	<1%

Source: HAZUS-MH 3.0

*The Total Damages column represents the sum of damages for all occupancy classes (residential, commercial, industrial, agricultural, educational, religious and government) based on estimated replacement cost value.

Table 5.5-59 Estimated Residential and Commercial Building Value (Structure Only) Damaged by the 100-Year and 500-Year MRP Hurricane-Related Winds

Municipality	Total RCV (Structure Only)	Estimated Residential Damage		Estimated Commercial Damage	
		100-Year	500-Year	100-Year	500-Year
Alpharetta (C)	\$9,220,248,000	\$5,959,856	\$23,831,544	\$191,087	\$742,855
Atlanta (C)	\$58,500,959,000	\$15,217,994	\$124,967,857	\$1,021,393	\$6,017,947
Chattahoochee Hills (C)	\$280,119,000	\$208,025	\$845,823	\$1,262	\$2,997
College Park (C)	\$1,587,945,000	\$230,021	\$3,217,137	\$0	\$149,003
East Point (C)	\$4,022,401,000	\$1,148,121	\$12,109,623	\$1,611	\$257,050
Fairburn (C)	\$1,468,831,000	\$472,238	\$5,135,764	\$54	\$54,293
Fulton County (Unincorporated)	\$11,308,807,000	\$4,110,612	\$34,655,845	\$133,664	\$576,432
Hapeville (C)	\$783,900,000	\$113,586	\$1,638,462	\$0	\$100,074
Johns Creek (C)	\$10,774,974,000	\$7,613,825	\$33,537,377	\$92,754	\$306,525
Milton (C)	\$4,571,655,000	\$3,561,196	\$12,119,730	\$33,849	\$98,216
Mountain Park (C)	\$125,576,000	\$126,911	\$301,132	\$668	\$1,470
Palmetto (C)	\$518,738,000	\$301,888	\$1,261,900	\$5,883	\$10,330
Roswell (C)	\$12,946,365,000	\$9,371,305	\$33,223,274	\$197,411	\$634,358



Municipality	Total RCV (Structure Only)	Estimated Residential Damage		Estimated Commercial Damage	
		100-Year	500-Year	100-Year	500-Year
Sandy Springs (C)	\$15,558,844,000	\$6,518,123	\$34,425,517	\$391,524	\$1,687,016
Union City (C)	\$1,981,070,000	\$508,701	\$6,183,951	\$132	\$102,717
Fulton County (Total)	\$133,650,432,000	\$55,462,401	\$327,454,936	\$2,071,291	\$10,741,283

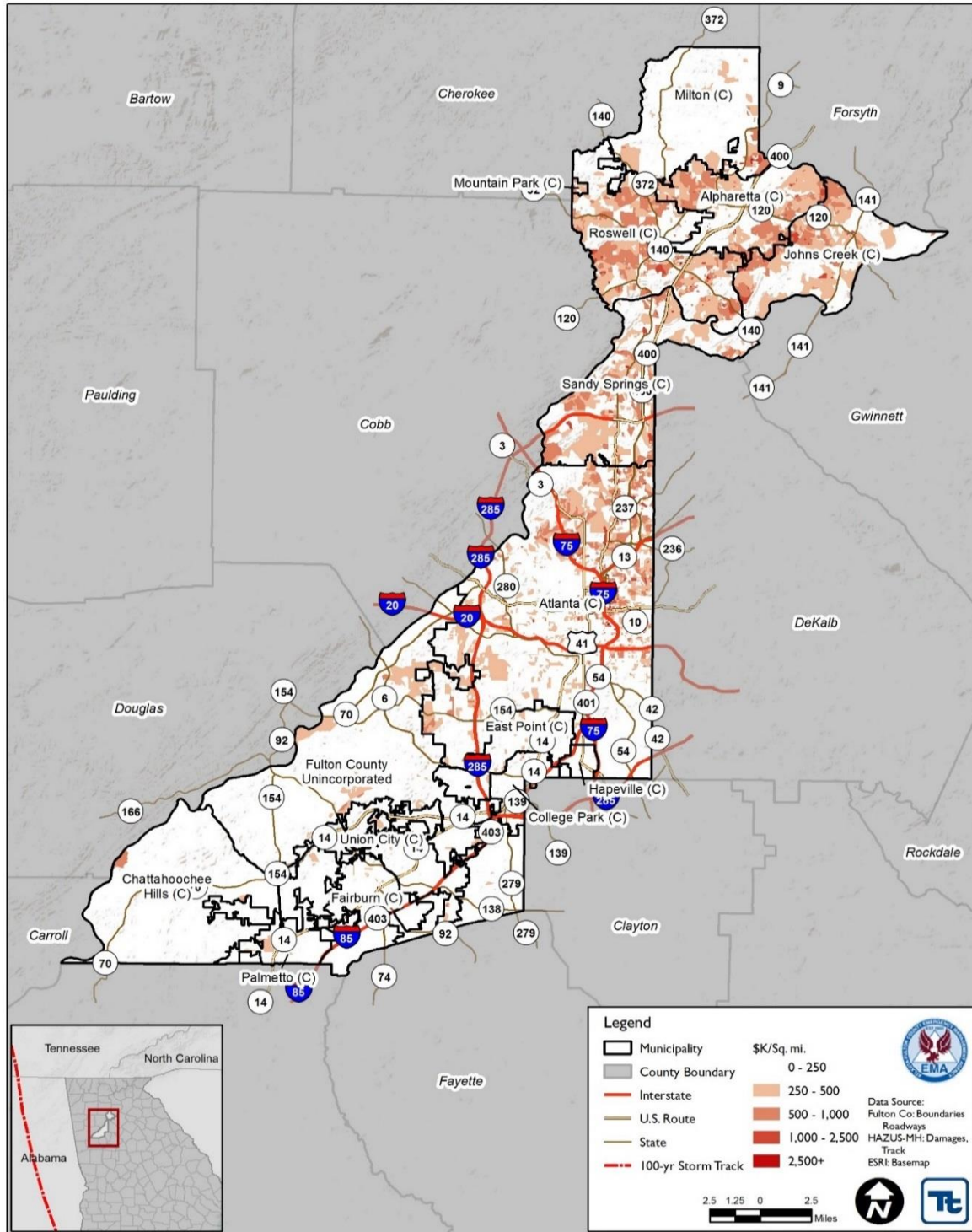
Source: HAZUS-MH 3.0

The total damage to buildings (structure only) for all occupancy types across the County is estimated to be \$58 million for the 100-year MRP wind-only event, and approximately \$340 million for the 500-year MRP wind-only event. The majority of these losses are to the residential building category.

Because of differences in building construction, residential structures are generally more susceptible to wind damage than commercial and industrial structures. The damage counts include buildings damaged at all severity levels from minor damage to total destruction. Total dollar damage reflects the overall impact to buildings at an aggregate level.



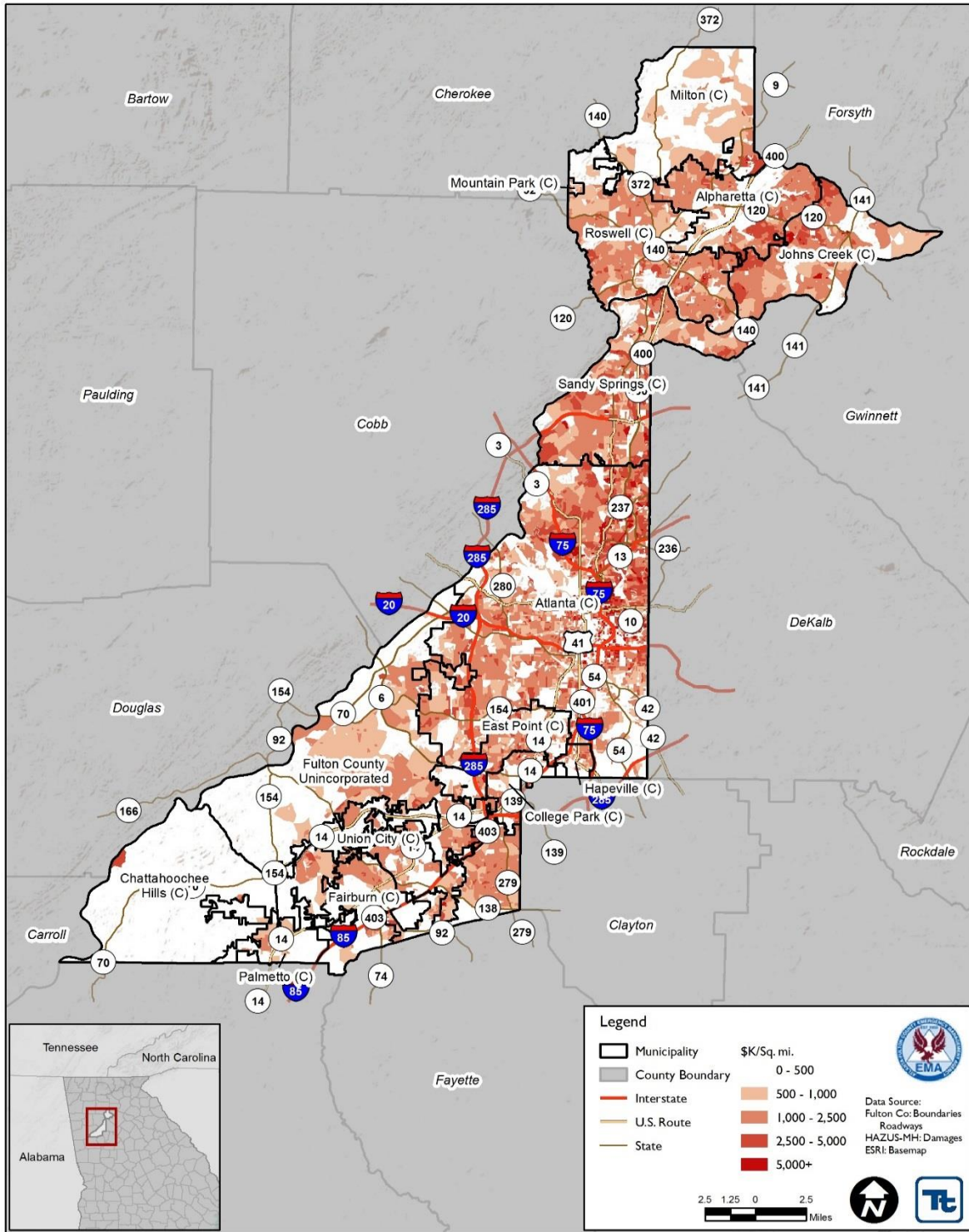
Figure 5.5-17 Density of Losses for Structures (All Occupancies) for the County 100-Year MRP Hurricane (Wind-Only) Event



Source: HAZUS-MH 3.0



Figure 5.5-18 Density of Losses for Structures (All Occupancies) for the County 500-Year MRP Hurricane (Wind-Only) Event



Source: HAZUS-MH 3.0



Impact on Critical Facilities

Overall, all critical facilities are exposed to the wind hazard associated with tropical system events. HAZUS-MH estimates the probability that critical facilities (i.e., medical facilities, fire/EMS, police, EOC, schools, and user-defined facilities such as shelters and municipal buildings) may sustain damage as a result of 100-year and 500-year MRP wind-only events. Additionally, HAZUS-MH estimates the loss of use for each facility in number of days. Due to the sensitive nature of the critical facility dataset, individual facility estimated loss is not provided.

Table 5.5-60 summarizes the potential damages to the critical facilities in Fulton County as a result of the 100- and 500-year MRP wind events. There is no loss of service for these critical facilities associated with these two events.

Table 5.5-60 Estimated Impacts to Critical Facilities for the 100-Year Mean Return Period Hurricane-Related Winds

Facility Type	100-Year Event				
	Loss of Days	Percent-Probability of Sustaining Damage			
		Minor	Moderate	Severe	Complete
EOC	0	0	0	0	0
Medical	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Schools	0	0	0	0	0

Source: HAZUS-MH 3.0

Table 5.5-61 Estimated Impacts to Critical Facilities for the 500-Year Mean Return Period Hurricane-Related Winds

Facility Type	500-Year Event				
	Loss of Days	Percent-Probability of Sustaining Damage			
		Minor	Moderate	Severe	Complete
EOC	0	0-2	0	0	0
Medical	0	0-1	0	0	0
Police	0	1-2	0	0	0
Fire	0	0-1	0	0	0
Schools	0	0-2	0	0	0

Source: HAZUS-MH 3.0

Impact on Economy

Hurricanes and tropical storms also impact the economy, including: loss of business function (e.g., tourism, recreation), damage to inventory, relocation costs, wage loss and rental loss due to the repair/replacement of buildings. HAZUS-MH estimates the total economic loss associated with each storm scenario (direct building losses and business interruption losses). Direct building losses are the estimated costs to repair or replace the damage caused to the building. This is reported in the “Impact on General Building Stock” subsection discussed earlier. Business interruption losses are the losses associated with the inability to operate a business because of the wind damage sustained



during the storm or the temporary living expenses for those displaced from their home because of the event.

For the 100-year MRP wind event, HAZUS-MH estimates less than \$40,000 in business interruption costs (income loss, relocation costs, rental costs and lost wages) and no inventory losses. For the 500-year MRP wind event, HAZUS-MH estimates approximately \$17 million in business interruption losses for the County, which includes loss of income, relocation costs, rental costs and lost wages, in addition to approximately \$11,000 in inventory losses.

Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to the population.

HAZUS-MH 3.0 also estimates the amount of debris that may be produced a result of the 100- and 500-year MRP wind events. Table 5.5-62 estimates the debris produced. Because the estimated debris production does not include flooding, this is likely a conservative estimate and may be higher if multiple impacts occur.

According to the HAZUS-MH Hurricane User Manual: ‘The Eligible Tree Debris columns provide estimates of the weight and volume of downed trees that would likely be collected and disposed at public expense. As discussed in Chapter 12 of the HAZUS-MH Hurricane Model Technical Manual, the eligible tree debris estimates produced by the Hurricane Model tend to underestimate reported volumes of debris brought to landfills for a number of events that have occurred over the past several years. This indicates that there may be other sources of vegetative and non-vegetative debris that are not currently being modeled in HAZUS. For landfill estimation purposes, it is recommended that the HAZUS debris volume estimate be treated as an approximate lower bound. Based on actual reported debris volumes, it is recommended that the HAZUS results be multiplied by three to obtain an approximate upper bound estimate. It is also important to note that the Hurricane Model assumes a bulking factor of 10 cubic yards per ton of tree debris. If the debris is chipped prior to transport or disposal, a bulking factor of 4 is recommended. Thus, for chipped debris, the eligible tree debris volume should be multiplied by 0.4’.

Table 5.5-62. Debris Production for 100- and 500-Year Mean Return Period Hurricane-Related Winds

Municipality	Brick and Wood (tons)		Concrete and Steel (tons)		Tree (tons)		Eligible Tree Volume (cubic yards)	
	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year
Alpharetta (C)	74	1,060	0	0	1,478	4,819	8,728	28,802
Atlanta (C)	516	11,737	0	0	4,107	22,420	27,836	140,245
Chattahoochee Hills (C)	0	10	0	0	1,422	4,892	747	2,371
College Park (C)	0	326	0	0	186	1,594	1,003	7,275
East Point (C)	0	820	0	0	327	3,042	2,671	20,177
Fairburn (C)	0	246	0	0	581	3,963	1,522	10,810



Table 5.5-62. Debris Production for 100- and 500-Year Mean Return Period Hurricane-Related Winds

Municipality	Brick and Wood (tons)		Concrete and Steel (tons)		Tree (tons)		Eligible Tree Volume (cubic yards)	
	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year
Fulton County (Unincorporated)	36	1,574	0	0	3,442	17,331	10,506	58,179
Hapeville (C)	0	140	0	0	36	351	399	2,579
Johns Creek (C)	71	1,033	0	0	1,664	4,824	10,820	31,116
Milton (C)	29	419	0	0	1,140	3,755	3,281	10,794
Mountain Park (C)	0	2	0	0	18	46	172	350
Palmetto (C)	3	31	0	0	396	1,327	900	2,586
Roswell (C)	120	1,361	0	0	2,099	5,687	14,497	38,579
Sandy Springs (C)	151	2,343	0	0	1,260	5,301	8,439	34,428
Union City (C)	1	429	0	0	490	4,022	1,693	13,533
Fulton County (Total)	1,001	21,531	0	0	18,646	83,374	93,212	401,824

Source: HAZUS-MH 3.0

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of events like hurricanes. While predicting changes to the prevalence or intensity of hurricanes and the events affects under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006).

Change of Vulnerability

Fulton County continues to be vulnerable to the tropical systems hazard. However, there are differences between the potential loss estimates between this plan update to the results in the 2010 HMP. The 2010 HMP provided an overall exposure to the hazard for the entire County. For the 2016 update, probabilistic scenarios were evaluated to determine potential losses for each community using HAZUS-MH 3.0.

Overall, this vulnerability assessment uses updated population, building inventory, and critical facility data, which provides a more accurate estimated exposure and potential losses for Fulton County.

Future Growth and Development

As discussed and illustrated in Chapter 3 and the annexes, areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the tropical system hazard because the entire Planning Area is exposed and vulnerable



to the impacts associated with these events. The development of new buildings in these areas must meet or exceed the standards in Section R301.2.1.1 of the International Building Code (IBC) which will assist with mitigating future potential damages and losses. Areas targeted for potential future growth and development in the next five (5) years have been identified across the County at the jurisdiction level. Refer to the jurisdictional annexes in this HMP.

Additional Data and Next Steps

Over time, the County will obtain additional data to support the analysis of this hazard. Data that will support the analysis would include additional detail on past hazard events and impacts and specific building information such as details on protective features (for example, hurricane straps).

5.5.10 Wildfire / Urban Interface Fires

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the wildfire hazard in Fulton County.

Specific 2016 Plan Update Changes for Wildfire / Urban Interface Fires

- The hazard profile has been enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the tornado hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the tornado hazard and it is included in this section.
- For the 2010 HMP, an exposure analysis was conducted using only the wildfire interface zones, whereas this plan used both the interface and intermix zones.

5.5.10.1 Profile

Hazard Description

According to the State of Georgia Hazard Mitigation Plan, a wildfire is an uncontained fire that spreads through the environment (State of Georgia HMP 2014). It is a term applied to any unwanted, unplanned, damaging fire burning in forest, shrub, or grass (U.S. Forest Service 2015). There are four different types of wildfires: crown fire, surface fire, ground fire, and spotting. A crown fire is when flames are burning in the tops or canopies of trees. They spread rapidly by wind and move quickly by jumping along the tops of trees. Surface fires are the most common type of wildfire and are typically small flames burning along the forest floor or through grass. Ground fires burn in natural litter, duff, roots or sometimes highly organic soils. Once started, they are difficult to detect and control because they can rekindle easily. Crown fires, wind and the local topography can produce spotting. When this occurs, large burning embers called firebrands are blown ahead of the main fire. Once spotting begins, it is difficult to control (Firewise 2014).

FEMA indicates that there are four categories of wildfires that are experienced throughout the U.S. These categories are defined as follows:

- Wildland fires – fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where Federal agencies are responsible for fire management and suppression.



- Interface or intermix fires – urban/wildland fires in which vegetation and the built-environment provide fuel
- Firestorms – events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.
- Prescribed fires and prescribed natural burns – fires that are intentionally set or selected natural fires that are allowed to burn for beneficial purposes (FEMA 1997).

Wildfire Behavior

The “wildfire behavior triangle” illustrates how three primary factors influence wildfire behavior: fuel, topography, and weather. Each point of the triangle represents one of the three factors; the sides represent the interplay between the factors. For example, drier and warmer weather combined with dense fuel loads and steeper slopes will cause more hazardous fires than light fuels on flat ground.

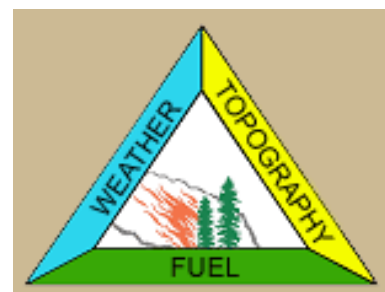
A fire needs all of the following three elements in the right combination to start and grow: a heat source, fuel and oxygen. The growth of the fire primarily depends on the characteristics of available fuel, weather conditions, and terrain. The characteristics are described below:

- Fuel - The dryer and lighter the fuels the more easily they will ignite. A continuous layer of fuels on the forest floor can aid in the spread of a fire.
- Weather - Wind can push a fire along, fires also create their own wind currents. Low relative humidity can dry out fuels causing them to ignite more easily. Precipitation can put out a fire and conversely a lack of precipitation can make fire more likely by drying out the fuels.
- Topography - A fire moves more rapidly up hills. A fire is more likely on southern and western aspects which are dryer (U.S. Forest Service 2015).

Location

All of Georgia is prone to wildfires due to the presence of fuels associated with them. Fulton County has abundant fuel sources in various locations across the county. More specifically, there are several municipalities at particular risk for wildfire/urban interface fires:

- Union City – approximately 3,000 homes are at risk for exposure to fire from urban interface.
- Fairburn – approximately 3,000 homes are at risk for exposure to fire from urban interface.
- Chattahoochee Hills – this is a heavily forested, rural community which is also surrounded by forests managed by the State Forestry Division. There is also a high risk of wildland fire in this and the land that surrounds it.
- Palmetto – there are a few hundred homes that are at risk of exposure to fire from urban interface.
- Sandy Springs and Roswell – these communities are bordered by large national parks that are heavily wooded.
- Johns Creek – this community contains some areas belonging to the Chattahoochee National Park, creating some risk for structures in the area.
- Unincorporated South Fulton County – this area contains heavily wooded areas that adjoin residential and business communities (Atlanta-Fulton County HMP 2010).

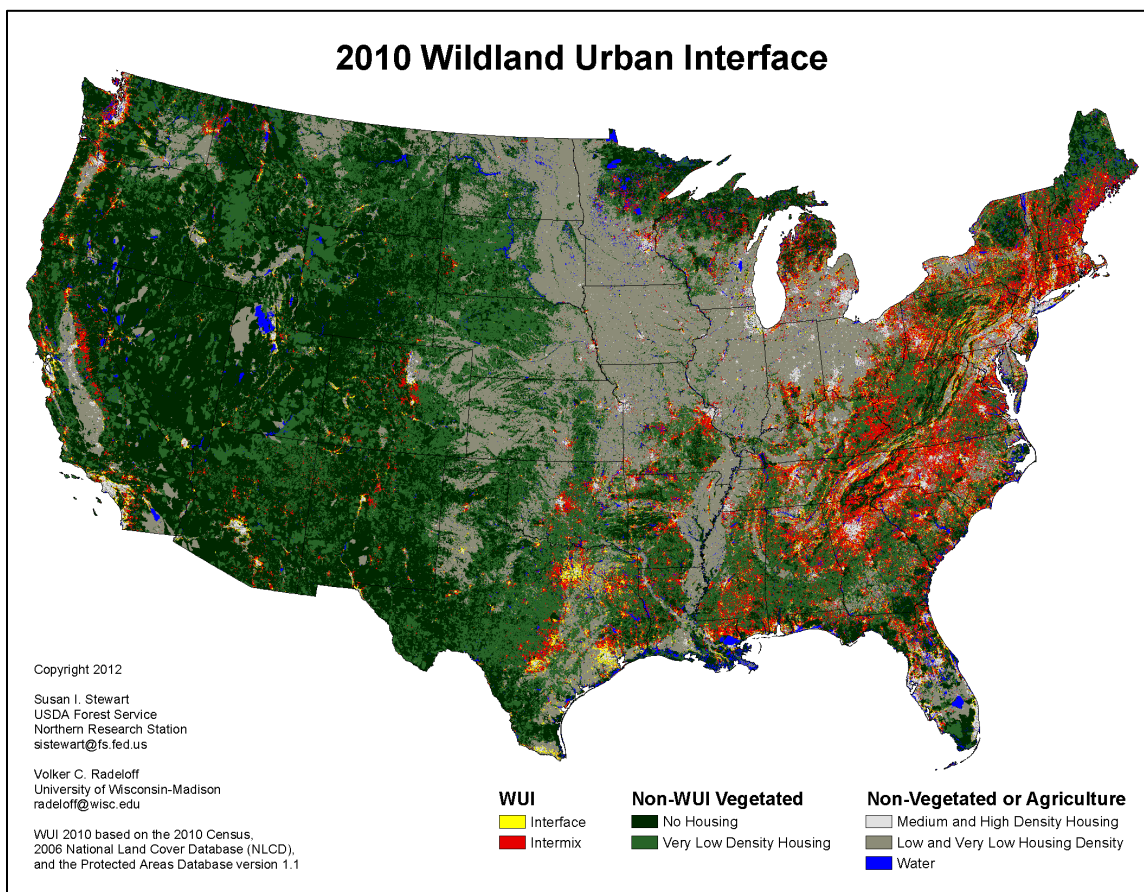


Wildfire/Urban Interface (WUI)

Wildland/Urban Interface (WUI) is the area where houses and wildland vegetation coincide. Interface neighborhoods are found all across the United States, and include many of the sprawling areas that grew during the 1990s. Housing developments alter the structure and function of forests and other wildland areas. The outcomes of the fire in the WUI are negative for residents; some may only experience smoke or evacuation, while others may lose their homes to a wildfire. All states have at least a small amount of land classified as WUI.

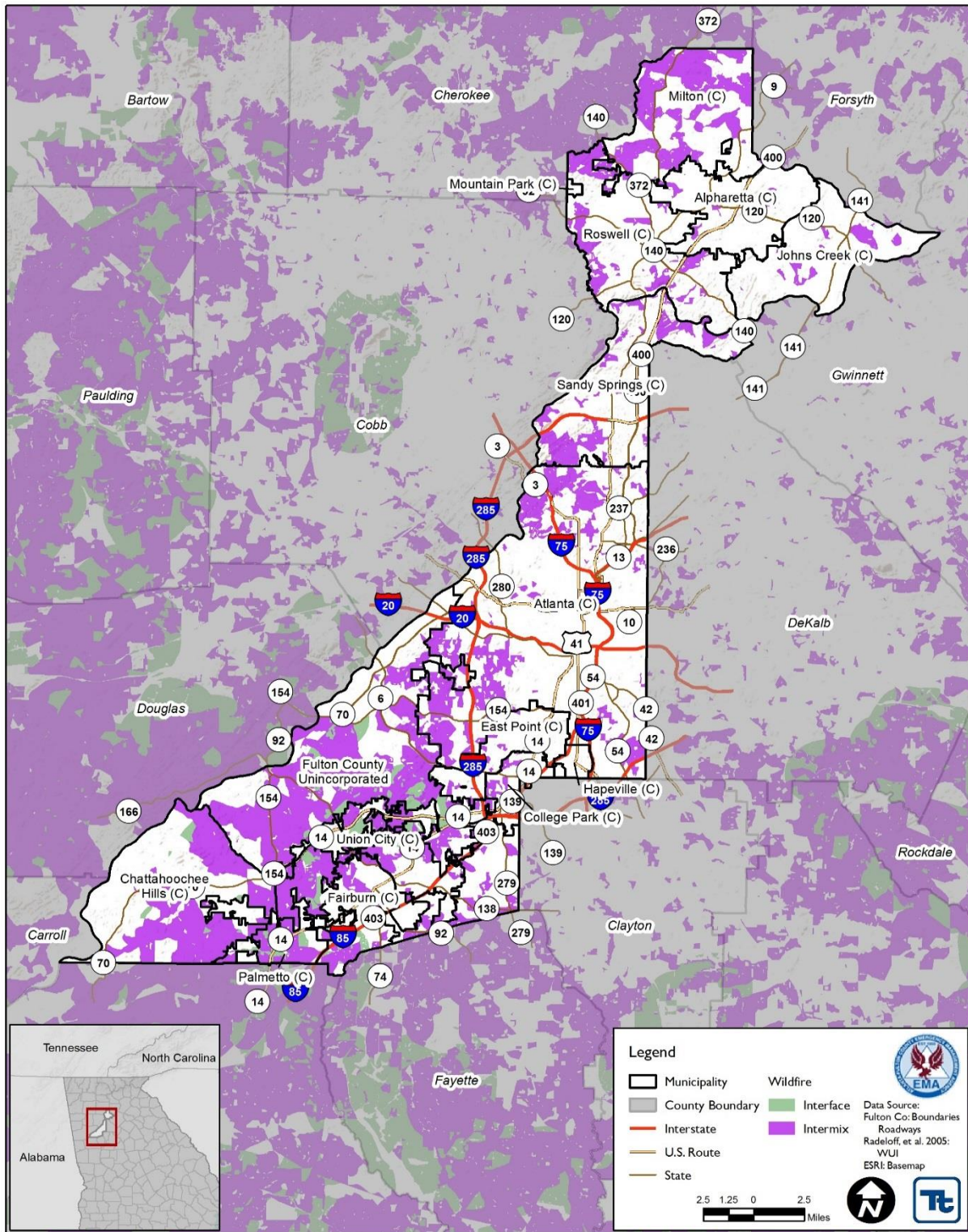
A detailed WUI (interface and intermix) is provided through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison which also defines the wildfire hazard area. The California Fire Alliance has determined that areas within 1.5 miles of wildland vegetation are the approximate distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not located within the forest are at risk to wildfire. This buffer distance, along with housing density and vegetation type were used to define the WUI illustrated in Figure 5.5-19 and Figure 5.5-20 below (Radeloff, et al, 2005).

Figure 5.5-19 SILVIS Wildland Urban Interface across the United States



Source: SILVIS Lab 2015

Figure 5.5-20 SILVIS Wildland Urban Interface and Intermix in Fulton County



Source: Radeloff, et al. 2005



Extent

Fulton County has multiple fuel sources and is prone to drought and thunderstorms which increase the potential severity of wildfires significantly. The county has abundant fuel sources in various locations of the county. Weather conditions, given the high frequency of severe storms with lightning and periodic severe drought conditions, can exacerbate wildfires (Atlanta-Fulton County HMP 2010).

Another factor that has direct impact on wildfire formation and increase the risk for wildfires in Fulton County is topography. Topography can have a powerful influence on wildfire behavior. Slope, gulches, and hollows can greatly increase the rate of spread and hamper access. These slopes lend themselves to rapid spreading fires due to their angle. The greater the slope, the faster the flames move and the longer the flames. Wildfires can reach into overhanging canopies, allowing spread not only through the lower areas of the forest, but the ability to jump to other trees (Atlanta-Fulton County HMP 2010).

The degree of exposure of properties at the wildland-urban interface also affects the extent of wildfires in Fulton County, especially at the edge of developed areas of cities and town. High risk properties located within these interface areas have the greatest potential for property damages and threats to life (Atlanta-Fulton County HMP 2010). In September 2011 fire crews battled a 45 to 50 acre brush fire near Old Jonesboro Road near Mt. Zion Road. Old Jonesboro Road was closed due to lack of visibility from the smoke. Two other brush fire incidents in 2011 also caused power outages and road closures due to poor visibility.

Finally, firefighting resources can affect the severity of wildfires. Rural fire departments are almost exclusively made up of volunteers and usually have limited resources that are stretched during periods when numerous fires occur. These limited firefighting resources can compound the risk and extent of wildfire damages (Atlanta-Fulton County HMP 2010).

Previous Occurrences and Losses

Wildfires have become a common annual occurrence in wooded areas during Georgia's dry season. Exposure to wildfire varies greatly across Fulton County. While exposure is relatively low along in the county's urbanized areas, it is quite high in the communities bordered by national parks and other heavily wooded areas.

Many sources provided wildfire information regarding previous occurrences and losses associated with wildfire throughout Fulton County. With many sources reviewed for the purpose of this HMP Update, loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2015, the State of Georgia was included in nine FEMA fire management assistance (FMA) declarations. Generally, these disasters cover a wide range of the State; therefore, the disaster may have impacted many counties. Fulton County was not included in any FMA declarations. For this 2016 HMP, wildfire events were summarized from 2010 to 2015 and are identified in Table 5.5-63. Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.



Table 5.5-63 Wildfire Events in Fulton County, 2010-2015

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
February 22, 2011	Brush Fire	N/A	N/A	Firefighters battled a brush fire next to Banneker High School in South Fulton County. There were no reports of injuries from this event.
May 3, 2011	Brush Fire	N/A	N/A	A brush fire was reported in the area of Johnson Ferry Road and Riverside Drive which caused power outages in the area as well. Johnson Ferry Road was closed at Riverside in both directions. The fire was caused by a blown transformer and downed power lines across the roadway.
September 19, 2011	Brush Fire	N/A	N/A	Fire crews battled a 45 to 50 acre brush fire near Old Jonesboro Road near Mt. Zion Road. Old Jonesboro Road was closed due to lack of visibility from the smoke. No injuries or damages were reported for this event.

Sources: NOAA-NCDC 2015; FEMA 2015; State of Georgia HMP 2014; WSBTV 2011; Sandy Springs Patch 2011; CBS46 2011; WUSA 9 2014; Sandy Spring VFD 2014

FEMA Federal Emergency Management Agency

NOAA National Oceanic and Atmospheric Administration

NCDC National Climatic Data Center

Probability of Future Occurrences

Estimating the approximate number of wildfires to occur in Fulton County is difficult in a probabilistic manner as a number of variable factors impact the potential for a fire to occur and because some conditions (for example, ongoing land use development patterns, location, fuel sources, and construction sites) exert increasing pressure on the WUI zone. Based on available data, it is expected that wildfires will continue to present a risk to Fulton County. Given the numerous factors that can impact urban fire and wildfire potential, the likelihood of a fire event starting and sustaining itself should be gauged by professional fire managers on a daily basis.

Section 5.4 provides a list of the identified hazards of concern for Fulton County. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for wildfire in the County is considered ‘possible’ (or one whose chance for impact is 1% to 10%). See section 5.6 for additional information provided by the Planning Committee.

Climate Change Impacts

Fire is determined by climate variability, local topography, and human intervention. Climate change has the potential to affect multiple elements of the wildfire system: fire behavior, ignitions, fire management, and vegetation fuels. Hot dry spells create the highest fire risk. With the increasing temperatures occurring in the State of Georgia, wildfire danger may intensify by warming and drying out vegetation. When climate alters fuel loads and fuel moisture, forest susceptibility to wildfires



changes. Climate change also may increase winds that spread fires. Faster fires are harder to contain, and thus are more likely to expand into residential neighborhoods.

Additionally, climate change is considered a potential source of influence for wildfires. Climate change may lead to a decrease in precipitation events during the summer which may increase the amount of areas susceptible to burning. Warming temperatures may also increase the insect population which may infest trees, killing them, and increase the fuel load.

5.5.10.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the wildfire hazard, the portions of Fulton County in the Wildland/Urban Interface zones (Interface and Intermix) have been identified as the hazard area. Therefore, all assets in the county (population, structures, critical facilities and lifelines), as described in the County Profile (Chapter 3), located in the hazard area are exposed and potentially vulnerable to wildfire. The following text evaluates and estimates the potential impact of the wildfire hazard on the County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Atlanta-Fulton County HMP
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

Wildfire hazards can impact significant areas of land, as evidenced by wildfires throughout the State and United States over the past several years. Fire in urban areas has the potential for great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be impacted in these areas. Wildfire, however can spread quickly, become a huge fire complex consisting of thousands of acres, and present greater challenges for allocating resources, defending isolated structures, and coordinating multi-jurisdictional response. If a wildfire occurs at a WUI, it can also cause an urban fire and in this case has the potential for great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be impacted in these areas.

Potential losses experienced from recent wildfire occurrences include human life, structures and other improvements, and natural resources. Given the immediate response times to reported wildfires, the likelihood of injuries and casualties is minimal. Smoke and air pollution from wildfires can be a health hazard, especially for sensitive populations including children, the elderly, and those with respiratory and cardiovascular diseases. Wildfire may also threaten the health and safety of those fighting the fires. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke. In addition, wildfire can lead to ancillary impacts such as landslides in steep ravine areas and flooding caused by the impacts of silt in local watersheds.



Data and Methodology

The WUI (interface and intermix) obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin – Madison was referenced to define the wildfire hazard areas. The University of Wisconsin-Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For the purposes of this risk assessment, the high-, medium-, and low-density interface areas were combined and used as the “interface” hazard area, and the high-, medium-, and low-density intermix areas were combined and used as the “intermix” hazard areas. Figure 5.5-18 and Figure 5.5-19 shown above display the 2010 Wildfire Urban Interface for the U.S. and Fulton County, respectively, by 2010 U.S. Census block.

The asset data (population, building stock, and critical facilities) presented in the County Profile (Chapter 3) was used to support an evaluation of assets exposed and potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available and appropriate Geographic Information System (GIS) data were overlaid upon the hazard area. Limitations of this analysis are recognized, and as such, the analysis is used only to provide a general estimate.

Impact on Life, Health and Safety

As demonstrated by historic wildfire events in the State of Georgia and other parts of the country, potential losses include human health and life of residents and responders, structures, infrastructure and natural resources. In addition, wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business and decrease in tourism. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment.

As a way to estimate the county’s population exposed to the wildfire hazard, the WUI was overlaid upon the 2010 Census population data (U.S. Census 2010). Census blocks with centers within the hazard area were used to calculate the estimated population exposed to the wildfire hazard. Table 5.5-64 summarizes these results by municipality.

Based on the analysis, 87,701 individuals, or 9.5% of the County’s population, are exposed to the intermix; while 20,441, or 2.2% of the County’s population, is exposed to the interface. A total of 108,142 (11.7% of the total population) individuals in Fulton County are located in the wildfire intermix/interface areas. Overall, the Cities of Chattahoochee Hills, Milton, and Palmetto have the greatest number of individuals located in the wildfire hazard areas.

Table 5.5-64 Estimated Vulnerable Population

Municipality	US. Census 2010 Population	Estimated Population Exposed			% of Total Exposed
		Intermix	Interface	Total	
Alpharetta (C)	57,551	1,220	0	1,220	2.1%
Atlanta (C)	391,711	23,166	0	23,166	5.9%
Chattahoochee Hills (C)	2,378	1,524	457	1,981	83.3%
College Park (C)	12,670	1,074	0	1,074	8.5%
East Point (C)	33,712	2,013	0	2,013	6.0%



Municipality	US. Census 2010 Population	Estimated Population Exposed			% of Total Exposed
		Intermix	Interface	Total	
Fairburn (C)	12,950	1,302	184	1,486	11.5%
Fulton County (Unincorporated)	87,478	26,314	14,496	40,810	46.7%
Hapeville (C)	6,373	61	0	61	1.0%
Johns Creek (C)	76,728	1,571	0	1,571	2.0%
Milton (C)	32,661	7,043	0	7,043	21.6%
Mountain Park (C)	526	2	0	2	<1%
Palmetto (C)	4,188	1,780	2,166	3,946	94.2%
Roswell (C)	88,346	8,835	0	8,835	10.0%
Sandy Springs (C)	93,853	9,063	0	9,063	9.7%
Union City (C)	19,456	2,733	3,138	5,871	30.2%
Fulton County (Total)	920,581	87,701	20,441	108,142	11.7%

Sources: U.S. Census 2010, Radeloff et al. 2005

Impact on General Building Stock

The most vulnerable structures to wildfire events are those located within the WUI areas. Buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. To estimate the buildings exposed to the wildfire hazard, the hazard areas were overlaid upon the building inventory in the County (Census block and building footprint layer). The replacement cost value of the Census blocks with their center in the hazard area were totaled. Table 5.5-65 summarizes the estimated building stock inventory exposed by municipality. Table 5.5-66 summarizes the number of buildings located in the WUI by municipality. The limitations of this analysis are recognized, and as such the analysis is only used to provide a general estimate.

Table 5.5-65 Building Stock Replacement Value Located in WUI Hazard Area

Municipality	Total RV (Structure and Contents)	Building RV Exposed			% of Total Exposed
		Intermix	Interface	Total	
Alpharetta (C)	\$15,242,479,000	\$459,040,000	\$0	\$459,040,000	3.0%
Atlanta (C)	\$98,670,268,000	\$4,520,649,000	\$0	\$4,520,649,000	4.6%
Chattahoochee Hills (C)	\$433,133,000	\$284,988,000	\$68,405,000	\$353,393,000	81.6%
College Park (C)	\$2,684,193,000	\$149,003,000	\$0	\$149,003,000	5.6%
East Point (C)	\$6,660,776,000	\$443,766,000	\$0	\$443,766,000	6.7%
Fairburn (C)	\$2,383,179,000	\$190,901,000	\$22,983,000	\$213,884,000	9.0%
Fulton County (Unincorporated)	\$18,581,416,000	\$5,070,248,000	\$2,500,482,000	\$7,570,730,000	40.7%
Hapeville (C)	\$1,328,675,000	\$4,605,000	\$0	\$4,605,000	<1%
Johns Creek (C)	\$16,852,355,000	\$325,481,000	\$0	\$325,481,000	1.9%
Milton (C)	\$7,092,133,000	\$1,716,570,000	\$0	\$1,716,570,000	24.2%
Mountain Park (C)	\$192,688,000	\$1,827,000	\$0	\$1,827,000	<1%



Municipality	Total RV (Structure and Contents)	Building RV Exposed			% of Total Exposed
		Intermix	Interface	Total	
Palmetto (C)	\$832,439,000	\$318,628,000	\$454,080,000	\$772,708,000	92.8%
Roswell (C)	\$20,997,523,000	\$2,122,981,000	\$0	\$2,122,981,000	10.1%
Sandy Springs (C)	\$26,257,287,000	\$2,673,911,000	\$0	\$2,673,911,000	10.2%
Union City (C)	\$3,150,518,000	\$520,834,000	\$433,666,000	\$954,500,000	30.3%
Fulton County (Total)	\$221,359,062,000	\$18,803,432,000	\$3,479,616,000	\$22,283,048,000	10.1%

Sources: Fulton County, Radeloff et al. 2005

RV Replacement value

Table 5.5-66. Number of Buildings Located within the WUI in Fulton County

Municipality	Total Number of Structure	Number of Buildings Exposed			% of Total Exposed
		Intermix	Interface	Total	
Alpharetta (C)	16,680	395	0	395	2.4%
Atlanta (C)	140,031	11,596	0	11,596	8.3%
Chattahoochee Hills (C)	2,361	1,593	239	1,832	77.6%
College Park (C)	3,859	456	0	456	11.8%
East Point (C)	15,119	502	5	507	3.4%
Fairburn (C)	5,491	948	133	1,081	19.7%
Fulton County (Unincorporated)	37,826	13,650	5,609	19,259	50.9%
Hapeville (C)	3,304	28	0	28	<1%
Johns Creek (C)	23,197	672	0	672	2.9%
Milton (C)	10,745	3,469	0	3,469	32.3%
Mountain Park (C)	325	10	0	10	3.1%
Palmetto (C)	2,119	996	959	1,955	92.3%
Roswell (C)	28,558	3,238	0	3,238	11.3%
Sandy Springs (C)	21,783	3,358	0	3,358	15.4%
Union City (C)	5,932	881	1,328	2,209	37.2%
Fulton County (Total)	317,330	41,792	8,273	50,065	15.8%

Sources: Fulton County, Radeloff et al. 2005

Impact on Critical Facilities

It is recognized that a number of critical facilities are located in the wildfire hazard area, and are also vulnerable to the threat of wildfire. Many of these facilities are the locations for vulnerable populations (i.e., schools, senior facilities) and responding agencies to wildfire events (i.e., fire, police). Table 5.5-67 summarizes the critical facilities located within the wildfire hazard area by jurisdiction.



Table 5.5-67. Facilities in WUI (Interface and Intermix) Hazard Area

Municipality	Facility Types												
	Arts & Culture	Communication	Court	Electric Facility	Fire	Government Building	Medical	Mental Health	Police	Potable Water Facility	Potable Pump Station	Senior	Tier II (Hazmat)
Alpharetta (C)	0	0	0	0	0	0	0	0	0	0	0	0	2
Atlanta (C)	0	0	0	0	0	0	3	1	0	3	7	1	4
Chattahoochee Hills (C)	0	0	0	0	0	0	0	0	0	0	1	0	0
College Park (C)	0	0	0	0	0	0	0	0	0	0	0	0	1
East Point (C)	0	0	0	0	0	0	0	0	0	0	0	0	1
Fairburn (C)	0	0	0	0	0	0	0	0	0	0	2	1	1
Fulton County (Unincorporated)	4	0	0	0	3	1	1	0	13	0	1	0	7
Hapeville (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Johns Creek (C)	0	0	0	0	0	0	0	0	0	1	2	0	2
Milton (C)	0	0	0	0	0	0	0	0	0	4	2	0	0
Mountain Park (C)	0	0	0	0	0	0	0	0	0	0	0	0	0
Palmetto (C)	0	1	1	1	0	1	0	0	0	0	1	0	3
Roswell (C)	0	0	0	0	0	0	0	0	0	0	1	0	1
Sandy Springs (C)	0	0	0	0	0	0	0	0	0	0	2	0	2
Union City (C)	0	0	0	0	0	0	0	0	0	0	0	0	2
Fulton County (Total)	4	1	1	1	3	2	4	1	13	8	19	2	26

Source: Fulton County



Impact on Economy

Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business and decrease in tourism. Wildfires can cost thousands of taxpayer dollars to suppress and control and involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from the volunteer firefighters. There are also many direct and indirect costs to local businesses that excuse volunteers from working to fight these fires.

Future Growth and Development

Areas targeted for potential future growth and development in the next five years have been identified across Fulton County at the municipal level. Refer to the jurisdictional annexes in Chapter 3 and the annexes. It is anticipated that any new development and new residents in the WUI areas will be exposed to the wildfire hazard.

Effect of Climate Change on Vulnerability

According to the U.S. Fire Service (USFS), climate change will likely alter the atmospheric patterns that affect fire weather. Changes in fire patterns will, in turn, impact carbon cycling, forest structure, and species composition. Climate change associated with elevated greenhouse gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires (USFS, 2011). Under a changing climate, wildfires are expected to increase by 50% across the U.S. (USFS, 2013).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the climate/fire/vegetation interactions is essential for addressing issues associated with climate change that include:

- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition, and
- Complications from land use change, invasive species and an increasing wildland-urban interface (USFS, 2011).

It is projected that higher summer temperatures will likely increase the high fire risk by 10 to 30-percent. Fire occurrence and/or area burned could increase across the U.S. due to the increase of lightning activity, the frequency of surface pressure and associated circulation patterns conducive to surface drying, and fire-weather conditions, in general, which is conducive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels and extending fire seasons and areas burned (USFS, 2011).

Future changes in fire frequency and severity are difficult to predict. Global and regional climate changes associated with elevated greenhouse gas concentrations could alter large weather patterns, thereby affecting fire-weather conducive to extreme fire behavior (USFS, 2011).

Change of Vulnerability

For the 2010 HMP, an exposure analysis was conducted using only the wildfire interface zones, whereas this plan updated used both the interface and intermix zones. Overall the County has more assets located in the intermix zones than the interface zones. The updated vulnerability assessment provides a more current exposure analysis for the County.



Additional Data and Next Steps

As the building inventory is updated additional building attributes regarding the construction of structures, such as roofing material, fire detection equipment, structure age, etc. may be incorporated as available. As stated earlier, buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. The proximity of these building types to the fuel hazard areas should be identified for further evaluation. Development and availability of such data would permit a more detailed estimate of potential vulnerabilities, including loss of life and potential structural damages.

5.5.11 Severe Winter Weather

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the severe winter weather hazard in Fulton County.

Specific 2016 Plan Update Changes for Severe Winter Weather

- The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the severe winter storms hazard is discussed.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2010 and 2015.
- A vulnerability assessment was conducted for the severe winter weather hazard and it is included in this section.

5.5.11.1 Profile

Hazard Description

A winter storm is a weather event in which the main types of precipitation are snow, sleet or freezing rain. They can be a combination of heavy snow, blowing snow, and/or dangerous wind chills. There are three basic components needed to make a winter storm. Below freezing temperatures (cold air) in the clouds and near the ground are necessary to make snow and ice. Lift, something to raise the moist air to form clouds and cause precipitation, is needed. Examples of this is warm air colliding with cold air and being forced to rise over the cold dome or air flowing up a mountainside. The last thing needed to make a winter storm is moisture to form clouds and precipitation. Air blowing across a body of water, such as a large lake or the ocean (National Severe Storms Laboratory 2014).

Some winter storms are large enough to immobilize an entire region while others may only affect a single community. Winter storms are typically accompanied by low temperatures, high winds, freezing rain or sleet, and heavy snowfall. The aftermath of a winter storm can have an impact on a community or region for days, weeks, or even months; potentially causing cold temperatures, flooding, storm surge, closed and/or blocked roadways, downed utility lines, and power outages. In Fulton County, winter storms include snow storms, ice storms, and cold temperatures.

Heavy Snow

According to the National Snow and Ice Data Center (NSIDC), snow is precipitation in the form of ice crystals. It originates in clouds when temperatures are below the freezing point (32°F), when water vapor in the atmosphere condenses directly into ice without going through the liquid stage. Once an ice crystal has formed, it absorbs and freezes additional water vapor from the surrounding air, growing into a snow crystals or snow pallet, which then falls to the earth. Snow falls in different



forms: snowflakes, snow pellets, or sleet. Snowflakes are clusters of ice crystals that form from a cloud. Snow pellets are opaque ice particles in the atmosphere. They form as ice crystals fall through super-cooled cloud droplets, which are below freezing but remain a liquid. The cloud droplets then freeze to the crystals. Sleet is made up of drops of rain that freeze into ice as they fall through colder air layers. They are usually smaller than 0.30 inches in diameter (NSIDC 2013). According to the Southeast Regional Climate Center (SERCC), the average snowfall (in inches) for Fulton County is 2.2 inches, with the month of January having the highest average of one inch (SERCC 2015).

Blizzards

A blizzard is a winter snowstorm with sustained or frequent wind gusts of 35 mph or more, accompanied by falling or blowing snow reducing visibility to or below 0.25 mile. These conditions must be the predominant over a 3-hour period. Extremely cold temperatures are often associated with blizzard conditions, but are not a formal part of the definition. The hazard, created by the combination of snow, wind, and low visibility, significantly increases when temperatures are below 20°F. A severe blizzard is categorized as having temperatures near or below 10°F, winds exceeding 45 mph, and visibility reduced by snow to near zero. Storm systems powerful enough to cause blizzards usually form when the jet stream dips far to the south, allowing cold air from the north to clash with warm, moister air from the south. Blizzard conditions often develop on the northwest side of an intense storm system. The difference between the lower pressure in the storm and the higher pressure to the west creates a tight pressure gradient, resulting in strong winds and extreme conditions caused by the blowing snow (The Weather Channel 2012).

Ice Storms and Freezing Rain

Freezing rain is a common occurrence each winter in the southeast United States. An ice storm describes those events when damaging accumulations of ice are expected during freezing rain situations. Significant ice accumulations are typically accumulations of 0.25-inches or greater (NWS 2013). Heavy accumulations of ice can bring down trees, power lines and utility poles, and communication towers. Ice can disrupt communications and power for days. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians (NWS 2008).

Extreme Cold Temperatures

Extreme cold events are when temperatures drop well below normal in an area. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Extreme cold temperatures are characterized by the ambient air temperature dropping to approximately 0 degrees Fahrenheit (°F) or below (National Weather Service [NWS] 2013). Extensive exposure to extreme cold temperatures can cause frostbite or hypothermia and can become life-threatening. Infants and the elderly are most susceptible to the effects of extreme changes in temperatures. Extreme cold also can cause emergencies in susceptible populations, such as those without shelter, those who are stranded, or those who live in a home that is poorly insulated or without heat (such as mobile homes). Infants and the elderly are particularly at risk, but anyone can be affected (Centers of Disease Control and Prevention [CDC] 2009). Average winter temperatures for the State of Georgia range from 46.1°F to 55.5°F (SERCC 2015).

There are several health hazards related to extreme cold temperatures and include wind chill, frostbite, and hypothermia.



- *Wind chill* is not the actual temperature but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature.
- *Frostbite* is damage to body tissue caused by extreme cold. A wind chill of -20°F will cause frostbite in just 30 minutes. Frostbite can cause a loss of feeling and a white or pale appearance in extremities.
- *Hypothermia* is a condition brought on when the body temperature drops to less than 95°F and it can be deadly. Warning signs of hypothermia include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion.

Location

Impacts of winter storms in the State of Georgia are typically contained in the northern part of the State; however, a storm can impact the entire region. Severe winter weather usually occurs in the winter months, between January and March, with the highest probability of occurrence in February. Fulton County is likely to experience all types of winter weather events including snow, freezing rain, ice, and extreme cold temperatures. All areas of the County are equally exposed to these types of weather events.

Extent

The extent of a severe winter storm can be classified by meteorological measurements and by evaluating its societal impacts. NOAA’s National Climatic Data Center (NCDC) is currently producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two-thirds of the United States. The RSI ranks snowstorm impacts on a scale from 1 to 5. It is based on the spatial extent of the storm, the amount of snowfall, and the interaction of the extent and snowfall totals with population (based on the 2000 Census). The NCDC has analyzed and assigned RSI values to over 500 storms since 1900 (NOAA-NCDC 2011). Table 5.5-68 presents the five RSI ranking categories.

Table 5.5-68. RSI Ranking Categories

Category	Description	RSI Value
1	Notable	1-3
2	Significant	3-6
3	Major	6-10
4	Crippling	10-18
5	Extreme	18.0+

Source: NOAA-NCDC 2011

Note: RSI = Regional Snowfall Index

The NWS operates a widespread network of observing systems such as geostationary satellites, Doppler radars, and automated surface observing systems that feed into the current state-of-the-art numerical computer models to provide a look into what will happen next, ranging from hours to days.



The models are then analyzed by NWS meteorologists who then write and disseminate forecasts (NWS 2013).

The NWS uses winter weather watches, warnings and advisories to ensure that people know what to expect in the coming hours and days. A winter storm watch means that severe winter conditions (heavy snow, ice, etc.) may affect a certain area, but its occurrence, location and timing are uncertain.

- A *winter storm watch* is issued 12 to 48 hours in advance of an event for a 50% or greater chance of conditions favorable for a significant winter storm (including heavy sleet, heavy snow, or ice storm). Winter storm conditions include two or more inches of snow, 1/2 inch or more of sleet, or 1/4 inch or more of freezing rain. May be issued at forecaster and emergency management discretion when significant impacts are expected but the snow, sleet, or freezing rain criteria are not necessarily met.
- A *winter storm warning* is issued up to 36 hours before an event for an 80% chance of a winter weather event that meets at least one of these criteria: two or more inches of snow, 1/2 inch or more of sleet, or 1/4 inch or more of freezing rain. This warning may be issued at forecaster and emergency management discretion when significant impacts are expected but the snow, sleet, or freezing rain criteria are not necessarily met.
- A *winter weather advisory* is issued when, within the next 36 hours, there is a high probability of enough snow, sleet, or ice to cause inconvenience, but not enough to warrant a warning.
- A *blizzard warning* is issued when there is at least an 80% chance that wind and snow will combine to produce blizzard conditions within the next 36 hours. Blizzard conditions consist of sustained wind speeds (or gusts) of at least 35 mph, and considerable falling or blowing snow causing a reduction of visibilities to less than 1/4 mile for at least three hours.
- A *blizzard watch* is issued when there is at least 50% chance for blizzard conditions within the next 12 to 48 hours. Blizzard conditions consist of sustained wind speeds (or gusts) of at least 35 mph, and considerable falling or blowing snow causing a reduction of visibilities to less than 1/4 mile for at least 3 hours.
- An *ice storm warning* is issued up to 36 hours before an event for an 80% or greater chance of a 1/4 inch or more of freezing rain. May be issued at forecaster and emergency management discretion when significant impacts are expected but the freezing rain criteria is not necessarily met (NWS 2014).

The magnitude or severity of a severe winter storm depends on several factors including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and time of occurrence during the day (e.g., weekday versus weekend), and time of season. The heaviest snow and ice accumulation for Fulton County occurred on March 12-14, 1993 when single storm brought around 16 in (41 cm) to the region and became known as "The Storm of the Century". According to the National Climatic Data Center, Fulton County experienced its worst impact from snow and ice accumulation on January 23, 2000. During this event snow, sleet, ice and freezing rain accumulated on local roads and 1/2 an inch of ice formed on the trees and power lines. Bridges and overpasses became treacherous and numerous accidents were reported. Over 500,000 individuals lost power and the Governor declared a state of emergency for 39 counties with \$48 million in damages.

Previous Occurrences and Losses

Many sources provided winter storm information regarding previous occurrences and losses associated with winter storm events throughout Fulton County. With many sources reviewed for the



purpose of this Hazard Mitigation Plan (HMP), loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2015, FEMA included the State of Georgia in five winter storm-related major disaster (DR) or emergency (EM) declarations classified as one or a combination of the following disaster types: severe winter weather, winter storm, severe snowfall and winter storm. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Fulton County was included in four of these declarations.

For this Plan, winter weather events were summarized from 2010 to 2015. Known severe winter storm events, including FEMA disaster declarations, which have impacted Fulton County are identified in Table 5.5-69. For events prior to 2010, refer to the 2010 Fulton County HMP. For detailed information on damages and impacts to each municipal, refer to jurisdictional annexes. Please note that not all events that have occurred in the County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.



Table 5.5-69 Severe Winter Weather Events in Fulton County, 2010-2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 12, 2010	Snow	N/A	N/A	Light snow began to fall over west Georgia around noon on February 12 th , which then spread eastward through the afternoon before tapering off to flurries. Snow and slush on the roadways froze overnight and led to hazardous driving conditions. Snowfall totals in Fulton County ranged from two to four inches.
December 15, 2010	Black Ice	N/A	N/A	Icy conditions impacted north Georgia during the afternoon and overnight hours as precipitation moved across the State. Locations near Columbus were the first to report sleet and rain followed by snow. The snow moved into the metro area of Atlanta and was mixed with sleet in some areas. The freezing rain continued through the evening and caused horrendous traffic problems which led to thousands of accidents across much of north Georgia. Ice accumulations in Fulton County ranged from a trace to ¼ inch.
December 24-25, 2010	Snow	N/A	N/A	A strong system moved across the southeast United States on Christmas Day. Precipitation began on Christmas Eve in northern and central Georgia as rain and changed to snow. For the rest of the impacted areas in the State, the changeover began during the day on Christmas Day. The highest accumulations occurred in the north Georgia mountains, where between six and eight inches of snow falling. In the Atlanta area, between one and three inches of snow was reported.
January 9-10, 2011	Winter Storm	N/A	N/A	A mix of rain, sleet and snow fell across central Georgia, with accumulations of up to two inches. In north Georgia, precipitation fell in the form of mostly snow with some sleet. An area of intense snow developed along and just north of the I-20 corridor, contributing to a narrow band of six to 8.5 inches of snow. Freezing drizzle and light freezing rain fell over central and northern Georgia with accumulations of 0.1 to 0.5 inches. In Fulton county, snowfall totals ranged from three inches in Atlanta to 4.5 inches in Roswell.
January 5-8, 2014	Cold Temperatures	N/A	N/A	A strong arctic front blew across north and central Georgia, bringing strong gusty winds and plummeting temperatures. Northwest winds of 15 to 30 mph with higher gusts were common across the region on January 5 th . Temperatures fell into the 20s on January 6 th and strong winds pushed the wind chill below zero over parts of northern and central Georgia. On the morning of January 7 th , temperatures ranged



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
January 28, 2014	Severe Winter Storm	N/A	N/A	<p>from teens across central Georgia to five and 10 below zero in northeast Georgia. Low temperature records that stood for over 40 years were broken. In Atlanta, Fulton County, the low temperature for January 7th was 6°F which broke a record set in 1970. The high for Atlanta was 26°F.</p> <p>Storm was the result of a very strong and very cold arctic cold surface high pressure system located across the Mid-Atlantic States. Fulton County experienced ¾ inches of glaze ice and 1.5 inches of sleet. Multiple vehicle accidents occurred on the slick snow and ice covered roads. This event cost \$350,000 in damages.</p>
February 11-13, 2014	Severe Winter Storm	DR-4165	Yes	<p>A powerful storm brought heavy snow and record level of ice to north and central Georgia. Two rounds of precipitation occurred with this event with the first one bringing between two and five inches of snow. The second event brought snow and freezing rain to the area, with areas along and just south of the Interstate 20 corridor in east-central Georgia receiving ice totals they have not seen in decades. Overall, the area saw between two and four inches of snow and ice accumulations of ¼ to ½ inches near Atlanta and amounts of over ¾ of an inch along the I-20 corridor east towards Augusta. In Fulton County, snowfall totals ranged from two inches to 6.5 inches and between 0.01 and 0.65 inches of ice.</p>
February 15-18, 2015	Severe Winter Storm / Ice Storm	DR-4215	No	<p>A cold front brought below freezing temperatures to northern Georgia. Freezing rain fell in north and northeast parts of the state, totaling between ¼" to ½" in some areas. This led to widespread tree and power lines damage. By the morning of February 17th, more than 200,000 customers were without power, including those in Fulton County. In Fulton County, customers were without power in the northeast Atlanta metro area and points north and east. Ice accumulations in the County ranged from 0.01 inches to 0.25 inches.</p>

Sources: FEMA 2015; NWS 2015; NOAA-NCDC 2015
 DR Major Disaster Declaration (FEMA)
 FEMA Federal Emergency Management Agency
 Mph Miles Per Hour
 N/A Not Applicable
 NOAA National Oceanic and Atmospheric Administration
 NWS National Weather Service



Probability of Future Occurrences

Severe winter weather events of all types will continue to affect Fulton County on an annual basis to some extent. The risks associated with the average annual hazard are slight, but the more infrequent but severe winter storms/freezes have potentially severe risks. These severe winter events can cause major transportation disruptions, lengthy power outages, substantial property damages, and some loss of life. The following table provides the probability of occurrences of severe winter weather events. Based on historic occurrences, winter storm events are the most common in Fulton County, followed by extreme cold/wind chill events. However, the information used to calculate the probability of occurrences is only based on using NOAA-NCDC storm events database results.

Table 5.5-70. Probability of Occurrence of Severe Winter Weather Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of Event Occurring in Any Given Year	% Chance of Occurrence in Any Given Year
Blizzard	0	0.00	N/A	N/A	N/A
Cold/Wind Chill	7	0.11	612.86	0.002	0.16
Extreme Cold/Wind Chill	20	0.31	214.50	0.005	0.47
Heavy Snow	9	0.14	476.67	0.002	0.21
Ice Storm	6	0.09	715.00	0.001	0.14
Winter Storm	14	0.22	306.43	0.003	0.33
Winter Weather	24	0.37	178.75	0.006	0.56
Total	80	1.23	53.63	0.019	1.86

Source: NOAA-NCDC 2015

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for severe winter storms in the County is considered ‘Possible’ (1% to 10% chance). See section 5.6 for additional details provided by the Planning Committee.

Climate Change Impacts

A changing climate has the potential to intensify rains and storms, damaging infrastructure, and causing injury, illnesses and death. Additionally, there has been an increase in the intensity and snowfall of winter storms. The atmosphere can hold more moisture and that, in turn, drives heavier than normal precipitation, including heavier snowfall in the appropriate conditions. Heavy snowfall and snowstorm frequency have increased in many parts of the northern United States; however, the south and lower Midwest has seen a reduction in snowstorm frequency over the last 100 years (Climate Communication 2015).

Precipitation is predicted to come with less frequency but with higher intensity, which would increase the likelihood of cycles of hazard types. The percentage of precipitation falling in very heavy events has increased by 27% across the southeast United States (Atlanta Regional Commission 2014).



The State could experience a 5% annual increase in precipitation over the next century (National Conference of State Legislatures 2008).

5.5.11.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the severe winter weather hazard, all of Fulton County is exposed; therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Chapter 3), are potentially vulnerable to a winter storm. The following text evaluates and estimates the potential impact of the severe winter weather hazard on Fulton County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Fulton County Hazard Mitigation Plan
- Effect of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

As discussed above, the Planning Committee identified severe winter weather as being a frequent hazard event for the County. Severe winter weather is a significant hazard because of the direct and indirect costs associated with these events, delays caused by the storms, and impacts on the people and facilities of the region related to snow and ice removal, health problems, cascade effects such as utility failure (power outages) and traffic accidents, and stress on community resources.

Data and Methodology

Updated population and general building stock data were used to support an evaluation of assets exposed to this hazard and the potential impacts associated with this hazard. Additionally, as available economic losses were provided by the Planning Committee to support this vulnerability assessment.

Impact on Life, Health and Safety

According to the NOAA National Severe Storms Laboratory (NSSL); every year, winter weather indirectly and deceptively kills hundreds of people in the U.S., primarily from automobile accidents, overexertion and exposure. Winter storms are often accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, drifting snow and extreme cold temperatures and dangerous wind chill. They are considered deceptive killers because most deaths and other impacts or losses are indirectly related to the storm. People can die in traffic accidents on icy roads, heart attacks while shoveling snow, or of hypothermia from prolonged exposure to cold. Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days or weeks. Heavy snow can immobilize a region and paralyze a city, shutting down all air and rail transportation and disrupting medical and emergency services. Storms near the coast can cause coastal flooding and beach erosion as well as sink ships at sea. The economic impact of winter weather each year is huge, with costs for snow removal, damage and loss of business in the millions (NSSL, 2006).



Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. In the mountains, heavy snow can lead to avalanches. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns (NSSL, 2006).

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces (NSSL, 2006).

For the purposes of this HMP, the entire population of Fulton County (920,581 people) is exposed to severe winter weather events (U.S. Census, 2010). Snow accumulation and frozen/slippery road surfaces increase the frequency and impact of traffic accidents for the general population, resulting in personal injuries. Refer to Chapter 3 (County Profile) for population statistics for each participating municipality.

The elderly are considered most susceptible to this hazard due to their increased risk of injuries and death from falls and overexertion and/or hypothermia from attempts to clear snow and ice. In addition, severe winter weather events can reduce the ability of these populations to access emergency services. Residents with low incomes may not have access to housing or their housing may be less able to withstand cold temperatures (e.g., homes with poor insulation and heating supply).

Impact on General Building Stock

The entire general building stock inventory is exposed and vulnerable to the severe winter weather hazard. In general, structural impacts include damage to roofs and building frames, rather than building content. Table 5.5-71 presents the total exposure value for general building stock for each participating municipality.

Current modeling tools are not available to estimate specific losses for this hazard. As an alternate approach, this plan considers percentage damages that could result from severe winter weather conditions. Given professional knowledge and the currently available information, the potential loss for this hazard is many times considered to be overestimated because of varying factors (building structure type, age, load distribution, building codes in place, etc.). Therefore, the following information should be used as estimates only for planning purposes with the knowledge that the associated losses for severe winter storm events vary greatly.



Table 5.5-71. General Building Stock Exposure and Estimated Losses from Severe Winter Storm Events

Municipality	Total (All Occupancies)	1% Damage Loss Estimate	5% Damage Loss Estimate	10% Damage Loss Estimate
Alpharetta (C)	\$9,220,248,000	\$92,202,480	\$461,012,400	\$922,024,800
Atlanta (C)	\$58,500,959,000	\$585,009,590	\$2,925,047,950	\$5,850,095,900
Chattahoochee Hills (C)	\$280,119,000	\$2,801,190	\$14,005,950	\$28,011,900
College Park (C)	\$1,587,945,000	\$15,879,450	\$79,397,250	\$158,794,500
East Point (C)	\$4,022,401,000	\$40,224,010	\$201,120,050	\$402,240,100
Fairburn (C)	\$1,468,831,000	\$14,688,310	\$73,441,550	\$146,883,100
Fulton County (Unincorporated)	\$11,308,807,000	\$113,088,070	\$565,440,350	\$1,130,880,700
Hapeville (C)	\$783,900,000	\$7,839,000	\$39,195,000	\$78,390,000
Johns Creek (C)	\$10,774,974,000	\$107,749,740	\$538,748,700	\$1,077,497,400
Milton (C)	\$4,571,655,000	\$45,716,550	\$228,582,750	\$457,165,500
Mountain Park (C)	\$125,576,000	\$1,255,760	\$6,278,800	\$12,557,600
Palmetto (C)	\$518,738,000	\$5,187,380	\$25,936,900	\$51,873,800
Roswell (C)	\$12,946,365,000	\$129,463,650	\$647,318,250	\$1,294,636,500
Sandy Springs (C)	\$15,558,844,000	\$155,588,440	\$777,942,200	\$1,555,884,400
Union City (C)	\$1,981,070,000	\$19,810,700	\$99,053,500	\$198,107,000
Fulton County (Total)	\$133,650,432,000	\$1,336,504,320	\$6,682,521,600	\$13,365,043,200

Source: HAZUS-MH 2.2

A specific area that is vulnerable to the severe winter weather hazard is the floodplain. Severe winter storms can cause flooding through blockage of streams or through snow melt. At-risk residential infrastructures are presented in the flood hazard profile (Section 5.4.4). Generally, losses resulting from flooding associated with severe winter storms should be less than that associated with a 100-year flood. In addition, coastal areas are at high risk during winter storm events that involve high winds. Please refer to the tropical systems profile (Section 5.4.8) profile for losses resulting from wind.

Impact on Critical Facilities

Full functionality of critical facilities such as police, fire and medical facilities is essential for response during and after a severe winter storm event. These critical facility structures are largely constructed of concrete and masonry; therefore, they should only suffer minimal structural damage from severe winter storm events. Because power interruption can occur, backup power is recommended. Infrastructure at risk for this hazard includes roadways that could be damaged due to the application of salt and intermittent freezing and warming conditions that can damage roads over time. Severe snowfall requires the clearing roadways and alerting citizens to dangerous conditions; following the winter season, resources for road maintenance and repair are required.



Impact on Economy

The cost of snow and ice removal and repair of roads from the freeze/thaw process can drain local financial resources. Another impact on the economy includes impacts on commuting into, or out of, the area for work or school. The loss of power and closure of roads prevents the commuter population traveling to work within and outside of the County.

Future Growth and Development

As discussed in Chapter 3 and the municipality annexes areas targeted for future growth and development have been identified across the County. Any areas of growth could be potentially impacted by the severe winter storm hazard because the entire planning area is exposed and vulnerable. Areas targeted for potential future growth and development in the next five (5) years have been identified across the County at the municipal level. Refer to the jurisdictional annexes of this HMP.

Change of Vulnerability

Overall, the entire County remains vulnerable to severe winter weather. A damage estimate was not conducted as part of the 2010 HMP. The updated vulnerability assessment provides a more current risk assessment and analysis for the County.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as winter storms. While predicting changes of winter storm events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2013).

Additional Data and Next Steps

The assessment above identifies vulnerable populations and economic losses associated with this hazard of concern. Historic data on structural losses to general building stock are not adequate to predict specific losses to this inventory; therefore, the percent of damage assumption methodology was applied. This methodology is based on FEMA's How to Series (FEMA 386-2), Understanding Your Risks, Identifying and Estimating Losses (FEMA, 2001) and FEMA's Using HAZUS-MH for Risk Assessment (FEMA 433) (FEMA, 2004). The collection of additional/actual valuation data for general building stock and critical infrastructure losses would further support future estimates of potential exposure and damage for the general building stock inventory. Mitigation strategies addressing early warning, dissemination of hazard information, provisions for snow removal and back-up power are included in Chapter 6 and individual Annexes of this plan.



5.6 Summary of Hazards and Community Impacts

Each participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology (see Appendix F – Surveys for a sample matrix that was used). This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.
 - Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
 - Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a month.
 - Property: More than 50 percent of the property located in the proximity of the City is severely damaged.
- Level II – Critical
 - Personnel: Permanent disability, severe injury or illness.
 - Public: Permanent disability, severe injury or illness.
 - Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
 - Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than two weeks.
 - Property: More than 25 percent of the property located in the proximity of the City is severely damaged.
- Level III – Marginal
 - Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
 - Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
 - Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
 - Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a week.
 - Property: More than 10 percent of the property located in the proximity of the City is severely damaged.
- Level IV: Negligible
 - Personnel: Treatable first aid injury.
 - Public: Minor quality of life loss.
 - Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
 - Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
 - Property: No more than 1 percent of property located in the proximity of the City is severely damaged.
 - and probability or likelihood as:
- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.



- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years. (<1%) This category can be compared to the 100-year flood exposures used in design.

For each natural hazard identified a potential threat. A meeting was conducted with each participating jurisdiction to complete the assessment exercise. Appendix B – Meeting Documentation contains a sample of the assessment instrument/survey that was used including descriptions for the levels of measurement. After an assessment was completed for each participating jurisdiction, the respective scores were combined to determine an overall county risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall county risk assessment matrix.

These assessments also served to assist the jurisdictions in determining which threats posed the highest or greatest threat. Once this was determined, these assessments were used to guide the development of hazard mitigation actions that were in the best interest of protecting their community from the most likely and/or the most severe hazards facing their jurisdiction.

Table 5.6.1. Alpharetta Risk Assessment Matrix

Alpharetta Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	L	L	L	H	13
Severe Weather	P	L	H	H	13
Winter Storm	P	L	L	H	12
Drought	P	P	L	L	10
Flood	P	P	L	L	10
Dam Failure	U	P	L	L	9
Heat Wave	P	P	P	P	8
Wildfire/Urban Interface	U	P	P	P	7
Tropical System	U	P	P	P	7
Earthquake	U	U	P	P	6
Sinkhole	U	U	U	P	5
Average Risk by Level	1.63	2.09	2.55	2.82	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 point)



Table 5.6.2. Atlanta Risk Assessment Matrix

Atlanta Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Flood	P	L	L	H	12
Tornadoes	P	L	L	H	12
Severe Weather	P	L	L	H	12
Winter Storm	P	P	L	H	11
Heat Wave	P	P	L	H	11
Drought	P	P	L	L	10
Dam Failure	U	P	P	P	7
Tropical System	U	P	P	U	6
Sinkhole	U	U	U	L	6
Wildfire/Urban Interface	U	U	U	P	5
Earthquake	U	U	U	P	5
Average Risk by Level	1.55	2.00	2.27	3.00	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.3. Chattahoochee Hills Risk Assessment Matrix

Chattahoochee Hills Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	L	L	L	L	12
Tornadoes	L	L	L	P	11
Winter Storm	P	P	P	L	9
Drought	P	P	P	P	8
Flood	U	P	P	L	8
Wildfire/Urban Interface	P	P	P	P	8
Heat Wave	P	P	P	P	8
Earthquake	U	U	U	P	5
Tropical System	U	U	U	U	4
Dam Failure	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.73	1.82	1.82	2	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.4. College Park Risk Assessment Matrix

College Park Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	U	L	H	H	12
Tornadoes	U	P	P	H	9
Flood	U	U	P	H	8
Heat Wave	U	U	P	H	8
Winter Storm	U	U	U	H	7
Wildfire/Urban Interface	U	U	P	L	7
Tropical System	U	U	P	L	7
Sinkhole	U	U	L	L	7
Drought	U	U	U	P	5
Dam Failure	U	U	U	L	5
Earthquake	U	U	U	U	4
Average Risk by Level	1	1.27	1.91	3.18	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.5. East Point Risk Assessment Matrix

East Point Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Drought	P	P	P	H	10
Flood	U	P	L	H	10
Tropical System	U	U	L	H	9
Severe Weather	U	U	L	H	9
Tornadoes	U	U	L	H	9
Winter Storm	U	U	L	H	9
Wildfire/Urban Interface	U	U	L	L	8
Sinkhole	U	U	U	H	7
Heat Wave	U	U	U	L	6
Earthquake	U	U	U	P	5
Dam Failure	U	U	U	U	4
Average Risk by Level	1.08	1.17	2.17	3.25	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.6. Fairburn Risk Assessment Matrix

Fairburn Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	H	H	H	H	16
Tornadoes	H	H	H	H	16
Winter Storm	P	P	P	P	8
Flood	P	P	P	P	8
Wildfire/Urban Interface	P	P	P	P	8
Drought	P	P	U	P	8
Sinkhole	P	P	P	P	8
Dam Failure	U	U	U	H	7
Heat Wave	U	U	U	L	6
Tropical System	U	U	U	U	4
Earthquake	U	U	U	U	4
Average Risk by Level	1.00	1.25	1.42	2.75	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.7. Hapeville Risk Assessment Matrix

Hapeville Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Winter Storm	P	L	L	H	12
Tornadoes	P	P	L	H	11
Severe Weather	P	P	L	H	11
Heat Wave	P	P	L	H	11
Drought	U	P	P	H	9
Tropical System	U	P	P	L	8
Earthquake	P	P	P	P	8
Wildfire/Urban Interface	U	P	P	P	7
Flood	U	U	U	L	6
Sinkhole	U	U	U	P	5
Dam Failure	U	U	U	U	4
Average Risk by Level	1.08	1.33	1.75	2.67	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.8. Johns Creek Risk Assessment Matrix

Johns Creek Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Drought	P	P	L	L	10
Sinkhole	P	P	P	P	8
Flood	U	U	P	L	7
Winter Storm	U	U	P	L	7
Tornadoes	U	U	P	P	6
Heat Wave	U	U	P	P	6
Tropical System	U	U	P	P	6
Severe Weather	U	U	U	P	5
Wildfire/Urban Interface	U	U	U	U	4
Dam Failure	U	U	U	U	4
Earthquake	U	U	U	U	4
Average by Risk	1.18	1.18	1.72	2	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.9 Milton Risk Assessment Matrix

Milton Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	P	L	L	H	12
Winter Storm	P	L	L	H	12
Flood	P	P	L	H	11
Wildfire/Urban Interface	U	P	L	H	10
Tornadoes	P	P	L	L	10
Dam Failure	P	P	P	P	8
Drought	U	P	P	P	7
Heat Wave	U	U	P	P	6
Earthquake	U	U	P	P	6
Sinkhole	U	U	P	P	6
Tropical System	U	U	U	U	4
Average Risk by Level	1.45	1.82	2.36	2.73	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.10 Mountain Park Risk Assessment Matrix

Mountain Park Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Wildfire/Urban Interface	L	L	L	H	13
Flood	L	L	L	L	12
Severe Weather	U	U	L	H	9
Tornado	P	P	P	L	9
Winter Storm	U	U	P	H	8
Heat Wave	P	P	P	P	8
Sinkhole	P	P	P	P	8
Dam Failure	P	P	P	P	8
Drought	U	U	P	P	6
Tropical System	U	U	U	U	4
Earthquake	U	U	U	U	4
Average Risk by Level	1.72	1.72	2.09	2.54	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.11 Palmetto Risk Assessment Matrix

Palmetto Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	P	L	L	L	11
Heat Wave	P	P	L	L	10
Severe Weather	P	P	L	L	10
Winter Storm	P	P	L	L	10
Drought	P	P	p	P	8
Dam Failure	P	P	P	P	8
Tropical System	P	P	P	P	8
Wildfire/Urban Interface	U	U	P	L	7
Flood	U	U	U	P	5
Earthquake	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.64	1.73	2.09	2.27	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.12. Roswell Risk Assessment Matrix

Roswell Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	L	L	L	H	13
Severe Weather	L	L	L	H	13
Flood	U	P	L	H	10
Winter Storm	U	P	L	H	8
Tropical System	U	U	L	L	8
Dam Failure	P	P	P	P	8
Heat Wave	U	U	P	P	6
Drought	U	U	U	L	6
Earthquake	U	U	U	P	5
Wildfire/Urban Interface	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.45	1.64	2.09	2.73	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.13 Sandy Springs Risk Assessment Matrix

Sandy Springs Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tropical System	U	P	P	H	9
Tornadoes	P	P	P	P	8
Flood	U	U	P	H	8
Dam Failure	P	P	P	P	8
Sinkhole	U	P	P	L	8
Wildfire/Urban Interface	U	U	P	P	6
Earthquake	U	U	P	P	6
Severe Weather	U	U	U	P	5
Winter Storm	U	U	U	P	5
Heat Wave	U	U	U	P	5
Drought	U	U	U	U	4
Average Risk by Level	1.18	1.36	1.63	2.36	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Table 5.6.14. Unincorporated Fulton County Risk Assessment Matrix

Unincorporated Fulton County Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	H	H	H	H	16
Tornadoes	L	H	H	H	16
Flood	H	H	H	H	16
Tropical System	L	H	H	H	15
Heat Wave	H	H	H	H	16
Winter Storm	H	H	H	H	16
Drought	H	H	H	H	16
Wildfire/Urban Interface	P	L	L	H	12
Dam Failure	P	L	L	H	12
Sinkhole	P	L	L	L	11
Earthquake	U	U	P	L	7
Average Risk by Level	3	3.45	3.55	3.82	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Table 5.6.15 Union City Risk Assessment Matrix

Union City Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Flood	U	L	H	H	12
Tornadoes	P	P	L	H	11
Severe Weather	U	P	L	H	10
Winter Storm	U	P	L	H	10
Wildfire/Urban Interface	U	P	L	L	9
Drought	U	U	U	H	7
Heat Wave	U	U	U	H	7
Tropical System	U	U	U	L	6
Sinkhole	U	U	U	P	5
Dam Failure	U	U	U	P	5
Earthquake	U	U	U	P	5
Average Risk by Level	1.08	1.5	1.92	3.08	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)



U = Unlikely (1 points)

The matrix below demonstrates the unique risks assessed by the Hazard Mitigation Planning Committee from each jurisdiction in comparison with others in Fulton County. The average of each hazard (rounded to the nearest score value) was used to assign the scores shown below. The hazards are also listed from left to right in order of the highest to lowest assessed likelihood of risk when combining averages from all jurisdictions.

Table 5.6.16. Overall County Combined Jurisdiction Likelihood of Occurrence Averages

Countywide Risk Assessment Matrix											
Jurisdiction	Hazards Assessed										
	Severe Weather	Tornadoes	Flood	Winter Storm	Heat Wave	Drought	Wildfire/Urban Interface	Tropical System	Dam Failure	Sinkhole	Earthquake
Alpharetta	L	L	L	L	P	L	P	P	P	U	P
Atlanta	L	L	L	P	P	P	U	P	P	P	U
Chattahoochee Hills	L	L	P	P	P	P	P	U	U	U	U
College Park	L	P	P	P	P	U	P	P	U	P	U
East Point	P	P	L	P	P	L	P	P	U	P	U
Fairburn	H	H	P	P	P	P	P	U	P	P	U
Hapeville	L	L	P	L	L	P	P	P	U	U	P
Johns Creek	U	P	P	P	P	L	U	P	U	P	U
Milton	L	L	L	L	P	P	P	U	P	P	P
Mountain Park	P	P	L	P	P	P	L	U	P	P	U
Palmetto	L	L	U	L	L	P	P	P	P	U	U
Roswell	L	L	L	P	P	P	U	P	P	U	U
Sandy Springs	U	P	P	U	U	U	P	P	P	P	P
Unincorporated S. Fulton	H	H	H	H	H	H	L	H	L	L	P
Union City	L	L	L	L	P	P	P	P	U	U	U
Countywide Ranking by Average Scores	2.73 L	2.73 L	2.53 L	2.40 P	2.20 P	2.20 P	1.93 P	1.86 P	1.67 P	1.67 P	1.33 U

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



5.7 Summary of Vulnerability of Structures and Dollar Estimate of Losses

This section provides data on the vulnerability of existing and future buildings, critical facilities, and infrastructure located within identified hazard areas and jurisdiction. For the purposes of this risk assessment, vulnerability refers to the exposure of buildings, critical facilities, infrastructure and property to a particular hazard and their susceptibility to the resultant damages that could be incurred by such hazard exposure. The property inventory in this section provides the basis for the loss estimates presented in Summary of Exposure Tables by jurisdiction. The information in these tables are listed in alphabetical order. Analysis was based on the 2009 tax records obtained from the Fulton County Tax Assessors office.

Most of the identified Fulton County hazards are countywide, where exposure is generally uniform among all jurisdictions. Countywide hazards include tornadoes, severe weather, tropical systems, winter storms, droughts, heat waves, and earthquakes. Location-specific hazards, where exposure may vary among jurisdictions include flooding, dam failure, landslides, and sinkholes. Jurisdiction specific data is incorporated throughout section 5.4 and in each of the municipality annexes.

5.7.1 Vulnerability of Structures

Table 5.7-1. Countywide Property Inventory by Property Class

Occupancy	County	Percentage
Agriculture	6	.002%
Commercial	20,217	5.882%
Education	993	.287%
Public Property	5,713	1.662%
Industrial	3,133	.912%
Religious	1,922	.559%
Hospitals/Medical	94	.027%
Charitable	613	.178%
Historic	365	.106%
Conservation & Environmental	517	.150%
Utilities	870	.253%
Single Family Residence	308,961	89.905%
Other	249	.072%
Total Property	343,653	100.00%



Table 5.7-2. Countywide Property Values by Property Class

Occupancy	Value	Percentage
Agriculture	\$11,235,120	.008%
Commercial	\$47,273,285,632	32.70%
Education	\$2,466,779,000	1.71%
Public Property	\$8,165,125,200	5.65%
Industrial	\$4,230,265,829	2.92%
Religious	\$1,768,829,300	1.22%
Hospitals/Medical	\$1,050,616,600	.727%
Charitable	\$1,050,523,800	.727%
Historic	\$165,309,900	.114%
Conservation & Environmental	\$253,069,172	.175%
Utilities	\$241,891,000	.167%
Single Family Residence	\$76,899,533,652	53.20%
Other	\$980,285,500	.678%
Total Property	\$144,556,749,705	100.00%

Table 5.7-3. Summary of Exposure by Hazard – Alpharetta

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	Not Reported	Not Reported	Not Reported	Not Reported
Earthquake	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Flood (1% Chance)	22	2	\$204,910,000	\$34,492,000
Flood (0.2% Chance)	71	13	\$323,388,000	\$87,745,000
Geologic Hazards	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Heat Wave	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Severe Storms	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Tropical Systems	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Tornado	15,056	1,624	\$10,268,995,000	\$4,973,484,000
Wildfire	373	22	\$261,349,000,000	\$197,691,000,000
Winter Storms	15,056	1,624	\$10,268,995,000	\$4,973,484,000

Source: HAZUS-MH 2.2



Table 5.7-4. Summary of Exposure by Hazard – Atlanta

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Earthquake	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Flood (1% Chance)	1,016	479	\$810,917,000	\$545,378,000
Flood (0.2% Chance)	1,540	708	\$1,396,635,000	\$885,852,000
Geologic Hazards	6,326	684	\$3,641,694,000	\$1,647,388,000
Heat Wave	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Severe Storms	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Tropical Systems	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Tornado	115,300	24,731	\$60,369,493,000	\$38,300,775,000
Wildfire	10,692	904	\$3,432,242,000,000	\$1,088,407,000,000
Winter Storms	115,300	24,731	\$60,369,493,000	\$38,300,775,000

Source: HAZUS-MH 2.2

Table 5.7-5. Summary of Exposure by Hazard – Chattahoochee Hills

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	2,177	184	\$384,336,000	\$48,797,000
Earthquake	2,177	184	\$384,336,000	\$48,797,000
Flood (1% Chance)	8	1	\$9,319,000	\$1,476,000
Flood (0.2% Chance)	20	10	\$10,539,000	\$1,816,000
Geologic Hazards	0	0	\$8,344,000	\$1,270,000
Heat Wave	2,177	184	\$384,336,000	\$48,797,000
Severe Storms	2,177	184	\$384,336,000	\$48,797,000
Tropical Systems	2,177	184	\$384,336,000	\$48,797,000
Tornado	2,177	184	\$384,336,000	\$48,797,000
Wildfire	1,709	123	\$323,982,000,000	\$29,411,000,000
Winter Storms	2,177	184	\$384,336,000	\$48,797,000

Source: HAZUS-MH 2.2



Table 5.7-6. Summary of Exposure by Hazard – College Park

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	3,162	697	\$1,538,585,000	\$1,145,608,000
Earthquake	3,162	697	\$1,538,585,000	\$1,145,608,000
Flood (1% Chance)	46	5	\$22,379,000	\$109,137,000
Flood (0.2% Chance)	52	5	\$22,781,000	\$125,761,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	3,162	697	\$1,538,585,000	\$1,145,608,000
Severe Storms	3,162	697	\$1,538,585,000	\$1,145,608,000
Tropical Systems	3,162	697	\$1,538,585,000	\$1,145,608,000
Tornado	3,162	697	\$1,538,585,000	\$1,145,608,000
Wildfire	448	8	\$129,017,000,000	\$19,986,000,000
Winter Storms	3,162	697	\$1,538,585,000	\$1,145,608,000

Source: HAZUS-MH 2.2

Table 5.7-7. Summary of Exposure by Hazard – East Point

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Earthquake	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Flood (1% Chance)	110	26	\$56,577,000	\$12,714,000
Flood (0.2% Chance)	187	48	\$84,240,000	\$46,567,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Severe Storms	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Tropical Systems	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Tornado	13,309	1,810	\$4,606,007,000	\$2,054,769,000
Wildfire	428	79	\$420,120,000,000	\$23,646,000,000
Winter Storms	13,309	1,810	\$4,606,007,000	\$2,054,769,000

Source: HAZUS-MH 2.2



Table 5.7-8. Summary of Exposure by Hazard – Fairburn

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	4,562	929	\$1,780,819,000	\$602,360,000
Earthquake	4,562	929	\$1,780,819,000	\$602,360,000
Flood (1% Chance)	5	1	\$1,326,000	\$0
Flood (0.2% Chance)	10	1	\$57,721,000	\$4,610,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	4,562	929	\$1,780,819,000	\$602,360,000
Severe Storms	4,562	929	\$1,780,819,000	\$602,360,000
Tropical Systems	4,562	929	\$1,780,819,000	\$602,360,000
Tornado	4,562	929	\$1,780,819,000	\$602,360,000
Wildfire	995	86	\$189,506,000,000	\$24,378,000,000
Winter Storms	4,562	929	\$1,780,819,000	\$602,360,000

Source: HAZUS-MH 2.2

Table 5.7-9. Summary of Exposure by Hazard – Hapeville

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	2,876	428	\$750,904,000	\$577,771,000
Earthquake	2,876	428	\$750,904,000	\$577,771,000
Flood (1% Chance)	119	62	\$31,448,000	\$41,530,000
Flood (0.2% Chance)	119	62	\$31,448,000	\$41,530,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	2,876	428	\$750,904,000	\$577,771,000
Severe Storms	2,876	428	\$750,904,000	\$577,771,000
Tropical Systems	2,876	428	\$750,904,000	\$577,771,000
Tornado	2,876	428	\$750,904,000	\$577,771,000
Wildfire	28	0	\$4,183,000,000	\$422,000,000
Winter Storms	2,876	428	\$750,904,000	\$577,771,000

Source: HAZUS-MH 2.2



Table 5.7-10 Summary of Exposure by Hazard – Johns Creek

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Earthquake	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Flood (1% Chance)	36	7	\$717,285,000	\$174,913,000
Flood (0.2% Chance)	66	15	\$1,485,238,000	\$327,927,000
Geologic Hazards	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Heat Wave	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Severe Storms	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Tropical Systems	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Tornado	20,547	2,650	\$14,330,739,000	\$2,521,616,000
Wildfire	629	43	\$251,468,000,000	\$74,013,000,000
Winter Storms	20,547	2,650	\$14,330,739,000	\$2,521,616,000

Source: HAZUS-MH 2.2

Table 5.7-11. Summary of Exposure by Hazard – Milton

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	10,005	740	\$6,214,503,000	\$877,630,000
Earthquake	10,005	740	\$6,214,503,000	\$877,630,000
Flood (1% Chance)	13	1	\$117,040,000	\$12,517,000
Flood (0.2% Chance)	26	29	\$261,054,000	\$18,598,000
Geologic Hazards	10,005	740	\$6,214,503,000	\$877,630,000
Heat Wave	10,005	740	\$6,214,503,000	\$877,630,000
Severe Storms	10,005	740	\$6,214,503,000	\$877,630,000
Tropical Systems	10,005	740	\$6,214,503,000	\$877,630,000
Tornado	10,005	740	\$6,214,503,000	\$877,630,000
Wildfire	3,334	135	\$1,490,022,000,000	\$226,548,000,000
Winter Storms	10,005	740	\$6,214,503,000	\$877,630,000

Source: HAZUS-MH 2.2



Table 5.7-12. Summary of Exposure by Hazard – Mountain Park

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	313	12	\$175,690,000	\$16,998,000
Earthquake	313	12	\$175,690,000	\$16,998,000
Flood (1% Chance)	3	0	\$627,000	\$1,406,000
Flood (0.2% Chance)	10	0	\$627,000	\$1,406,000
Geologic Hazards	313	12	\$175,690,000	\$16,998,000
Heat Wave	313	12	\$175,690,000	\$16,998,000
Severe Storms	313	12	\$175,690,000	\$16,998,000
Tropical Systems	313	12	\$175,690,000	\$16,998,000
Tornado	313	12	\$175,690,000	\$16,998,000
Wildfire	10	0	\$627,000,000	\$1,200,000,000
Winter Storms	313	12	\$175,690,000	\$16,998,000

Source: HAZUS-MH 2.2

Table 5.7-13. Summary of Exposure by Hazard – Palmetto

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	1,830	289	\$637,875,000	\$194,564,000
Earthquake	1,830	289	\$637,875,000	\$194,564,000
Flood (1% Chance)	3	0	\$0	\$0
Flood (0.2% Chance)	7	0	\$34,620,000	\$902,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	1,830	289	\$637,875,000	\$194,564,000
Severe Storms	1,830	289	\$637,875,000	\$194,564,000
Tropical Systems	1,830	289	\$637,875,000	\$194,564,000
Tornado	1,830	289	\$637,875,000	\$194,564,000
Wildfire	1,726	229	\$612,377,000,000	\$160,331,000,000
Winter Storms	1,830	289	\$637,875,000	\$194,564,000

Source: HAZUS-MH 2.2



Table 5.7-14. Summary of Exposure by Hazard – Roswell

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Earthquake	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Flood (1% Chance)	105	50	\$410,733,000	\$384,905,000
Flood (0.2% Chance)	203	70	\$835,657,000	\$553,805,000
Geologic Hazards	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Heat Wave	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Severe Storms	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Tropical Systems	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Tornado	26,349	2,209	\$15,432,150,000	\$5,565,373,000
Wildfire	3,097	141	\$1,758,897,000,000	\$364,084,000,000
Winter Storms	26,349	2,209	\$15,432,150,000	\$5,565,373,000

Source: HAZUS-MH 2.2

Table 5.7-15. Summary of Exposure by Hazard – Sandy Springs

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Earthquake	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Flood (1% Chance)	190	23	\$97,192,000	\$19,017,000
Flood (0.2% Chance)	344	34	\$241,555,000	\$106,886,000
Geologic Hazards	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Heat Wave	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Severe Storms	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Tropical Systems	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Tornado	19,758	2,025	\$16,348,638,000	\$9,908,649,000
Wildfire	3,231	127	\$2,013,529,000,000	\$660,382,000,000
Winter Storms	19,758	2,025	\$16,348,638,000	\$9,908,649,000

Source: HAZUS-MH 2.2



Table 5.7-16. Summary of Exposure by Hazard – Fulton County (Unincorporated)

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Earthquake	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Flood (1% Chance)	175	68	\$20,644,000	\$195,682,000
Flood (0.2% Chance)	342	116	\$457,212,000	\$243,330,000
Geologic Hazards	0	0	\$0	\$918,000
Heat Wave	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Severe Storms	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Tropical Systems	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Tornado	34,439	3,387	\$13,034,439,000	\$5,546,977,000
Wildfire	17,947	1,312	\$6,857,555,000,000	\$713,175,000,000
Winter Storms	34,439	3,387	\$13,034,439,000	\$5,546,977,000

Source: HAZUS-MH 2.2

Table 5.7-17. Summary of Exposure by Hazard – Union City

Hazard	Number of Properties		Replacement Cost Value	
	Residential	Non-Residential	Residential	Non-Residential
Dam Failure	Not Reported	Not Reported	Not Reported	Not Reported
Drought	4,948	984	\$2,495,406,000	\$655,112,000
Earthquake	4,948	984	\$2,495,406,000	\$655,112,000
Flood (1% Chance)	9	5	\$71,062,000	\$1,919,000
Flood (0.2% Chance)	13	7	\$76,776,000	\$5,339,000
Geologic Hazards	0	0	\$0	\$0
Heat Wave	4,948	984	\$2,495,406,000	\$655,112,000
Severe Storms	4,948	984	\$2,495,406,000	\$655,112,000
Tropical Systems	4,948	984	\$2,495,406,000	\$655,112,000
Tornado	4,948	984	\$2,495,406,000	\$655,112,000
Wildfire	2,051	158	\$839,258,000,000	\$115,242,000,000
Winter Storms	4,948	984	\$2,495,406,000	\$655,112,000

Source: HAZUS-MH 2.2



Table 5.7-18 is a summary of the analysis provided throughout section 5.4 and categorizes each jurisdictions exposure to jurisdiction-wide hazards based upon structure type, count and replacement costs.

Table 5.7-18. Summary of Exposure by Jurisdiction-wide Hazards

Municipality	All Occupancies				Residential		Commercial		Industrial	
	Count	Replacement Cost Value	Estimated Contents	Total (RCV + Contents)	Count	Total Value	Count	Total Value	Count	Total Value
Alpharetta (C)	17,850	\$9,220,248,000	\$6,022,231,000	\$15,242,479,000	16,058	\$10,268,995,000	1,253	\$3,922,683,000	342	\$730,217,000
Atlanta (C)	118,176	\$58,500,959,000	\$40,169,309,000	\$98,670,268,000	102,629	\$60,369,493,000	10,979	\$27,974,527,000	1,863	\$3,958,927,000
Chattahoochee Hills (C)	1,084	\$280,119,000	\$153,014,000	\$433,133,000	996	\$384,336,000	49	\$25,242,000	24	\$9,649,000
College Park (C)	3,572	\$1,587,945,000	\$1,096,248,000	\$2,684,193,000	3,018	\$1,538,585,000	383	\$651,106,000	76	\$90,051,000
East Point (C)	12,222	\$4,022,401,000	\$2,638,375,000	\$6,660,776,000	11,035	\$4,606,007,000	840	\$1,473,520,000	164	\$249,737,000
Fairburn (C)	4,545	\$1,468,831,000	\$914,348,000	\$2,383,179,000	4,197	\$1,780,819,000	227	\$292,438,000	75	\$212,162,000
Fulton County (Unincorporated)	32,459	\$11,308,807,000	\$7,272,609,000	\$18,581,416,000	30,257	\$13,034,439,000	1,503	\$3,610,907,000	448	\$1,522,264,000
Hapeville (C)	2,444	\$783,900,000	\$544,775,000	\$1,328,675,000	2,107	\$750,904,000	258	\$468,148,000	31	\$38,411,000
Johns Creek (C)	25,840	\$10,774,974,000	\$6,077,381,000	\$16,852,355,000	24,446	\$14,330,739,000	941	\$1,886,216,000	262	\$311,071,000
Milton (C)	11,007	\$4,571,655,000	\$2,520,478,000	\$7,092,133,000	10,355	\$6,214,503,000	431	\$685,545,000	128	\$98,461,000
Mountain Park (C)	313	\$125,576,000	\$67,112,000	\$192,688,000	280	\$175,690,000	24	\$13,356,000	6	\$2,182,000
Palmetto (C)	1,817	\$518,738,000	\$313,701,000	\$832,439,000	1,659	\$637,875,000	105	\$122,875,000	25	\$37,976,000
Roswell (C)	29,545	\$12,946,365,000	\$8,051,158,000	\$20,997,523,000	26,935	\$15,432,150,000	1,771	\$4,038,905,000	508	\$918,940,000
Sandy Springs (C)	27,022	\$15,558,844,000	\$10,698,443,000	\$26,257,287,000	23,864	\$16,348,638,000	2,307	\$8,255,081,000	481	\$911,273,000
Union City (C)	6,449	\$1,981,070,000	\$1,169,448,000	\$3,150,518,000	6,049	\$2,495,406,000	296	\$488,310,000	45	\$92,442,000
Fulton County (Total)	294,345	\$133,650,432,000	\$87,708,630,000	\$221,359,062,000	263,885	\$148,368,579,000	21,367	\$53,908,859,000	4,478	\$9,183,763,000

Source: HAZUS-MH 2.2



5.8 NFIP Insured Structures

This section provides an overview of the NFIP participation in Fulton County. Fulton County's losses by jurisdiction since 1978 are presented in Table 5-8-1.¹⁵

Table 5.8-1 NFIP Losses as of 10/31/15

Jurisdiction	Total Losses	Total Payments
Alpharetta	17	\$217,523.58
Atlanta	1664	\$58,091,682.09
College Park	132	\$1,656,742.14
East Point	96	\$542,228.45
Fairburn	2	\$0.00
Fulton County (unincorporated)	550	\$8,066,526.86
Hapeville	6	\$35,580.33
Johns Creek	2	\$0.00
Mountain Park	3	\$31,235.95
Palmetto	1	\$0.00
Roswell	80	\$1,341,246.90
Sandy Springs	6	\$45,881.64
Union City	1	\$27,919.22
Total	2331	\$66,309,506.61

¹⁵ NFIP Statistics Report, <http://bsa.nfipstat.com/reports/reports.htm>



As shown in the table below, there are a total of 4,356 NFIP policies in effect as of October 31, 2015 within Fulton County, totaling \$927,745,100.

Table 5.8-2. NFIP Policies as of 10/31/15

Jurisdiction	Policies in Force	Insurance in Force	Written Premiums in Force
Alpharetta	143	\$42,544,400	\$74,971
Atlanta	2,111	\$475,076,800	\$1,783,587
Chattahoochee Hills	2	\$490,000	\$725
East Point	138	\$31,570,200	\$98,711
Fairburn	17	\$3,419,800	\$5,592
Hapeville	54	\$11,734,500	\$76,835
Johns Creek	145	\$42,231,000	\$59,644
Milton	41	\$11,646,200	\$16,400
Mountain Park	6	\$1,515,000	\$7,270
Palmetto	1	\$280,000	\$348
Roswell	468	\$118,684,200	\$231,137
Sandy Springs	330	\$85,635,300	\$188,205
Union City	8	\$1,453,000	\$3,549
Fulton County (unincorporated)	793	\$221,943,900	\$506,409
Total	4,356	\$927,745,100	\$3,053,035

According to data obtained from the FEMA Region IV Floodplain Management and Insurance Branch, Fulton County had 38 repetitive loss structures (residential) as of July 2010 which are summarized in Table 5.8-3.

Table 5.8-3. NFIP Repetitive Loss Structures and Values (2010)

Jurisdiction	Number of Residential Properties	Value
Sandy Springs	31	\$9,862,900
Atlanta	3	\$988,700
Johns Creek	1	\$387,400
Roswell	1	\$528,600
Unincorporated Fulton Co.	2	\$278,200
Totals	38	\$12,045,800

2010 HMP



Since 2010 jurisdictions within Fulton County have been working to mitigate their exposure to flood hazards. The cities of Atlanta and Roswell have been successfully engaged in mitigation actions for repetitive loss residential structures. As of March 2016 the City of Atlanta has acquired and mitigated 12 properties since 2010 and is in the final stages of acquiring a 13th property. Roswell has acquired and mitigated 1 residential property since 2010 and now has 3 residential properties with known repetitive losses. East Point now has 11 repetitive loss properties and 2 of them have expressed interest in pursuing mitigation actions through property acquisition. Sandy Springs has 12 residential properties with repetitive losses since 2010 but no homeowners are currently seeking mitigation. Unincorporated South Fulton County has maintained a CRS rating of 8 and currently has 4 repetitive loss properties with three repetitive loss areas identified. 37 repetitive loss outreach notices were sent in 2015. Please see the NFIP section in each municipality annex for additional details.

NFIP Participation

All jurisdictions within Fulton County are currently participating in the NFIP as detailed in Table 5.8-4 below.

Table 5.8-4. NFIP Community Status Report¹⁶

CID	Community Name	Initial FHB Identified	Initial FIRM Identified	Current Effective Map Date	Regular Emergency Program Date	Tribal
130084	Alpharetta	06/14/74	02/15/78	09/18/13	02/15/78	No
135157	Atlanta		10/14/71	05/16/13	10/14/71	No
135174	Chattahoochee Hills ¹⁷		05/07/01	09/18/13	07/30/08	No
130086	College Park	05/31/74	09/15/78	09/18/13	09/15/78	No
130087	East Point	06/28/74	03/15/77	09/18/13	03/15/77	No
130314	Fairburn	08/19/77	09/28/79	09/18/13	09/28/79	No
135160	Fulton County		11/20/70	09/18/13	10/29/71	No
130502	Hapeville		08/24/93	09/18/13	07/02/96	No
130678	Johns Creek ¹⁸		06/18/10	09/18/13	08/18/09	No
130673	Milton		05/07/01	09/18/13	08/10/07	No
130315	Mountain Park	01/13/78	02/16/83	09/18/13	04/07/83	No
130239	Palmetto	06/14/74	11/01/79	09/18/13	11/01/79	No
130088	Roswell	06/07/74	12/15/77	09/18/13	12/15/77	No
130669	Sandy Springs ¹⁹		05/07/01	09/18/13	05/10/07	No
130316	Union City	04/04/75	09/28/79	09/18/13	09/28/79	No

¹⁶ As of November 24, 2015 <https://www.fema.gov/cis/GA.html>

¹⁷ The City’s SFHA is identified on the Fulton County, GA, FIRM panels (13121C0295 E, 0315, 0405, 0409, 0410, 0415, 0416, 0417, 0418, 0419, 0428, 0429, 0430, 0433, 0436, 0437, 0438, 0439, .441, 0443 E) dated May 7, 2001

¹⁸ City of Johns Creek has adopted Fulton County’s FIS and accompanying FIRM panels dated 05/07/01.

¹⁹ The City of Sandy Springs has adopted the Fulton County FIS and FIRM dated 05/07/01. The FIRM panels for Sandy Springs are 13121C 0044E, 0063E, 0064E, 0132E, 0134E, 0139E, 0140E, 0141E, 0142E, 0143E, 0144E, 0151E, 0152E, 0153E, 0154E, 0160E, 0161E.



Chapter 6: Mitigation Strategy

Chapter Overview

- 6.1 Federal Requirements for the Mitigation Strategy
- 6.2 Summary of Plan Updates
- 6.3 Goals and Objectives
- 6.4 Identification and Analysis of Mitigation Actions and Projects
- 6.5 Analysis and Implementation of Mitigation Projects
- 6.6 County and Jurisdiction Mitigation Actions

6.1 Federal Requirements for the Mitigation Strategy

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

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

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

6.2 Summary of Plan Updates

Table 6-1 summarizes changes made to the 2010 plan as a result of the 2015 plan update, as follows:

Table 6.1. Summary of Plan Changes

Section		Change
6.3	Goals and Objectives	Evaluated and rephrased as needed.
6.4	Identification and Analysis of Mitigation Actions and Projects	Reviewed and revised by planning committee
6.5	Analysis and Implementation of Mitigation Projects	Reviewed by planning committee



Table 6.1. Summary of Plan Changes

Section		Change
6.6	County and Jurisdiction Mitigation Actions	Updated matrix of mitigation projects Individual jurisdiction actions are also listed in their new plan Annex

6.3 Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate Fulton County’s long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what Fulton County wants to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives help reinforce Fulton County’s overall purpose and mission for undertaking a mitigation planning process.

The Planning Team developed hazard mitigation goals and objectives based on the findings of the individual jurisdictional Risk Assessment Matrices and the Georgia Hazard Mitigation Plan. The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. Fulton County will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent Fulton County’s hazard mitigation priorities.

Table 6.2. Hazard Mitigation Plan Goals and Objectives

Goal 1: Protect Public Health and Safety	
Objective 1.1	Improve systems that provide early warning and emergency communications and ensure interoperability of all systems
Objective 1.2	Reduce the impacts of hazards on vulnerable populations
Objective 1.3	Strengthen local building code enforcement
Objective 1.4	Enhance the level of protection of individuals from dangerous high winds, caused by tornadoes and severe storms, by advocating for special regulatory standards for safe rooms and shelter construction
Objective 1.5	Encourage all municipalities to develop and maintain an all-hazard Emergency Operations Plan and other supporting plans and procedures that are consistent with the county’s plan, National Response Framework, the National Incident Management Plan, and FEMA’s Comprehensive Planning Guidance (CPG) 101
Objective 1.6	Develop and/or enhance agreements for better resource sharing
Objective 1.7	Support inter-jurisdictional coordination to enhance mitigation, preparedness, response and recovery efforts (E.G. evacuation, communication, sheltering, and shelter-in-place)
Objective 1.8	Enhance the interoperability of all communications systems that support public safety operations through plans, policies, procedures, facilities, and equipment
Goal 2: Protect Property	
Objective 2.1	Consider known hazards, and the potential for likelihood, when identifying sites for new facilities and systems
Objective 2.2	Create redundant supply and interconnectivity for critical networks such as water, sewer, digital data, power, and communications



Objective 2.3	Integrate new hazard and risk information into building codes and land use planning mechanisms
Objective 2.4	Increase the awareness level of public officials, developers, realtors, contractors building owners, and the public about hazard risk and building requirements
Objective 2.5	When appropriate, incorporate effective mitigation strategies into county and municipal capital improvement projects, in support of continued NFIP compliance.
Objective 2.6	Promote post-disaster mitigation as part of restoration and recovery
Objective 2.7	Eliminate recurring flood, and other natural hazard damages, to existing buildings through property acquisition program, including, but not limited to, the demolition of vulnerable buildings and the establishment of permanent open space, in support of continued NFIP compliance.
Objective 2.8	Reduce exposure of existing buildings to flood damage by raising the finish floor elevations above the 100-year flood elevations to prevent interior water damage, in support of continued NFIP compliance.
Objective 2.9	Flood proof existing non-residential and residential buildings to safeguard against possible damages from natural hazards, in support of continued NFIP compliance.
Objective 2.10	Protect critical facilities from potential damages, as well as occupants from harm in the event of natural hazards, through retrofits/relocation of existing facilities located in high risk zones or construction of new facilities for maximum protection from all hazards
Objective 2.11	Maintain electric power in the event of loss during severe storms and other natural hazards to ensure uninterrupted operations of critical facilities as well as prevention of major disruptions and consequential damages
Goal 3: Promote a sustainable economy	
Objective 3.1	Form partnerships to leverage and share resources.
Objective 3.2	Partner with the private sector to promote structural and non-structural hazard mitigation as part of standard business practice
Objective 3.3	Educate businesses about contingency planning, targeting small businesses and those businesses located in high risk areas
Objective 3.4	Partner with private sector to promote employee/employer education about disaster preparedness while at work and home
Objective 3.5	Partner with private sector to support public safety, preparedness and response operations including warning, notification, evacuations, sheltering, shelter-in-place, and transportation
Objective 3.6	Partner with the Atlanta Regional Commission, Hartsfield-Jackson International Airport, Chambers of Commerce, and the larger business community to integrate regional economic development planning and regional economic mitigation opportunities
Goal 4: Manage development to minimize risks of loss	
Objective 4.1	Implement comprehensive planning programs that promote the principles of sustainable community development
Objective 4.2	Ensure capital improvement planning includes capital projects recommended in this hazard mitigation plan
Objective 4.3	Establish or review subdivision standards that sufficiently prevent damages to property from natural hazards, in support of continued NFIP compliance.
Objective 4.4	Review local codes for effectiveness of standards to protect buildings and infrastructure from hazard damages, in support of continued NFIP compliance.
Objective 4.5	Continue to implement floodplain management programs which meet or exceeds the minimum standards of the National Flood Insurance Program (NFIP)
Objective 4.6	Encourage participation in the Community Rating System (CRS) program
Objective 4.7	Encourage participation in the NFPA's Firewise Communities program to reduces risk of life and property losses due to wildfire and/or urban interface fires



Objective 4.8	Manage the impacts of land development to local drainage systems and waterways through comprehensive regulations designed to control the rate of post-development storm water discharge and adverse erosion and sedimentation impacts, in support of continued NFIP compliance.
Objective 4.9	Improve storm water management impacts through interjurisdictional coordination and collaboration
Objective 4.10	Continue to implement a comprehensive dam safety inspection and monitoring program to ensure proper maintenance, in support of continued NFIP compliance.
Objective 4.11	Enforce maintenance of dam faces, storm water control facilities, and water conveyance infrastructure, including privately owned structures, in support of continued NFIP compliance.
Objective 4.12	Enforce regulations to prevent dumping and littering in the public Right of Way and share maintenance responsibilities with adjoining property owners
Objective 4.13	Perform assessment of critical facilities (hospitals, schools, fire and police stations, emergency operations centers, special needs housing, and others) to address building and site vulnerabilities to hazards. Identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events
Objective 4.14	Complete and/or maintain a comprehensive GIS database of hazard locations, socioeconomic data, infrastructure, and critical facilities inventory
Objective 4.15	Incorporate mitigation strategies into community redevelopment or revitalization plans
Objective 4.16	Incorporate mitigation strategies and actions into post disaster redevelopment plans, in support of continued NFIP compliance.
Objective 4.17	Support engagement of all communities to participate in the hazard mitigation grant process and its programs
Goal 5: Natural Resources Protection	
Objective 5.1	Mitigate the long-term effects on the environment by promoting climate change adaptation strategies
Objective 5.2	Protect wetlands by preventing adverse development impacts and preserve their capabilities to store flood waters, reduce downstream flows and filter water
Objective 5.3	Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources
Objective 5.4	Restore and protect river and stream corridors to assure their natural and beneficial functions to manage floods and filter runoff
Objective 5.5	Maintain a healthy forest that can help mitigate the damaging impacts of wildfires, flooding, erosion, and landslides through selective cutting and other measures
Objective 5.6	Protect water quantity and quality through water conservation programs that can mitigate the effects of drought and help ensure uninterrupted water supplies
Objective 5.7	Convert Class 1 high hazard dams into multiple Class 2 low hazard dams
Goal 6: Apply engineered structural modifications to reduce impacts of hazards	
Objective 6.1	Control flooding through reservoirs and other cost effective, feasible structural improvements such as levees/floodwalls, diversions, channel modifications, dredging, draining modifications, and storm sewers
Objective 6.2	Perform regular maintenance of streams and drainage ways to ensure adequate conveyance of flood waters and storm water runoff
Objective 6.3	Ensure restraining structures, such as retaining walls, are adequately engineered to prevent damage from the effects of erosion
Objective 6.4	Reduce the potential for damage to structures from high winds by ensuring sufficient wind loading capabilities of structures



Objective 6.5	Upgrade flow capacity of dams due to downstream development and locate funding sources for these activities, in support of continued NFIP compliance.
Objective 6.6	Enforce maintenance of dam faces and stormwater control facilities and conveyance infrastructure including privately owned structures, in support of continued NFIP compliance.
Objective 6.7	Reduce the damaging effects of lightning to critical facilities and systems through the use of adequate surge protection
Objective 6.8	Collaborate with state agencies, such as DOT, to identify, inventory, and develop specific strategies reduce damage to critical transportation infrastructure (including bridges, culverts) and critical traffic control systems caused by severe weather events
Goal 7: Public Education and Awareness	
Objective 7.1	Distribute and educate the hazard mitigation plan to elected officials, businesses, and residents using all available means of publication and distribution
Objective 7.2	Provide public access to Flood Insurance Rate Map (FIRM) information
Objective 7.3	Conduct ongoing outreach projects to increase public awareness of hazard risks and provide information regarding steps to protect themselves and their properties
Objective 7.4	Utilize local library resources to educate the public on hazard risks and mitigation alternatives
Objective 7.5	Ensure availability of qualified local government staff to provide technical assistance to advise property owners of various hazard risks and mitigation alternatives
Objective 7.6	Use school and other community education resources to conduct programs on topics related to hazard risks and mitigation measures
Objective 7.7	Utilize all available mass media (i.e. newspapers, radio, TV, cable access, internet, etc.) to increase public awareness and distribute public information on hazard mitigation topics
Objective 7.8	Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means of advance warning
Objective 7.9	Promote signage regarding hazards to motorists pertaining to flooded or iced roadways and bridges



6.4 Identification and Analysis of Mitigation Actions and Projects

The strategic planning approach for identifying and analyzing mitigation actions and projects followed five overarching categories. These categories are:

- **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples include building and construction code revisions; zoning regulation changes; and computer hazard modeling.
- **Property Protection:** Actions that involve the modifications of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include roadway elevations, improving wind and impact resistance, and flood proofing.
- **Public Education and Awareness:** Action to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples include programs that target repetitive loss properties and vulnerable populations.
- **Natural Resources Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the function of natural systems. Examples include projects to create open space, green space, and stream restoration.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples include projects that control floodwater, reconstruction of dams, and construction of regional retention areas.
- **Emergency Services:** Actions that protect people and property during and immediately after a disaster event or hazard event. Examples include enhancements that provide advanced warning and redundant communications.

These categories were developed by FEMA for managing a successful mitigation program and were utilized for guiding jurisdictions in identifying the mitigation measures. A sample of the guidance packet that was used for each jurisdiction's meeting is included in Appendix C – Meeting Documentation.

6.5 Analysis and Implementation of Mitigation Projects

The STAPLEE process is the methodology by which the Hazard Mitigation Planning Committee and local jurisdictions analyzed and prioritized potential mitigation projects. STAPLEE examines social, technical, administrative, political, legal, environmental, and economic considerations. Hazard Mitigation Committee members from each jurisdiction participated in the evaluation and selection of mitigation measures. Using this method, each jurisdiction assigned a priority to selected measures, estimated costs, and where possible identified potential funding sources, including potential eligibility for FEMA Hazard Mitigation Assistance Programs.

The STAPLEE method guided the evaluation of the range of measures considered by the Hazard Mitigation Planning Committee and its recommended action programs for each participating jurisdiction. The STAPLEE method addressed the following areas of concern and responded to many of the questions presented here:

Social Considerations

- Socially equitable. Will the proposed measure be socially equitable to minority, disadvantaged, and special needs populations, such as the elderly and handicapped?
- Neighborhood impact. Will the measure disrupt established neighborhoods or improve quality of life for affected neighborhoods?



- Community support. Is the measure consistent with community values? Will the affected community support the measure?
- Impact on social and cultural resources. Does the measure adversely affect valued local resources or enhance those resources?

Technical Considerations

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

Administrative Considerations

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

Political Considerations

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

Legal Considerations

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

Economic Considerations

- Availability of funds. Will the measure require Federal or other outside funding sources? Are local funds available? Can in-kind services reduce local obligations? What is the projected availability of required funds during the timeframe for implementation? Where funding is not apparently available, should the project still be considered but at a lower priority?
- Benefits to be derived from the proposed measure. Will the measure likely reduce dollar losses from property damages in the event of a hazard? To what degree?
- Costs. Are the costs reasonable in relation to the likely benefits? Do economic benefits to the community outweigh estimated project costs? What cost reduction alternatives might be available?



- Economic feasibility. Have the costs and benefits of the preferred measure been compared against other alternatives? What is the economic impact of the no-action alternative? Is this the most economically effective solution?
- Impact on local economy. Will the proposed measure improve local economic activities? What impact might the measure have on the tax base?
- Economic development goals. Will the proposal advance the overall economic goals and objectives of the community?

In addition to STAPLEE and community capabilities, the jurisdictions examined other evaluation criteria, including consistency with the vision, goals, and objectives; weight of the benefit to cost; FEMA and State funding priorities for Hazard Mitigation Assistance grants; and the fiscal and staffing capacities of the jurisdictions for carrying out the measures.

The STAPLEE evaluation also facilitated the prioritization of measures. If a measure under consideration was found to be financially feasible and had high ratings, it was given a higher priority for implementation than measures that fell lower in the rating. Moreover, a general economic evaluation was performed as part of the STAPLEE method, as described above. Weighing potential economic benefits to reducing damages against costs made it possible to select among competing projects. Especially important to the selection process is the estimated cost and availability of funds through local sources and potential FEMA Hazard Mitigation Assistance (HMA) grant programs. Prior to implementation of projects proposed for HMA funding, a detailed benefit-cost analysis (BCA) will be required.

All of the above considerations and prioritization methods resulted in the final Mitigation Actions presented in Section 6.6 below.

6.6 County and Jurisdiction Mitigation Actions

Fulton County and its jurisdictions have been actively engaging and implementing hazards mitigation actions to reduce current and future risk to its residents and businesses.

Participating jurisdictions have identified mitigation measures for their respective jurisdictions and are presented in Table 6-3. Jurisdictions are responsible for establishing their respective action projects and programs as they relate to the items included in the table. The proposed measures are within the authority of the jurisdiction or are part of a joint effort among multiple jurisdictions covered by this plan. Each jurisdiction participated in the development of its action program through its representative(s) on the Hazard Mitigation Committee, who identified and analyzed a comprehensive range of mitigation actions and projects that address each identified hazard. All actions included in these projects and programs are achievable and within the capabilities of each jurisdictions. Projects numbers denoted by the symbol “†” indicate an action that supports NFIP participation or compliance.



Table 6.3. Fulton County Potential Hazard Mitigation Actions

Alpharetta

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0001	Complete dam breach analysis on Lake Windward.	Alpharetta	Public Works	Flooding	2.1	Property Protection	\$30,000	HMA, Local	2016-2021	9
01.0002	Acquire approximately 15 homes in the Mayfield Circle / Maple Lane area near Foe Killer Creek	Alpharetta	Community Development	Flooding; Severe Weather; Tropical Storms	2.7	Property Protection	\$3,000,000	HMA, FMA, Local	2016-2021	9
01.0003	Update City GIS system with more accurate parcel data	Alpharetta	IT	All Hazards	4.14	Prevention	\$90,000	HMA, Local	2016-2021	6
Comments: Current data does not line up with aerial imagery, lidar topography, or mapped flood risk modeling										
01.0004	Complete HAZUS — MH study of natural hazard impact on the city	Alpharetta	Public Works	All Hazards	4.14	Prevention	\$100,000	HMA, Local	2016-2021	6
01.0005	Outreach education to all parcels impacted by new RiskMAPs (letters, information packets)	Alpharetta	Engineering	Flooding	4.14	Prevention	\$20,000	HMA, Local	2016-2021	4
Comments: Can only be completed after the parcel maps are updated										
01.0006	Evaluate benefit of joining CRS with impact of new FEMA maps	Alpharetta	Engineering	Flooding	4.6 7.1 7.3	Prevention	\$100,000	HMA, Local	2016-2021	2



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
Comments: Can only be completed after the parcel maps are updated										
01.0007	Design and install master detention facility for water quality and flood control at Wills Park	Alpharetta	Engineering	Flooding	5.2 5.4 6.1	Natural Resource Protection	\$500,000	HMA, Local	2016-2021	9
01.0008	Foe Killer Creek— Design and implementation of projects to reduce elevated levels of bacteria	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$250,000	HMA, Local	2016-2021	7
01.0009	Webb Bridge Park— Erosion control and stream bank restoration	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$400,000	HMA, Local	2016-2021	8
01.0010	Perform stream stabilization and repair erosion along stream corridors	Alpharetta	Engineering	Flooding; Severe Weather; Tropical Storms	5.4 6.2 6.3	Natural Resource Protection	\$1,500,000	HMA, Local	2016-2021	6
01.0011	Stream bank restoration Big Creek at Webb Bridge	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$250,000	HMA, Local	2016-2021	8
00.0012	Stream bank restoration Big Creek at Haynes Bridge rd.	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$225,000	HMA, Local	2016-2021	8



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0013	Stream bank restoration for Killer Creek — Squirrel Run to Rucker Road	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$150,000	HMA, Local	2016-2021	6
01.0014	Reinforce old culverts with slip line	Alpharetta	Engineering	Flooding; Severe Weather; Tropical Storms	6.1	Structural Project	\$2,000,000	HMA, Local	2016-2021	5
01.0015	Improve stormwater drainage at Church Street	Alpharetta	Engineering	Flooding	6.1 6.8	Structural Project	\$200,000	HMA, Local	2016-2021	4
01.0016	Improve stormwater drainage at Hwy 9 at Canton Street	Alpharetta	Engineering	Flooding	6.1 6.8	Structural Project	\$200,000	HMA, Local	2016-2021	4
01.0017	Improve stormwater drainage at Southlake Drive culvert	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$600,000	HMA, Local	2016-2021	4
Comments: Replace triple 4' CMP culvert to handle capacity, this area currently does not handle the 2-year flow										
01.0018	Improve stormwater drainage at Cape York Trace at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$250,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
Comments: Replace single 4' CMP culvert to handle capacity, this area currently does not handle the 2-year flow										



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0019	Improve stormwater drainage at Glenn Knoll Court at Long Indian Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 2' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0020	Improve stormwater drainage at Mid Broadwell at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 4.5' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0021	Improve stormwater drainage at Newport Bay Passage at Caney Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 3.5' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0022	Improve stormwater drainage at Webb Bridge Court at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace double 8'x6' and single 4.35'x6.5' box culverts to handle capacity, this area currently does not handle the 2-year flow									
01.0023	Improve stormwater drainage at McGinnis Ferry Road at Big creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$500,000	HMA, Local	2016-2021	4



Chapter 6: Mitigation Strategy

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0024	Improve stormwater drainage at Pine Grove Drive at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$250,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
	Comments: Replace single 4' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0025	Improve stormwater drainage at Arrowwood Lane at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$325,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0026	Improve stormwater drainage at Wills Road at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$350,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0027	Improve stormwater drainage at Northwinds Parkway at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$400,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
	Comments: Replace double 5' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0028	Improve stormwater drainage at Academy Street at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$500,000	HMA, Local	2016-2021	4
					6.2					
					6.8					



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Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
	Comments: Replace single 9'x6' box culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0029	Improve stormwater drainage at Rock Mill Road at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$400,000	HMA, Local	2016-2021	4
	Comments: Replace double 5'x5' box culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0030	Improve stormwater drainage at North Park Road at Cooper Sandy Creek	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 4' RCP box culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0031	Improve stormwater drainage at culverts without capacity to handle the 5-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$2,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 7 locations.									
01.0032	Improve stormwater drainage at culverts without capacity to handle the 10-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$3,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 9 locations.									
01.0033	Improve stormwater drainage at culverts without capacity to handle the 25-year storm	Alpharetta	Engineering	Flooding	6.1 6.2	Structural Project	\$4,000,000	HMA, Local	2016-2021	4



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
					6.8					
	Comments: The city has identified 10 locations.									
01.0034	Improve stormwater drainage at culverts without capacity to handle the 50-year storm	Alpharetta	Engineering	Flooding	6.1	Structural Project	\$5,000,000	HMA, Local	2016-2021	4
					6.2					
					6.8					
	Comments: The city has identified 4 locations.									
01.0035	Detour roadway map for flood evacuation plans	Alpharetta	Public Safety	Flooding	1.2	Emergency Services	\$100,000	HMA, Emergency Management	2016-2021	7
01.0036	Install traffic warning signs on all road crossings that are submerged during a 25-year flood or greater	Alpharetta	Public Works	Flooding	7.9	Emergency services; Property Protection	\$100,000	HMA, Public Works	2016-2021	6
01.0037	911 — phone call warning alert system	Alpharetta	Public Safety	All Hazards	1.1	Emergency Services	\$22,000	HMA, Public Safety	2016-2021	6
01.0038	Variable message signage — for use during emergency situations that can be updated from the command center	Alpharetta	Public Safety	All Hazards	7.9 7.3	Emergency Services; Property Protection	\$15,000	HMA, Public Works and Public Safety	2016-2021	6



Chapter 6: Mitigation Strategy

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0039	Replace early warning software system	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	1.1	Emergency Services; Prevention	\$375	HMA, Public Safety	2016-2021	9
01.0040	Replace early outdoor warning systems	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	1.1	Emergency Services; Prevention	483,000	HMA, Public Works	2016-2021	8
01.0042	Install built-in surge protection at all Public Safety buildings	Alpharetta	Public Safety	All Hazards	2.11	Property Protection	\$150,000	HMA, Public Works	2016-2021	6
01.0044	Purchase a web based severe weather monitoring service	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	1.1	Emergency Services	\$20,000	HMA, Emergency Management	2016-2021	6
01.0045	Purchase cones and brigades for pedestrian traffic on Green Ways	Alpharetta	Public Works	Flooding	7.9	Emergency services; Property Protection	\$5,000	HMA, Public Works	2016-2021	4



Chapter 6: Mitigation Strategy

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0046	Replace the Fire Dept. Boat for rescue and evacuation on Lake Windward	Alpharetta	Public Safety	Flooding	7.5	Emergency services	\$35,000	HMA, Fire Dept.	2016-2021	8
01.0047	Replace chain saws and blades for removal of trees during an emergency	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	6.2	Emergency services	\$6,800	HMA, Fire Dept.	2016-2021	6
01.0048	Replace rope and technical rescue equipment	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	7.5	Emergency services	\$10,000	HMA, Fire Dept.	2016-2021	4
01.0049	Implement dam inspection on Lake Windward	Alpharetta	Engineering	Flooding; Dam Failure	4.10	Property Protection	\$25,000 Annually	HMA, Engineering	2016-2021	5
01.0050	Stream gauge with flow meter, rain gauge and stream height for Foe Killer Creek.	Alpharetta	Engineering	Flooding, Environmental issues	6.1 6.2 6.8	Property Protection, Environmental issues	\$14,500 Annually	HMA FMA Local	2016-2021	6



Atlanta

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
05.0023	Improve storm water drainage capacity and design in the area of Piedmont and Auburn Ave to allow better tie in to the Claire Creek overflow	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.5 6.1	SIP	\$5,000,000	HMA, Local	2016-2021	12
<p>Comment: This is an area of identified need as part of the Combined Sewer Overflow (CSO) Remediation Plan which can be found at http://www.cleanwateratlanta.org.</p>										
05.0024	Station 21: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEAM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Tornadoes; Winter Storms	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9
<p>Comments: This is a heavy rescue special operations station. Houses rescue boat, collapse rescue equipment, trench rescue equipment, and technical rescue equipment. ALS engine is station at this location. GSAR is housed at this station. Station has large amount of plate glass, including bay doors. Bay doors are older and are not up to current code.</p>										
05.0025	Station 8: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEAM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9
<p>Comment: This is the Hazardous Materials station and contains HazMat related personnel and equipment.</p>										
05.0026	Station 1: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEAM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9



Comments: This station is the Decontamination Station and houses decontamination equipment. It also houses CBRNE equipment and serves as the backup station to the HazMat team in Station 8.										
05.0027	Stations 9, 20, 22, & 25: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEAM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$2,000,000	HMA, SCG, Local	2016-2021	7
05.0028	Improve wind resistance of roof to the Maddox Park building which houses fleet operations. Roof is not wind rated	Atlanta	Office of Enterprise Assets Management (OEAM)/ Parks & Recreation	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10	SIP	\$1,000,000	HMA, Local	2016-2021	10
Comments: OEAM/ DPR assessing the roof at Maddox Park building to determine if the roof will be replaced. Numerous repairs were made in FY12, 13 & 14										
05.0029†	R.M. Clayton Waste Water Treatment Plan: Flood-proof the plant through raising the height of the banks Comment: This plant flooded from Proctor Creek during the floods of Sept. 2009. It has received some PDM funds for repairs, but further mitigation is needed to improve flood-proofing of this facility. This facility serves East Point, College Park, and Hapeville. The plant cannot treat sewage and is causing environmental problems in West Point Lake. It also affects the communities' ability to draw water.	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.10	SIP	\$2,500,000	HMA, FMA, Local	2016-2021	13
05.0031	Acquire generator for emergency power for Fire Department Headquarters Building	Atlanta	Fire & Rescue	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	SIP	\$1,300,000	HMA, SCG, Local	2016-2021	13
05.0032	Retrofit glass old window glass at the Fire Department Headquarters building for increased impact resistance	Atlanta	Fire & Rescue	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	SIP	\$1,500,000	HMA, SCG, Local	2016-2021	11
05.0033	Acquire generator for emergency	Atlanta		Severe Weather;	2.11	SIP	\$4,000,000	HMA, SCG, Local	2016-2021	13



	power for 40 Fire Stations		Fire & Rescue	Tornado; Winter Storm; Tropical System								
05.0034	Retrofit bay doors of Fire Stations	Atlanta	Fire & Rescue	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	SIP	\$5,000,000	HMA, SCG, Local	2016-2021			13
05.0035	Retrofit All Fire Stations with Lightning Rods	Atlanta	Fire & Rescue	All Hazards	2.10	SIP	\$ 800,000	HMA, SCG, Local	2016-2021			13
05.0036	Place Warning Sirens in Residential Areas	Atlanta	Fire & Rescue	Severe Weather	1.1 1.2 1.7	EAP/SIP	\$4,000,000	HMA, Local	2016-2021			13
05.0037	Acquire generator for emergency power for Police Facilities	Atlanta	Police	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	SIP	\$2,500,000	HMA, DHS, Local	2016-2021			7
Comment: Plan for immediate smaller rollout of the main precincts (6) in FY17.												
05.0038†	Relocate SWAT Offices & Storage, Classrooms, Ranger Offices & Storage, Gym, Explosive Bldg, and Equipment Facility at 1500 Key Rd outside of Floodplain	Atlanta	Police	Flooding	2.10, 4.11	SIP	\$3,750,000	DHS, Local	2016-2021			10
05.0039†	Relocate Firing Range Facility at 1500 Key Rd outside of Floodplain	Atlanta	Police	Flooding	2.10,4.11	SIP	\$2,125,000	Local	2016-2021			8



05.0040	Site at 1500 Key Road includes SWAT, flooding of the road severely impacts ability to respond. Multiple pieces of critical tactical equipment are located there as well as the Police Firing Range	Atlanta	Police	Flooding	4.11, 7.9	SIP	\$1,500,000	Local, HMA	2016-2021	8
05.0041	Install traffic warning signs on at all road crossing at creeks and streams that are submerged during a 100 & 500 year flood or greater. Approximately 100 locations	Atlanta	Public Works	Flooding	4.11, 7.9	SIP	\$100,000	Local	2016-2021	13
05.0042	Install generators at Public Work Facilities involving 25 sites involving Fueling Operations for the City, Operations, and Vehicle Maintenance	Atlanta	Public Works	Severe Weather, Flooding	4.11, 2.11	SIP	\$2,500,000	HMA, Local	2016-2021	11
05.0078[†]	Raise levee and other work along Chattahoochee River and Peachtree Creek to prevent flood waters from the Chattahoochee River raising into the R.M. Clayton Water Reclamation Center	Atlanta	Department of Water Management	Flooding	4.11	SIP	\$5,000,000	HMA, FMA, Local	2016-2021	14
05.0079	Acquire flood prone properties located in the FEMA	Atlanta			2.7	SIP/LPR	\$2,500,000	HMA, FMA, Local	2016-2021	14



	mapped floodplains throughout the City of Atlanta.		Department of Water Management	Flooding; Severe Weather; Tropical Systems								
Comment: 1 remaining to acquire FY16												
05.0081	Educate the public about the risk of flooding and the importance of obtaining flood insurance	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.4 7.2 7.3 7.4	SIP/EAP	\$50,000.00/Yearly	Local	2016-2021			14
Comment: Flyers and newsletters, Information on DWM website. Continue to update website as needed.												
05.0082	Continue program for natural/vegetative stabilization of stream banks (average 1300 feet per year) to secure infrastructure	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	5.1, 5.2, 5.4, 5.5	SIP/NRP	\$200,500/year	Local	2016-2021			13
05.0083	Relocate Parks NE and SE District Maintenance Depots	Atlanta	Parks, Recreation, & Cultural Affairs	Flooding	2.1, 2.10, 4.11	SIP	\$800,000 Land \$1,500,000 Design & Construction	Local	2016-2021			14
Comments: Additional space for welding and small equipment. Looking for opportunity to aggregate both compounds together with fleet (recreation). Price could be \$1.5 million for land and \$3 million for construction of new site. DPR is looking for alternative sites that may allow for aggregating maintenance and service sites.												
05.0084	Tree Maintenance Program in Hazard and Urbanized Areas	Atlanta	Parks, Recreation, & Cultural Affairs	Heat Wave; Drought; Severe weather	5.1, 5.2, 5.4, 5.5	SIP/NRP	\$300,000 Equipment; \$400,000 annually	Local	2016-2021			14
Comment: Preventative maintenance plan for ROW could require significantly higher funding if implemented citywide. Emergency vehicles for Forestry could be purchased – knuckle boom - \$200,000												
05.0085	Reconstruct roofs and generators on shelter facilities	Atlanta	Parks, Recreation, & Cultural Affairs	All Hazards	2.9 3.5 4.13	SIP	\$7,500,000	Local	2016-2021			14
Comment: Generators located at Ben Hill, Old Adamsville and Adamsville, All need upgrades to produce full service power restoration, generators needed at additional sites: Central, Rosel Fann, Bessie Branham, Peachtree Hills 7,500,00+												
05.0087	Upgrade outdoor siren warning	Georgia Institute of	Office of Emergency	All Hazards	1.1	EAP	Estimated cost for 6	Local, Others not	2016-2021			10



	system speakers.	Technology	Preparedness				speakers: \$186,000.	yet identified		
05.0088	Generators to supply power to fueling Stations.	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.11	SIP	\$100,000	Local, Others not yet identified	2016-2021	9
05.0089	Installation of above ground fuel storage tanks	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.5	SIP	\$100,000	Local, Others not yet identified	2016-2021	7
05.0090	Potable Clean Water Conveyance/Storage	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.5	SIP	\$300,000	Local, Others not yet identified	2016-2021	8
05.0091	High Impact Window Glass/treatment	Atlanta Public Schools	Office of Safety & Security	Severe weather, Hurricanes, Tornadoes	6.4	SIP	\$1,000,000	Local, Others not yet identified	2016-2021	4
05.0092	Generators in support of Schools/Buildings as Shelters	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.11	SIP	\$2,550,000	Local, Others not yet identified	2016-2021	10
05.0093	Install lightning detection equipment/software for campus buildings and athletic fields.	Ga. State University	Emergency Management	Severe weather, Hurricanes, Tornadoes	1.1 1.2 1.4	EAP	\$30,000	Local, Others not yet identified	2016-2021	10
05.0094	Install tornado sirens throughout the Downtown Atlanta campus.	Ga. State University	Emergency Management	Severe weather, Hurricanes, Tornadoes	1.1 1.2 1.4	EAP/SIP	\$30,000	Local, Others not yet identified	2016-2021	10



Chattahoochee Hills

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
65.001	Develop storm water plan	Chattahoochee Hills	Planning/Development	Severe Weather; Tropical Systems; Winter Storms	4.5 4.4 4.15 4.8	Prevention	\$10,000	HMA, Local	2016-2021	9
Comments:										
65.002	Harden/retrofit City hall	Chattahoochee Hills	City Manager/Public Works	Severe Weather; Tropical Systems; Tornadoes; Winter Storms	2.10 6.4	Property Protection	\$75,000	HMA, EOC, Local	2016-2021	9
Comments: Generator acquired and partial cost study done. Surplus/donation of equipment.										
65.003	Improve storm water run-off on caps ferry	Chattahoochee Hills	Public Works	Severe Weather; Flooding; Tropical Systems	6.1	Structural Projects	\$10,000	HMA, Local	2016-2021	15
Comments: Developing plan utilizing outside contractor/advisor during 2016: Due to the proximity to the Chattahoochee River, the creek backs up and floods the road which, in turn, cuts off access to three counties.										
65.004	Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator.	Chattahoochee Hills	Fire	Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 6.5	Property Protection	\$200,000	HMA, SCG, Local	2016-2021	9



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	Comments: Generator acquired. Surplus/donation of equipment.									
65.005	Replacement of Garrett's ferry bridge.	Chattahoochee Hills	Public Works	Severe Storm; Hurricane; Tornadoes	6.4	Structural Project	\$200,000	Local, others not currently identified	2016-2021	15
	Comments: Engineering study already completed; research federal and state funding options to initiate replacement during 2016									
65.006	Research/publish mitigation "opportunities" for citizen individual/group commitment.	Chattahoochee Hills	Planning	All hazards	7.1 7.2 7.3 7.4 7.7	Public Education and Awareness; Property Protection; Emergency Services	\$2,500	Local	2016-2021	6
	Comments: Identify/publish information about property insurance savings to property/home/business owners to encourage individual/group participation in mitigation and support for public safety services (needs).									

College Park

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0001†	Replace 3 box culvert on Camp Creek Parkway with a more open design	East Point	Georgia Department of Transport.	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$200,000	HMA, FMA, Local	2016 - 2021	14



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
<p>Comments: Flooding of Camp Creek Parkway causes traffic problems in College Park. Long, low slope trash rack would be a more cost effective solution to the problem.</p>										
15.0002	Storm sewer improvement project on, Walker Avenue/ Mercer Avenue	College Park	Public Works	Flooding	6.1	Structural Projects	\$500,000	Local	January 31, 2016	14
15.0002	Storm Sewer improvement project Cambridge Avenue (designed), Lyle/Vesta (not designed).	College Park	Public Works	Flooding	6.1	Structural Projects	\$1,000,000	HIMA, Storm Water Utility Fund	2016 - 2021	14
15.0003†	Increase flow-through capacity of box culvert on Park Terrace	College Park	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$100,000	HIMA, Local	2016 - 2012	14
<p>Comments: During heavy rains, the flow-through capacity is insufficient causing debris to accumulate and block water flow.</p>										
15.0004†	Increase flow-through capacity of box culvert the intersection of Harris and Rugby Ave.	College Park	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$100,000	HIMA, Local	2016 - 2012	14
<p>Comments: During heavy rains, the flow-through capacity is insufficient causing debris to accumulate and block water flow. Trash rack could be built upstream at Lyle Avenue where nearest house is at a higher elevation.</p>										



Chapter 6: Mitigation Strategy

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0005	Replace traffic lights with more weather resistant mast arms.	College Park	Power Department	Severe Weather; Tornadoes; Tropical Systems	6.8	Structural Projects	\$150,000 each one replaced at Godby Road, two candidates on Roosevelt Highway	HMA, DOT, Local	2016 – 2021	8
15.0006	Retrofit the roof at the Power Department Building; replace generator.	College Park	Power Department	Severe Weather; Tornadoes; Winter Storm; Tropical Systems	6.4 6.5	Property Protection	\$50,000	HMA, Local	2016 – 2021	10
<p>Comments: This building houses the operations for the City-owned power utility as well as the water and sewer department and the warehouse. The current generator is small and underpowered for current needs. The computer system that is housed at this location runs all of their system data.</p>										
15.0007	Install Fur Creek structure at Herschel Park Drive to regulate flow.	College Park	Public Works	Flooding	6.1	Property Protection	\$100,000	HMA, Local	2016 – 2021	14
15.0008 (refer to 15.0005)	Construct new detention pond to regulate southwest branch of Fur Creek.	College Park	Public Works	Flooding	6.3	Property Protection	\$1,000,000	HMA, Local	2016 – 2021	14



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0014	Improve Embassy Drive, T. Owen Smith Connector, Best Road, and Sullivan Road stormwater control, by installing trash racks.	College Park	Public Works	Flooding	6.1	Property Protection	\$400,000	HMA, Storm Water Utility Fund	2016 – 2021	14
15.0015	Replace 48" CMP with 7' by 7' box culvert to improve capacity of Janice Drive storm drainage.	College Park	Public Works	Flooding	6.1	Property Protection	\$100,000	HMA, Local	2016 – 2021	14

East Point

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0001	Coordinate with DOT regarding improved conveyance capacity and drainage on Camp Creek Pkwy between Washington Rd and	East Point	Public Works	Flooding; Severe Weather; Tropical Systems	6.8	Structural Projects	\$1,500,000	HMA, FMA, DOT, Local	2016-2021	16



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	Desert Dr.									
	Comment: DOT is preparing to widen Camp Creek and it owns the draining infrastructure; however, there are design impacts that may affect the City that need to be coordinated.									
20.0002	Improve drainage capacity on Norman Berry Rd	East Point	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$2,500,000	HMA, Local	2016-2021	16
20.0003	Improve drainage design in the area of Martin St. and Norman Berry due to insufficient infrastructure capacity	East Point	Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	2,000,000	HMA, Local	2016-2021	16
	Comments: This area collects from 3 or 4 different points that drain into one location. Either a larger drain or rerouting of drainage points to multiple locations are needed.									
20.0004	Harden City EOC (2727 East Point St) by adding more impact resistant glass	East Point	Public Works	Severe Weather; Tropical Systems; Tornadoes	6.4	Property Protection	10,000	HMA, EOC, Local	2016-2021	16



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0005	Drainage improvements in the Sun Valley/Camp Creek Watershed area	East Point	Public Works	Flooding	6.1	Structural Projects	\$800,000	HMA, Local	1 – 2 years from funds availability	15
20.0006	Drainage improvements at Lester St & Spring Ave. in the Utroy Watershed	East Point	Public Works	Flooding	6.1	Structural Projects	\$2,200,000	HMA, Local	1 – 2 years from funds availability	15
20.0007	Drainage improvements at Randall St & East Forrest Ave	East Point	Public Works	Flooding	6.1	Structural Projects	\$500,000	HMA, Local	2016-2021	15
20.0008	Culvert improvements at 3030 & 3042 Dodson Dr	East Point	Public Works	Flooding	6.1	Structural Projects	\$200,000	HMA, Local	2016-2021	15
20.0009	Drainage Improvements in the Jim's Creek area	East Point	Public Works	Flooding	6.1	Structural Projects	\$1,900,000	HMA, Local	2016-2021	16



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0010	North Martin St. regional storage improvement	East Point	Public Works	Flooding	6.1	Structural Projects	\$0	HMA, FMA, Local	2016-2021	16
	Comments: There is major road flooding; regional improvements for downstream flooding problems.									
20.0011	Calhoun Ave pipe replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$670,000	HMA, FMA, Local	2016-2021	16
	Comments: There is major road flooding at the intersection of Calhoun Ave. and Norman Berry Dr.									
20.0012	South River unnamed tributary 3 improvements	East Point	Public Works	Flooding	6.1	Structural Projects	\$4,000,000	HMA, FMA, Local	2016-2021	16
	Comments: There is secondary road flooding with potential structural flooding.									
20.0013	Pipe replacement on Norman Berry Dr. near Maria Head Terrace	East Point	Public Works	Flooding	6.1	Structural Projects	\$180,000	HMA, FMA, Local	2016-2021	16
	Comment: There is major roadway flooding.									
20.0014	Georgia Power Pond	East Point	Public Works	Flooding	6.1	Structural Project	\$280,000	HMA, Local	2016-2021	16



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	Comments: There is secondary road flooding; alternate access to residences; coordinate with Meadow Lark improvements. The detention pond suggested is within the area of a Georgia Power easement in the Meadowlark drive community. There is no direct association with Georgia Power Company project.									
20.0015	Meadow Lark Lane Pipe Replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$1,500,000	HMA, Local	2016-2021	15
	Comments: There is secondary road flooding; alternate access to residences.									
20.0016	Grove Ave. pipe replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$60,000	HMA, Local	2016-2021	15
	Comments: There is secondary road flowing; alternate access to residences.									
20.0017	Promote public education of water saving measures – Rebates/vouchers for low flow water fixtures, household water saving tips	East Point	Public Works	Drought	7.7	B	\$13,000	HMA, FMA, Local	2016-2021	12
20.0018	Implement water restrictions, prioritizing water use	East Point	Public Works	Drought	1.5	B	\$13,000	HMA, FMA Local	2016-2021	9



Fairburn

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
25.0001	Improve drainage at the bridge at Rivertown Road and Malone by adding drain to tie into the storm water drainage.	Fairburn	Public Works/Engineering Department	Flooding	6.1	Structural Project	\$150,000	HMA, FMA, Local	2016-2021	16
Comments: Debris backs up under the bridge at Malone. Need to add a drain to tie into the system.										
25.0002	Acquire the upstream property (currently privately owned) on Rivertown Road to provide City access to clean and prevent debris in stream.	Fairburn	Engineering Department	Flooding	5.3 6.2	Property Protection	\$100,000	HMA, FMA, Local	2016-2021	16
25.0003	Acquire privately owned agriculture land to prevent further development that is consistent with current land use policies.	Fairburn	Engineering Department	All Hazards	5.3	Property Protection	\$100,000	HMA, Local	2016-2021	19
Comments: Acquisition would be used to promote less dense land usage and expand nature preserve, which is consistent with the natural conservation projects already being implemented in the area.										



Hapeville

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
30.0001	Install surge protection for City Hall which houses server databases	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$2000	HMA, Local	2016-2021	8
30.0002	Install surge protection at the Police Station which houses its own database servers	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$5000	HMA, DHS, Local	2016-2021	8
30.0003	Install surge protection at Fire Station #2	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$1000	HMA, SCG, Local	2016-2021	8
Comments: Lightning surges can damage older repeaters, which serve as their backup communications system.										
30.0004	Install surge protection at the Community Services building	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$1000	HMA, Local	2016-2021	8
Comments: This building which IT Administration; Planning & Zoning; Public Works Administration; Plan Review Data and other data records. All GIS data is located at this building as well which is on a server with no external backup.										
30.0005†	Revise site plan review process to ensure that site plan	Hapeville	Community Services	All Hazards	2.3, 4.1 4.2 4.4	Prevention	\$2000	Local	2016-2021	9



	review is part of the interdepartmental plan review process									
	Comments: Currently the site plan review is performed by a position that is a political appointment and the planning commission may not be receiving technical expert reports and studies such as slope and connections to infrastructure. The current process only provides information on setbacks, landscape, etc. Comment: The current pipe capacity causes flooding in the park and roadway resulting in damage to the road and causing people to be caught in the flood waters.									
30.0006	Improve drainage in the area of South Central Avenue by increasing the size of the underground storm drain	Hapeville	Community Services	Flooding	6.1	Structural Project	\$50,000	HMA, FMA, Local	2016-2021	9
	Comments: Flooding impacts the business district and floods on both sides of the railroad tracks. Businesses are moving out of the area causing economic harm to the City. It also results in flooding at the fire station located at 870 S. Central Ave in which flood waters have flowed through the front garage door and out the back. The City would like to reroute the piping under the railroad, Refer to Hapeville flooding map for location of these choke points.									
30.0007	Perform curb modification on Oakdale Road, which currently has header rocks. Installation of curb and gutters will improve storm water drainage	Hapeville	Community Services	Flooding	6.1	Structural Project	10,000	HMA, Local	2016-2021	9



Johns Creek

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Estimated Timeline for Completion	STAPLEE Score
02.0001	Signage for severe weather at parks and open spaces	Johns Creek	Parks	All Hazards	7.9	Public Education and Awareness; Prevention	\$2000	Local; others not yet identified	2016-2020	8
02.0002	Develop a Debris Management Plan	Johns Creek	Emergency Management	Severe Weather, Winter Storms, Tropical Systems, Tornado, Flood	1.5 4.1 4.15 5.5	Local Plans and Regulations, Natural Resource Protection	\$3600	Local; others not yet identified	2016-2020	8
Comments: Johns creek is currently drafting a debris management plan										
02.0003	Debris Removal Contract	Johns Creek	Emergency Management	Severe Weather, Winter Storms, Tropical Systems, Tornado, Flood	1.5 4.1 4.15 5.5	Local Plans and Regulations, Natural Resource Protection	\$3600	Local; others not yet identified	2016-2020	8
Comments: Johns Creek is looking to establish a pre-event contract for disaster debris removal to include haulers, reduction and site monitors.										
02.0004	Require mandatory water conservation measures during drought emergencies	Johns Creek	JC OEM (Office of Emergency Management)	Water Conservation/Drought	1.5 4.1 4.15 5.5	Local Plans and Regulations	Staff Time, TBD	HMA, FMA, Local	2016-2021	8
Comments: Johns Creek will adopt ordinances specified by Fulton County to prioritize or control water use, particularly for emergency situations like firefighting and develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc.										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Estimated Timeline for Completion	STAPLEE Score
02.0005	Create a program encouraging to take water-saving measures.	Johns Creek	JC OEM (Office of Emergency Management)	Water Conservation/Drought	1.5 4.1 4.15 5.5	Local Plans and Regulations	Staff Time, TBD	HMA, FMA Local	2016-2021	8
<p>Comments: Johns Creek will encourage citizens to: install low-flow water saving showerheads and toilets, turn water flow off while brushing teeth or during other cleaning activities, adjust sprinklers to water the lawn and not the sidewalk or street, run the dishwasher and washing machine only when they are full, check for leaks in plumbing or dripping faucets, install rain-capturing devices for irrigation and encourage the installation of graywater systems in homes to encourage water reuse.</p>										

Milton

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
56.0001	Replace wooden wing walls on bridges with concrete wing walls; perform bank restoration and stabilization	Milton	Public Works	Flooding	6.8	Structural Project	5 Structures at \$75,000 ea. for \$375,000	HMA, FMA, Local	2016-2021	14
<p>Comments: When the creek swells the water seeps in through wooden wing wall cracks which then flows behind the wall and erodes the embankment. Four bridges were significantly damaged in Sept. 2009 and received PDM funds to replace, but can only replace with wooden wing walls, so the problem will re-occur.</p>										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
56.0002	Continue development of GIS web mapping project to allow for real time information of road and other hazard areas to be avoided	Milton	GIS	All Hazards	1.2	Public Education and Awareness	In house staff and time; \$20,000	HMA, DHS, Local	2016-2021	11
56.0003	Develop campaign strategy to increase participation in Nixel notification program	Milton	Planning	All Hazards	1.2	Public Education and Awareness	In house staff and time	HMA Local	2016-2021	11

Mountain Park

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
35.0001	Convert open storm water drainage ditches to underground piping system in areas where the ditching system passes the roadway	Mountain Park	City Public Works	Flooding; Severe Weather; Tropical Systems	2.7 6.1	Structural Project	\$500,000	HMA, Local	2016-2021	15
<p>Comments: City has open ditch drainage system, which causes problems in heavy rain events due to debris in the ditches. When the ditches get clogged, the water overflows onto the road and drivers cannot see where edge of road it and ditch is.</p>										



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Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
35.0002	Improve storm water drainage ditches in areas that do not cross roadways to increase drainage system capacity	Mountain Park	City Public Works	Flooding; Severe Weather; Tropical Systems	2.7 6.1 6.2	Structural Project	\$300,000	HMA, Local	2016-2021	15
35.0003	Acquire generator for EOC/Fire Station building	Mountain Park	Fire Department	Severe Weather; Tropical Systems;	2.11	Emergency Services	\$32,000	HMA, EOC, SCG, Local	2016-2021	12
35.0004	Install surge protection equipment and measures for the EOC/Fire Station	Mountain Park	Fire Department	Severe Weather	2.7 2.11 6.5	Property Protection; Emergency Services	\$5,000	HMA, EOC, Local	2016-2021	12
35.0005 [†]	Flood proof Fire Station including, raising generators and other mechanicals, installing drainage pumps, waterproof foundation and seal foundation walls	Mountain Park	Fire Department/ Public Works	Flooding; Severe Weather; Tropical Systems	2.7 2.9 2.10	Emergency Services; Property Protection	\$25,000	HMA, EOC, FMA, SCG, Local	2016-2021	12
	Acquire property to relocate flood-prone Fire Station	Mountain Park	Public Works	Flooding; Severe Weather; Tropical Systems	2.7 2.9 2.10	Property Protection	\$200,000	HMA, FMA, SCG, Local	2016-2021	8
<p>Comment: This is a multi-purpose building that also functions at the City's EOC and designated special needs shelter.</p>										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
35.0006	Enhance physical protection of City Hall for increased high wind resistance	Mountain Park	Public Works	Severe Weather; Tornadoes; Tropical Systems	2.7 6.4	Property Protection	\$50,000	HMA, Local	2016-2021	12
35.0007	Acquire property at the corner of Cardinal Rd & Mountain Park Rd to relocate the City Works building	Mountain Park	Planning/ Public Works	Flooding; Winter Storms; Severe Weather; Wildfire/Urban Interface	2.7	Emergency Services; Property Protection	\$200,000	HMA, Local	2016-2021	8
Comments: Acquisition of this property would allow for increased storage capacity to store more salt that could benefit additional jurisdictions such as the City of Roswell and Cherokee County										
35.0008	Improve capacity of Lake Garrett by dredging accumulated sedimentation	Mountain Park	Public Works	Flooding; Severe Weather; Winter Storm; Tropical Systems	6.1	Natural Resource Protection	\$700,000 per foot of removal	HMA, Local	2016-2021	17
35.0009	Improve capacity of Lake Cheerful by dredging accumulated sedimentation	Mountain Park	Public Works	Flooding; Severe Weather; Winter Storm; Tropical Systems	6.1	Natural Resource Protection	\$700,000 per foot of removal	HMA, Local	2016-2021	17
35.0010†	Harden spillway structure between Lake Cheerful and Lake Garrett to	Mountain Park	Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	\$200,000	HMA, Local	2016-2021	17
Comments: Received PDM grant to repair damage from recent flood event. Improvements would lessen risk for future damage.										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0011†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in the flood plain; improve drainage in the area	Roswell and Mountain Park	Public Works	Flooding; Severe Weather; Tropical Systems	5.2 5.3 5.4 6.1	Property Protection	\$3,000,000	HMA, FMA, Local	2016-2021	10
<p>Comment: Area is in flood plain. There is repeated flooding that affects homes and roadway. Have had numerous rescues due to low-lying area. Too much water comes into area that cannot be dispersed.</p>										

Palmetto

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0001	Acquire generator for emergency power for Fire Department Headquarters Building	Palmetto	Fire Department	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	Emergency Services	\$25,000	HMA, EOC, SCG, Local	2016 - 2021	8
40.0002	Retrofit old window glass at the Fire Department Headquarters building for increased impact resistance	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$10,000	HMA, SCG, EOC, Local	2016 - 2021	8



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0003	Acquire generator for emergency power for Fire Station	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	HMA, SCG, Local	2016 - 2021	8
40.0004	Retrofit bay doors of Fire Station	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$15,000	HMA, SCG, Local	2016 - 2021	8
Comments: Bay doors are over 40 years old and of residential grade quality. They are of insufficient wind loading capacity and impact resistance.										
40.0005	Retrofit current flat roof of City hall for improved wind loading capacity	Palmetto	City Administration	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$55,000	HMA, Local	2016 - 2021	8
40.0006	Acquire generator for emergency power for Police Station	Palmetto	Police Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	HMA, DHS, Local	2016 - 2021	8
40.0007	Retrofit Police Station for improved wind loading capacity	Palmetto	Police Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$15,000	HMA, DHS, Local	2016 - 2021	8



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Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0008	Harden Community Center, which functions as a first responder shelter. Reinforce roof for wind loading capacity as well replace windows for wind resistance	Palmetto	City Administration	All hazards	2.10 6.4	Property Protection	\$110,000	HMA, Local,	2016 - 2021	8
40.0009†	Acquire stream in Palmetto Oaks to preserved as green space and improve flood plain management	Palmetto	City Administration	Flooding	2.7 5.2 5.3 5.4	Natural Resource Protection	\$300,000	HMA, FMA, Local	2016 - 2021	7
40.0010	Acquire land on Mixon Ave to prevent further dense development as part of their green space expansion program	Palmetto	City Administration	Wildfire/Urban Interface; Tornado; Severe Weather	4.3 5.3 5.5	Natural Resource Protection	\$150,000	HMA, Local	2016 - 2021	7



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0011	Acquire Emergency Generator for Water Treatment Plant	Palmetto	Public Works	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8
40.0012	Acquire Emergency Generator for City Hall	Palmetto	City Administration	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8
40.0013	Retrofit Water Treatment Plant with Lightning Protection	Palmetto	Public Works	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8

Roswell

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
45.0001	Install surge protection at the City fuel island	Roswell	Public Works	Severe Weather	2.7 2.11 6.5	Property Protection; Emergency Services	35,000	Local	2016-2021	5
45.0002	Retrofit roof of the 911 Center which is susceptible to	Roswell		Severe Weather; Winter Storm; Tornadoes; Tropical Systems	2.7 2.10 6.4	Emergency Services; Property Protection	180,000	HMA, EOC, Local	2016-2021	6 /Med



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEIMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	damage from high winds and water leakage. Retrofit glass with more impact resistant glass		Administration							
45.0003	Add upstream detention and replace culvert at Warsaw Road near Willow Stream Townhomes	Roswell	Public Works	Flooding; Severe Weather; Tropical Systems	1.2 2.7 6.1	Structural Project; Natural Resource Protection	350,000	HMA, Local	2016-2021	8 / High
Comment: Area is in shaded zone X flood plain. There is repeated flooding that affects homes and roadway.										
45.0004	Perform stream stabilization and repair erosion along Crossville Creek corridors	Roswell	Public Works	Flooding; Severe Weather; Winter Storms; Tropical Systems	5.4 6.2 6.3	Natural Resource Protection	125,000	HMA, Local	2016-2021	6 / Med
45.0005	Add tamper resistant fittings to all fire hydrants in water system boundary	Roswell	Public Works	Fire	1.2	Preparedness, Property Protection	10,000	HMA, Local	2016-2021	4 / Med
99.0001†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in	Roswell and Mountain Park	Public Works	Flooding, Severe Weather; Tropical Systems	5.2 5.3 5.4 6.1	Property Protection	85,000	HMA, FMA, Local	2016-2021	3 / Low



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEIMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	the flood plain; improve drainage in the area									
<p>Comment: Area is in flood plain. There is repeated flooding that affects homes and roadway. Have had to have numerous rescues due to low-lying area. Too much water comes into area that cannot be dispersed. This project score has been dropped because of improvements to the dam overflow structure.</p>										

Sandy Springs

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEIMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0001	Purchase approximately 45 flooded homes in the Colewood Creek Basin	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$1.4M	HMA, FMA, Local	2016-2021	12
<p>Comments: Homes are located in the flood plain and are subject to flooding.</p>										
59.0002	Purchase approximately 35 flooded houses in Pine Forest along Nancy Creek Basin	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$1.1M	HMA, FMA Local	2016-2021	12
<p>Comments: Development is built in the floodplain. It is a 40 to 50 year old development, which was built pre-FIRM.</p>										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0003	Acquire approximately 10 homes in the North Mill area and convert to open space	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$3M	HMA, FMA, Local	2016-2021	12
	Comments: There are a total of about 600 homes in the floodplain. City wishes to purchase the most homes that are most at risk.									
59.0004	Reinforce old culverts with slip line	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems; Sinkholes	6.1	Structural Project	\$3.5M	HMA, Local	2016-2021	17
	Comments: Current infrastructure is aging and rusting. The leaking pipes are causing secondary erosion to the substrate. This technique would reinforce pipes to keep from collapsing which would damage homes that are built on or near the top of the system.									
59.0005	Rehabilitate City-owned detention ponds which have previously breached	Sandy Springs	Public Works	Flooding	6.1	Structural Project	\$5M	HMA, Local	32016-2021	14
	Comments: Some of the detention ponds are located by creeks. Should the structure fail, it will release mud and debris into the creeks.									



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0006	Build retaining wall on Morgan Falls Rd where erosion is occurring where slope crosses the roadway and has lake below	Sandy Springs	Public Works	Landslide; Severe Weather	6.3	Structural Project	\$1M	HMA, Local	2016-2021	14
59.0007	Build retaining wall on Lake Forest Rd to reduce debris sliding onto the roadway	Sandy Springs	Public Works	Landslide; Severe Weather	6.3	Structural Project	\$267,000	HMA, Local	2016-2021	19
<p>Comment: This is an old settlement road that became a major road. Trees, boulders, and mud block can block the road following severe weather events blocking any access, including first responders, into the area.</p>										
59.0008	Distributing tornado shelter location information	Sandy Springs	Fire & Communications	Severe Weather Tropical Systems Tornadoes	1.5	Civilian Property Project	\$10,000	HMA, FMA, Local	2016-2021	18
59.0009	Supporting severe weather awareness week.	Sandy Springs	Fire & Communications	Severe Weather Tropical Systems Tornadoes	1.5	Civilian Property Project	\$10,000	HMA, FMA Local	2016-2021	18



Unincorporated South Fulton

Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0004†	Train local flood plain managers through programs offered through the State and FEMA's training center	Planning	Countywide†	Flooding	7.5	Public Education and Awareness	\$500.00	HMA, FMA, Local	2016-2021	10
99.0005	Participate in the "Turn Around Don't Drown" program by acquiring signs in known flash flood locations	Public Works	Countywide†	Flooding	7.9	Public Education and Awareness	\$2500.00	HMA, Local	2016-2021	8
99.0011†	Update comprehensive plans, short-term work program, and capital improvements program (6-20 years) for future growth and development that integrate findings and recommendations of this Hazard Mitigation Plan. Consider the addition of a natural hazards element, which includes risk assessment findings of this plan and carries over the goals, objectives, and mitigation measures	Public Works	Countywide†	All Hazards	2.1 2.3 2.5 2.6 4.1 4.2 4.3	Prevention	1000.00	In house staff and time; costs for consultants	2016-2021	19
99.0012†	Ensure that capital improvement plans include capital projects to implement the natural hazards element of the jurisdiction's comprehensive plan or	Public Works	Countywide†	All Hazards	4.2	Prevention	0	In house staff and time	2016-2021	10



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	projects identified in the Mitigation Strategy Section of this plan									
99.0014†	Continue to enforce subdivision construction standards for drainage improvements	Planning	Countywide†	Flooding; Severe Weather; Tropical Systems	4.3	Prevention	0	In house staff and time	2016-2021	15
99.0016	Encourage the relocation of existing utility lines underground, and consider local regulations to require placement of all new utility lines underground, were feasible	Planning	Countywide†	Tornadoes; Severe Storms; Winter Storms; Tropical Systems	2.1	Prevention	0	Local	2016-2021	2
99.0017	Encourage replacement of traffic signals at major or priority intersections with mast arm design with emergency power; coordinate with State Transportation Agencies for state-owned roadways that impact local jurisdictions	Public Works	Countywide†	Tornadoes; Severe Storms; Winter Storms; Tropical Systems	6.8	Structural Projects	\$50000.00	Unk	2016-2021	3
99.0020†	Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas,	Planning	Countywide†	All Hazards	4.14	Public Education and Awareness	0	HMA	2016-2021	9

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



Chapter 6: Mitigation Strategy

Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	dam inundation areas, disaster events, and comprehensive inventory of critical facilities within all jurisdictions									
99.0021	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS	Fire	Countywide†	All Hazards	4.14	Prevention	0	HMA	2016-2021	6
99.0022	Work with DNR, NCRS, and local GIS departments to maintain inundation mapping downstream of dams	Planning	Countywide†	Flooding; Dam Failure	4.14	Prevention	0	HMA	2016-2021	12

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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0023	Evaluate all available notifications systems, including but not limited to, Outdoor Warning Sirens, Reverse 911, Code Red, Nixel, and all other public available systems for Atlanta-Fulton County, including consideration of the unique geographical location, technical requirements, system types, and operational procedures of each local jurisdiction with sirens. With interjurisdictional capability	Police	Countywide†	All hazards	1.1 1.8 2.2	Emergency Services	0	HMA	2016-2021	11
99.0024	Installation of warning and notification systems	Police/fire	Countywide†	All hazards		Emergency Services	\$5000.00	HMA	2016-2021	
99.0025	Develop a countywide multi-jurisdictionally coordinated notification plan for alert and notification of hazardous (or potentially hazardous) events	Police/Fire	Countywide†	All Hazards	1.1 1.8 2.2	Emergency Services	\$1000.00	HMA	2016-2021	10
99.0026	Install automatic icing indicators on critical bridges and	Public Works	Countywide†	Winter Storm	7.9	Emergency Services	\$50000.00	HMA	2016-2021	3

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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	overpasses									
99.0027†	Implement a voluntary program of flood protection and property acquisition and relocation for high-risk residences and repetitive loss properties. Survey property owners to determine interest and assess cost	Planning	Countywide†	Flooding	2.7	Prevention; Public Education and Awareness	\$5000.00	HMA, FMA, Local	2016-2021	9
99.0028	Coordinate and provide educational outreach on mitigation strategies the private sector can take to reduce or eliminate the impact of hazards of their services and infrastructure. Opportunities to educate Atlanta-Fulton County Emergency Management Agency's (AFCEMA) private sector partners include conferences, AFCEMA website, and presentations	Planning	Countywide†	All hazards	3.1 3.3 3.6	Public Education and Awareness	0	In house staff and time	2016-2021	12



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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0029	Support resiliency of the County's private sector through information sharing, partnership building, training and education on mitigation principles and the AFCEMA Hazard Mitigation Plan	Planning	Countywide†	All Hazards	3.1 3.2 3.4	Public Education and Awareness	0	In house staff and time	2016-2021	11
99.0030	Establish pre-arranged memoranda of understanding (MOU) for facility sharing following disaster, and other equipment sharing. Establish cooperative assistance agreements	EMA	Countywide†	Flooding; Severe Weather; Tornadoes; Tropical Systems	1.6	Emergency Services	0	In house staff and time	2016-2021	8
99.0031†	Develop and implement plans to prevent flooding of water and waste water facilities	Public Works	Countywide†	Flooding	1.5 1.8	Prevention	0	In house staff and time	2016-2021	8
99.0032	Participation in the National Weather Service's annual Flood Awareness Week	Planning	Countywide†	Flooding	7.4	Public Education and Awareness	0	In house staff and time	2016-2021	11
99.0033	Participation in the National Weather Service's annual Winter Weather Awareness week	Planning	Countywide†	Winter Storms	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	11

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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0034	Continue to participate in the National Oceanic and Atmospheric Administration (NOAA) weather radio program to distribute weather radios to vulnerable populations and high congregate areas	Police/Fire	Countywide†	Tornadoes; Severe Weather; Winter Storms; Flooding	7.8	Emergency Services	\$10000.00	HMA	2016-2021	6
99.0035	Sponsor educational programs for seniors to provide instruction for accessing government websites for preparedness information	Planning	Countywide†	All Hazards	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	11
99.0036	Continue to make presentations in the school system to educate students regarding natural hazards and preparedness	Planning	Countywide†	All Hazards	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	12
99.0037	Highlight and emphasize disaster preparedness and promote Ready.gov on local government cable channels during National Disaster Preparedness Month	Police/Fire	Countywide†	All Hazards	7.3 7.7	Public Education and Awareness	0	In house staff and time	1 – 3 years	12

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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0038	Increase jurisdictional participation in annual dissemination of flooding information and awareness to all residents as well as flood plain information to people and businesses in the flood plain	Planning	Countywide†	Flooding	7.2 7.3	Public Education and Awareness	\$5000.00	HMA, FMA, Local	2016-2021	13
99.0040	Increase participation by jurisdictions in the Storm Ready program to become Storm Ready Partners	Planning	Countywide†	Severe Weather; Tropical Systems; Flooding	7.3	Prevention	0	In house staff and time	2016-2021	10
99.0043	Increase participation by jurisdictions to implement water restrictions and promote public education and awareness through rebate/voucher programs for low flow	Public Works	Countywide†	Drought	3.1 5.1 5.6	Prevention	0	In house staff and time; partnerships with private sector	2016-2021	12
99.0044	Continue to implement and enforce dam maintenance ordinances throughout all jurisdictions	Public Works	Countywide†	Dam Failure	6.6	Prevention	0	In house staff and time	2016-2021	15

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Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0045	Continue to implement ordinances and/or comprehensive planning policies prohibiting new development in the 100 year floodplain	Planning	Countywide†	Flooding	4.5	Prevention	0	In house staff and time	2016-2021	14

Union City

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
50.0001	Oakley Industrial Boulevard catch basins repair	Union City	Department of Public Works	Flooding	1.2	Structural Project	\$175,000	HMA, FMA, Local	2016-2021	8
Comments: Project to address flooding and stormwater runoff by construction of pipe and drainage structures.										
50.0002	Royal South Parkway tire cleanup around lake.	Union City	Department of Public Works	Flooding	6.1	Engineering	\$10,000-\$15,000	HMA, FMA, Local	2016-2021	13
Comments: Project to address flooding and stormwater runoff as well as assist in controlling mosquito population by construction of pipe and drainage structures.										
50.0003	Mall Boulevard and Londerry Way	Union City	Department of	Flooding	6.8	Structural Projects	\$125,000	HMA, Local	2016-2021	9

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Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
	sinkhole repair		Public Works							
Comments: Project to address flooding and stormwater runoff by construction of pipe and drainage structures.										
50.00004	Improvements to drainage along roadways	Union City	Department of Public Works	Flooding	1.2	Structural Projects	\$225,000	HMA, FMA, Local	2016-2021	12
	Comments: Projects to address flooding and stormwater runoff by construction of pipe and drainage structures: Locations already identified include but are not limited to locations along the following: Alexander Street and Roosevelt Highway, Lester Road, Westbrook and McKinley Street, Shannon Boulevard, and Dodson Road.									
50.00004	Dredge Windham Creek that runs through the City to be wider and deeper to increase volume	Union City	Department of Public Works	Flooding; Severe Weather; Tropical Systems	6.2	Structural Projects	\$2M	HMA, Local	2016-2021	12
	Comments: Current creek capacity is insufficient. There is an increase volume directed towards it as a result of urbanization. The speed and volume of the flow causes erosion and exposes drainage pipes. NOTE: There are no populations downstream that would be affected by increased volume.									
50.00005†	Remediation of Upper Dixie Lake Dam (see Appendix E – Studies, Reports, and Supplementary Documents for detailed options)	Union City	Department of Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	\$250,000 to \$1.3M	HMA, FMA, Local	2016-2021	12



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Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
50.0006	Replace early warning system	Union City	Fire Department	Severe Weather; Tornadoes	1.8	Emergency Services	\$75,000	HMA, Local	2016-2021	13
	<p>Comments: City currently employs a siren system, which is older and only reaches a small percent of the population. Need a more targeted system such as Code Red or National Oceanic and Atmospheric Administration (NOAA) weather radios. This will be implemented in collaboration with the recommendations of the evaluation as described in this project.</p>									
50.0007	Improve emergency responder communication interoperability by implementing an 800 MHz radio system	Union City	Fire/City Administration	All Hazards	1.1, 1.8	Emergency Services	\$1M	Local	2016-2021	13
	<p>Comments: Union City is the only jurisdiction in Fulton County, which does not have an 800 MHz radio system. This results in severe interoperability issues with other jurisdictions and leaves the City with no backup system should the current system become damaged or otherwise inoperable.</p>									
50.0008	Emergency backup power for facilities with critical operations: City Hall, Public Services, and IT	Union City	Fire/City Administration	Severe Weather; Winter Storm; Tornadoes; Tropical Systems	2.2, 2.11	Emergency Services	\$62,000	HMA, Local	2016-2021	12



The following information shows the status of mitigation actions identified in the previous HMP.

Table 6.4. Status of Previously Identified Mitigation Actions

Alpharetta

Jurisdiction	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Alpharetta	Webb Bridge Park – Erosion Control and Stream Bank Restoration	Public Works	No Progress	50% complete – one stream restoration done, to water quality ponds added, a third pond to be built 2015-2016	Include in 2016 HMP	Include in 2015 plan – do not change language.
Alpharetta	Satellite Storage Facility for sand and salt	Public Works	Complete	100% Complete	Discontinue	Remove from the plan as this project is complete.
Alpharetta	Purchase City wide notification system	Public Safety	Complete	100% Complete	Discontinue	Remove from the plan as this project is complete.
Alpharetta	Purchase lighting detection equipment for public parks	Recreation and Parks	Complete	100% Complete	Discontinue	Remove from the plan as this project is complete.
Alpharetta	Purchase additional Community Emergency Response Team (CERT) equipment	Public Safety	Complete	100% Complete	Discontinue	Remove from the plan as this project is complete.
Alpharetta	Replace early warning software	Public Safety	In Progress	This is an ongoing project	Include in 2016 HMP	This software will be updated every 5 years.
Alpharetta	Replace outdoor early warning equipment	Public Safety	In Progress	This is an ongoing project	Include in 2016 HMP	This will be an ongoing project.



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Jurisdiction	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Alpharetta	Satellite storage facilities for sand and salt	Public Works	Complete	100% Complete	Discontinue	Remove from the plan as this project is complete.
Alpharetta	Variable message boards	Public Safety and Public Works	In Progress	50% Complete Some equipment was purchased. Still trying to obtain more portable electronic signs.	Include in 2016 HMP	Public Safety Traffic Division would like to purchase two more electronic portable signs.

Atlanta

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0023	Improve storm water drainage capacity and design in the area of Piedmont and Auburn Ave to allow better tie in to the Claire Creek overflow	DWM	No Progress	Lack of funding	Include in 2016 HMP	Secure funding
05.0024	Station 21: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	The generator for Station 21 has not been replaced and is not scheduled to be replaced this year.	Include in 2016 HMP	Completion of hardening measures to improve wind and impact resistance.
05.0025	Station 8: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	Generator is currently being replaced.	Include in 2016 HMP	Completion of hardening measures to improve wind and impact resistance.



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0026	Station 28: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	Complete	Station 28 is a new station and all improvements are completed. Construction standards used for building Fire Station 28 are consistent with/met hardening requirements	N/A	N/A
05.0027	Station 1: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	Generator has not been replaced and was not one of the stations scheduled to be replaced this year.	Include in 2016 HMP	Completion of hardening measures to improve wind and impact resistance.
05.0028	Stations 9, 20, 22, & 25: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	Only Station 9's generator was replaced with a 60kw natural gas generator.	Include in 2016 HMP	Completion of hardening measures to improve wind and impact resistance at Stations 9, 20, 22, & 25. Replace generators at Stations 20, 22, & 25.
05.0029	Improve wind resistance of roof to the Maddox Park building which houses fleet operations. Roof is not wind rated	OEAM/ DPR	In Progress	OEAM/ DPR assessing the roof at Maddox Park building to determine if the roof will be replaced. Numerous repairs were made in FY12, 13 &14	Include in 2016 HMP	OEAM/ DPR assessing the roof to determine if it will be replaced
05.0030	Build retaining structure at the solid waste landfill area to prevent	DPW	Complete	N/A	N/A	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0031†	further slope and erosion damage R.M. Clayton Waste Water Treatment Plan: Flood-proof the plant through raising the height of the banks	DWM	No Progress	Project put on hold. not funded	Include in 2016 HMP	Projected funded in FY17
05.0032	Piedmont Park natural creek bank restoration and stabilization by reducing slopes and burying tree logs that are natural features	DWM	Complete	Project Completed	N/A	N/A
05.0033	Acquire generator for emergency power for Fire Department Headquarters Building	OEAM	In Progress	Confirmation required of power generation and UPS technical specifications used when PSH was built to verify necessity/requirement for upgrade.	Include in 2016 HMP	Verification of upgrade requirement.
05.0034	Retrofit old window glass at the Fire Department Headquarters building for increased impact resistance	OEAM	In Progress	Confirmation required for technical specifications used for windows when PSH was built to verify necessity/requirement for upgrading windows.	Include in 2016 HMP	Verification of upgrade requirement.
05.0035	Acquire generator for emergency power for Fire Stations	OEAM/AFRD	In Progress	Installation of replacement generators with new energy efficient NG 60KW generators has begun. 11 of the 40 stations are	Include in 2016 HMP	Replace the generators at the remaining stations.



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0036	Retrofit bay doors of Fire Stations	OEAM	In Progress	currently replaced. No doors have been retrofitted. The cost to retrofit a door is \$20,000 – \$40,000 each. Only 3 of our stations (13, 18, & 28) have bay doors that are hurricane / tornado rated, soon to be four (Station 7).	<i>Include in 2016 HMP</i>	Completion of external funding/budget analysis, review, and approval process to continue/complete retro-fitting bay doors.
05.0037	Retrofit All Fire Stations with Lightning Rods	OEAM	No Progress	Research and analysis to determine functional and technical requirements.	<i>Include in 2016 HMP</i>	Research and analysis (feasibility study).
05.0038	Place Warning Sirens in Residential Areas	AFRD	No Progress	Research and analysis to determine functional and technical requirements for the procurement, installation, operation (policy & procedures), and maintenance of and siren audible and voice activated system.	<i>Include in 2016 HMP</i>	Research and analysis (feasibility study).
05.0039	Acquire generator for emergency power for Police Facilities	APD	No Progress	Cost estimates developed Obstacles – lack of funding	<i>Include in 2016 HMP</i>	Plan for immediate smaller rollout of the main precincts in FY17.
05.0041†	Relocate SWAT Offices & Storage, Classrooms, Ranger Offices &	APD	No Progress	Lack of funding Not priority in facility renovation listing.	<i>Include in 2016 HMP</i>	Include in FY17 CIP plan request.



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0042†	Storage, Gym, Explosive Bldg, and Equipment Facility at 1500 Key Rd outside of Floodplain Relocate Firing Range Facility at 1500 Key Rd outside of Floodplain	APD	No Progress	Lack of funding Not priority in facility renovation listing.	<i>Include in 2016 HMP</i>	Required amount adjusted to \$2,125,000. Include in FY17 CIP plan request.
05.0043	Site at 1500 Key Road includes SWAT, flooding of the road severely impacts ability to respond. Multiple pieces of critical tactical equipment are located there as well as the Police Firing Range	DPW/APD	No Progress	Lack of funding	<i>Include in 2016 HMP</i>	Required amount adjusted to \$1,500,000. Include in FY17 CIP plan request.
05.0044	Install traffic warning signs on at all road crossing at creeks and streams that are submerged during a 100 & 500 year flood or greater.	DPW	No Progress	Lack of funding	<i>Include in 2016 HMP</i>	Install traffic warning signs at all road crossing at streams that are flooded during a 100 year flood or greater.
05.0045	Install generators at Public Work Facilities involving 25 sites involving Fueling Operations for the City, Operations, and Vehicle Maintenance	DPW	In Progress	FY 15-16 OEAM received 30.5M to address life safety items which will address generators and roof repairs.	<i>Include in 2016 HMP</i>	Implement work via City Wide procurement program.
05.0046	Raise roadway & Structure by 3.3 ft. at Pryor Rd. Culvert at North Fork of South River	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0047	Raise roadway and structure by 17 ft. at Thornton St. Culvert at	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	North Fork of South River					
05.0048	Raise roadway and structure by 9.3 ft. at Arthur Langford Jr. Pl. at North Fork of South River	DPW	No Progress	Lack of funding	Discontinue	N/A
05.0049†	Raise roadway by 2.5ft at Macon Dr at South Fork of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0050†	Raise roadway and structure by 5.5ft. at Lakewood Raceway – Southern Leg at Middle Branch of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0051†	Raise roadway and structure by 4 ft. at Bohler Rd. at Peachtree Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0052†	Raise roadway and structure by 2 ft. at Northside Drive at Peachtree Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0052† (53?)	Raise roadway and structure by 4 ft. at Northwest Dr. at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0054†	Raise roadway and structure by 3.3 ft. at Sanford Dr. (AKA Kerry Cir.) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0055†	Raise roadway and structure by 5 ft. at Gun Club Park Bridge at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0056†	Raise roadway and structure by 8 ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0057†	Raise roadway and structure by 6.5ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0058†	Raise roadway and structure by 5 ft. at Burbank Dr. at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0059†	Raise roadway and structure by 9 ft. at Sharon St at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0060†	Raise roadway and structure by 8 ft at Windsor Pkwy. at Nancy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0061†	Raise roadway and structure by 2 ft. at Peachtree Dunwoody Rd. at Nancy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0062†	Raise roadway and structure by 3.2 ft. at Great Southwest Pkwy at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0063†	Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – EB at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0064†	Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – WB at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0065†	Raise roadway and structure by 4 ft. at Fairburn Rd at North Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0066†	Raise roadway and structure by 3.5 ft. at Benjamin E. Mays Dr. Rd. at North Uttoy	DPW	No Progress	Lack of funding.	Discontinue	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	Creek					
05.0067 [†]	Raise roadway and structure by 2.2 ft. at Brownlee Rd. at North Utoy Creek	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0068 [†]	Raise roadway and structure by 11.2ft at Sandy Creek Rd	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0069 [†]	Raise roadway and structure by 6 ft. at South River Industrial Blvd. at Federal Prison Creek	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0070 [†]	Raise roadway and structure by 11ft at Woodland Ave. at In trenchment Creek	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0071 [†]	Raise roadway and structure by 3.2 ft. at Danforth Rd. at Niskey Creek	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0072 [†]	Raise roadway and structure by 6 ft. at Niskey Lake Rd.	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0073 [†]	Raise roadway and structure by 2 ft. at Boulder Park Dr. at Wildwood Lake Tributary	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0074	Raise roadway and structure by 2.2 ft. at Branch Rd. at Wildwood Lake Tributary	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A
05.0075 [†]	Raise roadway and structure by 2.2ft at Hasty Place at Mozley Park Tributary	DPW	No Progress	Lack of funding.	<i>Discontinue</i>	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0076†	Raise roadway and structure by 1.5 ft. at Hightower Rd. at Center Hill Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0077†	Raise roadway and structure by 2 ft. at Donald Lee Hollowell Pkwy (AKA Bankhead Hwy) at Center Hill Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0078†	Raise roadway and structure by 5 ft. at Bolton Rd. at Whestone Creek	DPW	No Progress	Lack of funding..	Discontinue	N/A
05.0079†	Raise roadway and structure by 6.5 ft. at Adams Dr at East Whestone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0080†	Raise roadway and structure by 2 ft. at Dawn Ln. at East Whestone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0081†	Raise roadway and structure by 6 ft. at Sumter St. at East Whestone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0082†	Raise roadway and structure by 2.5 ft. at Connelly Dr at Headland Branch	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0083†	Raise roadway and structure by 2 ft. at Headland Dr. at Headland Branch	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0084	Build two separate 2,500 tons sand domes for storage of materials during cold and icy weather	DPW	Complete	N/A	N/A	N/A



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0085	Build retaining structure at the solid waste landfill area to prevent further slope and erosion damage	DPW	Complete	N/A	N/A	N/A
05.0086†	Raise levee and other work along Chattahoochee River and Peachtree Creek to prevent flood waters from the Chattahoochee River raising into the R.M. Clayton Water Reclamation Center	DWM	No Progress	Project put on hold.	Include in 2016 HMP	Projected funded in FY17
05.0087	Acquire flood prone properties located in the FEMA mapped floodplains throughout the City of Atlanta.	DWM	In Progress	12 properties acquired with HMGP 1758 funds.	Include in 2016 HMP	Acquire additional homes, as identified
05.0088†	Elevate flood prone properties located in the FEMA mapped floodplains throughout the City of Atlanta	DWM	No Progress	No feasible program for city to implement on private property.	Discontinue	N/A
05.0089	Educate the public about the risk of flooding and the importance of obtaining flood insurance	DWM	In Progress	Flyers and newsletters, Information on DWM website. Continue to update website as needed.	Include in 2016 HMP	Comprehensive outreach plan underdevelopment
05.0090	Implement program for natural/ vegetative stabilization of stream banks (average 1300 feet per year) to secure infrastructure	DWM	No Progress	Project put on Hold	Include in 2016 HMP	Project slated for Re-Bidding FY16
05.0091	Relocate Parks NE and SE District Maintenance Depots	DPR	In Progress	Additional space for welding and small equipment. Looking	Include in 2016 HMP	DPR is looking for alternative sites that may allow for



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0092	Tree Maintenance Program in Hazard and Urbanized Areas	DPR	In Progress	Preventative maintenance plan for ROW could require significantly higher funding if implemented citywide. Emergency vehicles for Forestry could be purchased – knuckle boom - \$200,000	Include in 2016 HMP	DPR looking for funding to purchase additional knuckle booms and other pertinent equipment
05.0093	Reconstruct roofs and generators on shelter facilities	DPR	In Progress	Generators located at Ben Hill, Old Adamsville and Adamsville. All need upgrades to produce full service power restoration, generators needed at additional sites: Central, Rosel Fann, Bessie Branham, Peachtree Hills 7,500,00+	Include in 2016 HMP	Preventative maintenance has been completed on generators currently located at various DPR locations. Upgrades are needed to provide additional emergency service to DPR facilities.
05.0094	Implement creek netting program to prevent damming of creeks and stream by debris and improve water quality by reducing the effect of	DWM	No Progress	Funding or staffing not available	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	pollutants entering the water					

Chattahoochee Hills

Jurisdiction	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Chattahoochee Hills	Develop Stormwater Plan	Planning/Dev	No Progress	<ol style="list-style-type: none"> 0% complete Lack of trained staff and funding 	Include in 2016 HMP	Identify as 2016 goal to admin team and planning/dev dept. Develop Stormwater Plan
Chattahoochee Hills	Harden/retrofit City hall	City Manager and Public Works	In Progress	<ol style="list-style-type: none"> Generator acquired and partial cost study done Surplus/donation of equipment 	Include in 2016 HMP	Identify as 2016 goal and establish time-line. Harden/retrofit City hall.
Chattahoochee Hills	Improve storm water run-off on caps ferry	Public Works	No Progress	<ol style="list-style-type: none"> 0% complete Lack of trained staff and funding 	Include in 2016 HMP	Develop plan utilizing outside contractor/advisor during 2016. Improve storm water run-off on caps ferry.
Chattahoochee Hills	Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator	Fire Chief	In Progress	<ol style="list-style-type: none"> Generator acquired Surplus/donation of equipment 	Include in 2016 HMP	Identify as 2016 goal and establish funding during fy2016 budget along with project time-line. Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator.
Chattahoochee Hills	Acquire abandoned subdivisions bear creek and arbor reserve	City Manager, Planning Dir	No Progress	<ol style="list-style-type: none"> 0% complete No plan established 	Discontinue	Acquire abandoned subdivisions bear creek and arbor reserve.



College Park

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
15.0001†	Replace 3 box culvert on Camp Creek Parkway with a more open design	GDOT	No Progress	0% GDOT lack of concern for storm water	Include in 2016 HMP	Seek Federal aid.
15.0002	Storm sewer improvement project on Cambridge, Walker, Mercer, Lyle, and Vesta Avenues	College Park	In Progress	Walker Avenue and Mercer Avenue effectively complete. NA Storm Water Utility Fund	Include in 2016 HMP	Cambridge, Lyle, and Vesta to remain.
15.0003†	Increase flow-through capacity of box culvert on Park Terrace	College Park	No Progress	0 % Funding	Include in 2016 HMP	House to the east has been flooded and tenant has health issues.
15.0004†	Increase flow-through capacity of box culvert the intersection of Harris and Rugby Ave.	College Park	No Progress	0 % Funding	Include in 2016 HMP	Rugby Avenue has been topped repeatedly presenting a safety concern.
15.0005	Increase capacity of City-owned detention ponds	College Park	No Progress	0% Funding and political motivation.	Discontinue	NA Construction further upstream is more acceptable.
15.0006	Replace traffic lights with more weather resistant mast arms	College Park	In Progress	1 % NA Power Department	Include in 2016 HMP	Lesley Drive and Herschel Road will probably be next.
15.0007	Retrofit roof at public works facility on Harvard Rd; install surge protection; install emergency generator	College Park	In Progress	1 % NA General fund	Discontinue	NA Will complete in 6 months.
15.0008	Upgrade culvert on Park Terrace (redundant)	College Park	No Progress	0% Funding	Discontinue	NA Redundant with 15.0003.
15.0009	Retrofit the roof at the Power Department Building; replace generator	College Park Power Department	No Progress	0% Funding	Include in 2016 HMP	Wording is OK.



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
15.0010	Clean up and make minor modifications to existing detention structures along Fur Creek in Greenspring Subdivision	College Park	No Progress	0% Funding	Discontinue	NA Redundant with 15.0005.
15.0011	Modify Fur Creek structure to regulate flow	College Park	No Progress	0 % Funding	Include in 2016 HMP	Install south of Herschel Park Drive.
15.0012	Modify and enlarge existing detention pond on Hopewell Road	College Park	No Progress	0% Funding	Discontinue	NA At Capacity.
15.0013	Construct new detention pond to regulate southwest branch of Fur Creek	College Park	No Progress	0% Funding	Include in 2016 HMP	More cost efficient than 15.0010 or 15.0012.
15.0014	Improve Edison/Sullivan Road drainage through the addition of new storm water piping	College Park	No Progress	0 % Funding	Include in 2016 HMP	See wording in Table 6.3
15.0015	Improve capacity of Janice Drive storm drain	College Park	No Progress	0 % Funding	Include in 2016 HMP	Wording is Ok.

East Point

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0001	Coordinate with Department of Transportation (DOT) regarding improved conveyance capacity and drainage on Camp Creek Pkwy between Washington Rd and Desert Dr	DPW	No Progress	1. No activity 2. Contact Georgia Department of Transportation (GDOT) for update	Include in 2016 HMP	The project will be reviewed with GDOT for prioritization 2016 - 2021



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0002	Improve drainage capacity on Norman Berry Rd	DPW	In Progress	1. Evaluation and monitoring area during rainfall event – funds 2. FY2016, Storm water infrastructure inventory project to identify structure	Include in 2016 HMP	1. After evaluation is complete in FY16 budget year, project schedule when funds available
20.0003	Improve drainage capacity in the 800 block of Cleveland Ave	DPW	In Progress	1. Culvert improvement complete w/erosion Improvement @ 871 Cleveland parking lot Area – Local funds	Discontinue	1. Monitor and evaluate stream flow @ location mentioned
20.0004	Improve drainage design in the area of Martin St. and Norman Berry due to insufficient infrastructure capacity	DPW	In Progress	1. Nothing has been complete 2. Infrastructure inventory project will assist w/evaluation of flooding in the area – local funds	Include in 2016 HMP	1. Monitor and evaluate stream flow @ location w/potential of project in the future
20.0005	Improve retaining wall at the Fire Station due to slope	DPW	Complete	1. 100% Complete	Discontinue	1. Project complete
20.0007	Drainage improvements in the Sun Valley/Camp Creek Watershed area	DPW	No Progress	1. Evaluation of storm water system in progress and evaluation of area for potential project in the future; local funds	Include in 2016 HMP	1. After evaluation and Infrastructure inventory. 2. Evaluate additional work
20.0008	Drainage improvements at Lester St & Spring Ave. in the Utoy Watershed	DPW	No Progress	1. Evaluation of condition during rain event and downstream. Local funding	Include in 2016 HMP	1. Infrastructure inventory to evaluate necessity of additional work
20.0009	Drainage improvements at Randall St & East Forrest Ave	DPW	In Progress	1. Drainage in area have been cleaned and Repairs of broken pipe. 2. Local funding for inventory of infrastructure	Include in 2016 HMP	1. RFP will be issued for construction



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0010	Culvert improvements at 3030 & 3042 Dodson Dr.	DPW	In Progress	1. Site plan approved by State Local funding	Include in 2016 HMP	1. RFP will be issued for construction
20.0011	Drainage Improvements in the Jim's Creek area	DPW	In Progress	1. No progress w/any improvement.	Include in 2016 HMP	Will move to later date for evaluation/2017
20.0012	North Martin St. catch basin replacement	DPW	No Progress	Evaluation of current drainage in the area to determine funding source. Combine with project, 20.0012 and 20.0013	Discontinue	Project number 20.0013 Address project 20.0012
20.0013	North Martin St. regional storage improvement	DPW	No Progress	1. No activity on project 2. Evaluation will be performed in 2016	Include in 2016 HMP	1. Evaluation of project
20.0014	Calhoun Ave pipe replacement	DPW	No Progress	1. No activity	Include in 2016 HMP	1. Evaluation of project
20.0015	South River unnamed tributary 3 improvements	DPW	No Progress	1. No activity	Include in 2016 HMP	1. Evaluation of project
20.0016	Pipe replacement on Norman Berry Dr, near Maria Head Terrace	DPW	In Progress	1. Storm drain pipe let clean 2. Headwall maintenance	Include in 2016 HMP	1. Evaluation of potential issue
20.0017	Maria Head Terrace Berm Construction	DPW	No Progress	1. No activity 2. No proof of project required	Discontinue	1. No information of issue. 2. Discontinue
20.0018	Georgia Power Pond	DPW	In Progress	1. No activity	Include in 2016 HMP	1. Evaluation in 2015-2016



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0019	Meadow Lark Lane Pipe Replacement	DPW	In Progress	1. No activity	<i>Include in 2016 HMP</i>	1. Evaluation of project
20.0020	Grove Ave. pipe replacement	DPW	No Progress	1. No progress	<i>Include in 2016 HMP</i>	1. Evaluation of project

Fairburn

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
25.0001	Improve drainage at the bridge at Rivertown Road and Malone by adding drain to tie into the storm water drainage system.	Public Works/Engineering Department	In Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.
25.0002	Acquire the upstream property (currently privately owned) on Rivertown Road to provide City access to clean and prevent debris in stream.	Engineering Department	No Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.
25.0003	Acquire privately owned agriculture land to prevent further development that is consistent with current land use policies.	Engineering Department	No Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.



Hapeville

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
30.0001	Install surge protection for City Hall which houses server databases	Community Services	In Progress	Will surge protect within 90 days	Include	
30.0002	Install surge protection and emergency generator at the Public Services building	Community Service	No Progress	Not needed at this building	Discontinue	
30.0003	Install surge protection at the Police Station which houses its own database servers	Community Services	In Progress	Will surge protect within 90 days	Include	
30.0004	Install surge protection at Fire Station #2	Community Services	In Progress	Will surge protect in the next 180 days	Include	
30.0005	Install surge protection at the Community Services building	Community Services	Complete	Will surge protect in 180 days	Include	
30.0006 ⁺	Revise site plan review process to ensure that site plan review is part of the interdepartmental plan review process	Community Services	Complete	Reviews are performed by Keck and Wood who provide reports and studies	Include	
30.0007	Acquire 7 parcels located south of Woodrow and west of Wheeler (north of the Lake)	Community Services	No Progress		Discontinue	
30.0008	Perform stream bank stabilization in the stream that flows into the South River	Community Services	Complete	Stabilized known areas	Discontinue	
30.0009	Improve drainage at Claire and Parkway by increasing the size of the underground storm drain line	Community Services	No Progress		Discontinue	



30.0010	Improve drainage in the area of South Central Avenue by increasing the size of the underground storm drain	Community Services	In Progress		Include	West end of S. Central is often prone to flooding and needs to be studied. High Priority
30.0011	Perform curb modification on Oakdale Road, which currently has header rocks. Installation of curb and gutters will improve storm water drainage	Community Services	No Progress		Include	

Johns Creek

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
0001	Signage for severe weather at parks and open spaces	Parks	No Progress	New action for 2016 plan	Include in 2016 HMP	
0002	Develop a Debris Management Plan	JCOEM	Draft under Development	New action for 2016 plan	Include in 2016 HMP	
0003	Debris Removal Contract	JCOEM	Draft under development	New action for 2016 plan	Include in 2016 HMP	Develop and Post RFP



Milton

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
56.0001	Retrofit Fire Station #42 to be more wind, impact resistant, surge resistant; improve emergency power generator	Fire Marshal / EM	In Progress	Already planned for a complete replace.	Discontinue	
56.0002	Implement roadway right of way maintenance program for Birmingham, Freemansville, Hopewell, Bethany, and Providence Roads	Public Works Director / ACM	In Progress	Implemented.	Discontinue	
56.0003	Replace wooden wing walls on bridges with concrete wing walls; perform bank restoration and stabilization	Public Works Director / ACM	In Progress	Currently in progress.	Include in 2016 HMP	See public works bid plan.
56.0004	Continue development of GIS web mapping project to allow for real time information of road and other hazard areas to be avoided	Fire Marshal / EM	In Progress	Limited progress. GIS mapping is more sophisticated, but not comprehensive.	Include in 2016 HMP	No specific plan for this project.
56.0005	Develop campaign strategy to increase participation in Nixel notification program	Fire Marshal / EM	Complete	Tornado sirens and CodeRed system in place.	Discontinue	

Mountain Park

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
35.0001	Convert open storm water drainage ditches to underground piping system in areas where the ditching system passes the roadway	Mountain Park	In Progress	0% complete Budget constraints	Include in 2016 HMP	Improve culvert system.
35.0002	Improve storm water drainage ditches in areas that do not cross roadways to increase drainage system capacity	Mountain Park	In Progress	City has a plan identifying areas of concern. Budget is a constraint.	Include in 2016 HMP	Improve current culvert system.



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
35.0003	Acquire generator for Emergency Operations Center (EOC)/Fire Station building	Mountain Park	In Progress	0% complete	Include in 2016 HMP	Continue in long term planning.
35.0004	Install surge protection equipment and measures for the EOC/Fire Station	Mountain Park	No Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
35.0005†	Flood proof Fire Station including, raising generators and other mechanicals, installing drainage pumps, waterproof foundation and seal foundation walls	Mountain Park	In Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
	Acquire property to relocate flood-prone Fire Station	Mountain Park	In Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
35.0006	Improve roadbed across lower dam to provide secondary access into the City	Mountain Park	Complete	City paved dam access to provide emergency ingress/egress.	Discontinue	Project complete.
35.0007	Enhance physical protection of City Hall for increased high wind resistance	Mountain Park	In Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
35.0008	Acquire property at the corner of Cardinal Rd & Mountain Park Rd to relocate the City Works building	Mountain Park	No Progress	Property no longer available.	Discontinue	Property no longer available.
35.0009	Improve capacity of Lake Garrett by dredging accumulated sedimentation	Mountain Park	No Progress	0% complete. Budget constraints. Estimated cost \$1.4 million.	Include in 2016 HMP	Continue in long term planning.
35.0010	Improve capacity of Lake Cheerful by dredging accumulated sedimentation	Mountain Park	No Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
35.0011†	Harden spillway structure between Lake Cheerful and Lake Garrett to	Mountain Park	No Progress	0% complete. Budget constraints	Include in 2016 HMP	Continue in long term planning.

Palmetto

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
40.0001	Acquire generator for emergency power for Fire Department Headquarters Building	Fire Department	No Progress	No Funding Available	Include in 2016 HMP	
40.0002	Retrofit glass old window glass at the Fire Department Headquarters building for increased impact resistance	Fire Department	No Progress	No Funding Available	Include in 2016 HMP	
40.0003	Acquire generator for emergency power for Fire Station	Fire Department	No Progress	No Funding Available	Include in 2016 HMP	
40.0004	Retrofit bay doors of Fire Station	Fire Department	No Progress	No Funding Available	Include in 2016 HMP	
40.0005	Retrofit current flat roof of City hall for improved wind loading capacity	City Administration	No Progress	No Funding Available	Include in 2016 HMP	
40.0006	Acquire generator for emergency power for Police Station	Police Department	No Progress	No Funding Available	Include in 2016 HMP	
40.0007	Retrofit Police Station for improved wind loading capacity	Police Department	No Progress	No Funding Available	Include in 2016 HMP	



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
40.0008	Harden Community Center, which functions as a first responder shelter. Reinforce roof for wind loading capacity as well replace windows for wind resistance	City Administration	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0009†	Acquire stream in Palmetto Oaks to preserved as green space and improve flood plain management	City Administration	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0010	Acquire land on Mixon Ave to prevent further dense development as part of their green space expansion program	City Administration	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	

Roswell

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
45.0001	Reroute Azalea Dr from current location to a more elevated location on hilltop	Roswell DOT	No Progress	Project will not be done	<i>Discontinue</i>	
45.0002†	Elevate Willeo Rd which becomes submerged during heavy rains and floods	Roswell DOT	No Progress	Project will not be done	<i>Discontinue</i>	
45.0003	Improve culvert capacity in the Roswell Area Park to reduce flooding to allow residents and first responders ingress and egress from the area	Parks & Rec	Complete	Completed with local funds	<i>Discontinue</i>	
45.0004	Install surge protection at the City fuel island	Public Works	No Progress	No local funding	<i>Include in 2015 HMP</i>	\$100,000



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
45.0005	Improve basin structure to the inland areas of Oxbo Rd to protect against turbulent water flows such as with regional detention areas and bank stabilization and restoration below the intake	Public Works	In Progress	Structural work completed but the project has not been completed yet	Include in 2015 HMP	\$1M
45.0006	Retrofit roof of the 911 Center which is susceptible to damage from high winds and water leakage. Retrofit glass with more impact resistant glass	Administration	No progress	FY 2016 Approved Capital Improvement Plan funding. \$170,000	Yes	\$170,000
45.0007	Perform stream stabilization and repair erosion along stream corridors	Public Works	No Progress	No local funding	Yes	Add to the new HMP Plan
99.0001†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in the flood plain; improve drainage in the area	Public Works	No Progress	No local funding	Discontinue	Need estimate and submit application for funding.

Sandy Springs

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
59.0001†	Improve infrastructure and capacity at Riverside Dr. and North Harbor	PW	Complete		Discontinue	



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
59.0002	Purchase approximately 45 flooded homes in the Colewood Creek Basin	PW	No Progress	2% complete. With the aid of federal/state/local dollars (HMGP/GEMA/local), the City has purchased one property in Colewood Creek Basin (6285 Riverside Pkwy). Progress was delayed due to the homeowners no longer interested in selling to the City.	Include in 2016 HMP	
59.0003	Purchase approximately 35 flooded houses in Pine Forest along Nancy Creek Basin	PW	In Progress	25% complete. With the aid of federal/state/local dollars (HMGP/PDMP/GEMA/local), the City has purchased nine properties within the Nancy Creek Basin, including five homes in Pine Forest. Progress was delayed due to the homeowners no longer interested in selling to the City. Currently, the City is designing in a park/greenspace to occupy the space remaining after demolition.	Include in 2016 HMP	
59.0004	Acquire approximately 10 homes in the North Mill area and convert to open space	PW	In Progress	10% complete. With the aid of federal/state/local dollars (HMGP/GEMA/local), the City has purchased one home in the North Mill area. Progress was delayed due to the homeowners no longer interested in selling to the City.	Include in 2016 HMP	



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
59.0005	Reinforce old culverts with slip line	PW	No Progress	0% No reported update	Include in 2016 HMP	
59.0006	Rehabilitate City-owned detention ponds which have previously breached	PW	No Progress	0% Research N/A	Include in 2016 HMP	
59.0007	Build retaining wall on Morgan Falls Rd where erosion is occurring where slope crosses the roadway and has lake below	PW	No Progress	1. 0% 2. Planning, Right of Way issues, Utilities 3. N/A	Include in 2016 HMP	
59.0008	Build retaining wall on Lake Forest Rd to reduce debris sliding onto the roadway	PW	In Progress	Sandy Springs has spent time sloping the bank back, but no wall was built.	Include in 2016 HMP	

Unincorporated South Fulton County

Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
55.0001	Acquisition of homes in the Old National area to implement a regional detention area	Public Works	No Progress	N/A	Discontinue	N/A – no funding sources
55.0002	Enhance pump stations at the older treatment facilities in Bear Creek	Public Works	No Progress	N/A	Discontinue	N/A – not required
55.0003	Retrofit Fire Station #7 on Buffington Rd to be more wind and impact resistant	Fire	No Progress	N/A	Discontinue	N/A not necessary. Station was re-built.
Countywide						



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Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0002	Increase participation in the NFPA Firewise Communities program to educate communities in steps to reduce risk to fires	Fire	No Progress	N/A	Discontinue	N/A – Fire wise concentrates on Forest and grassland fires; not priorities
99.0003†	Increase participation in the NFIP's Community Rating System including interjurisdictional coordination to ensure maximum use of shared credit for eligible activities; may include bi-annual interjurisdictional meeting to review shared credit activities	Planning	Complete	We are certified CRS Community Level 8	Discontinue	Complete
99.0004†	Train local flood plain managers through programs offered through the State and FEMA's training center	Planning	In Progress	Continually seeking education enhancement of staff	Include in 2016 HMP	Active
99.0005	Participate in the "Turn Around Don't Drown" program by acquiring signs in known flash flood locations	Planning	In Progress	Working to evaluate costs/benefits	Include in 2016 HMP	Active
99.0006†	Enact and enforce a storm water management ordinance that maintains pre-development runoff rates for major developments	Planning	Complete	100 percent complete	Discontinue	Completed
99.0007†	Conduct planning and engineering studies to determine feasibility of regional detention structures or sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding	Engineering	No Progress	N/A	Discontinue	N/A
99.0008†	Conduct multijurisdictional storm water modeling project. Develop comprehensive watershed-scale storm management plans. Multi-jurisdictional high priority areas should be identified where watershed level solutions projects could be applied	Engineering	No Progress	N/A	Discontinue	N/A
99.0009†	Evaluate the need for an ordinance to govern inspection and maintenance of private fire hydrants that are maintained within gated communities to prevent	Fire	No Progress	N/A	Discontinue	N/A



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Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	hitting non-functioning hydrants					
99.0010	Standardize older hydrants to the new 5" adapter specification to allow better connectivity to fire engines	Fire	No Progress	N/A	Discontinue	N/A
99.0011†	Update comprehensive plans, short term work program, and capital improvements program (6-20 years) for future growth and development that integrate findings and recommendations of this hazard mitigation plan. Consider the addition of a natural hazards element, which includes risk assessment findings of this plan and carries over the goals, objectives, and mitigation measures	Planning	In Progress	Will be completed by November 2016	Include in 2016 HMP	Community meeting in process
99.0012†	Ensure that capital improvement plans include capital projects to implement the natural hazards element of the jurisdiction's comprehensive plan or projects identified in the Mitigation Strategy Section of this plan	Planning	In Progress	Will be completed by November 2016	Include in 2016 HMP	Community meeting in process
99.0013†	Consider updating zoning regulations to require various open space and landscaping standards for land development proposals	Planning	Complete	100 percent complete	Discontinue	N/A
99.0014†	Continue to enforce subdivision construction standards for drainage improvements	Planning	In Progress	Actively enforced	Include in 2016 HMP	Underway
99.0015†	Evaluate building code standards for roof construction to assure protection against wind damage from wind producing events; consider incorporating green roof principles	Engineering	No Progress	N/A	Discontinue	N/A – not a priority
99.0016	Encourage the relocation of existing utility lines underground, and consider local regulations to require placement of all new utility lines underground, were	Planning	Complete	100 percent complete	Include in 2016 HMP	N/A



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Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	feasible					
99.0017	Encourage replacement of traffic signals at major or priority intersections with mast arm design with emergency power; coordinate with State Transportation agencies for state-owned roadways that impact local jurisdictions	Public Safety	In Progress	Part of the Fulton County DPW Transportation Plan	Include in 2016 HMP	Coordination in process
99.0018†	Develop local ordinances and enforcement mechanisms to ensure proper maintenance of privately-owned dams that are within local jurisdictions	Planning	No Progress	N/A	Discontinue	N/A
99.0019	Consider enactment of local ordinances to require community storm shelters or safe rooms with sizeable mobile homes parks, subdivisions, and RV parks	Planning	No Progress	N/A	Discontinue	N/A – lack of RV/Mobile home facilities
99.0020†	Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas, dam inundation areas, disaster events, and comprehensive inventory of critical facilities within all jurisdictions	Planning/GIS	In Progress	Working with GIS/IT to continually update hazard inventory, as known and applicable	Include in 2016 HMP	Underway
99.0021	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS	Planning/GIS	In Progress	Continually updating data sharing/sources	Include in 2016 HMP	Active
99.0022	Work with DNR, NCRS, and local GIS departments to maintain inundation mapping downstream of dams	Planning/GIS	In Progress	Continually updating data sharing/sources	Include in 2016 HMP	Active
99.0023	Evaluate all available notifications systems, including but not limited to, Outdoor Warning Sirens, Reverse 911, Code Red, Nixel, and all other public available systems for Atlanta-Fulton County, including consideration of the	E911	In Progress	Continually coordinating with all affected agencies	Include in 2016 HMP	



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Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	unique geographical location, technical requirements, system types, and operational procedures of each local jurisdiction with sirens. With interjurisdictional capability					
99.0024	Installation of warning and notification systems	E911	In Progress	Continually coordinating with all affected agencies	<i>Include in 2016 HMP</i>	
99.0025	Develop a countywide multi-jurisdictionally coordinated notification plan for alert and notification of hazardous (or potentially hazardous) events	EMA	In Progress	Continually coordinating with all affected agencies	<i>Include in 2016 HMP</i>	
99.0026	Install automatic icing indicators on critical bridges and overpasses	Public Works	In Progress	Coordinating with GDOT	<i>Include in 2016 HMP</i>	Active
99.0027†	Implement a voluntary program of flood protection and property acquisition and relocation for high-risk residences and repetitive loss properties. Survey property owners to determine interest and assess cost	Planning	In Progress	Always actively seeking buyouts when viable	<i>Include in 2016 HMP</i>	Active
99.0028	Coordinate and provide educational outreach on mitigation strategies the private sector can take to reduce or eliminate the impact of hazards of their services and infrastructure. Opportunities to educate AFCEMA's private sector partners include conferences, AFCEMA website, and presentations	Planning/EMA	In Progress	Actively cross-coordinating with EMA	<i>Include in 2016 HMP</i>	Active
99.0029	Support resiliency of the county's private sector through information sharing, partnership building, training and education on mitigation principles and the AFCEMA Hazard Mitigation Plan	Planning/EMA	In Progress	Actively cross-coordinating with EMA	<i>Include in 2016 HMP</i>	Active



Chapter 6: Mitigation Strategy

Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0030	Establish pre-arranged MOUs for facility sharing following disaster, and other equipment sharing. Establish cooperative assistance agreements	Planning/EMA	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0031 [†]	Develop and implement plans to prevent flooding of water and waste water facilities	Public Works-Water	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0032	Participation in the National Weather Service's annual Flood Awareness Week	Public Works	In Progress	In process	Include in 2016 HMP	Will participate in 2016
99.0033	Participation in the National Weather Service's annual Winter Weather Awareness week	EMA	In Progress	Continually coordinating with all affected agencies	Include in 2016 HMP	
99.0034	Continue to participate in the NOAA weather radio program to distribute weather radios to vulnerable populations and high congregate areas	EMA	In Progress	Continually coordinating with all affected agencies	Include in 2016 HMP	
99.0035	Sponsor educational programs for seniors to provide instruction for accessing government websites for preparedness information	Planning/EMA	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	
99.0036	Continue to make presentations in the school system to educate students regarding natural hazards and preparedness	EMA	In Progress	Continually coordinating with all affected agencies	Include in 2016 HMP	
99.0037	Highlight and emphasize disaster preparedness and promote Ready.gov on local government cable channels during National Disaster Preparedness Month	EMA	In Progress	Continually coordinating with all affected agencies	Include in 2016 HMP	
99.0038	Increase jurisdictional participation in annual dissemination of flooding information and awareness to all residents as well as flood plain information to people and businesses in the flood plain	Planning	In Progress	Actively participating in outreach	Include in 2016 HMP	Active
99.0039	Implement outreach campaign to disseminate maps to the public as the maps are updated over the next 18	Planning	Complete	100 percent complete	Discontinue	N/A



Chapter 6: Mitigation Strategy

Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	months					
99.0040	Increase participation by jurisdictions in the Storm Ready program to become Storm Ready Partners	Planning	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0041	Continue to build out development of web-based GIS mapping that allows residents to research and view their floodplain status	Planning	Complete	Complete and available	Discontinue	Done
99.0042†	Increase participation by jurisdictions to develop conservation easement ordinances	Planning	No Progress	N/A	Discontinue	N/A – not a priority;
99.0043	Increase participation by jurisdictions to implement water restrictions and promote public education and awareness through rebate/voucher programs for low flow	Public Works	In Progress	Actively cross-coordinating with Water and Waste Water Authorities on laws and conservation	Include in 2016 HMP	Active
99.0044	Continue to implement and enforce dam maintenance ordinances throughout all jurisdictions	Planning	In Progress	In process	Include in 2016 HMP	Active
99.0045	Continue to implement ordinances and/or comprehensive planning policies prohibiting new development in the 100 year floodplain	Planning	In Progress	In process; In efforts to revise and streamline language. 2017;	Include in 2016 HMP	Active
99.0046	Enhance and/or expand presentations regarding instructions to residents for weather sirens	E911	No Progress	N/A	Discontinue	N/A – not present part of our emergency system notification efforts



Union City

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0001	Replace drainage pipe on Shannon Parkway with bridge	DPW Department of Public Works	Complete	This project was complete.	Discontinue	Complete
50.0002	Improve aging storm water infrastructure on Lester Rd which is circa 1950 and of insufficient capacity for storm water runoff	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics. There has been no recent flooding of Lester Rd. Will continue to monitor and make recommendations based on outcome	Continue	Previous flooding had been caused by blockages in creek bed restricting water flow these obstructions have been removed
50.0003	Elevate areas of Lester Rd where creeks cross the roadway	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics. There has been no recent flooding of Lester Rd. Will conduct a feasibility study to verify if this is a warranted concern	Continue	There are no projects or plans to elevate Lester Road at this time. Lester Rd is not currently experiencing flooding. Determine if proposal is a feasible solution
50.0004	Dredge Windham Creek that runs through the City to be wider and deeper to increase volume	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics.	Continue	Begin Planning and design
50.0005†	Remediation of Upper Dixie Lake Dam (see Appendix E – Studies, Reports, and Supplementary Documents for detailed options)	DPW Department of Public Works	In Progress	This project is slated to be undertaken via stormwater utility funds. Awaiting approval from Mayor and council.	Include in 2016 HMP	Planning and Design



Chapter 6: Mitigation Strategy

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0006	Replace early warning system	Fire Department	In Progress	At present time, we are utilizing social media as well as Nextdoor and Nixle, and our early warning siren, all which are controlled by the Police Department. The siren system is located at the Police Department, which is not always staffed.	Include in 2016 HMP	Even with the utilization of media such as Nixle, and Nextdoor, other methods need to be utilized to provide early warning to citizens and visitors to Union City. Addition of strategically located sirens would enhance the other early warning systems being used currently by Union City, this accompanied by NOAA weather radios would benefit those who are not currently able to access social media.
50.0007	Improve emergency responder communication interoperability by implementing an 800 MHz radio system	Union City	In Progress	This project has progressed in March of 2015 when we began using Fulton County 911 as our dispatch center. Funded through our existing 911 funds. More 800 MHz radios are needed for the fire service.	Include in 2016 HMP	As the current communication system is switching to digital additional radios are needed for both fire and police services, so as to provide a safer work environment by having portable radios for each individual while on duty. Equipment updating is also needed on some of the existing



Chapter 6: Mitigation Strategy

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0008	Emergency backup power for facilities with critical operations: City Hall, Public Services, and IT	Union City	No Progress	Lack of funding to complete project.	<i>Include in 2016 HMP</i>	Our ability to house citizens during power outages is hampered due to lack of buildings with backup power supplies. By equipping some of our strategically placed City facilities with backup generators this need could be met. This project will also provide for continuity of operations.



Chapter 7. Plan Maintenance

Chapter Overview

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

7.1 Federal Requirements for the Mitigation Strategy

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

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

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

7.2 Summary of Plan Updates

Table 7-1 summarizes changes made to the 2010 plan as a result of the 2015-16 plan update process:

Table 7.1. Summary of Plan Changes

Section		Change
7.3	Monitoring, Evaluation, and Updating the Mitigation Plan	Reviewed and verified
7.4	Incorporation of the Mitigation Plan into Other Planning Mechanisms	Reviewed and verified
7.5	Continuing Public Participation in the Plan Maintenance Process	Reviewed and verified

7.3 Monitoring, Evaluating, and Updating the Mitigation Plan

7.3.1 Ongoing Monitoring of the Plan

The Hazard Mitigation Planning Committee’s (HMPC) ongoing review process throughout the year should continually monitor the current status of the mitigation measures scheduled for implementation. Ongoing status reports of each jurisdiction’s progress will be reviewed by the AFCEMA Director and representatives from the HMPC and will include the following information:



- Actions that have been undertaken to implement the scheduled mitigation measure, such as, obtaining funding, permits, approvals or other resources to begin implementation.
- Mitigation measures that have been completed, including public involvement activities.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.
- The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources scheduled in the Mitigation Action Projects presented in Chapter 6 – Mitigation Strategy. In the event modifications to the plan are warranted as a result of the annual review or other conditions, the HMPC will oversee and approve all amendments to the plan by majority vote of a quorum of HMPC members. Conditions that might warrant amendments to this plan would include, but not be limited to, special opportunities for funding or response to a natural or man-made disaster. A copy of the plan amendments will be submitted by AFCEMA to all jurisdictions in a timely manner and filed with GEMA.

7.3.2 Evaluating the Plan

Within sixty days following a significant disaster or an emergency event having a substantial impact on a portion of or the entire Fulton County area, the HMPC will conduct or oversee an analysis of the event to evaluate the responsiveness of the Mitigation Strategy to the event and the effects on the contents of the Risk Assessment. The Risk Assessment should evaluate the direct and indirect damages, response and recovery costs (economic impacts) and the location, type, and extents of the damages. The findings of the assessment should determine any new mitigation initiatives that should be incorporated into this plan to avoid similar losses from future hazard events. The results of the assessment will be provided to those affected jurisdictions for review. These results also provide useful information when considering new mitigation initiatives as an amendment to the existing plan or during the next five-year plan update period.

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

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

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

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



7.3.3 Plan Update Process

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

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

As stated above in Section 7.3, the HMPC will convene within 60 days of a significant disaster to discuss the potential need for any amendments to the plan. If there are no significant disasters which trigger an update, the current federal guidelines require a five-year update.

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

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

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

Six months prior to the plan's expiration, a final draft of the revised plan will be submitted to GEMA for review and comments and then to FEMA for conditional approval. Once FEMA Region IV has issued a conditional approval, the updated plan will be adopted by all participating jurisdictions.

7.4 Incorporation of the Mitigation Plan into Other Planning Mechanisms

This plan supplements the most recent edition of the Atlanta-Fulton County Emergency Operations Plan, which is administered through the Atlanta-Fulton County Emergency Management Agency.



Further, each governmental entity will be responsible for implementation of their individual Jurisdiction Mitigation Action Programs based on priorities, funding availability, capabilities, and other considerations described in Chapter 6 – Mitigation Strategy. Because the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan is a multijurisdictional plan, the mechanism for implementation of the various mitigation measures through existing programs may vary by jurisdiction. Each jurisdiction's unique needs and capacities for implementation are reflected in its respective mitigation action program.

The HMPC recognizes the importance of fully integrating hazard mitigation planning and implementation into existing local plans, regulatory tools, and related programs. This plan is intended to influence each jurisdiction's planning decisions concerning land use, development, public facilities, and infrastructure. Any updates, revisions, or amendments to the Atlanta-Fulton County Emergency Operations Plan, local comprehensive plans, capital improvement budgets or plans, zoning ordinances and maps, subdivision regulations, building and technical codes, and related development controls will be consistent with the goals, objectives, and mitigation measures adopted in this plan. Each jurisdiction's commitment to this consistency is reflected in its respective mitigation action program. As part of the subsequent five-year update process, all local planning mechanisms will again be reviewed for effectiveness, and recommendations for new integration opportunities will be carefully considered. This type of evaluation was performed in the 2016 update and will follow in the next update cycle.

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

Of particular importance to incorporating hazard mitigation planning into other planning programs, is AFCEMA's commitment to full integration of natural and man-made hazards mitigation planning into its comprehensive emergency operations planning program and associated public emergency management activities, to the furthest possible extent.

7.5 Continuing Public Participation in the Plan Maintenance Process

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

To this end, copies of this Fulton County 2016 Multijurisdictional Hazard Mitigation Plan will be maintained in the offices of AFCEMA and the principal offices of all of the jurisdictions that participated in the planning process. After adoption, a public information notice will inform the public that the plan may be viewed at these offices. Public comments can be mailed, e-mailed, or phoned in to AFCEMA.

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



involvement activities required for the five-year update and may be periodically administered by AFCEMA.

Public involvement activities initiated by the 2016 planning process are documented in this plan. These activities will continue throughout the five-year implementation cycle and be evaluated for effectiveness at least annually by the HMPC. Moreover, the public outreach goal of this plan and the associated objectives and mitigation measures commit each locality to implement a range of public education and awareness opportunities. The constant monitoring of these programmed mitigation actions assures ongoing public participation throughout the plan maintenance process.



Appendix A

Adoption and Approval Letters



APPENDIX A ADOPTION & APPROVAL LETTERS

Adoption by Resolution

A copy of each jurisdiction's resolution to adopt the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan along with the approval letters from GEMA/FEMA are included in Appendix A.



Alpharetta

1857



A RESOLUTION AUTHORIZING THE MAYOR AND COUNCIL FOR THE CITY OF ALPHARETTA, GEORGIA TO ADOPT THE 2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Federal Disaster Mitigation Act of 2000 (“DMA”) provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency (“AFCEMA”) serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee (“HMPC”); and

WHEREAS, AFCEMA through County Code, Chapter 130. (Sections 130.1 to 130.30) is designated as Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach for all Fulton County communities in dealing with identified hazards and associated risk issues; and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Plan to FEMA; and FEMA determined that the County’s Multi-Jurisdictional Plan be accepted in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans to be formally adopted by the governing body of each participating jurisdiction within Fulton County; and

WHEREAS, in 2016 AFCEMA made certain revisions to the hazard mitigation plan (“2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan”) based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency (“FEMA”); and



WHEREAS, federal regulations require that the 2016 Fulton County Multi-Jurisdictional Plan be formally adopted by the **City of Alpharetta**; and

WHEREAS, the City of Alpharetta desires to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for the purpose of ensuring mitigation and preparedness from natural hazards.

NOW THEREFORE, BE IT RESOLVED, that the Mayor and City Council for the City of Alpharetta, Georgia is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency; and that this Resolution shall be effective upon its adoption; and all Resolutions and parts of Resolutions in conflict, are hereby repealed to the extent of conflict.

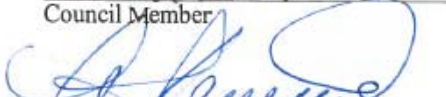
FURTHER RESOLVED AND ADOPTED this 6th day of October, 2016

CITY OF Alpharetta, GEORGIA


By: 
Mayor



Council Member


Council Member


Council Member


Council Member


Council Member


Council Member

Attest: 
City Clerk





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable David Belle Isle
Mayor of Alpharetta
2 Park Place
Alpharetta, Georgia 30009

Dear Mayor Isle:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Alpharetta is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Alpharetta for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Alpharetta. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Alpharetta Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lynn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Atlanta

CITY COUNCIL
ATLANTA, GEORGIA

A RESOLUTION BY

CITY UTILITIES COMMITTEE

16 -R- 4596

A RESOLUTION TO AMEND AND ACCEPT THE FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PREPARED BY THE ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY WITH THE PURPOSE TO ENSURE MITIGATION AND PREPAREDNESS PURSUANT TO THE DISASTER MITIGATION ACT OF 2000; WHICH MAY AFFECT THE CITY OF ATLANTA; AND FOR OTHER PURPOSES.

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management (FEMA) mitigation planning requirements for state, local and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential impacts of natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the enhanced planning better enables local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the lead coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee (HMPC); and

WHEREAS, the AFCEMA, through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, the Chapter 50 (Section 50.1-50.25) of the City of Atlanta, Code of Ordinances designates AFCEMA as its primary emergency management organization; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach among all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County's Multi-Jurisdictional Mitigation Plan acceptable in September 2016; and



WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdictions within Fulton County.

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan ("2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan") based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency ("FEMA"); and

WHEREAS, federal regulations that 2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan be formally adopted by the City of Atlanta; and

WHEREAS, the City of Atlanta desires to accept the 2016 Multi-Jurisdictional Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for purpose of ensuring mitigation and preparedness from natural hazards.

THE CITY COUNCIL OF THE CITY OF ATLANTA HEREBY RESOLVES, that the Mayor is hereby authorized to accept and execute an amended Fulton County Multi-Jurisdictional Hazard Mitigation Plan.

BE IT FINALLY RESOLVED, that all resolutions and parts of resolutions in conflict with this resolution hereby be waived to the extent of the conflict.

A true copy,

Rhonda Dauphin Johnson
Municipal Clerk

ADOPTED by the Atlanta City Council
APPROVED as per City Charter Section 2-403

NOV 21, 2016
NOV 30, 2016



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Kasim Reed
Mayor of Atlanta
55 Trinity Avenue Southwest, Suite 2700
Atlanta, Georgia 30303

Dear Mayor Reed:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Atlanta is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Atlanta for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Atlanta. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Atlanta Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Chattahoochee Hills

STATE OF GEORGIA
COUNTY OF FULTON

RESOLUTION NO. 16-11-218

**A RESOLUTION AUTHORIZING THE CITY OF CHATTAHOOCHEE HILLS
ADOPTION OF THE 2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD
MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 (“DMA”) provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency (“AFCEMA”) serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee (“HMPC”); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multijurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County’s Multijurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdictions within Fulton County.

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan (“2016 Fulton County Multijurisdictional Hazard Mitigation Plan”) based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency (“FEMA”); and

WHEREAS, federal regulations that 2016 Fulton County Multijurisdictional Plan be formally adopted by the City of CHATTAHOOCHEE HILLS; and

WHEREAS, the City of CHATTAHOOCHEE HILLS desire to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning



STATE OF GEORGIA
COUNTY OF FULTON

RESOLUTION NO. 16-11-218

guidelines provided by FEMA for purpose of ensuring mitigation and preparedness from natural hazards.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of CHATTAHOOCHEE HILLS is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency.

BE IT FINALLY RESOLVED, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to extent of conflict.

SO PASSED AND ADOPTED, this 1st day of November, 2016

Approved:

Tom Reed, Mayor

Attest:

Dana Wicher, City Clerk

(Seal)





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Tom Reed
Mayor of Chattahoochee Hills
6505 Rico Road
Chattahoochee Hills, Georgia 30268

Dear Mayor Reed:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Chattahoochee Hills is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Chattahoochee Hills for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Chattahoochee Hills. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Chattahoochee Hills Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Gunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



College Park

RESOLUTION NO. 2016-30

**A RESOLUTION OF THE
COLLEGE PARK CITY COUNCIL
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000
AUTHORIZING ADOPTION OF THE
FULTON COUNTY HAZARD MITIGATION PLAN**

WHEREAS, Fulton County and its municipal governments are required to complete a Hazard Mitigation Plan by the Disaster Mitigation Act of 2000; and

WHEREAS, under the provisions of the Disaster Mitigation Act of 2000, local governments that complete Hazard Mitigation Plans will remain eligible for Federal mitigation funding; and

WHEREAS, Fulton County and its municipal governments have completed an updated Hazard Mitigation Plan that fulfills the Federal requirements of the Disaster Mitigation Act of 2000.

NOW THEREFORE LET IT BE RESOLVED THAT THE COLLEGE PARK CITY COUNCIL FORMALLY ADOPTS THIS UPDATED HAZARD MITIGATION PLAN.

RESOLVED THIS 3rd DAY OF OCTOBER , 2016


Signed: Jack P. Longino/ Mayor


Attest: Melissa Brooks, College Park City Clerk





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Jack Longino
Mayor of College Park
Post Office Box 87137
College Park, Georgia 30337

Dear Mayor Longino:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of College Park is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of College Park for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of College Park. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of College Park Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



East Point

063-016

**A RESOLUTION OF THE
EAST POINT CITY COUNCIL
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000
AUTHORIZING ADOPTION OF THE
2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD
MITIGATION PLAN**

WHEREAS, FULTON County and its municipal governments are required to complete a Hazard Mitigation Plan by the Disaster Mitigation Act of 2000; and

WHEREAS, under the provisions of the Disaster Mitigation Act of 2000, local governments that complete Hazard Mitigation Plans will remain eligible for Federal mitigation funding; and

WHEREAS, FULTON County and its municipal governments have completed a Hazard Mitigation Plan that fulfills the Federal requirements of the Disaster Mitigation Act of 2000.

NOW THEREFORE LET IT BE RESOLVED THAT THE EAST POINT CITY COUNCIL FORMALLY ADOPTS THIS HAZARD MITIGATION PLAN.

RESOLVED THIS 17 DAY OF Oct, 2016


Signed: Jannequell Peters, Mayor


Attest: S. Diane White, East Point City Clerk





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017

Honorable Jannquell Peters
Mayor of East Point
2777 East Point Street
East Point, Georgia 30337



Dear Mayor Peters:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of East Point is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of East Point for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of East Point. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of East Point Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Winn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Fairburn

2017-01

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A RESOLUTION AUTHORIZING THE CITY OF FAIRBURN'S ADOPTION OF THE 2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management Agency's (FEMA's) hazard mitigation, as well as planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires, as a condition of disaster assistance, and with support of local governmental agencies, that a hazard mitigation plan be prepared to plan for and reduce potential natural hazards and facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the leading coordinating agency for mitigation planning in Fulton County and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA, through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the Plan creates a unified approach for all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County's Multi-Jurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdictions within Fulton County, and

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan ("2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan") based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency ("FEMA"); and

WHEREAS, federal regulations require that the 2016 Fulton County Multi-Jurisdictional Plan be formally adopted by the City of Fairburn; and

WHEREAS, the City of Fairburn desires to accept and approve the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for the purpose of ensuring mitigation and preparedness from natural hazards.

NOW, THEREFORE, BE IT RESOLVED, that the Mayor and City Council of the City of Fairburn does hereby accept and approve the 2016 Multi-Jurisdictional Hazard Mitigation Plan



39 for Fulton County and that a copy of this Resolution will be forwarded to the Atlanta-Fulton
40 County Emergency Management Agency.

41 **BE IT FINALLY RESOLVED**, that this Resolution shall be effective upon its adoption, and that
42 all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to
43 extent of conflict.

44 **SO PASSED AND ADOPTED**, this 9th day of January, 2017

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47 ATTEST:

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50 City Clerk

APPROVED AS TO FORM:

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Mayor



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Mario Avery
Mayor of Fairburn
56 Malone Street Southwest
Fairburn, Georgia 30213

Dear Mayor Avery:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Fairburn is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Fairburn for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Fairburn. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Fairburn Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Hapeville

Resolution 2016-09

WHEREAS, the City of Hapeville, Georgia is a full service municipality in Fulton County with a population of approx. 6,800; and

WHEREAS, the City of Hapeville has portions of the Hartsfield-Jackson International Airport within its Jurisdiction; and

WHEREAS, the City of Hapeville began working on a comprehensive multi-jurisdictional hazard mitigation Plan in 2015, (the "Plan"); and

WHEREAS, the City Plan also contains specific goals, objectives and plans the City wishes to adopt and implement to protect the health, welfare, life and safety of its visitors and citizens; and

WHEREAS, the City Plan has now been reviewed and approved by the Federal Emergency Management Agency (FEMA), as well as the Georgia Emergency Management and Homeland Security Agency (GEMHSA).

NOW THEREFORE BE IT RESOLVED, the City of Hapeville, Georgia acting in coordination with the Atlanta-Fulton County Emergency Management Agency hereby adopt the 2016 Hazard Mitigation Plan including all Hazard Mitigation Programs, Pre-Disaster Mitigation, Flood Mitigation Assistance and Severe Repetitive Loss programs and initiatives.

This Resolution having been properly considered and adopted by the City Council of the City of Hapeville, Georgia, the same is hereby APPROVED this 4 day of October, 2016.

CITY OF HAPEVILLE, GEORGIA




Alan Hallman, Mayor

ATTEST:



Jennifer Ekins, City Clerk

APPROVED AS TO FORM:



Steven M. Fincher
Attorney for City of Hapeville



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Alan Hallman
Mayor of Hapeville
3468 North Fulton Avenue
Hapeville, Georgia 30354

Dear Mayor Hallman:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Hapeville is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Hapeville for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Hapeville. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Hapeville Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Johns Creek

STATE OF GEORGIA
COUNTY OF FULTON

RESOLUTION 2016-11-20

**A RESOLUTION TO ADOPT THE UPDATED ATLANTA-FULTON COUNTY
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR THE CITY OF
JOHNS CREEK, GEORGIA**

WHEREAS, the City of Johns Creek and the other political jurisdictions within Fulton County, Georgia, in accordance with federal regulations, have developed an updated Fulton County Multi-Jurisdictional Hazard Mitigation Plan (the "Hazard Mitigation Plan"), which is expressly incorporated herein by this reference, to address potential dangers to life and property within Fulton County;

WHEREAS, City of Johns Creek staff actively participated in the preparation of the Hazard Mitigation Plan; and

WHEREAS, the Mayor and Council of the City of Johns Creek desire to adopt the Hazard Mitigation Plan, and thereby commit to work with the other represented jurisdictions in Fulton County to mitigate any identified hazards to the community.

NOW THEREFORE, BE IT RESOLVED by the Mayor and Council of the City of Johns Creek, Georgia, that the Hazard Mitigation Plan is hereby adopted.

SO RESOLVED AND EFFECTIVE, this 28th day of November, 2016.

Approved,

Michael E. Bodker, Mayor

Attest:

Joan C. Jones, City Clerk

R2016-11-20 Reso Adopting Hazard Mitigation Plan



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Mike Bodker
Mayor of Johns Creek
12000 Findley Road, Suite 400
Johns Creek, Georgia 30097

Dear Mayor Bodker:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Johns Creek is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Johns Creek for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Johns Creek. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Johns Creek Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Milton

**STATE OF GEORGIA
COUNTY OF FULTON**

RESOLUTION NO. 16-10-387

**A RESOLUTION AUTHORIZING THE CITY OF MILTON'S ADOPTION OF THE
2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA) provides the legal framework for the Federal Emergency Management Agency's (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states—as a condition of disaster assistance and with support from local governmental agencies—develop hazard mitigation plans to prepare for and reduce the potential hazards and facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach through which all Fulton County communities can deal with identified hazards and associated risks and thereby serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Hazard Mitigation Plan to FEMA and FEMA subsequently determined that the County's Multi-jurisdictional Mitigation Plan was acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each of the participating jurisdictions within Fulton County; and

WHEREAS, in 2016, AFCEMA made revisions to the hazard mitigation plan (2016 Fulton County Multi-jurisdictional Hazard Mitigation Plan) based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency (FEMA); and

WHEREAS, federal regulations require that the 2016 Fulton County Multi-jurisdictional Plan be formally adopted by the City of Milton; and



WHEREAS, the City of Milton desires to accept the 2016 Hazard Mitigation Plan as revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for purpose of ensuring mitigation and preparedness from natural hazards;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Milton is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to extent of conflict.

This Resolution shall be effective upon a majority vote by the City Council as ratified by the Mayor of the City of Milton, Georgia.

SO RESOLVED, this 3rd day of October, 2016.



Joe Lockwood, Mayor

Attest:



Sudie AM Gordon, City Clerk





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Joe Lockwood
Mayor of Milton
13000 Deerfield Parkway, Suite 107-F
Milton, Georgia 30004

Dear Mayor Lockwood:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Milton is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Milton for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Milton. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Milton Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Mountain Park

R085-16

A RESOLUTION AUTHORIZING THE CITY OF MOUNTAIN PARK ADOPTION OF THE 2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multijurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County's Multijurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdictions within Fulton County.

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan ("2016 Fulton County Multijurisdictional Hazard Mitigation Plan") based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency ("FEMA"); and

WHEREAS, federal regulations that 2016 Fulton County Multijurisdictional Plan be formally adopted by the City of Mountain Park; and

WHEREAS, the City of Mountain Park desires to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for purpose of ensuring mitigation and preparedness from natural hazards.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Mountain Park is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency.



BE IT FINALLY RESOLVED, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to extent of conflict.

SO PASSED AND ADOPTED, this 26th day of September, 2016

ATTEST:



Karen Segars, Clerk/Administrator

APPROVED AS TO FORM:



Jim Still, Jr., Mayor



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Jim Still
Mayor of Mountain Park
118 Lakeshore Drive
Roswell, Georgia 30075

Dear Mayor Still:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Mountain Park is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Mountain Park for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Mountain Park. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Mountain Park Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Dunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security

Post Office Box 18055 Atlanta, Georgia 30316-0055 • (404) 635-7000 • Fax (404) 635-7205
WWW.GEMA.GA.GOV



Palmetto

STATE OF GEORGIA
CITY OF PALMETTO

RESOLUTION

NO. 2016-06

**A RESOLUTION AUTHORIZING THE CITY OF PALMETTO ADOPTION OF THE
2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multijurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County's Multijurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdictions within Fulton County.



WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan ("2016 Fulton County Multijurisdictional Hazard Mitigation Plan") based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency ("FEMA"); and

WHEREAS, federal regulations that 2016 Fulton County Multijurisdictional Plan be formally adopted by the City of Palmetto; and

WHEREAS, the City of Palmetto desire to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for purpose of ensuring mitigation and preparedness from natural hazards.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Palmetto is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency.

BE IT FINALLY RESOLVED, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to extent of conflict.

SO PASSED AND ADOPTED, this 7th day of ~~October~~ November, 2016.

(SEAL)

ATTEST:


Cynthia Hanson, City Clerk

MAYOR AND COUNCIL
OF THE
CITY OF PALMETTO

By: 
J. Clark Boddie, Mayor

APPROVED AS TO FORM:


Dennis Davenport, City Attorney



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Clark Boddie
Mayor of Palmetto
Post Office Box 190
Palmetto, Georgia 30268

Dear Mayor Boddie:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Palmetto is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Palmetto for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Palmetto. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Palmetto Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Roswell

Resolution No. 2016-12-83

STATE OF GEORGIA
COUNTY OF FULTON

December 28, 2016

**RESOLUTION AUTHORIZING THE CITY OF ROSWELL ADOPTION OF THE 2016
FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA) provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states, as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce potential natural hazards with the intent to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency (AFCEMA) serves as the leading coordinating agency for Mitigation Planning and coordinates with the Hazard Mitigation Planning Committee (HMPC); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach for all Fulton County communities dealing with identified hazards and associated risks, and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, in 2016 AFCEMA made certain revisions to the "2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan" based upon the Hazard Mitigation Assistance Planning Guidelines provided by FEMA; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Hazard Mitigation Plan to FEMA in September 2016 and FEMA determined that the plan was acceptable; and

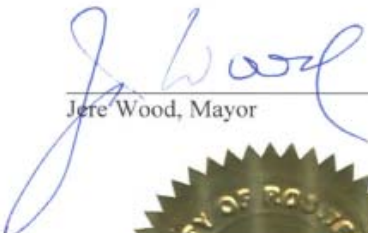
WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdiction within Fulton County and therefore, the City of Roswell accepts the 2016 Hazard Mitigation Plan revised by AFCEMA based on the guidelines provided by FEMA for the purpose of ensuring mitigation and preparedness from natural hazards; and



Resolution No. 2016-12-83


WHEREAS, federal regulations require that the 2016 Fulton County Multi-Jurisdictional Plan be formally adopted by the City of Roswell; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roswell that the Mayor of Roswell and/or City Administrator are authorized to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency, and that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict are hereby repealed to extent of conflict.



Jere Wood, Mayor

Attest:



Marlee Press, City Clerk
(Seal)





Resolution No. 2016-12-83

Regular Meeting **Wednesday, December 28, 2016** **7:00 PM**

Administration and Finance Department - Councilmember Donald J. Horton

5. **Approval for Advance Voting locations for the Special Election to be held on March 21, 2017.**

RESULT: **APPROVED [UNANIMOUS]**
MOVER: Donald J. Horton, Councilmember
SECONDER: Michael Palermo, Councilmember
IN FAVOR: Diamond, Horton, Orlans, Palermo, Zapata

Environmental / Public Works Department - Councilmember Jerry Orlans

6. **Approval for the Mayor and/or City Administrator to sign a contract amendment between the City of Roswell and Advanced Disposal Services, Inc. regarding an increase in the fee to continue the curbside recycling of glass.**

RESULT: **APPROVED [UNANIMOUS]**
MOVER: Jerry Orlans, Councilmember
SECONDER: Donald J. Horton, Councilmember
IN FAVOR: Diamond, Horton, Orlans, Palermo, Zapata

7. **Approval of the City of Roswell Water System Master Plan.**

RESULT: **APPROVED [UNANIMOUS]**
MOVER: Jerry Orlans, Councilmember
SECONDER: Donald J. Horton, Councilmember
IN FAVOR: Diamond, Horton, Orlans, Palermo, Zapata

Public Safety Department - Councilmember Marcelo Zapata

8. **Approval of a Resolution to adopt the 2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan.**

Resolution No. 2016-12-83

RESULT: **APPROVED [UNANIMOUS]**
MOVER: Marcelo Zapata, Councilmember
SECONDER: Michael Palermo, Councilmember
IN FAVOR: Diamond, Horton, Orlans, Palermo, Zapata



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Jere Wood
Mayor of Roswell
38 Hill Street
Roswell, Georgia 30075

Dear Mayor Wood:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Roswell is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Roswell for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Roswell. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Roswell Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Sandy Springs

RESOLUTION NO. 2016-10-113

STATE OF GEORGIA
COUNTY OF FULTON

**A RESOLUTION AUTHORIZING THE CITY OF SANDY SPRINGS ADOPTION OF THE
2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
PURSUANT TO THE DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 (“DMA”) provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with support from local governmental agencies, develop hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency (“AFCEMA”) serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee (“HMPC”); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multijurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County’s Multijurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdiction within Fulton County; and

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan (“2016 Fulton County Multijurisdictional Hazard Mitigation Plan”) based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency (“FEMA”); and

WHEREAS, federal regulations that 2016 Fulton County Multijurisdictional Plan be formally adopted by the City of Sandy Springs; and

WHEREAS, the City of Sandy Springs desires to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for the purpose of ensuring mitigation and preparedness from natural hazards.

NOW, THEREFORE, BE IT RESOLVED, that on this 4th day of October, 2016, the City of Sandy Springs is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency.



RESOLUTION NO. 2016-10-113

BE IT FINALLY RESOLVED, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to the extent of conflict.

RESOLVED this the 4th day of October, 2016.

Approved:


Russell K. Paul, Mayor

Attest:


Michael D. Casey, City Clerk

(Seal)





**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

MATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Rusty Paul
Mayor of Sandy Springs
7840 Roswell Road, Building 500
Sandy Springs, Georgia 30350

Dear Mayor Paul:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Sandy Springs is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Sandy Springs for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Sandy Springs. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Sandy Springs Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Unincorporated South Fulton

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**RESOLUTION AUTHORIZING ADOPTION OF THE 2016 FULTON COUNTY
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PURSUANT TO THE
DISASTER MITIGATION ACT OF 2000**

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management Agency (FEMA) mitigation, planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires that states as a condition of disaster assistance, with state (support from local government agencies) develop hazard mitigation plans to prepare for and reduce the potential natural hazards; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") is the Emergency Management Agency for Fulton County, and serves as the lead coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA has developed a Hazardous Mitigation Plan as a result of a countywide effort to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, Fulton County submitted its Hazardous Mitigation Plan to FEMA and FEMA determined the County's Multi-Jurisdictional Mitigation Plan acceptable in September 2016; and

WHEREAS, DMA requires that local hazard mitigation plans be formally adopted by the governing body of Fulton County and each participating jurisdiction.



1 **NOW, THEREFORE, BE IT RESOLVED**, that the Board of
2 Commissioners:

- 3 (1) Adopts in its entirety the 2016 Fulton County Multijurisdictional Hazard
- 4 Mitigation Plan ("FCMHMP")
- 5 (2) Will use the adopted plan to guide pre-and post-disaster mitigation of the
- 6 hazard mitigation of the hazard identified;
- 7 (3) Will coordinate that strategies identified in 2016 FCMHMP with other planning
- 8 programs and mechanisms under its jurisdictional authority;
- 9 (4) Will continue its support of the Hazard Mitigation Planning Committee
- 10 ("HMPC") and continue to participate in the HMPC as described in the
- 11 FCMHMP;
- 12 (5) Will help to promote and support the mitigation successes of all FCMHMP
- 13 partners .

14 **BE IT FURTHER RESOLVED**, that the Clerk to the Commission is directed to
15 forward a copy of this Resolution to the Atlanta-Fulton County Emergency
16 Management Agency.

17 **BE IT FURTHER RESOLVED**, that this Resolution shall become effective upon
18 its adoption, and that all resolution and parts of resolutions in conflict with this
19 Resolution are hereby repealed to the extent of the conflict.

20 **SO PASSED AND ADOPTED**, this 15th day of February, 2014

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FULTON COUNTY BOARD OF COMMISSIONERS



 John H. Eaves, Chairman
 District 7, At-Large



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4 ATTEST:

APPROVED AS TO FORM:

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Mark Massey, Clerk to the Commission




Patrise M. Perkins-Hooker, County Attorney

ITEM # 17-0139 RCS 2/15/2017
RECESS MEETING



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

MATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017

Honorable John Eaves
Chairman
Fulton County Board of Commissioners
141 Pryor Street Southwest, 10th Floor
Atlanta, Georgia 30303



Dear Commissioner Eaves:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved for a period of five (5) years, to February 28, 2022. With this approval, Fulton County is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS).

We commend Fulton County for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by Fulton County. Implementation of these projects will ultimately make your community a safer place to live and sustainable even through times of disaster.

I strongly encourage the Fulton County Hazard Mitigation planning team to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at (404) 635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Union City

RESOLUTION No. 2016- 07

A RESOLUTION AUTHORIZING THE CITY OF UNION CITY'S ADOPTION OF THE 2016 FULTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("DMA") provides the legal framework for the Federal Emergency Management Agency's (FEMA) mitigation and planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance; and

WHEREAS, the DMA requires as a condition of disaster assistance, with support from local governmental agencies, the development of hazard mitigation plans to prepare for and reduce the potential natural hazards and is intended to facilitate cooperation between state and local authorities; and

WHEREAS, the Atlanta-Fulton County Emergency Management Agency ("AFCEMA") serves as the leading coordinating agency for mitigation planning and coordinates with the Hazard Mitigation Planning Committee ("HMPC"); and

WHEREAS, AFCEMA through County Code, Chapter 130 (Sections 130.1 to 130.30) is designated as the Emergency Management Agency for Fulton County; and

WHEREAS, the purpose of the Fulton County Multi-Jurisdictional Plan is to identify and address certain vulnerabilities that exist prior to and during a disaster in Fulton County; and

WHEREAS, through a comprehensive planning process and risk assessment, the plan creates a unified approach to all Fulton County communities for dealing with identified hazards and associated risk issues and serves as a guide for local governments in their ongoing efforts to reduce community vulnerabilities; and

WHEREAS, Fulton County submitted its Multi-Jurisdictional Hazard Mitigation Plan to FEMA and FEMA determined that the County's Multi-Jurisdictional Mitigation Plan was acceptable in September 2016; and

WHEREAS, DMA requires local hazard mitigation plans be formally adopted by the governing body of each participating jurisdiction within Fulton County.

WHEREAS, in 2016, AFCEMA made certain revisions to the hazard mitigation plan ("2016 Fulton County Multi-Jurisdictional Hazard Mitigation Plan") based upon the hazard mitigation assistance planning guidelines provided by the Federal Emergency Management Agency ("FEMA"); and

WHEREAS, federal regulations require that the 2016 Fulton County Multi-Jurisdictional Plan be formally adopted by the City of **UNION CITY**; and



WHEREAS, the City of **UNION CITY** desires to accept the 2016 Hazard Mitigation Plan revised by AFCEMA based on the hazard mitigation assistance planning guidelines provided by FEMA for the purpose of ensuring mitigation and preparedness from natural hazards.


NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of **UNION CITY** is directed to forward a copy of this Resolution to the Atlanta-Fulton County Emergency Management Agency.

BE IT FINALLY RESOLVED, that this Resolution shall be effective upon its adoption, and that all resolutions and parts of resolutions in conflict with this Resolution are hereby repealed to extent of conflict.


SO PASSED AND ADOPTED, this 18 day of **OCTOBER**, 2016

ATTEST:

APPROVED AS TO FORM:



Jacqueline Cossey, City Clerk



Vince Williams, Mayor



**GEORGIA EMERGENCY MANAGEMENT AGENCY
HOMELAND SECURITY**

NATHAN DEAL
GOVERNOR



HOMER BRYSON
DIRECTOR

March 8, 2017



Honorable Vince Williams
Mayor of Union City
5047 Union Street
Union City, Georgia 30291

Dear Mayor Williams:

I am pleased to inform you that the Fulton County Multi-Jurisdictional Hazard Mitigation Plan has been federally approved through February 28, 2022. With this approval, the City of Union City is an eligible applicant for the Hazard Mitigation Assistance (HMA) grant programs made available through the Georgia Emergency Management Agency/Homeland Security (GEMA/HS) because of its active participation and adoption of the Fulton County plan.

We commend the City of Union City for the development of a solid and workable mitigation plan that will guide hazard mitigation activities over the coming years. The Fulton County Multi-Jurisdictional Hazard Mitigation Plan established a firm foundation to pursue many valuable and needed mitigation projects that have been identified by the City of Union City. Implementation of these projects will ultimately make your community a safer place to live and be sustainable even through times of disaster.

I strongly encourage the City of Union City Hazard Mitigation planning team to join with Fulton County to perform an annual review and assessment of the effectiveness of the mitigation plan and provide a report on any updates or changes made to the plan. This report should be coordinated through your Atlanta Fulton County Emergency Management Agency (EMA) Director who will take care of the updates to be submitted to GEMA/HS.

If you would like more information on the HMA grant application process, please contact Kelly Brokenburr, Risk Reduction Specialist, at 404-635-7511.

Sincerely,

Terry K. Lunn
Hazard Mitigation Division Director

tkl/lrg

cc: Matthew Kallmyer, Director
Atlanta Fulton County Emergency Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency Management Agency/Homeland Security



Appendix B

Meeting Documentation



APPENDIX B MEETING DOCUMENTATION

Steering Committee Letters

City of Alpharetta



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Bob Regus
City Manager
2 Park Plaza
Alpharetta, GA 30009

Dear Mr. Regus,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

The 2010 HMP will be updated according to the latest needs, interests, and statistics that are available for each jurisdiction. Over the course of the next year, AFCEMA will facilitate a series of planning meetings and will perform outreach to each jurisdiction. The end result of this project will be an updated HMP for Fulton County, which will be valid for five years and include specific plans for each municipality.

In order to ensure that each jurisdiction's specific hazards and mitigation projects are identified, we are respectfully requesting that you identify two representatives to serve on the Steering Committee throughout this year long process. Your Steering Committee members will provide guidance and direction for the project as well as ensure the needs and interests of your particular municipality are met. The Steering Committee will meet regularly through the course of the planning process via in-person meetings supplemented with regular conference calls or virtual meetings. A secure collaborative website will also be established to facilitate the exchange of data and information (datasets, worksheets, maps, drafts sections of the plan, guidance documents, etc.) with the Steering Committee members. To ensure consistency throughout the project, we respectfully request that the two individuals chosen to represent your municipality serve for the duration of the project.

Please submit the names and contact information for the two individuals that will represent your jurisdiction, to afcema@afcema.com by Friday July 24th, 2015. You may also submit the information to our Hazard Mitigation Project Coordinator, Destiny Ruffin, at 404-612-5689 or by email at destiny.ruffin@afcema.com.

Invitations to the project kick-off meeting will be sent in coming days. Additional updates will be provided as they become available. Please feel free to contact Ms. Ruffin or myself with any questions or concerns.

Thank you in advance for your time and commitment regarding this effort. We look forward to working with you and your representatives over the next several months.

Sincerely,

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Joe Popadics, Emergency Management Coordinator
City of Alpharetta
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville,
Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



City of Chattahoochee Hills



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Jim Williams
City Manager
6505 Rico Road
Chattahoochee Hills, GA 30268

Dear Mr. Williams,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

The 2010 HMP will be updated according to the latest needs, interests, and statistics that are available for each jurisdiction. Over the course of the next year, AFCEMA will facilitate a series of planning meetings and will perform outreach to each jurisdiction. The end result of this project will be an updated HMP for Fulton County, which will be valid for five years and include specific plans for each municipality.

In order to ensure that each jurisdiction's specific hazards and mitigation projects are identified, we are respectfully requesting that you identify two representatives to serve on the Steering Committee throughout this year long process. Your Steering Committee members will provide guidance and direction for the project as well as ensure the needs and interests of your particular municipality are met. The Steering Committee will meet regularly through the course of the planning process via in-person meetings supplemented with regular conference calls or virtual meetings. A secure collaborative website will also be established to facilitate the exchange of data and information (datasets, worksheets, maps, drafts sections of the plan, guidance documents, etc.) with the Steering Committee members. To ensure consistency throughout the project, we respectfully request that the two individuals chosen to represent your municipality serve for the duration of the project.

Please submit the names and contact information for the two individuals that will represent your jurisdiction, to afcema@afcema.com by Friday July 24th, 2015. You may also submit the information to our Hazard Mitigation Project Coordinator, Destiny Ruffin, at 404-612-5689 or by email at destiny.ruffin@afcema.com.

Invitations to the project kickoff meeting will be sent in coming days. Additional updates will be provided as they become available. Please feel free to contact Ms. Ruffin or myself with any questions or concerns.

Thank you in advance for your time and commitment regarding this effort. We look forward to working with you and your representatives over the next several months.

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Greg Brett, Emergency Management Coordinator
City of Chattahoochee Hills
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville,
Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



City of College Park



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Terrance Moore
City Manager
3667 Main Street
College Park, GA 30337

Dear Mr. Moore,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

The 2010 HMP will be updated according to the latest needs, interests, and statistics that are available for each jurisdiction. Over the course of the next year, AFCEMA will facilitate a series of planning meetings and will perform outreach to each jurisdiction. The end result of this project will be an updated HMP for Fulton County, which will be valid for five years and include specific plans for each municipality.

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**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Bruce Braxton, Emergency Management Coordinator
City of College Park
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of East Point



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Frederick Gardiner
City Manager
1526 East Forrest Avenue, Suite 400
East Point, GA 30344

Dear Mr. Gardiner,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: William Ware, Emergency Management Coordinator
City of East Point
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Fairburn



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Tom Barber
City Manager
56 Malone Street,
Fairburn, Georgia 30213

Dear Mr. Barber,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Stephan Hood, Emergency Management Coordinator
City of Fairburn
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Hapeville



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afcema@afcema.com

July 21, 2015

William Whitson
City Manager
3468 North Fulton Ave
Hapeville, GA 30354

Dear Mr. Whitson,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Tom Morris Jr., Emergency Management Coordinator
City of Hapeville
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Johns Creek



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afcema@afcema.com

July 21, 2015

Warren Hutmacher
City Manager
12000 Findley Road, Suite 400,
Johns Creek, GA 30097

Dear Mr. Hutmacher,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Grant Hickey Emergency Management Coordinator
City of Johns Creek
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Milton



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

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afcema@afcema.com

July 21, 2015

Christopher Lagerbloom
City Manager
13000 Deerfield Parkway, Suite 107
Milton, GA 30004

Dear Mr. Lagerbloom,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Matthew Marietta, Emergency Management Coordinator
City of Milton
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Mountain Park



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afcema@afcema.com

July 21, 2015

Karen Segars
City Administrator
118 Lakeshore Drive,
Mountain Park, GA, 30075

Dear Ms. Segars,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Palmetto



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

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afcema@afcema.com

July 21, 2015

William Shell
City Manager
P.O. Box 190
509 Toombs Street
Palmetto, GA 30268

Dear Mr. Shell,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HIMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HIMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Henry Argo, Emergency Management Coordinator
City of Palmetto

Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency

Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Roswell



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Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

Kay G. Love
City Administrator
38 Hill Street
Roswell, GA 30075

Dear Mr. Love,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Tony Papoutsis, Emergency Management Coordinator
City of Roswell
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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City of Sandy Springs



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 21, 2015

John McDonough
City Manager
7840 Roswell Road
Sandy Springs, GA 30350

Dear Mr. McDonough,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Mark Duke, Emergency Management Coordinator
City of Sandy Springs
Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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Union City



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afcema@afcema.com

July 21, 2015

Sonja Fillingame
City Manager
5047 Union Street,
Union City, GA 30291

Dear Ms. Fillingame,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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afcema@afcema.com

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Joe Maddox, Emergency Management Coordinator
City of Union City

Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency

Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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American Red Cross



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Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

July 23, 2015

Via Email: donna.lee@redcross.org

Ms. Donna Lee
American Red Cross of Georgia
1955 Monroe Drive NE
Atlanta, GA 30324

Dear Ms. Lee,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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A handwritten signature in blue ink that reads "Mathew Kallmyer".

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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Atlanta Medical Center



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
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afcema@afcema.com

July 23, 2015

Via Email: carey.westgate@tenethalth.com

Mr. Carey Westgate
Atlanta Medical Center
303 Parkway Drive NE
Atlanta, GA 30312

Dear Mr. Westgate,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency



Atlanta Public Schools



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afcema@afcema.com

July 23, 2015

Via Email: msandshall@atlanta.k12.ga.us

Dr. Marquenta Sands-Hall
Atlanta Public Schools
130 Trinity Avenue SW
Atlanta, GA 30303

Dear Dr. Sands-Hall,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency

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Emory University



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Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 23, 2015

Via Email: samuel.shartar@emoryhealthcare.org

Mr. Sam Shartar
Emory University
Office of Critical Event Preparedness and Response (CEPAR)
1599 Clifton Road.
Atlanta, Georgia 30322

Dear Mr. Shartar,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Shen Russo, Area Coordinator
Georgia Emergency
Management Agency



Fulton County Schools



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

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afcema@afcema.com

July 23, 2015

Via Email: hildreth@fultonschools.org

Mr. Paul Hildreth
Fulton County Schools
6201 Powers Ferry Rd
Atlanta, GA 30339

Dear Mr. Hildreth,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency



Georgia Institute of Technology



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afcema@afcema.com

July 23, 2015

Via Email: william.smith@police.gatech.edu

Mr. William Smith
Georgia Institute of Technology
879 Hemphill Avenue, NW
Atlanta, GA 30318

Dear Mr. Smith,

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Director
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Georgia Emergency
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Georgia State University



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afcema@afcema.com

July 23, 2015

Via Email: raderstorf@gsu.edu

Director Mike Raderstorf
Georgia State University
Commerce Building
34 Broad Street, Room 1107

Dear Director Raderstorf,

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Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
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Management Agency
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Grady Memorial Hospital



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

July 23, 2015

Via Email: lwood@gmh.edu

Ms. Lori Wood
Grady Memorial Hospital
80 Jesse Hill Drive SE
Atlanta, GA 30303

Dear Ms. Wood,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

The 2010 HMP will be updated according to the latest needs, interests, and statistics that are available for each jurisdiction. Over the course of the next year, AFCEMA will facilitate a series of planning meetings and will perform outreach to each jurisdiction. The end result of this project will be an updated HMP for Fulton County, which will be valid for five years and include specific plans for each municipality.

In order to ensure that each jurisdiction's specific hazards and mitigation projects are identified, we are respectfully requesting that you identify two representatives to serve on the Steering Committee throughout this year long process. Your Steering Committee members will provide guidance and direction for the project as well as ensure the needs and interests of your particular municipality are met. The Steering Committee will meet regularly through the course of the planning process via in-person meetings supplemented with regular conference calls or virtual meetings. A secure collaborative website will also be established to facilitate the exchange of data and information (datasets, worksheets, maps, drafts sections of the plan, guidance documents, etc.) with the Steering Committee members. To ensure consistency throughout the project, we respectfully request that the two individuals chosen to represent your municipality serve for the duration of the project.

Please submit the names and contact information for the two individuals that will represent your jurisdiction, to afcema@afcema.com by Friday July 24th, 2015. You may also submit the

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information to our Hazard Mitigation Project Coordinator, Destiny Ruffin, at 404-612-5689 or by email at destiny.ruffin@afcema.com.

Invitations to the project kickoff meeting will be sent in coming days. Additional updates will be provided as they become available. Please feel free to contact Ms. Ruffin or myself with any questions or concerns.

Thank you in advance for your time and commitment regarding this effort. We look forward to working with you and your representatives over the next several months.

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency



Hartsfield-Jackson Atlanta International Airport



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 23, 2015

Via Email: Augustus.Hudson@atlanta-airport.com

Mr. Augustus Hudson
Hartsfield-Jackson Atlanta International Airport
6000 N Terminal Pkwy,
Atlanta, GA 30320

Dear Mr. Hudson,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency



MARTA



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

July 23, 2015

Via Email: agreeene@itsmarta.com

Mr. Ashton Greene
Commander of Emergency Preparedness
Metropolitan Atlanta Rapid Transit Authority or MARTA
2424 Piedmont Road, NE
Atlanta, GA 30324-3311

Dear Mr. Greene,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP). In order for all of our partners to remain eligible for disaster mitigation grant funds and specific types of assistance following a Presidential Declaration, an updated HMP must be approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) every five years. As a local stakeholder your participation and feedback during this process will be a critical component to its success.

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Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

cc: Kelly Reeves, Hazard Mitigation Planner
Georgia Emergency
Management Agency
Sheri Russo, Area Coordinator
Georgia Emergency
Management Agency



Clayton County (Neighboring Jurisdiction)



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

June 8, 2016

Via Email: Beth.Durmire@ccfes.org

Beth Durmire
Deputy Director
Clayton County Emergency Management
7810 Highway 85
Riverdale, GA 30274

Dear Ms. Durmire,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP) to meet the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). The purpose of this plan is to identify vulnerabilities to a variety of natural hazards, and to develop plans to help minimize losses if disasters should occur. Throughout the planning process we would like our neighboring jurisdictions' to provide feedback and suggestions on our current draft plan.

Due to your proximity to Fulton County, the effects of many of these disasters would be similar in your county and your involvement in this process could reap mutual benefits to both counties. By participating in the review of this plan, you will be engaging in the regional coordination of disaster mitigation planning, which is one of the intents of the Mitigation Planning Regulations (44 CFR 201).

By means of this letter, AFCEMA is seeking your participation in this important planning effort. Specifically, we encourage interested neighboring county and community representatives to become familiar with this process by reviewing and providing input on the draft and final plan documents. Attached to this letter is an agreement that you have reviewed the plan and have sent comments and suggestions to our agency.

You are encouraged to learn more about the 2016 Fulton County Multijurisdictional Hazard Mitigation Draft Plan by visiting:

https://www.dropbox.com/s/4b8hte2yprb838/Fulton%20County%202016%20Multijurisdictional%20HMP_4-5-16_Final%28v1%29.pdf?dl=0

Thank you in advance for your time and commitment regarding this effort. We look forward to hearing from you soon.

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 512-5553 | Fax (404) 730-5625
afcema@afcema.com

Hazard Mitigation Plan Reviewed

I Beth Durmire have reviewed the Atlanta-Fulton County Emergency Management Agency 2016 Multijurisdictional Hazard Mitigation Plan Draft and I have submitted the appropriate comments and suggestion as a neighboring agency of Fulton County.

Print Name: Beth Durmire
Jurisdiction: Clayton County
Position: Deputy Director Clayton Co EMA
Signature: [Handwritten Signature]
Date: 6-20-2016

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Cobb County (Neighboring Jurisdiction)



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afcema@afcema.com

June 8, 2016

Via Email: Sean.Loughlin@cobbcountyz.org

Sean Loughlin
Emergency Management Planner
Cobb County Emergency Management Agency
140 N. Marietta Parkway
Marietta, GA 30060

Dear Mr. Loughlin,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP) to meet the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). The purpose of this plan is to identify vulnerabilities to a variety of natural hazards, and to develop plans to help minimize losses if disasters should occur. Throughout the planning process we would like our neighboring jurisdictions' to provide feedback and suggestions on our current draft plan.

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Thank you in advance for your time and commitment regarding this effort. We look forward to hearing from you soon.

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

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Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

Hazard Mitigation Plan Reviewed

I SEAN LOUGHLIN have reviewed the Atlanta-Fulton County Emergency Management Agency 2016 Multijurisdictional Hazard Mitigation Plan Draft and I have submitted the appropriate comments and suggestion as a neighboring agency of Fulton County.

Print Name: SEAN LOUGHLIN

Jurisdiction: COBB COUNTY

Position: PLANNER

Signature: Sean Loughlin

Date: 6/20/2016

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Douglas County (Neighboring Jurisdiction)



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130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

June 8, 2016

Via Email: jmilhollin@co.douglas.ga.us

Jason Milhollin
Director
Douglas County Emergency Management
8480 Earl D. Lee Blvd.
Douglasville, Georgia 30134

Dear Mr. Milhollin,

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is in process of updating our Multi-Jurisdictional Hazard Mitigation Plan (HMP) to meet the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). The purpose of this plan is to identify vulnerabilities to a variety of natural hazards, and to develop plans to help minimize losses if disasters should occur. Throughout the planning process we would like our neighboring jurisdictions' to provide feedback and suggestions on our current draft plan.

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Thank you in advance for your time and commitment regarding this effort. We look forward to hearing from you soon.

Sincerely,

Mathew Kallmyer
Director
Atlanta-Fulton County Emergency Management Agency

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afcema@afcema.com



Hazard Mitigation Plan Reviewed

I, Jason Mitchell have reviewed the Atlanta-Fulton County Emergency Management Agency 2016 Multijurisdictional Hazard Mitigation Plan Draft and I have submitted the appropriate comments and suggestion as a neighboring agency of Fulton County.

Print Name: Jason Mitchell
Jurisdiction: Douglas County
Position: EMA Director
Signature: [Handwritten Signature]
Date: 06-13-2016

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Kickoff Meeting

Kickoff Meeting Agenda



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

HAZARD MITIGATION PLAN KICK-OFF MEETING

AUGUST 5TH, 2015 10:00 A.M.

- | | | |
|------|---|----------|
| I. | Introduction
<i>Director Matthew Kallmyer- AFCEMA</i> | 10:00 AM |
| II. | Program Guidance and Requirements
<i>Kelly Reeves- GEMA</i>
a) Federal: Disaster Mitigation Act 2000
b) FEMA Mitigation Guidance | 10:20 AM |
| III. | Project Overview, Objectives, Timeline & Deliverables
<i>Lisa Danner- Tetra Tech</i> | 11:00 AM |
| IV. | Data Collection Worksheets Overview
<i>Jim McIntosh, Tetra Tech</i> | 11:45 AM |
| V. | Lunch | 12:00 PM |
| VI. | Local Data Collection Meetings
<i>Jim McIntosh – Tetra Tech</i> | 12:30 PM |
| VII. | Data Collection Worksheets
<i>Lisa Danner- Tetra Tech</i>
a) <i>Worksheet #1 – Events/Losses</i>
b) <i>Worksheet #2 – Capability Assessment</i>
c) <i>Worksheet #3 – National Flood Insurance Program</i>
d) <i>Worksheet #4 – Mitigation Action Progress</i>
e) <i>Worksheet #5 – Plan Integration</i>
f) <i>Worksheet #6 – New Development Table</i> | 12:45 PM |
| VII. | Meeting Wrap-Up
<i>Lisa Danner – Tetra Tech</i>
a) <i>Action Items</i>
b) <i>Next Meeting</i>
c) <i>Closing Comments- Director Matthew Kallmyer- AFCEMA</i> | 1:45 PM |

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Kickoff Meeting Sign In Sheets

Atlanta-Fulton County Hazard Mitigation Update Planning Project Kickoff Meeting Sign-In Sheet August 5, 2015 Usb Assignments					
Name	Jurisdiction	Position	Phone	Email	Signature
Matthew Kallmyer	AFCEMA	Director	404-612-5660	matthew.kallmyer@afcema	
Donnie Reece	AFCEMA	Operations Manager	404-612-5660	donnie.reece@afcema.com	
Destiny Ruffin	AFCEMA	Hazard Mitigation Project Coordinator	404-612-5660	destiny.ruffin@afcema.com	
Mattie Pam Johnson	AFCEMA	Administrative Assistant	404-612-5660	mattiepam.johnson@fultoncountyga.gov	
Pansy Ricks	AFCEMA	Deputy Director	404-612-5660	Pansy.ricks@fultoncountyga.gov	
Wanda Floyd	AFCEMA	Administrative Services Manager	404-612-5660	Wanda.floyd@fultoncountyga.gov	
Orette Ferdinand	AFCEMA	Program Manager	404-612-5660	orette.ferdinand@fultoncountyga.gov	
Joe Popadics	Alpharetta	Emergency Management Coordinator	678-297-6352	JPopadics@alpharetta.ga.us	<i>J Popadics</i>
Jill Bazinet	Alpharetta	Senior Storm Water Engineer	678-297-6200	jbazinet@alpharetta.ga.us	
Eric Corliss	American Red Cross	Regional Disaster Officer		Eric.Corliss@redcross.org	
Donna Lee	American Red Cross	Senior Disaster Program Manager		Donna.Lee@redcross.org	
Craig Dowdell	Atlanta	Homeland Security Officer	404-546-7046	cdowdell@atlantaga.gov	<i>Craig Dowdell</i> (USB)
Calvin G Burgess	Atlanta	Emergency Management Manager		CGBurgess@AtlantaGa.Gov	
Sylvester Alexander	Atlanta	Transportation Manager	404-853-3200	salexander@atlantaga.gov	
Carey Westgate	Atlanta Medical Center	Director of Security and Emergency Management		Carey.Westgate@tenethealth.com	

Marqueta Sands-Hall	Atlanta Public Schools	Chief of Police		msandshall@atlanta.k12.ga.us	
Larry Hoskins	Atlanta Public Schools	Deputy Superintendent of Operations		lhoskins@atlanta.k12.ga.us	
Elwood Duckworth	Atlanta Public Schools	Special Assistant to the CFO		educkworth@atlanta.k12.us.ga	
Greg Brett	Chattahoochee Hills	Fire Chief	770-463-6577	greg.brett@chathillsga.us	<i>Greg Brett</i> (USB)
Matthew Rook	Chattahoochee Hills	Police Chief	770-463-8177	greg.brett@chathillsga.us	
Sean P. Loughlin	Cobb County	Emergency Management Planner	770-499-4566	Sean.Loughlin@cobbcounty.org	
Bruce Braxton	College Park	Emergency Management Coordinator (Lieutenant)	404-305-2095	bbraxton@collegeparkga.com	<i>Bruce Braxton</i> (USB)
Brian White	College Park	Battalion Chief	404-766-8248	bwhite@collegeparkga.com	
Michael Webb	East Point	Provisional Deputy Chief	404-559-6401	mwebb@eastpointcity.org	<i>Michael Webb</i>
Montecia Paige	East Point	Homeland Security Manager	404-559-6401	mpaige@EastPointCity.org	
Sam Shartar	Emory University Hospital	Senior Administrator for CEPAR	404-712-1304	samuel.shartar@emoryhealthcare.org	<i>Sam Shartar</i>
Stephen Hood	Fairburn	Chief/Emergency Management Coordinator	770-969-3484	chiefhood@fairburn.com	<i>Stephen Hood</i>
Jon Fore	Fairburn	Division Chief		jfore@fairburn.com	
Nick Ammons	Fulton County	Public Works Deputy Director (Water Services)	404-612-7530	nick.ammons@fultoncountyga.gov	
Wyvern Budram	Fulton County	Traffic Operations Manager	404-612-2249	wyvern.budram@fultoncountyga.gov	<i>Wyvern Budram</i>



Appendix B
Meeting Documentation

Antonio Valenzuela	Fulton County	Assistant Director, Transportation	404-612-0520	antonio.valenzuela@fultoncountyga.gov	
Randy Beck	Fulton County	Director, Environment and Community Development	404-612-8053	randy.beck@fultoncountyga.gov	
Michelle Macauley	Fulton County	Assistant Director Environment & Community Development	404-612-8052	michelle.macauley@fultoncountyga.gov	<i>Michelle Macauley</i>
Michael Charlson	Fulton County	Planner	404-612-9460	michael.charlson@fultoncountyga.gov	<i>Michael Charlson</i>
Martin Salamanca	Fulton County	Fire Lieutenant	404-612-9226	martin.salamanca@fultoncountyga.gov	
Paul Hildreth	Fulton County Schools	Emergency Management Grants Coordinator		hildreth@fultonschools.org	
Kelly Reeves	GEMA	Hazard Mitigation Planner	404-635-2125	Kelly.Reeves@gema.ga.gov	
Keith Sumas	Georgia State University	Director of Emergency Management		ksumas1@gsu.edu	
William Smith	Georgia Tech	Acting Director, Office of Emergency Preparedness	404-894-8392	william.smith@police.gatech.edu	
Jennifer Mattingly-Rhodes	Georgia Tech	Emergency Preparedness Coordinator		jennifer.mattingly@ep.gatech.edu	<i>JMR</i>
Lori Wood	Grady Memorial Hospital	Emergency Management Specialist		lwood@gmh.edu	
William Whitson	Hapeville	City Manager		wwhitson@hapeville.org	
Tom Morris	Hapeville	Fire Chief		tmorris@hapeville.org	<i>Tom</i>
Augustus (Gus) Hudson	Hartsfield-Jackson Atlanta	Centralized Command and		Augustus.Hudson@atlanta-airport.com	

		Control Center Manager			
Wes McDonald	Hartsfield-Jackson Atlanta	Senior Operations Supervisor		wesley.mcdonald@atlanta-airport.com	
Grant Hickey	Johns Creek	Special Projects Coordinator	678-474-1591	Grant.Hickey@johnscreekgov.gov	
Patrick O'Neil	Johns Creek	Deputy Fire Chief			<i>Patrick O'Neil</i>
Ashton Greene	MARTA	Commander of Emergency Preparedness Unit		agreene@itsmarta.com	
Shawna Smith	MARTA	Emergency Preparedness Unit Coordinator		ssmith1@itsmarta.com	
Matthew Marietta	Milton	Fire Marshall/ Emergency Management Coordinator		Matthew.Marietta@cityofmiltonga.us	<i>Marietta</i>
Mark Stephens	Milton	Deputy Chief		Mark.Stephens@cityofmiltonga.us	<i>Mark Stephens</i>
Valerie Dalton	Morehouse	Chief of Police		Valerie.Dalton@morehouse.edu	
Joseph R. Chevalier, Jr.	Morehouse School of Medicine	Chief of Police	404-756-5773	jchevalier@msm.edu	
James Dame	Mountain Park	Chief	404-696-9383	jdame@mpvfr.org	<i>James Dame</i>
Jim Still	Mountain Park	Mayor	770-993-4232	jim.still@mountainpark-ga.gov	<i>Jim Still</i>
Henry Argo	Palmetto	Fire Chief	770-463-2990	argo@citypalmetto.com	<i>Henry Argo</i>
DeWayne Earnest	Palmetto	Fire Inspector	770-463-2990	earnest@citypalmetto.com	<i>DeWayne Earnest</i>
Mark Wolff	Roswell	Deputy Director of Community Development	770-594-6267	mwolff@roswellgov.com	
Tony Papoutsis	Roswell	Deputy Fire Chief	770-594-6231	tpapoutsis@roswellgov.com	<i>Tony Papoutsis</i>
Mark Duke	Sandy Springs	Deputy Chief of Operations/EMA	770-206-2076	MDuke@SandySpringsga.gov	<i>Mark Duke</i>
Donald Willbanks	Sandy Springs	Division Commander of Administrative Services	770-206-1416	DWillbanks@SandySpringsga.gov	<i>Donald Willbanks</i>



Appendix B
Meeting Documentation

Marquenta Sands-Hall	Atlanta Public Schools	Chief of Police		msandshall@atlanta.k12.ga.us	
Larry Hoskins	Atlanta Public Schools	Deputy Superintendent of Operations		lhoskins@atlanta.k12.ga.us	
Elwood Duckworth	Atlanta Public Schools	Special Assistant to the CEO		educkworth@atlanta.k12.us.ga	
Greg Brett	Chattahoochee Hills	Fire Chief	770-463-6577	matthew.rook@chatthillsga.us	
Matthew Rook	Chattahoochee Hills	Police Chief	770-463-8177	greg.brett@chatthillsga.us	
Sean P. Loughlin	Cobb County	Emergency Management Planner	770-499-4566	Sean.Loughlin@cobbcounty.org	
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Brian White	College Park	Battalion Chief	404-766-8248	bwhite@collegparkga.com	
Michael Webb	East Point	Provisional Deputy Chief	404-559-6401	mwebb@eastpointcity.org	
Montecia Paige	East Point	Homeland Security Manager	404-559-6401	mpaige@EastPointCity.org	
Sam Shartar	Emory University Hospital	Senior Administrator for CEPAR	404-712-1304	samuel.shartar@emoryhealthcare.org	
Stephen Hood	Fairburn	Fire Chief/Emergency Management Coordinator	770-969-3484	chiefhood@fairburn.com	
Jon Fore	Fairburn	Division Chief		jfore@fairburn.com	
Nick Ammons	Fulton County	Public Works Deputy Director (Water Services)	404-612-7530	nick.ammons@fultoncountyga.gov	
Wyvern Budram	Fulton County	Traffic Operations Manager	404-612-2249	wvvern.budram@fultoncountyga.gov	

Antonio Valenzuela	Fulton County	Assistant Director, Transportation	404-612-0520	antonio.valenzuela@fultoncountyga.gov	
Randy Beck	Fulton County	Director, Environment and Community Development	404-612-8053	randy.beck@fultoncountyga.gov	
Michelle Macauley	Fulton County	Assistant Director Environment & Community Development	404-612-8052	michelle.macauley@fultoncountyga.gov	
Michael Charlson	Fulton County	Planner	404-612-9460	michael.charlson@fultoncountyga.gov	
Martin Salamanca	Fulton County	Fire Lieutenant	404-612-9226	martin.salamanca@fultoncountyga.gov	
Paul Hildreth	Fulton County Schools	Emergency Management Grants Coordinator		hildreth@fultonschools.org	
Kelly Reeves	GEMA	Hazard Mitigation Planner	404-635-2125	Kelly.Reeves@gema.ga.gov	
Keith Sumas	Georgia State University	Director of Emergency Management		ksumas1@gsu.edu	
William Smith	Georgia Tech	Acting Director, Office of Emergency Preparedness	404-894-8392	william.smith@police.gatech.edu	
Jennifer Mattingly-Rhodes	Georgia Tech	Emergency Preparedness Coordinator		jennifer.mattingly@ep.gatech.edu	
Lori Wood	Grady Memorial Hospital	Emergency Management Specialist		lwood@gmh.edu	
William Whitson	Hapeville	City Manager		wwhitson@hapeville.org	
Tom Morris	Hapeville	Fire Chief		tmorris@hapeville.org	
Augustus (Gus) Hudson	Hartsfield-Jackson Atlanta	Centralized Command and		Augustus.Hudson@atlanta-airport.com	

Hazard Mitigation

“Mitigation” -

Sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event



“provides the blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and local ability...” (CFR).

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Fulton County and DMA 2000

The mitigation plan update will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Continue to allow the county and participating partners to be eligible for pre- and post-disaster recovery and mitigation funding.
 - Public Assistance Funding
 - Post-Disaster Reimbursement for Permanent Work (Categories C-G)
 - Post-Disaster Mitigation for Damaged Structures/Infrastructure (406 Mitigation)
 - Pre-Disaster Mitigation Grant Funding (404 Mitigation)
- Support National Flood Insurance Program (NFIP) compliance and, potentially, policy rate reduction efforts

A **Local Mitigation Plan** demonstrates the jurisdiction’s commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of natural hazards.

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Requirements for Local Mitigation Plan Updates

- **Updated Risk Assessment** - a factual basis for activities proposed in the Mitigation Strategy section include:
 - Overview of hazards (type, location, probability)
 - Vulnerability analysis (impact on buildings, infrastructure, economy, development trends)
 - Multiple jurisdictions (specific to each city/town/village)
- **Updated Mitigation Strategy** – a blueprint for reducing losses identified in the risk assessment
- Include the opportunity for public comment and for relevant agency and stakeholder involvement
- Plan Maintenance and Adoption Processes

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Plan Update Process Steps

Engage a Wide Range of “Stakeholders”

- Federal, State, Regional and Local Agencies
- Business and Civic Groups
- Academic Institutions
- Other “local governments”
- The Public

1. Organize Resources
2. Re-Assess the Risk
3. Review and Update the Mitigation Plan
4. Develop Procedures for Plan Implementation, Monitoring and Update
5. GEMA / FEMA Approval
6. Adopt the Plan



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Organization of the Steering Committee

- Project Management Team (AFCEMA)
- Contract Consultant (Tetra Tech)
- Municipal Planning Partnership
- Stakeholders (e.g. academic, police, fire, health care, business/industry, utilities)
- General Public

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Municipal Planning Partnership

- All municipalities are encouraged to participate to maintain DMA2000 coverage.
- FEMA has greatly expanded their scrutiny of “participation”.. Municipalities are required to actively participate.
- All municipalities who wish to join the update process **must formally indicate their intent to participate** with a Letter of Intent to Participate.

Letters of Intent to Participate

Your Letter of Intent to Participate (LOIP) for your community are due ASAP to AFCEMA. Copies will be included in the HMP.

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Municipal Participation

- Attend planning partnership meetings/workshops
- Provide data and information in a timely manner
- Support public and stakeholder outreach in your jurisdiction
- Provide outreach and encourage involvement of property owners in floodplains
- Assist with the development of your jurisdictional annex
- Review and provide feedback on Draft and Final Plan documents
- Facilitate the adoption process – Governing Body must pass an Adoption Resolution once the plan is approved by FEMA
- Implement and Maintain the Plan

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Assemble Your Municipal Mitigation Team

*Here is who we suggest you include as part of your
Hazard Mitigation Planning team:*

- Floodplain Administrator
- Building Code Official
- Municipal Engineer
- Land Use Planner
- Municipal Clerk
- Municipal Administrator
- Municipal CFO/Fiscal Rep
- Public Works Director
- Police Official
- Fire Official

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Steering Committee Support

Municipal Involvement will be encouraged and promoted by:

- Three formal municipal planning partnership meetings (Kick-Off Meeting (today), GEMA/FEMA Mitigation Strategy Workshop, Annex Completion Workshop)
- Data collection and annex tools, templates, surveys
- Local Data Collection Workshops (scheduled week of August 10th)
- Completion of Municipal Annex supports “buy in” and “ownership”
- Planning process execution and municipal training programs designed to build local capability
- Local public outreach including RL/SRL flood structure outreach

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Data Collection Worksheets

- We will review each one after lunch

#	Worksheet Name	Who is Responsible to Complete and Submit this Worksheet?	Where do you find the requested information?
1	Events/Losses	EMA, Police, Fire, DPW, Engineer	FEMA Project Worksheets (PWs) DPW records, Police response records
2	Capability Assessment	Code Official, Planner, CFO/Fiscal Rep, Clerk	Code Book, e-Code, Municipal ordinances, Master Plan
3	NFIP Floodplain Administrator	Floodplain Administrator	NFIP Records
4	Mitigation Action Progress	HMP Main POC – see 'Responsible Party' column in the table provided for guidance	LOIs, GEMA Grants, Capital Improvement records
5	Plan Integration Questionnaire	HMP Main POC	Discuss with Engineer, Clerk, Administrator, Planner, CFO, and Municipal Mayor/Administrator
6	New Development Table	Engineer, Planner, Building Department	Redevelopment Plans, Permits

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Public Meetings

- A total of 3 public meetings are required
 - Locations in Fulton County:
 - North, Central, South
 - Ideal Timing:
 - Afternoon or Evening hrs.
 - Sept./Oct. 2015
 - Early December 2015
 - Suggested Locations
 - Fulton County Libraries



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Schedule

- | | |
|--|------------------------------|
| ➤ Municipal Kick-Off Meeting: | August 5, 2015 |
| ➤ Municipal Data Collection –
Local Support Meetings: | Week of August
20th, 2015 |
| ➤ GEMA/FEMA Mitigation Workshop: | TBD (<i>Webinar</i>) |
| ➤ <i>1st Draft Plan to AFCEMA</i> | <i>December 31, 2015</i> |
| ➤ Draft Plan to GEMA: | March 30, 2016 |
| ➤ Final Plan to GEMA and FEMA Region IV: | September 26, 2016 |
| ➤ County and Municipal Plan Adoption: | Summer 2016 |

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Local Data Collection Meetings - Aug 24-28

Bring your whole local planning team, your draft worksheets,
and your questions/concerns

Time	Aug-24	Aug-25	Aug-26	Aug-27	Aug-28
10 a.m. 12 p.m.					
2 p.m. 4 p.m.					

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Questions?



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LUNCH BREAK

- Break for lunch from 12:00 to 12:30

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Data Collection Worksheets

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN UPDATE
Outline of Worksheets on the CD

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10th, 2015. Questions? Please contact:

Lisa Danner or Jim McIntosh

Lisa - Phone: 423-727-9058 Email: lisa.danner@tetrattech.com

Jim - Phone: 404-844-6571 Email: jim.mcintosh@tetrattech.com

#	Worksheet Name	Who is Responsible to Complete and Submit this Worksheet?	Where do you find the requested information?
1	Events/Losses	EMA, Police, Fire, DPW, Engineer	FEMA Project Worksheets (PWs) DPW records, Police response records
2	Capability Assessment	Code Official, Planner, CFO/Fiscal Rep, Clerk	Code Book, e-Code, Municipal ordinances, Master Plan
3	NFIP Floodplain Administrator	Floodplain Administrator	NFIP Records
4	Mitigation Action Progress	HMP Main POC – see 'Responsible Party' column in the table provided for guidance	LOIs, GEMA Grants, Capital Improvement records
5	Plan Integration Questionnaire	HMP Main POC	Discuss with Engineer, Clerk, Administrator, Planner, CFO, and Municipal Mayor/Administrator
6	New Development Table	Engineer, Planner, Building Department	Redevelopment Plans, Permits

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Re-Assess the Risk



These are the Five Steps to Assess Risk:

1. Identify Hazards
2. Profile Hazards
3. Inventory Assets
4. Estimate Losses
5. Evaluate Mitigation Options

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Assess the Risk – Hazard of Concern Identification

Hazards of Concern (HOCs)- Those natural hazards that pose significant risk to the Planning Area – and we can address through mitigation rather than only through preparedness, response and recovery.

- Review and update the “hazards of concern” that we will carry through the planning process.
- Our effort should be proportional to the risk the hazards pose.
- Each municipality has differing risk to the HOCs.
- We are generally limiting this plan to natural hazards:
 - Flood (riverine, ice jam, flash, urban/stormwater)
 - Severe Storm (wind, hail, lightning)
 - Severe Winter Weather (heavy snow, blizzard, ice storm)
 - Infestation (e.g. beavers, Emerald Ash Borer)
 - Wildfire
 - Earthquake – could include damage to dams



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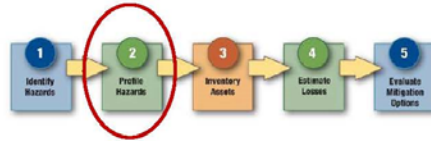


Assess the Risk – Hazard Profiling (Worksheet #1 on your USB)

- Hazards are profiled (characterized) according to:
 - Background and local conditions
 - Historic frequency and probability of occurrence
 - Severity
 - Historic losses and impacts
 - Designated hazard areas

- What hazard events have occurred since the 2011 Plan?

- What County and local losses have occurred as a result of these events?



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Worksheet #1 on USB Events and Losses

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN 2015
UPDATE
Worksheet #1 – Events and Losses

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10, 2015. Questions? Please contact:
Lisa Danner or Jim McIntosh

Lisa - Phone: 404-727-9058 E-mail: lisa.danner@tetrattech.com
Jim - Phone: 404-844-6571 E-mail: jim.mcintosh@tetrattech.com

Municipality: _____

Who can provide information about events and losses: Emergency Management, Police, Fire, Department of Public Works (DPW), building inspector, municipal engineer. Refer to FEMA Project Worksheets (PWs), DPW records, police response records, etc.

In the table below, please identify events in which your community suffered significant damages/losses and describe these losses (e.g., flooded roads, road closures, DPW/Police overtime, debris management, opened shelter for two days, etc.). Please add other non-declared events that affected your community that are not listed.

Feel free to add additional sheets for other major events that impacted your community.

Dates of Event	Event Type (Disaster Declaration if applicable)	Atlanta-Fulton County Designated ?	Did your community suffer losses/costs from this event? (Yes/No - if "yes" please complete an Event Loss Summary Sheet for this event.)	Notes on damages within County
February 10-15, 2014	Severe Winter Storm	Yes		Severe Winter Storm damages

If your community suffered significant damages/losses from this event, indicate "Yes" and complete an Event Loss Summary Sheet.

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Worksheet #1 on USB Events and Losses (Continued)

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN 2015
UPDATE
Worksheet #1 - Events and Losses

Event and Loss Summary Sheet
DR-4165 February 14-15, 2014

Event Date and Description (incl. DR# if applicable): _____

Life Safety (evacuation, sheltering, injuries, deaths):

Loss of Service (e.g. road closures, utility outages, commercial closures – include location, time of closure and/or number of affected):

Infrastructure Damage (e.g. roads, bridges, culverts, treatment facilities, lift stations, etc.):

Facility/Structural Damage – Public (e.g. police, school, etc.):

Facility/Structural Damage – Private (e.g. residential, commercial property, etc.):

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Assess the Risk – Inventory Assets

What is at risk? People, Property, Economy, Environment

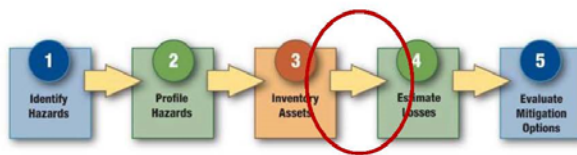
- Population and Demographics – Has this changed since 2011?
- Building Stock (Residential, Commercial, Industrial, Educational, etc.) – Has this changed since 2011?
- Facilities (critical and essential facilities, utilities, transportation features, high-potential loss facilities and user-defined facilities)
 - Police, Fire, Emergency Services
 - Hospitals and Medical Care Facilities
 - Schools and Care Facilities
 - Sheltering Facilities
 - Infrastructure (Transportation Systems, Utilities)



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Assess the Risk – Estimate Losses

- Vulnerability Assessment - What do we predict our suffering to be if we do nothing to mitigate our risk:
 - Given current conditions, which have changed since 2011?
 - Given our improved understanding of risk, and tools to assess that risk, which have changed since 2011?



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Assess the Risk – Evaluate Mitigation Options

- Re-evaluate Hazard Mitigation Goals and Objectives

Goals: General guidelines that state what we want to achieve. Should be consistent with the State goals and other local goals.

Example: “Protect property”

Objectives: Define strategies or implementation steps to attain a stated goal.

Example: “Enact or enforce regulatory measures that ensure new development will not increase flood threats to existing properties”.



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Assess the Risk – Evaluate Mitigation Options

➤ Evaluate Capabilities

What resources do we have at our disposal to Mitigate Risk?

“Proposed mitigation actions will be evaluated against the backdrop of what is feasible in terms of your government’s legal, administrative, fiscal and technical capacities”
(FEMA 386-3)

- Serve to identify legal authority and administrative, technical and fiscal capabilities in the state, county and jurisdictions that will facilitate or hinder hazard mitigation goals and objectives.
- State Capability Assessment is in the State HMP
- Part of this Planning Process is to build County and Local Mitigation Capabilities
- Training, Workshops and Seminars

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Capability Assessments (Worksheet #2 on USB)

Please work with your planning team and bring updated versions of worksheets to your local data collection meeting the week of Aug. 24th.

- **Building Code Official**
- **Municipal Engineer**
- **Land Use Planner**
- **Municipal Clerk**
- **Floodplain Administrator**
- **CFO/Fiscal Representative**

**ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN 2015
UPDATE
Worksheet #2 - Municipal Capability Assessment**

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10, 2015. Questions? Please contact:
Lisa Danner or Jim McIntosh
Lisa - Phone: 423-727-9058 E-mail: lisa.danner@tetratech.com
Jim - Phone: 404-844-6571 E-mail: jim.mcintosh@tetratech.com

Municipality: _____

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation. In addition, indicate the code chapter, and name of plan including any explanation of authority in the right-most column.

Who can assist with completing this table: Municipal Planner, Clerk, and Code Official. Refer to your municipal codes and ordinances, Master Plan.

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan				
Capital Improvements Plan				
Floodplain Management / Basin Plan				
Stormwater Management Plan				

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NFIP Compliance (Worksheet #3 on USB) We need the NFIP Floodplain Administrator Involved!

- We need to know specific information about the NFIP program in your community.
- Your NFIP Floodplain Administrator (FPA) **MUST** be actively involved in the update process.
- NFIP Administrator to work with Tetra Tech to complete **Worksheet #3** (best done in a short interview – live or phone)

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN
UPDATE
Worksheet #3 - NFIP Floodplain Administrator Questionnaire

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10, 2015. Questions? Please contact:
Lisa Danner or Jim McIntosh
Lisa - Phone: 404-844-9050 Email: lisa.danner@tetratech.com
Jim - Phone: 404-844-6571 Email: jim.mcintosh@tetratech.com

Municipality: _____

NFIP Floodplain Administrator Name/Title: _____

Flood Vulnerability Summary

1. Does the municipality maintain lists/inventories of properties that have been flood damaged? If so, does this inventory identify property owners who are interested mitigation (e.g. elevation, acquisition)?
2. Characterize/quantify the number of structures damaged during past events. If possible, can you provide a table of these structures indicating the number of residential / commercial / industrial?
3. Do you make Substantial Damage estimates?

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Update, Identification and Analysis of Mitigation Actions

- Mitigation strategies need to be realistic, achievable and action-oriented.
- Will include both regional (county-wide) strategies, as well as jurisdiction-specific.
- For each proposed mitigation strategy, the following will be identified:
 - Implementation timeline
 - Estimated budget
 - Potential funding sources
 - Lead agency or department
 - Supporting agencies
 - Priority
 - For prior/old strategies provide update of status
- Proposed mitigation activities are evaluated using a Cost-Benefit Screening



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Update Progress on 2011 Actions

- Identify progress made on mitigation actions identified in 2011 plan.
- If an action wasn't completed, why not?
- This strategy review process is NOT meant to blame or punish. The answer can reveal things that need to be addressed to allow mitigation to progress, for example:
 - Obstacle: We do not have the technical resources to prepare a grant application.
 - Possible Action: Develop a county-level support team trained in application development.

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Update Progress on 2011 Actions (Worksheet #4 on USB)

Please work with your planning team and bring updated versions of worksheets to your local data collection meeting the week of Aug. 24th.

Atlanta-Fulton County Hazard Mitigation Plan 2015 Update
Worksheet #4 - Mitigation Action Review Worksheet

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10th, 2015. Questions? Please contact:
Lisa Danner or Jim McIntosh
Lisa - Phone: 423-727-9058 Email: lisa.danner@tetratech.com
Jim - Phone: 404-644-6571 Email: jim.mcintosh@tetratech.com

Who can provide you information about past mitigation actions? See the 'Responsible Party' column in the table below which identifies who put this action in the 2011 HMP (e.g., DPW, Engineer, Code Official, Planner, OEM Coordinator).

Please use the following table to indicate progress and next steps on your community's mitigation strategy identified in the 2011 HMP. Please be as detailed as possible.

2011 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status		Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
			1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMP/grant, local budget)?	Next Step (Include in 2015 HMP, or Discontinue)	
Example Elevate Main Street Bridge	DPW	No Progress	1. 0% complete 2. Budget and personnel constraints have restricted this action from moving forward 3. No funding secured	Include in 2015 HMP	1. Elevate Main Street Bridge above the base flood elevation. 2. (If you chose 'Discontinue,' here is an example: The Town does not have the authority to reroof this bridge; it is owned by the State.
-	-	Choose an item.	-	Choose an item.	-

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New Mitigation Actions for 2015 HMP Update

- Opportunity to add new mitigation actions
- This includes all in-progress grant applications (FEMA or other related grant programs)
- Proposed mitigation actions should address identified vulnerabilities
- GEMA/FEMA Mitigation Workshop – August 2015



"At the first sign of a flood, you just push this little button."

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Types of Mitigation Actions

- **Plans and/or Regulations.** Measures such as zoning and building code, ordinances, planning (comprehensive/master plans, stormwater management plans, open space), hazard/risk insurance (e.g. NFIP).
- **Property Protection.** Measures such as acquisition, elevation, relocation, structural retrofits, storm shutters, rebuilding, barriers, floodproofing.
- **Public Education and Outreach.** Measures such as public awareness projects, real estate disclosure, hazard information centers, technical assistance.
- **Natural Resource Protection.** Measures such as erosion and sediment control, stream corridor protection, vegetative management, wetlands preservation.

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Plan Implementation

- Your mitigation strategy section provides a “blueprint” to follow for progressively reducing your community’s natural hazard risk.
- It will include two types of initiatives/projects – those that your community can “self fund”, and those that will require outside (e.g. grant) funding.
- Mitigation grant opportunities open regularly:
 - The annual HMA grant window opens in June of each year.
 - HMGP funding comes in the wake of Declared Disasters in the State.

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Integration with Other Plans and Programs

The Hazard Mitigation Plan should complement and support other Plans and Regulatory Mechanisms

- Emergency Operations Plan (EOP) / Comprehensive Emergency Management Plans (CEMP)
- Master Plans (regional and local) – these plans guide and direct land use and development
- Capital Improvement Plans (some of these projects are grant eligible)
- Higher Regulatory Standards (e.g. increased free-board, cumulative substantial damages)
- Stormwater Management Plans

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Plan Integration (Worksheet #5 on your USB)

- For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. We need to gather an understanding of your community's progress in plan integration, as well identify potential integration opportunities that you may pursue in the future.
- Circulate to your "team" to complete. Please expand on your answers when appropriate!

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN UPDATE
Worksheet #5 - Capability Assessment and Plan Integration

Municipality: _____

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. We would like to gather an understanding of your community's progress in plan integration, as well identify potential integration opportunities that your community may pursue in the future.

Who can assist with completing this table: The HMP main point of contact should discuss with the Engineer, Clerk, Mayor/Administrator, Planner, Chief Financial Officer, Building Code Official, NFIP Floodplain Administrator

Applicable Department/Agency	Plan, Program, Mechanism, etc.
Planning	
Planner (staff or contract); Planning Board; Zoning Board of Adjustments (ZBA)	Does your municipality have a Master/Comprehensive Plan (land-use plan), or are you currently working on an update of your Master/Comprehensive Plan?
	If so, does it include, or are you considering, areas of natural hazard risk (e.g. flood-prone areas, steep slopes)?
	Does your Master/Comprehensive plan refer to the local or Countywide Hazard Mitigation Plan?

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New Development (Worksheet #6 on your USB)

- Please indicate any major new development since 2011 AND any known or anticipated major new residential/commercial development and major infrastructure development that are identified for the next five (5) years in your municipality.

ATLANTA-FULTON COUNTY HAZARD MITIGATION PLAN UPDATE
Worksheet #6 - Potential New Development

Please work with your municipal planning team and bring updated versions of worksheets to your local data collection meeting the week of August 10th, 2015. Questions? Please contact:
Lisa Danner or Jim McIntosh
Lisa - Phone: 423-727-9058 Email: lisa.danner@tetrattech.com
Jim - Phone: 404-844-6571 Email: jim.mcintosh@tetrattech.com

Municipality: _____

Please indicate any recent development within your community from 2011 to present. Additionally, please indicate known or anticipated major residential and/or commercial development and major infrastructure development that can be identified for the next five (5) years in your community.

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					

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Review Worksheets #1 – #6

Please work with your planning team and bring updated versions of worksheets to your local data collection meeting the week of Aug. 24th. All electronic templates are on your USB in the 'Worksheets' folder.

#	Worksheet Name	Who is Responsible to Complete and Submit this Worksheet?	Where do you find the requested information?
1	Events/Losses	EMA, Police, Fire, DPW, Engineer	FEMA Project Worksheets (PWs) DPW records, Police response records
2	Capability Assessment	Code Official, Planner, CFO/Fiscal Rep, Clerk	Code Book, e-Code, Municipal ordinances, Master Plan
3	NFIP Floodplain Administrator	Floodplain Administrator	NFIP Records
4	Mitigation Action Progress	HMP Main POC – see 'Responsible Party' column in the table provided for guidance	LOIs, GEMA Grants, Capital Improvement records
5	Plan Integration Questionnaire	HMP Main POC	Discuss with Engineer, Clerk, Administrator, Planner, CFO, and Municipal Mayor/Administrator
6	New Development Table	Engineer, Planner, Building Department	Redevelopment Plans, Permits

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Comments or Questions?



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A presentation slide with a background image of a large lake under a cloudy sky, with mountains in the distance. The slide contains the following text:

Thank you!

Lisa Danner
Tetra Tech, Inc.
Lisa.danner@tetratech.com

Jim McIntosh
Tetra Tech, Inc.
jim.mcintosh@tetratech.com

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Kickoff Meeting Minutes



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

HAZARD MITIGATION PLAN KICK-OFF MEETING MINUTES

Georgia Dome Media Room
August 5TH, 2015 10:00 A.M.

Introduction - Director Matthew Kallmyer- AFCEMA

Director Kallmyer from the Atlanta-Fulton County Emergency Management Agency (AFCEMA) welcomed all those in attendance and thanked them for their time. A brief overview of the Hazard existing Mitigation Plan and the required update was provided before the additional presenters from Tetra Tech (Lisa Danner and Jim McIntosh) and the Georgia Emergency Management Agency (GEMA - Kelly Reeves) were introduced. It was explained that Tetra Tech was the consulting firm contracted to assist with the five year Hazard Mitigation Plan (HMP) Update and that Kelly from GEMA was a great resource to provide information about mitigation strategies and the state review process. Following this brief introduction of the presenters each of the planning team members and jurisdictional representatives present were asked to briefly introduce themselves to the group.

Program Guidance and Requirements - Kelly Reeves- GEMA

Mrs. Reeves discussed the overarching concepts of disaster mitigation and the importance of mitigation planning. She introduced key concepts of the Disaster Mitigation Act 2000 and what role the county and local mitigation plans play in developing resilient communities. She also briefly discussed the state mitigation plan, pre and post-disaster mitigation funding opportunities and how the overall process works. FEMA mitigation guidance was also discussed in an effort to assist with understanding the kinds of projects to consider and focus upon during the plan and mitigation strategy updates.

Project Overview, Objectives, Timeline & Deliverables - Lisa Danner- Tetra Tech

Lisa Danner from Tetra Tech followed Mrs. Reeves and presented the bulk of the kickoff information. Mrs. Danner discussed the reason for the update and the importance of maintaining the plan. She then provided the expected project schedule and an overview of the entire planning process that was later discussed in more detail. The steering committee concept of involving each municipality, other local stakeholders (schools, hospitals, businesses, neighboring jurisdictions etc.) and the public was also discussed in order for attendees to get a better idea of who would be participating in the plan update. Guidance was given on the type of positions/people each municipality would want to include on their local planning committee to assist with the data collection process and mitigation strategy updates. It was then proposed that the steering committee was expected to have three formal municipal partnership meetings (steering committee meetings) that included the current kickoff meeting, a GEMA/FEMA mitigation workshop and a final workshop to complete individual annexes. In addition to attending the three formal meetings Mrs. Danner also discussed additional responsibilities of the steering committee members including the need to serve as a local point of contact, assisting

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with local outreach, completion of local data collection worksheets, attending local data collection workshops and updating local mitigation strategies. Mrs. Danner concluded by introducing how each municipality will end up with their own annex to the overall Fulton County plan once this update is complete. This design is intended to promote ownership of the plan and make it easier to use since each jurisdiction will be able to quickly reference their community's specific data in addition to the countywide data. At this point Mrs. Danner and Director Kallmyer reintroduced Mr. McIntosh and his topic of data collection meetings to those present.

Data Collection Worksheets Overview - Jim McIntosh, Tetra Tech

Mr. McIntosh greeted those in attendance and provided an overview of the process that will be used for data collection. The first topic covered was the need for public meetings and a citizen survey designed to allow for public comment and input during the update process. Due to the size and elongated shape of Fulton County, with Atlanta in the center, it was determined that the meetings should be held in North, Central, and Southern portions of the county to allow for maximum public participation. The ideal timeline would also follow the early, midway and final planning stages such as early September, October and then December or early January depending on the availability of venues and the speed of planning progress. Any jurisdictions who thought they may have a suitable location were asked to get with Mr. McIntosh at the conclusion of the meeting to arrange follow-up. In addition to the public meetings a citizen survey would be designed to capture public input and will be made available during the process. The results of public input will then be included as applicable into the revised plan. After discussing the public meetings Mr. McIntosh provided an overview of the local data collection meetings. Each municipality received a packet as they entered the meeting. This packet contained two copies of the worksheets that will form the basis for the municipality annexes. The other stakeholders (external partners) such as public schools, colleges, hospitals etc. would also be asked to fill out these worksheets although they may not have a previous list of mitigation actions to update. The six worksheets in the packets were Events and Losses, Capability Assessment, NFIP Administrator data, Mitigation Action progress, Plan Integration and one to capture future land development. At this point the attendees were notified that lunch was ready to be served so they would take a short break and start back with a more detailed review of the worksheets.

Local Data Collection Meetings - Jim McIntosh - Tetra Tech

At the end of the lunch break Mr. McIntosh briefly presented on the proposed dates during the last two weeks of August for local data collection meetings. Typically two meetings would be conducted each day and follow-up dates would be scheduled as needed. A sign-up sheet was available and anyone who knew what day/time they wanted was encouraged to see Mr. McIntosh before leaving for the day.

Data Collection Worksheets - Lisa Danner- Tetra Tech

Mrs. Danner greeted the group and mentioned how this second half of the meeting was going to be a little more involved for the steering committee members as the data collection worksheets were going to be covered in detail. The purpose and mitigation planning role of each worksheet

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was discussed and then Mrs. Danner worked through each worksheet to review the questions, charts and overall content that was being asked for. The sheets reviewed were:

- a) *Worksheet #1 – Events/Losses*
- b) *Worksheet #2 – Capability Assessment*
- c) *Worksheet #3 – National Flood Insurance Program*
- d) *Worksheet #4 – Mitigation Action Progress (previously listed actions were provided for each municipality. It was explained how previous actions needed to be updated, prioritized and any new actions would be added during the update)*
- e) *Worksheet #5 – Plan Integration*
- f) *Worksheet #6 – New Development Table*

Meeting Wrap-Up - Lisa Danner – Tetra Tech

After reviewing the details of each worksheet the floor was opened for a question and answer session. Several questions about mitigation actions, meeting locations and scheduling were addressed before Mrs. Danner moved on to the day's action items. The steering committee was instructed to watch for emails from AFCEMA and/or Tetra Tech concerning next steps and scheduling local meetings. They were also asked to begin forming their local planning teams and to begin completing the six worksheets discussed today. Contact information for Lisa and Jim from Tetra Tech was also provided.

Closing Comments- Director Matthew Kallmyer- AFCEMA

Director Kallmyer thanked everyone for their attendance, encouraged their active participation and concluded the meeting at approximately 1:45 p.m.

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Municipality Data Collection Meetings

City of Alpharetta



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF ALPHARETTA

AUGUST 20, 2015
10:00 A.M. – 12:00 P.M.

- I. Welcome and Introductions
- II. Review of Worksheets
 - Worksheet #1 – Events and Losses for City of Alpharetta
 - Worksheet #2 – Municipality Capability Assessment for City of Alpharetta
 - Worksheet #3 – National Flood Insurance Program
 - Floodplain Administrator Questionnaire
 - Worksheet #4 – Mitigation Action Review for City of Alpharetta
 - Worksheet #5 – Capability Assessment and Plan Integration
 - Worksheet #6 – Potential New Development for City of Alpharetta
- III. Next Steps
- IV. Questions

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**Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Alpharetta
Sign-In Sheet**

August 20, 2015

Name	Department	Position	Phone	Email	Signature
Lisa Donner	TT	PM	678-787-4724	lisa.donner@kcted.com	LD
Donnie Reese	AFCEMA	Operations Mgr	404-304-8117	dannie.reese@afceema.com	DR
Joe Robbins	ALPHARETTA	EM COORDINATOR	678-297-6352	JROBBINS@ALPHARETTA.GA.US	Joe Robbins
Jim McIntosh	Tetra Tech	Planner	404-944-6571	Jim.McIntosh@tetra.tech.com	Jim McIntosh
Destiny Nuffin	AFCEMA	Project Coordinator	404-612-5689	destiny.nuffin@afceema.com	Destiny Nuffin
City Tugren	Alpharetta	City Clerk	678-277-6003	ctugren@alpharetta.ga.us	City Tugren
Will Bazinet	Alpharetta	Sr. Stormwater Engineer	678-297-6203	jbazinet@alpharetta.ga.us	Will Bazinet
Pek Sewczuk	Alpharetta	Dir. PW	678-619-6132	psewczuk@alpharetta.ga.us	Pek Sewczuk
Sharon Mitchell	Finance/Alpharetta	Budget/Purchasing Mgr	678-297-6016	Smitchell@alpharetta.ga.us	Sharon Mitchell
James Broder	Community Development	Building Official	678-297-6082	jbroder@alpharetta.ga.us	James Broder



City of Atlanta



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF ATLANTA**

**SEPTEMBER 10, 2015
2:00 P.M. – 4:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for City of Atlanta
Worksheet #2 – Municipality Capability Assessment for City of Atlanta
Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
Worksheet #4 – Mitigation Action Review for City of Atlanta
Worksheet #5 – Capability Assessment and Plan Integration
Worksheet #6 – Potential New Development for City of Atlanta

III. Next Steps

IV. Questions

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Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Atlanta
Sign-In Sheet

September 10, 2015

Name	Department	Position	Phone	Email	Signature
Ria Argen	CoA - Emergency	Preparedness	678-492-3748	riargen@atlantaga.gov	<i>[Signature]</i>
Celine G. Burgess	CoA - DWM	Emergency Management	41925-4387	Cgburgess@atlantaga.gov	<i>[Signature]</i>
Greg Rethwilm	CoA - DWM	Facilities Coordinator	41807-0942	crethwilm@atlantaga.gov	<i>[Signature]</i>
Reginald Mitchell	Atlanta PD	Major SOS	4-273-8178	Rmitchell@atlantaga.gov	<i>[Signature]</i>
Robb Goss	OSS - OWM	AD. OI. OSS	4-908-6855	rgoss@atlantaga.gov	<i>[Signature]</i>
Oz Hill	AFRD	RISK ASSESS	678-589085	ohill@atlantaga.gov	<i>[Signature]</i>
Larry King	CoA - DPW	Dep. Commissioner	419-330-6665	lking@atlantaga.gov	<i>[Signature]</i>
Michael Oboz	CoA - DPW	Security/Safety	404-852-5693	mboz@atlantaga.gov	<i>[Signature]</i>
MJ NAGY	CoA - OOB	Director	4-632-8700	MJNAGY@ATLANTA.GOV	<i>[Signature]</i>
Matthew Hallmyer	AFCEMA	Dir	4-612-5660	matthew.hallmyer@afcoma.com	<i>[Signature]</i>
Destiny Griffin	AFCEMA	Project Coordinator	4-612-5669	destiny.griffin@afcoma.com	<i>[Signature]</i>
Lisa Tanner	IT	PM	678-773-4724	lisa.tanner@techatdoh.com	<i>[Signature]</i>



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Atlanta
Sign-In Sheet

September 17, 2015

Name	Department	Position	Phone	Email	Signature
William Pearson	AFRD	Captain	4-309-3776	wpearson@atlantaga.gov	<i>[Signature]</i>
Christian Pennick	APD	Officer/ICAU	41546-7333	cpennick@atlantaga.gov	<i>[Signature]</i>
Ric Argen	CoA - MIM	Director of Emergency Planning		riargen@atlantaga.gov	<i>[Signature]</i>
Danley Kelle	APD	Sr. Project Mgr.	4546-4471	djkelle@atlantaga.gov	<i>[Signature]</i>
Greg Rethwilm	DWM	Civil EMR. MGR.	41546-3291	crethwilm@atlantaga.gov	<i>[Signature]</i>
Craig Daudell	AFRD	Hazardous Security Officer	4167-4926	cdaudell@atlantaga.gov	<i>[Signature]</i>
Celine G. Burgess	DWM	Emergency Management	41925-4387	Cgburgess@atlantaga.gov	<i>[Signature]</i>
Reginald James	DPW	Safety Manager	4130-6098	rjames@atlantaga.gov	<i>[Signature]</i>
Destiny Griffin	AFCEMA	Project Coordinator	41612-5669	destiny.griffin@afcoma.com	<i>[Signature]</i>
Matthew Hallmyer	AFCEMA	AFCEMA Dir	41925-2020	matthew.hallmyer@afcoma.com	<i>[Signature]</i>



City of Chattahoochee Hills



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF CHATTAHOOCHEE HILLS**

**AUGUST 27, 2015
10:00 A.M. – 12:00 P.M.**

- I. Welcome and Introductions

- II. Review of Worksheets
 - Worksheet #1 – Events and Losses for City of Chattahoochee Hills
 - Worksheet #2 – Municipality Capability Assessment for City of Chattahoochee Hills
 - Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
 - Worksheet #4 – Mitigation Action Review for City of Chattahoochee Hills
 - Worksheet #5 – Capability Assessment and Plan Integration
 - Worksheet #6 – Potential New Development for City of Chattahoochee Hills

- III. Next Steps

- IV. Questions

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Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



**Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Chattahoochee Hills
Sign-In Sheet**

August 27, 2015

Name	Department	Position	Phone	Email	Signature
Jay D. Pasquale	Administration City Manager	City Manager	770-463-6565	jaydipasquale@chathillsga.gov	<i>Jay D. Pasquale</i>
Greg Brett	Chattahoochee Hills	Fire Chief	770-367-4802	greg.brette@chathillsga.gov	<i>Greg Brett</i>
Destiny Ruffin	ATEMA	Project Coordinator	404-417-5160	destiny.ruffin@fema.com	<i>Destiny Ruffin</i>
Kyle Jones	Chatt Hills Finance →		770-463-6566	Kyle.Jones@chathillsga.gov	<i>Kyle J. Jones</i>
Lisa Demaree	IT	PM			<i>LD</i>
Jim McIntosh	IT	Planner			<i>JM</i>



City of College Park



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF COLLEGE PARK**

**SEPTEMBER 16, 2015
10:00 A.M. – 12:00 P.M.**

- I. Welcome and Introductions

- II. Review of Worksheets
 - Worksheet #1 – Events and Losses for City of College Park
 - Worksheet #2 – Municipality Capability Assessment for City of College Park
 - Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
 - Worksheet #4 – Mitigation Action Review for City of College Park
 - Worksheet #5 – Capability Assessment and Plan Integration
 - Worksheet #6 – Potential New Development for City of College Park

- III. Next Steps

- IV. Questions

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Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of College Park
Sign-In Sheet

September 16, 2015

Name	Department	Position	Phone	Email	Signature
William Moore	Engineering	Engineering Dir.	4-669-3763	wmoore@collegeparkga.com	William Moore
Bence Braxton	POLICE	E.M.D.	6-571-8833	b.braxton@collegeparkga.com	Bence Braxton
Raymond Collier	Highway + Street	Superintendent	(404) 669-3778	r.collier@collegeparkga.com	Raymond Collier
Jim McIntosh	Tetra tech	Planner	4-844-6571		Jim McIntosh
Destiny Ruffin	AFCOMA	Project Coordinator	4-022-5489	destiny.ruffin@afcoma.com	Destiny Ruffin



City of East Point



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF EAST POINT**

**AUGUST 19, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for City of East Point
Worksheet #2 – Municipality Capability Assessment for City of East Point
Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
Worksheet #4 – Mitigation Action Review for City of East Point
Worksheet #5 – Capability Assessment and Plan Integration
Worksheet #6 – Potential New Development for City of East Point

III. Next Steps

IV. Questions

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Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Fulton County
Hazard Mitigation Update Planning Project
East Point Data Collection Meeting
Sign-In Sheet
August 19, 2015

Name	Department	Position	Phone	E-mail
William Tate	East Point Fire	Training Officer	404-559-6406	wtate@eastpointcity.org
Michael Webb	East Point Fire	D. Chief	404 559 /6401	MWebb@EastPointCity.org
Jim McIntosh	Tetra Tech			
Lisa Danner	Tetra Tech			
Matthew Hallmyer	AFCEMA	Dir	404-612-5660	matthew.hallmyer@afcema.org
C. Thornton	East Point Fire	Fire Marshal	404 559-6409	cthornton@eastpointcity.org
Destiny Ruffin	AFCEMA	Hazard Mitigation Coordinator	404-612-5660	destiny.ruffin@afcema.com



City of Fairburn



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF FAIRBURN**

**SEPTEMBER 22, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

- Worksheet #1 – Events and Losses for City of Fairburn
- Worksheet #2 – Municipality Capability Assessment for City of Fairburn
- Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
- Worksheet #4 – Mitigation Action Review for City of Fairburn
- Worksheet #5 – Capability Assessment and Plan Integration
- Worksheet #6 – Potential New Development for City of Fairburn

III. Next Steps

IV. Questions

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City of Hapeville



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF HAPEVILLE**

**AUGUST 26, 2015
2:00 P.M. – 4:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

- Worksheet #1 – Events and Losses for City of Hapeville
- Worksheet #2 – Municipality Capability Assessment for City of Hapeville
- Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
- Worksheet #4 – Mitigation Action Review for City of Hapeville
- Worksheet #5 – Capability Assessment and Plan Integration
- Worksheet #6 – Potential New Development for City of Hapeville

III. Next Steps

IV. Questions

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Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Hapeville
Sign-In Sheet

August 26, 2015

Name	Department	Position	Phone	Email	Signature
Tom Morris	Fire	Fire Chief	4)391-9235	tmorris@hapeville.org	<i>Tom Morris</i>
Tom Nichols	Recreational	Manager	4)669-2139	Tnichols@hapeville.org	<i>Tom Nichols</i>
Lacey Richardson	Fire	EM COORDINATOR	7)718-7667	lrichardson263@gmail.com	<i>Lacey Richardson</i>
Lee Sudduth	Comm. Serv. Dept.	Director	4)669-2124	lsudduth@hapeville.org	<i>Lee Sudduth</i>
Jennifer Elkins	Administration	City Clerk	404)7663004	jelkins@hapeville.org	<i>Jennifer Elkins</i>
William Whitson	Admin.	City Mgr.	404-669-2117	wwhitson@hapeville.org	<i>William Whitson</i>
Rick Glavosek	Police	Chief	4)669-2150	rglavosek@hapeville.org	<i>Rick Glavosek</i>
Allie O'Brien	Econ. Dev.	Mainst. Marketing	4)669-8269	ao'Brien@hapeville.org	<i>Allie O'Brien</i>
Lisa Danner	IT	PM		lisa.danner@tchratech.com	<i>Lisa Danner</i>
Jim McIntosh	IT	Planner		jim.mcintosh@tchratech.com	<i>Jim McIntosh</i>
Destiny Ruffin	AFCEMA	Project Coordinator	404-951-2920	destiny.ruffin@afceema.com	<i>Destiny Ruffin</i>
Matthew Kallmyer	AFCEMA	Director	404-612-5660	matthew.kallmyer@afceema.com	<i>Matthew Kallmyer</i>



City of Johns Creek



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF JOHNS CREEK

AUGUST 18, 2015
10:00 A.M. – 12:00 P.M.

- I. Welcome and Introductions
- II. Review of Worksheets
 - Worksheet #1 – Events and Losses for City of Hapeville
 - Worksheet #2 – Municipality Capability Assessment for City of Hapeville
 - Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
 - Worksheet #4 – Mitigation Action Review for City of Hapeville
 - Worksheet #5 – Capability Assessment and Plan Integration
 - Worksheet #6 – Potential New Development for City of Hapeville
- III. Next Steps
- IV. Questions

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Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Fulton County
Hazard Mitigation Update Planning Project
Johns Creek Data Collection Meeting
Sign-In Sheet
August 18, 2015

Name	Department	Position	Phone	E-mail
Lisa Danner	Tetra Tech	PM		
Jim McIntosh	Tetra Tech	Planner		
Destiny Rutlin	Tetra Tech	Project Coordinator	404-957-2220	destiny.rutlin@afema.com
Grant Hickey	EMA	Director	678-314-2060	grant.hickey@JohnsCreekGA.gov
David Chastant	Tom Dev	Lead Rev Mgr	678-312-3284	david.chastant@volusia.gov
_____				nick.oday@johnscreekga.gov
Nick O'Day	GIS	GIS Manager	678-512-3202	



City of Milton



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF MILTON**

**AUGUST 25, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for City of Milton
Worksheet #2 – Municipality Capability Assessment for City of Milton
Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
Worksheet #4 – Mitigation Action Review for City of Milton
Worksheet #5 – Capability Assessment and Plan Integration
Worksheet #6 – Potential New Development for City of Milton

III. Next Steps

IV. Questions

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Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Milton
Sign-In Sheet

August 25, 2015

Name	Department	Position	Phone	Email	Signature
Matt Maretha	Fire/EMA	Milton	404-810-1518	Matthew.Maretha@cityofmilton.ga.us	<i>[Signature]</i>
Stacey Inglis	City Manager	Assistant City Mgr	678-242-2500	stacey.inglis@cityofmilton.ga.us	<i>[Signature]</i>
Robyn MacDonold	Com Dev	Zoning Manager	678-242-2540	robyn.macdonald@cityofmilton.ga.us	<i>[Signature]</i>
Vince Hines	Com Dev	Building Official	678-572-5070	vince.hines@cityofmilton.ga.us	<i>[Signature]</i>
Jimmy Sanders	Public Works	PW Dir	678-242-2543	Jimmy.Sanders@cityofmilton.ga.us	<i>[Signature]</i>
Cross Lagreel	City Manager	City Manager	678-242-2188	cross.lagreel@cityofmilton.ga.us	<i>[Signature]</i>
Sudie Gordon	City Clerk	City Clerk	678-242-2522	sudie.gordon@cityofmilton.ga.us	<i>[Signature]</i>
Jim McLatesh	TE	Planner			
Lisa Damer	TE	PM			
KATHY FIELD	Com Dev	DIRECTOR	678-242-2555	kathleen.field@cityofmilton.ga.us	<i>[Signature]</i>
Mark Stephen	Fire	Deputy Fire	404-810-3067	Mark.Stephen@cityofmilton.ga.us	<i>[Signature]</i>
Robert Edger	Fire	Fire Chief		robert.edger@cityofmilton.ga.us	<i>[Signature]</i>
Steve Kexakoff	Police	Chief	470-7748812	Steve.Kexakoff@CityofMiltonGA.us	<i>[Signature]</i>
Carter Lucas	Public Works	PW Director	678-242-2626	Carter.Lucas@cityofmilton.ga.us	<i>[Signature]</i>
Roddy Notes	PW	PW MGR	" " 2563	Roddy.Notes@ " " "	<i>[Signature]</i>
Matthew Kallmyer	AFCOAT	Director	404-412-5440	Matthew.Kallmyer@afcoam.com	<i>[Signature]</i>
Destiny Ruffin	AFCOAT				



City of Mountain Park



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF MOUNTAIN PARK**

**SEPTEMBER 24, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

- Worksheet #1 – Events and Losses for City of Mountain Park
- Worksheet #2 – Municipality Capability Assessment for City of Mountain Park
- Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
- Worksheet #4 – Mitigation Action Review for City of Mountain Park
- Worksheet #5 – Capability Assessment and Plan Integration
- Worksheet #6 – Potential New Development for City of Mountain Park

III. Next Steps

IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



City of Palmetto



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF PALMETTO**

**AUGUST 21, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for City of Palmetto
Worksheet #2 – Municipality Capability Assessment for City of Palmetto
Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
Worksheet #4 – Mitigation Action Review for City of Palmetto
Worksheet #5 – Capability Assessment and Plan Integration
Worksheet #6 – Potential New Development for City of Palmetto

III. Next Steps

IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Palmetto
Sign-In Sheet

August 21, 2015

Name	Department	Position	Phone	Email	Signature
Lisa Danner	IT	PM	878-773-4724	lisa.danner@cityofpalmetto.com	<i>[Signature]</i>
Henry Argo	Fire	Fire Chief	770-990-4437	argo@cityofpalmetto.com	<i>[Signature]</i>
Dewayne EARNEST	FIRE	Fire I/USP	770-970-0753	earnest@cityofpalmetto.com	<i>[Signature]</i>
Frank West	City Hall	Code Enforcement	770-990-4156	west@cityofpalmetto.com	<i>[Signature]</i>
Cindy Hanson	City Hall	City Clerk	770-463-3377	hanson@cityofpalmetto.com	<i>[Signature]</i>
J. CLARK Boddie	CITY HALL	MAYOR	770-463-3377	mayor@cityofpalmetto.com	<i>[Signature]</i>
Bill Shell	CITY ADMIN	CITY ADMIN	770-463-3377	WHSHELL@CityPalmetto.com	<i>[Signature]</i>
Matt Kallmyer	AFCEMA	EMA	41931-2020	matthew.kallmyer@afcema.com	<i>[Signature]</i>



City of Roswell



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF ROSWELL/CITY OF MOUNTAIN PARK

SEPTEMBER 10, 2015
10:00 A.M. – 12:00 P.M.

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for City of Roswell/City of Mountain Park

Worksheet #2 – Municipality Capability Assessment for City of Roswell/City of Mountain Park

Worksheet #3 – National Flood Insurance Program

Floodplain Administrator Questionnaire

Worksheet #4 – Mitigation Action Review for City of Roswell/City of Mountain Park

Worksheet #5 – Capability Assessment and Plan Integration

Worksheet #6 – Potential New Development for City of Roswell/City of Mountain Park

III. Next Steps

IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Roswell/City of Mountain Park
Sign-In Sheet

September 10, 2015

Name	Department	Position	Phone	Email	Signature
Mark Wolff	Community Development	Deputy Director	770-594-6267	mwolff@roswellga.gov	
Tony Papantis	Fire	Deputy Chief	7-994-6231	TPAPANTIS@roswellga.gov	
Lisa Danner	IT	PM	828-775-4224	lisa.danner@fultoncountyga.gov	
Destiny Ruffin	AFCEMA	Project Coordinator	404-412-5089	destiny.ruffin@afceema.com	



City of Sandy Springs



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
CITY OF SANDY SPRINGS**

**AUGUST 27, 2015
2:00 P.M. – 4:00 P.M.**

- I. Welcome and Introductions

- II. Review of Worksheets
 - Worksheet #1 – Events and Losses for City of Sandy Springs
 - Worksheet #2 – Municipality Capability Assessment for City of Sandy Springs
 - Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
 - Worksheet #4 – Mitigation Action Review for City of Sandy Springs
 - Worksheet #5 – Capability Assessment and Plan Integration
 - Worksheet #6 – Potential New Development for City of Sandy Springs

- III. Next Steps

- IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
City of Sandy Springs
Sign-In Sheet

August 27, 2015

Name	Department	Position	Phone	Email	Signature
DAN COFFER	Communications	Community Relations	770-206-1476	dcoffer@sandy-springs.ga.gov	<i>[Signature]</i>
Mark Dulce	Fire	Deputy Chief	678-614-2431	mdulce@sandy-springs.ga.gov	<i>[Signature]</i>
Bart Humble	Police	Captain	770-551-6924	bhumble@sandy-springs.ga.gov	<i>[Signature]</i>
Garrin Coleman	Public Works	Director	770-206-2017	gcoleman@sandy-springs.ga.gov	<i>[Signature]</i>
Destiny Ruffin	AFCEMA	Project Coordinator	404-612-5060	destiny.ruffin@afcema.com	<i>[Signature]</i>
MICHAEL CASEY	CITY MGMT	CITY CLERK	(770) 206-1906	MCASEY@SANDYSPRINGS.GA.GOV	<i>[Signature]</i>
BRYANT POOLE	CITY MGMT	ASSIST. CITY MGR	770-6-1415	bpoole@sandy-springs.ga.gov	<i>[Signature]</i>
Karen Ellis	Finance	Finance Director	770-6-1451	kellis@sandy-springs.ga.gov	<i>[Signature]</i>
Jim McIntosh	IT	Planner			
Lisa Danner	IT	PM			
Adam Lyon	Storm Water		404-989-9716	alyon@sandy-springs.ga.gov	<i>[Signature]</i>
Alexander Ferrell	Community	Code Manager	770-206-1590	aferrell@sandy-springs.ga.gov	<i>[Signature]</i>
Robert Wheeler	BUILDING	BUILDING OFFICER	770-206-1545	rwheeler@sandy-springs.ga.gov	<i>[Signature]</i>



Unincorporated South Fulton County



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
FULTON COUNTY**

**SEPTEMBER 23, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

- Worksheet #1 – Events and Losses for Fulton County
- Worksheet #2 – Municipality Capability Assessment for Fulton County
- Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
- Worksheet #4 – Mitigation Action Review for Fulton County
- Worksheet #5 – Capability Assessment and Plan Integration
- Worksheet #6 – Potential New Development for Fulton County

III. Next Steps

IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
Fulton County
Sign-In Sheet

September 23, 2015

Name	Department	Position	Phone	Email	Signature
MICHAEL CHARLSON	PCS	PLANNER	4-612-9460	michael.charlson@fultoncountyga.gov	
Michelle Macauley	PCS	Asst. Director	4-612-8052	michelle.macauley@fultoncountyga.gov	
Destiny Ruffin	AFCEMA	Project Coordinator	404-612-5000	destiny.ruffin@afceema.com	
Jim McIntosh	Tetra Tech	Planner	4-844-6571	jim.mcintosh@tetratech.com	
Matthew Kallmyer	AFCEMA	Dir	41-931-2020	matthew.kallmyer@afceema.com	



Union City



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
MUNICIPALITY DATA COLLECTION MEETING
UNION CITY**

**AUGUST 21, 2015
10:00 A.M. – 12:00 P.M.**

I. Welcome and Introductions

II. Review of Worksheets

Worksheet #1 – Events and Losses for Union City
Worksheet #2 – Municipality Capability Assessment for Union City
Worksheet #3 – National Flood Insurance Program
Floodplain Administrator Questionnaire
Worksheet #4 – Mitigation Action Review for Union City
Worksheet #5 – Capability Assessment and Plan Integration
Worksheet #6 – Potential New Development for Union City

III. Next Steps

IV. Questions

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
Union City, GA
Sign-In Sheet

August 21, 2015

Name	Department	Position	Phone	Email	Signature
Ashley Minter	Operations	Operations Coordinator	770-515-7823	aminter@unioncityga.org	<i>Ashley Minter</i>
Mike Clark	Fire Dept	BATT Chief	7-515-7825	mclark@unioncityga.org	<i>Mike Clark</i>
Joe Maddox	Union City Fire	Chief	770-515-7878	jmaddox@unioncityga.org	<i>Joe Maddox</i>
Jarsh Calloway	Finance	Director	7-515-7821	jcalloway@unioncityga.org	<i>Jarsh Calloway</i>
Cedric Clark	Public Services	Director	7-813-9825	cclark@unioncityga.org	<i>Cedric Clark</i>
Nicole Dozier	Community Dev	Director	7-515-7955	ndozier@unioncityga.org	<i>Nicole Dozier</i>
Jim McIntosh	Tetra Tech	Planner	4-844-6571	Jim.mcintosh@tetra.tech.com	<i>Jim McIntosh</i>
Deshmji Ruffin	AFCEMA	Project Coordinator	404-612-5089	deshmji.ruffin@afcema.com	<i>Deshmji Ruffin</i>



GEMA Mitigation Strategy Workshop

GEMA Mitigation Strategy Workshop Agenda



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
GEMA MITIGATION STRATEGY WORKSHOP
AMERICAN RED CROSS OF GEORGIA**


**DECEMBER 2, 2015
1:00 P.M. – 4:00 P.M.**

- | | | |
|------|--|---------|
| I. | Introduction
<i>Destiny Ruffin- AFCEMA</i> | 1:00 PM |
| II. | Project Overview, Status, Workshop Introduction
<i>Jim McIntosh- Tetra Tech</i> | 1:15 PM |
| III. | Mitigation Strategies Overview and Discussion
Kelly Reeves- GEMA | 1:30 PM |
| IV. | Review of Individual Municipality Mitigations Strategies
Jim McIntosh- Tetra Tech and Kelly Reeves-GEMA | 2:00 PM |
| V. | Meeting Wrap Up
<i>Jim McIntosh- Tetra Tech</i> | 3:30 PM |
| V. | Closing Comments
<i>Destiny Ruffin- AFCEMA</i> | 3:45 PM |

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GEMA Mitigation Strategy Workshop Sign-In Sheets



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
GEMA Mitigation Strategy Workshop
Sign-In Sheet

December 2, 2015

Name	Department	Position	Phone	Email	Signature
Math Maricella	Milton	EM/FM	404-810-1892	mathmaricella@cityofmiltonga.com	<i>[Signature]</i>
Joe Maddox	Union City	Fire Chief	770-652-1965	j.maddox@unioncityga.com	<i>[Signature]</i>
Mike Clark	Union City	Asst Chief	678-621-9227	mclark@unioncityga.com	<i>[Signature]</i>
Rich Richardson	Hapeville	EM	770-718-7667	richardson@hapeville.org	<i>[Signature]</i>
Henry Argo	Palmetto Fire	Fire Chief	770-940-4437	argo@citypalmetto.com	<i>[Signature]</i>
DNY Pappoutsis	Roswell	Deputy Fire	7-594-6031	TPAPPOUTSIS@RoswellGov.com	<i>[Signature]</i>
Joe Papanics	ALPHARETTA	EM COORD.	678-397-6252	JAPAPANICS@ALPHARETTA.GA.US	<i>[Signature]</i>
Kelly Reeves	GEMA	Planner	404-558-2991	kelly.reeves@gema.ga.gov	<i>[Signature]</i>
Mike White	East Point	Dept Chief	4155-1704	MWHITE@EastPointCity.org	<i>[Signature]</i>
CHRIS BETHUNUM	DWM - OES	CIVIL ENG MGR	404-516-3211	CBETHUNUM@ATLANTA.GA.GOV	<i>[Signature]</i>
Charles Kendrick	EBST POINT	Asst Battalion Chief	678-815-1532	Kendrick16@jaboo.com	<i>[Signature]</i>
Chris Harris	DPCP	Asst. Dir.	(4) 370-6078	Chris.harris@cityofharris.com	<i>[Signature]</i>
Ric Aron	Marietta	Manager	678-353-3479	Ric.Aron@Marietta.gov	<i>[Signature]</i>
Marilyn Taylor	CO2 CEAM	Manager	4-865-4557	mtaylor@atlanta.gov	<i>[Signature]</i>
Plumley Terry	CO4/D PW	Safety Supv	7652-9840	terry@atlanta.gov	<i>[Signature]</i>
LOREN KING	CSA/DPW	SAFETY SUPV.	(678) 614-8351	L.M.KING@ATLANTA.GA.GOV	<i>[Signature]</i>



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
GEMA Mitigation Strategy Workshop
Sign-In Sheet

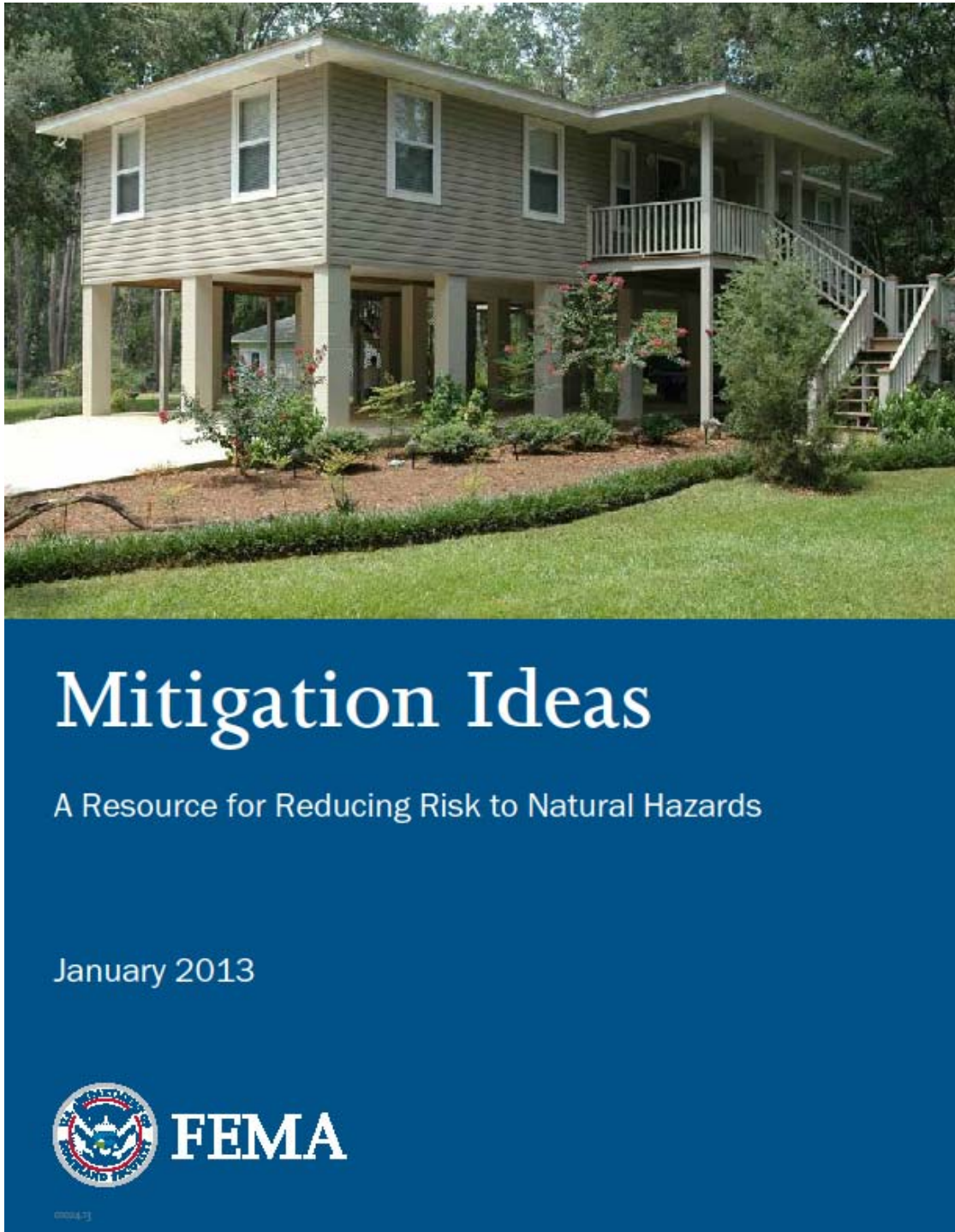
December 2, 2015

Name	Department	Position	Phone	Email	Signature
Donnie Reece	AFCEMA	Dps Manager	4 304 7777	Donnie.Reece@afcema.com	<i>[Signature]</i>
Calvin G Burgess	COA-DWM	Emergency Manager	41925-4387	cburgess@atlantaga.gov	<i>[Signature]</i>
OZ HILL	AFRD	AFRD	6784309093	ohill@atlantaga.gov	<i>[Signature]</i>
Destiny Rutin	AFCEMA	Project Coordinator	(4) 012-5089	destiny.rutin@afcema.com	<i>[Signature]</i>
Jim McIntosh	Tetra Tech	Planner	(4) 844-0571	Jim.mcintosh@tetratech.com	<i>[Signature]</i>



GEMA Mitigation Strategy Workshop Presentation

Meeting was primarily a discussion based workshop without a Power Point. The FEMA Mitigation Ideas resource below was available and discussed along with copies of each jurisdictions draft mitigation strategy list.





GEMA Mitigation Strategy Workshop Meeting Minutes



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

GEMA/FEMA MITIGATION STRATEGY WORKSHOP MINUTES

December 2, 2015
1:00 P.M.

Introduction - Destiny Ruffin - AFCEMA

Destiny Ruffin from AFCEMA greeted those in attendance and thanked them for their ongoing support and participation in the effort to update the Fulton County Hazard Mitigation Plan. Ms. Ruffin also provided a brief overview of what to expect from the workshop. All in attendance were then asked to introduce themselves to the group and to identify the jurisdiction they represented.

Project Overview, Status, Workshop Introduction - Jim McIntosh- Tetra Tech

Jim McIntosh from Tetra Tech provided an overview of the current project status. Mr. McIntosh discussed completion of the individual municipality meetings, the development of individual annexes in 2016 and reiterated what Ms. Ruffin had stated about the purpose and intent of the workshop. It was discussed that some of this material was presented during the initial /kickoff meeting but this was an opportunity to go into greater detail about the purpose and methodology of Hazard Mitigation Planning. The particular focus of the day was to assist with identifying, reviewing and prioritizing mitigation strategies since all were actively engaged in the local planning process. Mr. McIntosh then introduced Mrs. Kelly Reeves from the Georgia Emergency Management Agency (GEMA). Mrs. Reeves is responsible for reviewing local HMP as part of the State approval process and is an excellent resource for assisting with the development of mitigation strategies.

Mitigation Strategies Overview and Discussion - Kelly Reeves- GEMA

Mrs. Kelly Reeves introduced herself and discussed her desire to serve as a resource along with how this was an opportunity for the jurisdictions in Fulton County to ask questions and get assistance with their mitigation strategies if needed. Mrs. Reeves helped to clarify what "mitigation" really is and discussed the overall process and purpose of mitigation planning. Mrs. Reeves then discussed what factors such as alignment with goals, prioritizing, funding, risk vs. benefit and terminology that the jurisdictions should consider when listing new strategies or updating their previous list.

After this discussion Mrs. Reeves introduced the group to the *FEMA Mitigation Ides Book* as another planning resource. Examples of mitigation strategies such as education and community outreach, mass communication / warning, building designs, local ordinance, and land use planning were then discussed as potential options to consider as applicable.

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Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

Review of Individual Municipality Mitigations Strategies Jim McIntosh- Tetra Tech and Kelly Reeves-GEMA

Following the presentation and discussion lead by Mrs. Reeves those in attendance were provided with draft copies of their previously identified mitigation actions along with the list of new actions they planned to add. The materials had been previously submitted to the AFCEMA DropBox site following the individual municipality meetings. The planners from each jurisdiction were then asked to review their lists to determine if any revisions, additions or deletions were needed. Mrs. Reeves, Ms. Ruffin and Mr. McIntosh remained in the meeting room and held discussions with individual planners to assist as needed. Some individuals indicated that no changes were needed or that they would review their mitigation strategies with additional staff and follow-up. Other jurisdictions such as Alpharetta, Atlanta, Roswell and Union City remained longer to discuss specific details of items listed.

Meeting Wrap Up and Closing Comments - *Destiny Ruffin – AFCEMA and Jim McIntosh- Tetra Tech*

Shortly after those in attendance began to review their mitigation strategies Mr. McIntosh called for everyone's attention. Rather than having a formal end to the meeting he stated that people were free to go once they felt comfortable with their list and/or plan of action going forward. They were also directed to the list of contact information should anyone wish to follow-up with Ms. Ruffin or Mr. McIntosh. Attendees were instructed to submit any updates via DropBox by December 11th just as they had done with previous documents. Ms. Ruffin also announced that an additional meeting was going to take place with external partners such as schools and hospitals to discuss their specific interests. All were thanked for their time and effort. Individuals then left the meeting in a staggered fashion after having an opportunity to review and discuss their documents.

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External Partners Meeting

External Partners Meeting Agenda



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

HAZARD MITIGATION PLAN UPDATE
EXTERNAL PARTNERS MEETING
AMERICAN RED CROSS OF GEORGIA

DECEMBER 9, 2015
10:00 A.M. – 12:00 P.M.

- | | | |
|------|--|----------|
| I. | Introduction
<i>Matthew Kallmyer - AFCEMA</i> | 10:00 AM |
| II. | Project Overview, Status, Workshop Introduction
<i>Jim McIntosh- Tetra Tech</i> | 10:15 AM |
| III. | Mitigation Strategies Overview and Discussion
Kelly Reeves- GEMA | 1:30 PM |
| IV. | Review of Individual Municipality Mitigations Strategies
Jim McIntosh- Tetra Tech and Kelly Reeves-GEMA | 2:00 PM |
| V. | Meeting Wrap Up
<i>Jim McIntosh- Tetra Tech</i> | 3:30 PM |
| V. | Closing Comments
<i>Matthew Kallmyer - AFCEMA</i> | 3:45 PM |

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



External Partners Meeting Sign-In Sheets



Jurisdiction Visit
Fulton County Hazard Mitigation Plan Update
Fulton County External Partners Meeting
Sign-In Sheet

December 9, 2015

Name	Department	Position	Phone	Email	Signature
Jim McIntosh	Tetra Tech- AFCEMA	Planner	6-777-2678	jim.mcintosh@tetra.tech.com	<i>J. McIntosh</i>
Shauna Smith	MARTA-EPD	EPD Coord.	4-848-4703	SSmith1@itsmarta.com	<i>Shauna Smith</i>
Frank Stanley	GA TECH PD	EP COORD	4-734-7694	Frank.Stanley@ep.gatech.edu	<i>Frank Stanley</i>
Vonne Ruggins	APS-Facilities S&S	Project Mgr.	4-802-5720	vdouglas@atlantak12.ga.us	<i>V. Ruggins</i>
Destiny Rutin	AFCEMA	Project Coordinator	4-012-5000	destiny.rutin@afcema.com	<i>Destiny Rutin</i>
Donna Lee	Red Cross	Program Mgr	4-513-3585	donna.lee@redcross.org	<i>Donna Lee</i>
Marquanta S. Hall	APS Security	Director	4-802-2522	msandse@atlanta.publicschools.us	<i>Marquanta S. Hall</i>



External Partners Meeting Presentation

The slide features the Tetra Tech logo and tagline 'complex world | CLEAR SOLUTIONS®' in the top left. The main title is 'Fulton County Hazard Mitigation Plan : 2015 Update' with the date 'December 9, 2015' and 'External Partners Meeting' below it. The bottom left contains the text 'Atlanta-Fulton County Emergency Management Agency (AFCEMA)' and a 'Welcome' banner. The bottom center has the AFCEMA logo, and the bottom right has another Tetra Tech logo. Three photographs are included: a meeting in progress, a person interacting with children in a library, and a meeting with people seated around a table.


The slide is titled 'Today's Topics' and lists the following agenda items:

- Introductions
- Purpose for a Hazard Mitigation Plan
- Planning Process
- Updating a Hazard Mitigation Plan
- Schedule
- Next Steps

The slide includes the AFCEMA logo in the bottom left and the Tetra Tech logo with tagline 'complex world | CLEAR SOLUTIONS®' in the bottom right.

Hazard Mitigation

*“Mitigation” -
Sustained action taken to
reduce or eliminate
long-term risk to life and
property
from a hazard event*



“provides the blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and local ability...” (CFR).

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What is Mitigation?

- Mitigation is the cornerstone of emergency management.
- Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events.
- A Local Mitigation Plan demonstrates the jurisdiction’s commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

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The Mitigation Plan Update Will:


- **Help the county and participating partners prepare for and mitigate the effects of disasters.**
- **Build more resilient communities.**
- **Support National Flood Insurance Program (NFIP) compliance and, potentially, policy rate reduction efforts.**



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**New Mitigation Actions for
2015 HMP Update**

- **Opportunity to add new mitigation actions**
- **This include all in-progress grant applications (FEMA or other related grant programs)**
- **Proposed mitigation actions should address identified vulnerabilities**



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Types of Mitigation Actions

- **Plans and/or Regulations**
 - (Measures such as zoning and building code, ordinances, planning (comprehensive/master plans, stormwater management plans, open space), hazards/risk insurance (e.g. NFIP).
- **Property Protection**
 - Measures such as acquisition, elevation, relocation, structural retrofits, storm shutters, rebuilding, barriers, floodproofing.
- **Public Education**
 - Measures such as public awareness projects, real estate disclosure, hazard information centers, technical assistance.
- **Natural Resource Protection**
 - Measures such as erosion and sediment control, stream corridor protection, vegetative management, wetlands preservations.

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Plan Implementation

- Your mitigation strategy section provides a “blueprint” to follow for progressively reducing your community’s natural hazard risk.
- It will include two type of initiatives/projects – those that your community can “self find” and those that will require outside (e.g. grant) funding.
- Mitigation grant opportunities open regularly:
 - The annual HMA grant window opens in June of each year.
 - HMGP funding comes in the wake of a Declared Disaster in the State.


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**Examples of Mitigation Projects:
Plans and/or Regulations**

➤ **Drought:**

- **Monitor Water Supply.** Leaks, levels, etc.
- **Develop Drought Emergency Plan:** Identify plan triggers, early warning, restrictions, agreements for secondary water etc.
- **Establish Irrigation/Water Use Restrictions:** Drought tolerant landscaping
- **Retrofit Water Supply / Delivery System**
- **Educate Residence on Conservation Techniques**




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**Examples of Mitigation Projects:
Plans and/or Regulations**

➤ **Extreme Temperatures**

- **Reduce Urban Heat Island Effect:** increase plantings/shade around buildings and parking lots
- **Increase Awareness of Risk and Safety**
- **Assist Vulnerable Populations:** outreach campaigns
- **Educate Property Owners:** Frozen Pipes etc.
- **Develop Plan for Temperature Emergencies**



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**Examples of Mitigation Projects:
Plans and/or Regulations**

➤ **Lightning**

- **Protect Critical Facilities and Equipment:** lightning rods, grounding, surge protection etc.
- **Conduct Awareness Program:** Develop brochure, post warning signs etc.
- **Install Detection Equipment near outdoor arenas and develop policy for use:** Sport complex, stadium, practice fields, Amphitheaters



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**Examples of Mitigation Projects:
Plans and/or Regulations**

➤ **Tornado**

- **Promote the construction and use of safe rooms**
- **Require or encourage wind engineering measures and construction techniques.**
- **Conduct outreach activities to increase awareness of tornado risk:** Conducting tornado drills in schools. Teaching school children about the dangers of tornadoes and how to take safety precautions. Support Weather Awareness Week etc.



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Examples of Mitigation Projects: Plans and/or Regulations

- Flood
 - **Comprehensive Planning and Floodplain Management:** Determining and enforcing acceptable land uses to alleviate the risk of damage by limiting exposure in flood hazard areas. Passing and enforcing an ordinance that regulates dumping in streams and ditches, green infrastructure etc.
 - **Planning Partnerships:** Establishing watershed-based planning initiatives to address the flood hazard with neighboring jurisdictions
 - **Flooding can be mitigated by limiting or restricting how development occurs in floodplain areas.**
 - **Building Codes and Development Standards:** help ensure structures are able to withstand flooding.
 - **Rainwater and snowmelt can cause flooding and erosion in developed areas.** Implement storm water management practices to prevent this etc.

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Schedule

- Please submit your Mitigation Strategies by **December 18, 2015**
- Draft Plan to AFCEMA on December 31st
- Steering Committee Review in February 2016
- Final Draft to Steering Committee by March 1st
- Draft submitted to GEMA by March 30, 2016
- Plan Submitted to FEMA by Summer 2016



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Next Steps

- Identify Mitigation Actions/ Strategies to include in the 2016 Update
- Submit to AFCEMA by **December 18th**
- Review draft plan in 1st quarter 2016



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Thank you!

- Destiny Ruffin- AFCEMA
 - Email: destiny.ruffin@afcema.com
 - Phone: 404-612-5689
- Jim McIntosh- Tetra Tech
 - Email: jim.mcintosh@tetrattech.com
 - Phone: 678-777-2678



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External Partners Meeting Minutes



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afceema@afceema.com

EXTERNAL PARTNERS HAZARD MITIGATION WORKSHOP MINUTES

December 9, 2015

10:00 a.m.

Introduction - Destiny Ruffin - AFCEMA

Destiny Ruffin greeted those in attendance, thanked Donna Lee from the American Red Cross for hosting the meeting and thanked attendees for their participation in the Hazard Mitigation Plan Update. Ms. Ruffin then provided a brief overview of the meeting agenda.

Purpose for Hazard Mitigation Planning, Project Overview - Destiny Ruffin- AFCEMA and Jim McIntosh- Tetra Tech

Jim McIntosh from Tetra Tech provided a brief presentation to review the overall project and current status, discuss the purpose of hazard mitigation planning, examples of potential mitigation projects along with how funding opportunities are designed to work.

Updating Mitigation Strategies Overview and Discussion Jim McIntosh- Tetra Tech and Destiny Ruffin- AFCEMA

Following the presentation Mr. McIntosh and Ms. Ruffin walked attendees through a worksheet that the municipalities in Fulton County were using to identify and update their mitigation actions. Attendees were also provided with some guidance on how to identify and prioritize any potential strategies.

Schedule – Destiny Ruffin – AFCEMA

To close out the presentation Ms. Ruffin reviewed the significant future dates of the project. Attendees were asked to submit any updated mitigation actions to the AFCEMA DropBox or via email by December 18, 2015. Ms. Ruffin and Mr. McIntosh also made sure that attendees had their contact information if they had any additional questions after the meeting.

Review Worksheet #4 Individual Mitigations Strategies - Jim McIntosh- Tetra Tech and Destiny Ruffin- AFCEMA

Following the presentation Ms. Ruffin and Mr. McIntosh held individual discussions with attendees from Atlanta Public Schools, Georgia Tech, MARTA and the American Red Cross concerning the completion of the mitigation strategies worksheet (WS#4), potential project ideas, prioritization and answered additional questions about funding opportunities.

Closing Comments – Destiny Ruffin- AFCEMA

Ms. Ruffin concluded the meeting with a request to have feedback submitted by December 18th and to thank those in attendance for their time and effort. Following the meeting Ms. Ruffin sent the presentation and data request to all who had been invited so that those who were unable to attend would still have an opportunity to participate.

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Public Meeting #1

Press Release/ Announcements

**Atlanta-Fulton
County Emergency
Management Agency**
Matthew Kallmyer, Director

MEDIA RELEASE
FOR IMMEDIATE RELEASE

CONTACT

April Majors, Senior Public Affairs
Officer
141 Pryor Street, SW, Suite: 2105
Atlanta, Georgia 30303
Office: 404.612.1282
Media Only Line: xxx.xxx.xxxx
E-mail:
April.Majors@fultoncountygga.gov

Media Release – October 5, 2015

Emergency Managers Seek Public Input on Hazard Mitigation Plan

(October 5, 2015) The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is the lead county organization responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities within Fulton County. This is accomplished via hazard mitigation as well as preparation and response planning done in partnership with City/County agencies, regional and state level partners, non-profit entities, schools and the private sector.

The Atlanta-Fulton County Emergency Management Agency will hold a public meeting at 6:30 PM on Thursday, October 22, 2015. The meeting will be held at the Alpharetta Public Library located at 10 Park Plaza Alpharetta, GA 30009. Attendees will receive an overview of the hazard mitigation planning process and will have the opportunity to offer recommendations.

The final plan will be submitted to the Federal Emergency Management Agency (FEMA) for approval.



AFCEMA to Hold Public Meeting to Inform Residents of the Hazard Mitigation Planning Process

All residents encouraged to attend and give feedback

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) will hold a public meeting at 6:30 pm on Thursday, October 22, 2015. Attendees will receive an overview of the hazard mitigation planning process and will have the opportunity to offer recommendations. The meeting will be held at the Alpharetta Public Library located at 10 Park Plaza Alpharetta, Georgia 30009.

AFCEMA is currently working on updating the Fulton County Multijurisdictional Hazard Mitigation Plan in partnership with local municipalities. One of the program mandates is to solicit comments and suggestions from our citizens in the form of three (3) community meetings.

The Atlanta-Fulton County Emergency Management Agency is responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities for all municipalities within Fulton County. This is accomplished via hazard mitigation as well as preparation and response planning done in partnership with City and County agencies, regional and state level partners, non-profit entities, schools and the private sector.

The final plan will be submitted to the Federal Emergency Management Agency (AFEMA) for approval.

For information more about AFCEMA, please visit afcema.com or call (404) 612-5660.



Public Meeting #1 Agenda



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

HAZARD MITIGATION PLAN PUBLIC MEETING #1

October 22, 2015
6:30 P.M.

- | | | |
|------|--|---------|
| I. | Introduction
<i>Director Matthew Kallmyer- AFCEMA</i> | 6:30 PM |
| II. | Project Overview, Objectives, Timeline
<i>Lisa Danner- Tetra Tech</i> | 6:40 PM |
| III. | Meeting Wrap Up
<i>Lisa Danner- Tetra Tech</i> | 7:15 PM |
| IV. | Fulton County Communications
<i>Jessica Corbett – Fulton County</i> | 7:20 PM |
| V. | Closing Comments
<i>Director Matthew Kallmyer- AFCEMA</i> | 7:30 PM |

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Public Meeting #1 Sign-In Sheet



Public Meeting #1
Fulton County Hazard Mitigation Plan Update
Wolf Creek Branch Library
Sign-In Sheet

January 20, 2016

Name	City	Zip Code	Email (Optional)
Victor Gaither	Atlanta	30307	vgaither@Atlanta.K12.ga.us
Michael Charlson	Fulton	30331	MICHAEL.CHARLSON@ ATLANTA FULTONCOUNTYGA.GOV
Destiny Griffin	Atlanta	30303	destinygriffin@afema.com
Math Ballmyer	Atlanta	30303	matthew.ballmyer@afema.com
Jim McIntosh	Tetra Tech	30024	Jim.mcintosh@tetra.tech.com



Public Meeting #1 Presentation

TETRA TECH
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**Fulton County
Hazard Mitigation Plan :
2015 Update**

October 22, 2015
Public Meeting #1

Atlanta-Fulton County
Emergency Management
Agency (AFCEMA)

Welcome

EMA
EST. 1996
ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY


Today's Topics

- Introductions
- Purpose for a Hazard Mitigation Plan
- Updating a Hazard Mitigation Plan
- Schedule
- Planning Process

TETRA TECH
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Hazard Mitigation

*“Mitigation” -
Sustained action taken to
reduce or eliminate
long-term risk to life and
property
from a hazard event*



“provides the blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and local ability...” (CFR).

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What is Mitigation?

- Mitigation is the cornerstone of emergency management.
- Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events.
- A Local Mitigation Plan demonstrates the jurisdiction’s commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

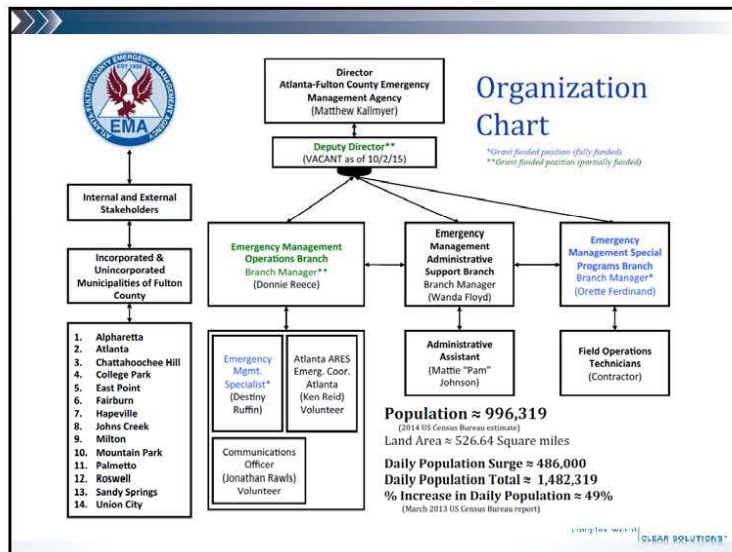
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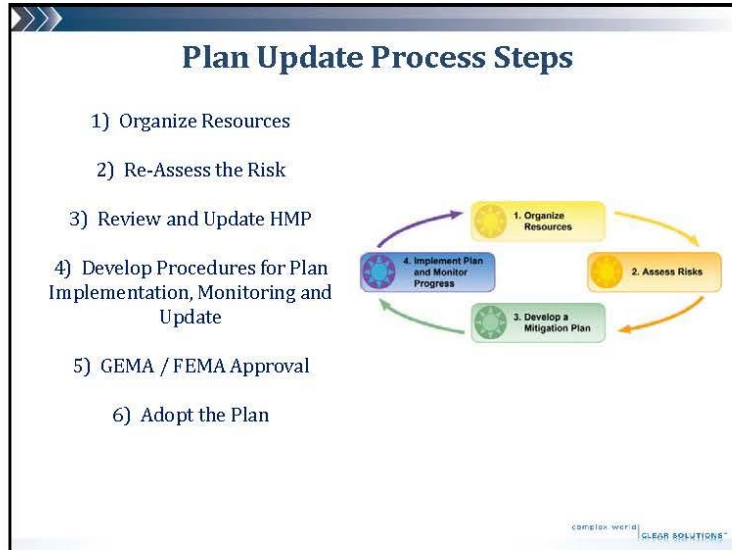


The Mitigation Plan Update Will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Support National Flood Insurance Program (NFIP) compliance and, potentially, policy rate reduction efforts.

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Fulton County Hazard Mitigation Planning Team


Fulton County Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens

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Public Meetings

➤ A total of 3 public meetings are required

- Locations in Fulton County:
 - Public Meeting #1 - October 22, 2015 - Alpharetta Library
 - Public Meeting #2 - Early December, 2015 - Location TBD
 - Public Meeting #3 - Early January, 2016 - Location TBD



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Project Timeline

Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015 – January 2016	Hold 3 Public Meetings
December 31, 2015	Draft Plan Reviewed by AFCEMA
March 30, 2016	Plan due to GEMA for Review and Approval
April – June 2016	FEMA will Review and Send Findings Back to AFCEMA
Summer 2016	Jurisdiction Adoption of New Plan

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Re-Assess the Risk



These are Five Steps to Assess Risk:


1. Identify Hazards
2. Profile Hazards
3. Inventory Assets
4. Estimate Losses
5. Evaluate Mitigation Options

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Assess the Risk – Hazard of Concern Identification

Hazards of Concern - Those natural hazards that pose significant risk to the Planning Area and that can be addressed through mitigation rather than only through preparedness, response and recovery.

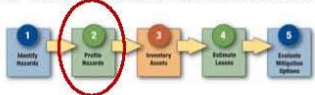
- Review and update the “hazards of concern” that will carry through the planning process.
- Each municipality has differing risk to the Hazards of Concern.
- The 2010 plan will be updated for natural hazards:
 - Flood (riverine, ice jam, flash, urban /stormwater)
 - Severe Storm (wind, hail, lightning)
 - Severe Winter Weather (heavy snow, blizzard, ice storm)
 - Infestation (e.g. beavers, Emerald Ash Borer)
 - Wildfire
 - Earthquake – could include damage to dams



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Assess the Risk – Hazard Profiling

- Hazards are profiled (characterized) according to:
 - Background and local conditions
 - Historic frequency and probability of occurrence
 - Severity
 - Historic losses and impacts
 - Designated hazard areas
- What hazard events have occurred since the 2010 Plan?
- What County and local losses have occurred as a result of these events?




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Assess the Risk – Inventory Assets

What is at risk? People, Property, Economy, Environment



- Population and Demographics – What has changed since 2010?
- Building Stock
 - What has changed since 2010?
- Facilities
 - Police, Fire, Emergency Services
 - Hospitals and Medical Care Facilities
 - Schools and Care Facilities
 - Sheltering Facilities
 - Infrastructure (Transportation Systems, Utilities)



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Assess the Risk – Estimate Losses

- Vulnerability Assessment - What do we predict our suffering to be if we do nothing to mitigate our risk:
 - Given current conditions, which have changed since 2010?
 - Given our improved understanding of risk, and tools to assess that risk, which have changed since 2010?


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Assess the Risk – Evaluate Mitigation Options

Re-evaluate Hazard Mitigation Goals and Objectives

Goals: General guidelines that state what we want to achieve. Should be consistent with the State goals and other local goals.
Example: “Protect property”

Objectives: Define strategies or implementation steps to attain a stated goal.
Example: “Enact or enforce regulatory measures that ensure new development will not increase flood threats to existing properties”.



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Assess the Risk – Evaluate Mitigation Options

What resources do we have at our disposal to Mitigate Risk?

“Proposed mitigation actions will be evaluated against the backdrop of what is feasible in terms of your government’s legal, administrative, fiscal and technical capacities” (FEMA 386-3)

- Serve to identify legal authority and administrative, technical and fiscal capabilities in the state, county and jurisdictions that will facilitate or hinder hazard mitigation goals and objectives.
- State Capability Assessment is in the State HMP
- Part of this Planning Process is to build County and Local Mitigation Capabilities
- Training, Workshops and Seminars

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Update, Identification and Analysis of Mitigation Actions


- Mitigation strategies need to be realistic, achievable and action-oriented.
- Will include both county-wide strategies, as well as jurisdiction-specific.
- For each proposed mitigation strategy, the following will be identified:
 - Implementation timeline
 - Estimated budget
 - Potential funding sources
 - Lead agency or department
 - Supporting agencies
 - Priority
 - For prior/old strategies provide update of status
- Proposed mitigation activities are evaluated using a Cost-Benefit Screening



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New Mitigation Actions for 2015 HMP Update

- Opportunity to add new mitigation actions
- This includes all in-progress grant applications (FEMA or other related grant programs)
- Proposed mitigation actions should address identified vulnerabilities
- GEMA/FEMA Mitigation Workshop



"At the first sign of a flood, you just push this little button."

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Types of Mitigation Actions

- **Plans and/or Regulations.** Measures such as zoning and building code, ordinances, planning, hazard/risk insurance (e.g. NFIP).
- **Property Protection.** Measures such as acquisition, elevation, relocation, structural retrofits, storm shutters, rebuilding, barriers, floodproofing.
- **Public Education and Outreach.** Measures such as public awareness projects, real estate disclosure, hazard information centers, technical assistance.
- **Natural Resource Protection.** Measures such as erosion and sediment control, stream corridor protection, vegetative management, wetlands preservation.

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Plan Implementation

- A mitigation strategy section provides a “blueprint” to reduce your community’s natural hazard risk.
- Two types of initiatives/projects:
 - Self-funded projects.
 - Grand funded.
- Mitigation grant opportunities open regularly:
 - The annual HMA grant window opens in June of each year.
 - HMGP funding comes in the wake of Declared Disasters in the State.

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Integration with Other Plans and Programs

The Hazard Mitigation Plan should complement and support other Plans and Regulatory Mechanisms

- Emergency Operations Plan (EOP)
- Master Plans
- Capital Improvement Plans
- Higher Regulatory Standards
- Storm Water Management Plans

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Public Meeting #1 Handout



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

Public Meeting #1 - Fulton County Hazard Mitigation Plan 2015 Update

Overview: Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events. Through mitigation actions such as sound land-use planning; adoption and enforcement of building codes; removing structures from hazardous areas; and retrofitting of existing buildings and facilities; and storm water management projects; we can protect facilities to assure functionality following an event, reduce exposure to liabilities and minimize disruptions to the community.

Introduction: Section 404 of the Robert T. Stafford Disaster and Emergency Assistance Act of 1988 established the Hazard Mitigation Grant Program (HMGP). The purpose of the program is to provide funds to State agencies and local governments in the aftermath of a disaster for projects that reduce or eliminate the long-term risk to human life and property from the effects of natural hazards. The Federal Emergency Management Agency (FEMA) contributes 20% of the amount it will spend on disaster assistance programs to fund the HMGP.

Federal law requires States and local jurisdictions have a mitigation plan prior to receipt of HMGP project funds. The plan identifies hazards, assesses community needs, and describes a community-wide strategy for reducing risks associated with natural disasters.

Project Timeline	
Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015 – January 2016	Hold 3 Public Meetings
December 31, 2015	Draft Plan Reviewed by AFCEMA
March 30, 2016	Plan due to GEMA for Review and Approval
April – June 2016	FEMA will Review and Send Findings Back to AFCEMA
Summer 2016	Jurisdiction Adoption of New Plan

Purpose: The Fulton County Hazard Mitigation Plan demonstrates the jurisdiction's commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

The mitigation plan update will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.

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**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

- Continue to allow the county and participating partners the ability to be eligible for pre and post-disaster recovery and mitigation funding through:
 - Pre-Disaster Mitigation Grant Funding (404 Mitigation)
 - Post-Disaster Public Assistance Funding (Categories C-G, 406 Mitigation)
- Support National Flood Insurance Program (NFIP) compliance, and potentially, policy rate reduction efforts.

Local Planning Teams: After the updated plan receives approval from GEMA and FEMA each municipality will need to formally adopt the Updated Hazard Mitigation Plan. The Local Planning Team will re-assess the specific hazards and risk for their jurisdiction.

The Fulton County Hazard Mitigation Planning Team includes representatives from the following disciplines for each municipality:

Fulton County Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens



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Public Meeting #1 Meeting Minutes



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

HAZARD MITIGATION PLAN PUBLIC MEETING #1 MINUTES

Alpharetta Public Library
October 22, 2015
6:30 P.M.

Introduction - Director Matthew Kallmyer- AFCEMA

The presentation room in the Alpharetta Public Library was set up for the public meeting with planning team members from AFCEMA and Tetra Tech present. Additional representatives from Atlanta Public Schools, Milton and Roswell were also in attendance.

No members of the public were present at the meeting start time so the official presentation did not begin as listed on the agenda.

Project Overview, Objectives, Timeline - Lisa Danner- Tetra Tech

One member from the public (Alpharetta resident) entered the room at approximately 6:45 P.M. and was provided a briefing on the planning process and progress to date along with the opportunity to ask additional questions or make comments.

At approximately 7:00 a gentleman from WXIA TV arrived to capture news footage of the event. Since there was no need for a formal presentation to an audience in the room, Director Kallmyer used the opportunity to provide a news interview concerning the Hazard Mitigation Plan and the update process that is underway.

Meeting Wrap Up - Lisa Danner- Tetra Tech

Following the News Interview it was evident that no additional members of the public were attending the meeting and the planned formal presentation was not required for the evening.

Closing Comments - Director Matthew Kallmyer- AFCEMA

Planning team members from AFCEMA and Tetra Tech concluded the public meeting and collected materials at approximately 7:45 P.M.

Proudly serving Fulton County, Alpharetta, Atlanta, Chattahoochee Hill Country, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs and Union City.



Public Meeting #2

Press Release/Social Media Announcements

PRESS RELEASE
Department of External Affairs

Communications Division
MEDIA CONTACT: April Majors
404-612-1262 • 404-441-1378 (cell)
april.majors@fultoncountyga.gov
141 Pryor Street, SW, Suite 3090
Atlanta, GA 30303
www.fultoncountyga.gov
<http://twitter.com/FultonInfo>
January 7, 2016



Fulton County Government

AFCEMA to Hold Public Meeting #2 to Inform Residents of the Hazard Mitigation Planning Process

Residents encouraged to attend and give feedback

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) will hold a public meeting at 6:30 pm on Wednesday, January 20, 2016. Attendees will receive an overview of the hazard mitigation planning process and will have the opportunity to offer recommendations. The meeting will be held at the Wolf Creek Public Library located at 3100 Enon Road, SW Atlanta, GA 30331.

AFCEMA is currently working on updating the Fulton County Multijurisdictional Hazard Mitigation Plan in partnership with local municipalities. One of the program mandates is to solicit comments and suggestions from our citizens in the form of three (3) community meetings.

The Atlanta-Fulton County Emergency Management Agency is responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities for all municipalities within Fulton County. This is accomplished via hazard mitigation as well as preparation and response planning done in partnership with City and County agencies, regional and state level partners, non-profit entities, schools and the private sector.

The final plan will be submitted to the Federal Emergency Management Agency (AFCEMA) for approval.
For information more about AFCEMA, please visit afcema.com or call (404) 612-5660.

###



AFCEMA seeks input from Fulton County residents regarding hazard mitu... Page 1 of 2

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Police stop rapper Blac Youngsta outside ...

Atlanta's tallest building purchased by ...

Free tribute to celebrate life of Atlanta ...

Two old trees removed from state Capitol lawn

Story AFCEMA seeks input from Fulton County residents regarding hazard mitigation has been created.

AFCEMA seeks input from Fulton County residents regarding hazard mitigation | Community Spirit

Title (Max 100 Characters)

AFCEMA seeks input from Fulton County residents regarding hazard mitigation

Submitted by AprilMajors

Wednesday, January 20th, 2016, 1:52pm

0 Tweet

Like

[Print \(a\)](#) [E-mail \(a\)](#)

Topics: [Community Spirit](#) ([/news/community-spirit](#)), [News](#) ([/news/news](#))



Disasters are unpredictable. The Atlanta-Fulton County Emergency Management Agency (AFCEMA) is the lead county organization responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities within its area of responsibility.

<http://downtown.11alive.com/news/community-spirit/1865642-afcema-seek...> 1/20/2016



AFCEMA seeks input from Fulton County residents regarding hazard miti... Page 2 of 2

Fulton County residents are asked to answer a brief survey (<https://www.surveymonkey.com/r/HazardMitigationPublicSurvey>) to assist AFCEMA in creating strategies to mitigate a hazardous event. At any time, a hazard such as floods, tornadoes, and severe storms on life and property could happen. Input from residents will greatly help in the development of a strategy.

Residents are urged to log-on to <http://svy.mk/1Zz6v8M> (<http://svy.mk/1Zz6v8M>) to complete a brief survey to help AFCEMA help them when disaster happens.

For more information about the Atlanta-Fulton County Emergency Management Agency, please visit <http://fulloncountyga.gov/afcema> (<http://fulloncountyga.gov/afcema>).

Topics: [Community Spirit](#) ([news/community-spirit](#)), [News](#) ([news/news](#))

[\(E\)](#) [\(P\)](#) [\(P\)](#) [\(P\)](#)

Top Downtown Stories

<p>News</p>  <p>(news/news/1865142-police-stop-rapper-blac-youngsta-outside-atlanta-bank) Police stop rapper Blac Youngsta outside ... (news/news/1865142-police-stop-rapper-blac-youngsta-outside-atlanta-bank)</p>	<p>News</p>  <p>(news/news/1865152-atlantas-tallest-building-purchased-calif-company) Atlanta's tallest building purchased by ... (news/news/1865152-atlantas-tallest-building-purchased-calif-company)</p>	<p>News</p>  <p>(news/news/1864872-free-tribute-celebrate-life-atlanta-music-promoter-alex-cooley) Free tribute to celebrate life of Atlanta ... (news/news/1864872-free-tribute-celebrate-life-atlanta-music-promoter-alex-cooley)</p>	<p>News</p>  <p>(news/news/1864702-two-old-trees-removed-state-capitol-lawn) Two old trees removed from state Capitol lawn (news/news/1864702-two-old-trees-removed-state-capitol-lawn)</p>
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0 Comments

Sort by



 Facebook Comments Plugin

[Downtown Deals](#) ([/local-deals](#))

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[More Local Coupons](#) ([/local-deals](#))
All Atlanta Coupons (<http://www.local saver.com/GA/Atlanta>)

<http://downtown.11alive.com/news/community-spirit/1865642-afcema-seek...> 1/20/2016



Fulton County Government
January 27 at 10:12am · Atlanta · 🌐

AFCEMA needs your feedback. Answer a brief survey to help Fulton County develop effective strategies to reduce the effects of hazards. Learn more at <http://goo.gl/duL59z>.



Like Comment Share

2 people like this.

FultonCountyGeorgia @FultonInfo

TWEETS	FOLLOWING	FOLLOWERS	LIKES	LISTS
8,743	3,286	8,415	3,504	5

Following

Take a brief survey to assist [AFCEMA](#) to mitigate hazardous events such as floods or tornadoes. bit.ly/1JYohkc #FultonInfo

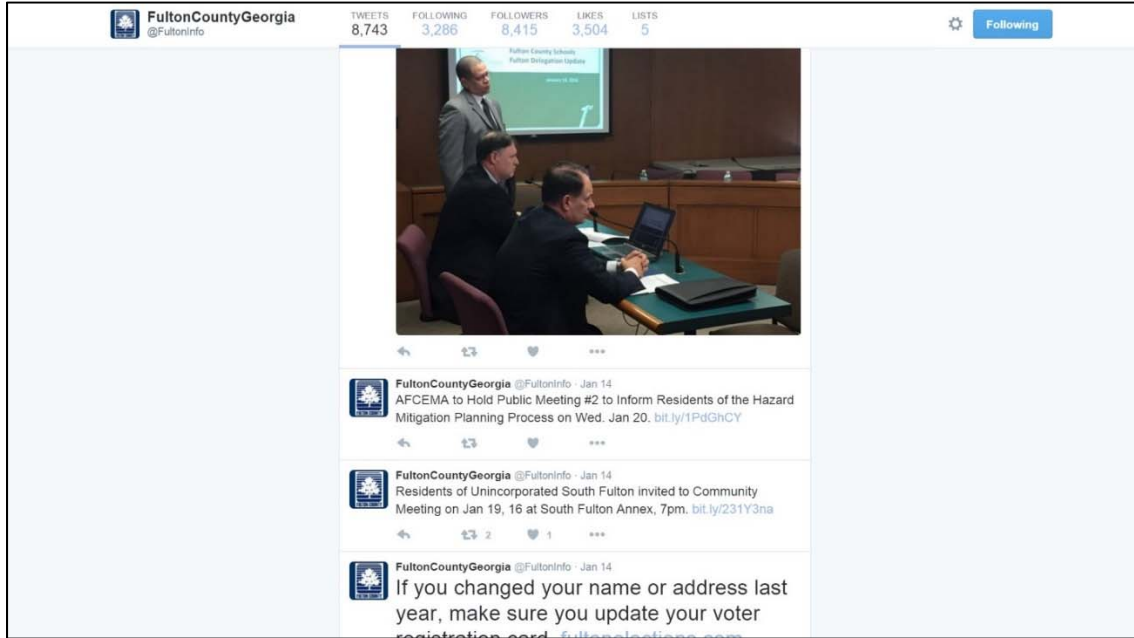
FultonCountyGeorgia @FultonInfo · Jan 20
Residents of Unincorporated South Fulton urged to attend Comprehensive Plan Workshops. 1st workshop Thurs 1/21/16. bit.ly/231Y3na

FultonCountyGeorgia @FultonInfo · Jan 20
AFCEMA to hold 2nd public meeting tonight at the Wolfcreek Library to discuss the hazard mitigation process. bit.ly/1PQhCY
11:19 AM · 20 Jan 2016 · Details

Reply to @FultonInfo

FultonCountyGeorgia @FultonInfo · Jan 20
Register to vote in the March Presidential Primary Election by 2/1/16. bit.ly/23d2Xhl #FultonVotes







Public Meeting #2 Agenda



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

HAZARD MITIGATION PLAN PUBLIC MEETING #2 Wolf Creek Branch Library

January 20, 2016

6:30 P.M.

- | | | |
|------|---|---------|
| I. | Introduction
<i>Director Matthew Kallmyer- AFCEMA</i> | 6:30 PM |
| II. | Project Overview, Objectives, Timeline
<i>Jim McIntosh- Tetra Tech</i> | 6:40 PM |
| III. | Meeting Wrap Up
<i>Jim McIntosh- Tetra Tech</i> | 7:15 PM |
| IV. | Public Questions & Comment
<i>Destiny Ruffin – AFCEMA</i>
<i>Jim McIntosh- Tetra Tech</i> | 7:20 PM |
| V. | Closing Comments
<i>Director Matthew Kallmyer- AFCEMA</i> | 7:30 PM |

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Public Meeting #2 Presentation

**Fulton County
Hazard Mitigation Plan :
2015 Update**

January 20, 2016
Public Meeting #2

Atlanta-Fulton County
Emergency Management
Agency (AFCEMA)

Welcome

The collage includes three photographs: a group of people in a meeting room, a young child sitting on the floor reading a book, and a wider view of the meeting room with people seated at tables.


Today's Topics

- Introductions
- Purpose for a Hazard Mitigation Plan
- Updating a Hazard Mitigation Plan
- Schedule
- Planning Process

The Tetra Tech logo and tagline are located in the bottom right corner of the slide.

Hazard Mitigation

*“Mitigation” -
Sustained action taken to
reduce or eliminate
long-term risk to life and
property
from a hazard event*



“provides the blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and local ability...” (CFR).

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What is Mitigation?

- Mitigation is the cornerstone of emergency management.
- Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events.
- A Local Mitigation Plan demonstrates the jurisdiction’s commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

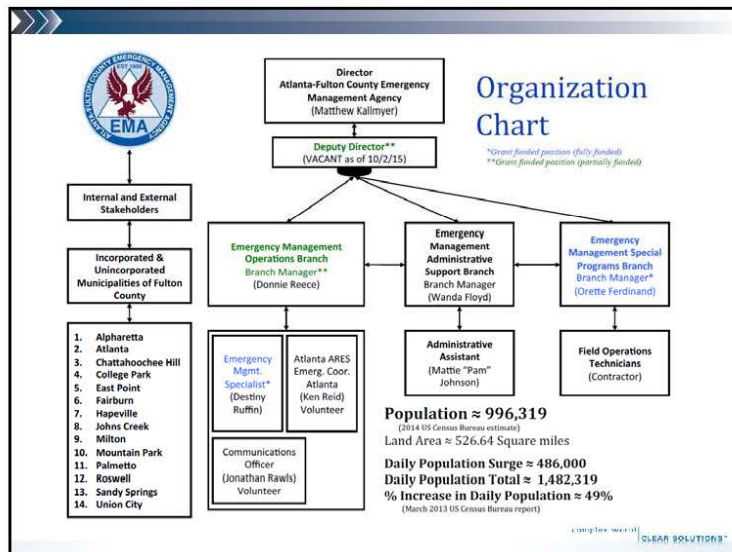
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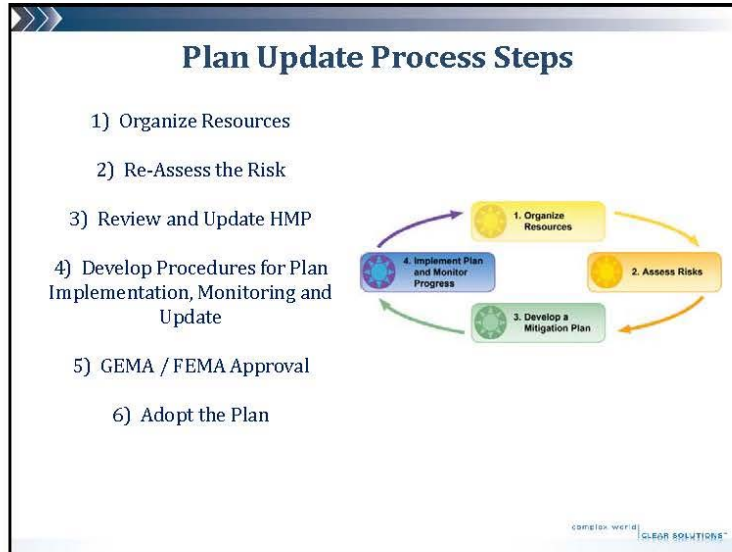


The Mitigation Plan Update Will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Support National Flood Insurance Program (NFIP) compliance and, potentially, policy rate reduction efforts.

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Fulton County Hazard Mitigation Planning Team


Fulton County Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens

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Public Meetings

➤ A total of 3 public meetings are required

- Locations in Fulton County:
 - Public Meeting #1 - October 22, 2015 - Alpharetta Library
 - Public Meeting #2 - January 20, 2016 - Wolf Creek Library
 - Public Meeting #3 - Early March, 2016 - Location TBD



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Project Timeline

Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015 – January 2016	Hold 3 Public Meetings
December 31, 2015	Draft Plan Reviewed by AFCEMA
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Summer 2016	Jurisdiction Adoption of New Plan

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Re-Assess the Risk



These are Five Steps to Assess Risk:


1. Identify Hazards
2. Profile Hazards
3. Inventory Assets
4. Estimate Losses
5. Evaluate Mitigation Options

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Assess the Risk – Hazard of Concern Identification

Hazards of Concern - Those natural hazards that pose significant risk to the Planning Area and that can be addressed through mitigation rather than only through preparedness, response and recovery.

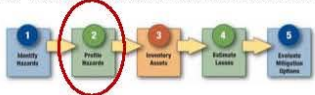
- Review and update the “hazards of concern” that will carry through the planning process.
- Each municipality has differing risk to the Hazards of Concern.
- The 2010 plan will be updated for natural hazards:
 - Flood (riverine, ice jam, flash, urban /stormwater)
 - Severe Storm (wind, hail, lightning)
 - Severe Winter Weather (heavy snow, blizzard, ice storm)
 - Infestation (e.g. beavers, Emerald Ash Borer)
 - Wildfire
 - Earthquake – could include damage to dams



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Assess the Risk – Hazard Profiling

- Hazards are profiled (characterized) according to:
 - Background and local conditions
 - Historic frequency and probability of occurrence
 - Severity
 - Historic losses and impacts
 - Designated hazard areas
- What hazard events have occurred since the 2010 Plan?
- What County and local losses have occurred as a result of these events?




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Assess the Risk – Inventory Assets

What is at risk? People, Property, Economy, Environment



- Population and Demographics – What has changed since 2010?
- Building Stock
 - What has changed since 2010?
- Facilities
 - Police, Fire, Emergency Services
 - Hospitals and Medical Care Facilities
 - Schools and Care Facilities
 - Sheltering Facilities
 - Infrastructure (Transportation Systems, Utilities)



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Assess the Risk – Estimate Losses

- Vulnerability Assessment - What do we predict our suffering to be if we do nothing to mitigate our risk:
 - Given current conditions, which have changed since 2010?
 - Given our improved understanding of risk, and tools to assess that risk, which have changed since 2010?


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Assess the Risk – Evaluate Mitigation Options

Re-evaluate Hazard Mitigation Goals and Objectives

Goals: General guidelines that state what we want to achieve. Should be consistent with the State goals and other local goals.
Example: “Protect property”

Objectives: Define strategies or implementation steps to attain a stated goal.
Example: “Enact or enforce regulatory measures that ensure new development will not increase flood threats to existing properties”.



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Assess the Risk – Evaluate Mitigation Options

What resources do we have at our disposal to Mitigate Risk?

“Proposed mitigation actions will be evaluated against the backdrop of what is feasible in terms of your government’s legal, administrative, fiscal and technical capacities” (FEMA 386-3)

- Serve to identify legal authority and administrative, technical and fiscal capabilities in the state, county and jurisdictions that will facilitate or hinder hazard mitigation goals and objectives.
- State Capability Assessment is in the State HMP
- Part of this Planning Process is to build County and Local Mitigation Capabilities
- Training, Workshops and Seminars

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Update, Identification and Analysis of Mitigation Actions

- Mitigation strategies need to be realistic, achievable and action-oriented.
- Will include both county-wide strategies, as well as jurisdiction-specific.
- For each proposed mitigation strategy, the following will be identified:
 - Implementation timeline
 - Estimated budget
 - Potential funding sources
 - Lead agency or department
 - Supporting agencies
 - Priority
 - For prior/old strategies provide update of status
- Proposed mitigation activities are evaluated using a Cost-Benefit Screening



New Mitigation Actions for 2015 HMP Update

- Opportunity to add new mitigation actions
- This includes all in-progress grant applications (FEMA or other related grant programs)
- Proposed mitigation actions should address identified vulnerabilities
- GEMA/FEMA Mitigation Workshop



"At the first sign of a flood, you just push this little button."

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Types of Mitigation Actions

- **Plans and/or Regulations.** Measures such as zoning and building code, ordinances, planning, hazard/risk insurance (e.g. NFIP).
- **Property Protection.** Measures such as acquisition, elevation, relocation, structural retrofits, storm shutters, rebuilding, barriers, floodproofing.
- **Public Education and Outreach.** Measures such as public awareness projects, real estate disclosure, hazard information centers, technical assistance.
- **Natural Resource Protection.** Measures such as erosion and sediment control, stream corridor protection, vegetative management, wetlands preservation.

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Plan Implementation

- A mitigation strategy section provides a “blueprint” to reduce your community’s natural hazard risk.
- Two types of initiatives/projects:
 - Self-funded projects.
 - Grand funded.
- Mitigation grant opportunities open regularly:
 - The annual HMA grant window opens in June of each year.
 - HMGP funding comes in the wake of Declared Disasters in the State.

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Integration with Other Plans and Programs

The Hazard Mitigation Plan should complement and support other Plans and Regulatory Mechanisms

- Emergency Operations Plan (EOP)
- Master Plans
- Capital Improvement Plans
- Higher Regulatory Standards
- Storm Water Management Plans

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Public Meeting #2 Handout



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

Public Meeting #2 - Fulton County Hazard Mitigation Plan 2015 Update

Overview: Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events. Through mitigation actions such as sound land-use planning; adoption and enforcement of building codes; removing structures from hazardous areas; and retrofitting of existing buildings and facilities; and storm water management projects; we can protect facilities to assure functionality following an event, reduce exposure to liabilities and minimize disruptions to the community.

Introduction: Section 404 of the Robert T. Stafford Disaster and Emergency Assistance Act of 1988 established the Hazard Mitigation Grant Program (HMGP). The purpose of the program is to provide funds to State agencies and local governments in the aftermath of a disaster for projects that reduce or eliminate the long-term risk to human life and property from the effects of natural hazards. The Federal Emergency Management Agency (FEMA) contributes 20% of the amount it will spend on disaster assistance programs to fund the HMGP.

Federal law requires States and local jurisdictions have a mitigation plan prior to receipt of HMGP project funds. The plan identifies hazards, assesses community needs, and describes a community-wide strategy for reducing risks associated with natural disasters.

Project Timeline	
Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
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December 31, 2015	Draft Plan Reviewed by AFCEMA
March 30, 2016	Plan due to GEMA for Review and Approval
April – June 2016	FEMA will Review and Send Findings Back to AFCEMA
Summer 2016	Jurisdiction Adoption of New Plan

Purpose: The Fulton County Hazard Mitigation Plan demonstrates the jurisdiction's commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

The mitigation plan update will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Continue to allow the county and participating partners the ability to be eligible for pre and post- disaster recovery and mitigation funding through:
 - Pre-Disaster Mitigation Grant Funding (404 Mitigation)
 - Post-Disaster Public Assistance Funding (Categories C-G, 406 Mitigation)

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**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

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afcema@afcema.com

- Support National Flood Insurance Program (NFIP) compliance, and potentially, policy rate reduction efforts.

Local Planning Teams: After the updated plan receives approval from GEMA and FEMA each municipality will need to formally adopt the Updated Hazard Mitigation Plan. The Local Planning Team will re-assess the specific hazards and risk for their jurisdiction.

The Fulton County Hazard Mitigation Planning Team includes representatives from the following disciplines for each municipality:

Fulton County Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens



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Public Meeting #2 Meeting Minutes



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

**HAZARD MITIGATION PLAN
PUBLIC MEETING #2
MINUTES**

Wolf Creek Branch Library

January 20, 2016

6:30 P.M.

Introduction – Destiny Ruffin- AFCEMA

The presentation room in the Wolf Creek Branch of the Fulton County Public Library was set up for the public meeting with planning team members from AFCEMA and Tetra Tech present. Additional representatives from Unincorporated South Fulton County and Atlanta Public Schools were also in attendance.

No members of the public were present at the scheduled meeting start time so the official presentation did not begin at the originally planned time.

Project Overview, Objectives, Timeline – Jim McIntosh- Tetra Tech

No citizens attended the public meeting. Staff from AFCEMA, Tetra Tech and Unincorporated S. Fulton County briefly reviewed the project status, public survey, data collection efforts, NFIP data requirements and planned future events.

Meeting Wrap Up – Jim McIntosh- Tetra Tech

After a while it was evident that no members of the public were attending the meeting and the planned formal presentation was not given.

Closing Comments - Director Matthew Kallmyer- AFCEMA

Planning team members from AFCEMA and Tetra Tech concluded the public meeting and collected materials at approximately 7:20 P.M.

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Public Meeting #3

Press Release/Social Media Announcements



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

AFCEMA to Hold Public Meeting #3 to Inform Residents of the Hazard Mitigation Planning Process

All residents encouraged to attend and give feedback

The Atlanta-Fulton County Emergency Management Agency (AFCEMA) will hold a public meeting at 6:30 pm on Wednesday, March 9, 2016. Attendees will receive an overview of the hazard mitigation planning process and will have the opportunity to offer recommendations. The meeting will be held at the Metropolitan Branch Public Library located at 1332 Metropolitan Parkway Atlanta, GA 30310.

AFCEMA is currently working on updating the Fulton County Multijurisdictional Hazard Mitigation Plan in partnership with local municipalities. One of the program mandates is to solicit comments and suggestions from our citizens in the form of three (3) community meetings.

The Atlanta-Fulton County Emergency Management Agency is responsible for providing management and coordination of mitigation, preparedness, response, and recovery activities for all municipalities within Fulton County. This is accomplished via hazard mitigation as well as preparation and response planning done in partnership with City and County agencies, regional and state level partners, non-profit entities, schools and the private sector.

The final plan will be submitted to the Federal Emergency Management Agency (AFEMA) for approval.

For information more about AFCEMA, please visit afcema.com or call (404) 612-5660.

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Public Meeting #3 Agenda



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303

Office (404) 612-5660 | Fax (404) 730-5625

afcema@afcema.com

**HAZARD MITIGATION PLAN
PUBLIC MEETING #3
Metropolitan Branch Library**

**March 9, 2016
6:30 P.M.**

- | | | |
|------|--|---------|
| I. | Introduction
<i>Director Matthew Kallmyer- AFCEMA</i> | 6:30 PM |
| II. | Project Overview, Objectives, Timeline
<i>Jim McIntosh- Tetra Tech</i> | 6:40 PM |
| III. | Building a More Resilient City of Atlanta
<i>Ria Aiken, Director Emergency Preparedness - City of Atlanta</i> | 7:15 PM |
| IV. | Meeting Wrap
<i>Jim McIntosh- Tetra Tech</i> | 7:25 PM |
| V. | Public Questions & Comments
<i>Destiny Ruffin- AFCEMA</i>
<i>Jim McIntosh- Tetra Tech</i> | 7:30 PM |
| VI. | Closing Comments
<i>Director Matthew Kallmyer</i> | 7:40 PM |

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Public Meeting #3 Sign-In Sheet



Public Meeting #3
Fulton County Hazard Mitigation Plan Update
Metropolitan Branch Public Library
Sign-In Sheet

March 09, 2016

Name	City	Zip Code	Email (Optional)
Michael Miller	Alpharetta	30005	—
Destiny Woffin	Atlanta	30317	destini.woffin@afceema.com
Richard Watson	Lawrenceville	30054	richwatson8263@gmail.com
Monica Robinson ^(Employee)			Monica.Robinson@fultoncountyga.gov
Dejunique Gay	Atlanta	30310	deja.gay@gmail.com
Ra'Quan	Atlanta	30303	raquan@atlantaga.gov
Donnie Reese	AFCEMA	30303	donnie.reese@afceema.com
Chela Bennett	CoA	30303	
Matt Kallmyer	AFCEMA	30303	matthew.kallmyer@afceema.com
Heate Cain	Atlanta	30331	cainheate@yupoo.com
Jim McIntosh	Tetra Tech	30024	Jim.mcintosh@tetra.tech.com



Public Meeting #3 Presentation

**Fulton County
Multijurisdictional
Hazard Mitigation Plan:
2015 Update**

March 9, 2016
Public Meeting #3

Atlanta-Fulton County
Emergency Management
Agency (AFCEMA)

Welcome


Today's Topics

- Introductions
- Purpose for a Hazard Mitigation Plan
- Updating a Hazard Mitigation Plan
- Schedule
- Planning Process

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Hazard Mitigation

"Mitigation" -
Sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event



"provides the blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and local ability..." (CFR).

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What is Mitigation?

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- A Local Mitigation Plan demonstrates the jurisdiction's commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

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The Mitigation Plan Update Will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Support National Flood Insurance Program (NFIP) compliance and, potentially, policy rate reduction efforts.

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Plan Update Process Steps

- 1) Organize Resources
- 2) Re-Assess the Risk
- 3) Review and Update HMP
- 4) Develop Procedures for Plan Implementation, Monitoring and Update
- 5) GEMA / FEMA Approval
- 6) Adopt the Plan



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Fulton County Multijurisdictional Hazard Mitigation Planning Team

Fulton County Multijurisdictional Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens

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Public Meetings

- A total of 3 public meetings are required
 - Locations in Fulton County:
 - Public Meeting #1 – October 22, 2015 – Alpharetta Library
 - Public Meeting #2 – January 20, 2016 – Wolf Creek Library
 - Public Meeting #3 – March 9, 2016 – Metropolitan Branch



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Project Timeline	
Date	Task
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Project Timeline to Date	
Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015 – January 2016	Held 2 Public Meetings (Oct 22 and Jan 20 th)
December 2, 2015	Held GEMA / FEMA Mitigation Workshop
December 9, 2015	External Stakeholders Mitigation Workshop (Schools, Medical Facilities, Local Industry, Transit etc.).
January 7, 2015	Submitted initial draft Plan Chapters to AFCEMA and Jurisdictions for review, comment and feedback.
January – March 5, 2016	Public Survey posted for citizen input
February 5, 2016	Initial drafts of all municipality annexes submitted for review, comment and feedback.
March 9, 2016	Public meeting #3 to inform public and review planning progress, draft plan revisions to date and solicit feedback.
August – March	Regular AFCEMA Tetra Tech status calls. Bi-Weekly progress reports.

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Accomplishments to Date

July 2015 to March 2016

- ✓ Formed Steering Committee and Local Planning Committee's
- ✓ Hazard Mitigation Kickoff Meeting
- ✓ Jurisdiction and Stakeholder Data Collection Meetings - Detailed input for the base plan chapters and new annexes.
- ✓ Held 3 Public Meetings to discuss plan development, review progress on drafts and collect feedback (Oct 22nd, Jan 20th, March 9th)
- ✓ Held GEMA / FEMA Mitigation Workshop
- ✓ Held External Stakeholders Mitigation Workshop (Schools, Medical Facilities, Local Industry, Transit etc).
- ✓ Held Steering Committee meetings including a Webinar for greater efficiency.
- ✓ Public Survey posted and received input from 949 visitors.
- ✓ New for 2016 - All municipalities will have their own Annex (15 total) with specific, detailed local information such as demographics, land use, future development, NFIP participation, plan integration and local mitigation projects.
- ✓ Updating plan chapters to reflect county profile, recent events, hazard profiles, inventory of assets, risk assessments, loss estimates and plan objectives, and updated FEMA requirements.
- ✓ Regular AFCEMA Tetra Tech status calls. Bi-Weekly progress reports.

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The Planning Process

Fulton County Multijurisdictional Hazard Mitigation Plan Update


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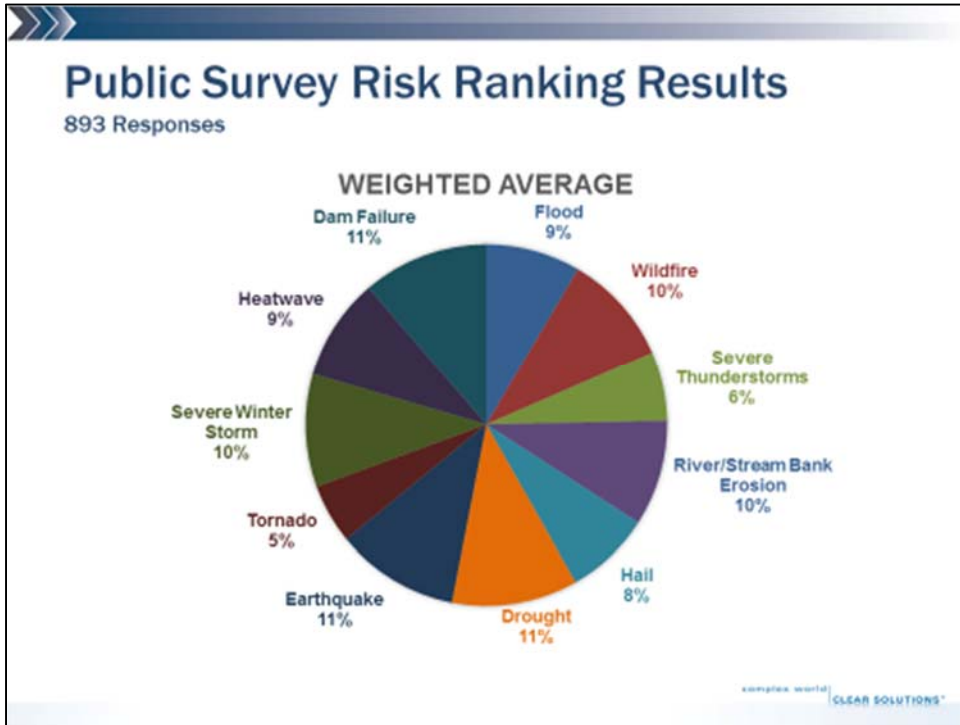
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- Population and Demographics – What has changed since 2010?
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- Training, Workshops and Seminars

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Update, Identification and Analysis of Mitigation Actions

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New Mitigation Actions for 2015 HMP Update

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Types of Mitigation Actions

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Integration with Other Plans and Programs

The Hazard Mitigation Plan should complement and support other Plans and Regulatory Mechanisms

- Emergency Operations Plan (EOP)
- Master Plans
- Capital Improvement Plans
- Higher Regulatory Standards
- Storm Water Management Plans

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Next Steps in the Planning Process

Date	Task
Early March 2016	Incorporate public comments and suggestions
Mid-March 2016	Finalize Municipality Annexes, Risk Assessments, and Priorities
March 30 2016	Submit Plan to GEMA
April – June 2016	Plan Submitted to GEMA & FEMA (30 Days to Make Changes to the Plan)
Summer 2016	Jurisdiction Adoption (Respective City Councils will adopt plan)
September 26, 2016	2010 Plan will Expire and New Plan will be Implemented

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Public Meeting #3 Handout



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

Public Meeting #3 - Fulton County Hazard Mitigation Plan 2015 Update

Overview: Hazard Mitigation is sustained action to reduce or eliminate risks to life and property from natural or man-made hazard events. Through mitigation actions such as sound land-use planning; adoption and enforcement of building codes; removing structures from hazardous areas; and retrofitting of existing buildings and facilities; and storm water management projects; we can protect facilities to assure functionality following an event, reduce exposure to liabilities and minimize disruptions to the community.

Introduction: Section 404 of the Robert T. Stafford Disaster and Emergency Assistance Act of 1988 established the Hazard Mitigation Grant Program (HMGP). The purpose of the program is to provide funds to State agencies and local governments in the aftermath of a disaster for projects that reduce or eliminate the long-term risk to human life and property from the effects of natural hazards. The Federal Emergency Management Agency (FEMA) contributes 20% of the amount it will spend on disaster assistance programs to fund the HMGP.

Federal law requires States and local jurisdictions have a mitigation plan prior to receipt of HMGP project funds. The plan identifies hazards, assesses community needs, and describes a community-wide strategy for reducing risks associated with natural disasters.

Project Timeline	
Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18-October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015 – March 2016	Hold 3 Public Meetings
December 31, 2015	Draft Plan Reviewed by AFCEMA
March 30, 2016	Plan due to GEMA for Review and Approval
April – June 2016	FEMA will Review and Send Findings Back to AFCEMA
Summer 2016	Jurisdiction Adoption of New Plan

Purpose: The Fulton County Hazard Mitigation Plan demonstrates the jurisdiction's commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of future natural hazards.

The mitigation plan update will:

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Continue to allow the county and participating partners the ability to be eligible for pre and post-disaster recovery and mitigation funding through:
 - o Pre-Disaster Mitigation Grant Funding (404 Mitigation)
 - o Post-Disaster Public Assistance Funding (Categories C-G, 406 Mitigation)

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- Support National Flood Insurance Program (NFIP) compliance, and potentially, policy rate reduction efforts.

Local Planning Teams: After the updated plan receives approval from GEMA and FEMA each municipality will need to formally adopt the Updated Hazard Mitigation Plan. The Local Planning Team will re-assess the specific hazards and risk for their jurisdiction.

The Fulton County Hazard Mitigation Planning Team includes representatives from the following disciplines for each municipality:

Fulton County Hazard Mitigation Planning Team		
Academic Institutions	Building Code	Business & Civic Groups
Chief Financial Officers	City & County Clerk	City & County Mayors / Administrators
City & County Engineers	Local EMS Services	City & County Fire Rescue
Floodplain Management	Hospitals	Land Use Planner
City & County Law Enforcement	City & County Public Works	Fulton County Citizens



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Public Meeting #3 Meeting Minutes



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HAZARD MITIGATION PLAN PUBLIC MEETING #3 Metropolitan Branch Library

March 9, 2016
6:30 P.M.

Introduction - Director Matthew Kallmyer- AFCEMA

Director Kallmyer from the Atlanta-Fulton County Emergency Management Agency (AFCEMA) welcomed all those in attendance and thanked them for taking the time to learn more about the local hazard mitigation process and planning efforts. All were reminded to sign in and to get copies of the handouts that were available in the back of the room. Director Kallmyer then reviewed the agenda and introduced Jim McIntosh from Tetra Tech, the consulting firm hired to assist with the current HMP update.

Project Overview, Objectives, Timeline - Jim McIntosh- Tetra Tech

Mr. McIntosh used a power point presentation (PPT) to provide an overview of the HMP planning process including the project timeline and achievements to date. Details of each step in planning process were covered along with a brief summary of the findings as applicable.

The preliminary results of the public survey were discussed with those in attendance. A chart representing the responses from 893 individuals showed which hazards were considered to be the most concerning among those who responded. One gentleman in the audience asked how the information was beneficial to planners since it was subjective in nature. AFCEMA explained there were many uses and it really helps see what the public's perception is about local hazards, especially when compared to the scientific data and past event history. The survey responses had also been forwarded to local hazard mitigation planners so they can review feedback from their specific community. It was noted that no single hazard jumped out as a top concern among the public, but others (tornado) were surprisingly low. This was highlighted as an example to demonstrate how the results can be used a potential indicator for more public awareness efforts in this area. Other attendees discussed this point and commented on how they feel a sense of security (possibly a false sense of security) from hazards such as tornadoes when they are in Atlanta or other highly developed areas.

After concluding the discussion about personal experiences with local hazards and the survey results, Mr. McIntosh continued with the planning process overview PPT. Upon conclusion of the presentation Director Kallmyer reminded those in attendance that the public survey was still open and encouraged everyone to participate. Hard copies were available in the room and slips of paper with the survey web address/information were also handed out.

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Building a More Resilient City of Atlanta - Ria Aiken, Director Emergency Preparedness - City of Atlanta

After the HMP planning process presentation, Mrs. Ria Aiken from the City of Atlanta discussed a current preparedness initiative. Atlanta has been selected as a top candidate for a grant to assist with projects designed to improve the City of Atlanta's resilience. The particular grant application period is only available for three years. Atlanta has applied each year without success; however, it is looking promising that Atlanta could win a grant award in 2016 which is the final application year. Planners from Atlanta have prepared descriptions of events which Atlanta residents react to, and events which are common stressors. The goal is to help identify strategies to reduce both the stressors and the degree of reaction required to manage specific events/threats to the community's well-being. Additional details can be made available in the near future as Atlanta proceeds through the selection and hopefully grant award process.

Meeting Wrap - Destiny Ruffin- AFCEMA

After Mrs. Aiken spoke the floor was handed over to Ms. Destiny Ruffin from AFCEMA. She provided a brief recap of the evening's topics and the next steps for the HMP update project. After this all in attendance were asked if they had any questions or additional items they would like to discuss. None were raised.

Closing Comments - Director Matthew Kallmyer- AFCEMA

Director Kallmyer closed the meeting by thanking everyone for their participation and attendance. All were encouraged to call or send emails to AFCEMA if they thought of any remaining questions about the HMP update.

The meeting ended at 8:00 as the library closed for the day.

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Steering Committee Meeting #1

The Kickoff Meeting on August 5, 2015 was also considered Steering Committee Meeting #1 for the Fulton County HMP Update Process. Additional multijurisdictional meetings that included Steering Committee and local Hazard Mitigation Planning Committee members and are documented under the GEMA/FEMA Mitigation Workshop and External Partner Meetings.

Steering Committee Meeting #2

Steering Committee Meeting #2 Agenda



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

HAZARD MITIGATION PLAN UPDATE
STEERING COMMITTEE MEETING #2
VIRTUAL MEETING
MINUTES

JANUARY 14, 2016
10:00 A.M.

Participants were able to attend the virtual meeting in the following ways:

Join the meeting at <https://join.me/afcemashare> using any browser on a computer.
To join on a phone or tablet, launch the [join.me app](#) and enter meeting code: afcemashare

Join the audio conference: Dial 1.404.801.3225 Access Code 838-090-088#
or via internet: click the phone icon and select 'Call via internet'. A small download might be required.

- I. Introduction
Destiny Ruffin - AFCEMA
- II. Update on Planning Process
Jim McIntosh- Tetra Tech
- III. Risk Assessment Survey
Destiny Ruffin - AFCEMA
- IV. Mitigation Goals & Objectives
Jim McIntosh- Tetra Tech
- V. Prioritization of Mitigation Strategies/Projects
Jim McIntosh- Tetra Tech
- VI. Municipality Annexes
Jim McIntosh- Tetra Tech
- VII. Plan Maintenance Strategies –
Jim McIntosh- Tetra Tech
- VIII. Action Items and Closing Remarks
Destiny Ruffin - AFCEMA
- IX. Questions and Comments
Destiny Ruffin- AFCEMA -Jim McIntosh -Tetra Tech

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Steering Committee Meeting #2 Presentation

The slide features the Tetra Tech logo in the top left corner with the tagline "complex world | CLEAR SOLUTIONS™". The main title is "Fulton County Hazard Mitigation Plan Update" with the date "January 14, 2016" and "Steering Committee Meeting #2". The bottom left identifies the "Atlanta-Fulton County Emergency Management Agency (AFCEMA)" with a "Welcome" message. The right side of the slide contains three photographs: a meeting in progress, a person at a table with materials, and a group of people in a meeting room. The Atlanta-Fulton County EMA logo is also present in the bottom right area of the slide.

The slide is titled "Housekeeping for Today's Meeting" and lists six items:

- Please mute your phone
- Avoid the use of speaker phone when possible
- Can rejoin if your call drops
- Notes and audio recording will be available
- Time for Q&A after each topic and at the end
- Not expected to last full 2 hours

The slide includes the Atlanta-Fulton County EMA logo in the bottom left and the Tetra Tech logo with the tagline "complex world | CLEAR SOLUTIONS™" in the bottom right.



Today's Topics


- Introduction
- Update on Planning Process
- Discussion & Review of Risk Assessment Survey
- Review of Mitigation Goals & Objectives
- Review Prioritization of Mitigation Strategies
- Discuss Municipality Annexes
- Review Plan Maintenance Strategies
- Questions and Comments
- Action Items and Closing Remarks



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Update on Planning Process

- Completed all municipality meetings
- Held Mitigation Workshop and External Partners Meeting
- Updated Vulnerability and Risk Assessments
 - combined analysis provides more detail
- Updated(ing) Community Profiles
- Draft Chapters 1-7 have been presented to AFCEMA for review (Will be available for municipalities via Dropbox folders)
- Draft Annexes prepared and ready for input
- Public Meeting #2 Scheduled – January 20th
- Public Survey & Public Meeting #3: TBD
- Steering Committee Meeting #3: TBD



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Risk Assessment Survey
Due: January 21, 2016

- For Steering/Planning Committee Members.
 - Link will be sent via email.
 - <https://www.surveymonkey.com/r/HMPRiskAssessmentSurvey>
- Duplicates previous survey as part of update.
 - Found in Chapter 5: Risk Assessment of 2010 plan
- May opt out if no changes.
 - Submit note indicating "no change"
- Used in conjunction with VA / RA run with computer models (HAZUS-MH, Sheldus etc).
- Captures subjective local knowledge.

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Risk Assessment Survey

- Measured level of magnitude or severity as:
 - Level I - Catastrophic
 - Level II - Critical
 - Level III - Marginal
 - Level IV - Negligible
- And Probability or Likelihood as:
 - Highly Likely
 - Likely
 - Possible
 - Unlikely

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Example from 2010

Table 5-19: Unincorporated Fulton County Risk Assessment Matrix

Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	P	P	H	H	12
Tornadoes	P	P	H	H	12
Flood	U	P	L	H	10
Tropical System	U	U	L	H	9
Heat Wave	U	P	P	L	8
Winter Storm	U	U	P	H	8
Drought	U	U	P	L	7
Wildfire/Urban Interface	U	U	U	P	5
Dam Failure	U	U	U	P	5
Sinkhole	U	U	U	P	5
Earthquake	U	U	U	P	5
Average Risk by Level	1.17	1.33	2.08	2.92	

H = Highly Likely (4 points)
L = Likely (3 points)
P = Possible (2 points)
U = Unlikely (1 point)

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Overall County Combined from 2010

Table 5-20: Overall County Combined Jurisdiction Likelihood of Occurrence Averages



Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	1.67	2.17	3.00	3.75	10.58
Severe Weather	1.33	1.83	3.17	3.92	10.25
Winter Storm	1.17	1.67	2.67	3.75	9.25
Flood	1.25	1.83	2.50	3.58	9.17
Heat Wave	1.08	1.42	2.00	3.50	8.00
Drought	1.33	1.50	1.83	3.33	8.00
Tropical System	1.08	1.25	2.08	3.00	7.42
Wildfire/Urban Interface	1.00	1.08	1.83	3.17	7.08
Dam Failure	1.17	1.25	1.50	2.33	6.25
Sinkhole	1.00	1.00	1.00	2.33	5.33
Earthquake	1.00	1.08	1.08	1.67	4.83
Average by Risk	1.17	1.42	1.99	3.00	

H = Highly Likely (4 points)
L = Likely (3 points)
P = Possible (2 points)
U = Unlikely (1 point)

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Review Mitigation Goals and Objectives

- See Chapter 6: Mitigation Strategy, Table 6-2 pages 6-2 through 6-6
- Goals:
 - 1) Protect public health & safety
 - 2) Protect property
 - 3) Promote a sustainable economy
 - 4) Manage development to minimize risks of loss
 - 5) Natural resource protection
 - 6) Apply engineered structural modifications to reduce impacts of hazard
 - 7) Public Education and Awareness



Prioritization of Mitigation Actions

- Risk and Vulnerability
- Likelihood and Impact
- Local Capability
- STAPLEE scores





Municipality Annexes

- All municipalities will have individual Annexes as part of the plan update. Topics include:
 - History and demographics
 - Infrastructure, industry and Economy
 - Mitigation Capability assessment
 - NFIP participation
 - Mitigation Strategy
 - Future land use and development
 - Other studies if provided
- Initial Drafts are Prepared and will be available in DropBox for review and revision.
- Feedback is Required
 - Annexes have been completed to the extent possible.
 - Based off of internet research and data submitted on worksheets.
 - Local review, revision, approval needed.

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Plan Maintenance Strategies

- Opportunity to Review / Revise those listed in 2010 HMP

7.3.1 Ongoing Monitoring of the Plan

The Hazard Mitigation Planning Committee's (HMPC) ongoing review process throughout the year should continually monitor the current status of the mitigation measures scheduled for implementation. Ongoing status reports of each jurisdiction's progress will be reviewed by the AFCEMA Director and representatives from the HMPC and will include the following information:

- Actions that have been undertaken to implement the scheduled mitigation measure, such as obtaining funding, permits, approvals or other resources to begin implementation.
- Mitigation measures that have been completed, including public involvement activities.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.
- The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources scheduled in the Mitigation Action Projects presented in Chapter 6 – Mitigation Strategy. In the event modifications to the plan are warranted as a result of the annual review or other conditions, the HMPC will oversee and approve all amendments to the plan by majority vote of a quorum of HMPC members. Conditions that might warrant amendments to this plan would include, but not be limited to, special opportunities for funding and response to a natural or man-made disaster. A copy of the plan amendments will be submitted by the Atlanta-Fulton County EMA to all jurisdictions in a timely manner and filed with the GEMA.

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Plan Maintenance Strategies (cont.)

7.3.2 Evaluating the Plan

- Within sixty days following a significant disaster or an emergency event having a substantial impact on a portion of or the entire Atlanta-Fulton County area or any of its jurisdictions, the HMPC will conduct or oversee an analysis of the event to evaluate the responsiveness of the Mitigation Strategy to the event and the effects on the contents of the Risk Assessment.

7.3.3 Plan Update Process

- Any of the following situations may require a review and update of the plan:
 - Requirement for a five-year update.
 - Change in federal requirements for review and update of the plan.
 - Significant natural or man-made hazard event(s) before the expiration of the five-year plan update.

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Plan Maintenance Strategies (cont.)

- Once the Hazard Mitigation Planning Committee has been organized to oversee the update, the following steps will take place in order to facilitate the process:
 - Step 1. Review of the most recent FEMA local mitigation planning requirements and guidance.
 - Step 2. Evaluation of the existing planning process and recommendations for improvements.
 - Step 3. Examination and revision of the risk assessment, including hazard identification, profiles, vulnerabilities, and impacts on development trends, to ensure accuracy and up to date information.
 - Step 4. Update of mitigation strategies, goals and action items, in large part based on the annual plan implementation evaluation input.
 - Step 5. Evaluation of existing plan maintenance procedures and recommendations for improvements.
 - Step 6. Comply with all applicable Federal regulations and directives.

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Schedule

- Draft Plan sent to AFCEMA on January 8th 2016
- Steering Committee Review in Jan/Feb 2016
- Final Draft to Steering Committee by March 1st
- Final Draft submitted to GEMA by March 30, 2016
- Plan Submitted to FEMA by Summer 2016



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Action Items and Closing



- Risk Assessment Survey
 - Complete or provide feedback by **1/21/16**
- Feedback on Goals & Objectives
 - Provide feedback by **1/21/16**
- Draft Plan Review (Chapters 1-7)
 - Email **notifications to be sent** with dates and requirements
- Draft Annexes
 - Email **notifications to be sent** with dates and requirements
- Feedback on Ranking of Mitigation Strategies
 - Complete **as part of individual Annex Review**

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Questions & Comments

- Remember to un-mute your line
- Can send questions via email
- Due by 1/21/2016 (Risk Assessment Survey Need to be Completed by Each Jurisdiction)



Thank you!

- Destiny Ruffin- AFCEMA
 - Email: destinyruffin@afcema.com
 - Phone: 404-612-5689
- Jim McIntosh- Tetra Tech
 - Email: jim.mcintosh@tetratech.com
 - Phone: 678-777-2678





Steering Committee Meeting #2 Meeting Minutes (includes participants)



ATLANTA-FULTON COUNTY EMERGENCY MANAGEMENT AGENCY

HAZARD MITIGATION PLAN UPDATE
STEERING COMMITTEE MEETING #2
VIRTUAL MEETING
MINUTES

JANUARY 14, 2016
10:00 A.M.

Participants were able to attend the virtual meeting in the following ways:

Join the meeting at <https://join.me/afcemashare> using any browser on a computer.

To join on a phone or tablet, launch the [join.me app](#) and enter meeting code: afcemashare

Join the audio conference: Dial 1.404.801.3225 Access Code 836-090-088#

or via internet: click the phone icon and select 'Call via internet'. A small download might be required.

Introduction - Destiny Ruffin - AFCEMA

The virtual meeting was launched via "Join Me" software at approximately 9:45 A.M. by staff from AFCEMA. At 10:00 A.M. Destiny Ruffin greeted those on the line, ensured they had audio and visual connectivity and took an initial roll call. Updates and additional roll calls were taken until 10:20 A.M. to make sure all who wished to join the meeting had an opportunity to do so. Ms. Ruffin then officially began the meeting with a formal introduction, brief discussion of housekeeping items to facilitate a smooth meeting in the virtual environment, and acknowledging the time and effort that has gone in to the update. Attendees were also informed that the meeting was being recorded and copies of the meeting would be available for future viewing and for those who were unable to attend.

Update on Planning Process - Jim McIntosh- Tetra Tech

Jim McIntosh from Tetra Tech greeted those on the line and provided an update on the overall planning process and a preview of next steps. The update included highlights of the completed municipality meetings, the mitigation workshop that was held with GEMA, the external partner's workshop, updated risk and vulnerability assessments, and updated community profiles, draft chapters 1-7 that will be published for initial review, the status of draft annexes and the next meetings that will be held.

Discussion and Review of Risk Assessment Survey – Destiny Ruffin - AFCEMA - Jim McIntosh – Tetra Tech

After providing an update on the planning process Mr. McIntosh and Ms. Ruffin presented on the Risk Assessment Survey that is available for each municipality. It was discussed that this survey is to update information currently listed in chapter 5 of the 2010 plan. The survey is a matrix that uses their local input to measure hazards based on level of severity and likelihood of occurrence. It was explained that this information is used to help validate statistical data and/or to identify the need to change planning priorities if significant changes and/or discrepancies are noted.

After discussing the surveys purpose Ms. Ruffin opened a copy of the survey on her computer to share with those in the virtual meeting. They were walked through each page and provided instruction on how it was intended to work. Following the survey preview, Mr. McIntosh showed and discussed examples of the final product as displayed in the 2010 plan. It was also noted that planning committee members had the option to indicate "no changes" if they determine there

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**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
STEERING COMMITTEE MEETING #2
VIRTUAL MEETING
MINUTES**

**JANUARY 14, 2016
10:00 A.M.**

is no need to update the matrix for their jurisdiction. It would also be assumed that no changes were required if no response is received by the 1/21/16 deadline.

Review of Mitigation Goals & Objectives - Jim McIntosh- Tetra Tech

After presenting on the Risk Assessment Survey Mr. McIntosh briefly discussed the need to review the Mitigation Goals and Objectives. This had been discussed with the planning committee previously but Mr. McIntosh explained the importance of ensuring their plan goals and objectives remain in line with their threats and vulnerabilities. While focusing on the updated survey/matrix this would be a good time to review goals and objectives and comment on potential changes during this update process.

Review Prioritization of Mitigation Strategies/Projects - Jim McIntosh- Tetra Tech

Following the Review of Mitigation Goals and Objectives, Mr. McIntosh reviewed how that information is also considered when prioritizing mitigation actions and reminded committee members to include these considerations when finalizing their individual mitigation strategies.

Discuss Municipality Annexes - Jim McIntosh- Tetra Tech

Mr. McIntosh provided an update on the municipality annexes that are under development. He then discussed several of the highlights they will find in their annex when it is time to review, revise and approve them. It was also discussed that the initial drafts they will receive are based upon the information provided during or just after their municipality meeting and from what could be found through internet research. Once they receive their annex it is important for them to closely review the content and fill in missing data where possible. It was also noted that some municipalities have a longer history in the county than others so the same data may not be readily available for all.

Review Plan Maintenance Strategies - Jim McIntosh- Tetra Tech

After discussing the municipality annexes, Mr. McIntosh presented the committee members with the plan maintenance strategies listed in chapter 7 of the 2010 HMP. This is the time to review and revise those strategies if needed. The 2010 plan included several updates to this section so no major changes are expected in 2016. However, one suggestion was discussed for the potential to specifically mention the new annexes which are going to be in the 2016 HMP. A potential strategy discussed was to perform an annual review/update of each municipality annex. This would ensure the plan remains current and could greatly facilitate the next 5 year update.

Action Items and Closing Remarks- Destiny Ruffin - AFCEMA

The presentation concluded with a review of action items. Planning Committee Members were informed that the risk assessment survey would be sent out within the next 24 hours for them to review and complete. They would also be provided with a copy of the instructions and their

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**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

**HAZARD MITIGATION PLAN UPDATE
STEERING COMMITTEE MEETING #2
VIRTUAL MEETING
MINUTES**

**JANUARY 14, 2016
10:00 A.M.**

jurisdictions previous matrix. Plan chapters 1-7 were going to be placed into their DropBox locations as PDF files for version control. All surveys and initial feedback on the draft chapters is due on 1/21/16. Another item to look for is an announcement concerning the individual municipality annexes. Once posted in DropBox the committee members will receive detailed instructions and a timeline for completion.

Questions and Comments- Destiny Ruffin- AFCEMA -Jim McIntosh -Tetra Tech

After the presentation Ms. Ruffin opened all lines for attendees to ask questions or provide comment. Milton asked a question to clarify when the survey will be available. Atlanta then asked a question to ensure AFCEMA and Tetra Tech had received their latest updates to their mitigation strategies in DropBox. Destiny Ruffin was going to specifically follow up with Ria Aiken from Atlanta after the call.

The meeting officially concluded at 11:02 P.M.

Individuals who attended today's Virtual Meeting (Join.Me)

1. Jim McIntosh- Tetra Tech
2. Donnie Reece- AFCEMA
3. Destiny Ruffin- AFCEMA
4. Grant Hickey- Johns Creek
5. Matthew Marietta- Milton
6. Ria Aiken- City of Atlanta
7. Joe Popadics – Alpharetta
8. Jon Fore- Fairburn

Meeting notes and materials are being sent to all steering/planning committee members via email along with detailed instructions concerning due dates and points of contact for questions.



Steering Committee Meeting #3

Steering Committee Meeting #3 Agenda



**ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY**

130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
afcema@afcema.com

**HAZARD MITIGATION PLAN
STEERING COMMITTEE MEETING #3
Georgia Dome, Media Room**


**March 16, 2016
10:00 A.M.**

- | | | |
|------|--|----------|
| I. | Introduction
<i>Director Matthew Kallmyer- AFCEMA</i> | 10:00 AM |
| II. | Project Overview, Timeline, Accomplishments
<i>Pat Beekman and Jim McIntosh- Tetra Tech</i> | 10:15 AM |
| III. | Chapters 1- 7 Content Review – What's new for 2016
<i>Jim McIntosh – Tetra Tech</i> | 10:45 AM |
| | <i>Lunch</i> | 11:45 AM |
| IV. | <i>Annex Content Review</i>
<i>Jim McIntosh – Tetra Tech</i> | 12:30 PM |
| V. | <i>Workshop</i>
<i>a. Discuss Top Hazards & Mitigation Actions</i>
<i>b. Completion of Missing Items</i> | 1:00 AM |
| VI. | Meeting Wrap
<i>Pat Beekman - Tetra Tech</i> | 2:30 PM |
| VI. | <i>Closing Comments</i>
<i>Director Matthew Kallmyer</i> | 3:00 PM |


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Steering Committee Meeting #3 Sign-In Sheet


**Fulton County Hazard Mitigation Plan Update
Final Steering Committee Meeting
10:00 AM Georgia Dome- Media Center
Sign-In Sheet**
 March 16, 2016

NAME	POSITION	JURISDICTION	OFFICE TELEPHONE	E-MAIL	SIGNATURE
Matthew Kallmyer	Director	AFCEMA	404-612-5660	matthew.kallmyer@afce ma	<i>[Signature]</i>
Donnie Reece	Operations Manager	AFCEMA	404-612-5660	donnie.reece@afcema.c om	<i>[Signature]</i>
Destiny Ruffin	Hazard Mitigation Project Coordinator	AFCEMA	404-612-5660	destiny.ruffin@afcema.c om	
Mattie Pam Johnson	Administrative Assistant	AFCEMA	404-612-5660	mattiepam.johnson@fult oncountyga.gov	
Orette Ferdinand	Senior Program Manager	AFCEMA	404-612-5660	orette.ferdinand@fultonc ountyga.gov	
Wanda Floyd	Administrative Services Coordinator	AFCEMA	404-612-5660	wanda.floyd@fultoncoun tyga.gov	
Joe Popadics	Emergency Management Coordinator	Alpharetta	678-297-6352	JPopadics@alpharetta.g a.us	
Donna Lee	Senior Disaster	American Red Cross	(404) 575-3154	Donna.Lee@redcross.or g	


**Fulton County Hazard Mitigation Plan Update
Final Steering Committee Meeting
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Donna Lee	Senior Disaster	American Red Cross	(404) 575-3154	Donna.Lee@redcross.or g	



Appendix B
Meeting Documentation

	Program Manager				
Craig Dowdell	Homeland Security Officer	Atlanta	404-546-7046	cdowdell@atlantaga.gov	
Ria Aiken	Director of Emergency Preparedness	Atlanta	678-492-3948	raiken@atlantaga.gov	
Craig Rethwilm	Civil Engineering Manager	Atlanta	404-546-3221	crethwilm@AtlantaGa.Gov	
Carey Westgate	Director of Security and Emergency Management	Atlanta Medical Center	404-554-1100	Carey.Westgate@tenethealth.com	C Westgate
Marquenta Sands-Hall	Chief of Police	Atlanta Public Schools		msandshall@atlanta.k12.ga.us	
Larry Hoskins	Deputy Superintendent of Operations	Atlanta Public Schools		lhoskins@atlanta.k12.ga.us	
Elwood Duckworth	Special Assistant to COO	Atlanta Public Schools		educkworth@atlanta.k12.ga.us	
Greg Brett	Fire Chief	Chattahoochee Hills	770-463-6577	matthew.rook@chathills.ga.us	
Bruce Braxton	Lieutenant	College Park	404-305-2095	bbraxton@collegeparkga.com	

	Program Manager				
Craig Dowdell	Homeland Security Officer	Atlanta	404-546-7046	cdowdell@atlantaga.gov	
Ria Aiken	Director of Emergency Preparedness	Atlanta	678-492-3948	raiken@atlantaga.gov	
Craig Rethwilm	Civil Engineering Manager	Atlanta		crethwilm@AtlantaGa.Gov	
Carey Westgate	Director of Security and Emergency Management	Atlanta Medical Center		Carey.Westgate@tenethealth.com	
Marquenta Sands-Hall	Chief of Police	Atlanta Public Schools		msandshall@atlanta.k12.ga.us	
Larry Hoskins	Deputy Superintendent of Operations	Atlanta Public Schools		lhoskins@atlanta.k12.ga.us	
Elwood Duckworth	Special Assistant to COO	Atlanta Public Schools		educkworth@atlanta.k12.ga.us	
Greg Brett	Fire Chief	Chattahoochee Hills	770-463-6577	matthew.rook@chathills.ga.us	Greg Brett
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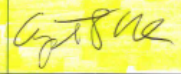
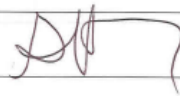
Brian White	Battalion Chief	College Park	404-766-8248	bwhite@collegetparkga.com	
Michael Webb	Provisional Deputy Chief	East Point	404-559-6401	mwebb@eastpointcity.org	
William Tate	Training Officer	East Point	404-559-6401	wtate@eastpointcity.org	
Sam Shartar	Senior Administrator of CEPAR	Emory University Hospital		samuel.shartar@emoryhealthcare.org	
Jon Fore	Division Chief	Fairburn		jfore@fairburn.com	
Jack Butler	Deputy Fire Chief	Fulton County	404-612-8905	Jack.Butler@fultoncountygga.gov	<i>JB</i>
Michael Charlson	Planner	Fulton County	404-612-9460	Michael.Charlson@fultoncountygga.gov	
April Majors	Senior Public Affairs Officer	Fulton County	404-612-1282	april.majors@fultoncountygga.gov	<i>April Majors</i>
Paul Hildreth	Emergency Management Grants Coordinator	Fulton County Schools		hildreth@fultonschools.org	
Keith Sumas	Director of Emergency Management	Georgia State University		ksumas1@gsu.edu	
William Smith	Acting Director, Office of Emergency	Georgia Tech	404-593-1030	william.smith@police.gatech.edu	<i>WS</i>

Brian White	Battalion Chief	College Park	404-766-8248	bwhite@collegetparkga.com	
Michael Webb	Provisional Deputy Chief	East Point	404-559-6401	mwebb@eastpointcity.org	
William Tate	Training Officer	East Point	404-559-6401	wtate@eastpointcity.org	
Sam Shartar	Senior Administrator of CEPAR	Emory University Hospital		samuel.shartar@emoryhealthcare.org	
Jon Fore	Division Chief	Fairburn		jfore@fairburn.com	
Jack Butler	Deputy Fire Chief	Fulton County	404-612-8905	Jack.Butler@fultoncountygga.gov	
Michael Charlson	Planner	Fulton County	404-612-9460	Michael.Charlson@fultoncountygga.gov	<i>etc</i>
April Majors	Senior Public Affairs Officer	Fulton County	404-612-1282	april.majors@fultoncountygga.gov	
Paul Hildreth	Emergency Management Grants Coordinator	Fulton County Schools		hildreth@fultonschools.org	
Keith Sumas	Director of Emergency Management	Georgia State University		ksumas1@gsu.edu	
William Smith	Acting Director, Office of Emergency	Georgia Tech		william.smith@police.gatech.edu	



Appendix B
Meeting Documentation

	Preparedness				
Lori Wood	Director, Emergency Management	Grady Memorial Hospital		lwood@gmh.edu	
David Bloodworth		Hapeville		dbloodworth@hapeville.org	
Larry Richardson	Emergency Plan Coordinator	Hapeville	404-699-2174	lrichardson8263@gmail.com	
Augustus (Gus) Hudson	Centralized Command and Control Center Manager	Hartsfield-Jackson Atlanta		Augustus.Hudson@atlanta-airport.com	
Wes McDonald	Senior Operations Supervisor	Hartsfield-Jackson Atlanta		wesley.mcdonald@atlanta-airport.com	
Grant Hickey	Special Projects Coordinator	Johns Creek	678-474-1591	Grant.Hickey@johnscreekga.gov	
Ashton Greene	Commander of Emergency Preparedness Unit	MARTA		agreene@itsmarta.com	
Shawna Smith	Emergency Preparedness Unit Coordinator	MARTA		ssmith1@itsmarta.com	

	Preparedness				
Lori Wood	Director, Emergency Management	Grady Memorial Hospital		lwood@gmh.edu	
David Bloodworth		Hapeville		dbloodworth@hapeville.org	
Larry Richardson	Emergency Plan Coordinator	Hapeville	404-699-2174	lrichardson8263@gmail.com	
Augustus (Gus) Hudson	Centralized Command and Control Center Manager	Hartsfield-Jackson Atlanta	404-382-1044	Augustus.Hudson@atlanta-airport.com	
Wes McDonald	Senior Operations Supervisor	Hartsfield-Jackson Atlanta		wesley.mcdonald@atlanta-airport.com	
Grant Hickey	Special Projects Coordinator	Johns Creek	678-474-1591	Grant.Hickey@johnscreekga.gov	
Ashton Greene	Commander of Emergency Preparedness Unit	MARTA		agreene@itsmarta.com	
Shawna Smith	Emergency Preparedness Unit Coordinator	MARTA		ssmith1@itsmarta.com	



Appendix B
Meeting Documentation

Matthew Marietta	Fire Marshall	Milton		Matthew.Marietta@cityofmiltonga.us	
Joseph R. Chevalier, Jr.	Chief of Police	Morehouse		ichevalier@msm.edu	
James Dame	Chief	Mountain Park	404-696-9383	jdame@mpvfr.org	
Jim Still	Mayor	Mountain Park	770-993-4232	jim.still@mountainpark-ga.gov	
Karen Segars	Clerk/Administrator	Mountain Park	770-993-4231	city.clerk@mountainpark-ga.gov	
Henry Argo	Fire Chief	Palmetto		argo@citypalmetto.com	<i>H. Argo</i>
Tony Papoutsis	Deputy Fire Chief	Roswell	770-594-6231	tpapoutsis@roswellgov.com	
Mark Duke	Deputy Chief of Operations/E MA	Sandy Springs	770-206-2076	MDuke@SandySpringsga.gov	
Donald Willanks	Division Commander of Administrative Services	Sandy Springs	770-206-1416	DWillbanks@SandySpringsga.gov	
Pat Beekman	Project Manager	Tetra Tech	<i>980-417-3309</i>	Patrick.Beekman@tetratech.com	<i>P. Beekman</i>
Jim McIntosh	Emergency Management Consultant	Tetra Tech	<i>678-777-2678</i>	Jim.McIntosh@tetratech.com	<i>J. McIntosh</i>
Joe Maddox	Fire Chief	Union City	770-515-7878	jmaddox@unioncityga.org	<i>Joe Maddox Mike Clark</i>

Matthew Marietta	Fire Marshall	Milton	<i>404-696-9383</i>	Matthew.Marietta@cityofmiltonga.us	<i>M. Marietta</i>
Joseph R. Chevalier, Jr.	Chief of Police	Morehouse		ichevalier@msm.edu	
James Dame	Chief	Mountain Park	404-696-9383	jdame@mpvfr.org	
Jim Still	Mayor	Mountain Park	770-993-4232	jim.still@mountainpark-ga.gov	
Karen Segars	Clerk/Administrator	Mountain Park	770-993-4231	city.clerk@mountainpark-ga.gov	
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Tony Papoutsis	Deputy Fire Chief	Roswell	770-594-6231	tpapoutsis@roswellgov.com	
Mark Duke	Deputy Chief of Operations/E MA	Sandy Springs	770-206-2076	MDuke@SandySpringsga.gov	
Donald Willanks	Division Commander of Administrative Services	Sandy Springs	770-206-1416	DWillbanks@SandySpringsga.gov	
Pat Beekman	Project Manager	Tetra Tech		Patrick.Beekman@tetratech.com	
Jim McIntosh	Emergency Management Consultant	Tetra Tech		Jim.McIntosh@tetratech.com	
Joe Maddox	Fire Chief	Union City	770-515-7878	jmaddox@unioncityga.org	



HERB JOSEPH Colin Burgess	DIRECTOR EM Manager	Atlanta Public Safety C of Atlanta	404-802-3700 4 925-4387	HcJOSEPH@ATLANTA.K12.GA.US cjburgess@atlantagov.gov	

Steering Committee Meeting #3 Presentation

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**Fulton County
Multijurisdictional
Hazard Mitigation Plan:
2015-16 Update**

March 16, 2016
Steering Committee Meeting #3

Atlanta-Fulton County
Emergency Management
Agency (AFCEMA)
Welcome





Today's Topics

- Introductions
- Review of Accomplishments of Hazard Mitigation Plan Update
- Current Location in the Update Process
- Review of What is New in 2016
- Review of Annex Content
- Workshop



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Purpose of the Mitigation Plan Update

- Help the county and participating partners prepare for and mitigate the effects of disasters.
- Build more resilient communities.
- Support National Flood Insurance Program (NFIP) compliance and potential policy rate reduction efforts.

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Plan Update Status

- 1) Organize Resources
- 2) Re-assess the Risk
- 3) Review and Update HMP
- 4) Develop Procedures for Plan Implementation, Monitoring, and Update

- 5) GEMA/FEMA Approval
- 6) Adopt the Plan

```

graph TD
    1[1. Organize Resources] --> 2[2. Assess Risks]
    2 --> 3[3. Develop a Mitigation Plan]
    3 --> 4[4. Implement Plan and Monitor Progress]
    4 --> 1
    
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Project Timeline

Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18–October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015–January 2016	Hold Three Public Meetings
December 31, 2015	Draft Plan Reviewed by AFCEMA
March 30, 2016	Plan Due to GEMA for Review and Approval
April–June 2016	FEMA Will Review and Send Findings Back to AFCEMA
Summer 2016	Jurisdiction Adoption of New Plan

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Project Timeline to Date	
Date	Task
August 5, 2015	Hazard Mitigation Kickoff Meeting
August 18–October 30, 2015	Jurisdiction and Stakeholder Data Collection Meetings
October 2015–January 2016	Held Two Public Meetings (October 22 and January 20)
December 2, 2015	Held GEMA/FEMA Mitigation Workshop
December 9, 2015	External Stakeholders Mitigation Workshop (Schools, Medical Facilities, Local Industry, Transit, etc.)
January 7, 2015	Submitted Initial Draft Plan Chapters to AFCEMA and Jurisdictions for Review, Comment, and Feedback
January–March 5, 2016	Public Survey Posted for Citizen Input
February 5, 2016	Initial Drafts of All Municipality Annexes Submitted for Review, Comment, and Feedback
March 9, 2016	Public Meeting #3 to Inform Public and Review Planning Progress, Review Draft Plan Revisions to Date, and Solicit Feedback
August–March 2016	Regular AFCEMA Tetra Tech Status Calls; Biweekly Progress Reports

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Accomplishments to Date	
July 2015 to March 2016	
✓	Formed Steering Committee and Local Planning Committees
✓	Hazard Mitigation Kickoff Meeting
✓	Jurisdiction and Stakeholder Data Collection Meetings – Detailed Input for the Base Plan Chapters and New Annexes
✓	Held Three Public Meetings to Discuss Plan Development, Review Progress on Drafts, and Collect Feedback (October 22, January 20, March 9)
✓	Held GEMA/FEMA Mitigation Workshop
✓	Held External Stakeholders Mitigation Workshop (Schools, Medical Facilities, Local Industry, Transit, etc.)
✓	Held Steering Committee Meetings Including a Webinar for Greater Efficiency
✓	Public Survey Posted and Received Input from 949 Visitors
✓	New for 2016 – All Municipalities Will Have Their Own Annex (15 Total) with Specific, Detailed Local Information Such As Demographics, Land Use, Future Development, NFIP Participation, Plan Integration and Local Mitigation Projects
✓	Updating Plan Chapters to Reflect County Profile, Recent Events, Hazard Profiles, Inventory of Assets, Risk Assessments, Loss Estimates, Plan Objectives, and Updated FEMA Requirements
✓	Regular AFCEMA Tetra Tech Status Calls; Biweekly Progress Reports


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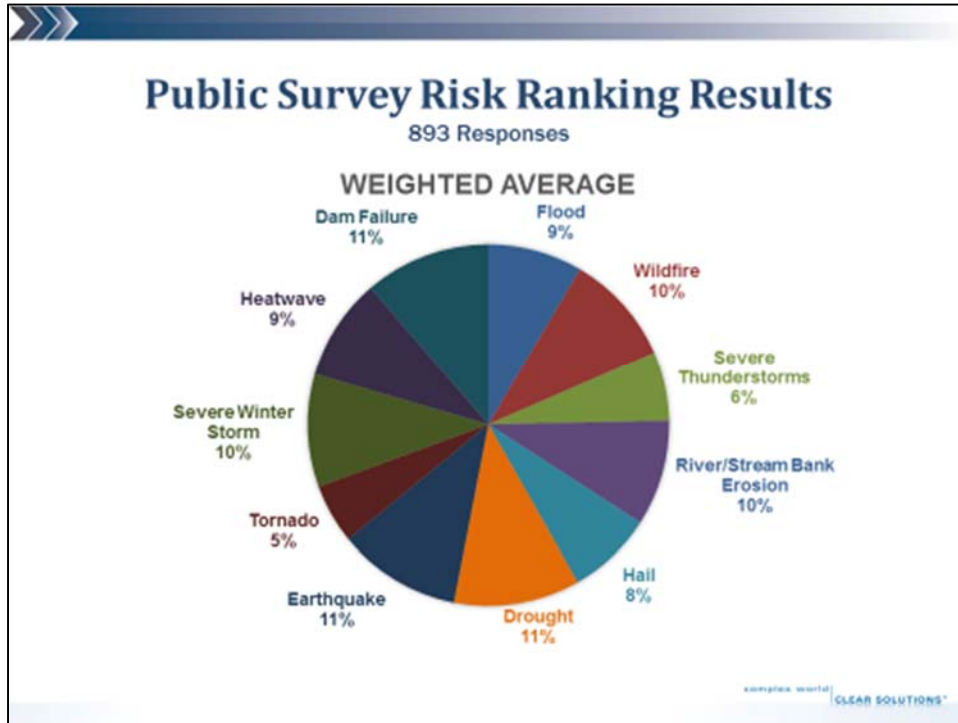
Assess the Risk – Hazard of Concern Identification

Hazards of Concern - Those natural hazards that pose significant risk to the Planning Area and that can be addressed through mitigation rather than only through preparedness, response, and recovery.

- Review and update the hazards of concern that will carry through the planning process.
- Each municipality has differing risk to the hazards of concern.
- The plan was updated for natural hazards:
 - Flood (riverine, flash, urban/stormwater)
 - Severe Storm (wind, hail, lightning)
 - Severe Winter Weather (heavy snow, blizzard, ice storm)
 - Tornado
 - Tropical Systems
 - Wildfire
 - Geological Hazards: Earthquake, Landslide, Sinkhole
 - Dams - *New for 2016*



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Steering Committee Risk Ranking Results

Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	1.67 (P)	2.17 (P)	3.00 (L)	3.75 (H)	10.58
Severe Weather	1.33 (U)	1.83 (P)	3.17 (L)	3.92 (H)	10.25
Winter Storm	1.17 (U)	1.67 (P)	2.67 (L)	3.75 (H)	9.25
Flood	1.25 (U)	1.83 (P)	2.50 (L)	3.58 (H)	9.17
Heat Wave	1.08 (U)	1.42 (U)	2.00 (P)	3.50 (H)	8.00
Drought	1.33 (U)	1.50 (U)	1.83 (P)	3.33 (L)	8.00
Tropical System	1.08 (U)	1.25 (U)	2.08 (P)	3.00 (L)	7.42
Wildfire/Urban Interface	1.00 (U)	1.08 (U)	1.83 (P)	3.17 (L)	7.08
Dam Failure	1.17 (U)	1.25 (U)	1.50 (P)	2.33 (P)	6.25
Sinkhole	1.00 (U)	1.00 (U)	1.00 (U)	2.33 (P)	5.33
Earthquake	1.00 (U)	1.08 (U)	1.08 (U)	1.67 (P)	4.83
Average by Risk	1.17 (U)	1.42 (U)	1.99 (P)	3.00 (L)	

H = Highly Likely (4 points)
L = Likely (3 points)
P = Possible (2 points)
U = Unlikely (1 point)

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Assess the Risk – Hazard Profiling

- Hazards are profiled (characterized) according to:
 - Background and local conditions
 - Historic frequency and probability of occurrence
 - Severity
 - Historic losses and impacts
 - Designated hazard areas
- Includes County and local losses as a result of these events
- **New hazard profiles now available in Chapter 5**
- **Immediately followed by loss statistics**



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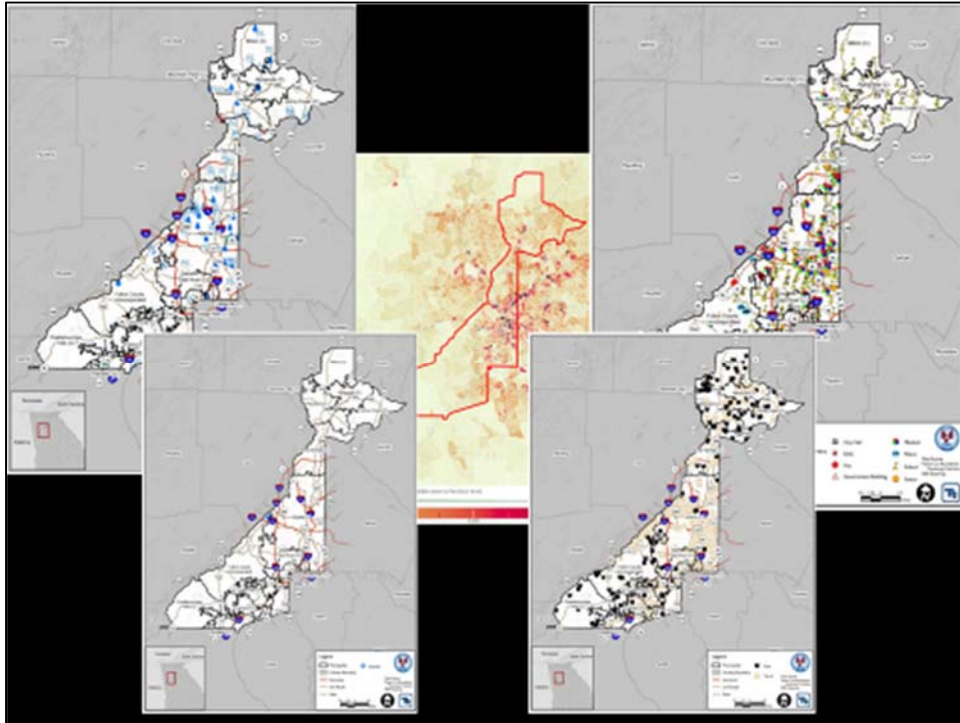
Assess the Risk – Inventory Assets

What is at risk? People, Property, Economy, Environment

- Updated population and demographics
- Building stock
- Facilities
 - Police, fire, emergency services
 - Hospitals and medical care facilities
 - Schools and care facilities
 - Sheltering facilities
 - Infrastructure (transportation systems, utilities)
- **New for 2016: Maps of Critical Infrastructure**



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Assess the Risk – Estimate Losses

- Vulnerability Assessment - What do we predict our suffering to be if we do nothing to mitigate our risk?
 - Updated current conditions
- **New for 2016:** Updated Loss Estimates for Each Jurisdiction



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All Occurrences – All Jurisdictions

Municipality	All Occurrences				Residential		Commercial		Industrial	
	Count	Replacement Cost Value	Estimated Contents	Total (RCV + Contents)	Count	Total Value	Count	Total Value	Count	Total Value
Alpharetta (C)	17,870	\$9,220,248,000	\$6,022,231,000	\$15,242,479,000	16,058	\$19,268,995,000	1,253	\$3,922,683,000	342	\$739,217,000
Atlanta (C)	118,176	\$58,590,959,000	\$48,169,509,000	\$98,670,268,000	102,629	\$63,369,493,000	10,979	\$27,974,527,000	1,863	\$3,958,927,000
Chamblee Hills (C)	1,084	\$280,118,000	\$153,014,000	\$433,132,000	996	\$384,338,000	49	\$25,242,000	24	\$9,649,000
College Park (C)	3,372	\$1,587,943,000	\$1,096,248,000	\$2,684,191,000	3,018	\$1,538,583,000	383	\$651,106,000	76	\$90,052,000
East Point (C)	12,222	\$4,822,463,000	\$2,638,375,000	\$6,660,738,000	11,825	\$4,606,007,000	840	\$1,475,520,000	164	\$249,737,000
Fairburn (C)	4,545	\$1,468,831,000	\$914,348,000	\$2,383,179,000	4,197	\$1,780,828,000	227	\$292,438,000	75	\$122,362,000
Fulton County (Unincorporated)	32,429	\$11,328,897,000	\$7,272,609,000	\$18,581,436,000	30,237	\$13,824,439,000	1,500	\$3,610,907,000	448	\$1,522,264,000
Hapeville (C)	2,444	\$783,900,000	\$544,775,000	\$1,328,675,000	2,107	\$758,964,000	258	\$468,148,000	31	\$58,411,000
Jones Creek (C)	25,840	\$18,774,974,000	\$6,077,281,000	\$24,852,255,000	24,446	\$14,330,739,000	943	\$1,896,216,000	262	\$311,871,000
Kennesaw (C)	11,007	\$4,571,655,000	\$2,520,478,000	\$7,092,133,000	10,335	\$6,214,503,000	433	\$685,545,000	128	\$98,463,000
Mountain Park (C)	313	\$125,076,000	\$67,312,000	\$192,388,000	280	\$175,690,000	24	\$13,316,000	6	\$2,382,000
Palmato (C)	1,817	\$518,738,000	\$313,701,000	\$832,439,000	1,659	\$637,871,000	105	\$122,873,000	25	\$37,976,000
Roswell (C)	29,543	\$12,846,365,000	\$8,051,158,000	\$20,897,523,000	26,935	\$13,432,150,000	1,773	\$4,838,905,000	508	\$918,940,000
Sandy Springs (C)	27,022	\$13,538,844,000	\$10,698,443,000	\$24,237,287,000	23,864	\$16,348,638,000	2,507	\$8,255,081,000	481	\$811,373,000
Union City (C)	6,449	\$1,981,070,000	\$1,169,448,000	\$3,150,518,000	6,049	\$2,495,406,000	296	\$488,318,000	43	\$92,442,000
Fulton County (Total)	284,340	\$133,626,432,000	\$87,788,630,000	\$221,389,862,000	263,888	\$148,348,779,000	21,367	\$53,968,889,000	4,478	\$9,183,763,000

Source: MAZUI-MV 2.2



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Assess the Risk – Evaluate Mitigation Options

- Hazard Mitigation Goals and Objectives **Remained the Same**

Goals: Goals are general guidelines that state what we want to achieve. Goals should be consistent with the State goals and other local goals.
Example: "Protect property"

Objectives: Define strategies or implementation steps to attain a stated goal.

Example: "Enact or enforce regulatory measures that ensure new development will not increase flood threats to existing properties".



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Assess the Risk – Evaluate Mitigation Options

What resources do we have at our disposal to mitigate risk?

- “Proposed mitigation actions will be evaluated against the backdrop of what is feasible in terms of your government’s legal, administrative, fiscal and technical capacities” (FEMA 386-3)

Worked with each jurisdiction to identify:

- Legal authority and administrative, technical, and fiscal capabilities in the state, county, and jurisdictions that will facilitate or hinder hazard mitigation goals and objectives
- Helps to identify strengths and areas for improvement

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Update, Identification, and Analysis of Mitigation Actions

- For each proposed mitigation strategy, the following **should** be identified:
 - For prior/old strategies, provide update of status
 - Implementation timeline
 - Estimated budget
 - Potential funding sources
 - Goals/Objectives Supported
 - Lead agency or department
 - Priority (STAPLEE)



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New Mitigation Actions for 2015 HMP Update

- Identified new actions for 2016
- Proposed mitigation actions should address identified vulnerabilities
- Cost-benefit analysis
- Prioritization/STAPLEE



"At the first sign of a flood, you just push this little button."

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Types of Mitigation Actions

- **Plans and/or Regulations.** Measures such as zoning and building code, ordinances, planning, hazard/risk insurance (e.g., NFIP)
- **Property Protection.** Measures such as acquisition, elevation, relocation, structural retrofits, storm shutters, rebuilding, barriers, and floodproofing
- **Public Education and Outreach.** Measures such as public awareness projects, real estate disclosure, hazard information centers, and technical assistance
- **Natural Resource Protection.** Measures such as erosion and sediment control, stream corridor protection, vegetative management, and wetlands preservation

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Plan Implementation

- A mitigation strategy section provides a “blueprint” to reduce your community’s natural hazard risk.
- Two types of initiatives/projects:
 - Self-funded projects
 - Grant funded
- Mitigation grant opportunities open regularly:
 - The annual HMA grant window opens in June of each year.
 - HMGP funding comes in the wake of Declared Disasters in the State.

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Integration with Other Plans and Programs

The Hazard Mitigation Plan should complement and support other plans and regulatory mechanisms.

- Emergency Operations Plan (EOP)
- Master Plans
- Capital Improvement Plans
- Higher Regulatory Standards
- Storm Water Management Plans

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Next Steps in the Planning Process	
Date	Task
Early March 2016	Incorporate Public Comments and Suggestions
Mid-March 2016	Finalize Municipality Annexes, Risk Assessments, and Priorities
March 30 2016	Submit Plan to GEMA
April-June 2016	Plan Submitted to GEMA and FEMA (30 Days to Make Changes to the Plan)
Summer 2016	Jurisdiction Adoption (Respective City Councils Will Adopt Plan)
September 26, 2016	2010 Plan Will Expire and New Plan Will Be Implemented

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Plan Layout		
Body - Chapters 1-7	Appendices A-E	Annex 1-15 New
Introduction	A – City Adoptions - New	All 15 Jurisdictions (14 Municipalities Plus Unincorporated S. Fulton)
Regulatory Requirements	B- Meeting Documentation	
County Profile	C – Event Data	
Planning Process	D - Maps	
Risk Assessment	E – Supporting Documentation	
Mitigation Actions		
Plan Maintenance	<ul style="list-style-type: none"> • Dams and Watershed • Building Summary Land Use/ Property Values • STAPLEE 	



Chapter 1: Introduction

Sections

- 1.1 Background
- 1.2 Authority
- 1.3 Overview of the FEMA Hazard Mitigation Assistance Grants
- 1.4 Fulton County 2016 Multi-jurisdictional Hazard Mitigation Plan Update

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Chapter 2: Regulatory Requirements

Sections

- 2.1 Federal Prerequisites
- 2.1 Plan Approval Required for Mitigation Grants Eligibility
- 2.3 Multi-Jurisdictional Participation
- 2.4 Public Participation
- 2.5 Multi-Jurisdictional Plan Adoption - **New**

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Chapter 3: County Profile

Sections

- 3.1 Federal Requirements
- 3.2 Summary of Plan Updates
- 3.3 Geographic Setting and History
- 3.4 Building Stock - **New**
- 3.5 Climate
- 3.6 Population, Demographics and Land Use
- 3.7 Critical Facilities - **New**

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Chapter 4: Planning Process

Sections

- 4.1 Federal Advisory Guidance for Community Profiles
- 4.2 Summary of Plan Updates
- 4.3 Public Comment and Involvement in the Planning Process
- 4.4 Multi-Jurisdictional Participation in the Planning Process
- 4.5 Review and Incorporation of Applicable Plans and Documents
- 4.6 Plan Preparation
- 4.7 The Plan Review and Update Process

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Chapter 5: Risk Assessment

- Sections
- 5.1 Federal Requirements for Risk Assessment
 - 5.2 Summary of Plan Updates
 - 5.3 Methodology and Tools
 - 5.4 Identification of Hazards Affecting Each Jurisdiction
 - 5.5 Description of Hazards, Hazard Profiles, Vulnerability Assessments and Loss Estimates
 - 5.6 Summary of Hazards and Community Impacts
 - 5.7 Summary of Vulnerability of Structures and Dollar Estimate of Losses
 - 5.8 NFIP Insured Structures
 - NFIP Participation
 - NFIP RL Chart *

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Natural Hazard Profiles Include:

- Description
- Location
- Extent
- Previous Occurrences and Losses
- Probability of Future Occurrence
- Climate Change Impacts - **New**

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Vulnerability Assessments Include:

- Overview of Vulnerability
- Data and Methodology
- Impact on Life, Health and Safety
- Impact on General Building Stock, Critical Facilities and Economy
- Effect of Climate Change on Vulnerability
- Change of Vulnerability
- Future Growth and Development
- Additional Data and Next Steps

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Chapter 6: Mitigation Strategy

Section

- 6.1 Federal requirements for the Mitigation Strategy
- 6.2 Summary of Plan Updates
- 6.3 Goals and Objectives
- 6.4 Identification and Analysis of Mitigation Actions and Projects
- 6.5 Analysis and implementation of Mitigation projects
- 6.6 County and Jurisdiction Mitigation Actions

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Plan Maintenance

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

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Local Mitigation Plan Review Tool

**SECTION 1:
REGULATION CHECKLIST**

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B1, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this Plan Review Guide in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST		Location in Plan (Section and/or Page Number)	Met	Not Met
ELEMENT A. PLANNING PROCESS				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 300.6(c)(1)(i))				
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement 300.6(b)(2))				
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement 300.6(b)(3))				
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 300.6(b)(4))				
A5. Is there a discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement 300.6(c)(4)(ii))				
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement 300.6(c)(4)(i))				

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Lunch



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Annex Review - New

- Each jurisdiction now has an annex with specific, local information.
- Sections
 - Geography/History
 - Significant Characteristics
 - Population and Demographics
 - Economy / Infrastructure
 - Land Usage
 - Growth and Development Trends
 - Legal and Regulatory Capabilities
 - NFIP Participation
 - Natural Hazard Event History Specific to the Municipality
 - Mitigation Actions



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Annex Completion

- Must complete missing items:
 - NFIP RL/SRL property data
 - Status of Previous Mitigation Actions
 - STAPLEE scores / Prioritization method
 - Worksheets identifying plans/policies in place
- **Final Responses due by March 23, 2016.**
 - Plan goes to GEMA on March 30, 2016.

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Workshop

- The workshop is an opportunity to complete missing annex items.
- Each Jurisdiction – Report Top 3's
 - Hazards
 - Mitigation Actions
- Please follow-up with Jim McIntosh before leaving today.

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Steering Committee Meeting #3 Meeting Minutes



ATLANTA-FULTON COUNTY
EMERGENCY MANAGEMENT AGENCY
130 Peachtree Street SW | Suite G-157 | Atlanta, Georgia 30303
Office (404) 612-5660 | Fax (404) 730-5625
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HAZARD MITIGATION PLAN STEERING COMMITTEE MEETING #3 Georgia Dome, Media Room

March 16, 2016
10:00 A.M.

Introduction - Director Matthew Kallmyer- AFCEMA

Director Kallmyer from the Atlanta-Fulton County Emergency Management Agency (AFCEMA) welcomed all those in attendance and thanked them for their continued dedication to the Hazard Mitigation Plan (HMP) update process. A brief overview of the day's agenda was provided as well as some general housekeeping announcements for the meeting.

Project Overview, Timeline, Accomplishments - Pat Beekman & Jim McIntosh - Tetra Tech

After the introduction Director Kallmyer introduced Pat Beekman and Jim McIntosh from Tetra Tech. Mr. Beekman provided some useful insight into the importance of developing strong Hazard Mitigation Plans at the local level and commended the group on their efforts to date. He is currently assisting with disaster recovery work in South Carolina and has the ability to draw upon this recent experience to assist the group. Mr. McIntosh provided a recap of the project timeline and notable accomplishments to date using a power point presentation (PPT) that had been prepared for the meeting. Following this he also provided a general overview of the planning process that has been followed by the mitigation planning team and briefly discussed the results captured during each step. Some of the key points covered were the local data collection meetings, development of individual municipality annexes for 2016, and the updated hazard profiles.

Chapters 1-7 Content Review: What's new for 2016 - Jim McIntosh – Tetra Tech

Following the project overview Mr. McIntosh presented on the content of each plan chapter. Two copies of each chapter were available for review at the front of the room. All those in attendance were encouraged to look through and reference them throughout the day and to provide any feedback they may have. The PPT covered chapters 1 through 7 and an overview of the appendices. The presentation identified key elements in each chapter to help the steering committee recall the plan layout and purpose behind each section. Mr. McIntosh also discussed some of the new content for 2016 that was designed to meet recommendations from previous plan reviewers or to address new HMP requirements.

Lunch

After reviewing the planning process overview and content of the plan body the steering committee took a break for lunch. Lunch was provided in the meeting space and individual discussions about the plan update took place among attendees during this time. Some of those in attendance also took time to review the draft plan chapters.

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**ATLANTA-FULTON COUNTY
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Annex Content Review - Jim McIntosh – Tetra Tech

Following lunch Mr. McIntosh and Ms. Destiny Ruffin handed out copies of the municipality annexes. Each municipality received two copies of their draft Annex. Although these Annexes were already available electronically for review this was an opportunity to discuss each section, clarify any questions and/or identify corrections needed. The steering committee members in attendance had participated in and were familiar with the data collection process so it was not necessary to spend a lot of time on each section. A brief overview was provided from the beginning to the end of the annexes explaining each section and where the data came from. If the information was not provided directly from the local planning committee then it was pulled from the latest census data available, published comprehensive plan or other available open source information. It was also explained that there may be some variances in the amount and date of data currently available due to fairly recent annexations and the availability of published data. This is a unique challenge for the 2016 update so all were encouraged to closely review their annex for accuracy and to provide feedback no later than March 23, 2016 since the target date for HMP submittal to the state is March 30th. After the annex overview Mr. McIntosh also discussed the list of mitigation actions for each municipality. The steering committee was reminded of the importance to provide details on the status of each previously listed action, to provide as much detail as possible for any newly identified actions and to prioritize their listed actions.

Workshop

After the meeting presentation Ms. Ruffin, Mr. McIntosh, Mr. Beekman and Director Kallmyer made themselves available to discuss any questions and to assist with annex completion as needed. All were reminded of the need for feedback by March 23rd and were told to expect email communication with this announcement and their latest drafts to review. Representatives from Atlanta and Johns Creek turned in copies of their annex with notes for correction. Other jurisdictions worked on their annexes and asked questions as needed. Director Kallmyer thanked everyone for their attendance and the meeting drew to a close at approximately 2:45 p.m.

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Jurisdiction HMP Adoption Meeting Schedule

Adoption / Resolution Meeting Schedule			
Jurisdiction	Meeting		Adoption Date
Mountain Park	September 26, 2016		September 26, 2016
College Park	October 3, 2016		October 3, 2016
Sandy Springs	October 4, 2016		October 4, 2016
Hapeville	October 4, 2016		October 4, 2016
Alpharetta	October 6, 2016		October 6, 2016
East Point	October 17, 2016		October 17, 2016
Union City	October 18, 2016		October 18, 2016
Milton	October 31, 2016		October 31, 2016
Chattahoochee Hills	November 1, 2016		November 1, 2016
Palmetto	November 11, 2016		November 11, 2016
Atlanta	November 15, 2016	November 21, 2016	November 21, 2016
Johns Creek	November 7, 2016	November 28, 2016	November 28, 2016
Roswell	December 12, 2016	December 12, 2016	December 28, 2016
Fairburn	December 12, 2016	January 9, 2017	January 9, 2017
Fulton County	February 15, 2017		February 15, 2017



Appendix C

Hazard Event Data



APPENDIX C HAZARD EVENT DATA

Appendix C of the 2016 Fulton County Multijurisdictional Hazard Mitigation Plan contains the detailed records of all 2010-2015 occurrences of hazard events reported in Chapter 5 for events reported by the National Weather Service and National Climatic Data Center. Most are also accompanied by a list of previous historical event data for additional reference.

Drought Events 2010-2015

Drought 2010 to 2015				
Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
November 2010	Drought	N/A	N/A	The USDA designated 151 counties in Georgia as primary natural disaster areas due to damages and losses caused by a recent drought. This included Fulton County.
April – September 2011	Drought	N/A	N/A	A drought began on April 15 th and continued through September in the State of Georgia. Much of the southern half of the state was in extreme drought with the northern areas classified as being in minor to moderate drought. Rainfall deficits by the end of August ranged from five to 10 inches below normal throughout many central and northern counties. Fulton County was declared a primary natural disaster area due to excessive heat and drought. Crop loss was estimated to be at least 30%. The USDA designated 150 counties in Georgia, including Fulton County, as primary natural disaster areas due to damages and losses caused by a recent drought.
December 2012	Drought	N/A	N/A	This drought in Georgia caused significant problems for farmers in central Georgia and other parts of the state. In early December, approximately 14% of the state was experiencing exceptional drought. More than half of the state received less than half its usual rainfall in September, October and November. This caused stream flows to drop near-record levels and expanding the areas affected by drought.



Historical Drought Data

Drought 1997 – 2007								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fulton	9/1/97	12:00 AM	Drought	N/A	0	0	0	\$20M
Fulton	5/1/99	12:00 AM	Drought	N/A	0	0	0	0
Fulton	8/1/99	12:00 AM	Drought	N/A	0	0	0	0
Fulton	2/1/00	12:00 AM	Drought	N/A	0	0	0	0
Fulton	4/1/00	12:00 AM	Drought	N/A	0	0	0	0
Fulton	5/1/00	12:00 AM	Drought	N/A	0	0	0	0
Fulton	6/1/00	12:00 AM	Drought	N/A	0	0	0	\$306.7M
Fulton	7/1/00	12:00 AM	Drought	N/A	0	0	0	0
Fulton	10/1/00	12:00 AM	Drought	N/A	0	0	0	0
Fulton	10/1/01	12:00 AM	Very Dry	N/A	0	0	0	0
Fulton	11/1/01	12:00 AM	Drought	N/A	0	0	0	0
Fulton	12/1/01	12:00 AM	Very Dry	N/A	0	0	0	0
Fulton	8/1/02	12:00 AM	Drought	N/A	0	0	0	0
Fulton	1/1/03	12:00 AM	Abnormally Dry	N/A	0	0	0	0
Fulton	3/1/04	12:00 AM	Drought	N/A	0	0	0	0
Fulton	5/1/07	12:00 AM	Drought	N/A	0	0	0	0
Fulton	9/1/07	12:00 AM	Drought	N/A	0	0	0	\$344 M
Fulton	10/1/07	12:00 AM	Drought	N/A	0	0	0	0
Fulton	11/1/07	12:00 AM	Drought	N/A	0	0	0	0
Fulton	12/1/07	12:00 AM	Drought	N/A	0	0	0	0

Earthquake Events in Vicinity of Fulton 2010-2015

Earthquake events in the Vicinity of Fulton County 2010 – 2015				
Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
March 25, 2010	Earthquake (magnitude 2.5)	N/A	N/A	Georgia, USA
August 5, 2010	Earthquake (magnitude 2.2)	N/A	N/A	Georgia, USA
May 3, 2011	Earthquake (magnitude 2.6)	N/A	N/A	Epicenter in Mitchell, GA (Glascocock County)



Earthquake events in the Vicinity of Fulton County 2010 – 2015				
Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
November 9, 2011	Earthquake (magnitude 2.7)	N/A	N/A	The epicenter for this earthquake was located in Dalton, GA (Whitefield County), north of Fulton County. There were no damages or injuries reported; however, there were numerous reports of people having felt the earthquake, including residents of Fulton County.
February 29, 2012	Earthquake (magnitude 1.7)	N/A	N/A	5km WNW of Dalton, Georgia
April 24, 2012	Earthquake (magnitude 2.3)	N/A	N/A	6km ENE of Appling, Georgia
June 2, 2012	Earthquake (magnitude 1.6)	N/A	N/A	10km NE of Varnell, Georgia
June 8, 2012	Earthquake (magnitude 2)	N/A	N/A	5km SSW of Ringgold, Georgia
June 8, 2012	Earthquake (magnitude 2)	N/A	N/A	6km SSW of Ringgold, Georgia
July 4, 2012	Earthquake (magnitude 2.7)	N/A	N/A	18km W of Sparks, Georgia
July 4, 2012	Earthquake (magnitude 2.7)	N/A	N/A	Georgia, USA
September 20, 2012	Earthquake (magnitude 2)	N/A	N/A	8km NW of Trion, Georgia
October 13, 2012	Earthquake (magnitude 2.5)	N/A	N/A	Georgia, USA
October 13, 2012	Earthquake (magnitude 2.5)	N/A	N/A	2km SE of McCaysville, Georgia
October 25, 2012	Earthquake (magnitude 2.4)	N/A	N/A	9km SSE of Dalton, Georgia
November 24, 2012	Earthquake (magnitude 1.4)	N/A	N/A	12km NW of Trion, Georgia
November 24, 2012	Earthquake (magnitude 1.7)	N/A	N/A	13km NW of Trion, Georgia
December 2, 2012	Earthquake (magnitude 1.4)	N/A	N/A	7km NW of Trion, Georgia
December 23, 2012	Earthquake (magnitude 1.4)	N/A	N/A	8km WSW of Ringgold, Georgia
February 2, 2013	Earthquake (magnitude 2.5)	N/A	N/A	7km NNE of Varnell, Georgia
April 7, 2013	Earthquake (magnitude 2.5)	N/A	N/A	8km NNE of Lincolnton, Georgia



Earthquake events in the Vicinity of Fulton County 2010 – 2015				
Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
	2.5)			
April 13, 2013	Earthquake (magnitude 1.9)	N/A	N/A	4km NE of Ringgold, Georgia
April 16, 2013	Earthquake (magnitude 2.2)	N/A	N/A	8km NNE of Lincolnton, Georgia
April 23, 2013	Earthquake (magnitude 1.9)	N/A	N/A	8km NNE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.1)	N/A	N/A	7km ESE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.2)	N/A	N/A	8km ESE of Lincolnton, Georgia
April 26, 2013	Earthquake (magnitude 2.8)	N/A	N/A	9km E of Lincolnton, Georgia
April 27, 2013	Earthquake (magnitude 2.2)	N/A	N/A	11km W of Gibson, Georgia
April 27, 2013	Earthquake (magnitude 2.3)	N/A	N/A	9km ESE of Lincolnton, Georgia
June 28, 2013	Earthquake (magnitude 2.1)	N/A	N/A	8km NNW of Trion, Georgia
August 13, 2013	Earthquake (magnitude 2.5)	N/A	N/A	6km N of Varnell, Georgia
November 19, 2013	Earthquake (magnitude 2.1)	N/A	N/A	1km N of Tyrone, Georgia
December 4, 2013	Earthquake (magnitude 2.2)	N/A	N/A	10km NE of Dalton, Georgia
December 12, 2013	Earthquake (magnitude 2)	N/A	N/A	5km W of Sparta, Georgia
February 14, 2014	Earthquake (magnitude 4.1)	N/A	N/A	This earthquake had its epicenter in South Carolina (seven miles west-northwest of Edgefield County). This was the second strongest earthquake to occur in South Carolina and it could be felt in South Carolina and Georgia. There were no reports of damages or injuries; however, bridge inspections were conducted. There were numerous of people who were felt the earthquake in Fulton County, Georgia, including many reports of residents in the City of Atlanta.
August 9, 2014	Earthquake (magnitude 1.8)	N/A	N/A	9km NNW of McCaysville, Georgia
August 9, 2014	Earthquake (magnitude 2)	N/A	N/A	9km NNW of McCaysville, Georgia



Earthquake events in the Vicinity of Fulton County 2010 – 2015				
Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
	2.3)			
September 15, 2014	Earthquake (magnitude 2.2)	N/A	N/A	16km NNW of Evans, Georgia
November 22, 2014	Earthquake (magnitude 2.5)	N/A	N/A	7km ESE of Varnell, Georgia
January 3, 2015	Earthquake (magnitude 1.8)	N/A	N/A	2km SSE of Summerville, Georgia
March 5, 2015	Earthquake (magnitude 2.3)	N/A	N/A	4km S of Hiawassee, Georgia
May 11, 2015	Earthquake (magnitude 2.06)	N/A	N/A	3km E of Indian Springs, Georgia
May 18, 2015	Earthquake (magnitude 2.44)	N/A	N/A	0km NW of Crawfordville, Georgia
September 14, 2015	Earthquake (magnitude 1.81)	N/A	N/A	2km W of Ringgold, Georgia
September 14, 2015	Earthquake (magnitude 1.91)	N/A	N/A	2km W of Ringgold, Georgia
October 4, 2015	Earthquake (magnitude 1.96)	N/A	N/A	15km SE of Eatonton, Georgia

Earthquake Historical Data (not currently available)

Flood Events 2010-2015

Flood Events in Fulton County 2010-2015				
Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
January 24, 2010	Flash Flood	N/A	N/A	<p>A system of storms moved from southern to northern Georgia. It brought heavy rain and flooding as showers and thunderstorms tracked from southwest to northeast in bands. Rainfall totals of two to three inches were common across central Georgia, with three to four inches falling across northwest Georgia. Many creeks, streams and rivers flooded. In addition to the rain, there were wind gusts of 43 to 51 mph.</p> <p>In Fulton County, the USGS stream gage on the upper portion of Peachtree Creek near the merger of the North and South Fork of Peachtree Creek indicated minor flooding. Damage was confined to minor debris removal from areas adjacent to the creek. The County had approximately \$3,000 in property damage.</p>



Flood Events in Fulton County 2010-2015				
Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
May 3, 2010	Thunderstorms and Flooding	N/A	N/A	A slow moving system brought several rounds of showers and thunderstorms to parts of Georgia with a two-day rainfall total of three to four inches. Flash flooding was observed in several counties on the northwest and west side of the City of Atlanta, with some of the counties experiencing catastrophic flooding. In Fulton County, several creeks reached or exceeded flood stage during this event. Proctor Creek at Jackson Parkway in Atlanta reached its flood stage of 13 feet and crested at 19.2 feet. Nancy Creek at Rickenbacker Drive had major flooding as it crested at 13.2 feet (13 foot flood stage). The County OEM Director reported that at least 50 homes were affected by the flood waters of Nancy and Peachtree Creeks. A swift water rescue was required along Nancy Creek. Flood waters covered portions of Cochran Mill Road, Cascade-Palmetto Highway, and Vandiver Road at Amen Road in central Fulton County. Portions of I-20 west of Atlanta were closed during the height of flooding. Damages in the County were approximately \$500,000.
April 15-16, 2011	Heavy Rain and Flash Flood	N/A	N/A	A line of strong to severe thunderstorms moved into northwest Georgia, bringing hail, damaging winds and three tornadoes. In addition to the severe weather events, the heavy rain caused flash flooding along north Atlanta metropolitan area creeks and streams. The USGS stream gage on Big Creek at Alpharetta reached flood stage of 7 feet and remained above flood stage for two days. Damage from this event was mainly minor debris around the creeks that flooded. The County had approximately \$5,000 in damages.
May 19, 2013	Heavy Rain and Flash Flood	N/A	N/A	Widespread showers and thunderstorms developed across a portion of northern Georgia. Rainfall amounts of three to seven inches occurred in less than six hours in an area from Dawsonville to Gainesville to Lawrenceville to Roswell. Significant flash flooding occurred with major damage to roads and bridges near Flowery Branch. Another three to seven inches of rain fell in northwest Georgia from Trenton to LaFayette to Calhou and Cartersville to Rome to Summerville. Both heavy rain events caused widespread flash flooding and minor river flooding. In Fulton County, Big Creek at Kimball Bridge Road near Alpharetta reached flood stage of seven feet and crested at 10.3 feet which caused minor flooding. The Chattahoochee River near Berkeley Lake and Norcross reached flood stage of 12 feet and crested at 12.4 feet, causing minor flooding. The Chattahoochee River overflowed its banks and flooded the paddocks and access road to the stables at the Huntcliff River Club near Sandy Springs. The County had approximately \$10,000 in property damage.
June 5-6, 2013	Heavy Rain and Flash Flooding	N/A	N/A	Numerous showers and thunderstorms produced flash flooding in the Atlanta area. Intense, heavy rainfall of 3.23 inches fell in 100 minutes at the Hartsfield-Jackson Atlanta International Airport. This caused significant flooding on portions of Interstate 285 at the Camp Creek Parkway intersection. There was a dam breach in Sandy



Flood Events in Fulton County 2010-2015				
Dates of Event	Event Type	FEMA Declaration Number	Location / County Designated?	Losses / Impacts
				Springs at the seven acre pond by Roswell Road. An access road over the dam was the only entrance into a neighborhood which was cutoff. Erosion caused severe damage to the access road. The County had approximately \$45,000 in property damages from this event.
April 5-7, 2014	Severe Weather and Tornadoes	N/A	N/A	A strong storm system impacted north and central Georgia, bringing widespread rain to the area. This resulted in extensive rainfall amounts. Over a 48 hour period, widespread two to four inches of rain fell across north and west-central Georgia. Isolated areas saw more than four inches of rain. Numerous flood warnings and flash flood warnings were issued. In Fulton County, between three and four inches of rain fell. In Atlanta, the heavy rains slowed cars on the interstates and traffic lights were knocked out. The storms caused flash flooding and downed trees and power lines. Nancy Creek near West Paces Ferry was also affected by the storm. Water gushed from creek for several hours.

Source: NOAA-NCDC 2015; FEMA 2015; SHELDUS 2015

Flood Events Historical Data

Flooding								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fulton	7/5/94	6:30 AM	Flood	N/A	0	0	\$5K	\$5K
Fulton	10/4/95	10:00 AM	Flash Flood	N/A	0	0	0	0
Fulton	2/27/97	10:00 PM	Flood	N/A	0	0	0	0
Atlanta	7/23/97	7:30 AM	Flash Flood	N/A	0	0	\$2K	0
Atlanta	11/21/97	8:35 PM	Flash Flood	N/A	0	0	\$45K	0
Fulton	2/4/98	5:00 AM	Flood	N/A	0	0	\$2K	0
Fulton	3/8/98	5:00 AM	Flash Flood	N/A	0	0	\$10K	0
East Point	9/1/98	5:00 PM	Flash Flood	N/A	0	0	\$10K	0
Atlanta	7/6/99	4:30 PM	Flash Flood	N/A	0	0	0	0
Atlanta	8/24/00	6:00 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Atlanta	9/21/00	8:05 AM	Urban/sml Stream Fld	N/A	0	0	0	0
Fulton	3/1/01	12:00 AM	Extremely Wet	N/A	0	0	0	0
Atlanta	6/3/01	4:30 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Alpharetta	7/3/01	2:45 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Atlanta	3/30/02	9:00 PM	Urban/sml Stream Fld	N/A	0	0	0	0
Atlanta	5/3/02	7:14 AM	Urban/sml Stream Fld	N/A	0	0	0	0
Atlanta	5/4/02	9:30 AM	Flash Flood	N/A	0	0	0	0
Atlanta	9/21/02	7:30 PM	Urban/sml Stream	N/A	0	0	0	0



*Appendix C
Hazard Event Data*

Flooding								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
			Fid					
Atlanta	9/21/02	8:30 PM	Flash Flood	N/A	0	0	\$1.5M	0
Fulton	10/6/02	11:00 AM	Abnormally Wet	N/A	0	0	0	0
Atlanta	12/24/02	8:30 AM	Flash Flood	N/A	0	0	0	0
Atlanta	5/6/03	1:45 AM	Flash Flood	N/A	0	0	\$250K	0
East Point	5/6/03	2:35 PM	Flash Flood	N/A	0	0	\$375K	0
North Fulton	5/6/03	2:40 PM	Flash Flood	N/A	0	0	\$5K	0
Atlanta	5/6/03	4:19 PM	Flash Flood	N/A	0	0	\$5K	0
East Point	5/7/03	8:00 PM	Flash Flood	N/A	0	0	\$5K	0
Atlanta	5/16/03	2:05 AM	Flash Flood	N/A	0	0	\$300K	0
Atlanta	5/18/03	2:45 AM	Flash Flood	N/A	0	0	0	0
Atlanta	6/13/03	2:50 PM	Flash Flood	N/A	0	0	\$5K	0
Sandy Springs	6/16/03	11:30 PM	Flash Flood	N/A	0	0	\$500K	0
Sandy Springs	6/28/03	5:57 PM	Heavy Rain	N/A	0	0	0	0
Atlanta	6/30/03	2:50 PM	Flash Flood	N/A	0	0	\$5K	0
Atlanta	7/1/03	3:35 PM	Flash Flood	N/A	0	0	\$5K	0
Atlanta	7/1/03	5:18 PM	Flash Flood	N/A	0	0	\$5K	0
Atlanta	7/10/03	4:30 PM	Flash Flood	N/A	0	0	0	0
Palmetto	7/10/03	6:12 PM	Heavy Rain	N/A	0	0	0	0
Alpharetta	5/12/04	7:20 PM	Heavy Rain	N/A	0	0	0	0
Atlanta	7/25/04	11:31 PM	Flash Flood	N/A	0	0	0	0
Sandy Springs	8/5/04	3:45 PM	Heavy Rain	N/A	0	0	\$50K	0
Fulton	9/16/04	1:20 AM	Flood	N/A	0	0	\$5.5M	0
Fulton	9/16/04	4:45 PM	Flash Flood	N/A	0	0	\$20M	0
North Fulton	9/27/04	7:00 PM	Flash Flood	N/A	0	0	\$2M	0
Fulton	11/24/04	10:00 AM	Flood	N/A	0	0	0	0
Atlanta	3/31/05	10:45 AM	Flash Flood	N/A	0	0	0	0
Fulton	7/6/05	7:00 PM	Flood	N/A	0	0	\$25K	0
Atlanta	7/6/05	8:23 PM	Flash Flood	N/A	0	0	\$5K	0
Union City	7/10/05	7:05 PM	Flash Flood	N/A	0	0	\$1K	0
Fulton	7/10/05	11:00 PM	Flood	N/A	0	0	\$665K	0
Central Fulton	7/11/05	1:45 AM	Flash Flood	N/A	0	0	\$10K	0
Newtown	1/2/06	8:35 AM	Flash Flood	N/A	0	0	0	0
Newtown	1/23/06	1:08 PM	Flash Flood	N/A	0	0	0	0
Alpharetta	3/21/06	12:09 AM	Flash Flood	N/A	0	0	0	0
Campbellton	7/31/08	20:45 PM	Flood	N/A	0	0	0	0
Rico	7/31/08	21:24 PM	Flash Flood	N/A	0	0	\$1K	0
Hapeville	6/4/09	18:45 PM	Flood	N/A	0	0	\$20K	0
Atlanta	7/12/09	19:45 PM	Flash Flood	N/A	0	0	\$30K	0



Flooding								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Atlanta	8/28/09	8:30 AM	Flash Flood	N/A	0	0	\$1K	0
Ocee	8/28/09	10:15 AM	Flash Flood	N/A	0	0	\$1K	0
Atlanta	1/24/10	18:26 PM	Flash Flood	N/A	0	0	\$3K	0

Geological Events 2010-2015

Date(s) of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Description
June 3, 2010	Sinkhole	N/A	N/A	A sinkhole has been forming in a southwest Atlanta subdivision due to an erosion control project undertaken by a developer that was ordered by the county. The project involved the installation of a retaining wall and a new drainage system.
June 8, 2010	Sinkhole	N/A	N/A	A sinkhole formed when an aging water pipe broke and caused a sinkhole in the center lanes of Centennial Olympic Park Drive.
August 5, 2013	Heavy Rains and Mudslide	N/A	N/A	Heavy rains created a mudslide in the City of Sandy Springs, forcing officials to close Lake Forrest Drive between Lake Summit and Chevaux Court. Tests showed a large wall bordering the street was no longer stable. Residents in the area have reported either other mudslides in this location over the last 12 months. Costs for repairs were estimated at \$1 million.
January 27, 2014	Sinkhole	N/A	N/A	A water main break flooded Collier Drive in northwest Atlanta and caused a sinkhole at least five feet deep and 12 feet wide. The water from the pipe caused the road to buckle in several areas. This area was closed between Valley Heart Drive and Chalmers Drive until the proper repairs were made.
February 5, 2014	Sinkhole	N/A	N/A	Due to a faulty stormwater line installed underneath a home in Atlanta that washed away soil, a sinkhole developed. The homeowner stepped outside and fell into the sinkhole. It was estimated to be eight feet deep and 12 feet wide. The woman suffered minor injuries.

Geological Historical Data (not currently available)

Heat Wave/Extreme Heat Events 2010-2015

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
June 29- July 1, 2012	Heat	N/A	N/A	This was one of the hottest events in Georgia state history, with multiple all-time heat records tied or broken. This included Athens (Clarke County) at 109°F, Macon (Bibb



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				County) at 108°F, Atlanta (Fulton County) at 106°F, and Columbus (Muscogee County) at 106°F. A heat advisory was issued for the Atlanta area.
June 23, 2015	Heat Wave	N/A	N/A	For the second time in two weeks, parts of Georgia dealt with a heat wave. Temperatures were in the mid to upper 90s for much of the week in the Atlanta area.
July 21, 2015	Heat Wave	N/A	N/A	The NWS issued heat advisories for the east coast and southern states as temperatures were predicted to reach up to 105°F.

Heat Wave/Extreme Heat Events Historical Data

Excessive Heat								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
College Park	6/9/95	11:00 AM	Heat	N/A	2	0	0	0
Fulton	7/20/99	8:00 AM	Excessive Heat	N/A	2	0	0	0
Fulton	8/1/99	12:00 AM	Excessive Heat	N/A	0	0	0	0
Fulton	9/3/02	12:00 PM	Very Warm	N/A	0	0	0	0
Fulton	8/1/07	12:00 AM	Excessive Heat	N/A	0	0	0	0

Severe Weather Events 2010-2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 22, 2010	Thunderstorm and Lightning	N/A	N/A	A strong line of thunderstorms moved into Georgia during the early morning, bringing lightning, heavy rain and hail. In Fulton County, lightning struck a gas line in Ocee near Abbots Bridge Road. The home caught fire and sustained damage as a result of the fire. The home had approximately \$50,000 in damages.
April 15, 2010	Thunderstorms and Lightning	N/A	N/A	Thunderstorms developed over parts of Georgia with many of them becoming strong to severe. Damaging downburst winds were noted with these storms. As the storms moved into east Georgia, several of the storms produced quarter to golf ball-sized hail. In Fulton County, the 911 center reported two commercial buildings that caught fire after being struck by lightning. The buildings were located in Alpharetta and Milton. Damages were approximately \$50,000.
June 16,	Thunderstorms	N/A	N/A	Strong to severe thunderstorms impacted the area with



Appendix C
Hazard Event Data

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
2010	and Lightning			one storm producing a significant downburst across Lumpkin County that downed over 200 trees and damaged homes, businesses and schools. In Fulton County, a home on Tullgean Drive in Birmingham was completely destroyed by a lightning strike. A firefighter was injured when the roof collapsed on him, suffering first and second degree burns on his legs. There was another home struck by lightning in Milton in the Oxford Lake subdivision. The strike damaged the roof and two rooms. This event caused approximately \$2.25 million in property damage.
October 25-28, 2010	Thunderstorms and Lightning	N/A	N/A	Severe thunderstorms and several tornadoes moved from east Texas eastward to Georgia. Two tornadoes were confirmed in northwest Georgia including an EF1 in southern Dade County. Another series of storms moved across east-central and southeast Georgia producing large hail and damaging wind gusts. In Fulton County, there were reports of three structure fires caused by lightning, causing approximately \$75,000 in property damage.
April 5, 2011	Thunderstorms and Strong Winds	N/A	N/A	An intense line of thunderstorms brought wind gusts of 60 to 70 mph as it impacted northern Georgia. Nearly every county in the area, including Fulton County, received at least one severe thunderstorm warning and these counties experienced extensive wind damage from the storms. There were two brief EF0 tornadoes in Glimmer County. The storms downed trees on homes and vehicles, caused power outages and resulted in seven fatalities. In Fulton County, there was one fatality when a tree fell on a car in the Howell Station neighborhood of Atlanta. Wind gusts of 30 to 35 mph were common in the County. Approximately \$20,000 in property damage was reported in the County.
April 15-16, 2011	Thunderstorms and Hail	N/A	N/A	A line of strong to severe thunderstorms began to move into northwest Georgia during the late afternoon of April 15 th . As the line moved further into the State, it evolved more in a large area of showers and thunderstorms with supercells. These supercells produced damaging winds, hail, and three tornadoes. During the early morning of April 16 th , the severity of these storms decreased but widespread rain and thunderstorms continued. The prolonged and heavy rain resulted in flash flooding along north Atlanta metropolitan area creeks and streams. In Sandy Springs, quarter to golf ball-sized hail was observed. Hail as large as ping-pong balls was observed around Roswell. Fulton County had approximately \$4.27 million in property damage from this event.
June 27, 2011	Thunderstorms and Lightning	N/A	N/A	Scattered thunderstorms impacted west central, southwest, and western portions of middle Georgia. In Fulton County, the County OEM director reported that a home in west-central Fulton County was struck by lightning and set on fire. The home sustained moderate damage. The County had approximately \$150,000 in property damage from this event.
July 20, 2011	Thunderstorms and Heavy Rain	N/A	N/A	Thunderstorms brought heavy rainfall over the Atlanta area and caused flooding of the downtown connector (Interstate 75/85) near the Grady Curve portion of the



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				Interstate. The flooding was largely caused by stopped up drains. Several cars become stranded due to the flooding. The heavy rain also damaged the roof of Grady Hospital. Rainfall totals ranged from two to 2.5 inches in this part of Atlanta. This event caused approximately \$500,000 in property damage.
January 21, 2012	Thunderstorms and Hail	N/A	N/A	Thunderstorms developed in northern Georgia with many of them becoming severe. Three tornadoes touched down with this system along with multiple reports of hail and wind damage. Flash flooding was also reported in the Atlanta area as a result of heavy rainfall. There were reports of 1.75 inch hail southwest of Atlanta in Ben Hill. The County had approximately \$3.8 million in damages from this event.
July 17, 2013	Thunderstorms and Hail	N/A	N/A	Numerous showers and thunderstorms developed over the Atlanta-Fulton County area bringing damaging winds, large hail and isolated flash flooding. Golf ball-sized hail was reported west of Fairburn in the County. There was approximately \$3.87 million in property damage in the County.
August 5, 2013	Heavy Rains and Mudslide	N/A	N/A	Heavy rains created a mudslide in the City of Sandy Springs, forcing officials to close Lake Forrest Drive between Lake Summit and Chevaux Court. Tests showed a large wall bordering the street was no longer stable. Residents in the area have reported either other mudslides in this location over the last 12 months. Costs for repairs were estimated at \$1 million.
April 20, 2015	Severe Thunderstorms and Hail	N/A	N/A	Widespread severe thunderstorms moved across northern Georgia. There were numerous reports of large hail and damaging winds associated with this event. In Fulton County, there was golf ball-sized hail reported at Georgia Highway 400 and Holcomb Bridge Road. The County had approximately \$4 million in property damage from this event.
June 24, 2015	Thunderstorms and Hail	N/A	N/A	There were numerous reports of damaging thunderstorm winds and large hail across northern Georgia. Heavy rain associated with one of the storms produced isolated flash flooding in western portions of Gwinnett County. In Fulton County, the Emergency Manager reported golf ball size hail in East Point. Damages in the County were approximately \$4 million.

Severe Weather Historical Data

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
FULTON	3/12/55	1930	Hail	1.50 in.	0	0	0	0
FULTON	4/6/56	1100	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/15/56	1814	Tstm Wind	77 kts.	0	0	0	0
FULTON	8/12/57	1500	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/18/57	1815	Tstm Wind	0 kts.	0	0	0	0
FULTON	1/21/59	1600	Tstm Wind	60 kts.	0	0	0	0



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
FULTON	3/16/60	300	Hail	0.00 in.	0	0	0	0
FULTON	8/13/62	1500	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/13/62	1527	Tstm Wind	55 kts.	0	0	0	0
FULTON	7/23/63	1645	Hail	1.75 in.	0	0	0	0
FULTON	4/23/64	1900	Tstm Wind	50 kts.	0	0	0	0
FULTON	8/4/64	1900	Tstm Wind	55 kts.	0	0	0	0
FULTON	4/12/65	600	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/12/65	605	Tstm Wind	50 kts.	0	0	0	0
FULTON	6/30/66	1520	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/14/66	1715	Tstm Wind	60 kts.	0	0	0	0
FULTON	7/15/66	1830	Tstm Wind	50 kts.	0	0	0	0
FULTON	3/10/68	900	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/14/68	1200	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/18/68	1800	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/29/68	1700	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/21/70	1920	Hail	1.00 in.	0	0	0	0
FULTON	8/22/70	1613	Tstm Wind	50 kts.	0	0	0	0
FULTON	5/12/71	1517	Tstm Wind	58 kts.	0	0	0	0
FULTON	8/9/71	1545	Hail	0.75 in.	0	0	0	0
FULTON	4/7/72	2130	Hail	0.75 in.	0	0	0	0
FULTON	8/20/72	1525	Tstm Wind	53 kts.	0	0	0	0
FULTON	3/4/73	1615	Tstm Wind	50 kts.	0	0	0	0
FULTON	5/11/73	1658	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/20/73	1600	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/21/74	343	Tstm Wind	61 kts.	0	0	0	0
FULTON	3/30/74	29	Tstm Wind	53 kts.	0	0	0	0
FULTON	5/3/74	1545	Tstm Wind	51 kts.	0	0	0	0
FULTON	12/15/74	1000	Tstm Wind	65 kts.	0	0	0	0
FULTON	1/10/75	1840	Tstm Wind	52 kts.	0	0	0	0
FULTON	3/13/75	1855	Tstm Wind	55 kts.	0	0	0	0
FULTON	8/26/75	1237	Tstm Wind	50 kts.	0	0	0	0
FULTON	2/18/76	1315	Tstm Wind	0 kts.	0	0	0	0
FULTON	2/18/76	1315	Tstm Wind	62 kts.	0	0	0	0
FULTON	7/16/76	1530	Tstm Wind	0 kts.	0	0	0	0
FULTON	12/5/77	1300	Hail	1.00 in.	0	0	0	0
FULTON	4/18/78	2330	Hail	1.75 in.	0	0	0	0
FULTON	4/18/78	2330	Hail	3.25 in.	0	0	0	0
FULTON	7/23/78	1330	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/13/79	930	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/5/80	1630	Hail	0.75 in.	0	0	0	0
FULTON	6/29/80	1230	Tstm Wind	50 kts.	0	0	0	0



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
FULTON	8/20/80	1830	Tstm Wind	0 kts.	0	0	0	0
FULTON	9/3/80	1958	Tstm Wind	56 kts.	0	0	0	0
FULTON	4/20/81	1045	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/18/81	2114	Tstm Wind	60 kts.	0	0	0	0
FULTON	6/7/81	1550	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/7/81	1555	Hail	1.75 in.	0	0	0	0
FULTON	6/10/81	1900	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/11/81	1240	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/25/81	1825	Hail	1.75 in.	0	0	0	0
FULTON	6/30/82	1652	Tstm Wind	59 kts.	0	0	0	0
FULTON	7/4/82	2200	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/7/83	1800	Hail	0.75 in.	0	0	0	0
FULTON	4/5/83	2040	Tstm Wind	53 kts.	0	0	0	0
FULTON	8/6/83	1440	Tstm Wind	50 kts.	0	0	0	0
FULTON	2/24/84	1800	Tstm Wind	0 kts.	0	0	0	0
FULTON	2/24/84	1810	Hail	1.75 in.	0	0	0	0
FULTON	2/24/84	1815	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/28/84	1352	Hail	1.00 in.	0	0	0	0
FULTON	3/28/84	1430	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/3/84	1315	Tstm Wind	0 kts.	0	1	0	0
FULTON	5/3/84	1330	Tstm Wind	63 kts.	1	5	0	0
FULTON	5/14/84	1256	Tstm Wind	50 kts.	0	0	0	0
FULTON	7/22/84	1527	Hail	1.75 in.	0	0	0	0
FULTON	7/22/84	1527	Hail	1.75 in.	0	0	0	0
FULTON	7/27/84	1222	Tstm Wind	67 kts.	0	0	0	0
FULTON	11/10/84	1715	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/10/84	1730	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/13/85	1400	Hail	1.75 in.	0	0	0	0
FULTON	4/5/85	1855	Tstm Wind	70 kts.	0	0	0	0
FULTON	4/5/85	1915	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/5/85	1915	Tstm Wind	53 kts.	0	0	0	0
FULTON	6/7/85	1450	Hail	0.75 in.	0	0	0	0
FULTON	6/7/85	1615	Hail	0.75 in.	0	0	0	0
FULTON	6/7/85	1615	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/7/85	1645	Tstm Wind	50 kts.	0	0	0	0
FULTON	8/24/85	1400	Hail	1.75 in.	0	0	0	0
FULTON	8/24/85	1400	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/25/86	1540	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/27/86	1545	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/23/86	1700	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/25/86	1945	Tstm Wind	0 kts.	0	0	0	0



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
FULTON	8/1/86	30	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/16/86	1730	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/20/86	810	Tstm Wind	0 kts.	0	1	0	0
FULTON	7/6/87	1620	Hail	1.75 in.	0	0	0	0
FULTON	7/6/87	1640	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/24/87	1640	Tstm Wind	52 kts.	0	0	0	0
FULTON	7/25/87	1530	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/26/87	1430	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/23/87	1525	Tstm Wind	0 kts.	0	0	0	0
FULTON	1/19/88	2245	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/25/88	1320	Hail	0.75 in.	0	0	0	0
FULTON	4/25/88	1535	Hail	1.25 in.	0	0	0	0
FULTON	6/25/88	1900	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/1/88	1754	Tstm Wind	52 kts.	0	0	0	0
FULTON	8/2/88	1905	Tstm Wind	52 kts.	0	0	0	0
FULTON	4/3/89	640	Hail	1.00 in.	0	0	0	0
FULTON	4/4/89	1254	Tstm Wind	52 kts.	0	0	0	0
FULTON	4/4/89	1350	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/5/89	1345	Tstm Wind	0 kts.	0	0	0	0
FULTON	6/14/89	1624	Tstm Wind	52 kts.	0	0	0	0
FULTON	6/28/89	1330	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/3/89	640	Hail	1.00 in.	0	0	0	0
FULTON	7/16/89	1330	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/19/89	1650	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/25/89	1710	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/26/89	1535	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/26/89	1535	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/15/89	1815	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/15/89	1835	Tstm Wind	65 kts.	0	0	0	0
FULTON	11/15/89	2030	Tstm Wind	0 kts.	0	0	0	0
FULTON	2/10/90	452	Tstm Wind	59 kts.	0	0	0	0
FULTON	2/10/90	510	Tstm Wind	0 kts.	1	1	0	0
FULTON	2/22/90	1015	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/16/90	1700	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/10/90	1613	Hail	1.00 in.	0	0	0	0
FULTON	4/10/90	1620	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/20/90	1320	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/20/90	1335	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/8/90	1700	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/8/90	1445	Tstm Wind	0 kts.	0	0	0	0
FULTON	9/10/90	450	Tstm Wind	0 kts.	0	0	0	0



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
FULTON	9/10/90	1515	Hail	0.75 in.	0	0	0	0
FULTON	9/10/90	1530	Tstm Wind	0 kts.	0	0	0	0
FULTON	9/10/90	1545	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/29/91	815	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/29/91	815	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/9/91	1800	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/19/91	1440	Hail	0.88 in.	0	0	0	0
FULTON	4/27/91	1645	Tstm Wind	0 kts.	0	0	0	0
FULTON	4/29/91	1313	Hail	0.88 in.	0	0	0	0
FULTON	5/5/91	1530	Tstm Wind	0 kts.	0	0	0	0
FULTON	5/5/91	1530	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/4/91	1300	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/10/91	2025	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/11/91	1240	Tstm Wind	0 kts.	0	0	0	0
FULTON	3/6/92	1555	Hail	1.75 in.	0	0	0	0
FULTON	3/19/92	1128	Hail	1.00 in.	0	0	0	0
FULTON	7/2/92	1445	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/2/92	1535	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/2/92	1700	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/5/92	1515	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/13/92	1655	Tstm Wind	0 kts.	0	0	0	0
FULTON	7/15/92	1400	Tstm Wind	0 kts.	0	0	0	0
FULTON	8/27/92	1745	Tstm Wind	0 kts.	0	0	0	0
FULTON	10/30/92	1615	Tstm Wind	0 kts.	0	0	0	0
FULTON	11/24/92	950	Tstm Wind	0 kts.	0	0	0	0
Atlanta	2/21/93	2145	Hail	1.50 in.	0	0	0	0
Atlanta	5/17/93	630	Hail	1.75 in.	0	0	500K	0
Roswell	10/18/93	1700	Lightning	N/A	0	1	0	0
FULTON	12/11/93	1000	High Winds	0 kts.	1	2	500K	0
Roswell	5/21/94	1645	Thunderstorm Winds	0 kts.	0	0	5K	0
Atlanta	5/21/94	1700	Thunderstorm Winds	0 kts.	0	0	500K	0
Roswell	5/21/94	1720	Thunderstorm Winds	0 kts.	0	0	5K	0
Roswell	6/9/94	1020	Hail	0.75 in.	0	0	0	0
Roswell	6/25/94	1850	Hail	0.88 in.	0	0	0	0
Roswell	6/29/94	920	Thunderstorm Winds	0 kts.	0	0	5K	0
Atlanta	7/8/94	1600	Thunderstorm Wind	0 kts.	0	0	1K	0
Hartfield Airport	1/6/95	1825	Lightning	N/A	0	2	0	0
College Park	1/19/95	1440	Hail	0.75 in.	0	0	0	0



*Appendix C
Hazard Event Data*

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Atlanta	4/19/95	1424	Thunderstorm Winds	0 kts.	0	0	300	0
FULTON	4/22/95	1030	Hail	1.00 in.	0	0	0	0
Atlanta	5/15/95	1611	Thunderstorm Winds	56 kts.	0	0	0	0
Atlanta	5/15/95	1625	Thunderstorm Winds	0 kts.	0	3	70K	0
Atlanta	6/30/95	1840	Thunderstorm Winds	0 kts.	0	0	1K	0
Atlanta	7/17/95	1443	Thunderstorm Winds53	0 kts.	0	0	50K	0
East Point	8/3/95	1700	Thunderstorm Winds	0 kts.	0	0	500	0
Atlanta	8/19/95	1845	Thunderstorm Winds	0 kts.	0	0	10K	0
FULTON	10/5/95	600	Thunderstorm Winds	0 kts.	8	7	75.0M	50.0M
Atlanta	3/6/96	9:17 AM	Tstm Wind	0 kts.	0	0	50K	0
Atlanta	4/20/96	2:45 PM	Tstm Wind	0 kts.	0	0	200K	0
Fulton County Airport	4/29/96	5:05 PM	Tstm Wind	55 kts.	0	0	0	0
Palmetto	4/29/96	5:45 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	4/29/96	5:50 PM	Tstm Wind	0 kts.	0	0	1K	0
Birmingham	5/6/96	4:40 PM	Hail	0.75 in.	0	0	0	0
Atlanta	5/6/96	6:35 PM	Hail	0.75 in.	0	0	0	0
Atlanta	5/24/96	9:45 PM	Hail	1.75 in.	0	0	0	0
Atlanta	6/13/96	1:44 PM	Tstm Wind	0 kts.	0	4	5K	0
Fairburn	8/23/96	8:00 PM	Tstm Wind	0 kts.	0	0	2K	0K
Atlanta	8/24/96	5:06 PM	Tstm Wind	0 kts.	0	0	4K	0K
Roswell	1/25/97	12:35 AM	Hail	0.75 in.	0	0	0	0
Atlanta	2/21/97	2:10 PM	Tstm Wind	0 kts.	0	0	5K	0
Sandy Springs	3/5/97	6:30 PM	Tstm Wind	0 kts.	0	0	3K	0K
Alpharetta	4/22/97	1:22 PM	Hail	1.00 in.	0	0	0	0
Alpharetta	4/22/97	2:00 PM	Hail	1.00 in.	0	0	0	0
Mountain Park	4/22/97	2:25 PM	Hail	1.75 in.	0	0	0	0
Atlanta	4/22/97	5:00 PM	Tstm Wind	0 kts.	0	0	2K	0
Atlanta	4/22/97	5:50 PM	Lightning	N/A	0	0	0	0
Adamsville	4/28/97	2:45 PM	Hail	0.75 in.	0	0	0	0
Atlanta	4/28/97	2:48 PM	Hail	2.50 in.	0	0	10K	0
Sandy Springs	4/28/97	4:45 PM	Hail	0.75 in.	0	0	0	0
Roswell	4/28/97	4:55 PM	Hail	1.50 in.	0	0	0	0
Atlanta	5/27/97	8:15 AM	Hail	0.90 in.	0	0	0	0
Atlanta	5/27/97	8:50 AM	Hail	0.75 in.	0	0	0	0
Ft Mc Pherson	6/17/97	2:10 PM	Tstm Wind	0 kts.	0	0	2K	0



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Hazard Event Data

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Alpharetta	6/20/97	9:00 PM	Hail	0.90 in.	0	0	0	0
Alpharetta	7/16/97	6:25 PM	Tstm Wind	0 kts.	0	0	15K	0
Roswell	9/10/97	5:10 PM	Hail	1.75 in.	0	0	0	0
Alpharetta	9/10/97	5:30 PM	Hail	0.88 in.	0	0	0	0
Fu	2/3/98	10:00 AM	Strong Wind	0 kts.	0	0	100K	0
Union City	2/17/98	7:50 AM	Hail	0.75 in.	0	0	0	0
Alpharetta	2/17/98	8:03 AM	Tstm Wind	76 kts.	0	0	0	0
Atlanta	4/3/98	4:15 PM	Hail	0.75 in.	0	0	0	0
Atlanta	4/3/98	4:25 PM	Hail	0.75 in.	0	0	0	0
Atlanta	4/3/98	6:45 PM	Hail	0.75 in.	0	0	0	0
Hapeville	4/3/98	8:15 PM	Hail	1.00 in.	0	0	0	0
Sandy Springs	4/3/98	10:24 AM	Lightning	N/A	1	0	0	0
Alpharetta	4/8/98	6:15 PM	Hail	0.75 in.	0	0	0	0
East Point	4/8/98	9:07 PM	Hail	1.00 in.	0	0	0	0
Roswell	4/8/98	11:30 PM	Hail	0.75 in.	0	0	0	0
Roswell	4/9/98	12:30 AM	Tstm Wind	0 kts.	0	4	5K	0
Alpharetta	4/21/98	4:45 PM	Hail	0.75 in.	0	0	0	0
Crabapple	5/3/98	4:24 PM	Hail	1.75 in.	0	0	2K	0
Alpharetta	5/3/98	4:35 PM	Hail	1.75 in.	0	0	5K	0
Alpharetta	5/3/98	7:20 PM	Funnel Cloud	N/A	0	0	0	0
Roswell	5/7/98	8:15 PM	Hail	1.50 in.	0	0	1K	0
Roswell	5/7/98	10:35 PM	Hail	1.75 in.	0	0	2K	0
Palmetto	5/8/98	1:00 AM	Hail	1.00 in.	0	0	0	0
Alpharetta	5/8/98	12:15 AM	Tstm Wind	0 kts.	0	0	2K	0
Sandy Springs	5/9/98	11:50 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	5/10/98	1:43 AM	Hail	0.75 in.	0	0	0	0
Palmetto	5/10/98	12:34 AM	Hail	1.00 in.	0	0	0	0
East Point	5/29/98	4:30 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	6/4/98	3:50 PM	Hail	1.75 in.	0	0	0	0
Roswell	6/4/98	3:50 PM	Tstm Wind	0 kts.	0	0	2K	0
Sandy Springs	6/4/98	4:35 PM	Hail	1.00 in.	0	0	0	0
Fairburn	6/4/98	6:48 PM	Hail	0.75 in.	0	0	0	0
Fairburn	6/5/98	7:35 AM	Tstm Wind	0 kts.	0	0	2K	0
East Point	6/15/98	11:45 PM	Hail	1.75 in.	0	0	0	0
East Point	6/15/98	11:45 PM	Tstm Wind	55 kts.	0	0	100K	0
Sandy Springs	6/19/98	10:45 AM	Tstm Wind	0 kts.	0	0	10K	0
Atlanta	6/19/98	10:55 AM	Hail	0.75 in.	0	0	0	0
Roswell	6/19/98	11:40 AM	Lightning	N/A	0	0	20K	0



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Hazard Event Data*

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fairburn	6/19/98	11:41 AM	Hail	1.00 in.	0	0	0	0
Atlanta	6/19/98	11:42 AM	Tstm Wind	0 kts.	0	0	10K	0
Alpharetta	6/30/98	8:00 PM	Tstm Wind	0 kts.	0	0	1K	0
Hapeville	7/19/98	9:40 PM	Tstm Wind	0 kts.	0	0	1K	0
Sandy Springs	7/20/98	4:15 PM	Hail	1.25 in.	0	0	0	0
Union City	8/18/98	2:55 PM	Hail	0.75 in.	0	0	0	0
Union City	8/18/98	2:55 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	8/30/98	3:34 PM	Hail	0.88 in.	0	0	0	0
Alpharetta	9/2/98	4:00 PM	Tstm Wind	0 kts.	0	0	2K	0
Sandy Springs	2/9/99	3:12 PM	Hail	0.75 in.	0	0	0	0
Atlanta	2/27/99	11:08 PM	Tstm Wind	0 kts.	0	0	10K	0
Roswell	3/3/99	4:30 AM	Tstm Wind	0 kts.	0	0	1K	0
Atlanta	5/6/99	7:35 AM	Hail	2.50 in.	0	0	50K	0
Atlanta	5/6/99	8:00 AM	Tstm Wind	50 kts.	0	0	1K	0
Alpharetta	5/7/99	6:30 PM	Hail	1.00 in.	0	0	0	0
Atlanta	5/13/99	2:30 PM	Hail	1.75 in.	0	0	0	0
East Point	5/23/99	5:00 PM	Hail	1.75 in.	0	0	0	0
Roswell	6/2/99	4:35 PM	Hail	1.00 in.	0	0	0	0
Roswell	6/2/99	4:45 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	6/2/99	5:00 PM	Tstm Wind	0 kts.	0	0	1K	0
Alpharetta	6/29/99	4:19 PM	Hail	1.00 in.	0	0	0	0
Union City	6/29/99	6:45 PM	Hail	0.75 in.	0	0	0	0
Roswell	6/30/99	2:20 PM	Tstm Wind	0 kts.	0	0	1K	0
Alpharetta	7/6/99	3:25 PM	Hail	1.00 in.	0	0	0	0
Sandy Springs	7/6/99	3:45 PM	Hail	1.25 in.	0	0	0	0
Atlanta	7/6/99	4:00 PM	Tstm Wind	57 kts.	0	0	5K	0
Sandy Springs	7/6/99	4:00 PM	Lightning	N/A	0	0	1.0M	0
Alpharetta	7/10/99	5:00 PM	Tstm Wind	0 kts.	0	0	1K	0
Alpharetta	7/24/99	2:30 PM	Lightning	N/A	0	0	200K	0
Alpharetta	7/24/99	2:33 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	7/24/99	2:46 PM	Tstm Wind	0 kts.	0	0	1K	0
Fairburn	8/20/99	4:10 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	8/23/99	5:00 PM	Tstm Wind	0 kts.	0	0	1K	0
Sandy Springs	9/21/99	1:30 PM	Hail	1.25 in.	0	0	0	0
College Park	9/21/99	2:10 PM	Hail	0.75 in.	0	0	0	0
Fairburn	1/10/00	2:00 AM	Tstm Wind	0 kts.	0	0	2K	0
Fulton	4/8/00	1:45 PM	Strong Wind	0 kts.	0	13	12K	0
Adamsville	5/3/00	5:30 PM	Hail	0.88 in.	0	0	0	0



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Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Atlanta	5/21/00	7:25 PM	Hail	0.75 in.	0	0	0	0
Union City	5/21/00	7:25 PM	Funnel Cloud	N/A	0	0	0	0
Roswell	5/25/00	4:55 PM	Tstm Wind	0 kts.	0	0	0K	0
Alpharetta	5/25/00	5:15 PM	Hail	0.75 in.	0	0	0	0
East Point	6/25/00	1:00 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	6/25/00	12:10 PM	Hail	0.75 in.	0	0	0	0
Hartfield Airport	6/26/00	5:30 PM	Lightning	N/A	0	5	0	0
College Park	7/20/00	8:15 PM	Tstm Wind	50 kts.	0	0	1K	0
College Park	7/23/00	3:30 PM	Tstm Wind	0 kts.	0	0	8.0M	0
College Park	7/23/00	3:40 PM	Hail	1.75 in.	0	0	0	0
Roswell	7/30/00	7:15 PM	Hail	1.75 in.	0	0	0	0
Alpharetta	8/10/00	11:15 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	8/24/00	5:57 PM	Tstm Wind	0 kts.	0	0	5K	0
Roswell	8/24/00	6:15 PM	Tstm Wind	0 kts.	0	0	10K	0
Atlanta	8/24/00	10:15 PM	Lightning	N/A	0	0	0	0
Union City	1/19/01	12:10 PM	Tstm Wind	0 kts.	0	0	500K	0
Adamsville	2/16/01	6:22 PM	Tstm Wind	0 kts.	0	0	5K	0
Fairburn	4/3/01	8:00 AM	Lightning	N/A	0	0	2K	0
Fairburn	4/3/01	8:00 AM	Lightning	N/A	0	0	2K	0
Sandy Springs	5/19/01	3:09 PM	Lightning	N/A	0	0	250K	0
Roswell	5/19/01	3:43 PM	Lightning	N/A	0	0	0	0
Alpharetta	5/19/01	11:27 AM	Hail	1.75 in.	0	0	0	0
Alpharetta	5/28/01	9:04 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	6/3/01	2:40 PM	Hail	0.75 in.	0	0	0	0
Atlanta	6/3/01	3:21 PM	Hail	0.88 in.	0	0	1K	0
Atlanta	6/3/01	3:58 PM	Hail	0.75 in.	0	0	0	0
Atlanta	6/14/01	1:35 PM	Hail	0.75 in.	0	0	0	0
Union City	6/14/01	6:55 PM	Hail	0.88 in.	0	0	0	0
Union City	6/22/01	12:45 PM	Tstm Wind	0 kts.	0	0	2K	0
Atlanta	6/25/01	6:45 PM	Tstm Wind	0 kts.	0	0	5K	0
Alpharetta	7/3/01	2:45 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	7/3/01	2:45 PM	Tstm Wind	0 kts.	0	0	1K	0
Atlanta	7/5/01	4:39 PM	Tstm Wind	56 kts.	0	0	10K	0
Fulton	1/29/02	3:00AM	Fog	N/A	0	0	0	0
Fulton	1/30/02	12:00 AM	Fog	N/A	0	0	0	0
East Point	3/31/02	2:03 PM	Hail	0.75 in.	0	0	0	0
Lakewood Heights	3/31/02	2:16 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	4/28/02	8:23 PM	Hail	1.75 in.	0	0	0	0



Appendix C
Hazard Event Data

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Roswell	4/28/02	8:30 PM	Funnel Cloud	N/A	0	0	0	0
Roswell	4/28/02	8:30 PM	Tstm Wind	0 kts.	0	0	7K	0
Atlanta	5/3/02	7:10 AM	Hail	0.75 in.	0	0	0	0
Fairburn	5/13/02	2:30 PM	Tstm Wind	0 kts.	0	0	1K	0
Crabapple	5/13/02	2:40 PM	Hail	0.88 in.	0	0	0	0
Roswell	6/4/02	7:07 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	6/4/02	7:10 PM	Hail	0.75 in.	0	0	0	0
Crabapple	7/2/02	3:42 PM	Hail	0.88 in.	0	0	0	0
Atlanta	7/2/02	4:45 PM	Hail	1.00 in.	0	0	0	0
Atlanta	7/2/02	4:50 PM	Tstm Wind	0 kts.	0	0	1K	0
Atlanta	7/3/02	3:50 PM	Tstm Wind	0 kts.	0	0	1K	0
Alpharetta	7/23/02	4:54 PM	Hail	1.00 in.	0	0	0	0
Warsaw	7/31/02	4:00 PM	Tstm Wind	0 kts.	0	0	1K	0
Roswell	8/16/02	7:30 PM	Tstm Wind/hail	0 kts.	0	0	0	0
Sandy Springs	8/26/02	6:09 PM	Tstm Wind	0 kts.	0	0	2K	0
Fairburn	8/26/02	6:30 PM	Lightning	N/A	0	0	0K	0
Fulton	9/26/02	6:00 PM	Strong Wind	0 kts.	0	0	22K	0
Fulton	9/27/02	3:00 AM	Strong Wind	0 kts.	0	0	32K	0
Alpharetta	11/11/02	3:39 AM	Hail	0.75 in.	0	0	0	0
Atlanta	11/11/02	3:46 AM	Tstm Wind	0 kts.	0	0	30K	0
Campbellton	3/5/03	10:20 PM	Hail	0.75 in.	0	0	0	0
College Park	3/20/03	12:25 AM	Tstm Wind	50 kts.	0	0	2K	0
Atlanta	4/25/03	6:15 PM	Tstm Wind	45 kts.	0	0	5K	0
Bolton	4/25/03	6:17 PM	Hail	1.75 in.	0	0	0	0
Alpharetta	5/2/03	4:35 PM	Hail	1.00 in.	0	0	0	0
Lakewood Heights	5/2/03	5:16 PM	Hail	0.75 in.	0	0	0	0
Lakewood Heights	5/2/03	5:20 PM	Tstm Wind	50 kts.	0	0	1K	0
Union City	5/2/03	6:50 PM	Hail	0.75 in.	0	0	0	0
Union City	5/2/03	7:20 PM	Tstm Wind	60 kts.	0	1	150K	0
East Point	5/7/03	6:00 PM	Tstm Wind	50 kts.	0	0	2K	0
Fairburn	5/7/03	6:05 PM	Hail	0.75 in.	0	0	0	0
Fairburn	5/7/03	6:05 PM	Tstm Wind	56 kts.	0	0	0	0
Birmingham	5/17/03	4:12 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	6/28/03	5:57 PM	Heavy Rain	N/A	0	0	0	0
Roswell	7/4/03	2:00 PM	Tstm Wind	45 kts.	0	0	0K	0
Atlanta	7/10/03	4:15 PM	Tstm Wind	53 kts.	3	0	35K	0
Palmetto	7/10/03	6:12 PM	Heavy Rain	N/A	0	0	0	0
Alpharetta	7/22/03	1:14 PM	Hail	0.75 in.	0	0	0	0



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Alpharetta	7/22/03	1:15 PM	Lightning	N/A	0	0	5K	0
Birmingham	7/22/03	12:12 PM	Tstm Wind	52 kts.	0	0	100K	0
Fulton	2/25/04	9:30 PM	Strong Wind	39 kts.	0	0	170K	0
Atlanta	4/12/04	11:45 PM	Tstm Wind	35 kts.	0	0	1K	0
Alpharetta	5/12/04	7:20 PM	Heavy Rain	N/A	0	0	0	0
East Point	5/16/04	4:55 PM	Hail	0.75 in.	0	0	0	0
Atlanta	6/23/04	4:30 PM	Tstm Wind	50 kts.	0	0	5K	0
Atlanta	6/27/04	6:07 PM	Tstm Wind	50 kts.	0	0	7K	0
Moutain Park	7/6/04	5:05 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	7/14/04	6:33 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	8/5/04	3:45 PM	Heavy Rain	N/A	0	0	50K	0
Fulton	9/27/04	5:30 AM	Strong Wind	30 kts.	0	0	758K	0
Campbellton	11/24/04	9:52 AM	Tstm Wind	50 kts.	0	0	1K	0
Sandy Springs	11/24/04	10:25 AM	Tstm Wind	50 kts.	0	0	5K	0
Atlanta	12/9/04	9:15 PM	Hail	1.00 in.	0	0	0	0
Atlanta	12/10/04	3:55 PM	Tstm Wind	50 kts.	0	0	5K	0
Atlanta	12/10/04	4:00 PM	Hail	1.00 in.	0	0	0	0
Fulton	1/22/05	7:00 PM	Strong Wind	33 kts.	0	0	148K	0
Alpharetta	2/21/05	6:50 PM	Hail	1.00 in.	0	0	0	0
Sandy Springs	2/21/05	7:35 PM	Hail	1.00 in.	0	0	0	0
Atlanta	2/21/05	8:46 PM	Hail	0.75 in.	0	0	0	0
Alpharetta	3/27/05	2:40 PM	Hail	1.00 in.	0	0	0	0
Fulton	4/2/05	6:00 AM	Strong Wind	36 kts.	0	2	271K	0
Crabapple	4/12/05	5:42 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	4/22/05	9:2PM	Hail	1.00 in.	0	0	0	0
Palmetto	4/22/05	12:25 PM	Hail	1.00 in.	0	0	0	0
Palmetto	6/6/05	3:40 PM	Hail	1.00 in.	0	0	0	0
Atlanta	7/3/05	12:40 PM	Lightning	N/A	0	0	5K	0
Atlanta	7/3/05	12:50 PM	Tstm Wind	50 kts.	0	0	250K	0
Atlanta	7/3/05	12:57 PM	Hail	0.75 in.	0	0	0	0
Fairburn	7/6/05	7:55 PM	Tstm Wind	50 kts.	0	0	5K	0
Fulton	7/10/05	3:00 PM	Strong Wind	34 kts.	1	0	246K	0
Roswell	7/15/05	3:49 PM	Lightning	N/A	0	2	0	0
East Point	8/4/05	10:22 PM	Tstm Wind	50 kts.	0	0	3K	0
Warsaw	8/5/05	3:10 PM	Tstm Wind	35 kts.	0	0	1K	0
Alpharetta	8/16/05	3:00 PM	Lightning	N/A	0	0	500K	0
Warsaw	8/29/05	6:48 PM	Tstm Wind	50 kts.	0	0	3K	0
Fulton	8/30/05	3:00 AM	Strong Wind	32 kts.	0	0	19K	0
Fulton	11/21/05	7:00 PM	Strong Wind	31 kts.	0	0	39K	0



Appendix C
Hazard Event Data

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Alpharetta	12/4/05	3:47 PM	Hail	1.00 in.	0	0	0	0
Palmetto	1/2/06	4:30 PM	Hail	2.00 in.	0	0	250K	0
College Park	1/2/06	5:02 PM	Tstm Wind	50 kts.	0	0	2K	0
Alpharetta	1/2/06	5:12 PM	Hail	0.75 in.	0	0	0	0
Adamsville	4/3/06	6:15 AM	Hail	1.25 in.	0	0	0	0
Union City	4/26/06	8:35 PM	Tstm Wind	35 kts.	0	0	1K	0
Roswell	5/25/06	6:10 PM	Hail	0.75 in.	0	0	0	0
Roswell	6/23/06	5:15 PM	Hail	0.75 in.	0	0	0	0
Sandy Springs	8/2/06	6:13 PM	Tstm Wind	35 kts.	0	0	1K	0
Sandy Springs	8/5/06	5:20 PM	Tstm Wind	50 kts.	0	0	2K	0
Atlanta	8/31/06	2:00 PM	Lightning	N/A	0	0	0	0
Alpharetta	9/28/06	2:10 PM	Hail	0.75 in.	0	0	0	0
Atlanta	9/28/06	4:15 PM	Hail	0.88 in.	0	0	0	0
Atlanta	1/5/07	11:20 AM	Thunderstorm Wind	50 kts.	0	0	3K	0K
Sandy Springs	4/3/07	18:05 PM	Hail	1.00 in.	0	0	0K	0K
Crabapple	4/4/07	1:07 AM	Thunderstorm Wind	50 kts.	0	0	7K	0K
Fulton	4/16/07	15:00 PM	Strong Wind	37 kts.	0	0	200K	0K
Alpharetta	6/5/07	14:04 PM	Hail	0.75 in.	0	0	0K	0K
Sandy Springs	6/5/07	15:17 PM	Thunderstorm Wind	39 kts.	0	0	3K	0K
Alpharetta	6/12/07	18:50 PM	Thunderstorm Wind	50 kts.	0	0	10K	0K
College Park	6/12/07	18:50 PM	Hail	1.25 in.	0	0	0K	0K
Alpharetta	6/12/07	18:57 PM	Hail	0.75 in.	0	0	0K	0K
Alpharetta	6/12/07	19:05	Lightning	N/A	0	0	10K	0K
College Park	6/12/07	19:56 PM	Thunderstorm Wind	36 kts.	0	0	2K	0K
Atlanta	6/19/07	15:15 PM	Thunderstorm Wind	50 kts.	0	1	25K	0K
Sandy Springs	7/19/07	14:00 PM	Lightning	N/A	0	1	0K	0K
Roswell	8/17/07	16:30 PM	Thunderstorm Wind	50 kts.	0	0	5K	0K
College Park	8/23/07	18:46 PM	Lightning	N/A	0	0	50K	0K
Sandy Springs	8/24/07	17:25 PM	Thunderstorm Wind	51 kts.	0	0	10K	0K
Alpharetta	8/26/07	14:00 PM	Lightning	N/A	1	0	0K	0K
Alpharetta	8/26/07	14:20 PM	Lightning	N/A	0	0	100K	0K
Atlanta	8/26/07	14:20 PM	Thunderstorm Wind	46 kts.	0	0	50K	0K
Fairburn	9/13/07	13:50 PM	Lightning	N/A	0	0	1K	0K
Fulton	1/30/08	12:30 AM	Strong Wind	43 kts.	0	0	2K	0K
Palmetto	2/17/08	16:30 PM	Thunderstorm Wind	50 kts.	0	0	3K	0K



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Hazard Event Data*

Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Roswell	2/26/08	6:30 AM	Thunderstorm Wind	78 kts.	0	2	2.0M	0K
East Point	3/14/08	21:54 PM	Hail	0.88 in.	0	0	0K	0K
Palmetto	3/15/08	4:45 AM	Hail	0.75 in.	0	0	0K	0K
Adamsville	3/15/08	14:45 PM	Hail	2.75 in.	0	0	5.0M	0K
Atlanta	3/15/08	15:15 PM	Hail	0.75 in.	0	0	0K	0K
Hapeville	3/15/08	15:37 PM	Hail	1.75 in.	0	0	1.5M	0K
Union City	3/15/08	15:51 PM	Hail	1.00 in.	0	0	0K	0K
Fairburn	5/11/08	1:05 AM	Hail	1.75 in.	0	0	2.0M	0K
Fairburn	5/11/08	3:41 AM	Thunderstorm Wind	52 kts.	0	0	150K	0K
Mountain Park	5/20/08	17:40 PM	Thunderstorm Wind	52 kts.	0	0	15K	0K
Alpharetta	5/20/08	17:43 PM	Lightning	N/A	0	0	50K	0K
Roswell	5/20/08	18:38 PM	Hail	1.00 in.	0	0	0K	0K
Palmetto	6/11/08	16:00 PM	Thunderstorm Wind	56 kts.	0	0	20K	0K
Sandy Springs	6/11/08	16:15 PM	Thunderstorm Wind	37 kts.	0	0	2K	0K
East Point	7/22/08	17:30 PM	Thunderstorm Wind	50 kts.	0	0	3K	0K
Union City	7/31/08	18:40 PM	Lightning	N/A	0	0	1K	0K
Sandy Springs	8/2/08	18:19 PM	Hail	0.88 in.	0	0	0K	0K
Atlanta	8/2/08	18:20 PM	Thunderstorm Wind	62 kts.	0	0	0K	0K
Atlanta	8/7/08	14:05 PM	Thunderstorm Wind	50 kts.	0	0	50K	0K
Ben Hill	8/26/08	7:13 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
Fulton	1/7/09	10:50 AM	Strong Wind	33 kts.	0	0	2K	0K
Ocee	2/18/09	17:07 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
Fairburn	2/18/09	17:12 PM	Thunderstorm Wind	39 kts.	0	0	2K	0K
Palmetto	2/18/09	17:50 PM	Hail	1.75 in.	0	0	700K	0K
Crabapple	4/10/09	18:15 PM	Thunderstorm Wind	52 kts.	0	0	30K	0K
Roswell	4/10/09	18:19 PM	Hail	1.75 in.	0	0	600K	0K
Sandy Springs	4/10/09	19:10 PM	Hail	0.75 in.	0	0	0K	0K
Atlanta	4/10/09	19:42 PM	Hail	0.88 in.	0	0	0K	0K
Atlanta	4/10/09	19:56 PM	Hail	0.75 in.	0	0	0K	0K
Atlanta	4/23/09	18:18 PM	Hail	1.00 in.	0	0	0K	0K
Fairburn	4/23/09	18:24 PM	Hail	1.00 in.	0	0	0K	0K
Hartfield Airport	4/23/09	19:00 PM	Lightning	N/A	0	0	5K	0K
Roswell	4/23/09	19:23 PM	Hail	1.00 in.	0	0	0K	0K
Atlanta	4/23/09	20:10 PM	Hail	1.75 in.	0	0	2.0M	0K



Severe Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Atlanta	5/2/09	15:06 PM	Thunderstorm Wind	35 kts.	0	0	35K	0K
Palmetto	5/3/09	17:22 PM	Thunderstorm Wind	50 kts.	0	0	250K	0K
Atlanta	5/6/09	13:38 PM	Thunderstorm Wind	50 kts.	0	0	100K	0K
Atlanta	6/11/09	14:40 PM	Hail	0.88 in.	0	0	0K	0K
Atlanta	6/12/09	14:40 PM	Thunderstorm Wind	50 kts.	0	0	25K	0K
Warsaw	7/7/09	12:36 PM	Lightning	N/A	0	0	5K	0K
Lakewood Heights	7/17/09	15:00 PM	Thunderstorm Wind	30 kts.	0	0	15K	0K
College Park	8/26/09	20:43 PM	Thunderstorm Wind	35 kts.	0	0	1K	0K
Warsaw	8/28/09	8:00 AM	Lightning	N/A	0	0	25K	0K
Ocee	2/22/10	3:49 AM	Lightning	N/A	0	0	50K	0K

Tornado Events 2010-2015

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
October 25-28, 2010	Thunderstorms and Lightning	N/A	N/A	Severe thunderstorms and several tornadoes moved from east Texas eastward to Georgia. Two tornadoes were confirmed in northwest Georgia including an EF1 in southern Dade County. Another series of storms moved across east-central and southeast Georgia producing large hail and damaging wind gusts. In Fulton County, there were reports of three structure fires caused by lightning, causing approximately \$75,000 in property damage.
April 5, 2011	Thunderstorms and Strong Winds	N/A	N/A	An intense line of thunderstorms brought wind gusts of 60 to 70 mph as it impacted northern Georgia. Nearly every county in the area, including Fulton County, received at least one severe thunderstorm warning and these counties experienced extensive wind damage from the storms. There were two brief EF0 tornadoes in Glimmer County. The storms downed trees on homes and vehicles, caused power outages and resulted in seven fatalities. In Fulton County, there was one fatality when a tree fell on a car in the Howell Station neighborhood of Atlanta. Wind gusts of 30 to 35 mph were common in the County. Approximately \$20,000 in property damage was reported in the County.
April 15-16, 2011	Thunderstorms and Hail	N/A	N/A	A line of strong to severe thunderstorms began to move into northwest Georgia during the late afternoon of April 15 th . As the line moved further into the State, it evolved more in a large area of showers and thunderstorms with supercells. These supercells produced damaging winds, hail, and three tornadoes. During the early morning of April 16 th , the severity of



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Hazard Event Data*

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				<p>these storms decreased but widespread rain and thunderstorms continued. The prolonged and heavy rain resulted in flash flooding along north Atlanta metropolitan area creeks and streams. In Sandy Springs, quarter to golf ball-sized hail was observed. Hail as large as ping-pong balls was observed around Roswell. Fulton County had approximately \$4.27 million in property damage from this event.</p>
September 4-5, 2011	Remnants of Tropical Storm Lee	N/A	N/A	<p>Remnants of Tropical Storm Lee brought heavy rain, flooding and possible tornadoes to north and central Georgia. The most extensive damage was reported in Cherokee County where an EF1 tornado touched down and damaged/destroyed 400 homes and injured one person. Rainfall amounts totaled seven to 10 inches over the northwest corner of Georgia. The heaviest rain was in Dade, Walker, Catoosa, Whitfield and Chatooga Counties. Several flash flood warnings and river flood warnings were issued due to widespread flooding. Between one and two inches of rain fell in the Atlanta area.</p>
January 21, 2012	Thunderstorms and Hail	N/A	N/A	<p>Thunderstorms developed in northern Georgia with many of them becoming severe. Three tornadoes touched down with this system along with multiple reports of hail and wind damage. Flash flooding was also reported in the Atlanta area as a result of heavy rainfall. There were reports of 1.75 inch hail southwest of Atlanta in Ben Hill. The County had approximately \$3.8 million in damages from this event.</p>
June 13, 2013	Tornado (EF1)	N/A	N/A	<p>Numerous severe thunderstorms developed over northern and central Georgia which downed trees and brought large hail. In addition, two small tornadoes touched down. A tornado began in Cherokee County and passed through Cobb County and lifted in Fulton County. It moved over the Chattahoochee River near Morgan Falls (Sandy Springs), retaining its EF1 strength as it snapped and uprooted dozens of trees along the riverbank. It damaged roofs at the Laurel at Overlook Park Apartments. Netting polls at the driving range at a golf club were damaged as well. The tornado continued southeast, snapping or uprooting trees until it finally lifted just short of the DeKalb County line, where it snapped and uprooted a few trees along Twin Branch Road. Damages from this event were estimated at \$60,000.</p>
October 14, 2014	Tornadoes	N/A	N/A	<p>A line of thunderstorms brought damaging winds, tornadoes, heavy rain and flash flooding. There were multiple tornado touchdowns in Fulton County. The first was a EF0 tornado and touched down near Camp Creek Parkway and traveled north across Campbellton Road to Fairburn Road in the Ben Hill community. This tornado had maximum wind speeds of around 75 mph and a path width of 75 yards. Damage was confined trees snapped or uprooted. This event caused approximately \$10,000 in property damage.</p>



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				<p>The second event was an EF0 tornado that touched down on the west side of East Point around Ben Hill Road and traveled north-northeast crossing Langford Parkway before lifting in the Adams Park area. This event had maximum wind speeds of 80 mph and a path width of 75 mph. Damage was confined to mainly snapped or uprooted trees. This event caused approximately \$10,000 in property damage.</p> <p>A third tornado, a EF0, touched down in Bolton near Nancy Creek Road NW and West Paces Ferry Road NW then traveled north-northwest lifting near Paces Ferry Road NW and Parian Ridge Road NW. This event had maximum wind gusts of 75 mph and a path width of 75 mph. Damage was mainly to snapped or uprooted trees; however, several homes sustained damage from falling trees. This event caused approximately \$40,000 in property damage.</p> <p>An EF1 tornado touched near Willow Point Parkway in east Cobb County and traveled north-northeast into Fulton County in Roswell north of Timber Ridge Road before lifting along Willeo Road near the Chattahoochee River. When the tornado entered Fulton County, it was downgraded to an EF0 and damage was confined to trees snapped or uprooted with some damage to homes from falling trees. The county had approximately \$15,000 in property damage from this tornado.</p> <p>An EF1 tornado touched down in Fulton County near Rucker Road west of Alpharetta and traveled northeast crossing into Forsyth County north of Francis Road before lifting near Campground Road and Wills Orchard Road. EF1 damage was indicated in Fulton County with maximum wind speeds around 105 mph and a path wide of 100 yards. Damage was confined mainly to trees with numerous large hardwood trees snapped or uprooted. Some damage to homes occurred from falling trees. Damage from this event was approximately \$80,000.</p>

Historical Tornado Data

Tornadoes 1954-2009								
Location	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fulton	12/5/54	5:30 PM	Tornado	F2	1	40	\$25K	0
Fulton	5/20/65	2:15 PM	Tornado	F0	0	3	\$3K	0
Fulton	5/18/66	5:00 PM	Tornado	F0	0	0	\$3K	0



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Fulton	1/10/72	10:25 AM	Tornado	F3	1	9	\$250K	0
Fulton	5/27/73	11:30 PM	Tornado	F3	0	0	\$250K	0
Fulton	3/13/75	5:00 PM	Tornado	F1	0	0	\$250K	0
Fulton	3/13/75	7:30 PM	Tornado	F1	0	1	\$250K	0
Fulton	3/24/75	5:28 AM	Tornado	F3	3	152	\$250M	0
Fulton	5/14/76	5:00 PM	Tornado	F1	0	0	\$25K	0
Fulton	3/17/82	12:05 PM	Tornado	F0	0	0	\$25K	0
Fulton	12/3/83	9:00 PM	Tornado	F2	0	0	\$2.5M	0
Fulton	5/3/84	1:30 PM	Tornado	F1	0	0	\$250K	0
Fulton	4/5/85	7:10 PM	Tornado	F1	0	0	\$2.5M	0
Fulton	11/15/89	6:31 PM	Tornado	F2	0	0	\$2.5M	0
Fulton	11/15/89	6:49 PM	Tornado	F2	0	7	\$2.5M	0
Fulton	2/10/90	5:10 AM	Tornado	F1	0	0	\$2.5M	0
Fulton	5/28/90	12:50 PM	Tornado	F0	0	0	\$0K	0
Atlanta	9/16/96	8:53 PM	Tornado	F1	0	0	\$500K	0
Sandy Springs	4/8/98	11:30 PM	Tornado	F1	0	4	\$10M	0
Palmetto	1/2/06	4:45 PM	Tornado	F2	0	0	\$250K	0
Mountain Park	4/8/06	3:02 AM	Tornado	F1	0	0	\$1.5M	0
Atlanta	3/14/08	8:38 PM	Tornado	F2	1	30	\$25M	0

Tropical System Events 2010-2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
September 4-5, 2011	Remnants of Tropical Storm Lee	N/A	N/A	Remnants of Tropical Storm Lee brought heavy rain, flooding and possible tornadoes to north and central Georgia. The most extensive damage was reported in Cherokee County where an EF1 tornado touched down and damaged/destroyed 400 homes and injured one person. Rainfall amounts totaled seven to 10 inches over the northwest corner of Georgia. The heaviest rain was in Dade, Walker, Catoosa, Whitfield and Chatooga Counties. Several flash flood warnings and river flood warnings were issued due to widespread flooding. Between one and two inches of rain fell in the Atlanta area.
May 20, 2012	Tropical Storm Alberto	N/A	N/A	Tropical Storm Alberto developed off the coast of South Carolina which caused thunderstorms to develop over Georgia. One storm became severe in Fulton County and large hail was reported. There were reports of dime to quarter size hail from Langford Parkway, south of Downtown Atlanta, to Lakewood Heights.



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
June 7, 2013	Tropical Storm Andrea	N/A	N/A	As a result of Tropical Storm Andrea, showers and thunderstorms impacted north and Central Georgia, including Fulton County. Several thunderstorms reached severe levels with downed trees. The heaviest rain was confined to mainly east-central Georgia. A couple of the storms produced enough rain that resulted in flash flooding. In Fulton County, there were numerous downed trees in the City of Alpharetta and wind gusts reached 63 mph. Damages in the County were approximately \$5,000.

Tropical System Historical Data

Tropical System								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Inclusive of Fulton	9/14/2002	11:00 AM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	7/1/2003	12:00 AM	Tropical Depression	N/A	0	0	0	0
Inclusive of Fulton	9/6/2004	12:00 PM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	9/16/2004	12:00 AM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	9/26/2004	12:00 AM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	6/12/2005	12:00 AM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	7/6/2005	3:00 PM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	7/10/2005	10:00 AM	Hurricane	N/A	0	0	0	0
Inclusive of Fulton	8/29/2005	11:00 AM	Hurricane	N/A	0	0	0	0
Inclusive of Fulton	10/5/2005	4:00 AM	Tropical Storm	N/A	0	0	0	0
Inclusive of Fulton	9/14/2007	12:00 AM	Hurricane	N/A	0	0	0K	0K
Inclusive of Fulton	8/21/2008	12:00 PM	Tropical Storm	N/A	0	0	1.9M	0K

Wildfire Events 2010 - 2015



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
February 22, 2011	Brush Fire	N/A	N/A	Firefighters battled a brush fire next to Banneker High School in South Fulton County. There were no reports of injuries from this event.
May 3, 2011	Brush Fire	N/A	N/A	A brush fire was reported in the area of Johnson Ferry Road and Riverside Drive which caused power outages in the area as well. Johnson Ferry Road was closed at Riverside in both directions. The fire was caused by a blown transformer and downed power lines across the roadway.
September 19, 2011	Brush Fire	N/A	N/A	Fire crews battled a 45 to 50 acre brush fire near Old Jonesboro Road near Mt. Zion Road. Old Jonesboro Road was closed due to lack of visibility from the smoke. No injuries or damages were reported for this event.

Sources: NOAA-NCDC 2015; FEMA 2015; State of Georgia HMP 2014; WSBTV 2011; Sandy Springs Patch 2011; CBS46 2011; WUSA 9 2014; Sandy Spring VFD 2014

Wildfire Historical Data (not currently available)

Severe Winter Weather Events 2010 - 2015

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 12, 2010	Snow	N/A	N/A	Light snow began to fall over west Georgia around noon on February 12 th , which then spread eastward through the afternoon before tapering off to flurries. Snow and slush on the roadways froze overnight and led to hazardous driving conditions. Snowfall totals in Fulton County ranged from two to four inches.
December 15, 2010	Black Ice	N/A	N/A	Icy conditions impacted north Georgia during the afternoon and overnight hours as precipitation moved across the State. Locations near Columbus were the first to report sleet and rain followed by snow. The snow moved into the metro area of Atlanta and was mixed with sleet in some areas. The freezing rain continued through the evening and caused horrendous traffic problems which led to thousands of accidents across much of north Georgia. Ice accumulations in Fulton County ranged from a trace to ¼ inch.
December 24-25, 2010	Snow	N/A	N/A	A strong system moved across the southeast United States on Christmas Day. Precipitation began on Christmas Eve in northern and central Georgia as rain and changed to snow. For the rest of the impacted areas in the State, the changeover began during the day on Christmas Day. The highest accumulations occurred in the north Georgia mountains, where between six and eight inches of snow falling. In the Atlanta area, between one and three inches of snow was reported.
January 9-10, 2011	Winter Storm	N/A	N/A	A mix of rain, sleet and snow fell across central Georgia, with accumulations of up to two inches. In north Georgia, precipitation fell in the form of mostly snow with some sleet. An area of intense snow developed along and just north of



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				the I-20 corridor, contributing to a narrow band of six to 8.5 inches of snow. Freezing drizzle and light freezing rain fell over central and northern Georgia with accumulations of 0.1 to 0.5 inches. In Fulton county, snowfall totals ranged from three inches in Atlanta to 4.5 inches in Roswell.
January 5-8, 2014	Cold Temperatures	N/A	N/A	A strong arctic front blew across north and central Georgia, bringing strong gusty winds and plummeting temperatures. Northwest winds of 15 to 30 mph with higher gusts were common across the region on January 5 th . Temperatures fell into the 20s on January 6 th and strong winds pushed the wind chill below zero over parts of northern and central Georgia. On the morning of January 7 th , temperatures ranged from teens across central Georgia to five and 10 below zero in northeast Georgia. Low temperature records that stood for over 40 years were broken. In Atlanta, Fulton County, the low temperature for January 7 th was 6°F which broke a record set in 1970. The high for Atlanta was 26°F.
February 11-13, 2014	Severe Winter Storm	DR-4165	Yes	A powerful storm brought heavy snow and record level of ice to north and central Georgia. Two rounds of precipitation occurred with this event with the first one bringing between two and five inches of snow. The second event brought snow and freezing rain to the area, with areas along and just south of the Interstate 20 corridor in east-central Georgia receiving ice totals they have not seen in decades. Overall, the area saw between two and four inches of snow and ice accumulations of ¼ to ½ inches near Atlanta and amounts of over ¾ of an inch along the I-20 corridor east towards Augusta. In Fulton County, snowfall totals ranged from two inches to 6.5 inches and between 0.01 and 0.65 inches of ice.
February 15-18, 2015	Severe Winter Storm / Ice Storm	DR-4215	No	A cold front brought below freezing temperatures to northern Georgia. Freezing rain fell in north and northeast parts of the state, totaling between ¼" to ½" in some areas. This led to widespread tree and power lines damage. By the morning of February 17 th , more than 200,000 customers were without power, including those in Fulton County. In Fulton County, customers were without power in the northeast Atlanta metro area and points north and east. Ice accumulations in the County ranged from 0.01 inches to 0.25 inches.

Sources: FEMA 2015; NWS 2015; NOAA-NCDC 2015

Winter Weather Historical Data

Winter Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fulton	2/3/96	1:00 PM	Extreme Cold	N/A	0	0	0	0
Fulton	12/18/96	6:00 PM	Heavy Snow	N/A	0	0	0	0
Fulton	2/4/98	1:00 AM	Snow	N/A	0	0	0	0
Fulton	3/12/98	6:55 AM	Cold	N/A	0	0	0	0
Fulton	2/23/99	11:00 AM	Snow	N/A	0	0	0	0
Fulton	1/22/00	1:00 PM	Ice Storm	N/A	0	1	\$48M	0



Winter Weather								
Location or County	Date	Time	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Fulton	1/28/00	7:00 PM	Ice Storm	N/A	0	0	\$2M	0
Fulton	12/17/00	7:30 AM	Winter Storm	N/A	0	0	0	0
Fulton	12/19/00	12:00 AM	Winter Storm	N/A	0	0	0	0
Fulton	1/1/01	7:58 AM	Light Snow	N/A	0	0	0	0
Fulton	1/2/02	6:00 AM	Heavy Snow	N/A	0	0	0	0
Fulton	2/26/02	6:00 PM	Extreme Cold	N/A	0	0	0	0
Fulton	1/23/03	8:00 AM	Extreme Cold	N/A	0	0	0	0
Fulton	1/25/04	5:00 AM	Ice Storm	N/A	0	1	\$925K	0
Fulton	2/26/04	12:00 AM	Winter Storm	N/A	0	0	0	0
Fulton	1/28/05	8:00 PM	Winter Storm	N/A	0	0	\$9.8M	0
Fulton	4/2/05	10:00 AM	Winter Weather	N/A	0	0	0	0
Fulton	12/16/05	5:00 AM	Freezing Fog	N/A	0	0	0	0
Fulton	2/13/06	12:00 AM	Winter Weather	N/A	0	0	0	0
Fulton	2/1/07	4:00 AM	Heavy Snow	N/A	0	0	OK	OK
Fulton	2/1/07	4:00 AM	Winter Storm	N/A	0	0	OK	OK
Fulton	2/1/07	4:00 AM	Winter Weather	N/A	0	0	OK	OK
Fulton	4/7/07	4:00 AM	Frost/freeze	N/A	0	0	OK	\$155M
Fulton	1/16/08	20:00 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	1/16/08	20:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	1/19/08	12:00 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	1/19/08	12:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	3/1/09	11:00 AM	Heavy Snow	N/A	0	0	\$3K	OK
Fulton	3/1/09	11:00 AM	Winter Weather	N/A	0	0	OK	OK
Fulton	3/1/09	12:00 PM	Heavy Snow	N/A	0	0	\$25K	OK
Fulton	3/1/09	12:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	1/7/10	15:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	2/12/10	13:30 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	2/12/10	14:00 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	2/12/10	14:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	3/2/10	5:00 AM	Heavy Snow	N/A	0	0	OK	OK
Fulton	3/2/10	5:00 AM	Winter Weather	N/A	0	0	OK	OK
Fulton	12/15/10	17:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	12/25/10	14:00 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	12/25/10	14:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	01/09/11	17:00 PM	Heavy Snow	N/A	0	0	OK	OK
Fulton	01/09/11	17:00 PM	Winter Storm	N/A	0	0	OK	OK
Fulton	01/09/11	19:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	02/09/11	20:00 PM	Winter Weather	N/A	0	0	OK	OK
Fulton	02/09/11	21:00 PM	Winter Weather	N/A	0	0	OK	OK



Appendix D Maps



APPENDIX D MAPS

MAPS

Appendix D: The Fulton County Multijurisdictional Hazard Mitigation Plan contains various maps for reference. Some maps in this appendix are from previous versions of the HMP as a point of reference. Individual municipality annexes contain additional local maps.

Map of Fulton Cities (2010)

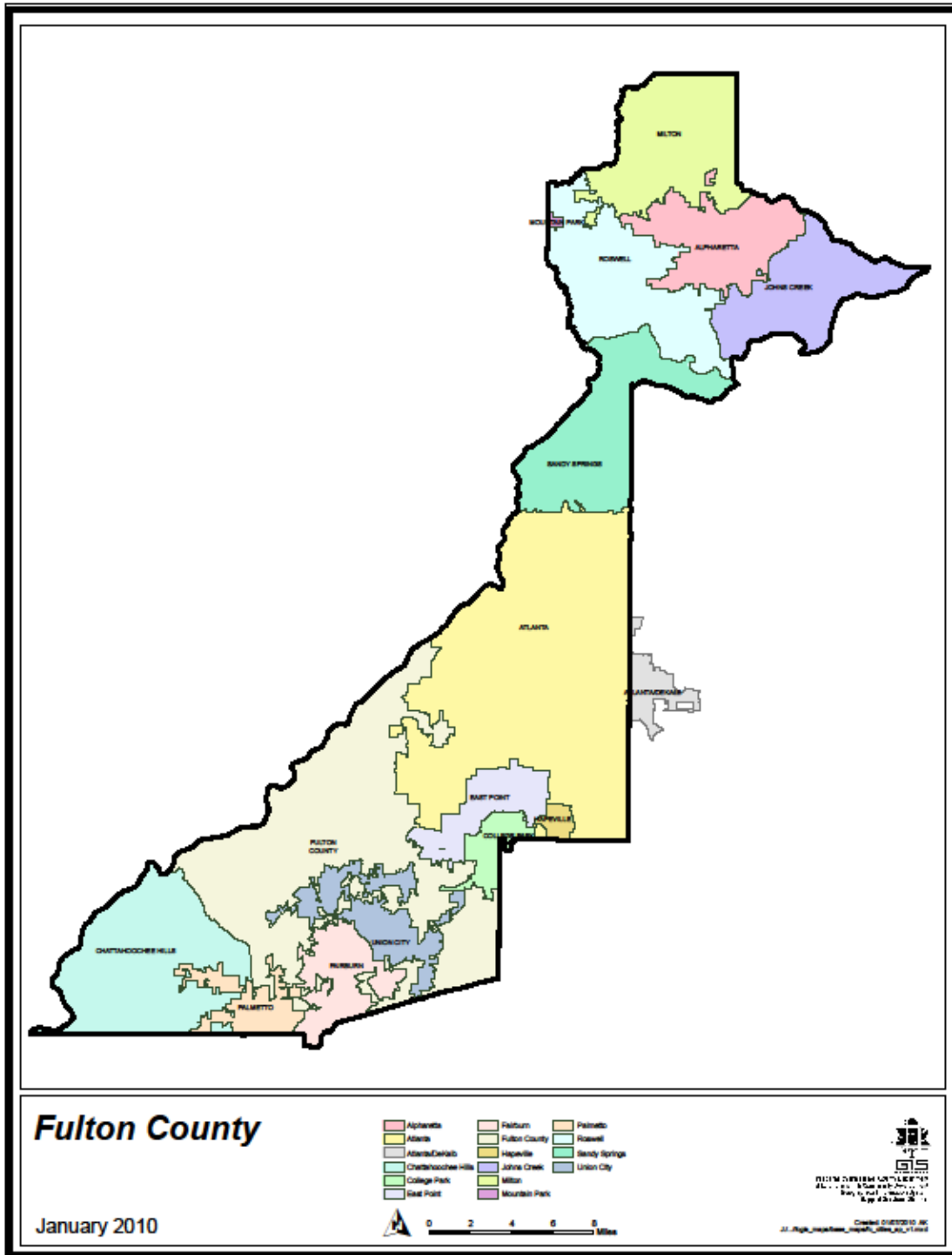


Figure 3-1: Overview of Fulton County

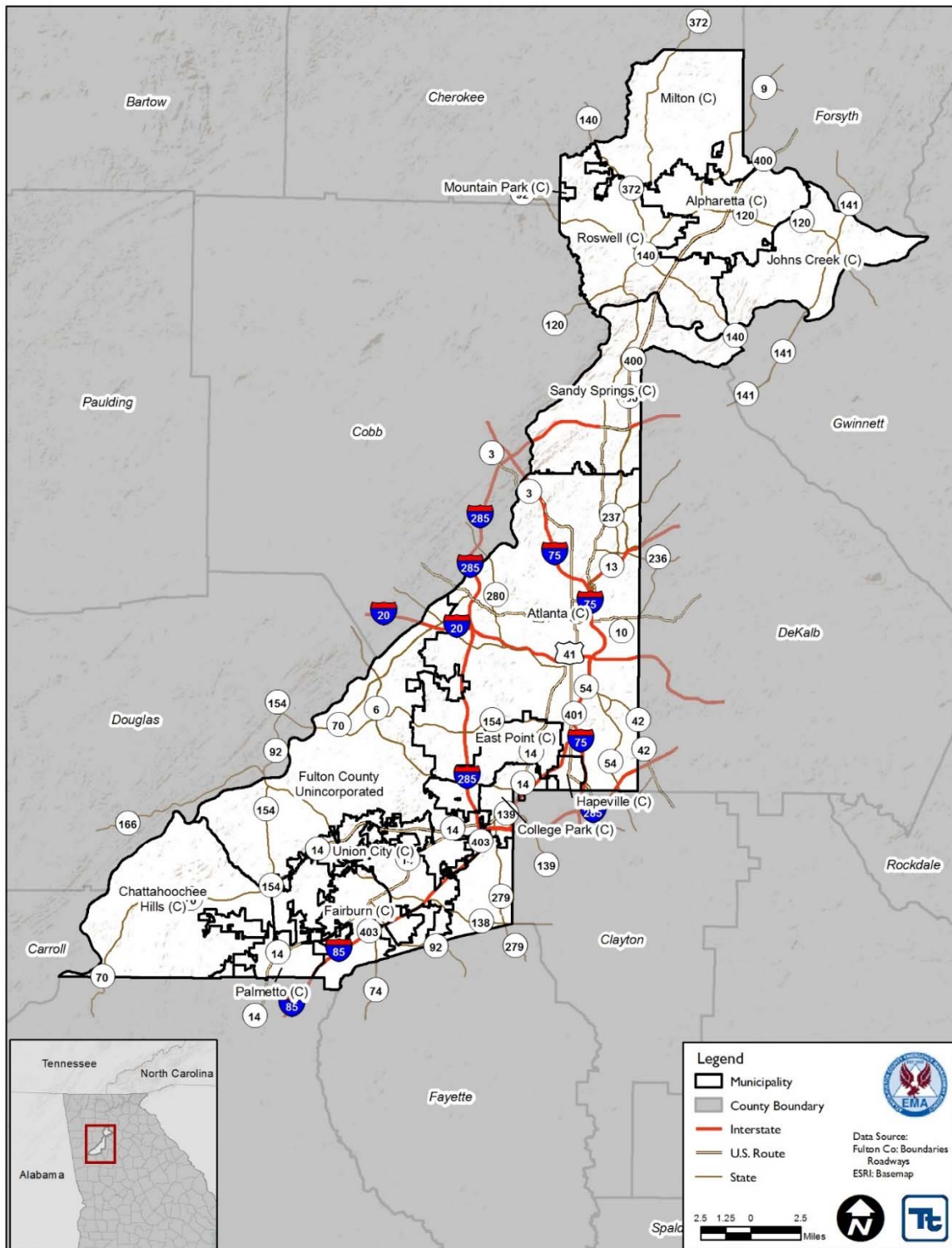
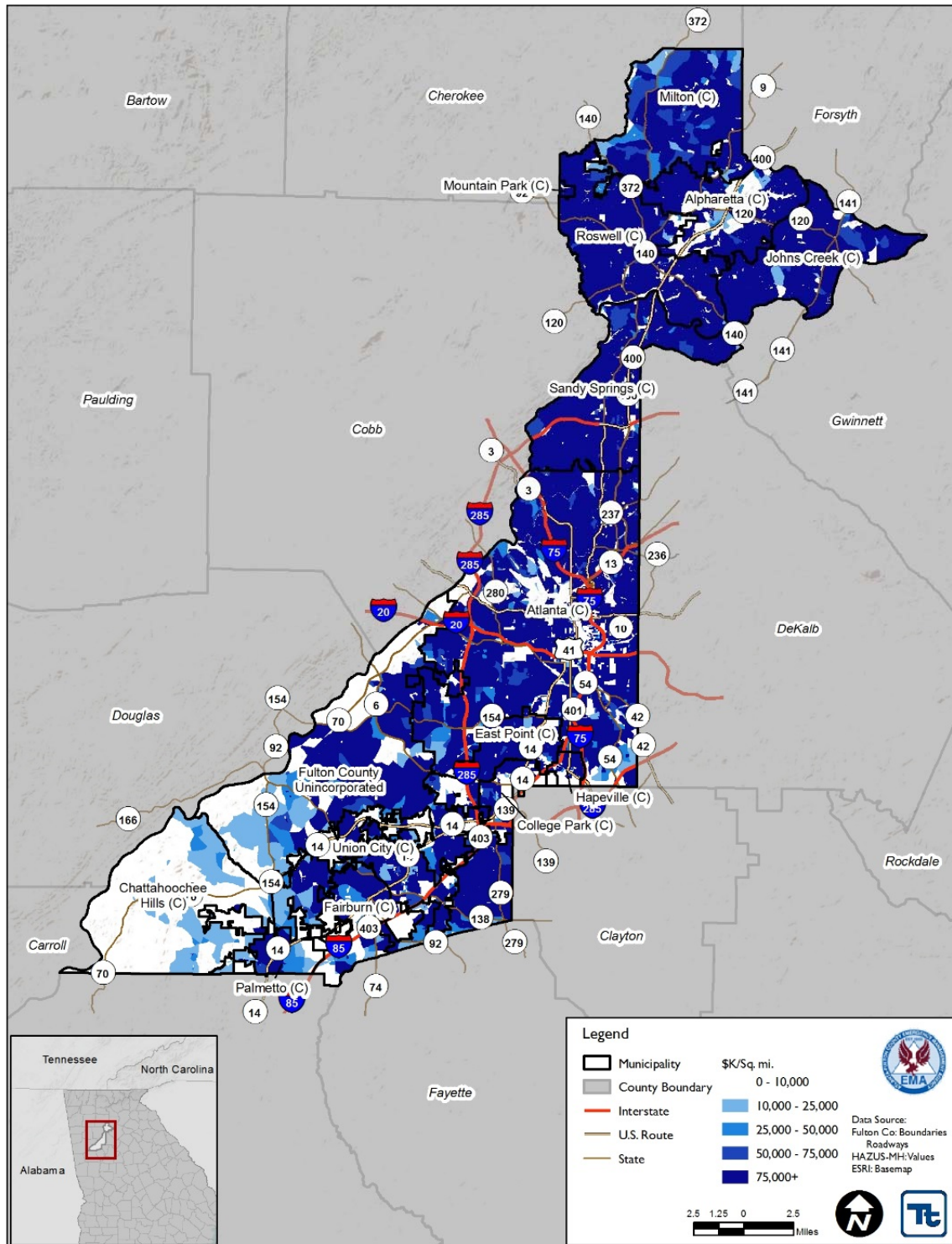




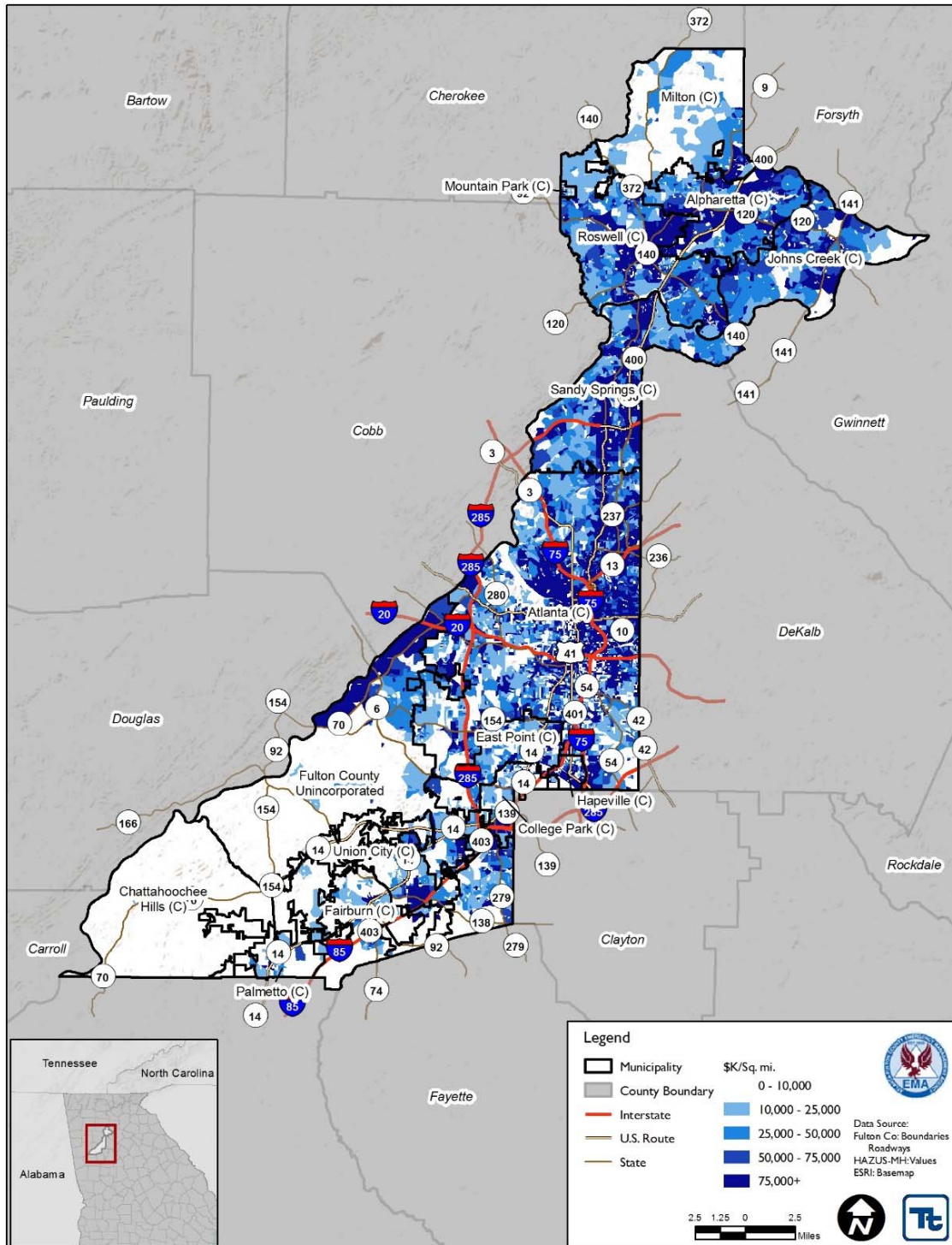
Figure 3-3. Distribution of Residential Building Stock and Value Density in Fulton County



Source: HAZUS-MH 2.2



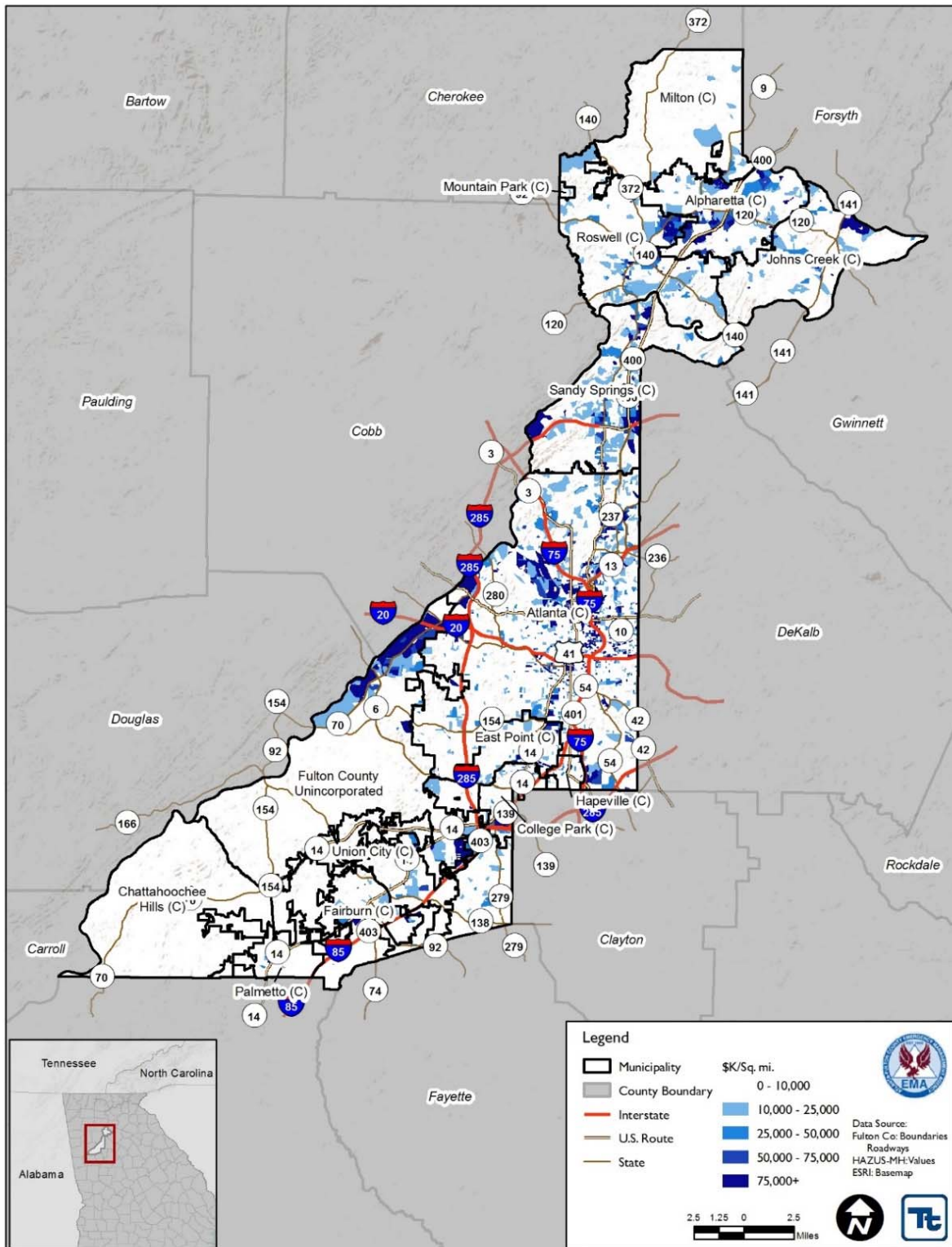
Figure 3-4. Distribution of Commercial Building Stock and Value Density in Fulton County



Source: HAZUS-MH 2.2

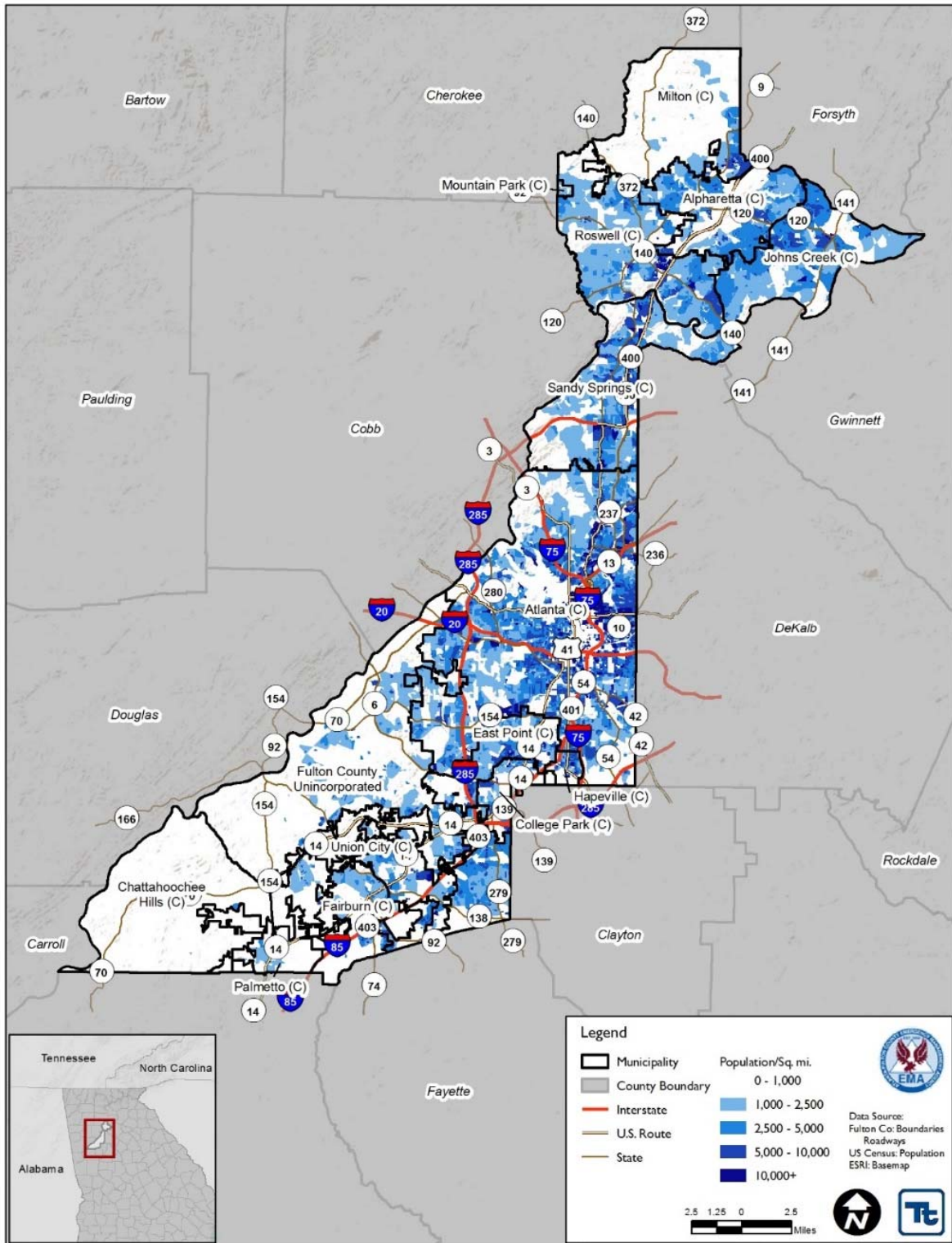


Figure 3-5. Distribution of Industrial Building Stock and Value Density in Fulton County



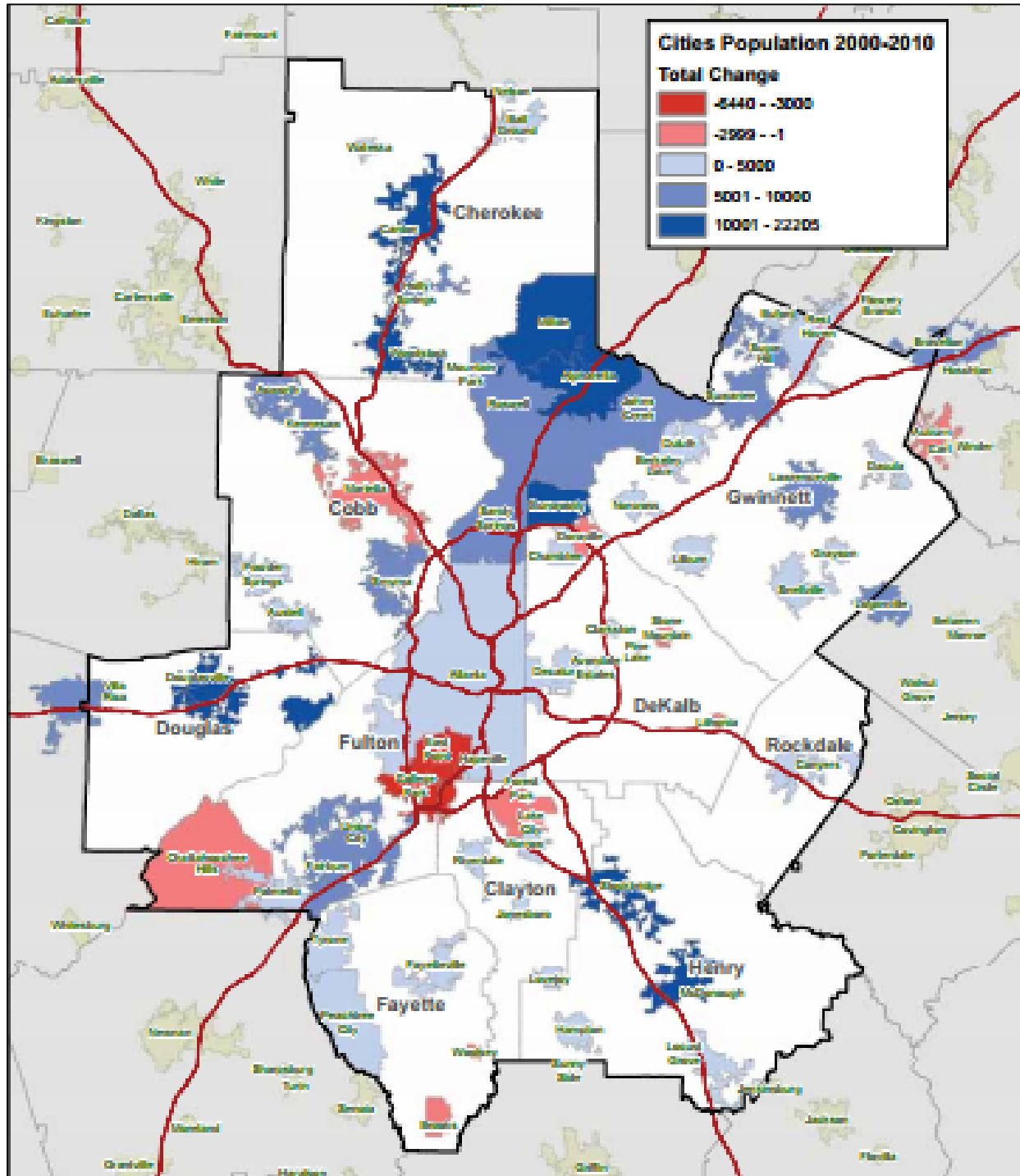
Source: HAZUS-MH 2.2

Figure 3-7. 2010 Population Distribution for Fulton County



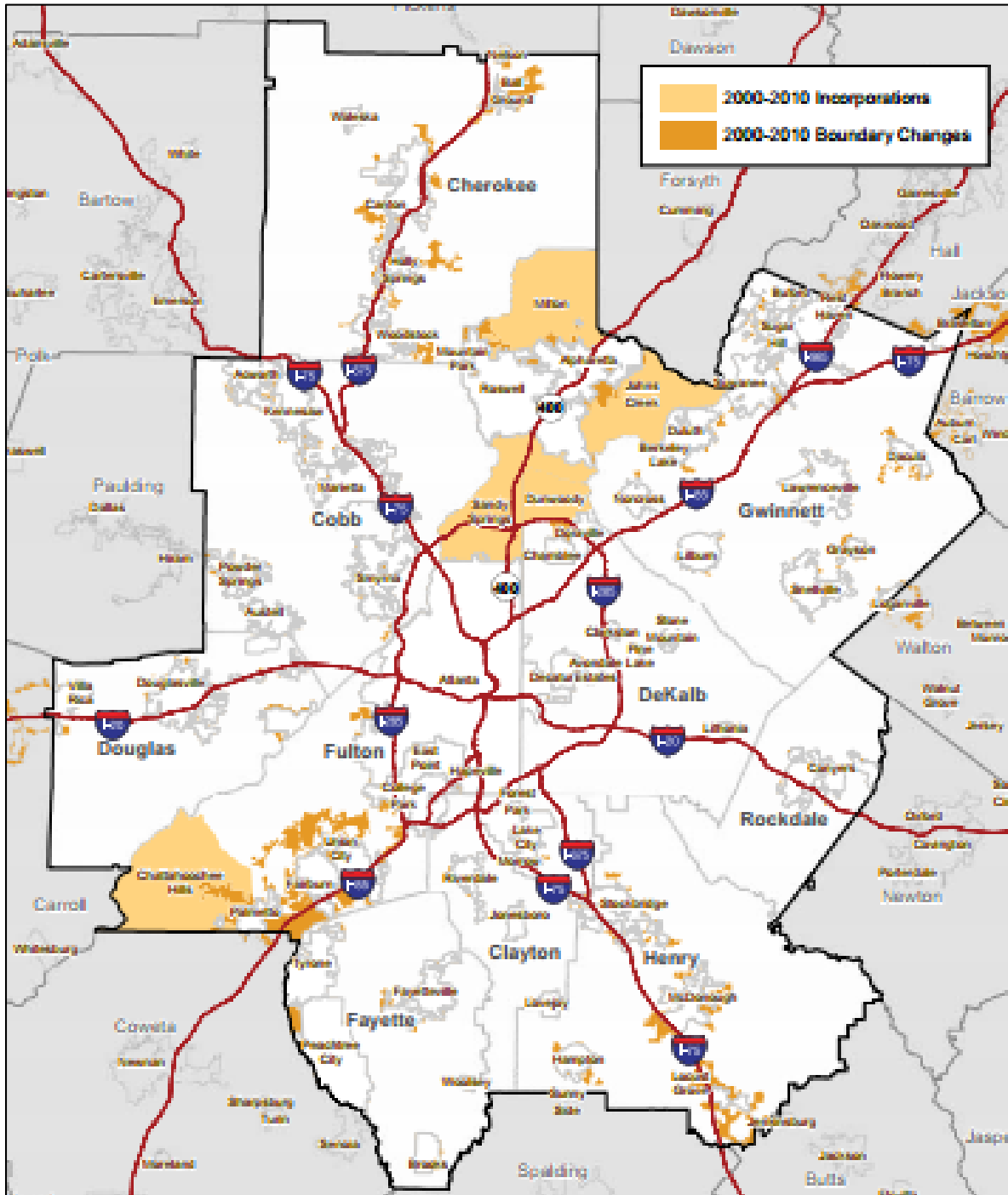
Source: US Census, 2010

Figure 3-8. Total Change in Population, 2000 - 2010



Source: ARC Cities and Towns. 2010 Yearbook of Growth and Change.

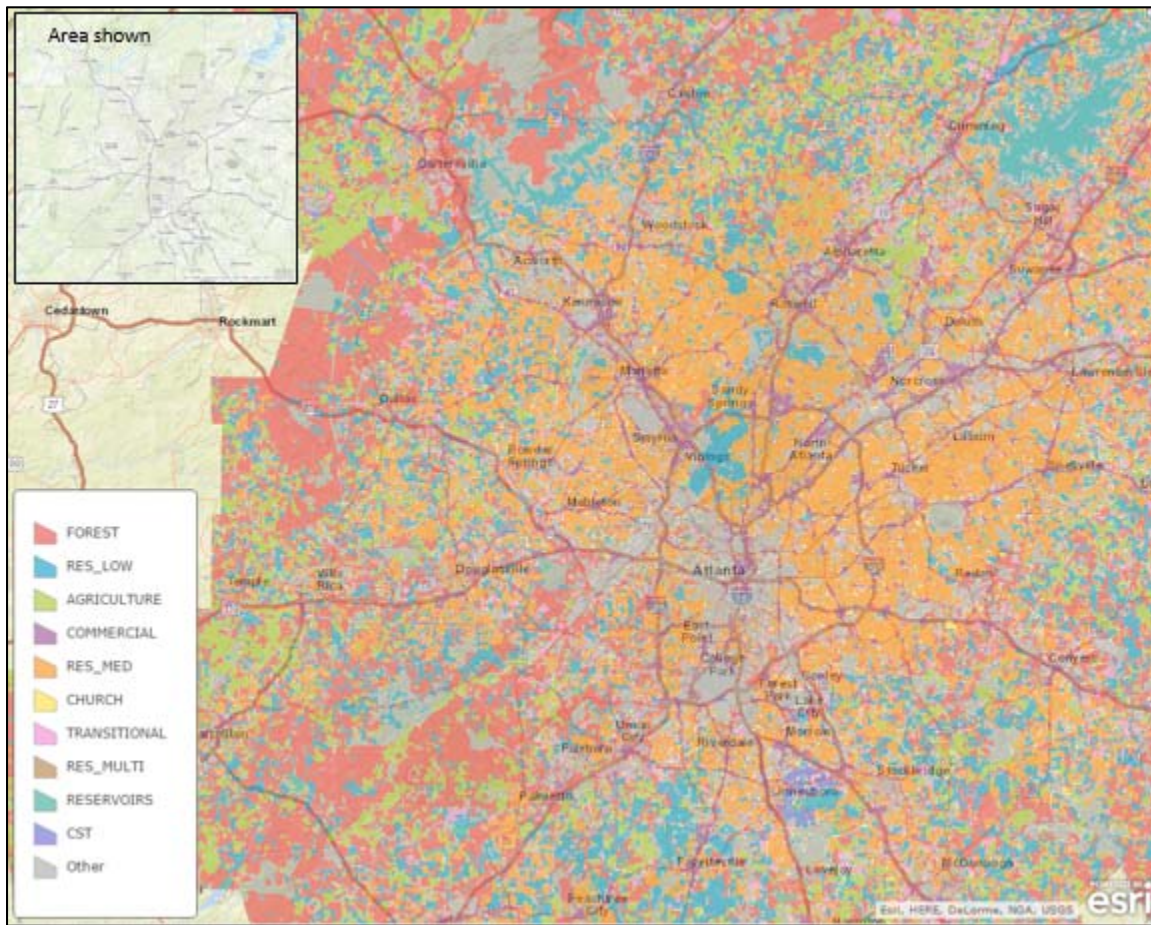
Figure 3-9 Regional Annexation: 2000 - 2010



Source: ARC Cities and Towns. 2010 Yearbook of Growth and Change. P29



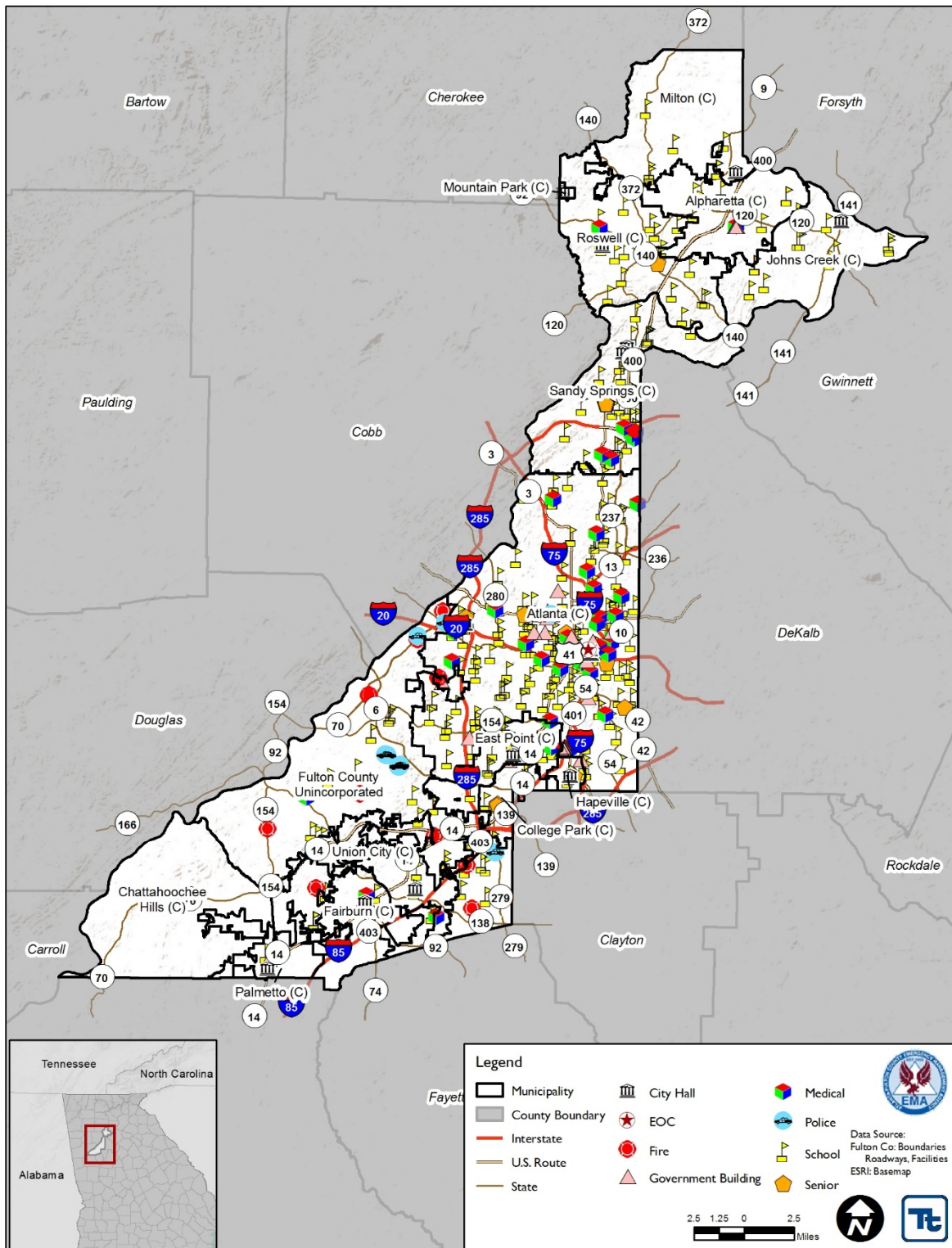
Figure 3-10. Regional Land Use Map, 2012



Source: Atlanta Regional Commission, ArcGIS maps, LandPro 2012, Open Data



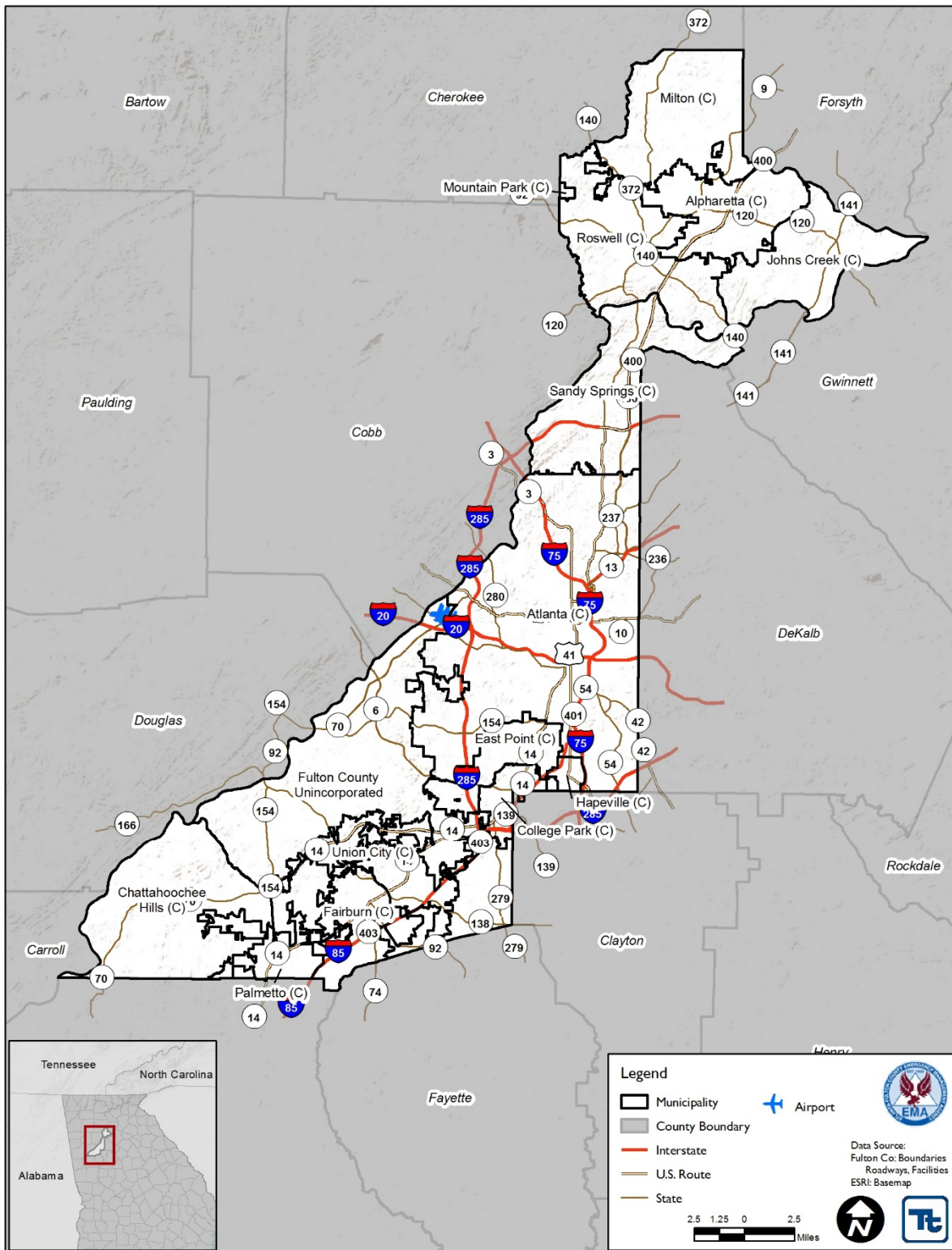
Figure 3-11. Essential Facilities in Fulton County



Source: Fulton County



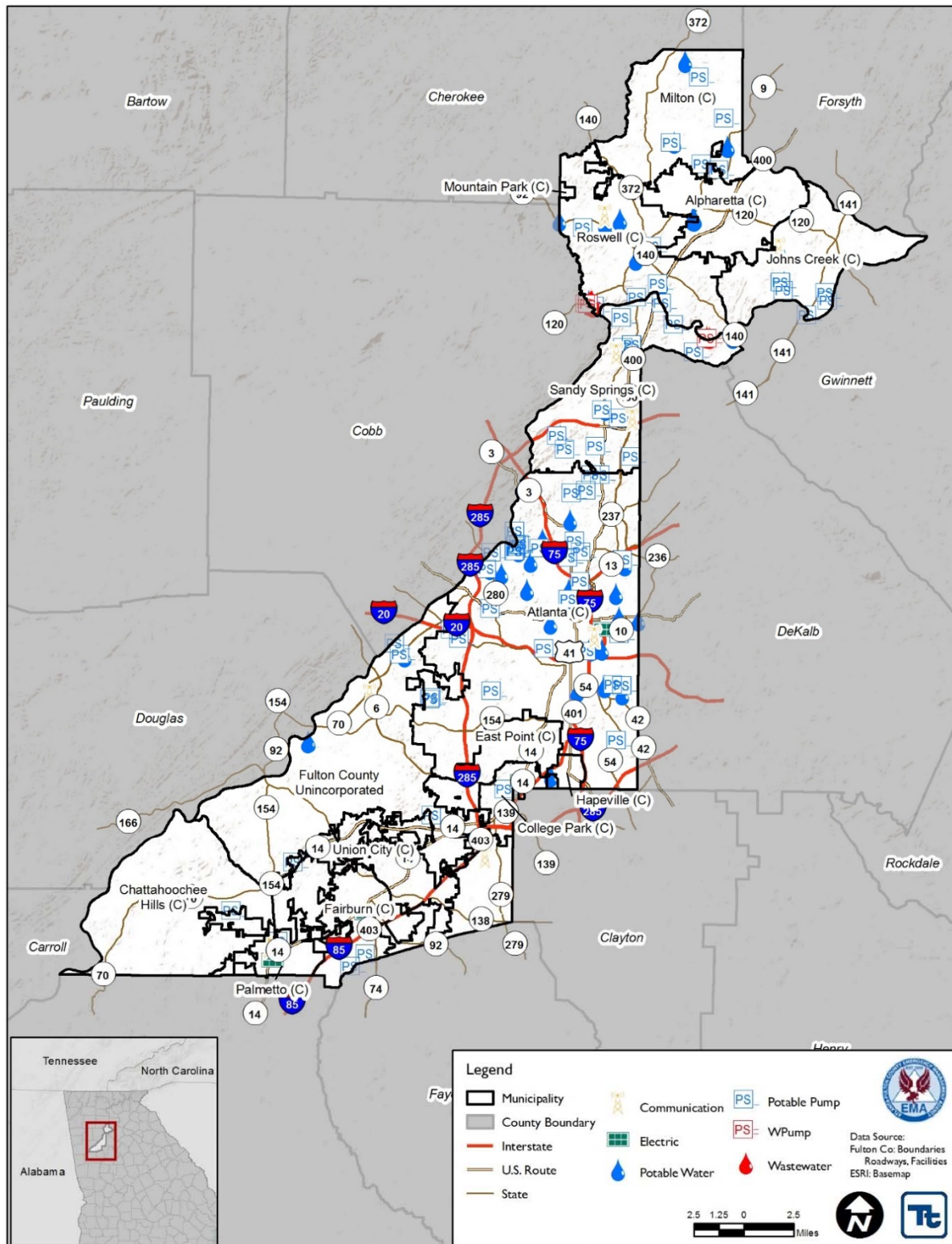
Figure 3-12. Transportation Facilities in Fulton County



Source: Fulton County

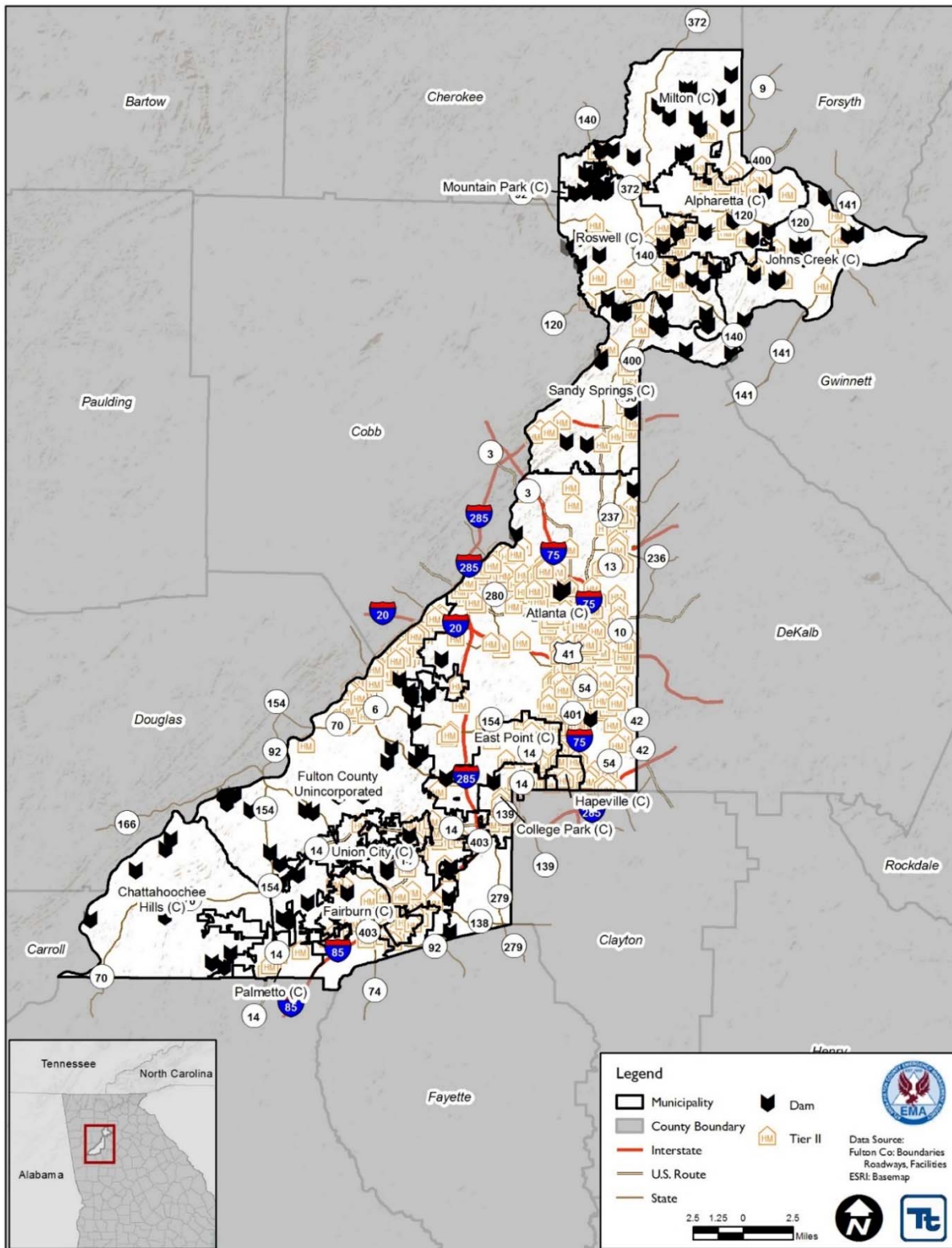


Figure 3-13. Utility Lifelines in Fulton County



Source: Fulton County

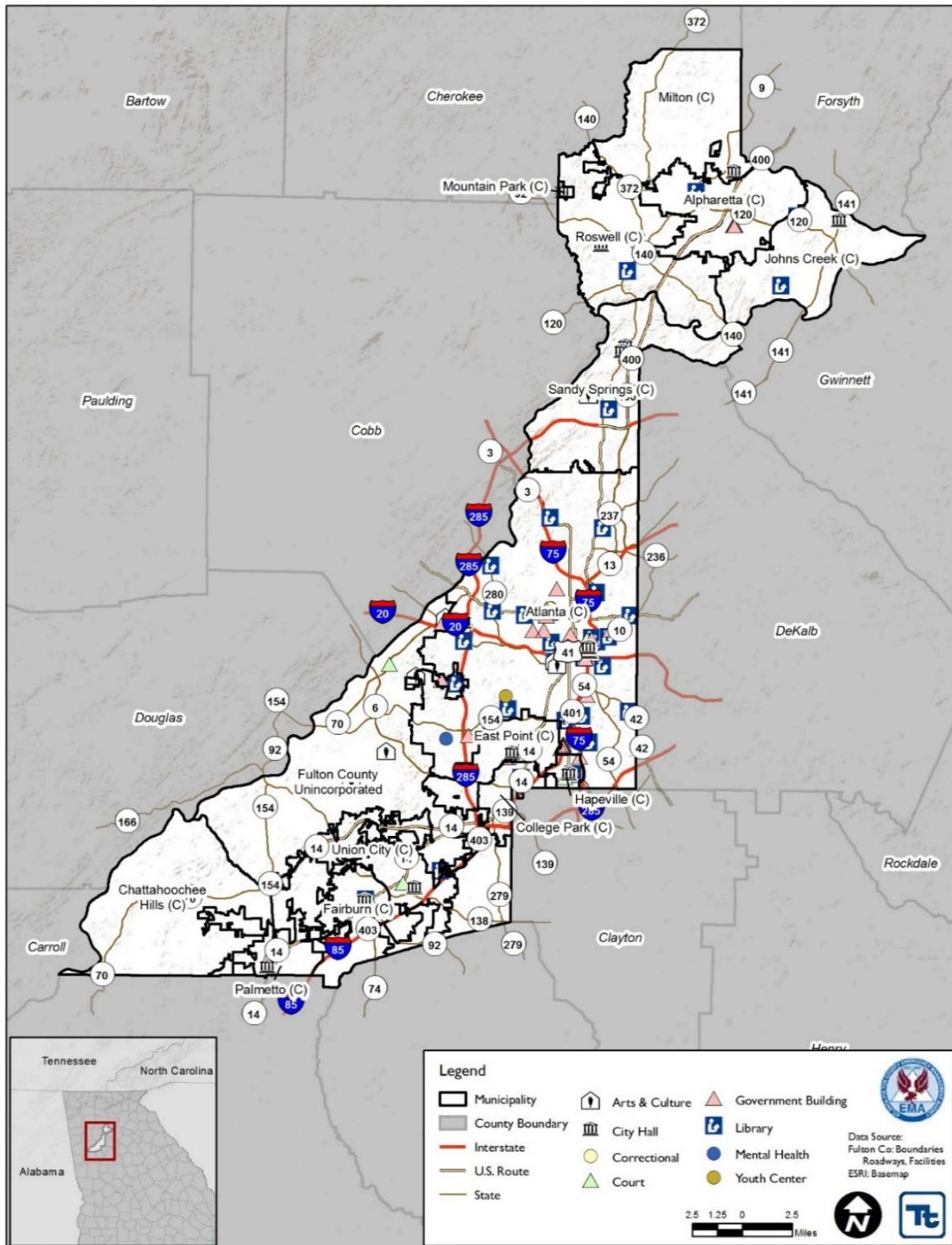
Figure 3-14. High-Potential Loss Facilities in Fulton County



Source: Fulton County

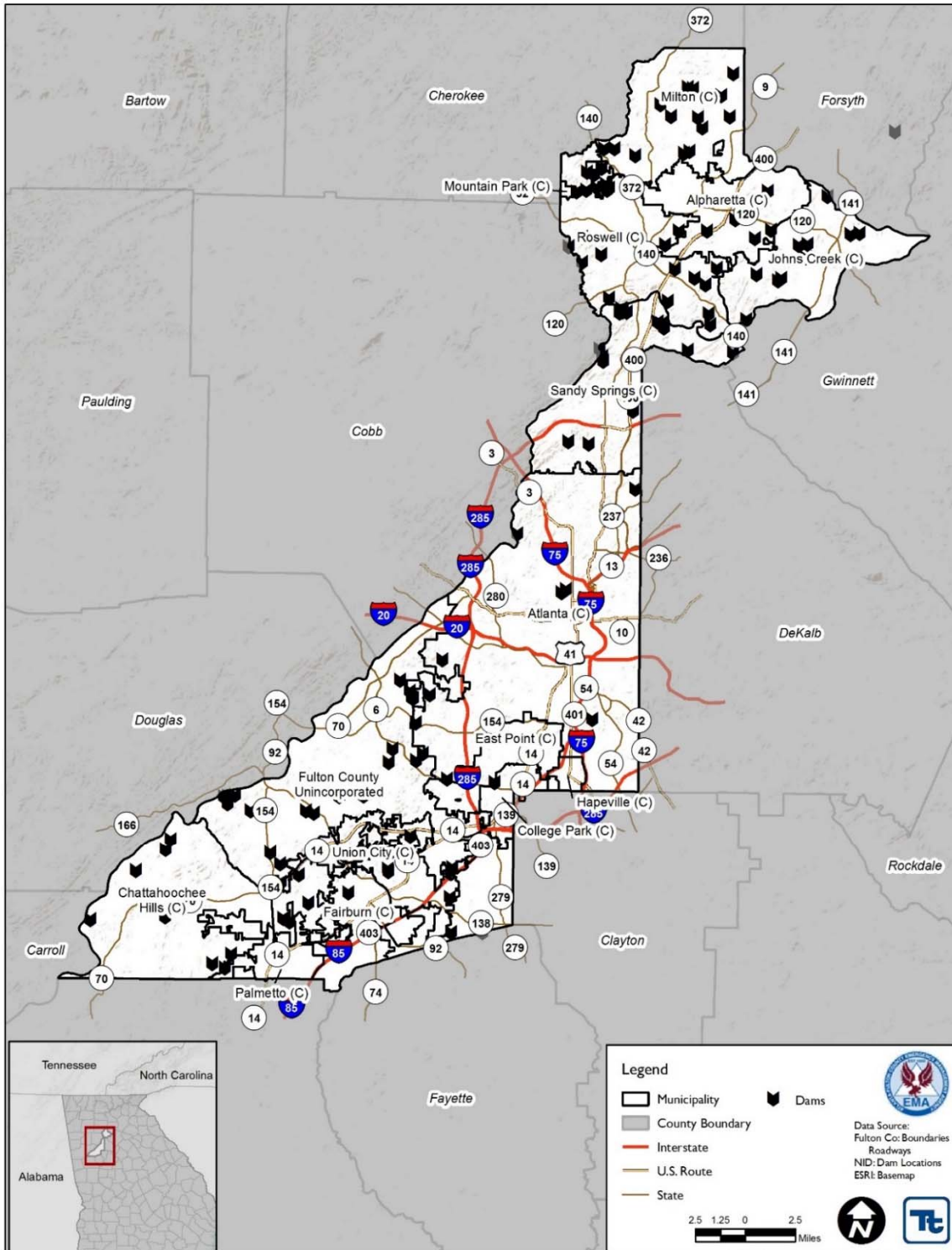


Figure 3-15. Additional Facilities in Fulton County



Source: Fulton County

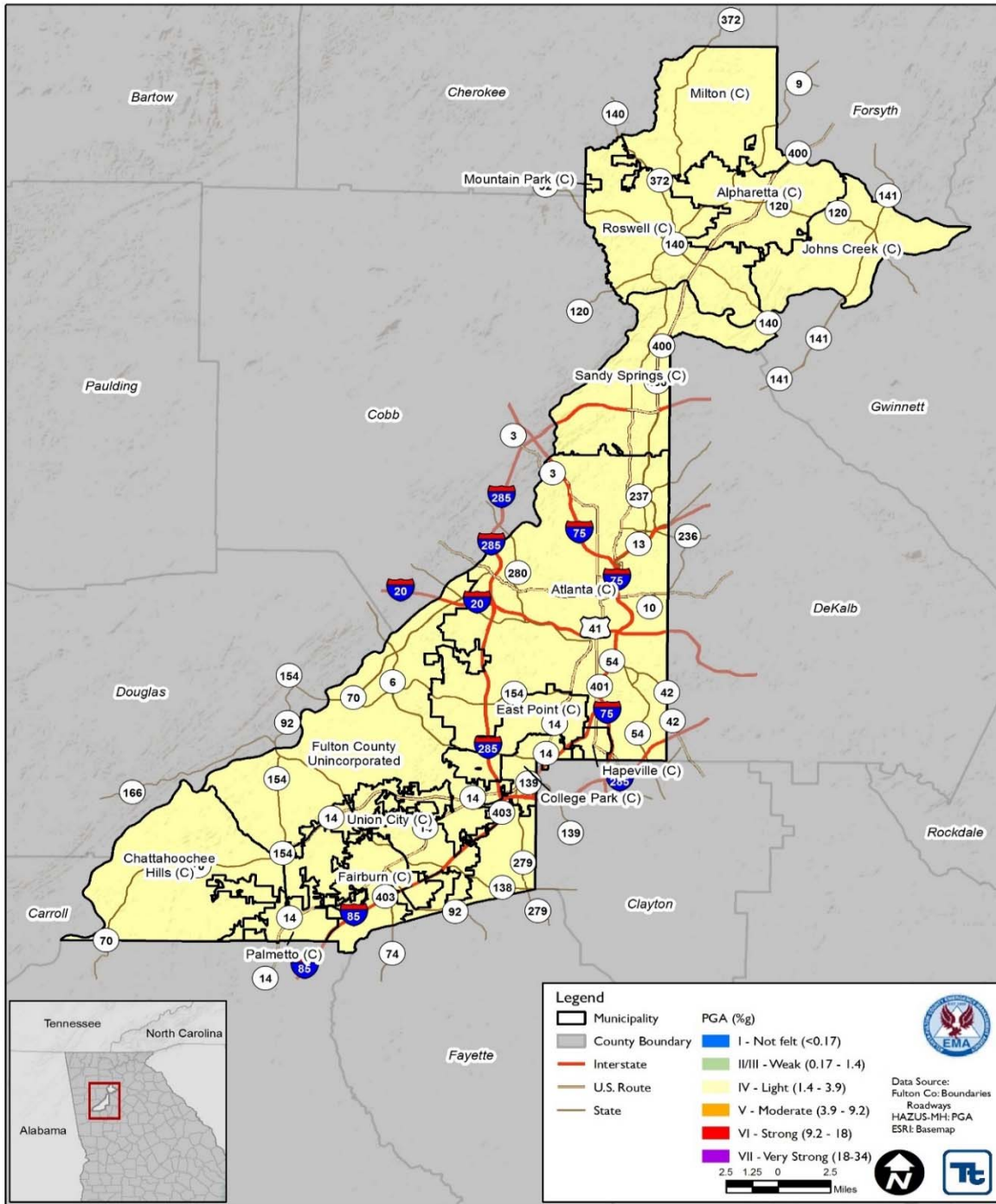
Figure 1.4-1. Dam Locations in Fulton County



Source: National Inventory of Dams, 2013



Figure 5.4.3-1 Peak Ground Acceleration 100-Year Mean Return Period for Fulton County

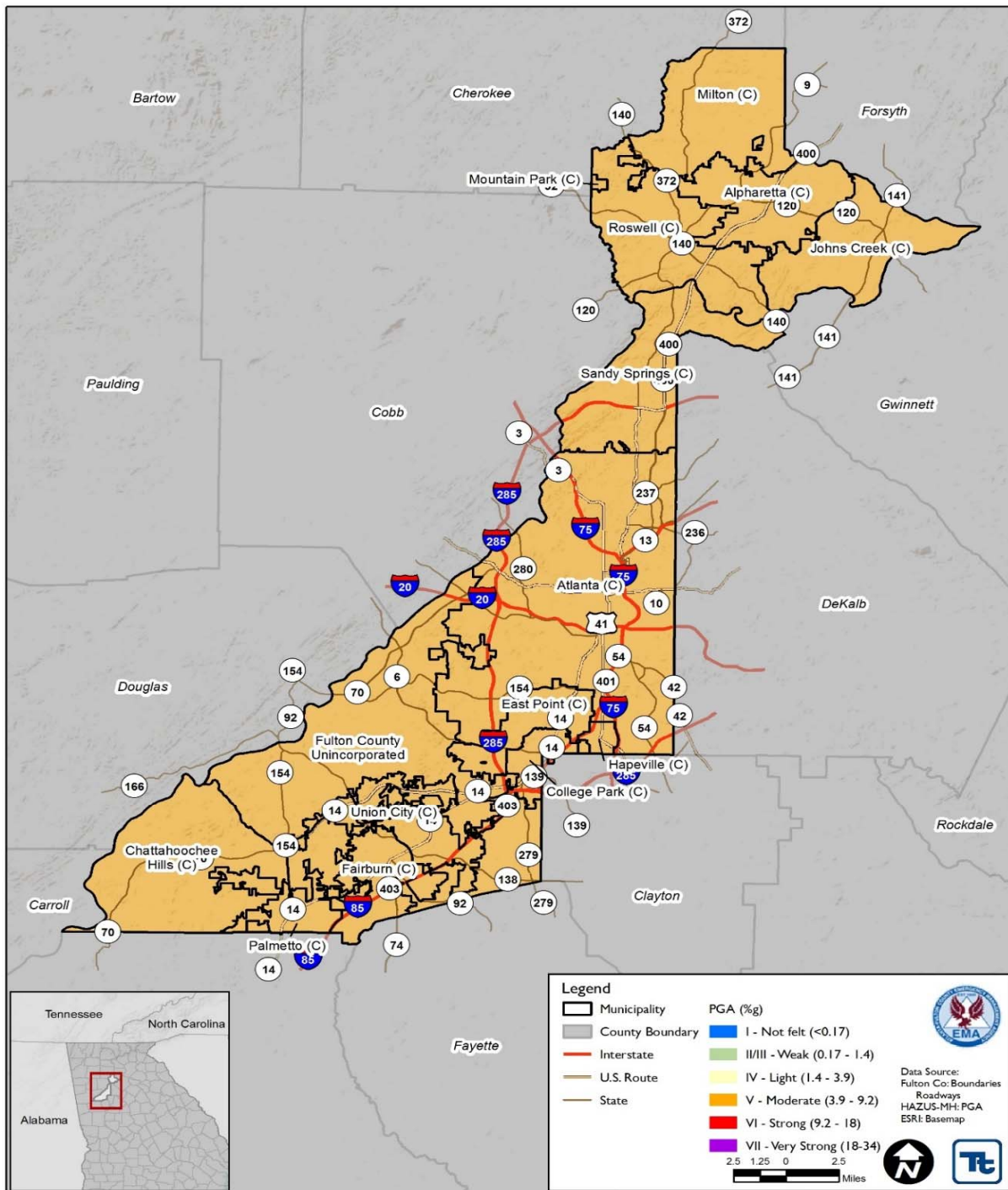


Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 100-year MRP is 2.0-2.6



Figure 5.4.3-2 Peak Ground Acceleration 500-Year Mean Return Period for Fulton County

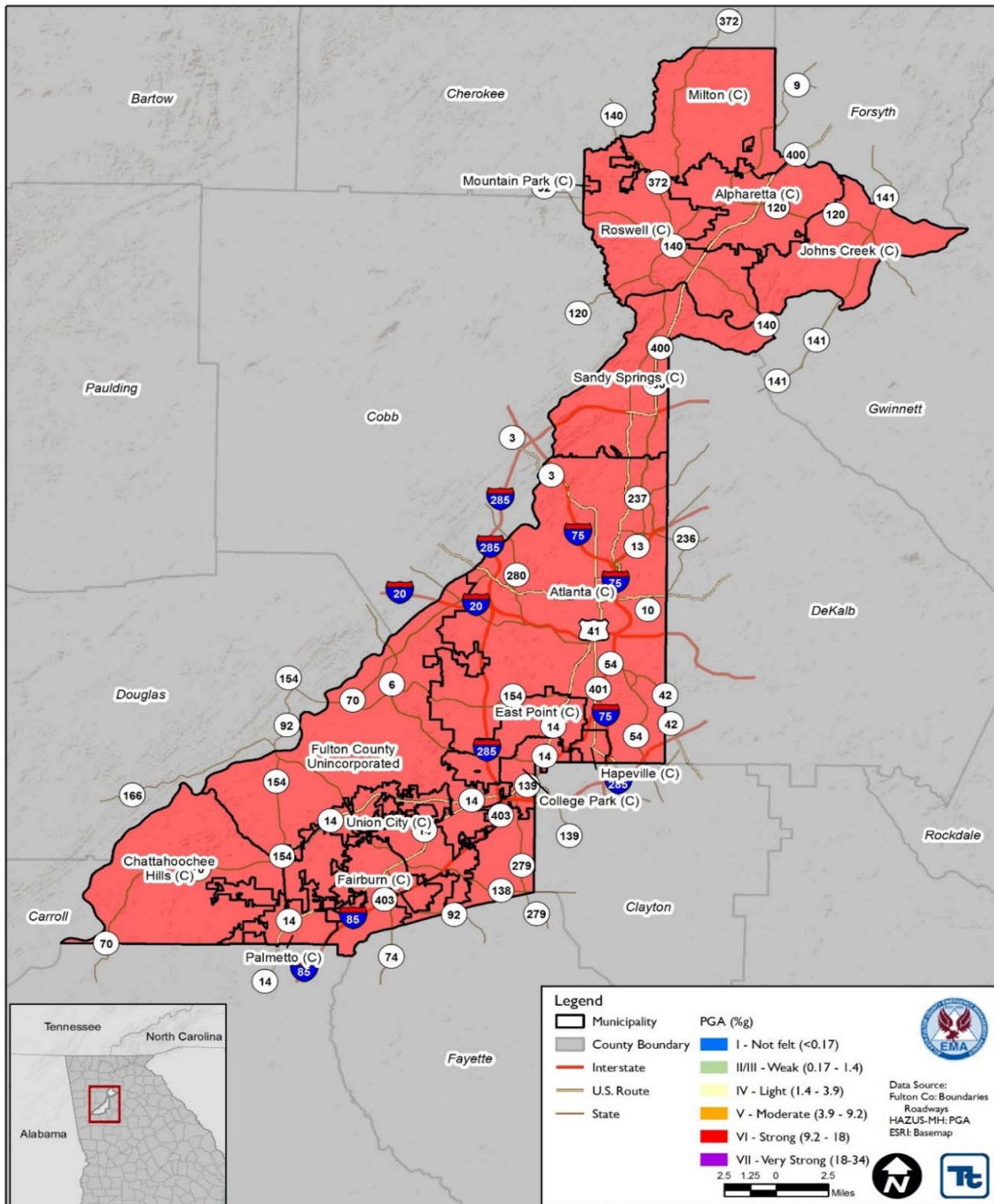


Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 500-year MRP is 4.97-6.58



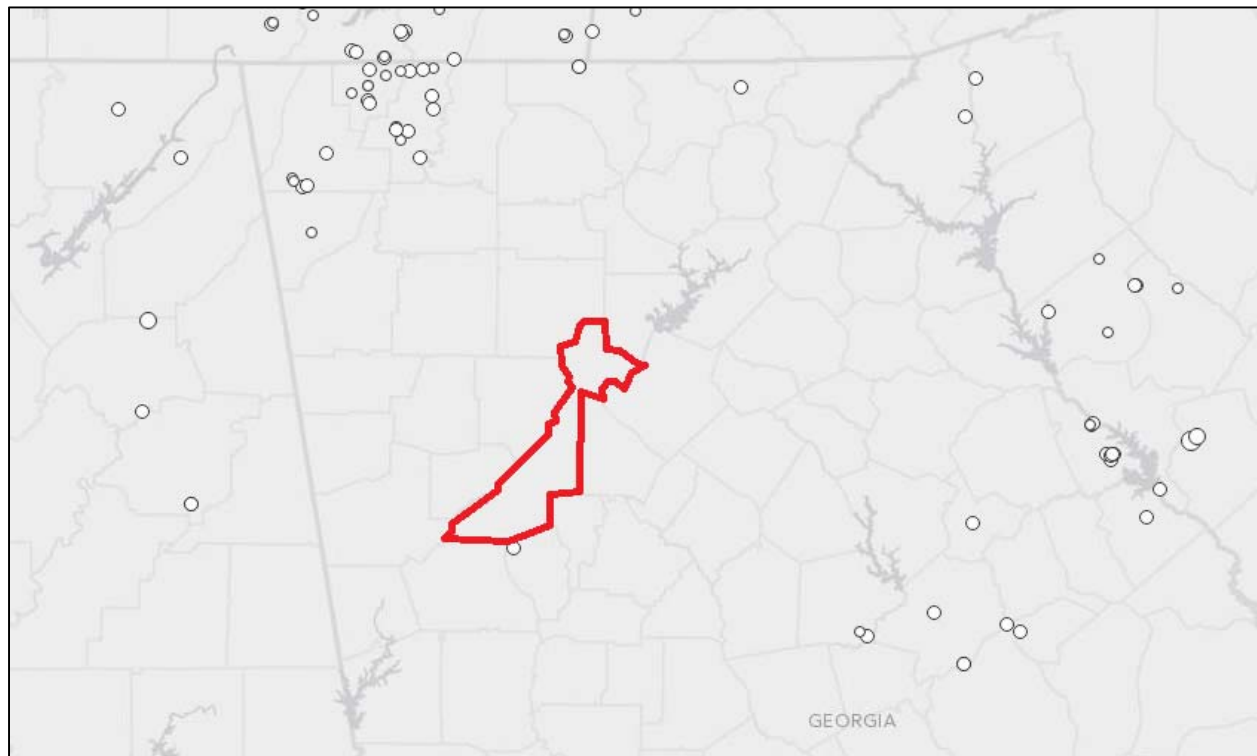
Figure 5.4.3-3. Peak Ground Acceleration 2,500-Year Mean Return Period - Fulton County



Source: HAZUS-MH 2.2

Note: The peak ground acceleration for the 2,500-year MRP is 10.8-15.3

Figure 5.4.3-4. Earthquakes Occurring Around Fulton County, 2010 to 2015



Source: USGS 2015

Note: Fulton County is outlined in red. There have no earthquake epicenters in the County between 2010 and 2015.



Figure 5.4.3-5. Fulton County 2010 Census Tract Boundaries and Cities

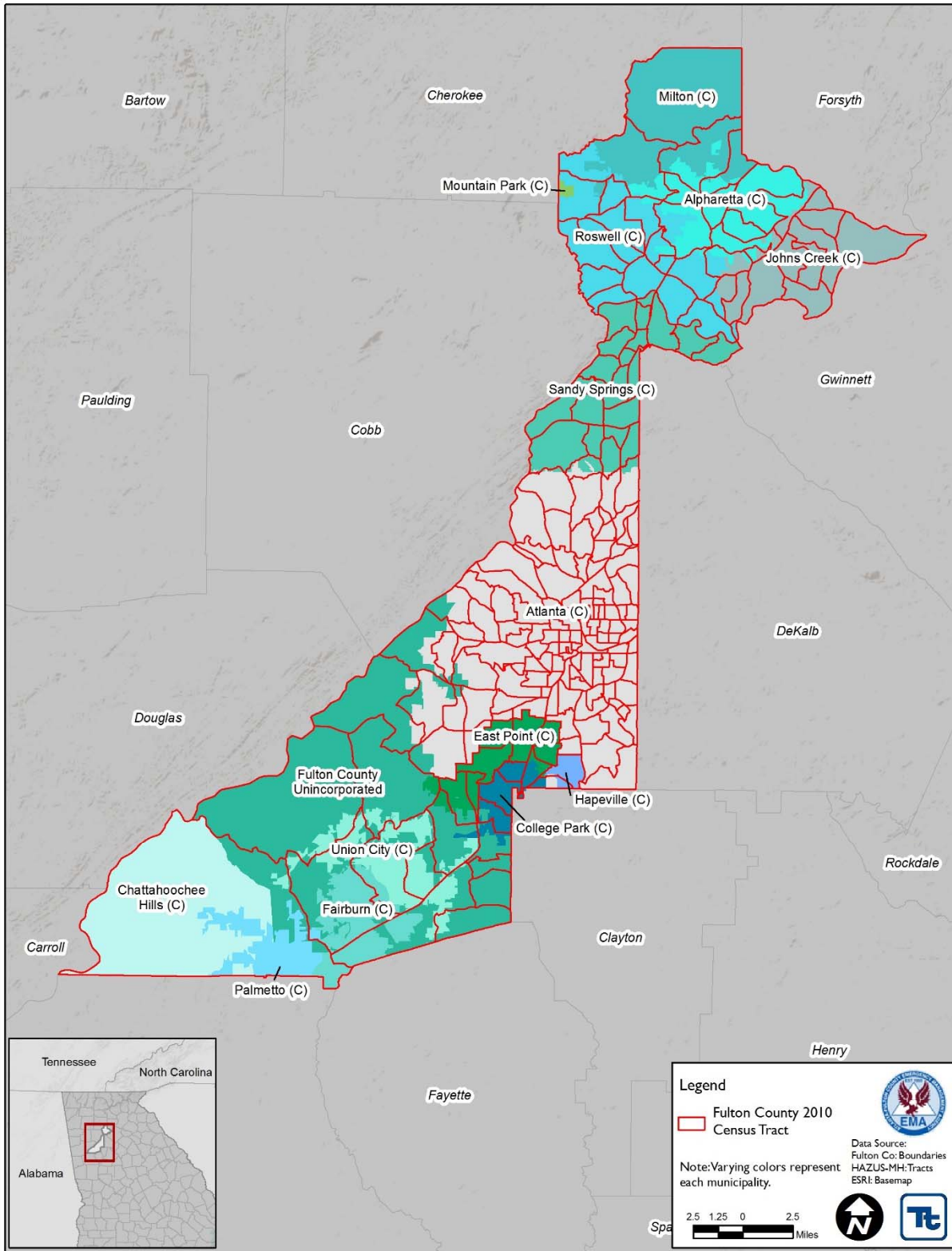
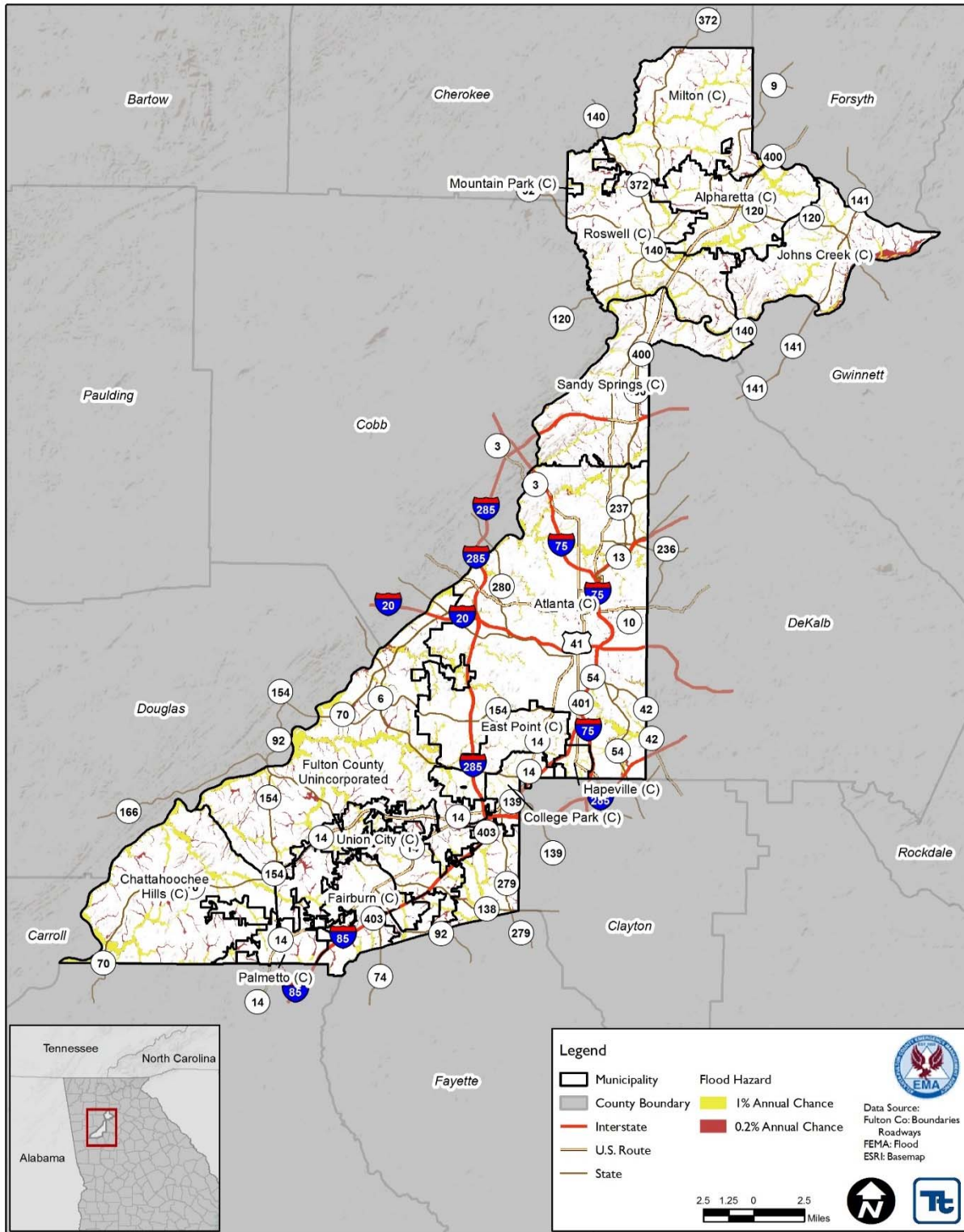


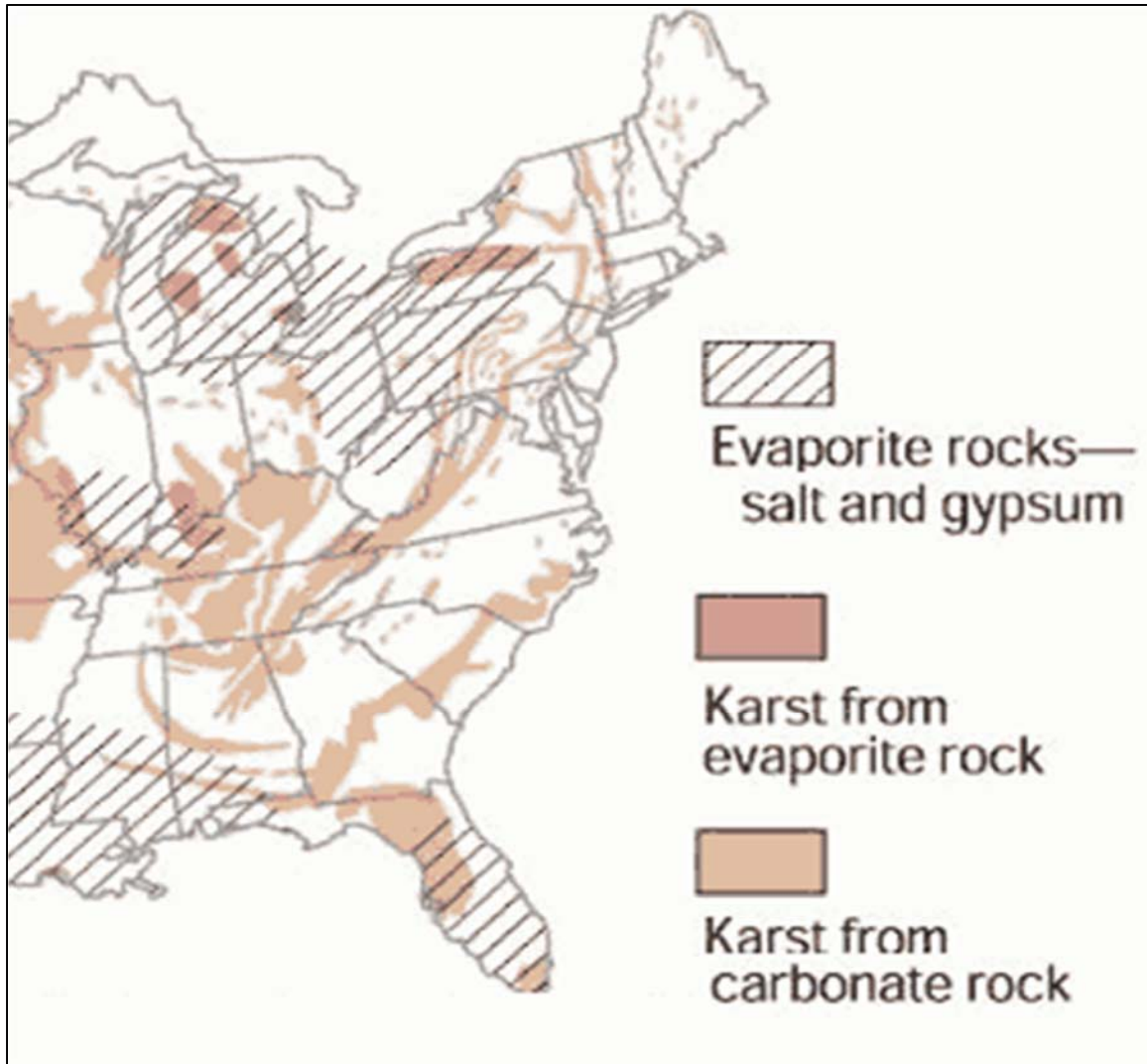


Figure 5.4.4-1 FEMA Flood Hazard Areas in Fulton County



Source: FEMA, 2015 Federal Emergency Management Agency

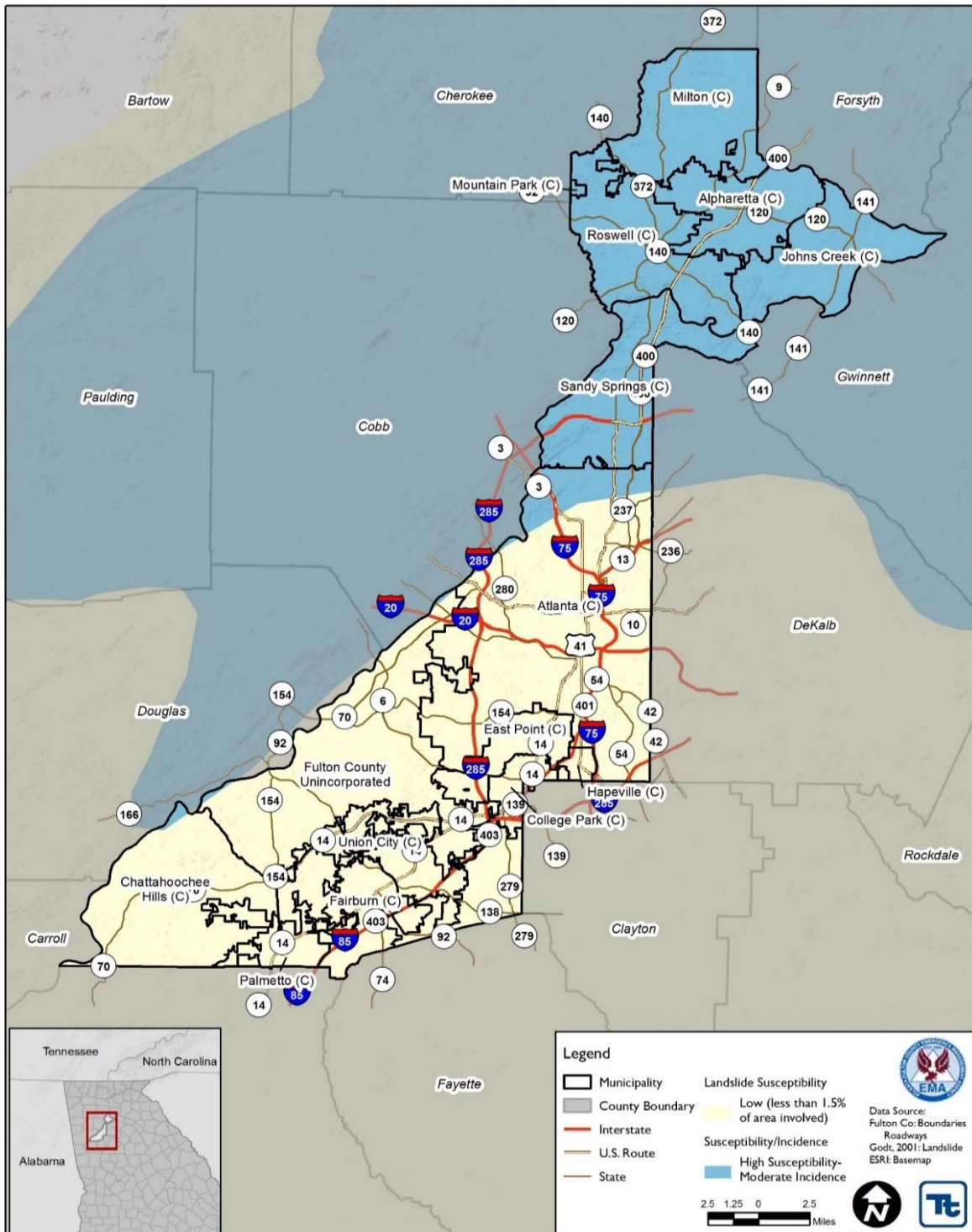
Figure 5.4.5-1. Areas Prone to Sinkholes in the United States.



Source: USGS 2015 (<http://water.usgs.gov/edu/sinkholes.html>)



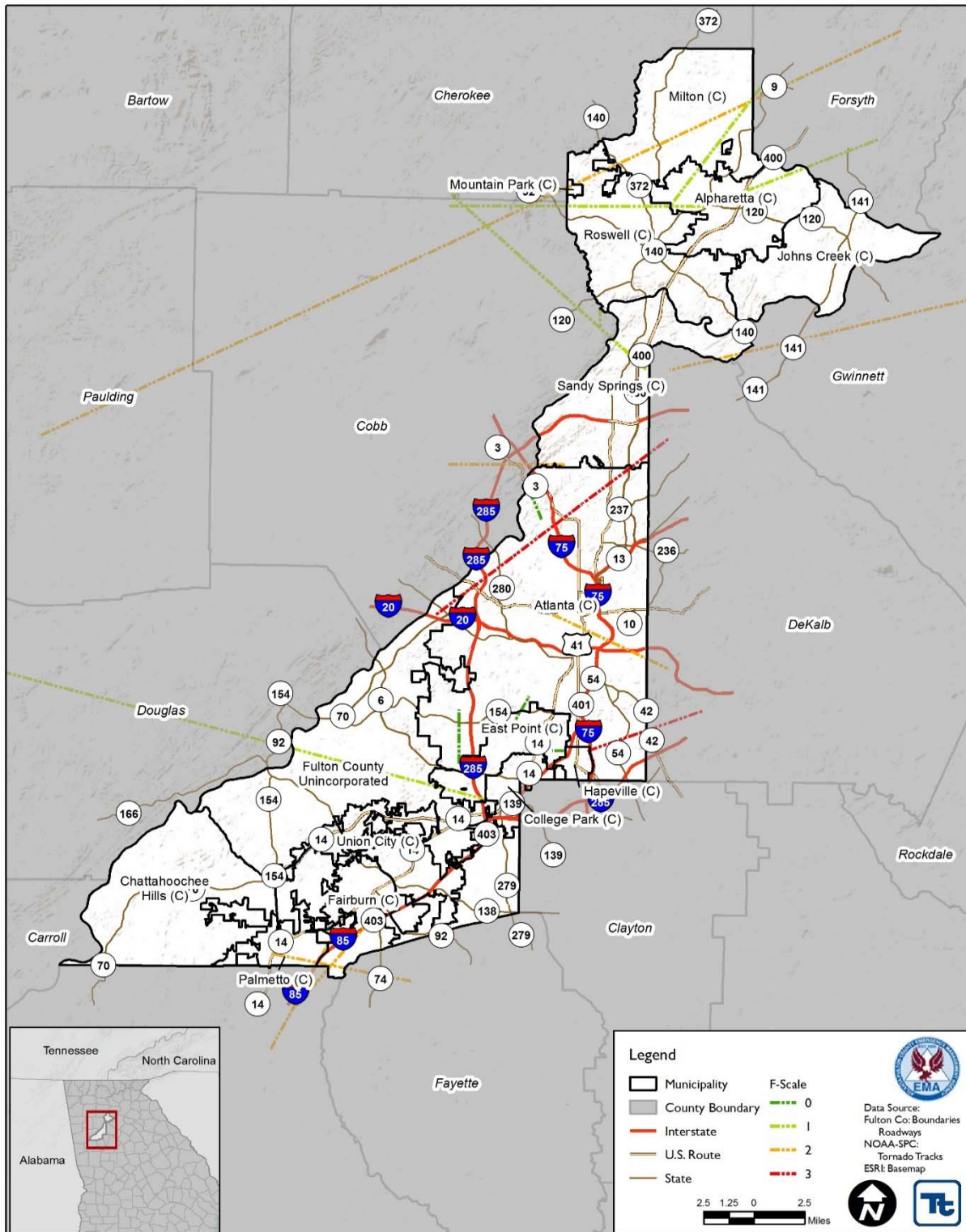
Figure 5.4.5-2. Landslide Susceptibility in Fulton County



Source: Godt, 2001



Figure 5.4.7-1. Historic Tornado Tracks for Fulton County (1950-2014)



Source: NOAA-SPC, 2015



Figure 5.4.7-1. Wind Zones of the United States

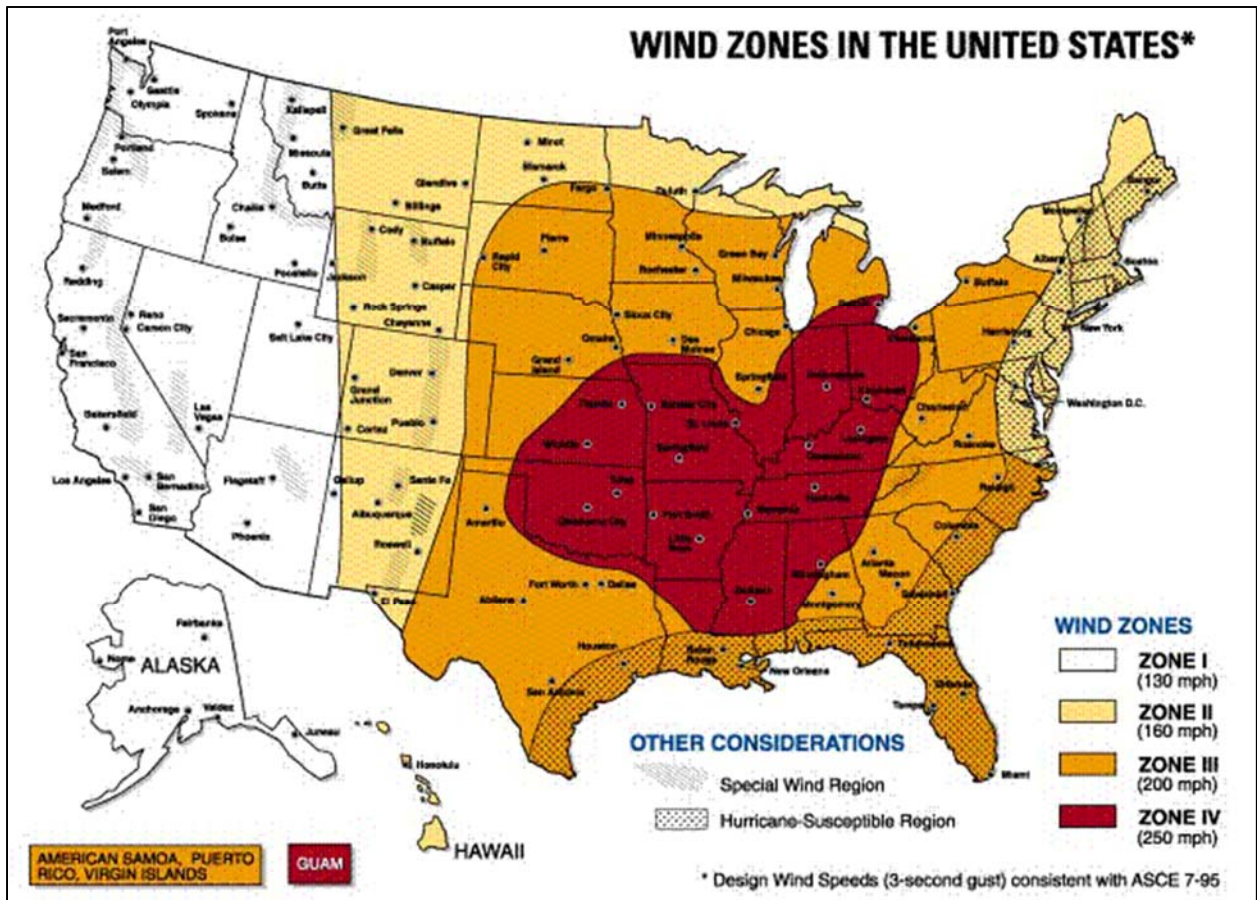
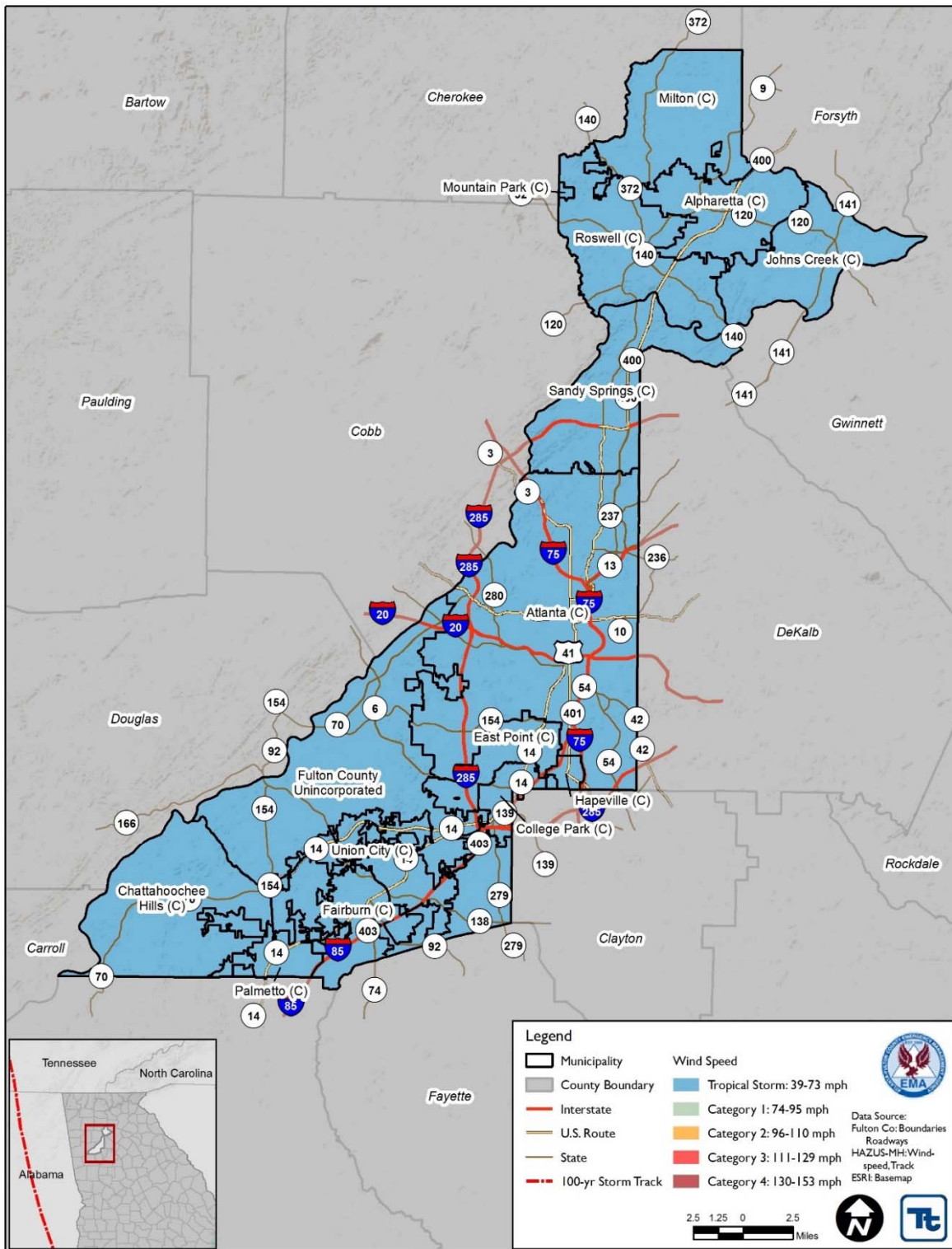




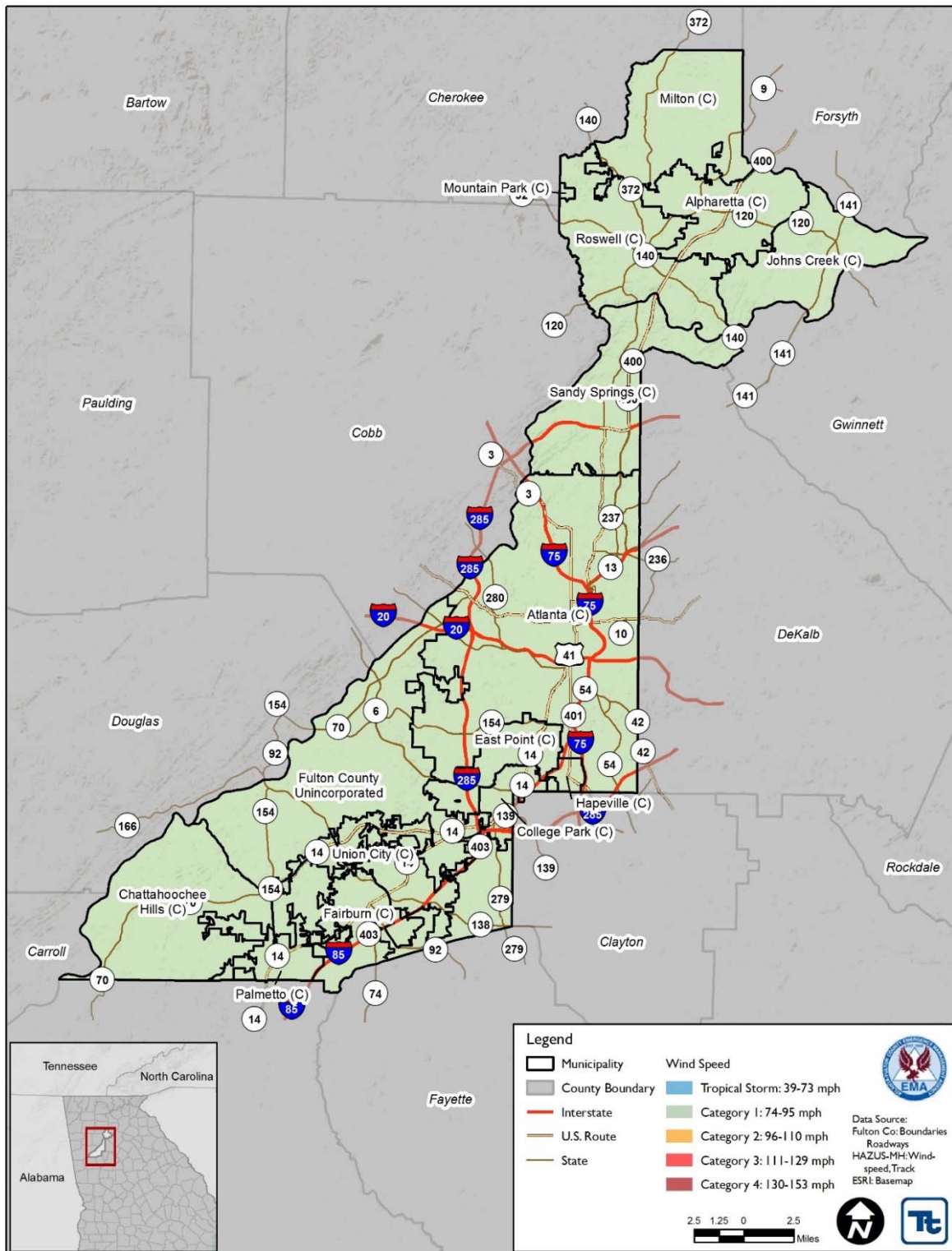
Figure 5.4.8-1. Wind Speeds for the 100-Year Mean Return Period Event



Source: Hazus-MH 3.0



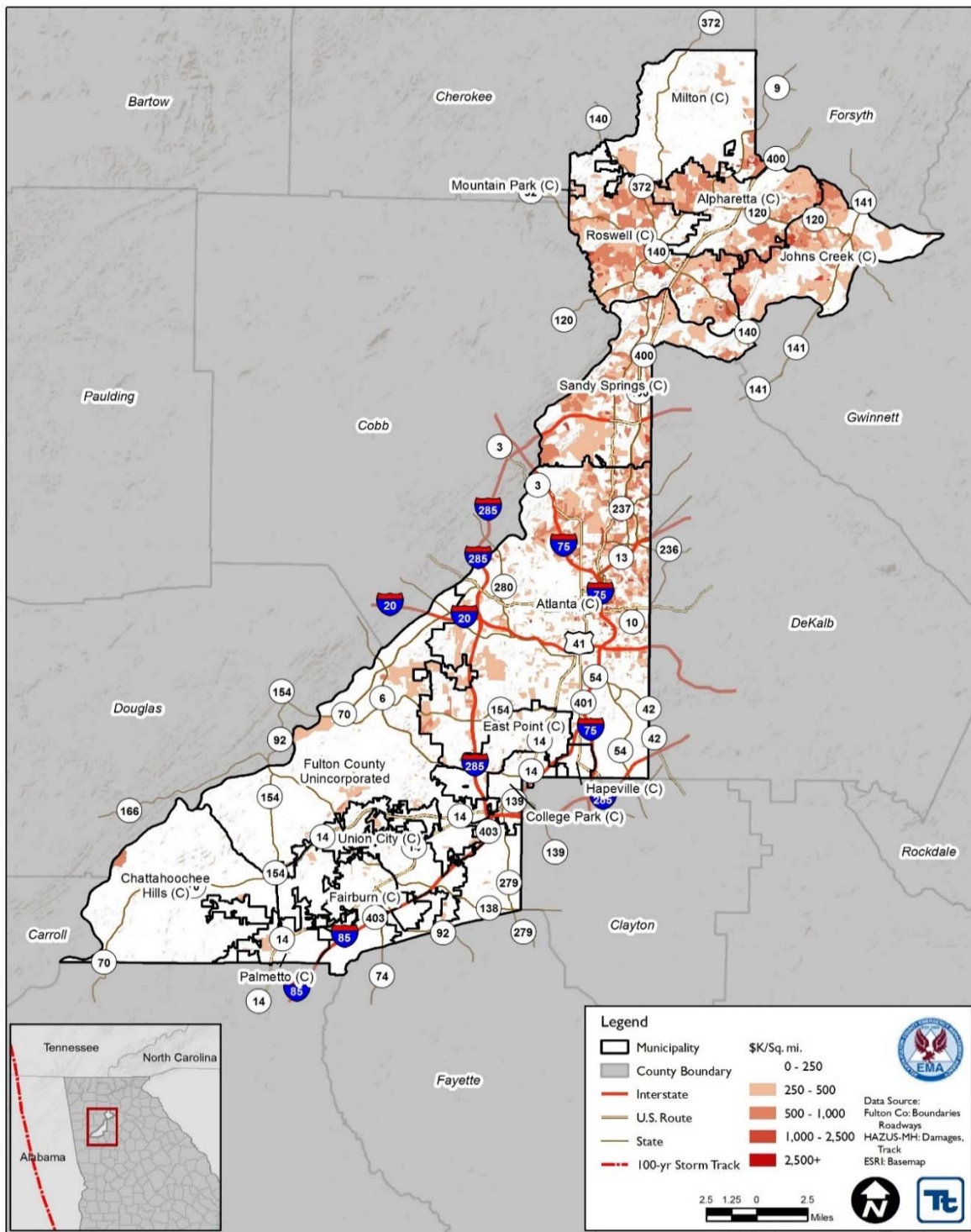
Figure 5.4.8-2. Wind Speeds for the 500-Year Mean Return Period Event



Source: Hazus-MH 3.0



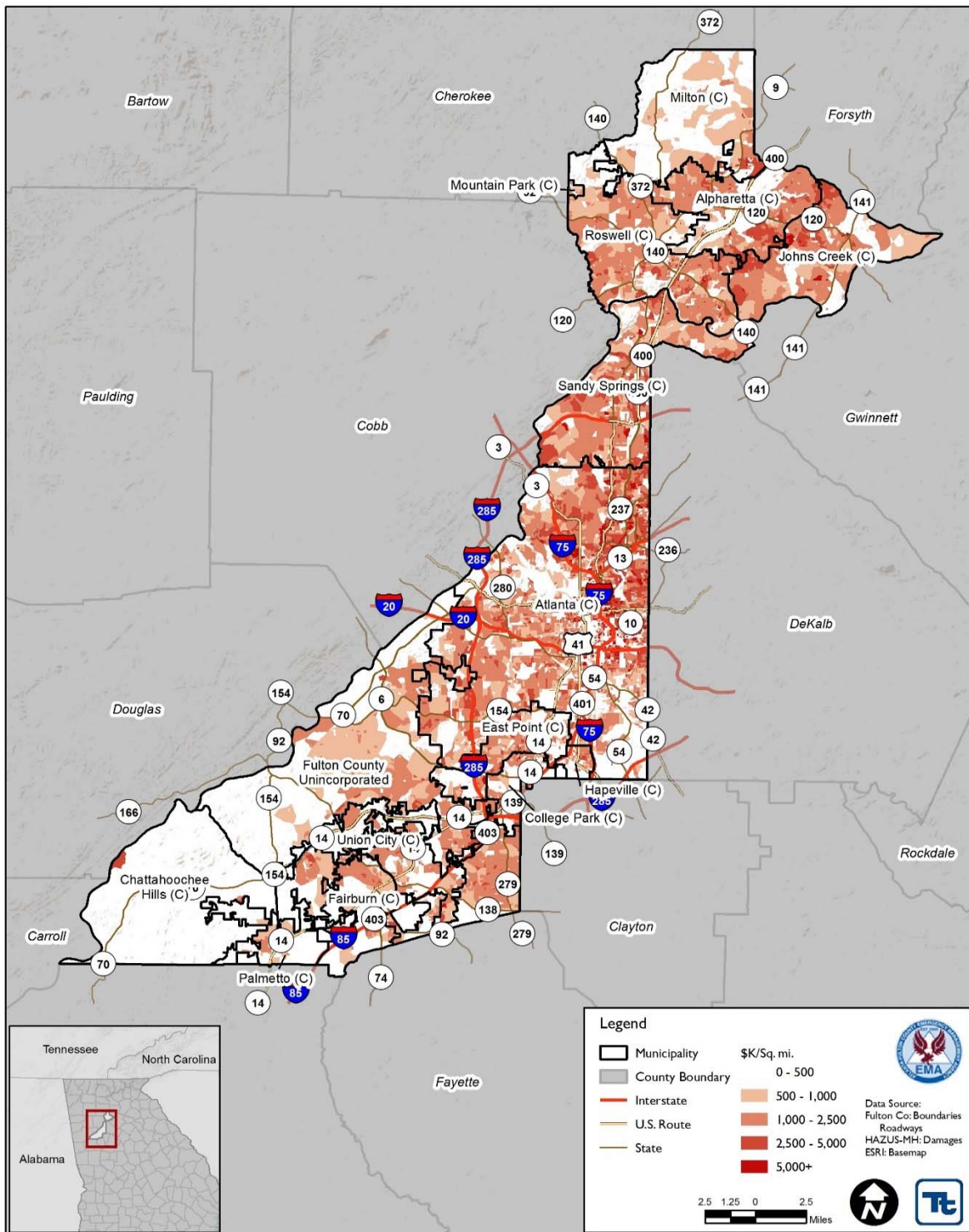
Figure 5.4.8-3. Density of Losses for Structures (All Occupancies) for the County 100-Year MRP Hurricane (Wind-Only) Event



Source: HAZUS-MH 3.0



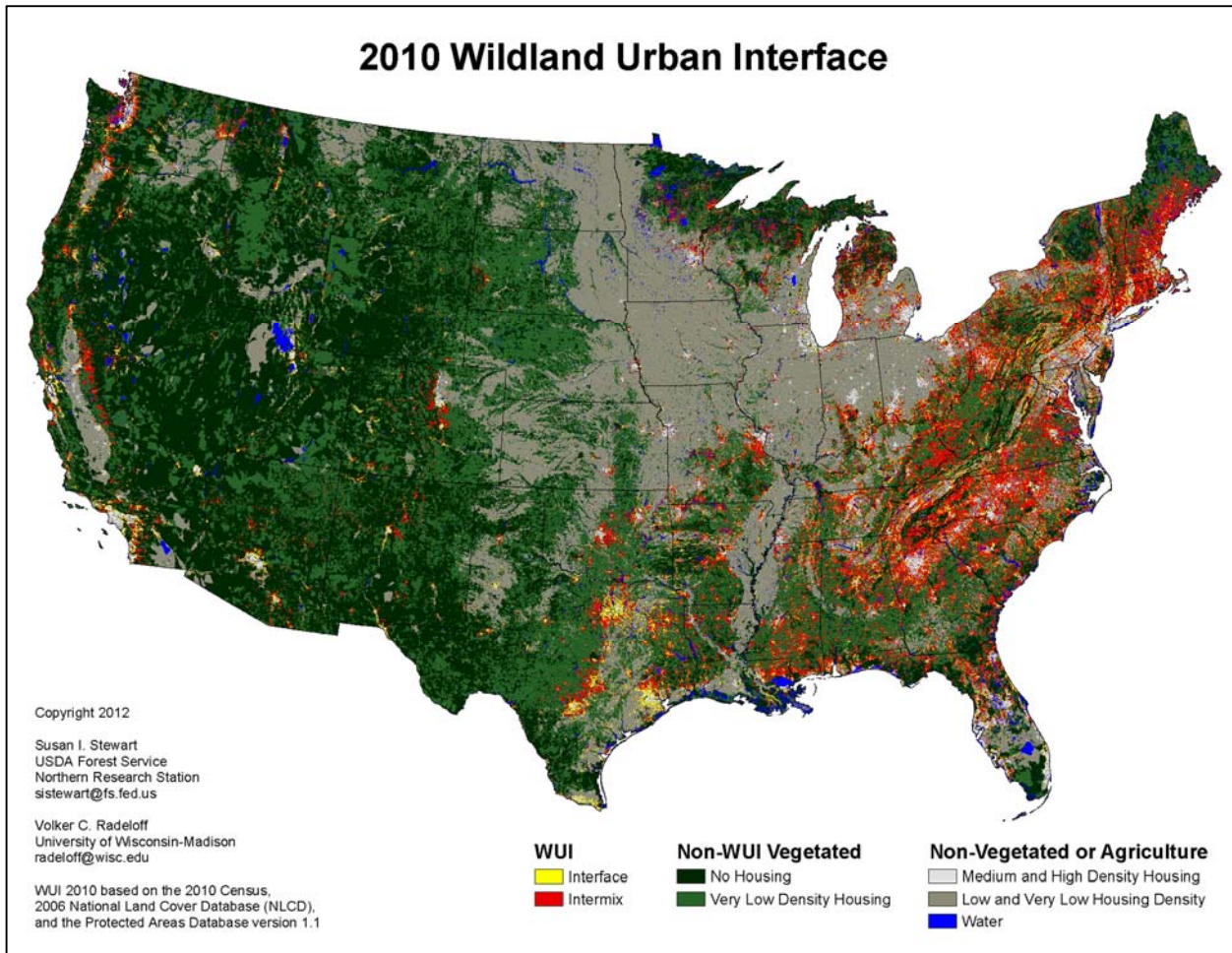
Figure 5.4.8-4. Density of Losses for Structures (All Occupancies) for the County 500-Year MRP Hurricane (Wind-Only) Event



Source: HAZUS-MH 3.0

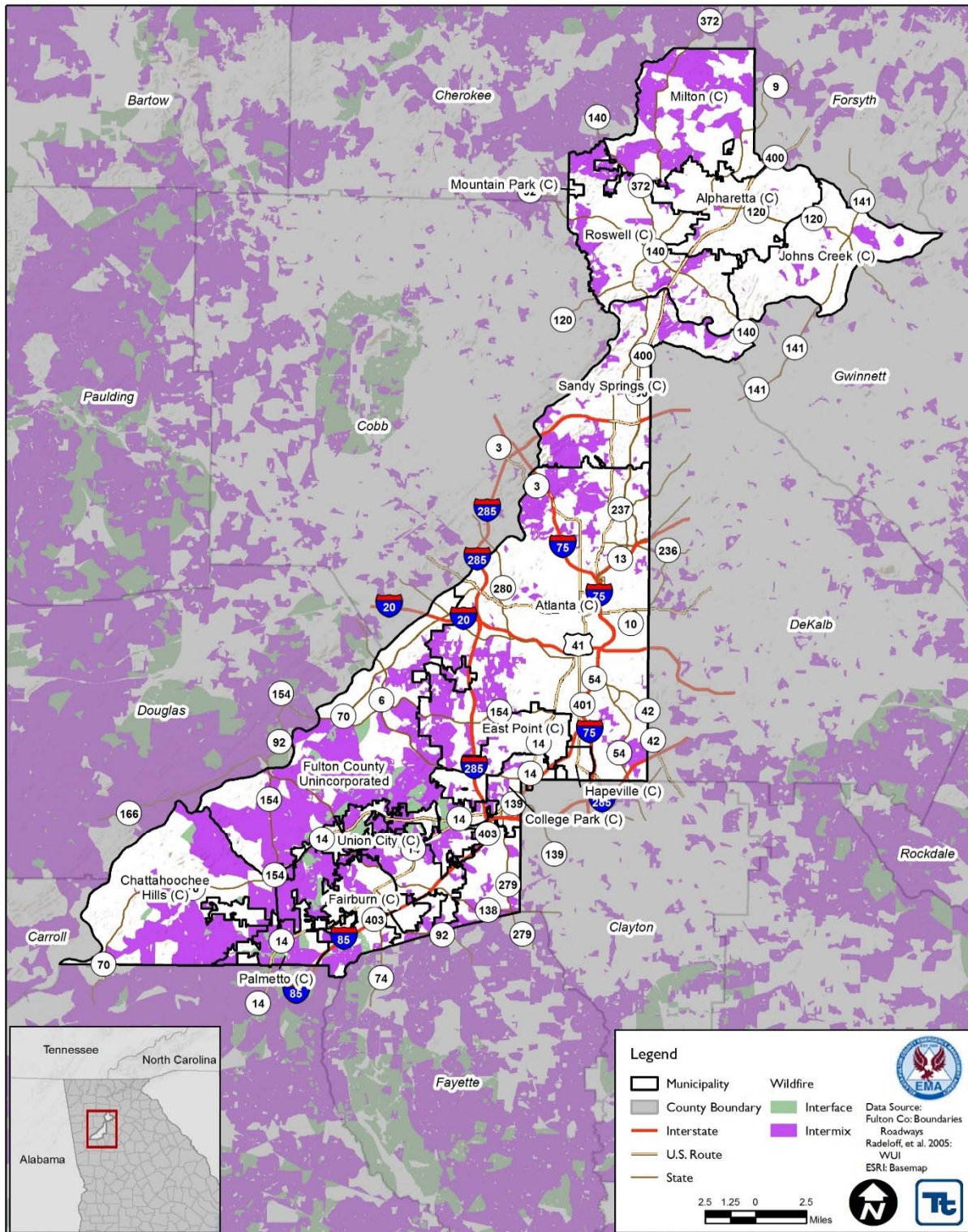


Figure 5.4.8-1. SILVIS Wildland Urban Interface across the United States



Source: SILVIS Lab 2015

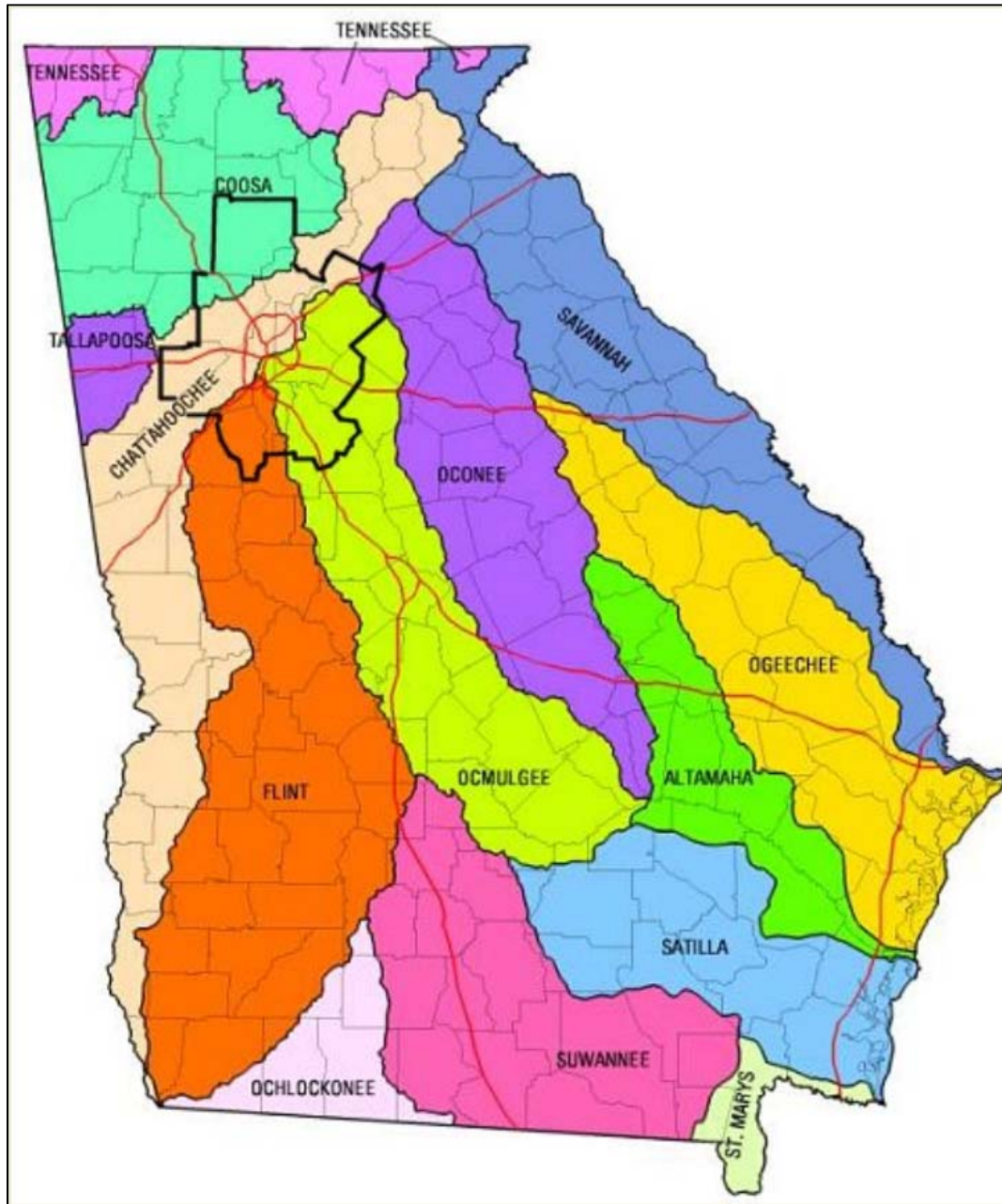
Figure 5.4.8-2. SILVIS Wildland Urban Interface and Intermix in Fulton County





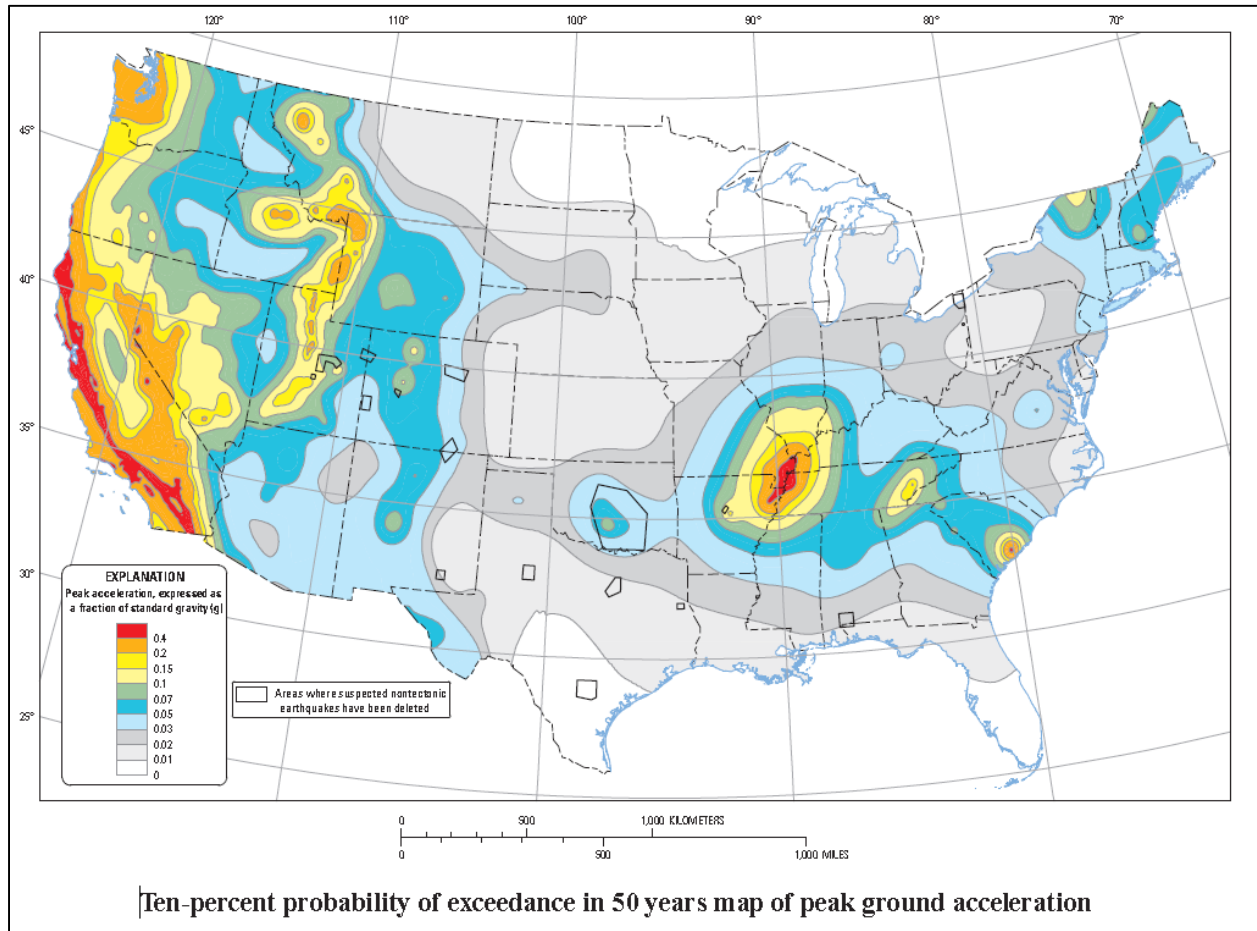
Source: Radeloff, et al. 2005

Georgia River Basins / Watershed





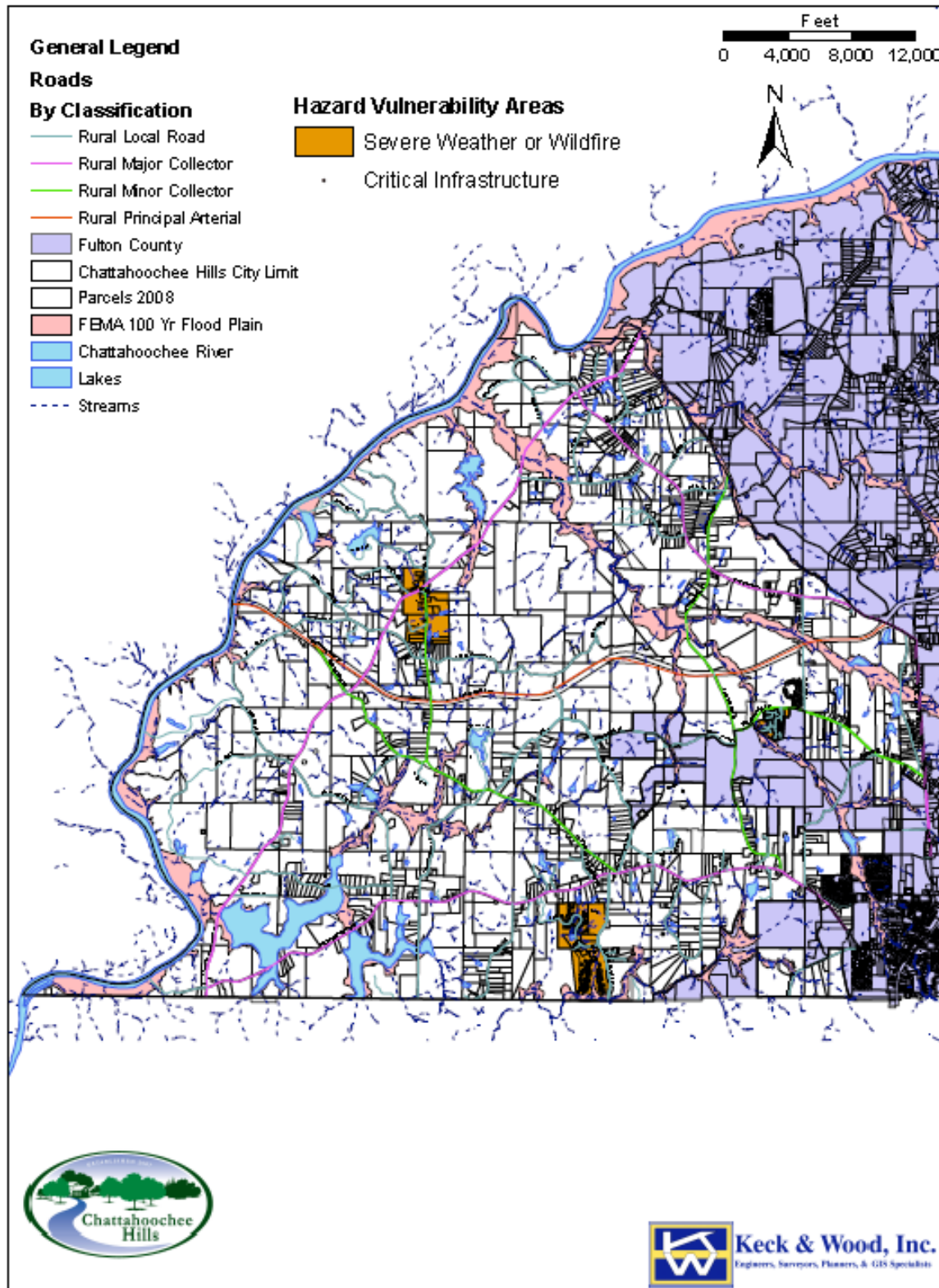
50 Year map of peak Ground Acceleration (2014)



<http://earthquake.usgs.gov/hazards/products/conterminous/2014/2014pga10pct.pdf>

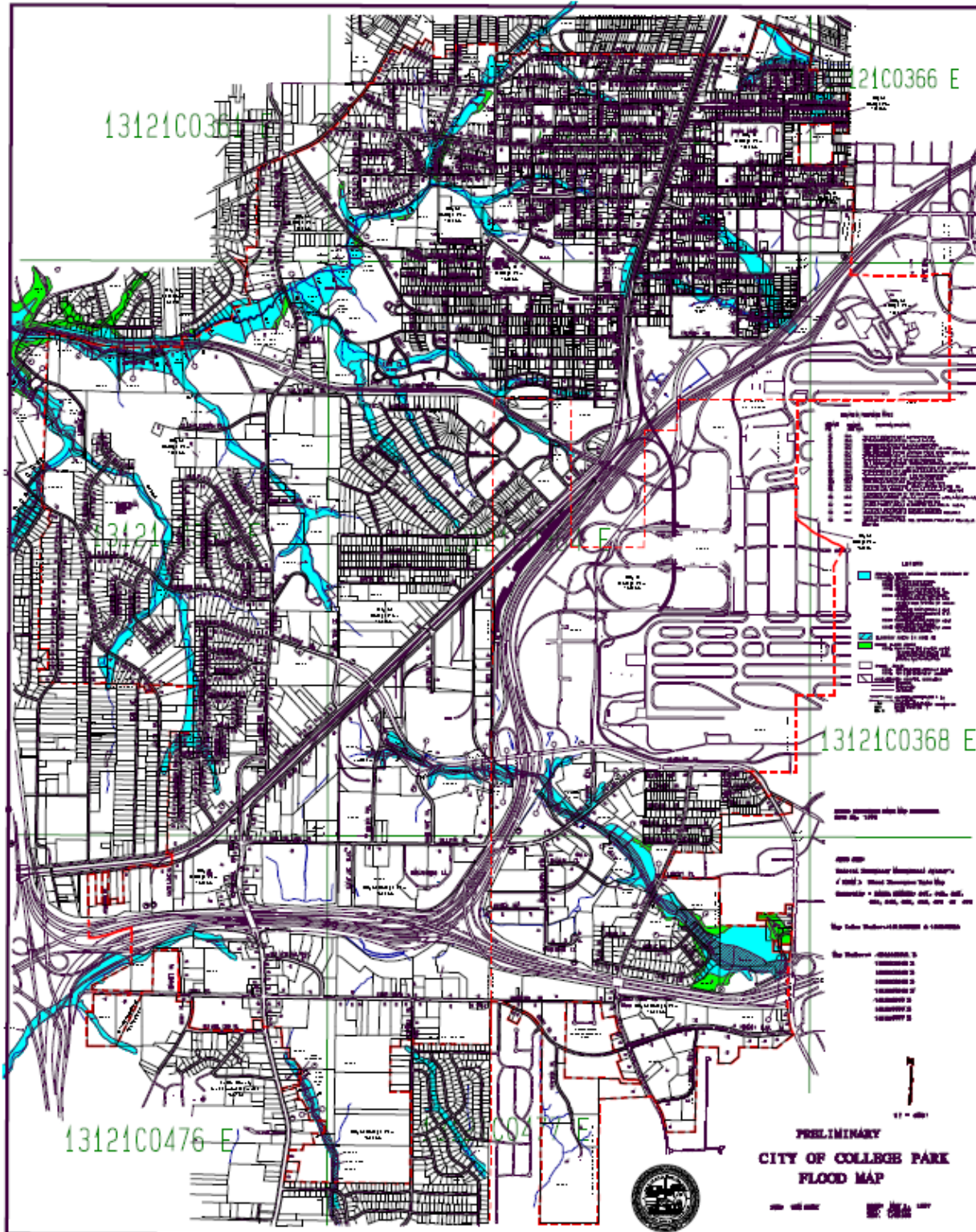


Chattahoochee Hills Multi-Hazard Map (2010 HMP)



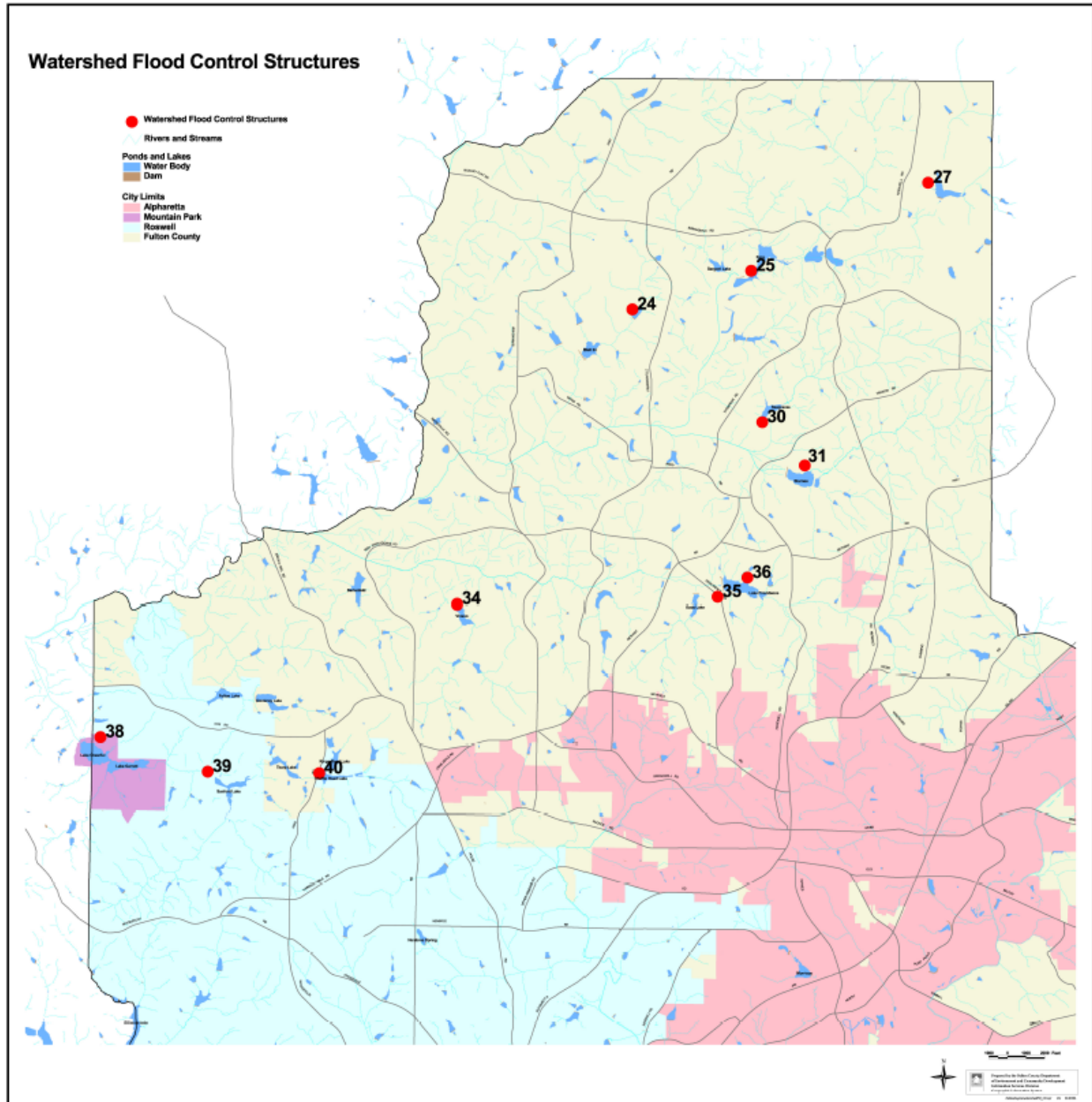


College Park Flood Map (2010 HMP)



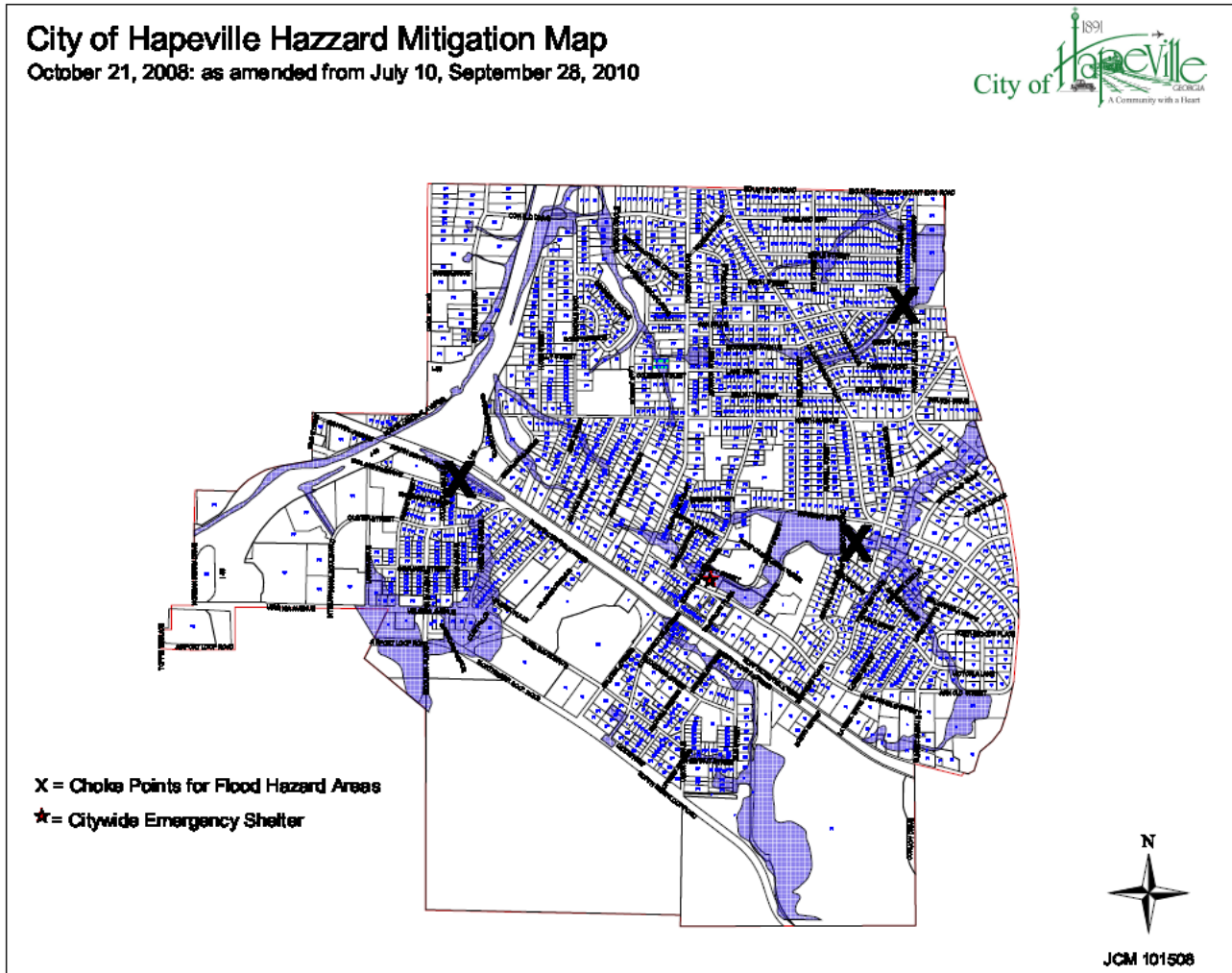


Fulton Watershed Structures (2010 HMP)



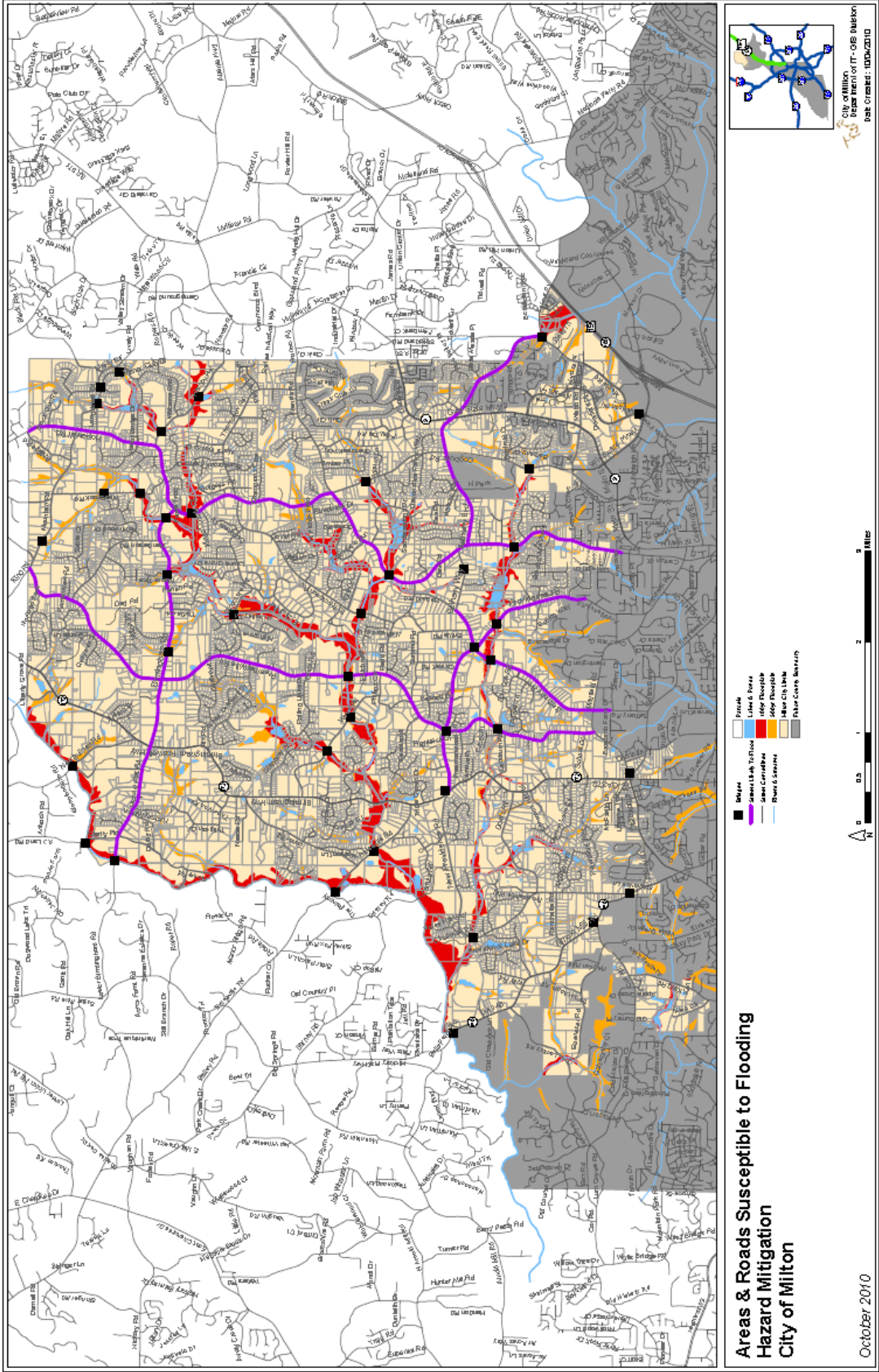


Hapeville Flood Map (2010 HMP)

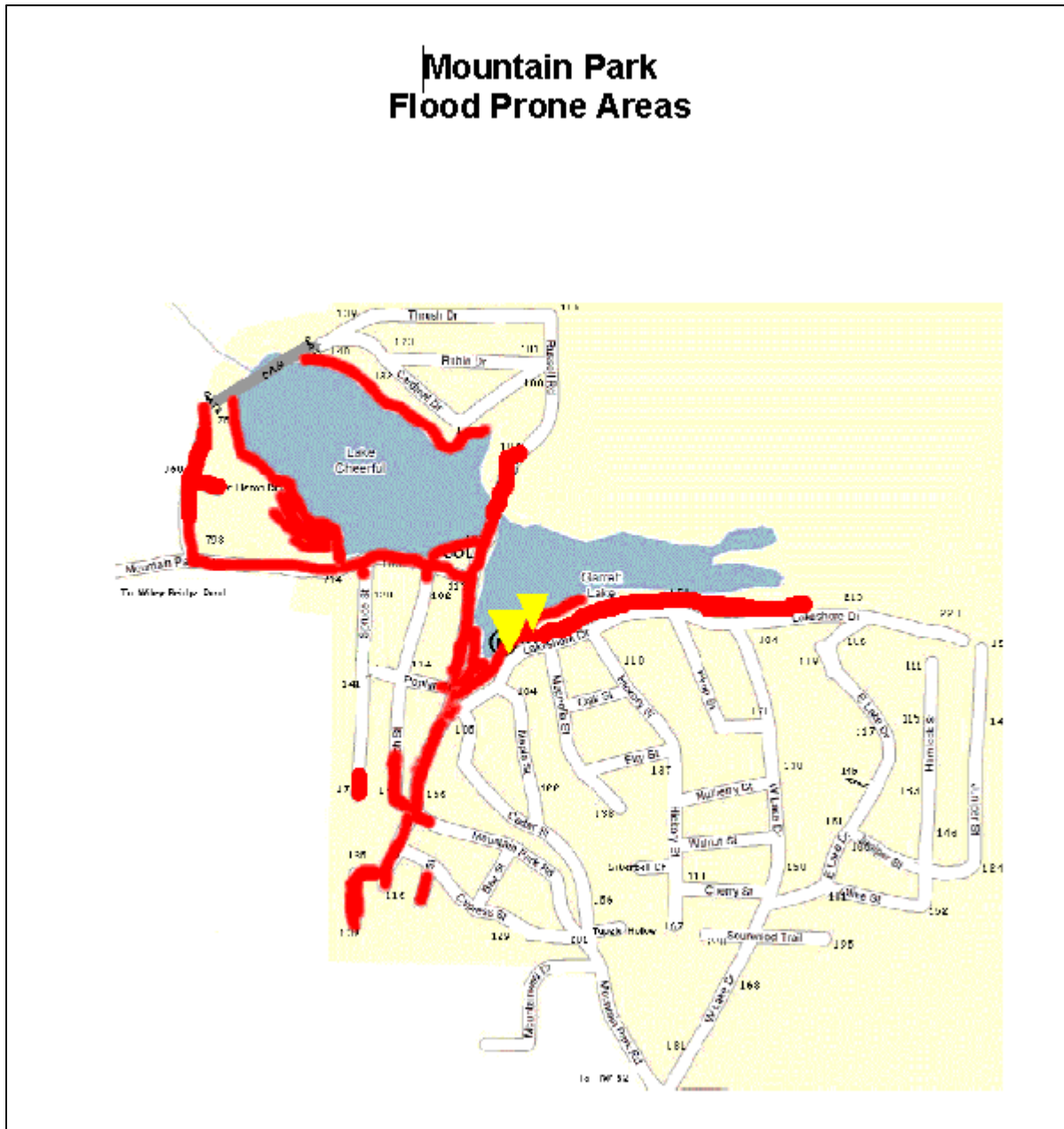




Milton Roads Susceptible to Flooding (2010 HMP)

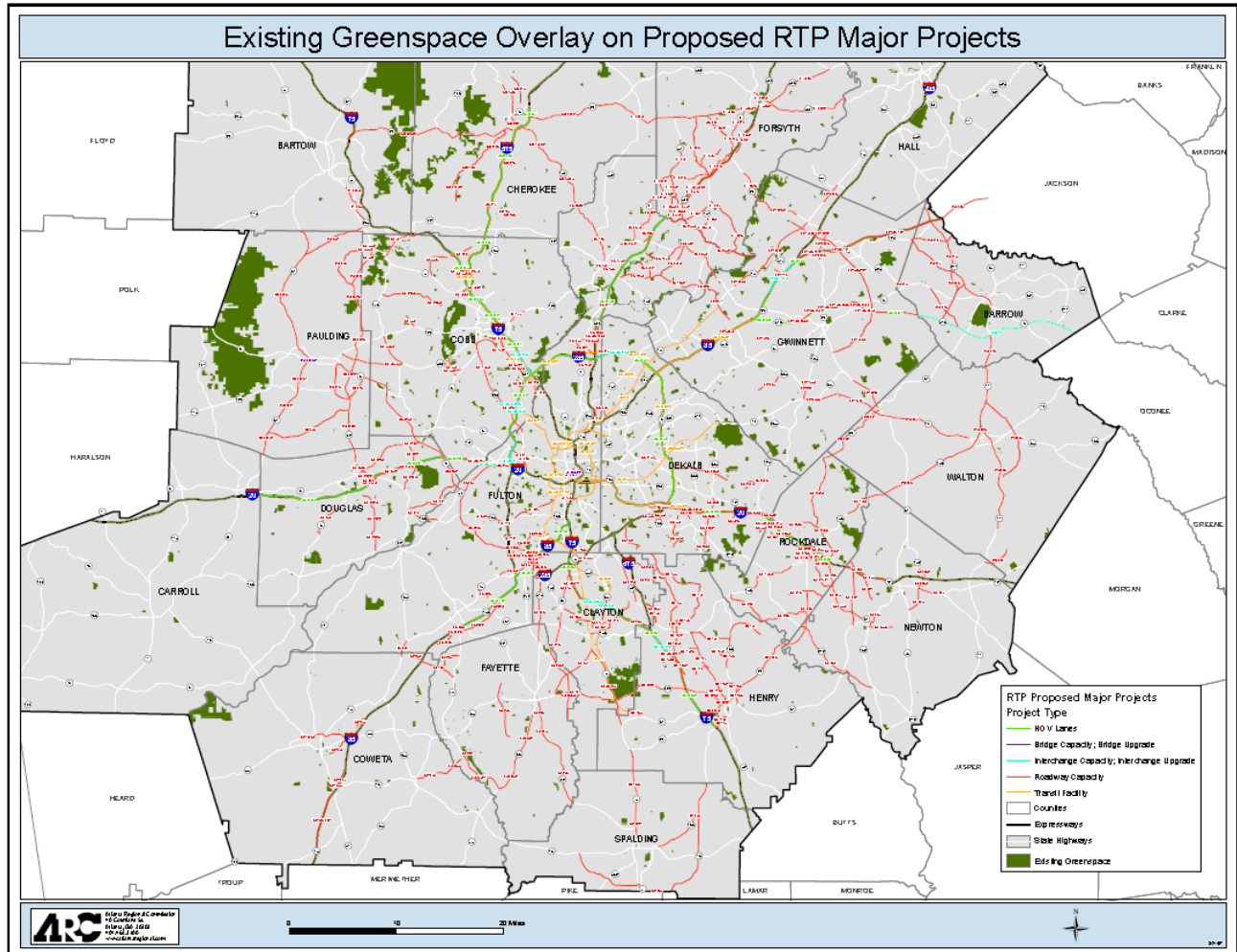


Mountain Park Flood Prone Areas (2010 HMP)



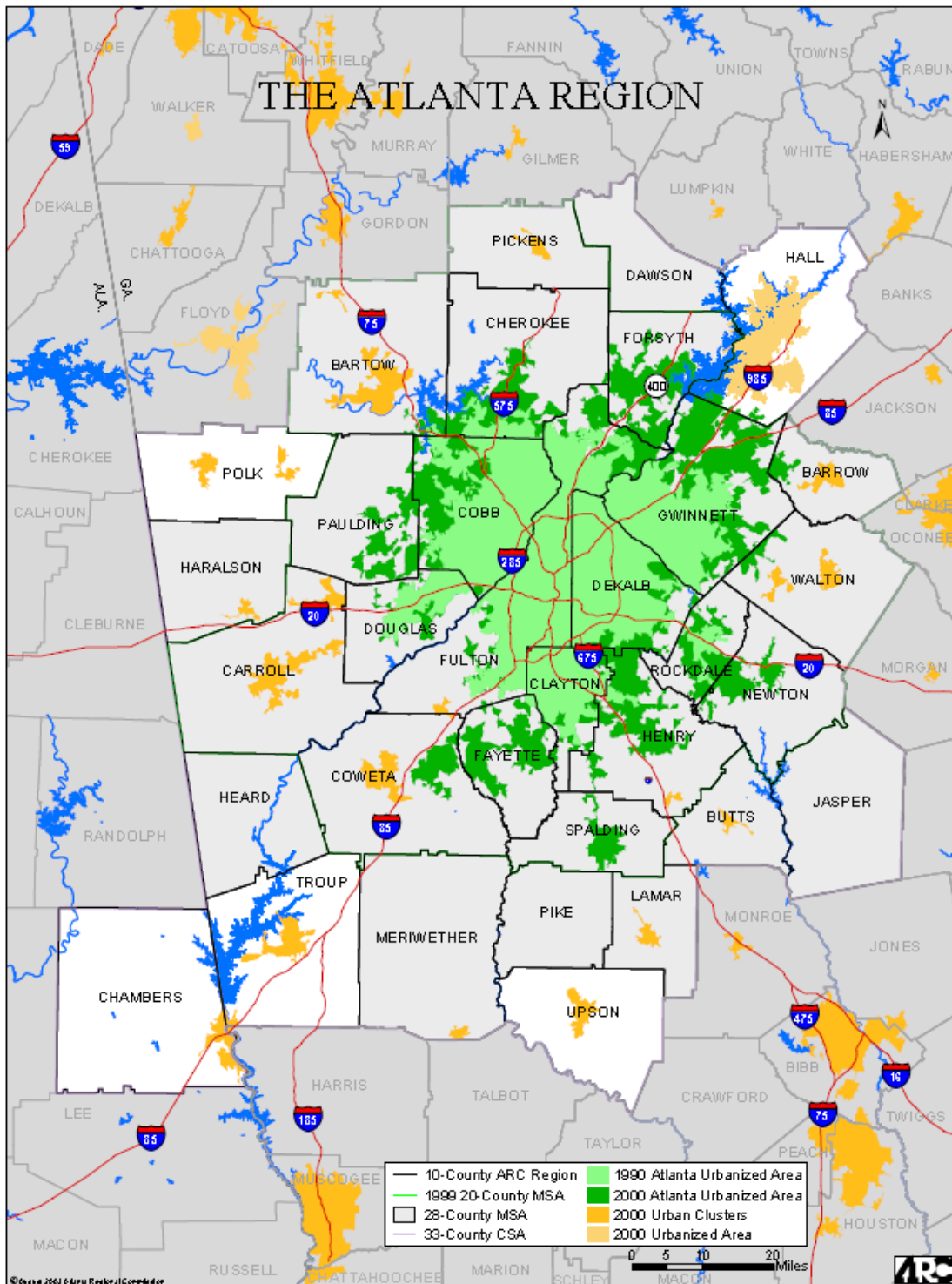


Regional Green Space Map (2010 HMP)





Urbanized Area (2010 HMP)





Appendix E

Critical Facilities List



APPENDIX E CRITICAL FACILITIES LIST

Table E-1. Police Stations in Unincorporated Fulton County

Name	Address	Municipality	Owner	Backup Power
Fulton County Airport Brown Field	3995 Martin Luther King Jr. Drive	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
Wolf Creek Public Safety Training Center	0 Vandiver Road Rear	Fulton County-Unincorporated		
Wolf Creek Public Safety Training Center	3025 Merk Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldredge Road	Fulton County-Unincorporated		
Major Case Division	4701 Fulton Industrial Drive	Fulton County-Unincorporated		
Wolf Creek Public Safety Training Center	3025 Merk Road	Fulton County-Unincorporated		
Old National Police Precinct	5549C Old National Highway	Fulton County-Unincorporated		
David L. Hagin Firing Range	5301 Aldrege Road	Fulton County-Unincorporated		
Old National Offices	5616 Old National Highway	Fulton County-Unincorporated		
Sheriff Fleet Division Operations	1135 Jefferson Street	Atlanta (C)		

Sources: Fulton County

Notes: C=City



Table E-2. Fire Stations in Fulton County

Name	Address	Municipality	Type	Owner	Backup Power
Fire Station #1 Red Oak	5165 Welcome All Rd	Fulton County-Unincorporated	Fire		
Fire Station #17 Cedar Grove	8675 Ridge Road	Fulton County-Unincorporated	Fire		
Fire Station #23	4121 Cascade Road	Atlanta (C)	Fire		
Fire Station #23	4121 Cascade Road	Fulton County-Unincorporated	Fire		
Fire Station #11 Fulton Indust.	4760 Fulton Industrial Blvd	Fulton County-Unincorporated	Fire		
Fire Station #11 Fulton Indust.	4765 Fulton Industrial Blvd	Fulton County-Unincorporated	Fire		
Fire Station #3 Cliftondale	4035 Stonewall Tell Road	Fulton County-Unincorporated	Fire		
Fire Station	6625 Cedar Grove Road	Fulton County-Unincorporated	Fire		
Fire Station #13 Cascade	5890 Plummer Road	Fulton County-Unincorporated	Fire		
Fire Station #13 Cascade	5890 Plummer Road	Fulton County-Unincorporated	Fire		
Fire Station #13 Cascade	5890 Plummer Road	Fulton County-Unincorporated	Fire		
Fire Station #5 Pine Ridge	3175 Bethsaida Road	Fulton County-Unincorporated	Fire		
Fire Station #11 Fulton Indust.	4765 Fulton Industrial Blvd	Fulton County-Unincorporated	Fire		
Fire Station #23	4121 Cascade Road	Fulton County-Unincorporated	Fire		
Fire Station #19 C Brown Airport	3965 Aero Drive	Fulton County-Unincorporated	Fire		
Fire Station #7 Midway	5965 Buffington Road	Fulton County-Unincorporated	Fire		

Sources: Fulton County
Notes: C=City

Table E-3. Multi Agency Coordination Centers in Fulton County

Name	Address	Municipality	Ownership	Backup Power
AFCEMA	130 Peachtree St SW	Atlanta (C)	County	

Sources: Fulton County
Notes: C=City



Table E-4. Medical Facilities in Fulton County

Name	Address	Municipality	Type	Ownership	Backup Power
Atlanta Outpatient Peachtree Dunwoody	5505 Peachtree Dunwoody RD NE	Sandy Springs (C)	Medical		
Atlanta Outpatient Surgery Center	5730 Glenridge Dr NE #400 Atlanta	Sandy Springs (C)	Medical		
Bonterra Nursing Center	2801 Felton Dr East Point	East Point (C)	Medical		
Canterbury Court	3750 Peachtree RD Atlanta	Atlanta (C)	Medical		
Christian City Conv Center	7300 Lester Rd Union City	Union City (C)	Medical		
College Park Health Care Center	1765 Temple Ave Atlanta	College Park (C)	Medical		
Crestview Health & Rehab Center	2800 Springdale Road Atlanta	Atlanta (C)	Medical		
Emory Crawford Long Hospital	550 Peachtree Street N.E. Atlanta	Atlanta (C)	Hospital		
Fairburn Health Care Center, Inc	178 W Campbellton St Fairburn	Fairburn (C)	Medical		
Fox Glove Court Care and Rehab Center	2850 Springdale RD SW Atlanta	Atlanta (C)	Medical		
Golden Livingcenter-Northside	5470 Meridian Mark Rd Atlanta	Sandy Springs (C)	Medical		
Heritage Healthcare of West Atlanta	2645 Whiting Street NW Atlanta	Atlanta (C)	Medical		
Hillside Hospital	690 Courtenay Dr NE Atlanta	Atlanta (C)	Hospital		
Kindred Hospital Atlanta	705 Juniper St NE Atlanta	Atlanta (C)	Hospital		
Legacy Nursing and Rehab Center	460 Auburn Ave NE Atlanta	Atlanta (C)	Medical		
Lenbrook Square	3747 Peachtree RD Atlanta	Atlanta (C)	Medical		
Metropolitan Hospital	3223 Howell Mill Road NW Atlanta	Atlanta (C)	Hospital		
Northside Hospital- Atlanta	1000 Johnson Ferry Road Atlanta	Sandy Springs (C)	Hospital		
Nurse Care of Buckhead	2920 Pharr Court South NW Atlanta	Atlanta (C)	Medical		
Our Lady of Perpetual Help FRE	760 Pollard Boulevard SW Atlanta	Atlanta (C)	Medical		
Promina Health System	1968 Peachtree RD NW Atlanta	Atlanta (C)	Medical		
Reliable Health & Rehab at Lakewood	3301 Lakewood Ave Atlanta	Atlanta (C)	Medical		
Roswell Nursing & Rehab Center	1109 Green Street Roswell	Roswell (C)	Medical		
Sadie G Mays Health & Rehab Center	1821 Anderson Ave NW Atlanta	Atlanta (C)	Medical		
Saint Joseph's Hospital of Atlanta	5665 Peachtree Dunwoody Rd NE	Sandy Springs (C)	Hospital		
Select Specialty Hospital Atlanta	550 Peachtree Street N.E. Atlanta	Atlanta (C)	Hospital		
Signature Healthcare of Buckhead	54 Peachtree Park NE Dr Atlanta	Atlanta (C)	Medical		
Southwest Regional Medical Center	501 Fairburn Rd SW Atlanta	Atlanta (C)	Hospital		



Table E-4. Medical Facilities in Fulton County

Name	Address	Municipality	Type	Ownership	Backup Power
The A.G. Rhodes Home, Inc	350 Boulevard SE Atlanta	Atlanta (C)	Medical		
The William Breman Jewish Home	3150 Howell Mill Rd Atlanta	Atlanta (C)	Medical		
Unihealth Post-Acute Care-Fairburn	7560 Butner Road Fairburn	Fulton County - Unincorporated	Medical		
Wellington Court at St George Village	11350 Woodstock Rd Roswell	Roswell (C)	Medical		
Westminster Commons	560 St Charles Ave NE Atlanta	Atlanta (C)	Medical		
Center for Health & Rehabilitation	265 Boulevard Avenue	Atlanta (C)	Medical		
Central Training Center	425 Langhorn Street	Atlanta (C)	Medical		
Royal Drive Office Suites	3155 Royal Drive Suite 125	Alpharetta (C)	Medical		
College Park Regional Health Center	1920 John Wesley Avenue	College Park (C)	Medical		
West Fulton Mental Health Center	475 Fairburn Road	Atlanta (C)	Medical		
Aldredge Health Center	99 Jessie Hill Jr	Atlanta (C)	Medical		
North Fulton Mental Health Training Ctr	5025 Roswell Road	Sandy Springs (C)	Medical		
Lakewood Health Center	1853 Jonesboro Road	Atlanta (C)	Medical		
Adamsville Regional Health Center	3700 Martin Luther King, Jr. Drive	Atlanta (C)	Medical		
West End Medical Centers Inc	868 York Avenue	Atlanta (C)	Medical		
Neighborhood Union Health Center	186 Sunset Avenue	Atlanta (C)	Medical		
Aldredge Health Center	99 Jessie Hill Jr	Atlanta (C)	Medical		
Aldredge Health Center	99 Jessie Hill Jr	Atlanta (C)	Medical		
Dunbar Teen Clinic	477 Windsor Street, SW, Suite 309	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		
Oak Hill Child, Adol & Fam Ctr	2805 Metropolitan Parkway	Atlanta (C)	Medical		

Sources: Fulton County

Notes: C=City

Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Alpharetta Elementary School	Alpharetta (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Creek View Elementary School	Alpharetta (C)		
Manning Oak Elementary School	Alpharetta (C)		
Webb Bridge Middle School	Alpharetta (C)		
Alpharetta High School	Alpharetta (C)		
Independence High School	Alpharetta (C)		
Amana Academy	Alpharetta (C)		
Fulton Science Academy High School	Alpharetta (C)		
Strayer University- Roswell	Alpharetta (C)		
Adamsville Elementary School	Atlanta (C)		
Atlanta Heights Charter School	Atlanta (C)		
Atlanta Heights Charter School	Atlanta (C)		
Georgia State University	Atlanta (C)		
Interdenominational Theological Center	Atlanta (C)		
John Marshall Law School	Atlanta (C)		
Morehouse College	Atlanta (C)		
Atlanta College of Art	Atlanta (C)		
Bauder College	Atlanta (C)		
Herzing College	Atlanta (C)		
Spelman College	Atlanta (C)		
The Salvation Army Evangeline Booth Coll	Atlanta (C)		
Atlanta Metropolitan College	Atlanta (C)		
Atlanta Technical College	Atlanta (C)		
KIPP West Atlanta Young Scholars Acdmy	Atlanta (C)		
S. Atlanta Law and Social Justice Sch	Atlanta (C)		
S. Atlanta School of Comp Anim and Des	Atlanta (C)		
S. Atlanta School of Health and Med Sci	Atlanta (C)		
Crawford W. Long Middle School	Atlanta (C)		
Martin Luther King Jr. Middle School	Atlanta (C)		
Samuel M Inman Middle School	Atlanta (C)		
Kennedy Middle School	Atlanta (C)		
Parks Middle School	Atlanta (C)		
Sylvan Hills Middle School	Atlanta (C)		
Price Middle School	Atlanta (C)		
Grady High School	Atlanta (C)		
Washington High School Senior Academy	Atlanta (C)		
Douglass High School	Atlanta (C)		
Bunche Middle School	Atlanta (C)		
Mays High School	Atlanta (C)		
Young Middle School	Atlanta (C)		
Brown Middle School	Atlanta (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
APS-Forrest Hills Academy	Atlanta (C)		
Harper-Archer Middle School	Atlanta (C)		
Early College High School at Carver	Atlanta (C)		
School of Health Sciences and Research	Atlanta (C)		
Carver School of Technology	Atlanta (C)		
The School of the Arts at Carver	Atlanta (C)		
Hillside Conant School	Atlanta (C)		
The Best Academy at Benjamin S. Carson	Atlanta (C)		
Therrell School of Engrn, Math, and Sc	Atlanta (C)		
Therrell School of Health and Science	Atlanta (C)		
Therrell School of Law, Gov and Pub Pol	Atlanta (C)		
KIPP Vision	Atlanta (C)		
KIPP Strive Academy	Atlanta (C)		
Coretta Scott King Young Women's MS	Atlanta (C)		
Coretta Scott King Young Women's HS	Atlanta (C)		
Booker T. Washington High School	Atlanta (C)		
Booker T. Washington - Early College	Atlanta (C)		
First Montessori School of Atlanta	Atlanta (C)		
Maria Montessori School of Atlanta	Atlanta (C)		
Boyd Elementary School	Atlanta (C)		
Garden Hills Elementary School	Atlanta (C)		
Towns Elementary School	Atlanta (C)		
Rivers Elementary School	Atlanta (C)		
Kimberly Elementary School	Atlanta (C)		
Hutchinson Elementary School	Atlanta (C)		
Grove Park Elementary School	Atlanta (C)		
Humphries Elementary School	Atlanta (C)		
F. L. Stanton Elementary School	Atlanta (C)		
Woodson Elementary School	Atlanta (C)		
Dunbar Elementary School	Atlanta (C)		
Slater Elementary School	Atlanta (C)		
Miles Elementary School	Atlanta (C)		
Herndon Elementary School	Atlanta (C)		
Thomasville Heights Elementary School	Atlanta (C)		
Benteen Elementary School	Atlanta (C)		
M. A. Jones Elementary School	Atlanta (C)		
Cleveland Elementary School	Atlanta (C)		
Cascade Elementary School	Atlanta (C)		
Scott Elementary School	Atlanta (C)		
Fickett Elementary School	Atlanta (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Peyton Forest Elementary School	Atlanta (C)		
Fain Elementary School	Atlanta (C)		
Continental Colony Elementary School	Atlanta (C)		
Beecher Hills Elementary School	Atlanta (C)		
West Manor Elementary School	Atlanta (C)		
Perkerson Elementary School	Atlanta (C)		
Sarah Smith Elementary School	Atlanta (C)		
Renaissance Montessori	Atlanta (C)		
Heritage Preparatory School	Atlanta (C)		
Sesame Seed Pre-School	Atlanta (C)		
Seeds of Faith Christian Academy	Atlanta (C)		
Black Star Educational Institute	Atlanta (C)		
Hillside Learning Center	Atlanta (C)		
Berean Christian Junior Academy	Atlanta (C)		
Nsoromma School	Atlanta (C)		
The Orion School	Atlanta (C)		
St. Nicholas Orthodox Academy	Atlanta (C)		
Atlanta Preparatory Academy	Atlanta (C)		
Southwest Atlanta Christian Academy	Atlanta (C)		
Atlanta International School	Atlanta (C)		
The Atlanta School	Atlanta (C)		
Atlanta Speech School	Atlanta (C)		
Atlanta New Century School	Atlanta (C)		
K12 International Academy	Atlanta (C)		
Midtown International School, Inc.	Atlanta (C)		
Atlanta Preparatory Academy	Atlanta (C)		
KIPP Atlanta Collegiate	Atlanta (C)		
South Atlanta High School	Atlanta (C)		
North Atlanta High School	Atlanta (C)		
Atlanta Charter Middle School	Atlanta (C)		
Morningside Elementary School	Atlanta (C)		
Venetian Hills Elementary School	Atlanta (C)		
Warren T Jackson Elementary School	Atlanta (C)		
Gideons Elementary School	Atlanta (C)		
Hope-Hill Elementary School	Atlanta (C)		
Connally Elementary School	Atlanta (C)		
Bethune Elementary School	Atlanta (C)		
Centennial Place Elementary School	Atlanta (C)		
Parkside Elementary School	Atlanta (C)		
Heritage Academy Elementary School	Atlanta (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Neighborhood Charter School	Atlanta (C)		
Dobbs Elementary School	Atlanta (C)		
Bolton Academy	Atlanta (C)		
Bazoline E. Usher/Collier Heights ES	Atlanta (C)		
Deerwood Academy	Atlanta (C)		
Finch Elementary School	Atlanta (C)		
The Bridge	Atlanta (C)		
Hillside Conant School	Atlanta (C)		
Wesley International Academy	Atlanta (C)		
The Kindezi School	Atlanta (C)		
Intown Charter Academy	Atlanta (C)		
Briar Vista Elementary School	Atlanta (C)		
Christ the King School	Atlanta (C)		
Pace Academy	Atlanta (C)		
The Westminster Schools	Atlanta (C)		
Nur Academy	Atlanta (C)		
The Galloway School	Atlanta (C)		
The Howard School	Atlanta (C)		
Lovett School	Atlanta (C)		
Dar Un-Noor School	Atlanta (C)		
Gate City Heritage School	Atlanta (C)		
Imhotep Academy	Atlanta (C)		
Worthy's Academy	Atlanta (C)		
Heavenly Institute of Learning	Atlanta (C)		
The Children's School	Atlanta (C)		
Trinity School	Atlanta (C)		
International Preparatory Institute	Atlanta (C)		
Mount Nebo Christian Academy	Atlanta (C)		
Everest College	Atlanta (C)		
Savannah College of Art and Design	Atlanta (C)		
Keller Graduate School of Mgmt	Atlanta (C)		
Richmont Graduate University	Atlanta (C)		
Brown College of Court Reporting	Atlanta (C)		
Anthem College- Atlanta	Atlanta (C)		
American Institute Of Banking	Atlanta (C)		
Gammon Theological Seminary	Atlanta (C)		
Johnson C Smith Theological Seminary	Atlanta (C)		
Beulah Heights Bible College	Atlanta (C)		
Georgia Military College (Ft McPherson)	Atlanta (C)		
Clark Atlanta University	Atlanta (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Georgia Institute of Technology	Atlanta (C)		
Harriet Tubman Elementary School	College Park (C)		
Frank McClarin High School	College Park (C)		
Main Street Academy (Lower Academy)	College Park (C)		
Main Street Academy (Upper Academy)	College Park (C)		
Woodward Academy	College Park (C)		
Brookview Elementary School	East Point (C)		
Conley Hills Elementary School	East Point (C)		
Hamilton E Holmes Elementary School	East Point (C)		
Mount Olive Elementary School	East Point (C)		
Oak Knoll Elementary School	East Point (C)		
Parklane Elementary School	East Point (C)		
Paul D West Middle School	East Point (C)		
Woodland Middle School	East Point (C)		
KIPP South Fulton Academy	East Point (C)		
Tri-Cities High School	East Point (C)		
Point University	East Point (C)		
KIPP South Fulton Academy	East Point (C)		
Campbell Elementary School	Fairburn (C)		
Mary Mcleod Bethume Elementary School	Fulton County - Unincorporated		
Cliffondale Elementary School	Fulton County - Unincorporated		
Feldwood Elementary School	Fulton County - Unincorporated		
Heritage Elementary School	Fulton County - Unincorporated		
Seaborn Lee Elementary School	Fulton County - Unincorporated		
S. L. Lewis Elementary School	Fulton County - Unincorporated		
Love T Nolan Elementary School	Fulton County - Unincorporated		
Oakley Elementary School	Fulton County - Unincorporated		
A. Phillip Randolph Elementary School	Fulton County - Unincorporated		
Renaissance Elementary School	Fulton County - Unincorporated		
Stonewall Tell Elementary School	Fulton County - Unincorporated		
Evoline C. West Elementary School	Fulton County - Unincorporated		
Bear Creek Middle School	Fulton County - Unincorporated		
Camp Creek Middle School	Fulton County - Unincorporated		
Ronald E. McNair Middle School	Fulton County - Unincorporated		
Renaissance Middle School	Fulton County - Unincorporated		
Sandtown Moddle School	Fulton County - Unincorporated		
Benjamin Banneker High School	Fulton County - Unincorporated		
Creekside High School	Fulton County - Unincorporated		
Langston Hughes High School	Fulton County - Unincorporated		
Prime Care Learning Center	Fulton County - Unincorporated		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Randolph Elementary School	Fulton County - Unincorporated		
Heritage Elementary School	Fulton County - Unincorporated		
Westlake High School	Fulton County - Unincorporated		
Hapeville Career Academy	Fulton County - Unincorporated		
Fulton Leadership Academy	Fulton County - Unincorporated		
Hapeville Charter Career Academy	Fulton County - Unincorporated		
Sandtown Middle School	Fulton County - Unincorporated		
Westlake High School	Fulton County - Unincorporated		
Camp Creek Middle School	Fulton County - Unincorporated		
Hapeville Elementary School	Hapeville (C)		
Hapeville Middle School	Hapeville (C)		
Barnwell Elementary School	Johns Creek (C)		
Dolvin Elementary School	Johns Creek (C)		
Findley Oaks Elementary School	Johns Creek (C)		
Lake Windward Elementary School	Johns Creek (C)		
Medlock Bridge Elementary School	Johns Creek (C)		
New Prospect Elementary School	Johns Creek (C)		
Ocee Elementary School	Johns Creek (C)		
Shakerag Elementary School	Johns Creek (C)		
State Bridge Crossing ES	Johns Creek (C)		
Wilson Creek Elementary School	Johns Creek (C)		
Audrey Mill Middle School	Johns Creek (C)		
Haynes Bridge Middle School	Johns Creek (C)		
Holcomb Bridge Middle School	Johns Creek (C)		
River Trail Middle School	Johns Creek (C)		
Taylor Road Middle School	Johns Creek (C)		
Chattahoochee High School	Johns Creek (C)		
Johns Creek High School	Johns Creek (C)		
Northview High School	Johns Creek (C)		
Birmingham Falls Elementary School	Milton (C)		
Cogburn Woods Elementary School	Milton (C)		
Crabapple Crossing Elementary School	Milton (C)		
Summit Hill Elementary School	Milton (C)		
Hopewell Middle School	Milton (C)		
Northwestern Middle School	Milton (C)		
Cambridge High School	Milton (C)		
Milton High School	Milton (C)		
Palmetto Elementary School	Palmetto (C)		
Hembree Springs Elementary School	Roswell (C)		
Hillside Elementary School	Roswell (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
Esther Jackson Elementary School	Roswell (C)		
Mimosa Elementary School	Roswell (C)		
Mountain Park Elementary School	Roswell (C)		
Northwood Elementary School	Roswell (C)		
River Eves Elementary School	Roswell (C)		
Roswell North Elementary School	Roswell (C)		
Sweet Apple Elementary School	Roswell (C)		
Crabapple Middle School	Roswell (C)		
Elkins Pointe Middle School	Roswell (C)		
Centennial High School	Roswell (C)		
St. Francis Day School	Roswell (C)		
Roswell High School	Roswell (C)		
Fulton Sunshine Academy	Roswell (C)		
Crossroads/Second Chance- North	Roswell (C)		
Art Institute of Atlanta	Sandy Springs (C)		
Chamberlain College of Nursing	Sandy Springs (C)		
Dunwoody Springs Elementary School	Sandy Springs (C)		
Heards Ferry Elementary School	Sandy Springs (C)		
High Point Elementary School	Sandy Springs (C)		
Sutton Middle School	Sandy Springs (C)		
Lake Forest Elementary School	Sandy Springs (C)		
Spalding Drive Charter School	Sandy Springs (C)		
Woodland Elementary School	Sandy Springs (C)		
Ridgeview Middle School	Sandy Springs (C)		
Sandy Springs Middle School	Sandy Springs (C)		
North Springs High School	Sandy Springs (C)		
Rivecliff Lutheran School	Sandy Springs (C)		
Cumberland Academy of Georgia	Sandy Springs (C)		
Amit Gar'inim School	Sandy Springs (C)		
Woodland Elementary Charter School	Sandy Springs (C)		
High Point Elementary School	Sandy Springs (C)		
Spalding Drive Charter Elementary School	Sandy Springs (C)		
Heards Ferry Elementary School	Sandy Springs (C)		
St. Jude the Apostle Catholic School	Sandy Springs (C)		
The Schenck School	Sandy Springs (C)		
Holy Innocents Episcopal School	Sandy Springs (C)		
Mount Vernon Presbyterian School	Sandy Springs (C)		
Davis Academy	Sandy Springs (C)		
Holy Spirit Preparatory School	Sandy Springs (C)		
Katherine Jacob Greenfield Hebr	Sandy Springs (C)		



Table E-5. Schools in Fulton County

Name	Municipality	Owner	Backup Power
The Epstein School	Sandy Springs (C)		
Brandon Hall School	Sandy Springs (C)		
Riverwood High School	Sandy Springs (C)		
American InterContinental University	Sandy Springs (C)		
DeVry University Atlanta	Sandy Springs (C)		
Sanford-Brown College Atlanta	Sandy Springs (C)		
Argosy University-Atlanta	Sandy Springs (C)		
University of Phoenix- Sandy Springs	Sandy Springs (C)		
Ridgeview Charter Middle School	Sandy Springs (C)		
American Intercontinental University	Sandy Springs (C)		
Ison Springs Elementary School	Sandy Springs (C)		
Dunwoody Springs Elementary School	Sandy Springs (C)		
Lake Forest Elementary School	Sandy Springs (C)		
North Springs High School	Sandy Springs (C)		
C. H. Gullatt Elementary School	Union City (C)		
Liberty Point Elementary School	Union City (C)		
Little People's Learning Cent	Union City (C)		
Crossroads/Second Chance- South	Union City (C)		

Sources: *Fulton County*
Notes: C=City

Table E-6. Senior Facilities in Fulton County

Name	Address	Municipality	Owner	Backup Power
St. Paul Golden Age Center	501 Grant Street SE	Atlanta (C)	Private	
Harriett G. Darnell Senior Multi-Purpose	677 Fairburn Road	Atlanta (C)	Private	
Dorothy C. Benson Senior Multi-Purpose	6500 Vernon Woods Drive	Sandy Springs (C)	Private	
Roswell Neighborhood Senior Center	1250 Warsaw Road	Roswell (C)	Private	
Dogwood Neighborhood Senior Center	1953 Donald L. Hollowell Pkwy	Atlanta (C)	Private	
Hapeville Neighborhood Senior Center	527 King Arnold Street	Hapeville (C)	Private	
Dorothy C. Benson Senior Multi-Purpose	6500 Vernon Woods Drive	Sandy Springs (C)	Private	
Dorothy C. Benson Senior Multi-Purpose	6500 Vernon Woods Drive	Sandy Springs (C)	Private	
Southeast Neighborhood Senior Center	1650 New Town Circle	Atlanta (C)	Private	
Camp Truitt Neighborhood Senior Center	4320 Herschel Road	College Park (C)	Private	
Auburn Neighborhood Senior Center	300 Edgewood Avenue SE	Atlanta (C)	Private	



Table E-6. Senior Facilities in Fulton County

Name	Address	Municipality	Owner	Backup Power
New Beginnings Neighborhood Senior Ctr	66 Brooks Drive	Fairburn (C)	Private	
New Horizons Neighborhood Senior Center	738 Jos E Boone Blve, NW	Atlanta (C)	Private	
H. J. C. Bowden Senior Multi-Purpose	2885 Church Street	East Point (C)	Private	
Camp Fulton/Truitt 4-H Center	4300 Herschel Road	College Park (C)	Private	

Sources: *Fulton County*

Notes: *C=City*

Table E-7. Airports/Heliports in Fulton County

Name	Municipality	Type	Owner	Backup Power
FCAB Administration Building	Fulton County-Unincorporated			
FCAB Corporate Hangar	Fulton County-Unincorporated			
FCAB Corporate Hangar	Fulton County-Unincorporated			
Airport Complex Bldg A	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Fulton County Airport Brown Field	Fulton County-Unincorporated			
Fulton County Airport Brown Field	Fulton County-Unincorporated			
Airport Complex Bldg B	Fulton County-Unincorporated			
Fulton County Airport Brown Field	Fulton County-Unincorporated			
Fulton County Airport Brown Field	Fulton County-Unincorporated			
Airport Complex Garage	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Airport Complex Bldg C	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			
Airport Complex Storage	Fulton County-Unincorporated			

Sources: *Fulton County*

Notes: *C=City*



Table E-10 Electric Power Generating Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
Georgia Power Company	Atlanta (C)	Power Facility		
City of College Park	College Park (C)	Power Facility		
City of Palmetto Electric Company	Palmetto (C)	Power Facility		
City of Fairburn Electric Company	Fairburn (C)	Power Facility		

Sources: *Fulton County*

Notes: *C = City*

Table E-11. Communication Facilities in Fulton County

Name	Municipality	Owner	Backup Power
191 Peachtree Tower	Atlanta (C)		
Coleman Drive Communication Site	Roswell (C)		
Morgan Falls Communications Site	Sandy Springs (C)		
Morgan Falls Communications Site	Sandy Springs (C)		
Concourse 5 Tower	Sandy Springs (C)		
Jones Bridge Tower 2	Johns Creek (C)		
Palmetto Communication Site	Palmetto (C)		
Fire Station #13 Cascade	Fulton County- Unincorporated		
Jones Bridge Tower 1	Johns Creek (C)		
FCC Registration 1201330	Fulton County- Unincorporated		
Morgan Falls Communications Site	Sandy Springs (C)		
Morgan Falls Communications Site	Sandy Springs (C)		

Sources: *Fulton County*

Notes: *C=City*

Table E-12. Dams in Fulton County

Name	Municipality	Owner	Backup Power
Palmetto Reservoir Dam	Palmetto (C)		
Georgia Baptist Childrens Home Lake Dam	Chattahoochee Hills (C)		
Chester Lake Dam	Chattahoochee Hills (C)		
Green Valley Lake Dam	Fulton County - Unincorporated		
City Lake Dam	Fairburn (C)		
Starke Lake Dam	Palmetto (C)		
Jones Ferry Road Dam	Chattahoochee Hills (C)		
Lake Tahoe Dam	Fulton County - Unincorporated		
Buckner Lake Dam	Fulton County - Unincorporated		
Rico Lake Dam	Chattahoochee Hills (C)		
Overton Lake Dam	Fairburn (C)		
Redding Lake Dam	Fulton County - Unincorporated		
Pritchard Lake Dam	Union City (C)		
Clarence Duncan Park Lake Dam	Fairburn (C)		



*Appendix E
Critical Facilities List*

Name	Municipality	Owner	Backup Power
Newton Lake Dam	Union City (C)		
Cedar Grove Lake Dam	Fulton County - Unincorporated		
Smith Lake Dam	Chattahoochee Hills (C)		
Upper Dixie Lake Dam	Union City (C)		
Lower Dixie Lake Dam	Union City (C)		
Lake Feldwood Dam	Fulton County - Unincorporated		
Bell Telephone Lake Dam	Fulton County - Unincorporated		
Mcclure Lake Dam	Union City (C)		
Horsehead Lake Dam	Fulton County - Unincorporated		
Valley Lakes Dam #2	Union City (C)		
Carmichael Lake Dam	Chattahoochee Hills (C)		
Arnold'S Dam	Fulton County - Unincorporated		
Bear Creek Reservoir	Chattahoochee Hills (C)		
Lake Frances Dam	Fulton County - Unincorporated		
Bullock-Habersham Lower Lake Dam	Fulton County - Unincorporated		
Finnegan Lake Dam	Fulton County - Unincorporated		
Upper Twin Lake Dam	Fulton County - Unincorporated		
Browns Upper Lake Dam	Fulton County - Unincorporated		
Browns Lower Lake Dam	Fulton County - Unincorporated		
Browns Middle West Lake Dam	Fulton County - Unincorporated		
Demooney Lake Dam	Fulton County - Unincorporated		
Anderson Lake Dam	Fulton County - Unincorporated		
Small Brown'S Lake Dam	Fulton County - Unincorporated		
Herschell Lake Dam	East Point (C)		
Bales Lake Dam	Atlanta (C)		
Granite Lake Dam	Fulton County - Unincorporated		
Cowart Lake Dam	Fulton County - Unincorporated		
Upper Cowart Lake Dam	Fulton County - Unincorporated		
Vandivers Lake Dam	Fulton County - Unincorporated		
East Point Reservoir Dam	Atlanta (C)		
Lakewood Fairgrounds Lake Dam	Atlanta (C)		
Upper Wright'S Lake Dam	Fulton County - Unincorporated		
Lower Wright'S Lake Dam	Fulton County - Unincorporated		
Lake Niskey Dam	Atlanta (C)		
Kings Lake Dam	Fulton County - Unincorporated		
Lake Clara Belle Dam	Fulton County - Unincorporated		
Wildwood Lake Dam	Atlanta (C)		
Atlanta Reservoir Dam No. 2	Atlanta (C)		
Atlanta Reservoir Dam No.1	Atlanta (C)		
Rivermeade	Atlanta (C)		
Ibm Lake Dam	Atlanta (C)		



*Appendix E
Critical Facilities List*

Name	Municipality	Owner	Backup Power
Capital City Country Club Lake Dam	Atlanta (C)		
Tera Lee Lake Dam	Sandy Springs (C)		
Powers Lake Dam	Sandy Springs (C)		
Peppertree Lake Dam	Sandy Springs (C)		
Glenlake Dam #2	Sandy Springs (C)		
Wildercliff	Sandy Springs (C)		
Orkin Lake Dam	Sandy Springs (C)		
Spalding Lake Dam	Sandy Springs (C)		
Dunwoody Country Club Lake Dam	Sandy Springs (C)		
Northridge Lake Dam	Sandy Springs (C)		
Carriage Lake Dam	Roswell (C)		
Huntington Lake Dam	Sandy Springs (C)		
Hartrampf Lake Dam	Sandy Springs (C)		
Glen Lake Dam	Johns Creek (C)		
Willow Lake Dam	Roswell (C)		
Cherokee Country Club Lake Dam No. 3 (West)	Sandy Springs (C)		
Cherokee Country Club Lake Dam # 1 (East)	Sandy Springs (C)		
Cherokee Country Club Lake Dam # 2 Middle Lake	Sandy Springs (C)		
Huntcliff Lake Dam	Sandy Springs (C)		
Martin'S Landing Lake Dam	Roswell (C)		
Upper Chatahoochee Nature Center Lake Dam	Roswell (C)		
Lower Nesbit Ferry Lake Dam	Roswell (C)		
Fulton Reservoir #2	Johns Creek (C)		
Atlanta - Fulton Cwcr Reservoir Dam	Johns Creek (C)		
Lake Forest Dam	Roswell (C)		
Everett's Dam	Johns Creek (C)		
Kimberly Clark Lake Dam	Roswell (C)		
Willow Springs Lake Dam	Roswell (C)		
Pine Grove Road Lake Dam	Roswell (C)		
Medlock Lake Dam	Johns Creek (C)		
Lake Charles Dam	Roswell (C)		
Gilham'S Lake Dam	Roswell (C)		
Craighead'S Dam	Johns Creek (C)		
Herman Miller Lower Lake Dam	Roswell (C)		
Daniels & Thomaselli Lake Dam	Johns Creek (C)		
Dunmoor Lake Dam	Alpharetta (C)		
Stonegate Lake Dam	Roswell (C)		
Technology Park Pond B Lake Dam	Johns Creek (C)		
Technology Park Pond C	Johns Creek (C)		
Spruill Lake Land Lot 605 Dam	Roswell (C)		



Appendix E
Critical Facilities List

Name	Municipality	Owner	Backup Power
Morrison Dam	Alpharetta (C)		
Essex Properties South Lake Dam	Alpharetta (C)		
Essex Properties North	Alpharetta (C)		
Gulfstream Development Corp. Lake Dam	Johns Creek (C)		
Brookfield West Lake Dam	Roswell (C)		
George Parsons Lake Dam	Alpharetta (C)		
Little River Ws Str # 39	Roswell (C)		
Little River Ws Str # 40	Roswell (C)		
Kings Road Lake Dam	Roswell (C)		
Irene Lake Dam	Milton (C)		
Little River Ws Str. No.38	Milton (C)		
Dominey Lake Dam	Roswell (C)		
Adams Lake Dam	Roswell (C)		
Turner Lake Dam	Milton (C)		
Little River Ws Str #34	Milton (C)		
Little River Ws Str #35	Milton (C)		
Little River Ws Str #36	Milton (C)		
C.G. Bartenfeld Lake Dam	Milton (C)		
Bartenfeld Lake Dam	Milton (C)		
Little River Ws Str #31	Milton (C)		
Little River Ws #30	Milton (C)		
Crooked Creek Lake Dam	Milton (C)		
Frehejan Farms Lake Dam	Milton (C)		
Little River Ws Str #24	Milton (C)		
Hopewell Downs Golf Club	Milton (C)		
Little River Ws Str #25	Milton (C)		
Sargent Dam	Milton (C)		
Little River Ws # 27	Milton (C)		

Sources: Fulton County

Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
3189 GT Georgia Tech - USID57734	Atlanta (C)		
3M Atlanta	Atlanta (C)		
AAA Cooper Transportation	Fulton County- Unincorporated		
ABL Technic	Fairburn (C)		
Accu-Tech	Roswell (C)		
ADP, Inc.	Alpharetta (C)		
Advanced Design & Packaging	Fulton County- Unincorporated		
Advanced Disposal Services, Inc.	Fulton County- Unincorporated		
Airgas Dry ICE	Fulton County- Unincorporated		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
AIRGAS USA, LLC.	Atlanta (C)		
AIRGAS USA, LLC.	Atlanta (C)		
Alchem Chemical Company	Fulton County- Unincorporated		
Alcon Laboratories- John Creek Manufactur	Johns Creek (C)		
Alcon Laboratories John Creek Campus	Johns Creek (C)		
Allied City Fuel Storage Facility	Atlanta (C)		
Allied North Cargo Fuel Storage Facility	Atlanta (C)		
Allied Waste Services of Atlanta	Atlanta (C)		
Alpharetta Transfer Station (Waste Manag	Alpharetta (C)		
American Water	Fulton County- Unincorporated		
Americold Lakewood	Atlanta (C)		
Americold	Atlanta (C)		
Aramark Uniform and Career Apparel, Inc.	Atlanta (C)		
Argos Cement LLC. (Atlanta Plant)	Atlanta (C)		
Armour Drive Concrete Plant	Atlanta (C)		
Ashland Consumer Market- Atlanta Direct	College Park (C)		
Ashland, Inc.	College Park (C)		
Ashley Home Store Distribution Center	Union City (C)		
AT & T CORP - R05A8	Atlanta (C)		
AT&T- GAB200	Alpharetta (C)		
AT&T- GAB460	Alpharetta (C)		
AT&T- GAB590	Alpharetta (C)		
AT&T- GAC130	Hapeville (C)		
AT&T - GA0868	Atlanta (C)		
AT&T BU Q055/130219/1 - GAA390	Atlanta (C)		
Fulton County Water Treatment PI	Johns Creek (C)		
Atlanta Del Monte (Saddle Creek Corporat	Union City (C)		
Atlanta Distrubution Center- Robert Bosc	Fulton County- Unincorporated		
Atlanta Distrubution Terminal	Atlanta (C)		
Atlanta Eagles	Fulton County- Unincorporated		
Atlanta Equipment Fulfillment Center (Co	Fulton County- Unincorporated		
Atlanta Marketplace DC	Union City (C)		
Atlanta Network Distribution (US Postal	Atlanta (C)		
Atlanta Network Distribution Center	Atlanta (C)		
Atlanta P&DC (US Postal Service)	Atlanta (C)		
Atlanta Packaging Center	Fulton County- Unincorporated		
Atlanta Parts Warehouse	Union City (C)		
Atlanta Preprint	Fulton County- Unincorporated		
Atlanta Regional Distribution Center	College Park (C)		
Atlanta South Hauling	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Atlanta Switch- Qwest d/b/a Centurylink	Atlanta (C)		
Atlanta Switch	Atlanta (C)		
Atlanta TRANSFLO Terminal	Atlanta (C)		
Atlanta Works (Chemtrade Solutions LLC)	East Point (C)		
Atlantic Chemical & Equipment Company	Atlanta (C)		
Atlantic Chemical & Equipment Company	Atlanta (C)		
Atlas Logistics (Atlas Cold Storage)	East Point (C)		
Auto-Chlor System, LLC	Hapeville (C)		
Automatic Data Processing Inc Data Cente	Alpharetta (C)		
AutoNation Ford Lincoln of Union City	Union City (C)		
Averitt Express Fulton GA	Fulton County- Unincorporated		
Avis Rent A Car System, LLC - Bobby Brow	East Point (C)		
Avis Rent A Car System, LLC - Courtland	Atlanta (C)		
Avis Rent A Car System, LLC - Hartsfield	College Park (C)		
B&B Oil Company	East Point (C)		
Bailey Street Bakery	Atlanta (C)		
Bank of America - Midtown Center	Atlanta (C)		
Bank of America - Southside Operations C	Fulton County- Unincorporated		
Bank of America -Alpharetta	Alpharetta (C)		
Bay Valley Foods, LLC - Atlanta	Fulton County- Unincorporated		
BellSouth- Telecommunication F1145	Atlanta (C)		
BellSouth - F1502	East Point (C)		
BellSouth - F1522	Atlanta (C)		
BellSouth - F1522	Atlanta (C)		
BellSouth - FAN81	Roswell (C)		
BellSouth - FAN81	Roswell (C)		
BellSouth - FK621	Atlanta (C)		
BellSouth - Telecommunications F1308	Atlanta (C)		
BellSouth - Telecommunications F1434	Fairburn (C)		
BellSouth - Telecommunications F1458	Palmetto (C)		
BellSouth - Telecommunications F1502	East Point (C)		
BellSouth - Telecommunications F1507	Atlanta (C)		
BellSouth - Telecommunications F5102	Atlanta (C)		
BellSouth - Telecommunications F5104	Atlanta (C)		
BellSouth - Telecommunications F5112	Atlanta (C)		
BellSouth - Telecommunications F5142	Atlanta (C)		
BellSouth - Telecommunications F5401	Sandy Springs (C)		
BellSouth - Telecommunications F5402	Atlanta (C)		
BellSouth - Telecommunications F5572	Roswell (C)		
BellSouth - Telecommunications F5573	Alpharetta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
BellSouth - Telecommunications FAN81	Roswell (C)		
BellSouth - Telecommunications FK202	East Point (C)		
BellSouth - Telecommunications GAF192	Atlanta (C)		
BellSouth - Telecommunications GAF193	Atlanta (C)		
BellSouth - Telecommunications R02G4	Atlanta (C)		
BellSouth Telecommunications- F1220	Atlanta (C)		
BellSouth Telecommunications - F1307	Atlanta (C)		
Big Creek Water Reclamation Plant Veolia	Roswell (C)		
BJ's Wholesale Club (0152)	East Point (C)		
Blue Beacon Truck Wash of Atlanta West	Atlanta (C)		
Blue Beacon Truck Wash of Atlanta West	Atlanta (C)		
Bonsal American, Inc.	Fulton County- Unincorporated		
Bottling Group, LLC	Atlanta (C)		
Boulevard Avenue Regulator (City of Atla	Atlanta (C)		
Boulevard Cold Storage	Atlanta (C)		
Boyd Corporation Fairburn	Fairburn (C)		
BP Products North America - Atlanta Term	Atlanta (C)		
Braddock Metallurgical	Atlanta (C)		
BRE-COH GA LLC	Alpharetta (C)		
Brenntag Mid-South, Inc.	East Point (C)		
Bronner Brothers, Inc.	Fulton County- Unincorporated		
Buckhead Beef Atlanta	College Park (C)		
Burris Logistics-Atlanta	Fulton County- Unincorporated		
Buzzi Unicem USA College Park Distributi	College Park (C)		
Buzzi Unicem USA, Mina Distribution Term	Atlanta (C)		
C & S Wholesale, Inc.	Atlanta (C)		
C & S Wholesale, Inc.	Atlanta (C)		
Camp Creek Wastewater Treatment	Fulton County- Unincorporated		
Carboline Company - Atlanta Warehouse	Fulton County- Unincorporated		
CarMax #7298 Roswell	Roswell (C)		
Carolina Logistics Services LLC	Fulton County- Unincorporated		
Caterpillar Logistics, Inc.- Atlanta Dis	Union City (C)		
Centennial Farms Dairy	Atlanta (C)		
Chadwick Road Landfill	Milton (C)		
Chattahoochee-Peachtree Pumping Station	Atlanta (C)		
Chattahoochee Raw Water Intake	Atlanta (C)		
Chattahoochee Water Treatment Plant	Atlanta (C)		
Christine Verre	Atlanta (C)		
Citgo Atlanta Lubricants	Atlanta (C)		
Clark Atlanta University	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Clear Creek CSO Facility	Atlanta (C)		
Clorox	Fairburn (C)		
Coca-Cola Properties, North Yards Warehouse	Atlanta (C)		
Coca-Cola Properties, World of Coca-Cola	Atlanta (C)		
Coca-Cola Refreshments USA, Inc - South	Fulton County- Unincorporated		
Coca-Cola Refreshments USA, Inc - South	Fulton County- Unincorporated		
Coca-Cola Refreshments USA, Inc	College Park (C)		
Coca-Cola Refreshments USA, Inc.--Atlant	Fulton County- Unincorporated		
Coca-Cola Refreshments USA, Inc. - Atlan	Atlanta (C)		
Coca-Cola Refreshments USA, Inc.	Sandy Springs (C)		
College Park Corrugated Plant	College Park (C)		
College Park Distribution Terminal	College Park (C)		
College Park Terminal	College Park (C)		
Colonial Pipeline Company Sanctuary Park	Alpharetta (C)		
Comcast of Georgia/Michigan, L.P. (7085	Fairburn (C)		
Comcast of Georgia/Virginia	Atlanta (C)		
Comcast of Georgia/Virginia, Inc (3205 S	East Point (C)		
Comcast of Georgia/Virginia, Inc. (3128	East Point (C)		
Comcast of Georgia/Virginia, Inc. (4700	Johns Creek (C)		
Comcast of Georgia/Virginia, Inc. (4700	Alpharetta (C)		
Comcast of Georgia/Virginia, Inc.	Atlanta (C)		
Comcast of Georgia/Virginia, Inc.	Johns Creek (C)		
Comcast of Georgia/Virginia, Inc.	Milton (C)		
Con-way Freight-NAT	Atlanta (C)		
Confederate Avenue Regulator	Atlanta (C)		
ConGlobal Industries- Atlanta	Atlanta (C)		
Costco Wholesale (188)	Atlanta (C)		
Costco Wholesale (262)	Fulton County- Unincorporated		
Costco Wholesale (263)	Fulton County- Unincorporated		
Costco Wholesale (743)	Alpharetta (C)		
Country Home Bakers Inc. Subsidiary of J	Atlanta (C)		
Covidien Sales, LLC Atlanta Distribution	Atlanta (C)		
Cox CTECH	Sandy Springs (C)		
Cox Enterprises Flight Operations	Atlanta (C)		
Crestview Health & Rehabilitation Center	East Point (C)		
CROWN CASTLE	Sandy Springs (C)		
CROWN CASTLE (Alpharetta)	Milton (C)		
CROWN CASTLE (BBDBD)	Sandy Springs (C)		
CROWN CASTLE (BBS ATL071)	Milton (C)		
Crown Castle (Bell Road)	Johns Creek (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
CROWN CASTLE (BRH ATL095)	Atlanta (C)		
CROWN CASTLE (BVV-2 ATL 103)	Milton (C)		
CROWN CASTLE (DG ATL)	Atlanta (C)		
CROWN CASTLE (Food Mart)	Atlanta (C)		
CROWN CASTLE (HAM ATL)	Atlanta (C)		
CROWN CASTLE (I-75/85 SOUTH)	Atlanta (C)		
CROWN CASTLE (Lexington ATL)	East Point (C)		
CROWN CASTLE (PPD-A)	Atlanta (C)		
CROWN CASTLE (RW-G ATL)	Roswell (C)		
Crown Castle	Atlanta (C)		
CROWN CASTLE	Atlanta (C)		
CROWN CASTLE	Fulton County- Unincorporated		
CROWN CASTLE	Atlanta (C)		
CROWN CASTLE	Atlanta (C)		
CROWN CASTLE	Roswell (C)		
CROWN CASTLE	Atlanta (C)		
CROWN CASTLE	Atlanta (C)		
CSX Intermodal Terminals, Inc. Atlanta -	Atlanta (C)		
CSX Intermodal Terminals, Inc. Fairburn	Fairburn (C)		
CSXT Atlanta Hulsey Yard	Atlanta (C)		
CSXT Atlanta Redi Center Bldg 1	Atlanta (C)		
CSXT Atlanta, GA Tilford	Atlanta (C)		
Cummins Inc. - Atlanta Regional Distribu	College Park (C)		
Custer Avenue CSO	Atlanta (C)		
Dell Inc. (Atlanta Dell SecureWorks- USA	Sandy Springs (C)		
DSC/Kellogg Atlanta NSD	Union City (C)		
Duke Drive Technology Center	Alpharetta (C)		
East Point Property (Southern Wood Piedm	East Point (C)		
East Point Transfer Station	East Point (C)		
Electrolux (Kenco) Fairburn	Fairburn (C)		
Emory Johns Creek Hospital	Johns Creek (C)		
Emory University Grady Campus	Atlanta (C)		
Emory University Hospital Midtown	Atlanta (C)		
EMS Maintenance Facility	Atlanta (C)		
Ennis Flint	Atlanta (C)		
Enterprise Leasing Company of GA	College Park (C)		
Enterprise Leasing Company of Georgia, L	Atlanta (C)		
Enterprise RAC HJAIA	College Park (C)		
Enterprise Rent-A-Car - Piedmont Rd	Atlanta (C)		
Environmental Remedies, LLC	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Equinix LLC	Atlanta (C)		
Equinix LLC	Atlanta (C)		
ES3 Fairburn (Peach Tree Logistics LLC)	Fairburn (C)		
EXIDE Technologies	Milton (C)		
ExpressJet Airlines - ATL	College Park (C)		
Fairburn- Fairburn Ready Mix, Inc.	Fairburn (C)		
Fairburn Distribution Center (Excel, Inc	Fairburn (C)		
Fairburn Distribution Center (TOTO USA I	Fairburn (C)		
Fastenal Company	Fulton County- Unincorporated		
Federal Home Loan Bank of Atlanta	Atlanta (C)		
FedEx Express - ATLR	Hapeville (C)		
Flash Foods # 293	Palmetto (C)		
Flint Group North America Atlanta GA	Fulton County- Unincorporated		
Fort McPherson	Atlanta (C)		
Fulton I-85 NB Exit 61	Fairburn (C)		
G & K SERVICES - Atlanta (DPC 054)	Fulton County- Unincorporated		
G & K Services	Fulton County- Unincorporated		
GA3140 CLK CLARK HOWELL GSM - USID57691	College Park (C)		
GA4016 BELLSOUTH TROWBRIDGE - USID5839	Sandy Springs (C)		
Gannett Offset Atlanta/Gannett Publishin	Fulton County- Unincorporated		
Garratt-Callahan Company	Fulton County- Unincorporated		
Gateway Transfer Station	Fulton County- Unincorporated		
GE Capital Retail Finance- Alpharetta	Alpharetta (C)		
Geiger International, Inc	Fulton County- Unincorporated		
Geiger International, Inc.	Fulton County- Unincorporated		
General Electric Company	Alpharetta (C)		
Geo. H Green Oil, Inc	Fairburn (C)		
Georgia-Pacific Center	Atlanta (C)		
Georgia Coatings Division	Fulton County- Unincorporated		
Georgia Gas Distributors, Inc., Atlanta	Atlanta (C)		
Georgia Pavement Products, Inc.	Fulton County- Unincorporated		
Georgia Power- Morgan Falls Hydro	Sandy Springs (C)		
Georgia Power Company - Backup Control C	Atlanta (C)		
Georgia Power Company - Central Operatin	Atlanta (C)		
Georgia Power Company - Corporate Headqu	Atlanta (C)		
Georgia Power Company - Network Undergro	Atlanta (C)		
Georgia Power Company - Oakley Industria	Fairburn (C)		
Georgia Power Company - Wills Road Opera	Roswell (C)		
Georgia State University	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Glenwood Concrete Plant (Argo Ready Mix)	Atlanta (C)		
Grady Hospital Steam Plant	Atlanta (C)		
Grady Memorial Hospital	Atlanta (C)		
Graham Packaging Company, L.P.	Atlanta (C)		
Graham Packaging Company. L.P. (Graham P	Fulton County- Unincorporated		
Greens Ferry CSO (City of Atlanta)	Atlanta (C)		
Greyhound Lines, Inc. - #410026	Atlanta (C)		
Guardian Building Products Distribution	Atlanta (C)		
Halperns Halperns' Steak and Saefood	Fulton County- Unincorporated		
HD Supply Construction Supply, Ltd (GA00	Atlanta (C)		
HD Supply Construction Supply, Ltd (WC29	Atlanta (C)		
HD Supply Crown Bolt, LLC. (GA010-1235)	Atlanta (C)		
Hemphill Water Treatment Plant	Atlanta (C)		
Hemphill Water Treatment Plant	Atlanta (C)		
Hennessy Jaguar	Atlanta (C)		
Hennessy Porsche	Roswell (C)		
Heritage-Crystal Clean Atlanta Distribut	Fulton County- Unincorporated		
Heritage Propane	Fairburn (C)		
Hertz Corporation-Atlanta RENTAL CORP /	Atlanta (C)		
Hewlett Packard- ALF01	Alpharetta (C)		
Hewlett Packard - ATC01	Alpharetta (C)		
Hill Manufacturing Co., Inc.	Atlanta (C)		
Honda Carland	Roswell (C)		
Honeywell Enraf Americas, Inc.	Roswell (C)		
IBM Barfield Rd.	Sandy Springs (C)		
IBM Riveredge * Vacated Bld. in June 201	Sandy Springs (C)		
Industrial Metals Surplus	Atlanta (C)		
Integrated Environmental Service (IES)-	Atlanta (C)		
Intonu, LLC	Fulton County- Unincorporated		
IVC Atlanta - Georgia	Fulton County- Unincorporated		
J.M. Fry Inks - Georgia	Fulton County- Unincorporated		
Jackson Acura	Roswell (C)		
Johns Creek Environmental Campus	Johns Creek (C)		
Kapstone Container Corporation	Fulton County- Unincorporated		
Kapstone Container Corporation	College Park (C)		
Kellogg Snacks Union City Distribution C	Union City (C)		
Keywell LLC	Fulton County- Unincorporated		
Keywell Metals LLC	Fulton County- Unincorporated		
Kimball Bridge Holdings, LLC	Alpharetta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Kimberly-Clark Corporation- Roswell Camp	Roswell (C)		
Koch Industries Aviation, Atlanta	Fulton County- Unincorporated		
Kor-Chem Inc.	Fulton County- Unincorporated		
Kor-Chem, Inc.	Fulton County- Unincorporated		
Lakeside/Hillside * Vacated Bld in June	Atlanta (C)		
Landmark Aviation	College Park (C)		
Leggett & Platt Incorporated - Masterack	Atlanta (C)		
Level 3 Communications- Atlanta (ATLCGA0	Atlanta (C)		
Level 3 Communications- Atlanta (ATLDAUY	Atlanta (C)		
Level 3 Communications- Atlanta (ATLNGAH	Atlanta (C)		
Level 3 Communications- Atlanta (ATLNGAM	Atlanta (C)		
Level 3 Communications- Atlanta (ATLNGAM	Atlanta (C)		
Level 3 Communications - Atlanta	Atlanta (C)		
Level 3 Communications - Atlanta (ATLNGA	Atlanta (C)		
Level 3 Communications -College Park (CL	College Park (C)		
LexisNexis (Main Georgia Campus)	Alpharetta (C)		
Linde Gas North America, LLC (Union City	Fulton County- Unincorporated		
Lowe's Coastal Holding Facility (Palmett	Palmetto (C)		
LOWE'S OF ALPHARETTA, GA (#615)	Alpharetta (C)		
Main Georgia Campus	Alpharetta (C)		
MARTA Armour Yard	Atlanta (C)		
MARTA Arts Center Station (NNA)	Atlanta (C)		
MARTA Arts Center Tunnel (N430)	Atlanta (C)		
MARTA Ashby Street Station (WWA)	Atlanta (C)		
MARTA Bankhead Station (WPB)	Atlanta (C)		
MARTA Brady Mobility Bus Maintenance	Atlanta (C)		
MARTA Browns Mill Bus Maintenance	Atlanta (C)		
MARTA Civic Center Station (NNC)	Atlanta (C)		
MARTA College Park Station (SSC)	College Park (C)		
MARTA Dome-GWCC Station	Atlanta (C)		
MARTA East Point Station (SSE)	East Point (C)		
MARTA Five Points Station (NFF)	Atlanta (C)		
MARTA Garnett Station (SSG)	Atlanta (C)		
MARTA Georgia State Station (EEU)	Atlanta (C)		
MARTA Hamilton Bus Maintenance	Atlanta (C)		
MARTA Holmes Station (WWH)	Atlanta (C)		
MARTA Inman Park Station (EEM)	Atlanta (C)		
MARTA King Memorial Station (EEG)	Atlanta (C)		
MARTA Lakewood Station (SSL)	Atlanta (C)		
MARTA Lenox Station (NNL)	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
MARTA Lindbergh Station (NNP)	Atlanta (C)		
MARTA Midtown Station (NNT)	Atlanta (C)		
MARTA North Springs Station (NFN)	Sandy Springs (C)		
MARTA Oakland City Station (SSO)	Atlanta (C)		
MARTA Peachtree Center Station (NNE)	Atlanta (C)		
MARTA Perry Bus Maintenance	Atlanta (C)		
MARTA Vine City Station (NWW)	Atlanta (C)		
MARTA Wachovia (HQ Annex)	Atlanta (C)		
MARTA West End Station (SSW)	Atlanta (C)		
MARTA West Lake Station (WWW)	Atlanta (C)		
MAS ASB Cogen, LLC. CHP Facility	Atlanta (C)		
McCormick - USIG - Atlanta (McComrick & McDaniel)	Fulton County- Unincorporated		
McDaniels Street CSO (City of Atlanta)	Atlanta (C)		
MCI- AATWGA (GAAATWGA)	Atlanta (C)		
MCI- AENEGA (GAAENEGA)	Atlanta (C)		
MCI- AKFCGA (GAAKFCGA)	Johns Creek (C)		
MCI- ALQUGA (GAALQUGA)	Atlanta (C)		
MCI- AQEWGA (GAAQEWGA)	Atlanta (C)		
MCI- ATADGA (GAATADGA)	Atlanta (C)		
MCI- ATGXGA (GAATGXGA)	Atlanta (C)		
MCI- ATIEGA (GAATIEGA)	Atlanta (C)		
MCI- ATLAGA (GAATLAGA)	Atlanta (C)		
MCI- ATLBGA (GAATLBGA)	Atlanta (C)		
MCI- ATLLGA (GAATLLGA)	Sandy Springs (C)		
McMaster-Carr Supply Company	Fulton County- Unincorporated		
MeadWestvaco Packaging System, LLC	Atlanta (C)		
Metalplate Galvanizing, L.P.	Fulton County- Unincorporated		
Metropolitan Atlanta Rapid Transit Autho	Atlanta (C)		
Mikart, Incorporated	Atlanta (C)		
Miller Zell	Fulton County- Unincorporated		
Miller Zell	Fulton County- Unincorporated		
Momar, Incorporated	Atlanta (C)		
Mondelez Global, LLC, Atlanta Bakery	Atlanta (C)		
Morehouse College	Atlanta (C)		
MWL - PDP	Fulton County- Unincorporated		
Nalley Honda	Union City (C)		
Nalley Lexus Roswell	Roswell (C)		
National Alamo Car Rent HJIA (Enterpris	College Park (C)		
National Diagnostics	Fulton County- Unincorporated		
National Distributing Company- Atlanta	Fulton County- Unincorporated		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Navistar	Fairburn (C)		
Nestle Purina Petcare Company	Fairburn (C)		
Neutral Tandem - GA	Atlanta (C)		
NEW CINGULAR WIRELESS - 3005 IXXM I 20 M	Atlanta (C)		
NEW CINGULAR WIRELESS - 3116 3117 MFIV A	Atlanta (C)		
NEW CINGULAR WIRELESS - 3156 CLAIRE GSM	Atlanta (C)		
NEW CINGULAR WIRELESS - 3188 INTL INTERN	Atlanta (C)		
NEW CINGULAR WIRELESS - Bldg 3 & 4	Alpharetta (C)		
NEW CINGULAR WIRELESS - GA2101 ATLANTA W	Atlanta (C)		
NEW CINGULAR WIRELESS - GA3204 GA3358 CO	College Park (C)		
NEW CINGULAR WIRELESS - GA4699	Sandy Springs (C)		
NEW CINGULAR WIRELESS - VOSS TECH CENTER	Alpharetta (C)		
NEW CINGULAR WIRELESS - WINDWARD 4 DATA	Alpharetta (C)		
NEW CINGULAR WIRELESS -3148 CCP CAMP CRE	East Point (C)		
NEW CINGULAR WIRELESS -3202 STC STOUFFER	Hapeville (C)		
NEW CINGULAR WIRELESS -4033 BUICE	Alpharetta (C)		
NEW CINGULAR WIRELESS -4045 BBD 1 NORTHR	Sandy Springs (C)		
NEW CINGULAR WIRELESS -4075 OA (OLD ALAB	Alpharetta (C)		
NEW CINGULAR WIRELESS -5600 GLENRIDGE DR	Sandy Springs (C)		
NEW CINGULAR WIRELESS -AT&T WINDWARD ADM	Alpharetta (C)		
NEW CINGULAR WIRELESS -GA 3061 NORTH SID	Atlanta (C)		
NEW CINGULAR WIRELESS -GA4047 ROSWELL WA	Roswell (C)		
NEW CINGULAR WIRELESS -GA4079 ATLAGA0714	Johns Creek (C)		
New Cingular Wireless PCS, LLC - GA WORL	Atlanta (C)		
New Cingular Wireless PCS, LLC - GA3161	Atlanta (C)		
New Cingular Wireless PCS, LLC - GA3324	Atlanta (C)		
New Cingular Wireless PCS, LLC - GA4010	Alpharetta (C)		
New Cingular Wireless PCS, LLC - GA4016	Sandy Springs (C)		
New Cingular Wireless PCS, LLC (Hyatt Re	Atlanta (C)		
New Cingular Wireless PCS, LLC (LEI LEIL	Atlanta (C)		
New Cingular Wireless PCS, LLC	Fulton County- Unincorporated		
Newell Recycling of Atlanta, LLC	East Point (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
NEXTRAN Truck Center - Atlanta	Atlanta (C)		
NKM Warehousing, LLC	Fulton County- Unincorporated		
Nordic - Empire	Atlanta (C)		
Norfolk Southern Railway Company - East	East Point (C)		
Norfolk Southern Railway Company - Inman	Atlanta (C)		
Norfolk Southern Railway Company - Inman	Atlanta (C)		
Norfolk Southern Railway Company - Peach	Atlanta (C)		
North Avenue CSO (City of Atlanta)	Atlanta (C)		
Northside Hospital Atlanta	Sandy Springs (C)		
Nottingham Company	Atlanta (C)		
Nyro Packaging Georgia	Atlanta (C)		
Nyro Packaging Georgia	Atlanta (C)		
Oldcastle Surfaces, Inc. - Atlanta	Atlanta (C)		
Oracle America, Inc.	Sandy Springs (C)		
Owens-Illinois Glass Container	Hapeville (C)		
OWENS BROCKWAY	Hapeville (C)		
Owens Corning - Atlanta Roofing & Asphal	Fulton County- Unincorporated		
Owens Corning Insulating Systems, LLC Fa	Fairburn (C)		
P & D Color Co., Inc.	Atlanta (C)		
Packaging Corporation of America	East Point (C)		
Paetec Atlanta Switch #1/Sales	Sandy Springs (C)		
Paetec Cav Tel Switch Site - LC	Atlanta (C)		
Pan Glo Atlanta	Atlanta (C)		
Payless Car Rental - Hartsfield-Jackson	College Park (C)		
Penske Truck Leasing Co., LP Atlanta Mar	Atlanta (C)		
Penske Truck Leasing Co., LP Atlanta	Fulton County- Unincorporated		
Pepsi Beverages Company - Atlanta Hotfil	Fulton County- Unincorporated		
Pepsi Beverages Company	Atlanta (C)		
Perimeter Terminal, LLC - Atlanta Facili	Atlanta (C)		
Petro Atlanta (TA Operating LLC)	Atlanta (C)		
Philip Lee Drive Pumping Station (City o	Fulton County- Unincorporated		
Pirkle Inc.	Atlanta (C)		
Pitney Bowes Presort Services- Georgia	College Park (C)		
Plastipak Packaging Inc.	Fulton County- Unincorporated		
Polymer Sciences, Inc.	Fulton County- Unincorporated		
Porex Corporation - Fairburn	Fairburn (C)		
PPG Architectural Finishes, East Point	East Point (C)		
PPG Fairburn DC	Fulton County- Unincorporated		
PPG FINISHES	Atlanta (C)		
PSC Metals, Inc- Union City GA	Fulton County- Unincorporated		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Publix Super Markets Inc. (Atlanta Baker	Fulton County- Unincorporated		
Quality Investment Properties Metro, LLC	Atlanta (C)		
Quality Technology Services Metro, LLC	Atlanta (C)		
R. M. Clayton WRC	Atlanta (C)		
Ready Mix USA, Alpharetta Plant	Alpharetta (C)		
Ready Mix USA, College Park Plant	College Park (C)		
Ready Mix USA, Downtown Atlanta Plant	Atlanta (C)		
Ready Mix USA, Fulco plant	Fulton County- Unincorporated		
Ready Mix USA, Midtown Atlanta Plant	Atlanta (C)		
Recycled Materials Incorporated	Fulton County- Unincorporated		
Red Oak Concrete Plant	College Park (C)		
Reddy Ice-East Point	East Point (C)		
Ribelin Sales, Inc.	Fulton County- Unincorporated		
RockTenn FSP Atlanta Ga	Fulton County- Unincorporated		
Ryder Transportation Services #0147	Fulton County- Unincorporated		
Ryder Transportation Services #0147A	Fulton County- Unincorporated		
Ryder Transportation Services #0394	Atlanta (C)		
Ryder Transportation Services #0427	Atlanta (C)		
Saddle Creek Corporation - Atlanta Del M	Union City (C)		
Saddle Creek Corporation - Eagle 1-2 & B	Fulton County- Unincorporated		
SAF Atlanta Plant	Atlanta (C)		
Safeguard Landfill, Waste Industries	Fairburn (C)		
Sam's Club #6646	Alpharetta (C)		
SAVVIS Centurylink (Atlanta GA ALD)	Atlanta (C)		
SBC Telcom dba AT&T Inc	Atlanta (C)		
SBC Telcom dba AT&T Inc. - GA0600	Atlanta (C)		
Schnitzer Southeast Adamson Street	Atlanta (C)		
Schnitzer Southeast Blashfield St	Atlanta (C)		
Scholle Chemical Corporation	College Park (C)		
Sears Tire Distribution Center #45460	Atlanta (C)		
Sekisui SPR Americas, LLC	Fulton County- Unincorporated		
Sherwin-Williams #3672	Atlanta (C)		
Sherwood Food Distributors - Atlanta War	Fulton County- Unincorporated		
Signature Flight Support (FTY) Atlanta	Fulton County- Unincorporated		
Skygate	Fulton County- Unincorporated		
South River WRC	Atlanta (C)		
Southern Industrial Chemicals, Inc.	Atlanta (C)		
Southern Telecom - 270 Peachtree	Atlanta (C)		
SouthernLinc Wireless - Maple Street G93	Hapeville (C)		
SouthernLinc Wireless - Virginia Avenue	Atlanta (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
SPRINT - Atlanta, GA MSO	Sandy Springs (C)		
SPRINT - ATLANTA, GA POP DEKALB	Atlanta (C)		
SPRINT - Atlanta, GA POP	Atlanta (C)		
SPRINT - Atlanta, GA Switch	Atlanta (C)		
SPRINT - Roswell, GA PCS Switch	Roswell (C)		
Spurlin Industries, Inc. - Palmetto	Palmetto (C)		
SSC Industries - East Point, GA	East Point (C)		
Staples, Inc.	Sandy Springs (C)		
State Farm Insurance Support Center East	Alpharetta (C)		
State Industrial Products	Fulton County- Unincorporated		
Sto Corp Atlanta Plant	Fulton County- Unincorporated		
Storopack, Inc. (Atlanta)	Fulton County- Unincorporated		
Sun Chemical (Atlanta CSC- NAI Division)	Atlanta (C)		
Sun Chemical Corporation	Atlanta (C)		
Sunbelt Rentals PC #055	Atlanta (C)		
Sunbelt Rentals PC #068/069	Atlanta (C)		
Sungard (Alpharetta GA)	Alpharetta (C)		
Sungard Available Service	Atlanta (C)		
Sunny Delight Beverages Company	Fulton County- Unincorporated		
Superior Essex Inc	Sandy Springs (C)		
Superior Pool Products, LLC #444A	College Park (C)		
Sysco Atlanta LLC (Food Services of Atla	College Park (C)		
T-Mobile USA, Inc. GA Atlanta Data Cente	Sandy Springs (C)		
T-Mobile USA, Inc. GA Atlanta South	Atlanta (C)		
Tanyard Creek CSO (City of Atlanta)	Atlanta (C)		
Telecommunication (Earthlink)	Atlanta (C)		
The Coca-Cola Company (Atlanta Beverage	Fulton County- Unincorporated		
The Coca-Cola Company (Atlanta Office Co	Atlanta (C)		
The Coca-Cola Company, Aviation Departme	Fulton County- Unincorporated		
The Eggo Company	Fulton County- Unincorporated		
The Hertz Corporation (Atlanta-Hartfield	College Park (C)		
The Hertz Corporation (Atlanta-Hartsfiel	Hapeville (C)		
The Hertz Corporation (Atlanta-Hartsfiel	College Park (C)		
The Hertz Corporation (Hartsfield Jackso	College Park (C)		
The Hertz Corporation (HERC East Point)	East Point (C)		
The Hertz Corporation	Atlanta (C)		
The Home Depot Flight Department	Fulton County- Unincorporated		
The Home Depot Store #0123	Atlanta (C)		
The Home Depot Store #0130	Fulton County- Unincorporated		
The Home Depot Store #0131	Johns Creek (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
The Home Depot Store #0146	Roswell (C)		
The Home Depot Store #0149	Alpharetta (C)		
The Home Depot Store #0154	Sandy Springs (C)		
The Home Depot Store #0159	Atlanta (C)		
The Home Depot Store #1755	Roswell (C)		
The Home Depot Store #6986	Atlanta (C)		
The Martin Brower Company, LLC	East Point (C)		
The McPherson Companies, Inc. Atlanta	Atlanta (C)		
The Procter and Gamble Distributing LLC	Fairburn (C)		
TheoChem Laboratories	Atlanta (C)		
Thomas Concrete - Buckhead Plant #2300	Atlanta (C)		
Thomas Concrete Alpharetta Plant # 1800	Alpharetta (C)		
Thomas Concrete Ben Hill Plant # 100	Atlanta (C)		
TIS Bridge - South Atlanta	Atlanta (C)		
TOTO USA, INC. LAKEWOOD	Atlanta (C)		
Trimac Transportation South	Fulton County- Unincorporated		
U.P.S Airport Hub	Atlanta (C)		
U.P.S Atlanta Hub	Fulton County- Unincorporated		
U.P.S. Roswell Hub	Roswell (C)		
UFP Union City, LLC (Plant 211)	Union City (C)		
UniFirst	Atlanta (C)		
Unilever, Atlanta	Atlanta (C)		
United BMW of Roswell	Roswell (C)		
United Natural Foods, Inc.	Fulton County- Unincorporated		
United States Penitentiary	Atlanta (C)		
UPS Supply Chain Solutions-GATLA	Atlanta (C)		
US Foods - Fairburn	Fulton County- Unincorporated		
US Tsubaki Inc	Fulton County- Unincorporated		
Utoy Creek WRC (City of Atlanta)	Fulton County- Unincorporated		
Verizon WINDWARD FOREST (GAS191004)	Alpharetta (C)		
Verizon Wireless Alpharetta (GA28162)	Alpharetta (C)		
Verizon Wireless Alpharetta MTSO (GA2104)	Alpharetta (C)		
Verizon Wireless Atlanta (GA7204722)	Atlanta (C)		
Verizon Wireless Atlanta Downtown(8th St	Atlanta (C)		
Verizon Wireless Ben Hill (GA28370)	Atlanta (C)		
Verizon Wireless East Point (GA446877)	East Point (C)		
Verizon Wireless Stonebridge @ Sanctuary	Alpharetta (C)		
Verizon Wireless Stonebridge Two (GA4856)	Alpharetta (C)		
Verizon Wireless UNION CITY (GA27991)	Union City (C)		
Verizon Wireless Verizon Wireless Headqu	Milton (C)		



Table E-13. Tier II Facilities in Fulton County

Name	Municipality	Owner	Backup Power
Verizon Wireless WAOK (GA39944)	Atlanta (C)		
Vulcan Materials Company-Alpharetta Plan	Alpharetta (C)		
Wayne Davis Concrete Union City	Union City (C)		
Wells Fargo Atlanta Operations Center	Hapeville (C)		
West Area CSO Treatment Facility	Atlanta (C)		
West Atlanta DC	Fulton County- Unincorporated		
Whitaker Oil Company	Atlanta (C)		
William C. Meredith Co., Inc	East Point (C)		
Willow Oak Landfill	Palmetto (C)		
Wilson Trucking Corporation - FUL	Fulton County- Unincorporated		
Windstream - Atlanta NuVoxCentral Office	Atlanta (C)		
Windstream Communications Inc (Paetec At	Sandy Springs (C)		
Windstream Communications Inc (Paetec At	Atlanta (C)		
WSE Transportation, LLC ATL	Atlanta (C)		
Xerox Atlanta Data Center	Sandy Springs (C)		
ZAYO BANDWIDTH GA-56M	Atlanta (C)		
Zayo Group (Atlanta- Concourse Pkwy)	Sandy Springs (C)		
Zep Inc.	Atlanta (C)		
Zep Inc.	Fulton County- Unincorporated		

Sources: Fulton County

Notes: C=City

Table E-14. Additional Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
Atlanta City Hall	Atlanta (C)	City Hall		
Alpharetta City Hall	Alpharetta (C)	City Hall		
College Park City Hall	College Park (C)	City Hall		
East Point City Hall	East Point (C)	City Hall		
Fairburn City Hall	Fairburn (C)	City Hall		
Hapeville City Hall	Hapeville (C)	City Hall		
Johns Creek City Hall	Johns Creek (C)	City Hall		
Milton City Hall	Milton (C)	City Hall		
Mountain Park City Hall	Mountain Park (C)	City Hall		
Palmetto City Hall	Palmetto (C)	City Hall		
Roswell City Hall	Roswell (C)	City Hall		
Sandy Springs City Hall	Sandy Springs (C)	City Hall		
Union City City Hall	Union City (C)	City Hall		
Fulton County Government Center	Atlanta (C)	City Hall		
North Fulton County Government Center	Sandy Springs (C)	City Hall		



Table E-14. Additional Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
South Fulton County Service Center	Fulton County-Unincorporated	City Hall		
Southwest- Fulton County Service Ctr	Atlanta (C)	City Hall		
Ocee Library	Johns Creek (C)	Library		
Roswell Library	Roswell (C)	Library		
Northeast/Spruill Oaks Library	Johns Creek (C)	Library		
Sandy Springs Library	Sandy Springs (C)	Library		
Northside Library	Atlanta (C)	Library		
Buckhead Library	Atlanta (C)	Library		
Perry Homes Library	Atlanta (C)	Library		
Peachtree Library	Atlanta (C)	Library		
Ponce de Leon Library	Atlanta (C)	Library		
Dogwood Library	Atlanta (C)	Library		
Bowen/Bankhead Library	Atlanta (C)	Library		
Adamsville-Collier Heights Library	Atlanta (C)	Library		
Washington Park Library	Atlanta (C)	Library		
Central Library & Library System HQ	Atlanta (C)	Library		
Auburn Avenue Research Library	Atlanta (C)	Library		
Southwest Library	Fulton County-Unincorporated	Library		
West End Library	Atlanta (C)	Library		
Mechanicsville Library	Atlanta (C)	Library		
Georgia Hill Library	Atlanta (C)	Library		
Adams Park Library	Atlanta (C)	Library		
Stewart-Lakewood Library	Atlanta (C)	Library		
Carver Homes Library	Atlanta (C)	Library		
Cleveland Avenue Library	Atlanta (C)	Library		
East Point Library	East Point (C)	Library		
College Park Library	College Park (C)	Library		
South Fulton Library	Fulton County-Unincorporated	Library		
Fairburn Library	Fairburn (C)	Library		
Hapeville Library	Hapeville (C)	Library		
Alpharetta Library	Alpharetta (C)	Library		
Martin Luther King Jr., Library	Atlanta (C)	Library		
Thomasville Heights Library	Atlanta (C)	Library		
Atlanta Traffic Court	Atlanta (C)	Court		
US Bankruptcy Court	Atlanta (C)	Court		
Superior Court of Fulton County	Atlanta (C)	Court		
Superior Court - Fulton County-Accntbly	Atlanta (C)	Court		
Superior Court - Fulton County-	Atlanta (C)	Court		



Table E-14. Additional Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
Dispute				
Superior Court - Fulton County-Business	Atlanta (C)	Court		
Superior Court - Fulton County-Family	Atlanta (C)	Court		
Municipal Court of Atlanta	Atlanta (C)	Court		
Superior Court of Georgia	Atlanta (C)	Court		
Magistrate Court- North	Sandy Springs (C)	Court		
Fulton County Juvenile Court	Atlanta (C)	Court		
Traffic Court-Problem Department	Atlanta (C)	Court		
US District Court Probation	Atlanta (C)	Court		
Probate Court of Fulton County	Atlanta (C)	Court		
Court of Appeals Judge	Atlanta (C)	Court		
State Court-Civil-Garnishments	Atlanta (C)	Court		
Municipal Court of Hapeville	Hapeville (C)	Court		
Municipal Court of Alpharetta	Milton (C)	Court		
Municipal Court of College Park	College Park (C)	Court		
Municipal Court of East Point	East Point (C)	Court		
Municipal Court of Fairburn	Fairburn (C)	Court		
Municipal Court of Milton	Milton (C)	Court		
Municipal Court of Mountain Park	Mountain Park (C)	Court		
Municipal Court of Palmetto	Palmetto (C)	Court		
Municipal Court of Roswell	Roswell (C)	Court		
Municipal Court of Sandy Springs	Sandy Springs (C)	Court		
Municipal Court of Union City	Union City (C)	Court		
State Court Fulton County	Atlanta (C)	Court		
Fulton County Superior Court	Atlanta (C)	Court		
Fulton County Superior Court- North	Sandy Springs (C)	Court		
Fulton County Superior Court- West	Fulton County-Unincorporated	Court		
Romae T. Powell Juvenile Justice Center	Atlanta (C)	Court		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Fulton County Jail	Atlanta (C)	Correctional		
Hapeville Youth Center	Hapeville (C)	Youth Center		
Clubhouse for Youth	Atlanta (C)	Youth Center		



Table E-14. Additional Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
South Mental Health Training Center	Atlanta (C)	Mental Health		
South Fulton Mental Health Center	East Point (C)	Mental Health		
Atlanta Medical Center	Atlanta (C)	Government Building		
Wendell Court Offices	Fulton County-Unincorporated	Government Building		
East Point Community Prosecution Office	East Point (C)	Government Building		
Villages at Carver	Atlanta (C)	Government Building		
Joseph E Boone Boulevard Offices	Atlanta (C)	Government Building		
Royal Drive Office Suites	Alpharetta (C)	Government Building		
Odyssey Villas - Intact Families	Atlanta (C)	Government Building		
Quality Living Services	Fulton County-Unincorporated	Government Building		
Fulton County Family Resource Center	Atlanta (C)	Government Building		
IT Record Center	Hapeville (C)	Government Building		
Coverdale Legislative Office Bldg	Atlanta (C)	Government Building		
Medical Examiner's Center	Atlanta (C)	Government Building		
Atlanta Judicial Circuit	Atlanta (C)	Government Building		
Elections Preparation Center	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
Elections Warehouse	Atlanta (C)	Government Building		
191 Peachtree Tower	Alpharetta (C)	Government Building		
Greenbriar Mall Service Center	Atlanta (C)	Government Building		
Royal Drive Office Suites	Alpharetta (C)	Government Building		
Mitchell Street Offices	Atlanta (C)	Government Building		
County Extension Office	East Point (C)	Government Building		



Table E-14. Additional Facilities in Fulton County

Name	Municipality	Type	Owner	Backup Power
Palmetto Neighborhood Community Center	Palmetto (C)	Government Building		
DFACS South	Fulton County-Unincorporated	Government Building		
Women & Children Services	Atlanta (C)	Government Building		
Jefferson Place	Atlanta (C)	Government Building		
Peachtree Street Offices	Atlanta (C)	Government Building		
DFACS North	Atlanta (C)	Government Building		
Fulton County Animal Services	Atlanta (C)	Government Building		
Hammond House Musuem	Atlanta (C)	Arts & Culture		
Clifondale Park	Fulton County-Unincorporated	Arts & Culture		
Wolf Creek Amphitheater	Fulton County-Unincorporated	Arts & Culture		
West End Performing Arts Center	Atlanta (C)	Arts & Culture		
Aviation Community Cultural Center	Fulton County-Unincorporated	Arts & Culture		
Abernathy Arts Center	Sandy Springs (C)	Arts & Culture		
Southwest Arts Center	Fulton County-Unincorporated	Arts & Culture		
Southwest Arts Center	Fulton County-Unincorporated	Arts & Culture		
Abernathy Arts Center	Sandy Springs (C)	Arts & Culture		
South Fulton Arts Center	Fulton County-Unincorporated	Arts & Culture		

Sources: Fulton County

Notes: C=City



Appendix F

Surveys



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Welcome to the Hazard Mitigation Plan Public Survey

Thank you for participating in our survey. Your feedback is an important part of updating the Fulton County Hazard Mitigation Plan!

The information from this survey will help Fulton County develop effective strategies to reduce the effects of hazards such as floods, tornadoes, and severe storms on life and property.



1. Where in Fulton County do you live?

- Alpharetta
- Atlanta
- Chattahoochee Hills
- College Park
- East Point
- Fairburn
- Hapeville
- Johns Creek
- Milton
- Mountain Park
- Palmetto
- Roswell
- Sandy Springs
- Union City
- Unincorporated South Fulton

2. How long have you lived in Fulton County?

- Less Than 1 Year
- 1-5 Years
- 6-10 Years
- 11-20 Years
- More Than 20 Years

3. Do you own or rent your place of residence?

- Own
- Rent

4. Do you work in Fulton County?

- Yes
- No



5. Do you live in a flood plain?

- Yes
- No
- I Don't Know

6. Do you have National Flood Insurance?

- Yes
- No
- Unsure



2015 Fulton County Hazard Mitigation Plan (HMP) Update

7. How prepared do you feel for natural hazard events such as tornadoes, floods, or severe storms to occur in Fulton County?

- Very Well Prepared
- Well Prepared
- Adequately Prepared
- Somewhat Prepared
- Not at All Prepared
- Not Sure

8. Do you consider yourself informed about probable impacts of natural hazards that may occur within Fulton County?

- Yes
- No
- Not Sure



9. Which information sources are the most effective at warning you of approaching storms or natural hazards in Fulton County? (Check all that apply to you/your household)

- Cell Phone
- Outdoor Sirens
- Facebook
- Television
- Internet Web Site
- Telephone
- Newspaper
- Twitter
- Radio
- Weather Alert Radio
- Other (please specify)

10. What would help you feel more prepared? (Select all that apply to you/your household)

- Educational Brochures
- Community Shelters
- Community Classes on Natural Hazards
- Relocate to a Safer Location
- Readiness Kit
- Safe Room

Other (please specify)



11. Please indicate your personal experience and level of concern about the effects of each natural hazard's potential impact on life and property in Fulton County.

	Highly Concern	Fair Concern	Concern	Not Concern
Dam Failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earthquake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Floods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Severe Thunderstorms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tornado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildfire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Severe Winter Storm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
River/Stream Bank Erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous Material Spill/Release	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heatwave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Demographics

12. Gender

- Female
- Male

13. Please indicate your age range

- Under 18
- 18-30
- 31-40
- 41-50
- 51-60
- 61- Older



14. How many people currently live in your household?

- 1
- 2
- 3
- 4
- 5
- 6
- 7 or More

15. Please indicate the primary language spoken in your household.

- English
- Spanish
- French
- Other Indo-European Languages
- Asian and Pacific Island Languages
- Other (please specify)

16. Please indicate your highest level of education.

- Grade School/No Schooling
- Some High School
- High School Graduate/GED
- Some College/Trade School
- College Degree
- Graduate Degree
- Other (please specify)

17. Do you have regular access to the Internet?

- Yes
- No
- Not Sure



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Comments (Optional)

If you have additional information you would like to share about your knowledge and experience regarding local natural hazards and disasters, we invite you to provide your information on this page. This survey and your comments are completely confidential and greatly appreciated.

Thank you for your time!

18. Comments???



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q18 Comments???

Answered: 127 Skipped: 822

#	Responses	Date
1	I would think a good plan would also have your neighbors cell numbers for requesting and offering help and assistance	2/27/2016 12:07 PM
2	How will this survey help us?	2/24/2016 2:22 PM
3	I hope to hear the results of this survey	2/22/2016 3:21 PM
4	ARES Amateur Radio member	2/21/2016 5:33 PM
5	Have any needed phone numbers immediately accessible with cell phone fully charged. Ready to leave on a moment's notice	2/20/2016 10:49 AM
6	Mountain Park (in Roswell) has many large, old trees. Every year or two a large tree falls on the power lines along Mountain Park Rd resulting in lengthy power outages. Ideally, the power lines need to go underground. Not sure if this is possible in Mountain Park. Thank you.	2/20/2016 10:35 AM
7	Need tornado sirens	2/19/2016 6:28 PM
8	Maybe place more info into our monthly hapeville package/bill	2/19/2016 10:36 AM
9	How will we receive the survey feedback and when?	2/18/2016 6:17 PM
10	Would like classes and opportunity to buy preserved food items such as those used by military to store for use in case of an emergency	2/18/2016 9:29 AM
11	Thank you for the opportunity to respond.	2/17/2016 7:17 PM
12	hand out preparedness brochures to new city/county arrivals in case of loss of electricity, etc.	2/17/2016 3:35 PM
13	good survey - thanks	2/17/2016 10:17 AM
14	our community e-mail is very helpful!!!	2/17/2016 9:29 AM
15	Retired military and civil servant. Every community should work to have a 3 day plan to meet immediate needs of water, food and shelter for its resident. Communication and rally points are vital in any disaster. Every community should have a brochure on this 3 day plan, communication and rally points. Every community should have a HAM radio system set up with trained operators. The brochure should be simple and easy to understand. Do not have overkill in posting plans on community websites that people will never read. A very simple solution, low cost and yet nothing is in place.	2/17/2016 9:01 AM
16	We need better cell service in the area and internet service, if you can help with getting that in... to help people be able to stay informed.	2/17/2016 8:50 AM
17	With heavy rains, we are concerned about our bridges and roadways washing out. Also, major issues (wrecks, spills, etc.) on the South Fulton Parkway are a concern.	2/17/2016 8:47 AM
18	Chattahoochee Hills has poor cell phone reception and no cable internet, so I'm concerned about the ability of the community to get or share proper communication. The is also, NO EMS coverage within 5- 10 miles	2/17/2016 8:46 AM
19	South Fulton is very neglected & i worry about the time it would take to be found or rescued should something happen. We don't have internet service or sirens. Also Chattahoochee Hills Charter School is down the street & I worry about something happen ending at school so bad that I go pick my son up if we are expecting bad weather because of the neglect that we experience & the lack of equipment that our fire station has.	2/17/2016 8:37 AM
20	Believe local first responders are genuinely concerned about well-being of all citizens our City.	2/17/2016 8:05 AM
21	I have lived in South Fulton County for over 50 years. It is largely ignored or short-changed by all county services. It always has been. People who live in the South end of the county know that if a natural disaster occurs, they will be on their own because the county won't help them. While South Fulton will always be my home, the county services suck!	2/17/2016 7:27 AM
22	Nothing addresses the danger of falling trees and tree limbs	2/17/2016 6:33 AM
23	Knowledge of natural disasters: worked in tv news and covered many tornados, floods, and severe storms. Also was raised in Oklahoma so lots of knowledge about tornados as it is a yearly event.	2/16/2016 11:46 PM
24	I don't believe Hapeville has an effective emergency plan in place. It is very scary since we are so close to the airport.	2/16/2016 10:44 PM



2015 Fulton County Hazard Mitigation Plan (HMP) Update

25	Sirens at 92 near Cobb county would be nice	2/16/2016 6:43 PM
26	None	2/16/2016 3:44 PM
27	Thank you for the opportunity to participate in your survey.	2/16/2016 2:49 PM
28	I'm fairly new to GA, and new to tornado's. I love the fact that there are sirens all around to warn you of an impending tornado, but it can hardly be heard from my house. There need to be more.	2/16/2016 12:56 PM
29	Hurricane, tropical storm was not included in list. Primary concern is if an evacuation is ordered the road congestion would prevent a proper response.	2/16/2016 12:40 PM
30	We REALLY need more tornado sirens. We can't hear it at our house and we are less than 2 miles from Canton Street. Tornado's are my main concern.	2/16/2016 10:48 AM
31	I was part of CERT a few years back and still keep my books and backpack handy.	2/16/2016 10:21 AM
32	Zika Virus control is a timely & frightening possibility.....no city or county spraying??	2/16/2016 10:19 AM
33	I'm glad you are doing this	2/16/2016 10:05 AM
34	Again, no safe place to go re tornados or flooding... trapped in apt when roads are icy since apartment development does not clear ice (waits for sun to do the job)	2/16/2016 9:50 AM
35	A simple way to subscribe to text alerts regarding local hazards/disasters would be ideal. One important facet to this would be the ability to subscribe for your area. People in south Fulton don't need to receive an alert about an issue an hour north of them in north Fulton.	2/16/2016 9:49 AM
36	Additional emergencies not listed include riot/civil unrest/occupying protest, active shooter(s) situation, chemical/biological attack, pandemic/infectious disease outbreak. I believe local area residents would be interested in a civilian response group charged with distributing information in the event of an emergency. Select residents would be willing to volunteer security, aid and additional resources if/when called upon if such a network was established before said emergency. Think police/fire explorer network/program Finally, in the event of certain emergencies, conventional means of information sharing could be unavailable or impaired. A dependable/proven form of information transfer is physical message boards. This was especially effective method for locating missing loved ones when the telephone/SMS systems were down during 911 attacks. Knowing where these type of boards are located before said emergency would be helpful. Possible locations could include libraries, town halls, town squares, parks and places of worship (think existing polling stations) Thank you for your concern and commitment.	2/16/2016 9:44 AM
37	I feel safe in Roswell/Fulton County	2/16/2016 9:32 AM
38	Due to our age we feel we will need help if a catastrophe occurs.	2/16/2016 9:31 AM
39	Thanks	2/16/2016 9:30 AM
40	None	2/16/2016 8:56 AM
41	Thanks for conducting the survey.	2/14/2016 8:12 PM
42	What about nuclear disaster or biohazard and terrorist threats. With the CDC near by is this not a consideration?	2/14/2016 4:29 PM
43	As a general warning sirens are fine but are not localized enough. Sometimes you hear sirens from adjacent cities/counties. That adds confusion.	2/14/2016 2:43 PM
44	The releases at Buford Dam are combining recently with normal rainfalls to create frequent overtopping of the Chattahoochee's banks in the stretch from Holcomb Bridge Road to the Chattahoochee's Nature Center. I am concerned that this is aggravating stream bank erosion on the river and its tributaries and endangering homes and other riverside structures. This is also jeopardizing public parklands owned by the City of Roswell and NPS.	2/13/2016 5:07 PM
45	Good survey... Quick and easy	2/13/2016 11:39 AM
46	Communications from county offices to residents of unincorporated South Fulton are very limited. I signed up to read newsletters in North Fulton to ensure that I'm aware of events and communications from officials which is an unfortunate step that I've had to take although we all pay county taxes.	2/13/2016 7:17 AM
47	Neighborhood, HOA, local parks or other local gatherings would be a good place to call people together and go over community and individual family plans. You didn't mention home invasion or terrorism and that may be top-of-mind for a lot of people.	2/11/2016 2:43 PM
48	Fairburn should host community preparedness classes and/or help to assemble or provide readiness kits and information.	2/10/2016 12:42 AM
49	My wife and I debate the safest place in the house - we don't have a basement!	2/9/2016 8:50 PM
50	We live very close to the river and use it often. We are very concerned about sewage getting into it!	2/9/2016 7:10 PM



2015 Fulton County Hazard Mitigation Plan (HMP) Update

51	Nixle alerts are great!	2/8/2016 3:45 PM
52	There are several NGOs that work towards this same Emergency preparedness and Fulton County EMA should be looking to work with them.	2/8/2016 11:17 AM
53	Need more sirens near Horseshoe Bend	2/7/2016 4:38 PM
54	SARTEch1 and CERT. Trained for EOC and Search and Rescue Management and Search. Info and timely, concise direction are the key.	2/6/2016 3:21 PM
55	Our neighborhood in Roswell has only one road to enter and exit, Riverwalk Drive. It exits down to the Chattahoochee flood plain. When the river floods there is no way for emergency vehicles to enter our neighborhood.	2/6/2016 7:04 AM
56	Continued concern regarding terrorism and active shooter situations and defense.	2/5/2016 3:53 PM
57	None	2/5/2016 3:44 PM
58	There was no reference to pets in this survey. Didn't anyone learn a lesson from Katrina? Do you even know how many pets there are in Fulton County?	2/5/2016 3:24 PM
59	living so close to the train tracks - trains carrying hazardous materials worry me the most. There have been some very serious fatalities regarding trains carrying oil & gaz.	2/5/2016 3:15 PM
60	Would like to find out about earth quake insurance.	2/5/2016 2:34 PM
61	Good Survey	2/5/2016 2:25 PM
62	over flow of sewage during flooding conditions	2/5/2016 2:24 PM
63	the city needs to keep updating and maintain drainage from heavy rains to prevent floods.	2/5/2016 1:30 PM
64	I am concerned about terrorism and biological warfare. Not to mention attack on power grid and anything else I do not how to prepare for.	2/5/2016 12:10 PM
65	I do think a workshop for the community would be good. Leaders from HOA can take that information back to their neighborhood.	2/5/2016 7:57 AM
66	None	2/4/2016 11:18 PM
67	I find the siren system and the Nixle messaging system to be sufficient warning for disaster response.	2/4/2016 10:47 PM
68	Communicable disease hazards (rabies, zika, influenza, food poisoning like e-coli contamination, etc) also require preparation and communication. Thank you!	2/4/2016 9:38 PM
69	I used to live in a flood zone on Wickerberry Road in Roswell. The City ultimately was approved for a FEMA grant to purchase and demolish my former house. However, I bought the house while the grant application was in progress without knowing about the grant application. The previous owners said nothing about it, because they technically were not required to disclose it (what they did disclose was "a flood of the property that caused damaged in excess of \$500." This made the flood situation seem a lot less severe than it actually was; the actual damages were closer to \$60,000). I would recommend to anybody, but especially people considering buying in a flood zone in Roswell/Fulton County: Google the address of the house you are considering before placing an offer on. There were City Council minutes regarding the FEMA grant application that I could have accessed online had I thought to Google the address before putting an offer on the house.	2/4/2016 8:29 PM
70	Enhanced siren systems seem the most obvious means of notification. If the range and volume was vastly expanded, the entire population could receive a warning of potential danger without depending on TV or phones.	2/4/2016 7:43 PM
71	I grew up in Atlanta and we did not have the tornado sirens. It is a comfort having them!	2/4/2016 7:21 PM
72	Roswell is a good location !	2/4/2016 6:53 PM
73	Wish Roswell sirens were louder	2/4/2016 6:52 PM
74	none	2/4/2016 6:35 PM
75	The sewage spill near the Don White Park/Riverside Park in Roswell, happens EVERY TIME there is a hard rain. It is a ridiculous situation. Human waste, bad odors, even toilet paper, every hard rain. I run that trail and I very concerned about my health in addition to the inconvenience of having the trails closed and the damage it is doing to the environment.	2/4/2016 6:21 PM
76	Training for civilians for disaster readiness	2/4/2016 6:18 PM
77	I think the idea (being prepared) behind this effort is very commendable. One other potential disaster: attack on utility grid that leads to long term power outage. See Ted Koppel's book "Lights Out". Thanks	2/4/2016 6:17 PM



2015 Fulton County Hazard Mitigation Plan (HMP) Update

78	I'm really concerned about the raw sewage that overflows the sewers when it rains. This is within walking distance from my house. Not only does it smell, but it is an extremely dangerous situation for my family and my pets.	2/4/2016 6:09 PM
79	Thanks for doing this	2/4/2016 6:09 PM
80	Very concerned about raw sewage spills reported by upper chatahochee River keeper.	2/4/2016 5:56 PM
81	I would like to be prepared somewhere between SH-TF peppers and a suburban resident caught in a situation without any stored food, water, cash, and info resources when an emergency severely degrades the daily comforts we take for granted. If EMA provided a few levels of preparedness in downloadable booklet form such how to create a 3 day family self sustaining kit, then a 6 day kit, then how to pick a self rescue destination and inform the rest of the family.	2/4/2016 5:55 PM
82	I live in large neighborhood and it would be very beneficial to have local captains of each section of neighborhood to have that personal contact in case of a large natural disaster.	2/4/2016 5:48 PM
83	With the recent rains and Army Corps water releases from Lake Lanier, it has been obvious that little has been done to protect us from sewage overflow into the Chattahoochee and severe bank erosion.	2/4/2016 5:48 PM
84	Having retired after 40 years in the Elec. Util. business, I was involved with serious weather related events. With electricity out and cell towers destroyed, communications will be critical and require "out of the box" thinking and solutions.	2/4/2016 5:39 PM
85	help us with road conditions more and repairs of roads too	2/4/2016 5:24 PM
86	None	2/4/2016 5:17 PM
87	No	2/4/2016 5:03 PM
88	We were hit by a tornado in 2005 and have been hit by lightning twice. Never heard sirens...ever	2/4/2016 4:57 PM
89	I live in a community with the only access being off Azalea Drive. Azalea floods every few years and I worry about emergency access to my neighborhood...EMT and Fire Vehicles.	2/4/2016 4:56 PM
90	Fulton county needs to fix the sewage over flow at Don White part any hard rain it lets bio hazards directly in to the river.	2/4/2016 4:53 PM
91	Thank you!	2/4/2016 4:49 PM
92	We can't hear the emergency tornado sirens and wish there were more of them and they were louder in horseshoe bend neighborhood.	2/4/2016 4:41 PM
93	Love Roswell's use of Nixle	2/4/2016 4:23 PM
94	help people understand the benefits/uses/purposes to a backup generator.	2/4/2016 4:20 PM
95	I have a place in my house that I plan to go to in case of tornado warning. I would like an expert to come to my house and verify that this would be the best place and make recommendations on how I could make that place even safer.	2/4/2016 4:11 PM
96	You didn't have Ham Radio in there to help with your Harzard Mitigation Plan.. when cell phone don't work b/c of cell towers being out of commission, Ham Radio operates can get the word out and with our net, help people that are disconnected from the rest of the world. David-	2/4/2016 4:07 PM
97	Thanks for the really simple/straightforward survey :)	2/4/2016 4:06 PM
98	I recently moved here from Southern California, and have no idea what kind of natural disasters are typical for the area, what their frequency would be and probable degree of severity, and minimal knowledge of what a good emergency kit should include to account for these new hazards. I have an earthquake/wildfire emergency kit, compiled in CA, which I don't think properly addresses the different types of hazards in this area (ex: we used to store 2 wks of water at a time, but there seems to be plenty of water everywhere in this state, and that doesn't seem to be the concern when addressing tornadoes). I don't know where to find information on the recommended preparation/response to each of the local disasters or hazards.	2/4/2016 4:02 PM
99	Our local Government uses a Nixle system which is very informative. I get emails on my phone for any emergencies, road closures, missing persons that affect my area. Tornado warnings and flood warnings come through quicker than my notices from the tv weather channels.	2/4/2016 4:02 PM
100	Short video snippets on emergency scenarios and what to do would be helpful. That way we can share with our kids.	2/4/2016 3:57 PM
101	While this is based on a single technology (cell service), the emergency alerts to cell phones along with Roswell's use of text alerts via Pixle have been very helpful. It is nearly impossible to hear the tornado sirens from the house, but I do find the lightning sirens Country Club of Roswell to be very beneficial (we live adjacent)	2/4/2016 3:54 PM
102	Considering the potential for natural hazards and others think spills of hazardous materials is one we're least likely to be prepared for.	2/4/2016 3:54 PM



2015 Fulton County Hazard Mitigation Plan (HMP) Update

103	I do not live in a "designated flood zone", but have FEMA flood insurance just in case. It is very reasonable.	2/4/2016 3:51 PM
104	We live in Riverwalk, on the hill above the Chattahoochee River Park. Our only access is via Azalea, so road closings are very important. Please assure we are informed regarding impending closures.	2/4/2016 3:49 PM
105	I think providing information on preparation is important, including cycling supplies, annual checks, and individual and cooperative planning.	2/4/2016 3:47 PM
106	Thanks!	2/4/2016 3:38 PM
107	Unable to drive out of neighborhood when Chattahoochee floods Azalea Drive.	2/4/2016 3:36 PM
108	THANKS FOR CARING ...	2/4/2016 3:33 PM
109	Thanks for asking	2/4/2016 12:57 PM
110	I see trees in Fairburn, and South Fulton hanging over powerlines and Roads, potentially storm power outage. HWY 92, Koweta Rd. Flood Zones never cleared of debris, never seen them control beavers that build up creeks and destroys properties when there's a storm. Is this survey really going to solve anything	2/4/2016 8:30 AM
111	Thank you for taking the time to put together such a well thought out survey for the community. Let's hope more people take the time to fill it out. Perhaps you should provide a paper copy to every home. For those who are not internet saavy or for those who don't have NextDoor. Again, thank you	2/3/2016 11:04 AM
112	During the last tomado I was at the Fairburn Food Depot when the alarm sounded the store mgmt had us all move to the rear of the store away from the windows and didn't allow anyone to leave. I am appreciative of their awareness and quick response	2/3/2016 7:53 AM
113	Does Fairburn have an emergency evacuation plan and if you do where does a homeowner see this plan including evacuation routes. How do you let homeowners know where this plan is and is easily accessible?	2/2/2016 11:00 AM
114	The City of Fairburn is incompetent and has too little interaction with its businesses or concern with its responsibility to the residents. The present government of Fairburn should be ashamed and along with it's public service departments be reprimanded for its inability to clean street drains and debris from wash areas that prevent proper drainage. The City is not doing its job to protect property from avoidable damages caused by their neglect. We have a 59 years long business in Fairburn and have seen no positive growth due to unnecessary codes placed to discourage small business growth. Help our property owners and businesses grow by removing obstacles that cause distractive and negative growth damage.	2/2/2016 7:43 AM
115	Thank you for the survey.	2/2/2016 2:25 AM
116	N/A	2/1/2016 8:01 PM
117	I impress that that Fulton County is taking the time to improve Public awareness. I agree because a change is needed because of global warming and the out dated warning systems.	2/1/2016 7:18 PM
118	A safe means of crossing highway atRoosevelt highway at the entrance to highway 74, in front of the police station. The also need a bus stop shelter and a traffic lights .. At 71 years young,, help.. I cannot run that fast any more.. Thanks	2/1/2016 6:38 PM
119	Creeks need to be inspected on a regular basis	2/1/2016 5:56 PM
120	The only time I felt threatened by acts of nature when I lived in Alabama and TN-flooding in Ala and snow storms in TN. So far, nothing too bad in GA.	2/1/2016 5:05 PM
121	drainage and sewers should be checked and cleared year round and at all times.	2/1/2016 5:03 PM
122	We should have a super loud danger SIREN	2/1/2016 4:54 PM
123	Should you make brochures, please also have them available in English and Mandarin, for the older Asians that live in the community but don't know HOW to take surveys online. Thank you.	2/1/2016 4:37 PM
124	As a non-Atlanta city resident I do not feel that AFCEMA engages me nor provides services to me or my municipality. I often feel my city would be better off handling emergency management on its own. I'm an experienced public safety and emergency management professional and dont think AFCEMA does its job in my area. I would like to see that change.	2/1/2016 4:34 PM
125	I would certainly appreciate my governmental concern for the community if they would bring themselves into the 21st century and support reliable internet access for all	2/1/2016 4:30 PM
126	How did you get me email?	2/1/2016 4:25 PM



2015 Fulton County Hazard Mitigation Plan (HMP) Update

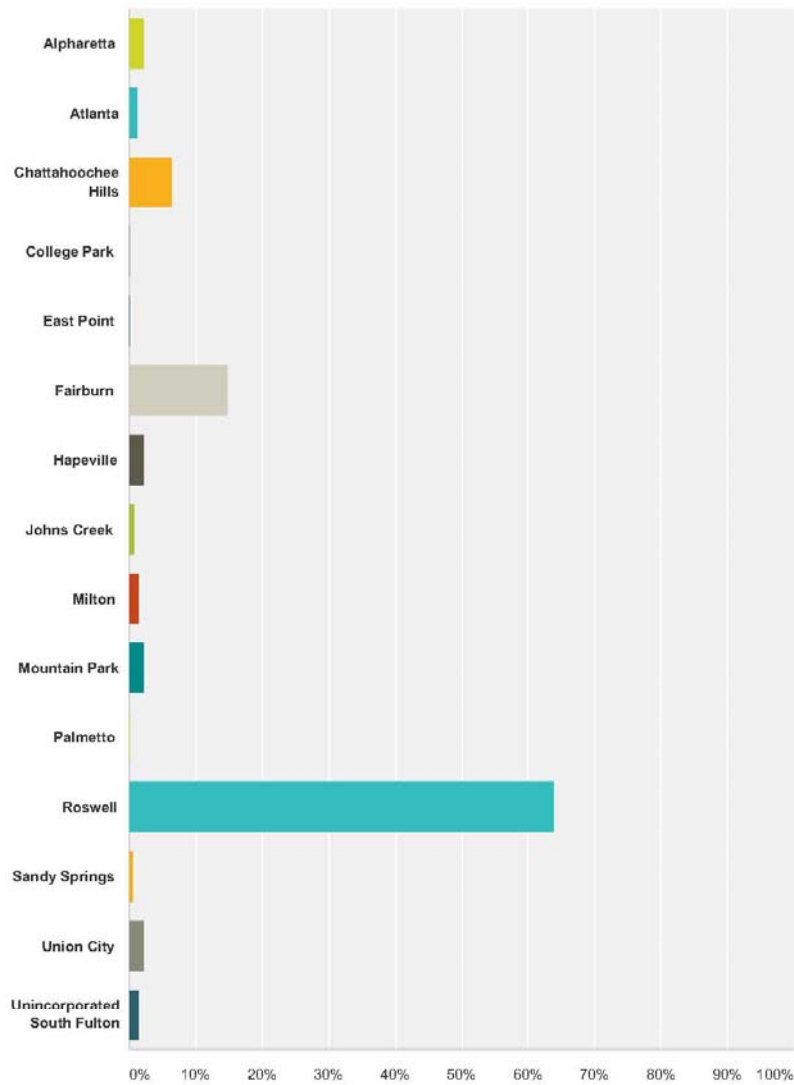
127	It concerns me how after every time we have more than a light shower, pot holes always appear (and reappear) in the roads. I do not feel that it is a simple "old road" issue as pot holes that are filled in, show back up after a few weeks or months and are considerably larger than before. The materials used and quality of work seems to be an issue.	2/1/2016 4:15 PM
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2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q1 Where in Fulton County do you live?

Answered: 946 Skipped: 3



Answer Choices	Responses
Alpharetta	2.22% 21
Atlanta	1.27% 12
Chattahoochee Hills	6.45% 61



2015 Fulton County Hazard Mitigation Plan (HMP) Update

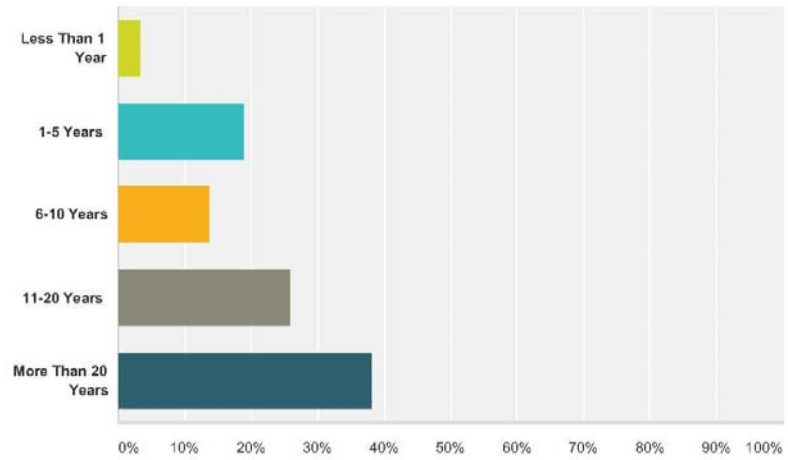
College Park	0.11%	1
East Point	0.11%	1
Fairburn	14.90%	141
Hapeville	2.22%	21
Johns Creek	0.74%	7
Milton	1.37%	13
Mountain Park	2.33%	22
Palmetto	0.11%	1
Roswell	63.95%	605
Sandy Springs	0.53%	5
Union City	2.33%	22
Unincorporated South Fulton	1.37%	13
Total		946



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q2 How long have you lived in Fulton County?

Answered: 942 Skipped: 7



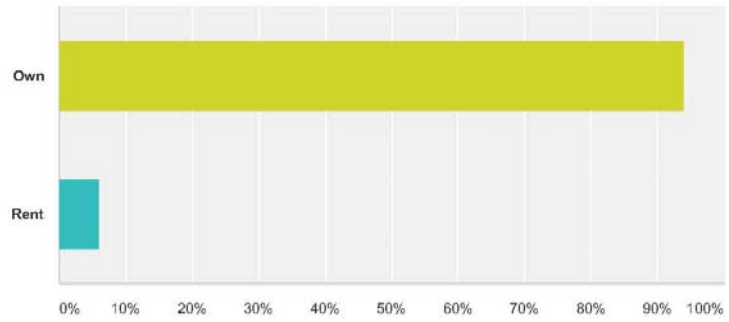
Answer Choices	Responses	
Less Than 1 Year	3.29%	31
1-5 Years	19.00%	179
6-10 Years	13.69%	129
11-20 Years	25.80%	243
More Than 20 Years	38.22%	360
Total		942



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q3 Do you own or rent your place of residence?

Answered: 941 Skipped: 8



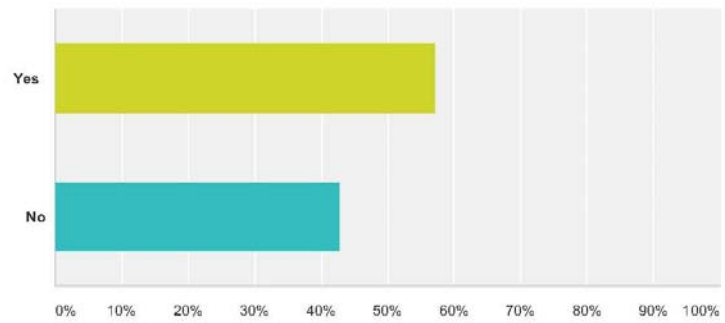
Answer Choices	Responses	
Own	93.94%	884
Rent	6.06%	57
Total		941



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q4 Do you work in Fulton County?

Answered: 936 Skipped: 13



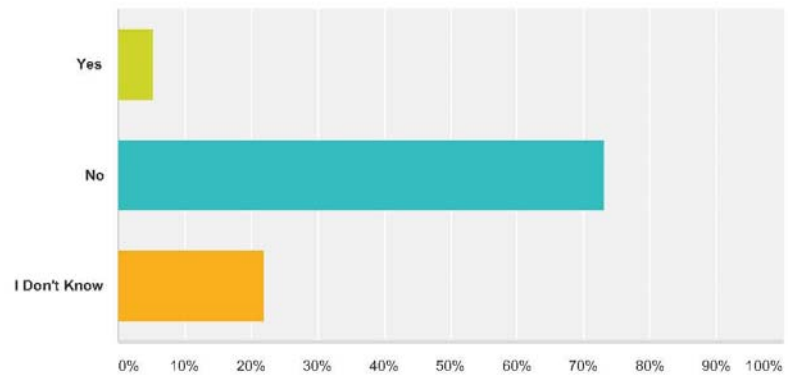
Answer Choices	Responses	
Yes	57.26%	536
No	42.74%	400
Total		936



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q5 Do you live in a flood plain?

Answered: 937 Skipped: 12



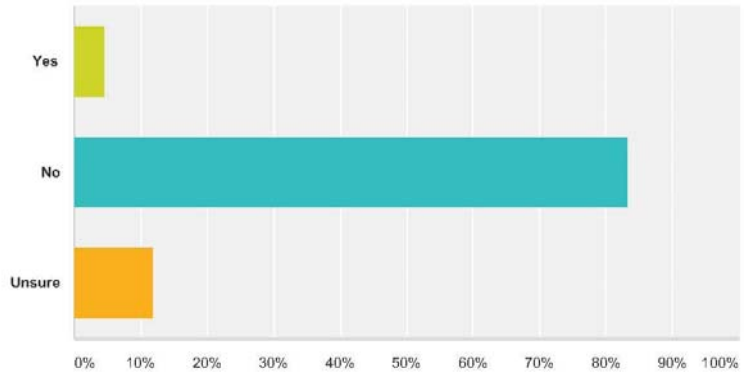
Answer Choices	Responses	
Yes	5.12%	48
No	73.00%	684
I Don't Know	21.88%	205
Total		937



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q6 Do you have National Flood Insurance?

Answered: 943 Skipped: 6



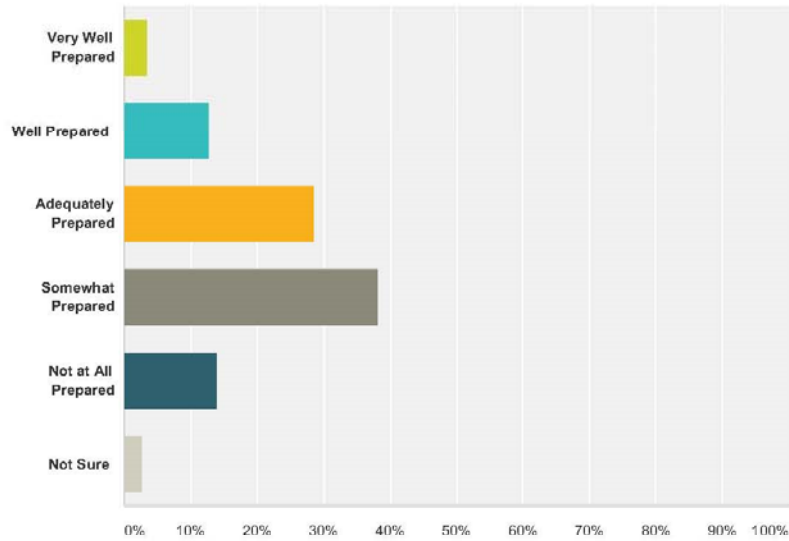
Answer Choices	Responses	
Yes	4.67%	44
No	83.35%	786
Unsure	11.98%	113
Total		943



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q7 How prepared do you feel for natural hazard events such as tornadoes, floods, or severe storms to occur in Fulton County?

Answered: 890 Skipped: 59



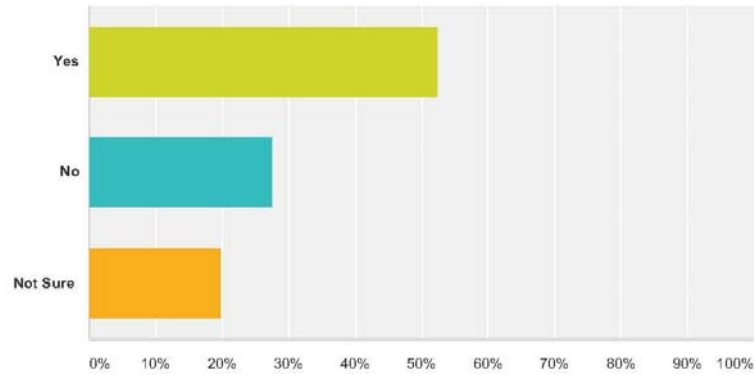
Answer Choices	Responses
Very Well Prepared	3.60% 32
Well Prepared	12.81% 114
Adequately Prepared	28.65% 255
Somewhat Prepared	38.20% 340
Not at All Prepared	13.93% 124
Not Sure	2.81% 25
Total	890



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q8 Do you consider yourself informed about probable impacts of natural hazards that may occur within Fulton County?

Answered: 888 Skipped: 61



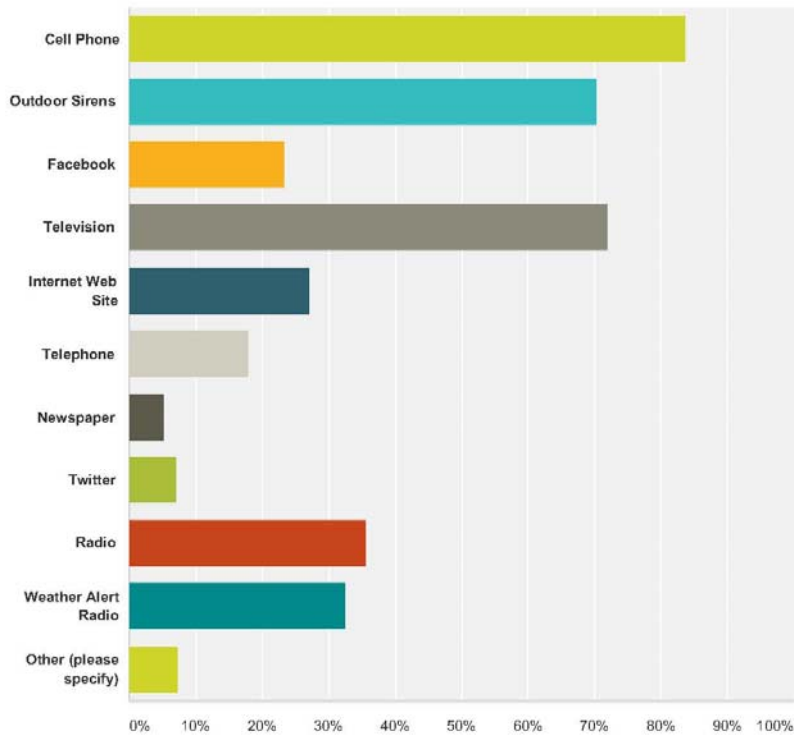
Answer Choices	Responses	Count
Yes	52.48%	466
No	27.59%	245
Not Sure	19.93%	177
Total		888



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q9 Which information sources are the most effective at warning you of approaching storms or natural hazards in Fulton County? (Check all that apply to you/your household)

Answered: 892 Skipped: 57



Answer Choices	Responses	Count
Cell Phone	83.74%	747
Outdoor Sirens	70.40%	628
Facebook	23.32%	208
Television	71.97%	642
Internet Web Site	27.24%	243
Telephone	17.94%	160
Newspaper	5.27%	47
Twitter	7.06%	63



2015 Fulton County Hazard Mitigation Plan (HMP) Update

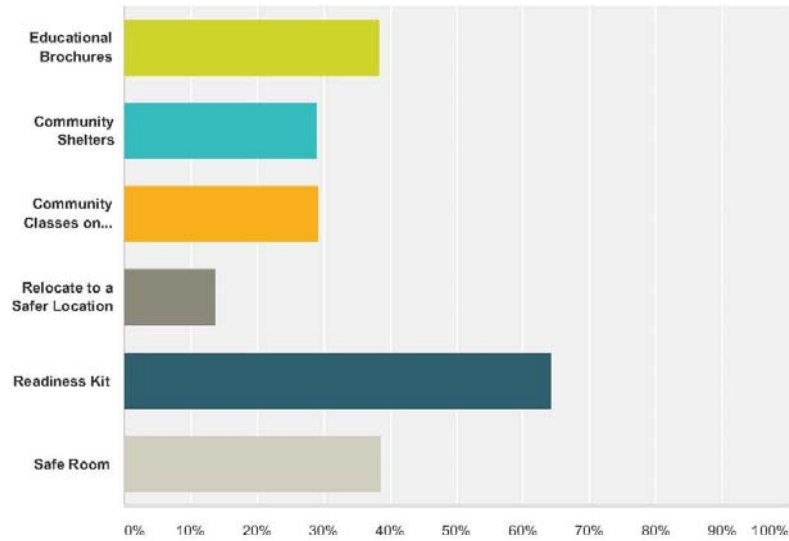
Radio	35.65%	318
Weather Alert Radio	32.51%	290
Other (please specify)	7.29%	65
Total Respondents: 892		



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q10 What would help you feel more prepared? (Select all that apply to you/your household)

Answered: 802 Skipped: 147



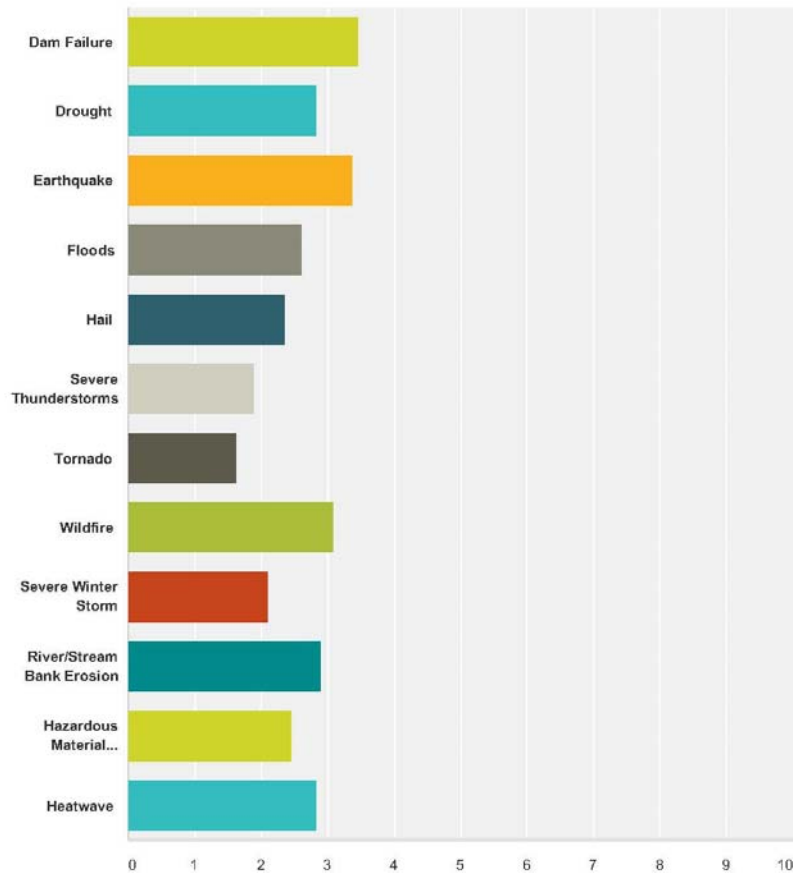
Answer Choices	Responses
Educational Brochures	38.40% 308
Community Shelters	29.05% 233
Community Classes on Natural Hazards	29.30% 235
Relocate to a Safer Location	13.72% 110
Readiness Kit	64.34% 516
Safe Room	38.65% 310
Total Respondents: 802	



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q11 Please indicate your personal experience and level of concern about the effects of each natural hazard's potential impact on life and property in Fulton County.

Answered: 893 Skipped: 56



	Highly Concern	Fair Concern	Concern	Not Concern	Total	Weighted Average
Dam Failure	4.28% 36	10.46% 88	18.79% 158	66.47% 559	841	3.47
Drought	10.76% 91	23.17% 196	37.71% 319	28.37% 240	846	2.84
Earthquake	5.24% 44	9.06% 76	27.41% 230	58.28% 489	839	3.39



2015 Fulton County Hazard Mitigation Plan (HMP) Update

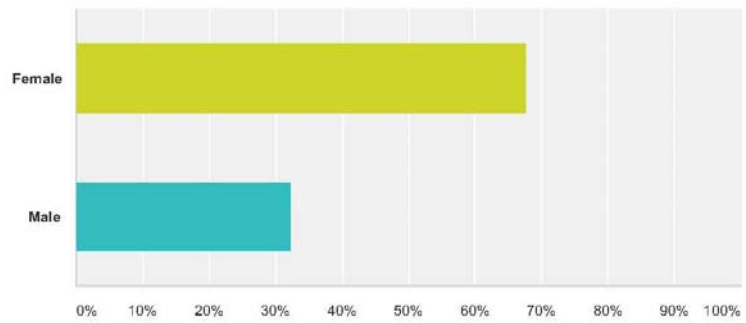
Floods	13.40% 115	30.19% 259	39.39% 338	17.02% 146	858	2.60
Hail	18.02% 153	39.10% 332	31.80% 270	11.07% 94	849	2.36
Severe Thunderstorms	39.00% 342	35.58% 312	20.52% 180	4.90% 43	877	1.91
Tornado	56.41% 497	26.22% 231	14.87% 131	2.50% 22	881	1.63
Wildfire	9.68% 81	15.53% 130	31.90% 267	42.89% 359	837	3.08
Severe Winter Storm	31.19% 271	34.52% 300	26.01% 226	8.29% 72	869	2.11
River/Stream Bank Erosion	11.08% 94	20.75% 176	35.14% 298	33.02% 280	848	2.90
Hazardous Material Spill/Release	26.35% 225	23.07% 197	29.16% 249	21.43% 183	854	2.46
Heatwave	11.03% 94	24.18% 206	35.92% 306	28.87% 246	852	2.83



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q12 Gender

Answered: 880 Skipped: 69



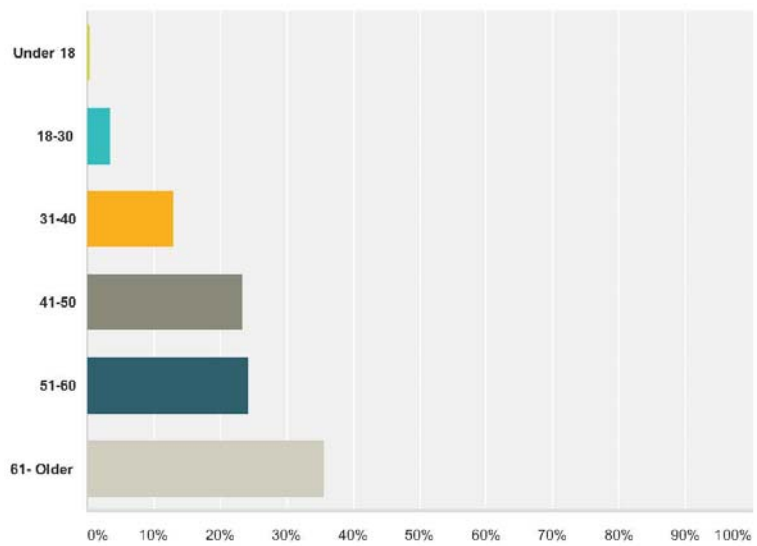
Answer Choices	Responses	
Female	67.73%	596
Male	32.27%	284
Total		880



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q13 Please indicate your age range

Answered: 887 Skipped: 62



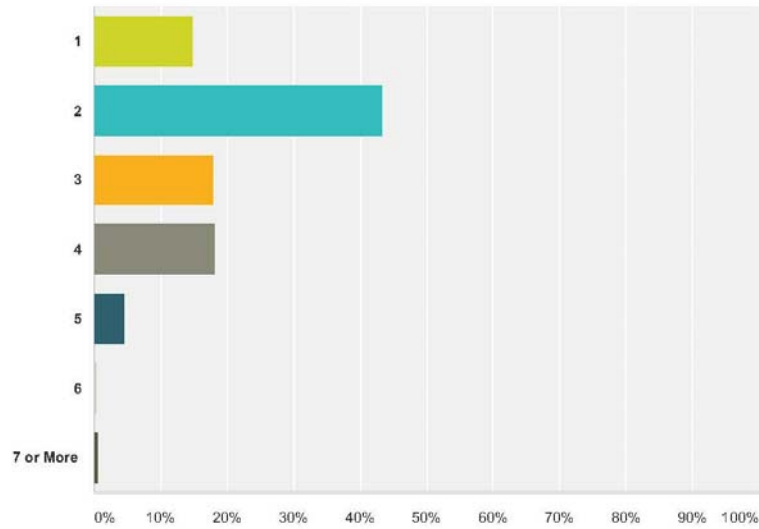
Answer Choices	Responses	
Under 18	0.34%	3
18-30	3.49%	31
31-40	12.97%	115
41-50	23.34%	207
51-60	24.13%	214
61- Older	35.74%	317
Total		887



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q14 How many people currently live in your household?

Answered: 879 Skipped: 70



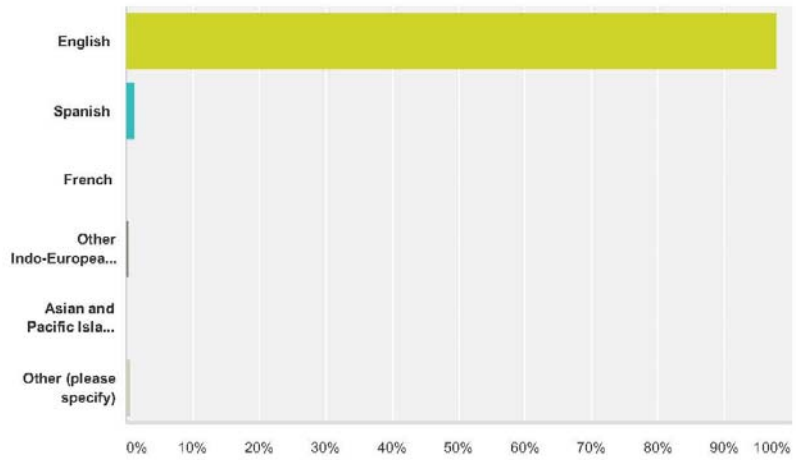
Answer Choices	Responses	
1	14.79%	130
2	43.46%	382
3	17.86%	157
4	18.09%	159
5	4.66%	41
6	0.46%	4
7 or More	0.68%	6
Total		879



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q15 Please indicate the primary language spoken in your household.

Answered: 885 Skipped: 64



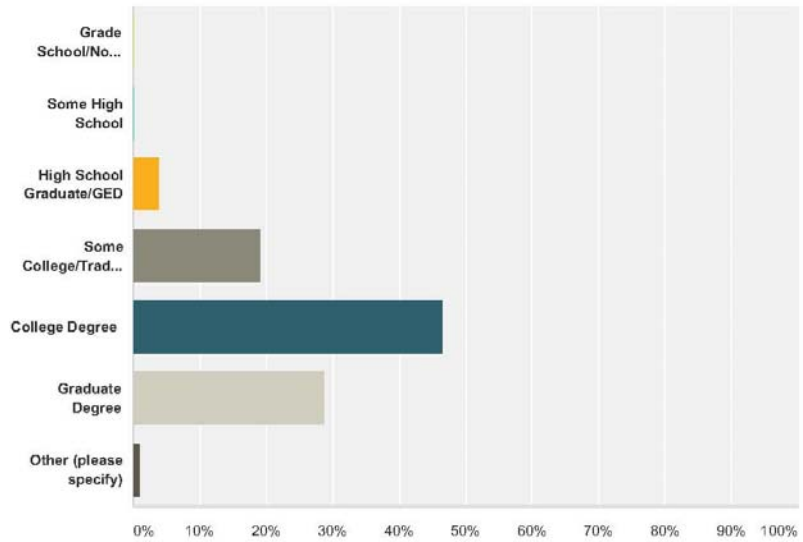
Answer Choices	Responses
English	97.85% 866
Spanish	1.24% 11
French	0.00% 0
Other Indo-European Languages	0.34% 3
Asian and Pacific Island Languages	0.00% 0
Other (please specify)	0.56% 5
Total	885



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q16 Please indicate your highest level of education.

Answered: 881 Skipped: 68



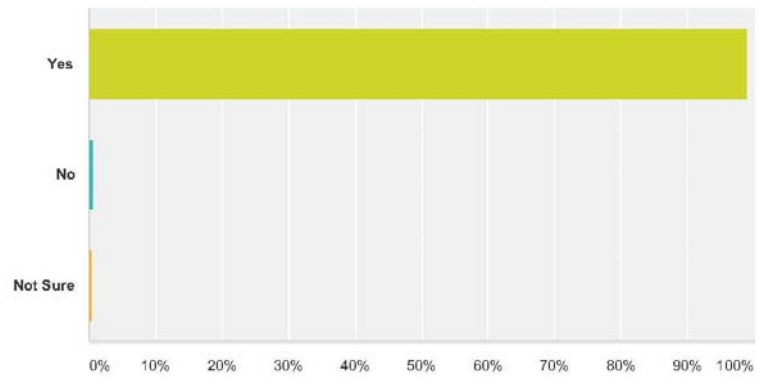
Answer Choices	Responses
Grade School/No Schooling	0.11% 1
Some High School	0.11% 1
High School Graduate/GED	3.97% 35
Some College/Trade School	19.30% 170
College Degree	46.54% 410
Graduate Degree	28.83% 254
Other (please specify)	1.14% 10
Total	881



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q17 Do you have regular access to the Internet?

Answered: 884 Skipped: 65



Answer Choices	Responses
Yes	98.98% 875
No	0.68% 6
Not Sure	0.34% 3
Total	884



2015 Fulton County Hazard Mitigation Plan (HMP) Update

Q18 Comments???

Answered: 127 Skipped: 822



Public Survey Risk Ranking Results 893 Responses

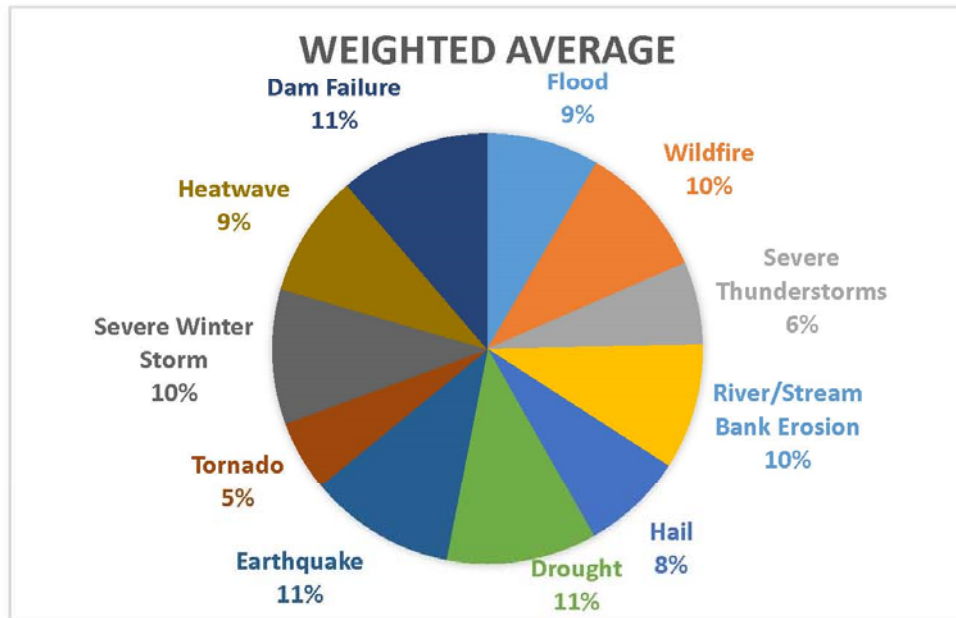




Table Error! No text of specified style in document. Overall County Combined Jurisdiction Likelihood of Occurrence Averages

Countywide Risk Assessment Matrix											
Hazards Assessed											
Jurisdiction	Severe Weather	Tornadoes	Flood	Winter Storm	Heat Wave	Drought	Wildfire/Urban Interface	Tropical System	Dam Failure	Sinkhole	Earthquake
Alpharetta	L	L	L	L	P	L	P	P	P	U	P
Atlanta	L	L	L	P	P	P	U	P	P	P	U
Chattahoochee Hills	L	L	P	P	P	P	P	U	U	U	U
College Park	L	P	P	P	P	U	P	P	U	P	U
East Point	P	P	L	P	P	L	P	P	U	P	U
Fairburn	H	H	P	P	P	P	P	U	P	P	U
Hapeville	L	L	P	L	L	P	P	P	U	U	P
Johns Creek	U	P	P	P	P	L	U	P	U	P	U
Milton	L	L	L	L	P	P	P	U	P	P	P
Mountain Park	P	P	L	P	P	P	L	U	P	P	U
Palmetto	L	L	U	L	L	P	P	P	P	U	U
Roswell	L	L	L	P	P	P	U	P	P	U	U
Sandy Springs	U	P	P	U	U	U	P	P	P	P	P
Unincorporated S. Fulton	H	H	H	H	H	H	L	H	L	L	P
Union City	L	L	L	L	P	P	P	P	U	U	U
Countywide Ranking by Average Scores	2.73 L	2.73 L	2.53 L	2.40 P	2.20 P	2.20 P	1.93 P	1.86 P	1.67 P	1.67 P	1.33 U

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)





2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

Welcome to Summary of Hazard Impacts Survey 2015

Thank you for participating in our survey. Your feedback is an important part of updating the Fulton County Hazard Mitigation Plan.

1. Contact Information

Name	<input type="text"/>
Jurisdiction	<input type="text"/>
Agency	<input type="text"/>
Email	<input type="text"/>
Phone Number	<input type="text"/>



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

Welcome to Summary of Hazard Impacts Survey

The information collected will be used to update the information currently found in Chapter 5: Risk Assessment (pages 5-35 through 5-49) of the 2010 Hazard Mitigation Plan.

Please use the following as reference for your questions:

Level I – Catastrophic

- *Personnel:* Death or fatal injury.
- *Public:* Death or fatality or fatalities due to direct exposure.
- *Environment:* A major hazardous chemical spill that is uncontaminated. Regional or total species/subspecies loss.
- *Economic Impact:* Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- *Facilities:* Complete shutdown of facilities and critical services for more than a month.
- *Property:* More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- *Personnel:* Permanent disability, severe injury or illness.
- *Public:* Permanent disability, severe injury or illness.
- *Environment:* A minor hazardous chemical spill that is uncontaminated. Local or species/subspecies damage.
- *Economic Impact:* Partial loss of financial base, temporarily incapacitating the City.



Funding not available within four days to initiate recovery procedures.

- *Facilities:* Complete shutdown of facilities and critical services for more than two weeks.
- *Property:* More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- *Personnel:* Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- *Public:* Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- *Environmental:* A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- *Economic Impact:* Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- *Facilities:* Complete shutdown of facilities and critical services for more than a week.
- *Property:* More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV: Negligible

- *Personnel:* Treatable first aid injury.
- *Public:* Minor quality of life loss.
- *Environment:* A minor hazardous chemical spill that is contained. No measurable impact to environs.
- *Economic Impact:* Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- *Facilities:* Complete shutdown of facilities and critical services for more than 24 hours.
- *Property:* No more than 1 percent of property located in the proximity of the City is severely damaged.



Probability or Likelihood As:

Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.

Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.

Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.

Unlikely – A hazard whose potential impact is likely to occur



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

Fulton County Hazard Ranking



2. Please use the Matrix below to identify the likelihood of risk for your jurisdiction.

Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event.

This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Severe Weather (High Winds & Lightening)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Severe Winter Storm	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Flooding	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Heat Wave	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Drought	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tropical System/Hurricane	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Wildfire/Urban Interface	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Dam/Levee Failure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sinkhole	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Earthquake	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Hazardous Material Spill/Release	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
River/Stream Bank Erosion	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Other (please specify)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

Comments (Optional)

If you have additional information you would like to share about your knowledge and experience regarding local natural hazards and disasters, we invite you to provide your information on this page. This survey and your comments are completely confidential and greatly appreciated.

Additionally, go to the hazard plan website at:

if you would like more information or to be added to an information list.

Thank you for your time!

3. Comments:



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#1



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Thursday, January 14, 2016 3:15:39 PM
 Last Modified: Thursday, January 14, 2016 3:21:42 PM
 Time Spent: 00:06:02
 IP Address: 70.151.174.190

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Grant Hickey
Jurisdiction	City of Johns Creek
Agency	Emergency Management
Email	grant.hickey@Johnscreekga.gov
Phone Number	678-314-2060

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Severe Weather (High Winds & Lightening)	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Severe Winter Storm	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
Flooding	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
Heat Wave	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Drought	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Dam/Levee Failure	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Sinkhole	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Hazardous Material Spill/Release	Possible (2)	Possible (2)	Likely (3)	Likely (3)
River/Stream Bank Erosion	Possible (2)	Possible (2)	Possible (2)	Possible (2)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#2



COMPLETE

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 Last Modified: Friday, January 15, 2016 8:51:47 AM
 Time Spent: 18:21:05
 IP Address: 12.116.203.222

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Joe Popadics
Jurisdiction	City of Alpharetta
Agency	Alpharetta Department of Public Safety
Email	jpopadics@alpharetta.ga.us
Phone Number	678-297-6352

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Possible (2)	Likely (3)	Highly Likely (4)	Highly Likely (4)
Severe Winter Storm	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Flooding	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Heat Wave	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Drought	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Tropical System/Hurricane	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
Wildfire/Urban Interface	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
Dam/Levee Failure	Unlikely (1)	Possible (2)	Likely (3)	Likely (3)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Earthquake	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Hazardous Material Spill/Release	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
River/Stream Bank Erosion	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#3



COMPLETE

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 Last Modified: Friday, January 15, 2016 9:40:35 AM
 Time Spent: 00:22:28
 IP Address: 172.11.252.39

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Chief Henry W. Argo
Jurisdiction	City of Palmetto, Georgia
Agency	City of Palmetto Fire - Rescue
Email	argo@citypalmetto.com
Phone Number	770-990-4437

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Likely (3)	Likely (3)	Likely (3)
Severe Weather (High Winds & Lightening)	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Severe Winter Storm	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Flooding	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Heat Wave	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Drought	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Tropical System/Hurricane	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
Dam/Levee Failure	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Hazardous Material Spill/Release	Possible (2)	Possible (2)	Likely (3)	Likely (3)
River/Stream Bank Erosion	Possible (2)	Possible (2)	Possible (2)	Possible (2)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#4



COMPLETE

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 Started: Friday, January 15, 2016 2:54:12 PM
 Last Modified: Friday, January 15, 2016 3:00:57 PM
 Time Spent: 00:06:44
 IP Address: 216.79.97.66

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Tony Papoutsis
Jurisdiction	Roswell
Agency	Fire
Email	tpapoutsis@roswellgov.com
Phone Number	770-594-6231

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Flooding	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Heat Wave	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Drought	Unlikely (1)	Unlikely (1)	Unlikely (1)	Likely (3)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Likely (3)	Likely (3)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Dam/Levee Failure	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Hazardous Material Spill/Release	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
River/Stream Bank Erosion	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#5



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, January 20, 2016 10:28:01 AM
Last Modified: Wednesday, January 20, 2016 10:35:16 AM
Time Spent: 00:07:14
IP Address: 64.28.222.108

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Matt Marietta
Jurisdiction	Milton
Agency	City of Milton
Email	matthew.marietta@cityofmiltonga.us
Phone Number	404-840-1898

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Severe Weather (High Winds & Lightening)	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Flooding	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Heat Wave	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Drought	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Wildfire/Urban Interface	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Dam/Levee Failure	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Earthquake	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Hazardous Material Spill/Release	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
River/Stream Bank Erosion	Possible (2)	Possible (2)	Likely (3)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

*Respondent skipped this
question*



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#6



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Wednesday, January 20, 2016 3:53:44 PM
 Last Modified: Wednesday, January 20, 2016 3:57:40 PM
 Time Spent: 00:03:55
 IP Address: 68.208.197.20

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Michael Charlson
Jurisdiction	Fulton
Agency	Planning and Community Svcs
Email	michael.charlson@fultoncountyga.gov
Phone Number	404-612-9460

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Likely (3)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Severe Winter Storm	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Flooding	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Heat Wave	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Drought	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Tropical System/Hurricane	Likely (3)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Wildfire/Urban Interface	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Dam/Levee Failure	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Sinkhole	Possible (2)	Likely (3)	Likely (3)	Likely (3)
Earthquake	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
Hazardous Material Spill/Release	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
River/Stream Bank Erosion	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#7



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Monday, January 25, 2016 1:45:48 PM
 Last Modified: Monday, January 25, 2016 1:58:36 PM
 Time Spent: 00:12:47
 IP Address: 216.130.142.131

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	JON B. FORE
Jurisdiction	FAIRBURN FIRE
Agency	FIRE
Email	JFORE@FAIRBURN.COM
Phone Number	678-898-5607

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
Severe Winter Storm	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Flooding	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Heat Wave	Likely (3)	Likely (3)	Likely (3)	Likely (3)
Drought	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Wildfire/Urban Interface	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Dam/Levee Failure	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Sinkhole	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Hazardous Material Spill/Release	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)	Highly Likely (4)
River/Stream Bank Erosion	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#8



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, January 14, 2016 3:29:04 PM
Last Modified: Tuesday, January 26, 2016 3:35:40 PM
Time Spent: Over a week
IP Address: 70.88.183.181

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Joe Maddox
Jurisdiction	Union City
Agency	Fire
Email	jmaddox@unioncityga.org
Phone Number	770-515-7878

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Likely (3)	Highly Likely (4)	Possible (2)
Severe Weather (High Winds & Lightening)	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Flooding	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Heat Wave	Unlikely (1)	Unlikely (1)	Possible (2)	Highly Likely (4)
Drought				
Tropical System/Hurricane				
Wildfire/Urban Interface				
Dam/Levee Failure				
Sinkhole				
Earthquake				
Hazardous Material Spill/Release				
River/Stream Bank Erosion				



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#9



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Thursday, February 04, 2016 11:46:34 AM
 Last Modified: Thursday, February 04, 2016 11:53:38 AM
 Time Spent: 00:07:03
 IP Address: 74.254.43.162

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Michael Webb
Jurisdiction	City Of East Point
Agency	City Of East Point Fire
Email	Mwebb@eastpointcity.org
Phone Number	404/559/6404

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes		Possible (2)		
Severe Weather (High Winds & Lightening)			Likely (3)	
Severe Winter Storm			Likely (3)	
Flooding				
Heat Wave			Highly Likely (4)	
Drought			Possible (2)	
Tropical System/Hurricane			Possible (2)	
Wildfire/Urban Interface			Possible (2)	
Dam/Levee Failure			Unlikely (1)	
Sinkhole			Likely (3)	
Earthquake			Possible (2)	
Hazardous Material Spill/Release			Likely (3)	
River/Stream Bank Erosion			Possible (2)	



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#10



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, February 08, 2016 5:27:06 PM
Last Modified: Monday, February 08, 2016 5:32:45 PM
Time Spent: 00:05:38
IP Address: 192.163.30.170

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Greg Brett
Jurisdiction	Chattahoochee Hills
Agency	Chattahoochee Hills Fire Rescue
Email	greg.brett@chatthillsga.us
Phone Number	770-463-1592

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Likely (3)	Likely (3)	Likely (3)	Possible (2)
Severe Weather (High Winds & Lightening)	Likely (3)	Likely (3)	Likely (3)	Likely (3)
Severe Winter Storm	Possible (2)	Possible (2)	Possible (2)	Likely (3)
Flooding	Unlikely (1)	Possible (2)	Possible (2)	Likely (3)
Heat Wave	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Drought	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Wildfire/Urban Interface	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Dam/Levee Failure	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Hazardous Material Spill/Release	Possible (2)	Possible (2)	Possible (2)	Possible (2)
River/Stream Bank Erosion	Possible (2)	Possible (2)	Likely (3)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#11



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, February 11, 2016 3:14:49 PM
Last Modified: Thursday, February 11, 2016 3:32:33 PM
Time Spent: 00:17:44
IP Address: 74.254.43.162

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	William Tate
Jurisdiction	City of East Point
Agency	East Point Fire Department
Email	wtate@eastpointcity.org
Phone Number	(404) 559-6406

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Unlikely (1)	Unlikely (1)	Likely (3)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Unlikely (1)	Unlikely (1)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Unlikely (1)	Unlikely (1)	Likely (3)	Highly Likely (4)
Flooding	Unlikely (1)	Possible (2)	Likely (3)	Highly Likely (4)
Heat Wave	Unlikely (1)	Unlikely (1)	Unlikely (1)	Likely (3)
Drought	Possible (2)	Possible (2)	Possible (2)	Highly Likely (4)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Likely (3)	Highly Likely (4)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Likely (3)	Likely (3)
Dam/Levee Failure	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Highly Likely (4)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Hazardous Material Spill/Release	Possible (2)	Possible (2)	Possible (2)	Likely (3)
River/Stream Bank Erosion	Unlikely (1)	Unlikely (1)	Likely (3)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Tuesday, January 19, 2016 1:43:04 PM
 Last Modified: Friday, February 12, 2016 2:08:01 PM
 Time Spent: Over a week
 IP Address: 50.147.253.27

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Larry Richardson
Jurisdiction	City of Hapeville
Agency	Fire Department
Email	lrichardson@hapeville.org
Phone Number	770-718-7667

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Flooding	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)
Heat Wave	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Drought	Unlikely (1)	Possible (2)	Possible (2)	Highly Likely (4)
Tropical System/Hurricane	Unlikely (1)	Possible (2)	Possible (2)	Likely (3)
Wildfire/Urban Interface	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
Dam/Levee Failure	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Earthquake	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Hazardous Material Spill/Release	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
River/Stream Bank Erosion	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

#13



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, March 08, 2016 4:04:15 PM
Last Modified: Tuesday, March 08, 2016 4:37:38 PM
Time Spent: 00:33:22
IP Address: 68.118.115.151

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	James Dame, Fire Chief
Jurisdiction	City of Mountain Park
Agency	Mountain Park Vol. Fire and Rescue
Email	jdame@mpvfr.org
Phone Number	404.969.9383

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Possible (2)	Possible (2)	Likely (3)
Severe Weather (High Winds & Lightening)	Unlikely (1)	Unlikely (1)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Unlikely (1)	Unlikely (1)	Possible (2)	Highly Likely (4)
Flooding	Likely (3)	Likely (3)	Likely (3)	Likely (3)
Heat Wave	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Drought	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Tropical System/Hurricane	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Wildfire/Urban Interface	Likely (3)	Likely (3)	Likely (3)	Highly Likely (4)
Dam/Levee Failure	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Hazardous Material Spill/Release	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
River/Stream Bank Erosion	Possible (2)	Likely (3)	Likely (3)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Most hazards are either local storms, flooding, or wildfire in our rural/urban interface. Flooding hazards are usually due to the low-lying areas, decreased lake capacity from silt washing into the lakes from the golf course upstream. Dredging may help increase the lake capacity, but flooding may likely only be mitigated from condemnation or purchase of at-risk properties.



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, March 07, 2016 9:09:00 AM
Last Modified: Wednesday, March 09, 2016 3:32:22 PM
Time Spent: Over a day
IP Address: 205.232.8.14

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Lt. Bruce Braxton
Jurisdiction	College Park, Georgia
Agency	Police Department
Email	bbraxton@collegeparkga.com
Phone Number	678-571-8833

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes			Possible (2)	
Severe Weather (High Winds & Lightening)		Likely (3)		
Severe Winter Storm			Unlikely (1)	
Flooding		Possible (2)		
Heat Wave			Possible (2)	
Drought				Possible (2)
Tropical System/Hurricane			Likely (3)	
Wildfire/Urban Interface				Likely (3)
Dam/Levee Failure				Likely (3)
Sinkhole				Unlikely (1)
Earthquake				Unlikely (1)
Hazardous Material Spill/Release			Likely (3)	
River/Stream Bank Erosion			Likely (3)	



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey



COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Thursday, March 10, 2016 8:41:29 AM
 Last Modified: Thursday, March 10, 2016 9:09:50 AM
 Time Spent: 00:28:21
 IP Address: 70.43.136.221

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Mark Duke
Jurisdiction	City of Sandy Springs
Agency	Sandy Springs Fire Rescue
Email	mduke@sandyspringsga.gov
Phone Number	7702062076

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Severe Weather (High Winds & Lightening)	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Severe Winter Storm	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Flooding	Unlikely (1)	Unlikely (1)	Possible (2)	Highly Likely (4)
Heat Wave	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Drought	Unlikely (1)	Unlikely (1)	Unlikely (1)	Unlikely (1)
Tropical System/Hurricane	Unlikely (1)	Possible (2)	Possible (2)	Highly Likely (4)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Dam/Levee Failure	Possible (2)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Unlikely (1)	Possible (2)	Possible (2)	Likely (3)
Earthquake	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
Hazardous Material Spill/Release	Unlikely (1)	Unlikely (1)	Possible (2)	Possible (2)
River/Stream Bank Erosion	Unlikely (1)	Unlikely (1)	Possible (2)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, February 12, 2016 12:40:01 PM
Last Modified: Sunday, March 13, 2016 11:39:15 PM
Time Spent: Over a week
IP Address: 107.215.60.89

PAGE 1: Welcome to Summary of Hazard Impacts Survey 2015

Q1: Contact Information

Name	Ria Aiken
Jurisdiction	Fulton County
Agency	City of Atlanta
Email	raiken@atlantaga.gov
Phone Number	6784923948

PAGE 3: Fulton County Hazard Ranking

Q2: Please use the Matrix below to identify the likelihood of risk for your jurisdiction. Each level (Catastrophic, Critical, Marginal, Negligible) should be answered for each Hazard Type. For example: if you jurisdiction has a history of floods then you would use the drop down scale of 1-4 (1 being the unlikely and 4 being the highly likely) to indicate the likelihood that your jurisdiction would experience negligible, marginal, critical, and catastrophic impacts from a flood event. This should be done for all 12 hazards listed.

	Level 1: Catastrophic	Level 2: Critical	Level 3: Marginal	Level 4: Negligible
Tornadoes	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Weather (High Winds & Lightening)	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Severe Winter Storm	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Flooding	Possible (2)	Likely (3)	Likely (3)	Highly Likely (4)
Heat Wave	Possible (2)	Possible (2)	Likely (3)	Highly Likely (4)
Drought	Possible (2)	Possible (2)	Likely (3)	Likely (3)
Tropical System/Hurricane	Unlikely (1)	Possible (2)	Possible (2)	Unlikely (1)
Wildfire/Urban Interface	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Dam/Levee Failure	Unlikely (1)	Possible (2)	Possible (2)	Possible (2)
Sinkhole	Unlikely (1)	Unlikely (1)	Unlikely (1)	Likely (3)
Earthquake	Unlikely (1)	Unlikely (1)	Unlikely (1)	Possible (2)
Hazardous Material Spill/Release	Possible (2)	Possible (2)	Possible (2)	Likely (3)
River/Stream Bank Erosion	Possible (2)	Possible (2)	Possible (2)	Likely (3)



2015 Fulton County Hazard Mitigation Plan (HMP) Update Survey

PAGE 4: Comments (Optional)

Q3: Comments:

Respondent skipped this question



Appendix G

Reports and Studies



KECK & WOOD, INC.

PROJECT: 061000.90
PREPARED BY: RDG
DATE 10/02/2006

**COST ESTIMATE
LOWER DIXIE LAKE DAM
OPTION ONE - CONSTRUCT CHANNEL
CITY OF UNION CITY, GEORGIA**

ITEM DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing & Grubbing	1	LS	\$ 20,000.00	\$ 20,000.00
Excavation	3500	CY	\$ 15.00	\$ 52,500.00
Remove existing bridge	1	LS	\$ 15,000.00	\$ 15,000.00
Remove Roadway	550	SY	\$ 20.00	\$ 11,000.00
Stabilize Slopes - Riprap	560	SY	\$ 60.00	\$ 33,600.00
Plastic Filter Fabric - under Riprap	560	SY	\$ 5.00	\$ 2,800.00
Sanitary Sewer Replacement	200	LF	\$ 50.00	\$ 10,000.00
Water line Replacement	200	LF	\$ 50.00	\$ 10,000.00
Pilings for utility support over channel	80	LF	\$ 250.00	\$ 20,000.00
Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00
Grassing	1	AC	\$ 2,000.00	\$ 2,000.00
Contingency			20%	\$ 186,900.00
Total Construction Cost				\$ 224,280.00
Engineering			12%	\$ 26,913.60
Total Project Cost				\$ 251,193.60

FILE: LowrDixieLakeDam\$EST.xls SHEET: Option 1 COST EST



PROJECT: 061000.90
PREPARED BY: RDG
DATE 10/02/2006

**COST ESTIMATE
LOWER DIXIE LAKE DAM
OPTION TWO - CONVERT DAM TO ROADWAY EMBANKMENT WITH DRAINAGE
STRUCTURE
CITY OF UNION CITY, GEORGIA**

KECK & WOOD, INC.

ITEM DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing & Grubbing	1	LS	\$ 20,000.00	\$ 20,000.00
Excavation	3500	CY	\$ 15.00	\$ 52,500.00
Remove existing bridge	1	LS	\$ 15,000.00	\$ 15,000.00
Remove Roadway	550	SY	\$ 20.00	\$ 11,000.00
Concrete Box Culvert - 10 ft x 8 ft	223	CY	\$ 750.00	\$ 167,250.00
Reinforcing Steel - Box Culvert	27500	LBS	\$ 1.25	\$ 34,375.00
Stabilize Slopes - Riprap	90	SY	\$ 60.00	\$ 5,400.00
Plastic Filter Fabric - under Riprap	90	SY	\$ 5.00	\$ 450.00
Embankment - Borrow	10600	CY	\$ 15.00	\$ 159,000.00
Construct Roadway - Asphalt, Curb & Gutter	200	LF	\$ 96.00	\$ 19,200.00
Construct Roadway - Drainage	1	LS	\$ 7,000.00	\$ 7,000.00
Sanitary Sewer Replacement	200	LF	\$ 50.00	\$ 10,000.00
Water line Replacement	200	LF	\$ 50.00	\$ 10,000.00
Temporary Support for utility support over excavation	80	LF	\$ 200.00	\$ 16,000.00
Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00
Grassing	1.5	AC	\$ 2,000.00	\$ 3,000.00

Contingency 20% \$ 540,175.00
\$ 108,035.00

Total Construction Cost \$ 648,210.00

Engineering 12% \$ 77,785.20

Total Project Cost \$ 725,995.20

FILE: LowrDixieLakeDam\$EST.xls SHEET: Option 2 COST EST



PROJECT: 061000.90
PREPARED BY: RDG
DATE 10/02/2006

KECK & WOOD, INC.

**COST ESTIMATE
LOWER DIXIE LAKE DAM
OPTION THREE - CONVERT LAKE INTO A DETENTION FACILITY (DRY POND)
CITY OF UNION CITY, GEORGIA**

ITEM DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing & Grubbing	1	LS	20,000.00	20,000.00
Excavation	3500	CY	15.00	52,500.00
Remove existing bridge	1	LS	15,000.00	15,000.00
Remove Roadway	550	SY	20.00	11,000.00
Detention Structure - Conduit through Dam	223	CY	750.00	167,250.00
Detention Structure - Riser in Lake	25	CY	750.00	18,750.00
Conduit Reinforcing Steel	10000	LBS	1.25	12,500.00
Stabilize Slopes - Riprap	90	SY	60.00	5,400.00
Plastic Filter Fabric - under Riprap	90	SY	5.00	450.00
Embankment - Borrow	22000	CY	15.00	330,000.00
Construct Roadway - Asphalt, Curb & Gutter	200	LF	96.00	19,200.00
Construct Roadway - Drainage	1	LS	7,000.00	7,000.00
Sanitary Sewer Replacement	200	LF	50.00	10,000.00
Water line Replacement	200	LF	50.00	10,000.00
Temporary Support for utility support over excavation	80	LF	200.00	16,000.00
Erosion Control	1	LS	10,000.00	10,000.00
Grassing	1.5	AC	2,000.00	3,000.00

Contingency	20%	\$ 708,050.00
		\$ 141,610.00

Total Construction Cost \$ 849,660.00

Engineering	12%	\$ 101,959.20
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Total Project Cost \$ 951,619.20

FILE: LowrDixieLakeDam\$EST.xls SHEET: Option 3 COST EST



PROJECT: 061000.90
PREPARED BY: RDG
DATE 10/02/2006

KECK & WOOD, INC.

**COST ESTIMATE
LOWER DIXIE LAKE DAM
OPTION FOUR - RESTORE DAM TO PROVIDE PERMANENT POOL LAKE/DETENTION
FACILITY
CITY OF UNION CITY, GEORGIA**

ITEM DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing & Grubbing	1	LS	\$ 20,000.00	\$ 20,000.00
Excavation	15000	CY	\$ 15.00	\$ 225,000.00
Remove existing bridge	1	LS	\$ 15,000.00	\$ 15,000.00
Remove Roadway	550	SY	\$ 20.00	\$ 11,000.00
Detention Structure - Conduit through Dam	223	CY	\$ 750.00	\$ 167,250.00
Detention Structure - Riser in Lake	25	CY	\$ 750.00	\$ 18,750.00
Conduit Reinforcing Steel	10000	LBS	\$ 1.25	\$ 12,500.00
Stabilize Slopes - Riprap	90	SY	\$ 60.00	\$ 5,400.00
Plastic Filter Fabric - under Riprap	90	SY	\$ 5.00	\$ 450.00
Embankment - Borrow	25000	CY	\$ 15.00	\$ 375,000.00
Chimney Drain	360	CY	\$ 30.00	\$ 10,800.00
Construct Roadway - Asphalt, Curb & Gutter	200	LF	\$ 96.00	\$ 19,200.00
Construct Roadway - Drainage	1	LS	\$ 7,000.00	\$ 7,000.00
Relocate Sanitary Sewer out of dam structure	400	LF	\$ 80.00	\$ 32,000.00
Relocate Water Line out of dam structure	400	LF	\$ 80.00	\$ 32,000.00
Temporary Support for utility support over excavation	80	LF	\$ 200.00	\$ 16,000.00
Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00
Grassing	1.5	AC	\$ 2,000.00	\$ 3,000.00

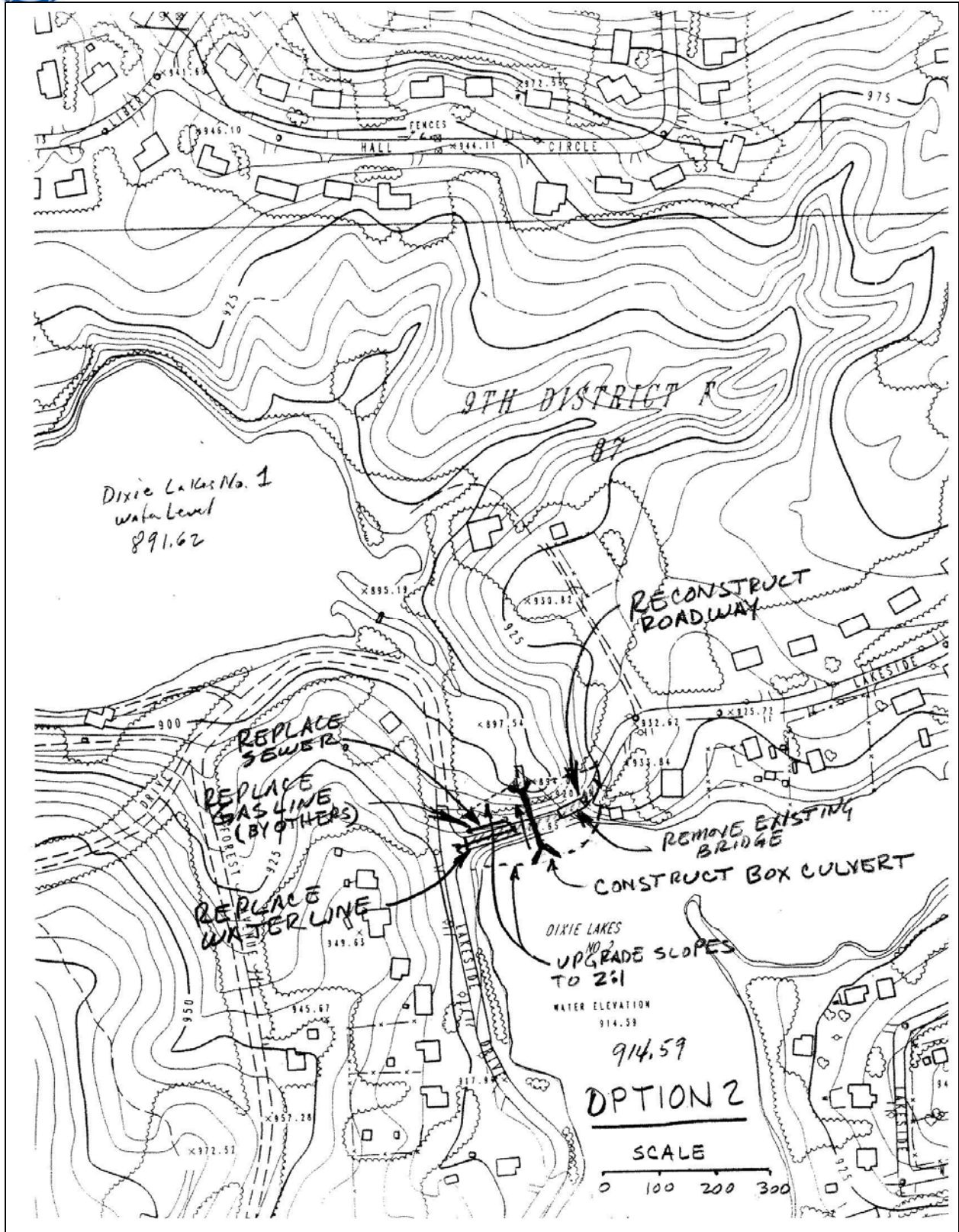
Contingency 20% \$ 980,350.00
\$ 196,070.00

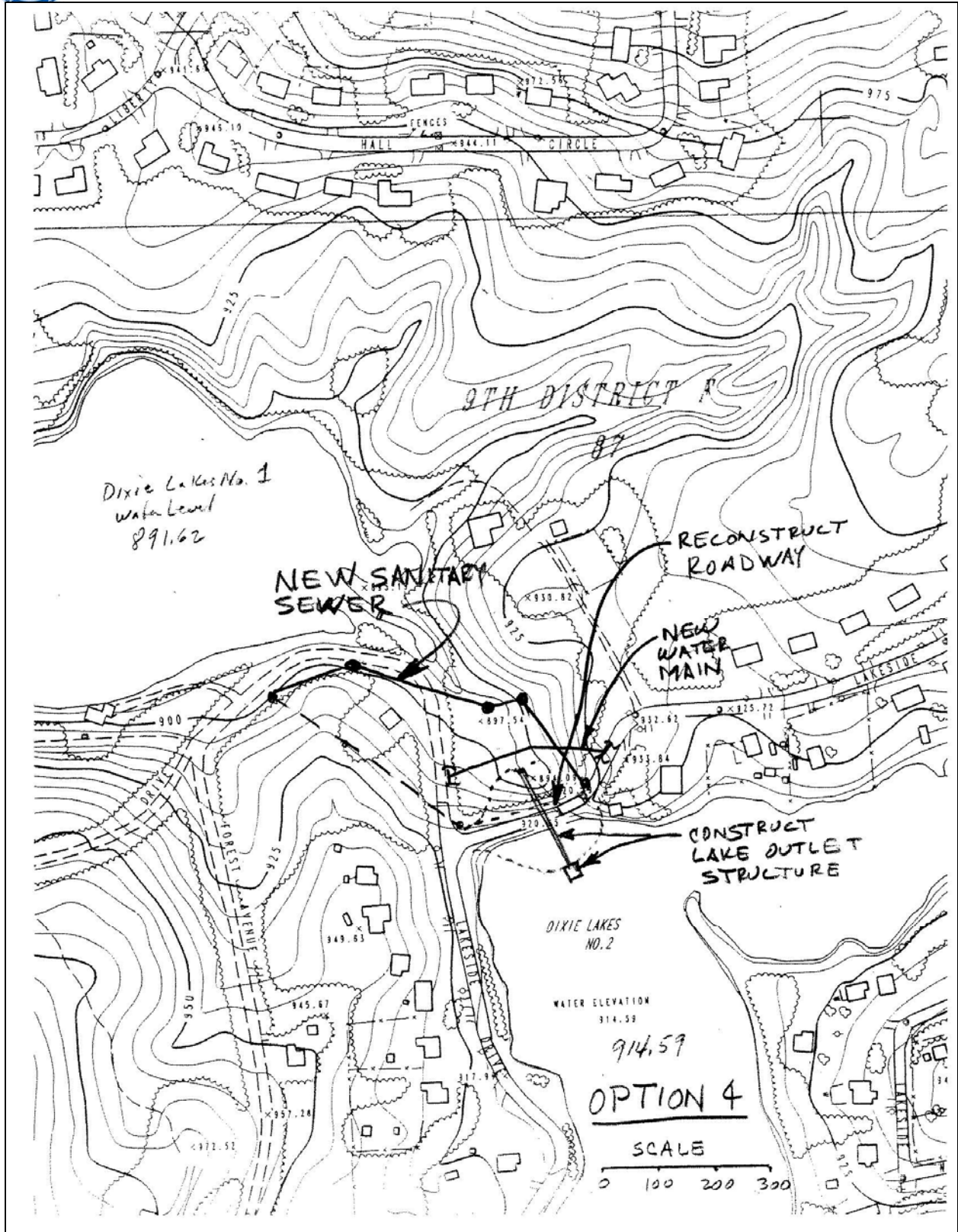
Total Construction Cost \$ 1,176,420.00

Engineering 12% \$ 141,170.40

Total Project Cost \$ 1,317,590.40

FILE: LowrDixieLakeDam\$EST.xls SHEET: Option 4 COST EST







KECK & WOOD, INC.
2425 Commerce Avenue
Building 2100, Suite 300
Duluth, GA 30096
(678) 417-4000
FAX (678) 417-8785

MEMO

TO OFFICE **Terrell Jacobs, City Administrator**
 City of Union City

FROM OFFICE **Richard D. Gurney, P.E.**
 Keck & Wood, Inc.

SUBJECT **Upper Dixie Lake Dam Remediation Options**

DATE **September 7, 2006**

This memo provides the City with the probable cost of several options to remedy the problems associated with the Upper Dixie Lake Dam. These options are based on the information provide in the Report of Preliminary Subsurface Exploration and Geotechnical Engineering Evaluation prepared by Piedmont Geotechnical Consultants, Inc. of July 10, 2006.

Option One – Cut channel through the dam

This option would be to remove the dam structure sufficiently to allow the drainage to pass freely through the area of the dam by excavating a channel west of the bridge at the location of the non-functioning low level drain (wood pipe) and stabilizing the side slopes of the channel. The roadway and bridge would also be removed. The existing sanitary sewer and water main, which are embedded in the existing earth dam, would be replaced with ductile iron and supported with a timber pile bents to span the proposed channel. The water line and sanitary sewer would be 15 to 20 feet above the proposed channel grade. There also is a natural gas line in the dam, which would be relocated by the utility company. Roadway improvements to add a cul-de-sac to the newly created dead end of Lakeshore Drive are not included in the probable cost. The probable cost does not include the cost of a drainage easement beyond the road right of way to construct the drainage channel. The probable cost does not include the cost to stabilize the lakebed, which would be the responsibility of the property owners.

Probable Cost	\$250,000
Project Schedule	
Surveying and Engineering	3 months
Obtain Easements	3 months
Contract letting period	2 months
Construction	3 months



Memo –Upper Dixie Lake Dam Remediation Options
September 7, 2006

Page 2

Option Two – Dam converted to roadway embankment with drainage structure.

This option would install a 10-foot by 8-foot box culvert at the location of the wood pipe and upgrade the existing dam slopes to 2:1. Removal and replacement of part of the embankment and roadway would be required to install the box culvert. The existing bridge and spillway would be removed permanently and the spillway channel backfilled. Replacement and temporary support of the sanitary sewer and water line would be required during construction. The probable cost does not include the cost of easements to construct the box culvert outside the right of way and upgrade the fill slopes to 2:1 slopes. The probable cost does not include the cost to stabilize the lakebed, which would be the responsibility of the property owners.

Probable Cost	\$725,000
Project Schedule	
Surveying and Engineering	4 months
Obtain R/W & Easements	6 months
Contract letting period	2 months
Construction	6 months

Option Three – Convert the lake into a detention facility (dry pond).

This option would install a detention control structure that pools water during a storm event but otherwise allows the lake to drain completely. There would be no permanent pool. The structure would be located west of the existing bridge at the location of the existing wood pipe. The existing embankment and roadway would be removed and replaced to install the outlet structure. The embankment slopes would be flattened to 3:1 on the upstream face and 2:1 on the downstream face. The existing waterline and sanitary sewer line would be relocated out of the embankment. The probable cost does not include the cost to purchase the land for the detention facility, which would probably be less than the current lake boundary. The probable cost does not include the cost to stabilize the lakebed, which would be the responsibility of the property owners.

Probable Cost	\$950,000
Project Schedule	
Surveying and Engineering	4 months
Obtain R/W & Easements	6 months
Contract letting period	2 months
Construction	6 months



Memo –Upper Dixie Lake Dam Remediation Options
September 7, 2006

Page 3

Option Four – Restore dam to provide a permanent pool lake/wet detention facility

The requirements for the dam embankment would be the same whether the lake has a normal pool, similar to the existing pool, or is set lower to allow for detention storage. Due to the fact that both usages have a permanent pool the embankment and outlet structure must conform to current engineering standards. The recent geotechnical survey and report identified many deficiencies and unknowns with the current embankment and outlet structure and states that it is probably more cost effective to remove the dam and replace it. Therefore this option removes and replaces the existing dam, roadway, bridge, and spillway completely. The bridge and spillway would be replaced with a large principal spillway conduit located within the embankment, which would also serve as the low-level lake drain. The dam embankment would utilize 3:1 slopes. The underground utilities, water, sewer and natural gas would be relocated outside the dam structure. The roadway would be replaced. The probable cost does not include the cost to purchase the land for the lake and a shoreline control width, which would be greater than the current lake boundary.

Probable Cost	\$1,300,000
Project Schedule	
Surveying and Engineering	4 months
Obtain R/W & Easements	6 months
Contract letting period	2 months
Construction	9 months



KECK & WOOD, INC.
2425 Commerce Avenue
Building 2100, Suite 300
Duluth, GA 30096
(678) 417-4000
FAX (678) 417-8785

MEMO

TO OFFICE	Terrell Jacobs, City Administrator City of Union City
FROM OFFICE	Richard D. Gurney, P.E. Keck & Wood, Inc.
SUBJECT	Upper Dixie Lake Dam Remediation Options
DATE	September 7, 2006

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Probable Cost	\$250,000
Project Schedule	
Surveying and Engineering	3 months
Obtain Easements	3 months
Contract letting period	2 months
Construction	3 months



Memo –Upper Dixie Lake Dam Remediation Options
September 7, 2006

Page 2

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Probable Cost	\$725,000
Project Schedule	
Surveying and Engineering	4 months
Obtain R/W & Easements	6 months
Contract letting period	2 months
Construction	6 months

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Probable Cost	\$950,000
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Obtain R/W & Easements	6 months
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Memo –Upper Dixie Lake Dam Remediation Options
September 7, 2006

Page 3

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Probable Cost	\$1,300,000
Project Schedule	
Surveying and Engineering	4 months
Obtain R/W & Easements	6 months
Contract letting period	2 months
Construction	9 months



ADMINISTRATIVE COMMENTS:

ADMINISTRATIVE RECOMMENDATION:



PIEDMONT
GEOTECHNICAL CONSULTANTS, INC.

P.O. BOX 1997 * ROSWELL, GA 30077
(770) 752-9205 * FAX (770) 752-0890

July 10, 2006

The City of Union City
5047 Union Street
Union City, GA 30291

Attention: Mr. Buddy Landrum
Public Service Director

Subject: **Report of Preliminary Subsurface Exploration
and Geotechnical Engineering Evaluation**
Upper Dixie Lake Dam
Lakeshore Drive
Union City, Fulton County, Georgia
PGC Project No. 106107

Dear Mr. Landrum:

Piedmont Geotechnical Consultants, Inc. (PGC) has completed the authorized preliminary subsurface exploration and geotechnical engineering evaluation of the subject site and is reporting our findings herein. The purpose of this study was to obtain general subsurface data from the dam to determine the internal composition of the dam so that a preliminary geotechnical engineering assessment could be performed and recommendations formulated to address the deficiencies noted during our visual reconnaissance in March 2006.

This study was outlined in our Proposal No. P6158 (R1) dated May 19, 2006 and generally included a more detailed reconnaissance of the site, drilling four (4) soil test borings from the crest of the dam through the embankment fill materials and into the foundation, and formulating preliminary geotechnical engineering recommendations for remediation. This study is not intended to fully evaluate this project to allow specific dam rehabilitation recommendations to be made. Rather, we understand the results of this study are to allow the City and its engineers the opportunity to compare and cost the options available for upgrading or modifying this dam. Based on our discussions with Mr. Rick Gurney, P.E. of Keck & Wood, Inc. we understand The City of Union City operates and maintains the road across the dam as well as some of the utilities which pass through the dam, but does not physically own the dam or the lake. Therefore, the City's legal responsibilities for repairing the dam have not been determined. The following paragraphs briefly describe our understanding of the project, the exploration procedures utilized, findings, and our conclusions and preliminary recommendations concerning the geotechnically related aspects of this project.



PROJECT INFORMATION

Our understanding of this project is based primarily on discussions with Mr. Rick Gurney, P.E. and Mr. Charles Corbin, P.E. of Keck & Wood, Mr. Matt Goette (formerly of Keck & Wood), various employees of The City of Union City Public Works Department, our observations at the site during the previous visual evaluation, and limited subsurface data obtained during this current study. Our observations and subsurface exploration data will be discussed in subsequent sections of this report. The Upper Dixie Lake Dam is located approximately 1 mile north-northeast of the intersection of Beverly Engram Parkway (State Route 138) and Roosevelt Highway. Access to the lake and dam are via surface streets off of Lower Dixie Lake Road. Lakeside Drive traverses the western shoreline and crosses the dam. We understand the lake has a considerable watershed to lake area ratio. No survey of the dam has been performed; therefore, any reference to distances or elevation should be considered very approximate.

Our initial involvement with this project began with a site evaluation performed on March 20, 2006 by Mr. Craig Robinson, P.E. of our firm. This visit to the dam was requested by Keck & Wood after the water level in the lake noticeably dropped over a short time interval and considerable uncontrolled seepage was observed near the downstream toe of the existing dam. To our knowledge, the lake level stabilized after it was significantly lowered by pumping and the flows originally observed near the downstream toe of the dam ceased. PGC engineers have not actually witnessed the seepage flows that initiated this geotechnical effort.

The exact history and origin of the dam are not known. Based on discussions with City representatives that are somewhat familiar with local history, we understand that this dam and lake in some configuration may have existed near the turn of the century (early 1900s) and served as a recreational area for vacationing Atlanta residents. More recent history recollection suggests that the dam experienced uncontrolled leakage through the existing low-level conduit and some quantity of concrete was placed by the then current lake owners in the lake at the upstream end of this conduit in an effort to control or restrict the leakage. We understand that representatives of the Georgia Safe Dams Program have recently visited the site and determined that this project is considered an "Exempt" structure by the current Georgia Safe Dams Act.

Based on our discussions with various individuals, we understand that the City does not actually own the dam and/or operate the lake. The City does maintain the road and some of the utilities that cross the dam. Therefore, the participation of the City in the needed repairs and modifications of this project are not clearly defined. We understand three potential options may be considered for modification of the existing dam as follows:

1. Perform repairs and modifications to the dam such that it continues to function only as a road embankment and does not impound a lake.
2. Perform modifications to the existing dam such that it will function as a detention pond and not impound a permanent pool.
3. Perform modifications to the dam such that it continues to function as an earthen dam with a permanent pool.



As part of the follow-up studies recommended by PGC after completion of the March 20, 2006 site visit, we recommended the existing low-level conduit be video inspected. On or about May 5, 2006, a video pipe inspection was performed by the City. The results of this study have been provided to us in VHS format. The pipe inspection video indicated that the existing conduit through the dam, beginning about 6 to 10 feet upstream of the downstream end, was observed to be constructed of tongue-and-groove wood slats. The low-level conduit has been suspected of leaking and causing the uncontrolled release or lowering of the lake level. The camera equipment was only successful in reaching approximately 30 feet upstream of the downstream end. This traverse indicated the wooden pipe to have several holes where voids behind the pipe could be observed. The camera equipment reached an obstruction within the pipe that would not allow the equipment to pass. This obstruction was a large dead turtle. It is unknown how the turtle was able to access the pipe.

On May 22 and 23, 2006, six (6) soil test borings were attempted along the crest of the dam through the road surface. Borings B-2 and B-3 were abandoned and offset upstream (borings B-2A and B-3A) to avoid a suspected unmarked underground utility.

EXPLORATION PROCEDURES

Site Reconnaissance

As indicated previously, our initial reconnaissance of the site was performed in March of 2006 due to the uncontrolled lowering of the lake. Our observations during this initial site visit are documented in our report entitled Site Evaluation Report, dated March 21, 2006, PGC Project No. 106107. This was followed by a more detailed reconnaissance during the actual geotechnical subsurface exploration. During these reconnaissances, engineers from our office visited the site to observe exposed conditions of the existing embankment and surrounding areas. The information obtained from our observations was used in planning and revising the field exploration, and in developing the general conclusions and preliminary assessment recommendations for rehabilitation of the existing embankment dam.

Field Exploration

A subsurface exploration was undertaken to evaluate the general condition of the dam. The exploration of the dam site included a total of four (4) originally planned soil test borings and two (2) offset borings. The soils test borings, designated B-1 through B-4, were attempted along the crest of the dam to allow sampling of the existing embankment fill materials and the underlying foundation materials. Borings B-2A and B-3A were offset from the original borings due to a potential unmarked utility obstruction encountered during the drilling operations at the original boring locations. The boring depths ranged from 4 to 27 feet below the ground surface. The locations of the soil test borings are shown on Figure 1: Site and Boring Location Plan attached to this report. Test locations were measured in the field by our engineer by referencing existing site features. The actual test locations illustrated on Figure 1 should be considered approximate.



The soil test borings were advanced by twisting continuous hollow-stem auger flights into the ground. At selected intervals, Standard Penetration Testing (SPT) was performed in general accordance with ASTM D-1586, and soil samples were collected for visual classification. The results of the penetration tests, when properly evaluated, provide an indication of the relative consistency of the soil being sampled, the potential for difficult excavation, and the soil's ability to support loads. A more detailed description of the drilling and sampling processes is included in the attachments to this report.

Soil samples recovered during the drilling process were classified in the field by the engineer in general accordance with the Unified Soil Classification System (USCS). Detailed descriptions of the materials encountered at each boring location, along with a graphical representation of the Standard Penetration Test results are shown on the Soil Boring Records attached. Groundwater information is also depicted on these records. During the drilling process, temporary small diameter PVC pipes were installed in the open bore holes to facilitate measurement of a stabilized groundwater level. We note that at the time this exploration was performed, the lake level was down several feet below normal pool. Following completion of the drilling, all open bore holes were backfilled using a cement/bentonite grout.

SITE OBSERVATIONS

Observations March 20, 2006

On the day of our visit, the weather conditions were cloudy to partly sunny, and the ground conditions damp due to light rainfall received the previous day and this morning. The lake level had been lowered an estimated 6 to 8 feet below the apparent normal pool level prior to our visit, and we understand the lake level had risen some from the recent rains. Our understanding of this project is based on limited historical data from Keck & Wood and City representatives that were present during this site visit. The following items document our observations and discussions:

1. The dam is an earthen embankment estimated to be approximately 20 to 25 feet in height and approximately 200 to 300 feet in length. The slopes of the dam are very steep, and covered with large trees and thick understory. A two lane road traverses the length of the dam along the crest.
2. A concrete paved service spillway is located at the far right end of the dam (looking downstream) and consists of a concrete channel approximately 3 feet deep and 15 feet wide. A bridge crosses the spillway channel and at least three piped utilities are buried within the embankment, and located vertically within the space between the bottom of the bridge and the spillway slab. The spillway slab appears to be a thin concrete section. At the downstream end of the spillway, approximately coinciding with the downstream side of the bridge, a very large, deep erosion feature has resulted due to flows discharging through the concrete spillway section onto an unprotected spillway outlet channel downstream of the bridge. The erosion has partially undermined the concrete slab, and possibly may extend beneath the road/bridge section. This scour/erosion activity has exposed a highly fractured dense soil/partially weathered rock/rock surface that is



essentially vertically oriented at the dam. These dense/hard residual materials likely have prevented the dam from failing previously at this location. Based on our discussions and observations, we understand the spillway was rehabilitated a few years ago using rock filled gabion baskets to stabilize the spillway outlet channel. These gabion baskets have collapsed into the spillway channel and currently offer very little erosion protection. The continued erosion of the spillway channel could result in a breach in the dam at the spillway section and an uncontrolled release of the lake. Flows from this lake drain into another lake (Lower Dixie Lake) located a short distance downstream.

3. We traversed the right side of the spillway channel down to the creek bottom, crossed the creek, and observed an area near the left abutment/floodplain contact where representatives of Keck & Wood and the City previously observed seepage. At this location, we partially removed the vegetative cover and observed the presence of a large cast metal mechanical valve, possibly attached to the downstream end of a low-level drain pipe. Furthermore, we observed several holes in the ground near this valve that appeared to be areas where flow has exited the ground surface. On this day, very minimal flow was observed to be exiting one of these holes near the left side (facing downstream) of the valve.
4. A masonry/rock structure is located downstream of the dam, and immediately along the right creek channel. This structure appears to be some type of water cistern or spring house. The age of this structure is unknown. The condition of this structure has deteriorated and some of the rock structures have fallen. Future rehabilitation of the dam may need to consider any historical significance of this structure.
5. A large erosion feature is located near the downstream edge of the crest at approximately the middle of the dam. We understand this erosion feature resulted from the open discharge of the large pump used to lower the lake. This erosion feature is estimated to be approximately 8 to 10 feet deep by approximately 6 to 8 feet wide. Several pieces of asphalt and concrete are located within this erosion feature. We are unsure if these pieces of asphalt and concrete were materials embedded within the embankment fill materials, or were pieces lying on the slope that fell into the resulting erosion hole.
6. Considerable seepage was observed in the stream channel downstream of the service spillway area. It is likely this seepage is through the highly fractured rock and partially weathered rock foundation materials exposed. Seepage was also observed above the general floodplain to the left of the creek. The downstream embankment slope is heavily overgrown and the vegetation could be masking a more significant embankment seepage condition.
7. A large number of dead fish were located in the channel immediately downstream of the mechanical valve. These fish were trapped within the vegetation immediately covering the holes and the mechanical valve, suggesting that the fish came through the holes. If this is the case, the holes (voids) immediately surrounding the suspected low-level pipe are significant and the flows were sufficient to allow these fish to travel from one side of the dam to the other.



Observations May 22 and 23, 2006

1. The City had placed a large pump on the dam with a discharge hose and was maintaining the lake level an estimated 8 to 10 feet below normal pool. The upstream slope appeared near vertical just above the current water level at the location suspected for the upstream end of the low-level conduit, assuming it has a straight alignment.
2. The City had cleared trees and built a temporary gravel road along the downstream left toe of dam to access the outlet end of the low-level conduit. The mechanical valve on the downstream end of the conduit was open and a measurable volume of water was flowing through the conduit.
3. The locations of the buried utilities across the dam were not clearly marked.
4. The City was still maintaining the road closed with barricades. Walkers and bicycle traffic still use the road.
5. The seepage observed along the left downstream toe and from the spillway channel still persists.

SUBSURFACE CONDITIONS

Soil test borings drilled from the top of the dam initially encountered existing embankment fill materials to depths ranging from 16 feet at boring B-1 to 23 feet in boring B-3A. The fill composition varied considerably through the embankment, both vertically with depth and to some degree laterally along the length of the dam. Based on our observations of soil samples recovered from the drilling operation, we suspect that two episodes of fill placement may have occurred during the life of this dam/road. It is possible that these different zones of fill represent different sources of fill materials used and/or two separate time periods of fill placement. Underlying the surficial pavement section of asphalt and graded aggregate base, the borings encountered fill materials described as moderate consistency red brown or red orange silty clays (CL) and clayey sands (SC) sometimes containing small pieces of rock. Underlying this upper fill zone and transitioning at a depth of approximately 8 to 10 feet below the ground surface, borings encountered a deeper zone of fill materials described as low consistency dark brown silty sands (SM), clayey sands (SC), and silty clays (CL). The lower fill zone also contained some rock fragments. Standard Penetration Test values ranged from 10 to 15 blows per foot in the upper fill zone and 2 to 10 blows per foot in the lower fill zone. Borings B-2 and B-3 were terminated in the upper fill zone due to the presence of a suspected unmarked utility.

Underlying the fill materials in boring B-4, residual soils weathered from the underlying parent rock were encountered from a depth of 19 feet to 23 feet. The residual materials encountered in boring B-4 were described as moderate consistency micaceous silty sands (SM). Residual soils were not encountered in the remaining soil test borings drilled. Standard Penetration Test values for the residual soil zone were measured at approximately 18 blows per foot.



Underlying the residual material in boring B-4 and the fill materials in borings B-1, B-2A and B-3A, a thin 1 to 4 feet thick zone of partially weathered rock (PWR) was penetrated before the borings were either terminated or reached auger refusal materials. Partially weathered rock is a very dense or very hard material retaining the relic structure of the underlying bedrock, but can be penetrated by the power auger. Where sampled, the PWR was described as very dense silty sands (SM). Refusal to the drilling process was encountered in boring B-3A at a depth of 27 feet after penetrating a 4 feet thick zone of PWR. In order to evaluate the auger refusal materials, rock coring techniques would have to be employed. Rock coring was beyond our authorized scope of work. All other borings were terminated above the auger refusal level.

Groundwater was encountered in borings B-1, B-2A, and B-3A following completion of the drilling. Groundwater levels ranged from approximately 15 feet to 23 feet below the ground surface, or at least 2 to 7 feet below the lake level on the days of this study. The water levels measured in these borings were made when the lake level was approximately 8 to 10 feet below normal pool. Consequently, the measured water levels likely do not depict the levels that would be measured if the water surface were at normal pool. Changes in the lake level would likely have a significant influence on the phreatic surface through the dam and pressures within underlying foundation materials.

Borings B-2 and B-3 were intentionally located to either side of the suspected low-level pipe alignment through the dam using visual line of site methods. These borings were placed to attempt to explore for the presence of any void or soft soils that might exist in this area. During drilling, borings B-2 and B-3 both encountered an obstruction (suspected unmarked pipe) at depths ranging from approximately 4 feet to 6 feet below the ground surface. Due to the concerns of penetrating a utility that might be under pressure, both borings were abandoned and offset upstream about 2 to 3 feet. Offset borings B-2A and B-3A were attempted and were successful at being advanced to their respective boring termination or auger refusal depths. Neither boring encountered any voids. However, both borings identified very soft soil conditions below a depth of about 15 to 18 feet, overlying PWR.

The conditions described in the preceding paragraphs have been based on interpolation of the results of the previously described data using generally accepted principles and practices of geotechnical engineering. However, conditions in this geology may vary considerably intermediate of the test locations and in other areas. The transitions between the soil strata depicted on the Soil Boring Records are likely more gradual than indicated within the similar materials. For more detailed information on the soil classifications see the attached Soil Boring Records.

Although individual test borings are representative of the subsurface conditions at the precise locations on the day performed, they are not necessarily indicative of the subsurface conditions at other locations or other times. The nature and extent of variation between the borings may not become evident until the course of construction. If such variations are then noted, it will be necessary to re-evaluate the recommendations of this report after on-site observations of the actual conditions.



EVALUATIONS, CONCLUSIONS AND RECOMMENDATIONS

The following evaluations, conclusions and recommendations are based primarily on site observations, the limited subsurface data gathered during this preliminary exploration, our extensive experience with dam design and construction, and generally accepted principles and practices of geotechnical engineering in the State of Georgia. As stated previously, we understand three general options are being considered for rehabilitation of this project and have been briefly presented in the Project Information section of this report. Prior to beginning the final design phase for any of the stated options, project ownership/maintenance, property boundaries and other constraints need to be clearly defined. This report, and the conclusions and recommendations provided herein, are provided exclusively for the use of Keck & Wood, Inc. and The City of Union City, Georgia, and are intended solely for the ongoing evaluation of the referenced project.

General Assessment

Our evaluations of this dam conclude that there are several significant deficiencies that require remediation should this project continue to function as a dam, maintaining a relatively stable normal pool level. The following will list the deficiencies that we currently know to exist:

1. Uncontrolled lowering or release of the impoundment through some unknown void(s) or leaking conduit.
2. Severely eroded service spillway channel.
3. Steep embankments slopes; current slope failure of downstream slope near right end at bridge. Surface runoff from the road/crest may also be aggravating the area of slope failure.
4. Uncontrolled seepage through and/or beneath the dam.
5. No functioning low level drain conduit.
6. The presence of pressurized utility conduits within the embankment.
7. Suspected insufficient spillway capacity and configuration.
8. Unsuitable vegetation.

Specific geotechnical recommendations for the remediation of this project to correct the noted deficiencies cannot be formulated until a more comprehensive geotechnical evaluation is performed and the hydrologic assessment completed to determine the spillway requirements. Until the future use of the dam is decided, we recommend the lake level be maintained as low as possible. Although PGC engineers did not observe the conditions noted by others of significant uncontrolled seepage and the associated fairly rapid drop of the lake level, an internal condition



of preferential seepage paths apparently exists within this dam that could rapidly progress and lead to an eventual dam failure if lake levels approaching normal pool were allowed to reestablish.

In addition to the deficiencies noted above, the soil test borings performed from the crest of the dam encountered a lower zone of low quality, poorly compacted fill materials (below about 8 to 10 feet) overlying essentially a partially weathered rock or rock subgrade. Based on the boring data, we suspect that no fully penetrating conventional keyway or cutoff was likely constructed to control seepage, and no special foundation preparation measures were performed prior to fill placement. The presence of the poorly compacted silt and sandy soils within the central section of the dam and immediately overlying the residual foundation materials raises concerns about increased seepage potential and overall structural stability of the embankment materials, especially in light of the steep slope geometry. However, the observed water levels in the soil test borings suggest the water level in the embankment (phreatic surface) is lower than the current lake level. Based on the soil test boring information, we are of the opinion that the overall structural stability of this dam is marginal for some of the loading conditions that are typically analyzed in embankment design.

Most of the following comments and recommendations will focus on this project being rehabilitated to function as an earthen dam with permanent pool. We have attempted to provide some general recommendations that may also apply to modifying/renovating the existing project should the purpose of the embankment change to that of a detention pond with no permanent pool or a simple roadway embankment.

Should the dam be modified to function only as a road embankment with an open conduit through the base of the embankment section so that no significant ponding of water occurs during rainfall events, the issues related to uncontrolled seepage along the toe of the embankment and the otherwise steeper than normal slopes and unsuitable vegetation are not as critical as for use as a dam. Modifications for creating the road embankment will likely involve breaching the dam to install a new low-level conduit of suitable size to pass the design storm event. The impacts of the reduction in storm water retention provided by this dam should be evaluated to determine if there would be any detrimental effects to the downstream stream channel, and the lower lake and dam. The breach alignment and size should also consider the need to remove the existing wooden conduit, and associated structures and voids outside the conduit, if they exist. We recommend the final embankment slopes for this scenario be flattened to at least 2(H):1(V) or flatter. The existing fill materials exposed in the breach are expected to be wet and unstable so that flatter slopes than the typical 1.5(H):1(V) may be required for temporary excavation, and subsequent compaction of new fill materials on the exposed fill subgrades may be problematic. Surface water from the road should be collected and conveyed away from the embankment slopes. The existing bridge located at the far right end of the dam would no longer be needed and could be abandoned and removed. This would allow additional fill materials to be placed in the currently severely eroded spillway channel, and the area of slope instability could be buttressed with additional fill materials and stabilized. Although not part of a geotechnical assessment, we envision a significant effort would be required to stabilize the exposed lake bed and sediments if the pool is permanently eliminated.



Should this project be remediated for use as a detention pond dam with no permanent pool, issues related to uncontrolled seepage again become less critical, but still may be a consideration depending on the duration of temporary flood water storage. Modifications for creating the detention pond dam will involve breaching the dam, installing a new conduit and spillway control structure to regulate the detention release. The final embankment slopes need to be flattened to at least 3(H):1(V) upstream and 2(H):1(V) downstream. Special attention to the subgrade preparation beneath the new conduit alignment and embankment slope projections to control seepage during the temporary pool events is required. Undercutting and replacement of unsuitable alluvial or unstable soils with new select fill materials is required. Provided the new low-level drain conduit is of sufficient size to safely pass the design storm event, no emergency spillway may be required. In such case, the bridge and existing spillway channel could possibly be abandoned, the bridge section removed, and the channel filled with compacted soil to buttress the current area of slope instability similar to that discussed in the previous paragraph. Otherwise, the existing chute spillway could be renovated to serve as an adequate emergency spillway, if needed.

Renovation of this project for use as an embankment dam with permanent pool will require significant upgrades to bring this project up to current engineering standards. A comprehensive subsurface exploration and geotechnical engineering evaluation of the dam footprint area is needed in order to provide site specific geotechnical recommendations for the project rehabilitation. The following report sections will briefly address the noted deficiencies listed previously to provide some preliminary indication of the types of issues that would have to be fully assessed to rehabilitate this project as a permanent dam.

Uncontrolled Lake Release

The factors causing the uncontrolled release of the pool have not been field verified or directly observed by Piedmont Geotechnical Consultants, Inc. engineers. Although the pipe video process was not successful in evaluating the entire conduit from upstream to downstream, the limited video that was performed revealed that the conduit is constructed of wood, which is an uncommon material for use in a permanent dam, and certainly is not acceptable by today's engineering standards. Voids were observed outside the conduit through holes in the wood. Based on the information that we have obtained from talking with individuals knowledgeable of the project that described where the significant water release was exiting the dam, as well as our observations of the pipe video, we are of the opinion the uncontrolled seepage reported is primarily either through or around the existing wooden conduit. As such, the existing conduit and associated structures should be completely removed as part of any planned dam renovation.

Spillways

Although the spillway design is not a geotechnical function, the construction of a conduit penetration through the embankment does involve geotechnical aspects that need to be considered and incorporated into the design. Dam design should as a minimum provide a low-level drain pipe/conduit or a siphon that can be operated in case of an emergency to lower the lake. The bottom drain conduit could also serve as part of the principal spillway system, sized to carry up to the design storm event, if practical. The bottom drain/principal spillway should be



designed as a pressurized, water-tight conduit. Additional geotechnical safeguards to prevent uncontrolled seepage along the conduit are recommended. These include proper subgrade preparation to remove damaged or otherwise permeable materials, a concrete cradle around circular conduits, backfilling with select clayey compacted fill materials, and a strategically located collar drain to collect any seepage before it exits the downstream slope.

The required breach to remove the existing conduit and install the new low-level drain should be configured to provide sufficient horizontal work space around the conduit, typically at least 5 to 10 feet outside the conduit. Additional over excavation may be needed to evaluate/repair/remove any voids or permeable materials encountered in the remaining embankment or foundation materials. Based on a breach configuration using 2(H):1(V) temporary cut slopes, approximately 110 linear feet or more of the crest would be removed. This is a significant portion of the existing dam. As such, during the planning discussions, complete removal of the existing dam should be a consideration if it is decided to renovate the project to provide a permanent lake. It may be more cost effective to remove and replace the entire dam with a properly designed embankment than to deal with the potential unknowns related to a complete renovation of an existing dam with several significant identified deficiencies.

Currently, when the lake is at full pool, outflows are through a minimally improved channel service spillway located at the far right end of the dam. We understand flows through this channel during an extreme rain event in 2005 caused the failure of a gabion basket armoring system. Based on our observations of the channel spillway, we suspect the dam would have breached through this area had it not been for the dense residual soils/partially weathered rock/rock materials exposed in this area. However, the spillway flows are undermining a portion of the thin concrete slab and may be triggering an active slope failure that has currently impacted approximately one-half the embankment width by approximately 40 feet left of the bridge, endangering the bridge and the buried utilities. Flow through this area is also eroding the right abutment slope.

The current spillway system is in poor condition and in our opinion should be replaced in lieu of attempting to repair the damage and provide upgrades. The presence of the utilities within the spillway section poses some risk for collecting floating debris, reducing the spillway capacity and/or causing damage to the utilities from the debris. Consideration should be given to eliminating the current service spillway channel system for a large principal spillway conduit, if possible, or constructing a new concrete spillway farther to the left to straighten and align the spillway with the downstream valley. In our opinion, attempting to construct a new chute spillway in the current location would be complicated by the extensive foundation/abutment damage repair that would be needed. The spillway would also require high side walls to prevent future damage to the abutment. Furthermore, the active slope failure wedge would have to be removed and replaced with structural fill materials. We understand the hydrologic assessment of this dam is being performed by others. The assessment should consider various conduit sizes and flood-stages to determine the most efficient and economical spillway solution. Regardless of the spillway system chosen, the design should incorporate current dam engineering practice and standards.



Existing Utilities

Rehabilitation of this dam will be complicated due to the presence of multiple utilities that cross the dam. In general, pressurized conduits should not be included within the embankment section. The accidental rupture of a pressurized conduit can result in the loss of a significant embankment section and possible breach and failure of the dam. Based on our observations of the site, we understand that an 8-inch force main as well as a 2-inch gas line are buried within the embankment crest section. Additionally, a gravity sewer and possibly other utilities are present. Rehabilitation of this project as a dam should attempt to remove these pressurized conduits from the dam or as a minimum shift them to the downstream shoulder/crest and provide proper safeguards such as restrained joint pipe, concrete encasements, and/or oversized continuous sleeves. Construction will be significantly encumbered if these systems must remain active and they cannot be shifted from the work area.

Embankment Geometry and Construction

As an initial step in the construction process it will be necessary to drain the existing lake and maintain the lake drained throughout a significant portion of the construction process. Control of surface water and installation/maintenance of proper BMP's will be required to control the movement of sediments from the lakebed. Positive dewatering methods to control groundwater seepage and divert stream flow will also be required so that construction activities can be accomplished in the dry.

All existing vegetation should be removed from areas where new construction is planned. This would generally include both slopes of the dam, and an area downstream of the toe sufficient to accommodate the recommended extension of the slope in this area as well as required buffers along the downstream toe. These areas include all topsoil, and stumps and major root systems associated with any trees or bushes that exist. Clearing of trees and vegetation is normally recommended for at least 25 feet beyond the final downstream toe to allow for future inspections. The materials removed during clearing and stripping are considered unsuitable for use in the proposed construction and should be wasted in an as yet undesignated disposal area. Suitable disposal areas may be identified in advance, or the contractor may be required to find his own off-site disposal area. Caution should be exercised during removal of tree stumps from the existing dam to not remove excess amounts of soil, but remove the stump and associated major root system. All stump holes will have to be repaired with compacted soil. In order to accommodate the recommended chimney drain, discussed later in this report, we recommend that the entire downstream slope be excavated to a relatively uniform configuration after removal of the unsuitable surface materials. The final reconfiguration of the slopes can best be determined once a field survey of the existing dam is performed.

Traditionally, two general approaches have been utilized for the rehabilitation of small earthen embankment dams. One approach is to remove portions of the downstream toe and slope of the embankment to allow the drain components to be constructed upstream of the current embankment toe. A second, and the recommended approach for this project, is to build onto the existing slope and extend the dam downstream. In some cases, modifications to the existing dam



are also performed on the upstream slope when property or other downstream constraints exist. Modifications to the upstream slope and in the lakebed are typically much more complicated than construction downstream of the existing dam due to the presence of more recent lake sediments which have accumulated since the construction of the dam, and the added difficulties related to groundwater and surface water control. We prefer to minimize excavation into the existing embankment; however, with the planned breach and the potential for property issues, partial to complete removal of the existing dam and reconstruction in essentially the same location may be an option over significantly widening the dam footprint and having to work around and on the existing embankment. The total amount of undercutting beyond the existing dam footprint would also be reduced. If the existing dam remains, a sufficient mass of new fill must be added to significantly enhance the overall structural stability of this embankment and create the recommended flatter slopes. The configuration of the embankment geometry both during and after the reconstruction is an important consideration. The final configuration of the embankment, in conjunction with the recommended internal drainage system components, must provide adequate protection, or cover, to these drain components. We recommend that the final embankment configuration generally utilize 3(H):1(V) or flatter final slopes. These slope inclination recommendations are made based on previous experience and our observations at the site. No detailed slope stability analyses have been performed to confirm these slope inclinations.

The subgrade conditions in the lower portions of the downstream toe area are expected to be of low quality and consistency, and will likely require undercutting to provide a stable foundation for this slope extension, and to aid in forcing collected seepage into the drain system components. We recommend that all of the alluvium be removed. The exact limits and depths of undercutting required were not determined by this study. Additional geotechnical exploration will be required to determine the amount of unsuitable materials that will require undercutting and replacement as part of the rehabilitation and slope flattening of this project. Undercutting to remove unsuitable soils from beneath the flattened slope projections should extend from approximately the existing toe of the dam, to a point upstream or downstream that corresponds to the level at which the projection of the final 3(H):1(V) meets the approved subgrade. The materials removed during the undercutting process will not be suitable for reuse within the final embankment construction. Therefore, these materials should be wasted in an appropriate area that does not impact the remaining construction. Based on the soil test borings, undercutting operations may expose a partially weathered rock/rock subgrade. Preparation of a pwr/rock subgrade to receive fill placement often are more complicated and complex due to the irregular surface exposed, difficulties with dewatering these dense materials and compacting the initial lifts of fill.

A borrow source of suitable soil materials will be needed to construct the flattened slopes and backfill the breach and undercut areas. We do not know if adequate materials can be borrowed from the lakebed area or if off-site borrow soils materials will need to be imported. Typically, utilization of materials from within the lakebed is not practical if for no other reason than the excessive moisture contents of these materials. The final geotechnical study should evaluate potential suitable borrow sites.



Seepage Control

It is our opinion that the observed seepage should be controlled through an internal drain system incorporated into the embankment modifications. If the existing embankment remains, the recommended system will be constructed essentially downstream of the existing dam and on the prepared downstream slope; otherwise the drains will be incorporated into the new embankment section. The general seepage control modifications recommended for this dam include a toe/foundation drain along the existing downstream toe of the embankment, combined with a chimney drain on the prepared downstream slope. Once a detailed survey of the existing embankment has been performed, the reshaping of the downstream slope can best be depicted or illustrated using this survey data. The details of the internal drain system will best be determined once a configuration of the dam has been chosen. In general, we envision the toe drain collection portion of this system to consist of a nominal 4 feet high by 3 feet wide trench drain constructed of non-woven needle-punched filter fabric encapsulating a zone of No. 57 stone and a perforated PVC pipe. The toe drain typically is embedded within the residual soil foundation materials approximately 2 feet. The toe drain system would extend along the downstream toe of the existing dam from abutment to abutment and up to the normal pool elevation. Due to the extreme topography of the right abutment contact, the toe drain configuration may need to be modified to facilitate construction in these more adverse conditions. Furthermore, if the exposed foundation materials cannot be excavated, the foundation drain portion may be modified to resemble that of a blanket drain where the width of the drain will be widened significantly in an upstream downstream direction and the overall height or thickness will be thinned up to approximately 1 to 2 feet. Overlying the toe/foundation drain, we recommend a chimney drain be constructed. The recommended chimney drain should consist of a minimum 2 feet thick zone of ASTM C-33 sand. This chimney drain will extend from the top of the toe drain at its base, to a recommended horizontal top elevation that has not been determined. Typically the top of a partial height chimney drain for a dam of this size is about 5 to 10 feet below the normal pool level while a full height chimney drain, if needed, will extend to normal pool. Again until sufficient subsurface data is available for this area of the site, and an evaluation of seepage potential is completed, the specific recommendations for the drain system cannot be completed.

ADDITIONAL SERVICES RECOMMENDED

The geotechnical study completed thus far was not intended to fully evaluate this dam for rehabilitation. As such, a final geotechnical study to fully evaluate the footprint of the planned dam is recommended. This future study will include additional soil test boring and test pits downstream and possibly upstream of the existing dam and an evaluation of potential borrow sites with laboratory testing, engineering evaluation of the data and preparation of the final design report. Upon the completion of this comprehensive geotechnical study, we will work with your designers as they develop plans and specifications for the rehabilitation of this project.

The design of an earthen dam actually continues through the construction, reservoir filling and initial operation of the structure. Personnel of our firm should be present on-site during the reconstruction of this dam. We currently envision that an engineer of our staff should be present



for the foundation preparation and undercutting process. This engineer would also be present during critical portions of the internal drainage system construction. A senior soil engineering technician should be present to monitor the earthwork and portions of the drain construction, as well as installation of other portions of the construction such as rip rap, etc. Our personnel should be present on an essentially full-time basis when the contractor is working on the project. Our staff also remains available to assist Keck and Wood with the remaining portions of the design phase of this project.

QUALIFICATIONS OF RECOMMENDATIONS

Our preliminary evaluation of the dam design and construction has been based on our understanding of the site and project information, and the data gathered during this limited field exploration. The general subsurface conditions have been based on interpolation of the subsurface data between the borings. A more thorough comprehensive geotechnical evaluation of this site should be performed before final recommendations are provided. Regardless of the thoroughness of a subsurface exploration, there is always the possibility that conditions between borings will be different from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should observe all phases of the construction to verify that conditions anticipated in design actually exist. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications or recommendations.

The nature and extent of variations between the borings may not become evident until the course of construction. If variations are then observed, it will be necessary for a re-evaluation of the recommendations of this report to be made after performing on-site observations during construction and noting the characteristics of any such variation.

The preliminary design recommendations presented in this report have been developed on the basis of the previously described project information and subsurface conditions. If there is any change in these project criteria, including project location on the site, a review should be made by this office to determine if any modifications to the recommendations will be required. Findings of such a review should be presented in a supplemental report.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices normal to the Piedmont Physiographic Province of Georgia. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data.

This report was made to determine the geotechnical properties of the site and is not intended to serve as a wetlands survey. No effort was made to define, delineate, or designate any areas as wetlands. Any references to low areas, floodplain areas, poorly drained areas, etc. are related to geotechnical applications. Any recommendations regarding drainage are made on the basis that the work can be permitted and performed in accordance with the current laws pertaining to wetlands areas.



The scope of our services does not include any environmental assessment or evaluation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test boring logs regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client. Unless complete environmental information regarding the site is already available, an environmental assessment may be appropriate.

CLOSURE

We appreciate the opportunity to provide you with these professional geotechnical engineering services. Should you have any questions concerning this report, or if we may be of additional service to you in any way, please do not hesitate to contact us.

Respectfully submitted,
Piedmont Geotechnical Consultants, Inc.

H. Craig Robinson, P.E.
Senior Project Engineer
Registered Georgia 19121

Karl W. Myers, P.E.
Senior Consultant
Registered Georgia 11280

HCR:KWM/tk

Attachments: Figure 1: Site and Boring Location Plan
Soil Test Boring Procedures
Key to Symbols and Classifications
Soil Boring Records (6)

cc: Addressee (2)
Mr. Rick Gurney, P.E. – Keck & Wood, Inc.



APPENDIX

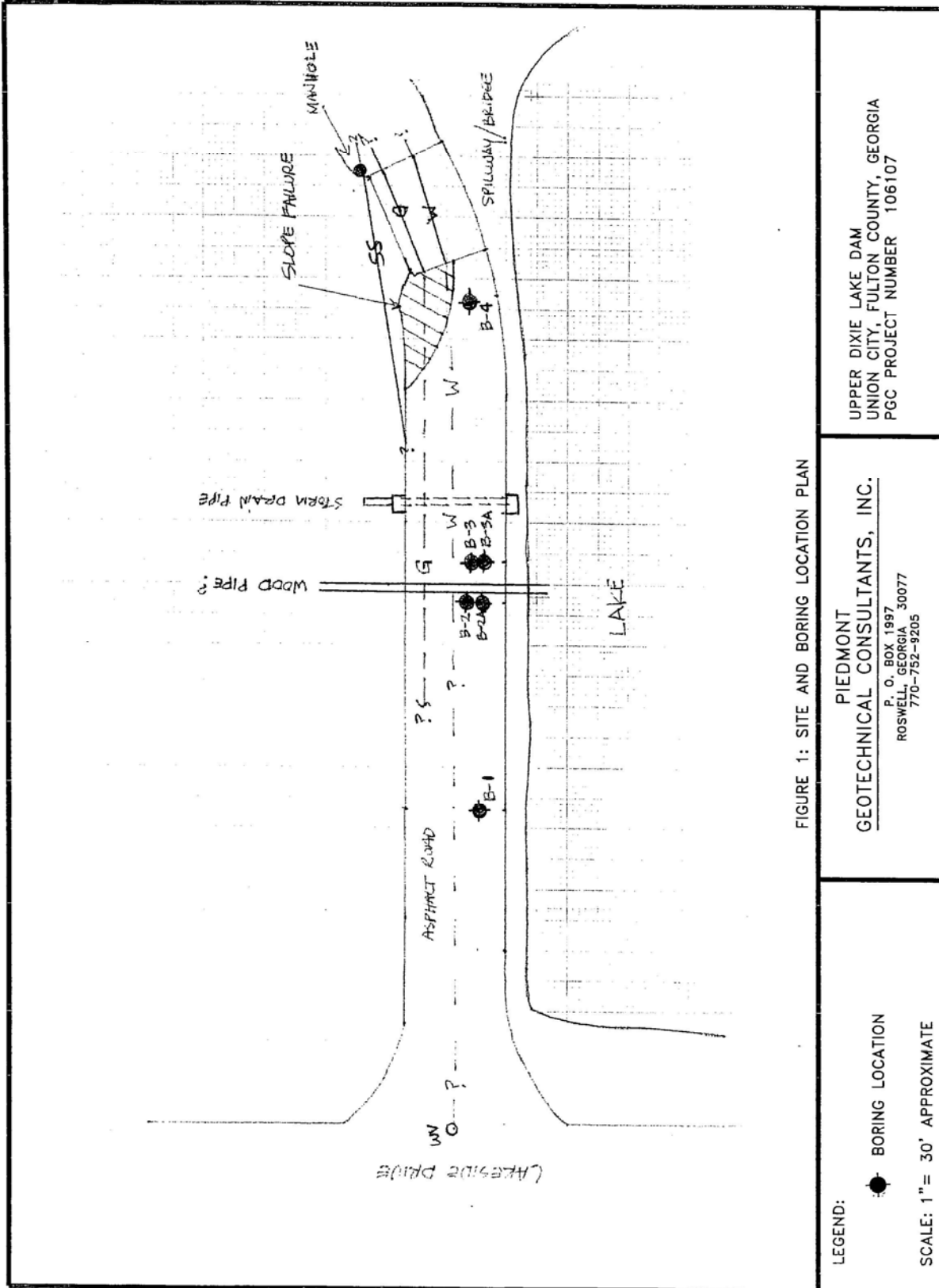


SOIL TEST BORING PROCEDURES (ASTM D 1586 and 1587)

The soil test borings were advanced by twisting continuous auger flights into the ground. At selected intervals, soil samples were obtained by driving a standard 1.4 inch I.D., 2.0 inch O.D., split tube sampler into the ground. The sampler was initially seated six inches to penetrate any loose cuttings created in the boring process. The sampler is then driven an additional 12 inches by blows of a 140-pound "hammer" falling 30 inches. The number of blows required to drive the sampler the final foot is designated the Standard Penetration Resistance.

Relatively undisturbed samples were secured using a three-inch diameter, thin-wall steel tube sampler. In this sampling procedure, the borehole is advanced to the desired level, and the tube is lowered to the bottom of the boring. It is then pushed about two feet into the undisturbed soil in one continuous stroke. The sample and tube is retrieved from the borehole and detached from the drill string.

The samples recovered were sealed against moisture loss and were transported to the office where they were classified by an engineer in general accordance with the Unified Soil Classification System (USCS).





KEY TO SYMBOLS AND CLASSIFICATIONS

SYMBOLS

■	UNDISTURBED SAMPLE (UD) RECOVERED
☒	UNDISTURBED SAMPLE (UD) NOT RECOVERED
e	STANDARD PENETRATION RESISTANCE (ASTM D 1586)
50 / 2"	NUMBER OF BLOWS (50) TO DRIVE THE SPOON A NUMBER OF INCHES (2)
AX, BX, NQ, NX	CORE BARREL SIZES WHICH OBTAIN CORES 1-1/8, 1-5/8, 1-7/8 AND 2-1/8 INCHES IN DIAMETER, RESPECTIVELY
65%	PERCENTAGE OF ROCK CORE RECOVERED
RQD	ROCK QUALITY DESIGNATION-% OF CORE SEGMENTS 4 OR MORE INCHES LONG
≡	WATER TABLE AT LEAST 24 HOURS AFTER DRILLING
≡	WATER TABLE AT TIME OF DRILLING
▶	LOSS OF DRILLING FLUID
U	UNIT WEIGHT TEST PERFORMED
A	ATTERBERG LIMITS TEST PERFORMED
C	CONSOLIDATION TEST PERFORMED
GS	GRAIN SIZE TEST PERFORMED
T	TRIAXIAL SHEAR TEST PERFORMED
P	PERMEABILITY TEST PERFORMED
V	FIELD VANE SHEAR TEST PERFORMED

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

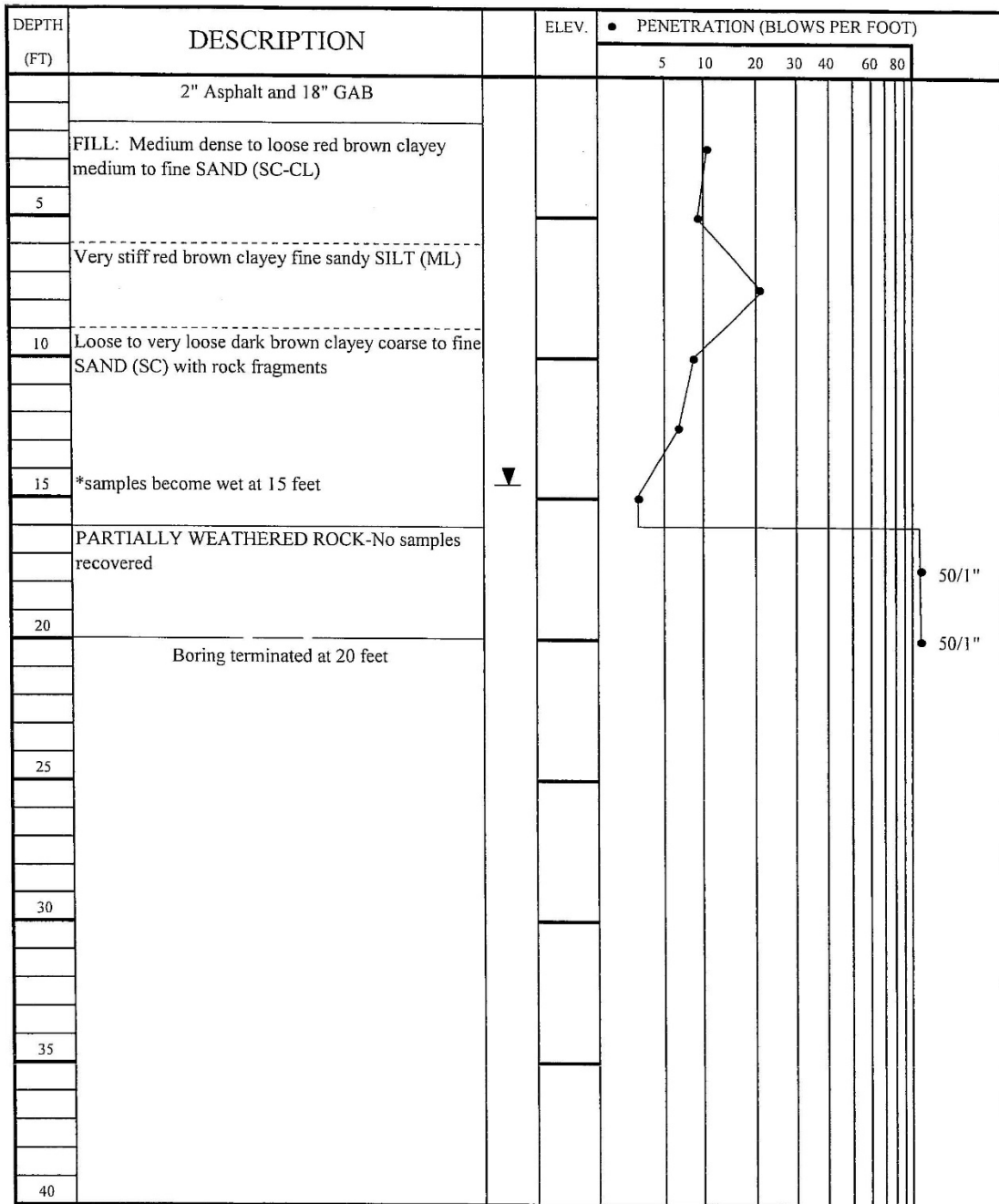
	<u>NO. OF BLOWS, N</u>	<u>APPROXIMATE RELATIVE DENSITY</u>
SANDS	0 - 4	VERY LOOSE
	5 - 10	LOOSE
	11 - 30	MEDIUM DENSE
	31 - 50	DENSE
	OVER 50	VERY DENSE
		<u>APPROXIMATE CONSISTENCY</u>
SILTS AND CLAYS	0 - 1	VERY SOFT
	2 - 4	SOFT
	5 - 8	FIRM
	9 - 15	STIFF
	16 - 30	VERY STIFF
	OVER 30	HARD

DRILLING PROCEDURES

SOIL SAMPLING AND STANDARD PENETRATION TESTING PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1586. THE STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS OF A 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D., 1.4 INCH I.D. SPLIT SPOON SAMPLER ONE FOOT. CORE DRILLING IN GENERAL ACCORDANCE WITH ASTM DESIGNATION D 2113. THE UNDISTURBED SAMPLING PROCEDURE IS DESCRIBED BY ASTM SPECIFICATION D 1587. SOIL AND ROCK SAMPLES WILL BE DISCARDED 30 DAYS AFTER THE DATE OF THE FINAL REPORT UNLESS OTHERWISE DIRECTED.



PIEDMONT GEOTECHNICAL CONSULTANTS, INC.



SOIL BORING RECORD

Boring abandoned and backfilled using cement/bentonite grout on
5/23/06.

BORING NUMBER
DATE DRILLED
PROJECT NUMBER
PAGE



PIEDMONT GEOTECHNICAL CONSULTANTS, INC.

DEPTH (FT)	DESCRIPTION	ELEV.	• PENETRATION (BLOWS PER FOOT)														
			5	10	20	30	40	60	80								
	3" Asphalt and 9" GAB																
	FILL: Stiff red brown medium to fine sandy silty CLAY (CL)																
5	Boring terminated at 4 feet due to suspected utility obstruction																
10																	
15																	
20																	
25																	
30																	
35																	
40																	

SOIL BORING RECORD

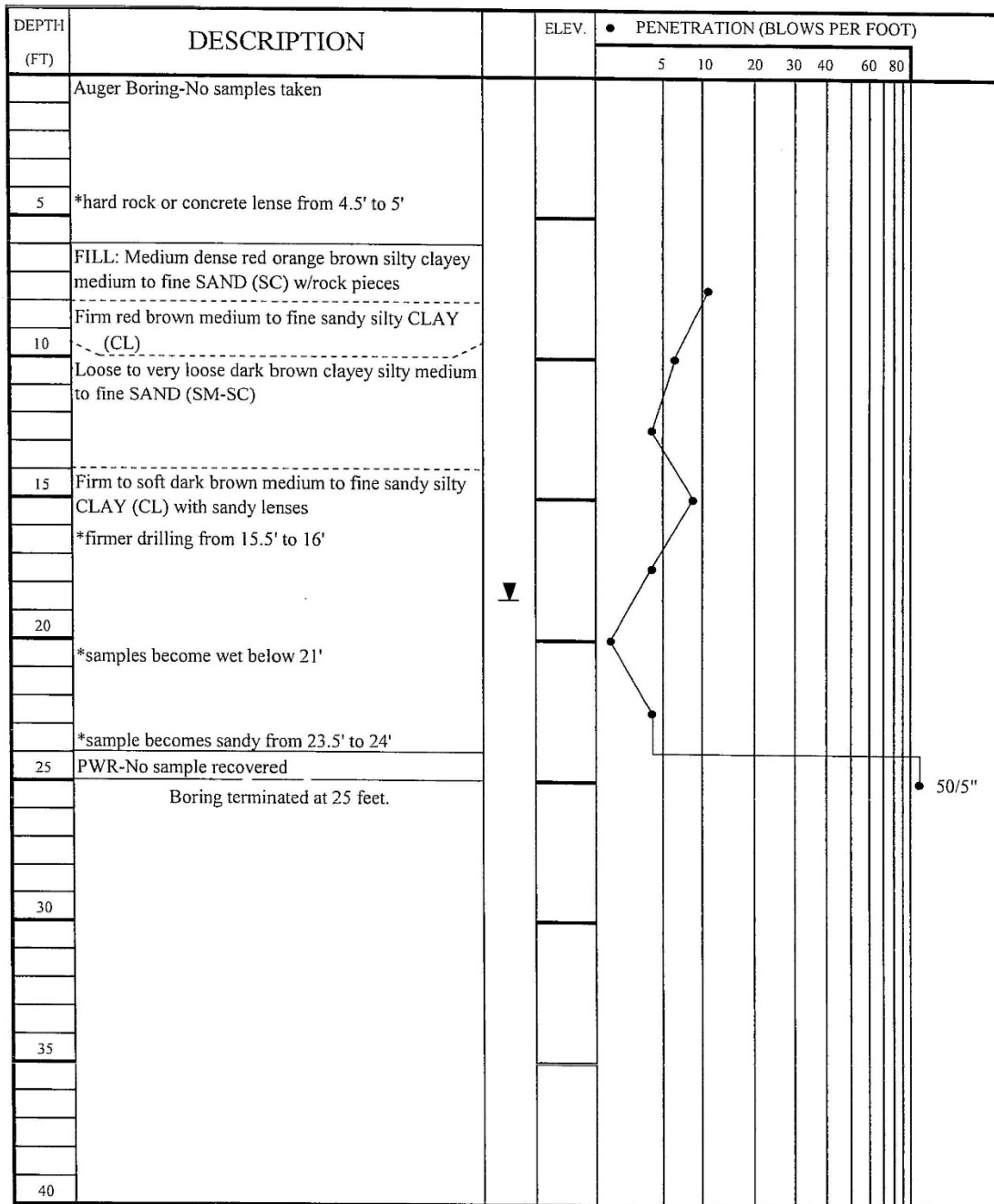
Boring abandoned and backfilled using cement/bentonite grout on 5/23/06.
No groundwater encountered at time of boring.

BORING NUMBER
DATE DRILLED
PROJECT NUMBER
PAGE

B-2
5/22/06
106107
1/1



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SOIL BORING RECORD

Boring B-2A offset 2 feet upstream from boring B-2.
Boring abandoned and backfilled using cement/bentonite grout on 5/23/06.

BORING NUMBER
DATE DRILLED
PROJECT NUMBER
PAGE

B-2A
5/23/06
106107
1/1



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DEPTH (FT)	DESCRIPTION	ELEV.	• PENETRATION (BLOWS PER FOOT)														
			5	10	20	30	40	60	80								
	2" Asphalt and 10" GAB																
	FILL: Medium dense to loose red tan slightly micaceous clayey silty fine SAND (SM)																
5																	
	Boring terminated at 6 feet due to suspected utility obstruction																
10																	
15																	
20																	
25																	
30																	
35																	
40																	

SOIL BORING RECORD

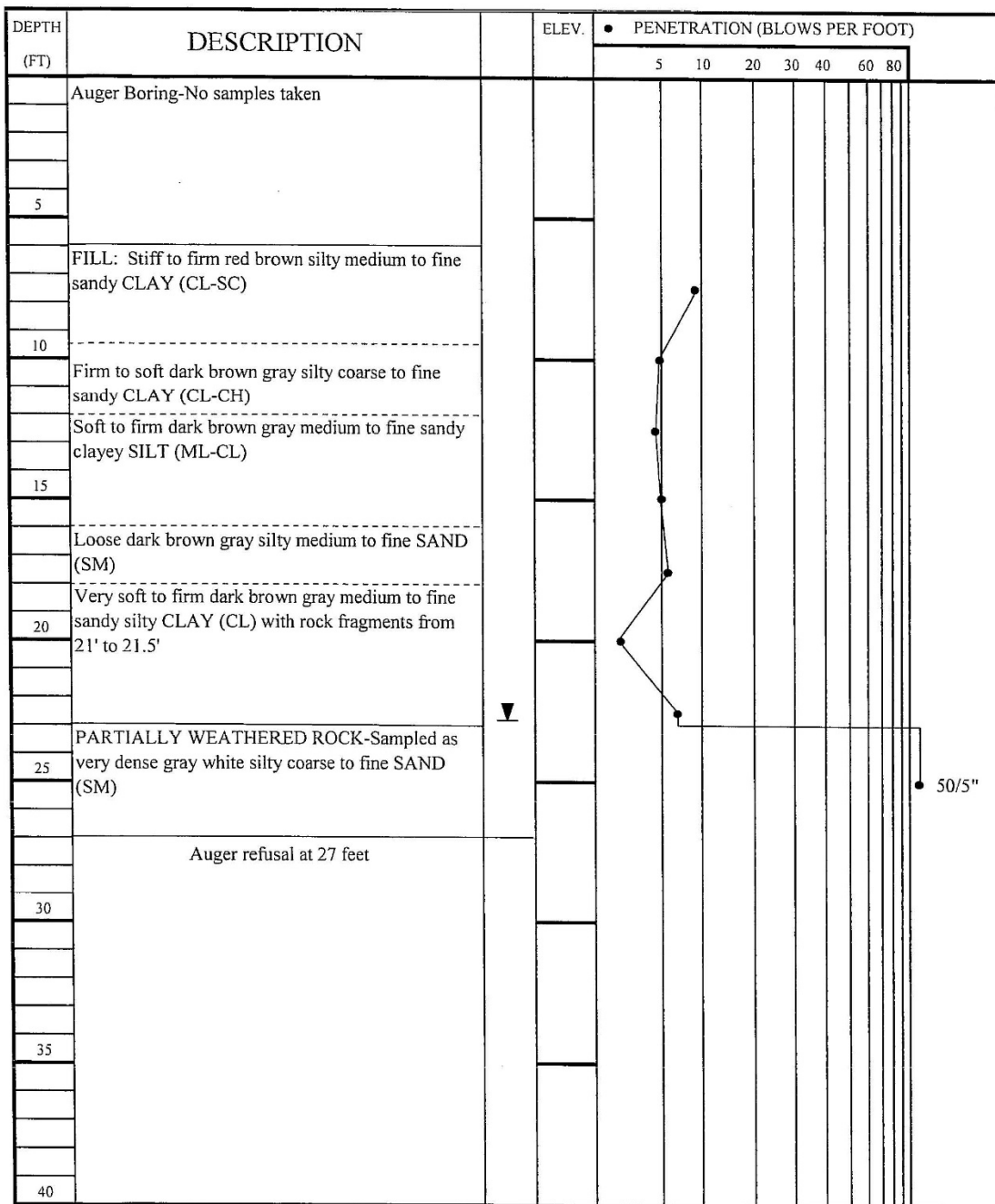
Boring abandoned and backfilled using cement/bentonite grout on 5/23/06.
No groundwater encountered at time of boring.

BORING NUMBER
DATE DRILLED
PROJECT NUMBER
PAGE

B-3
5/22/06
106107
1/1



PIEDMONT GEOTECHNICAL CONSULTANTS, INC.



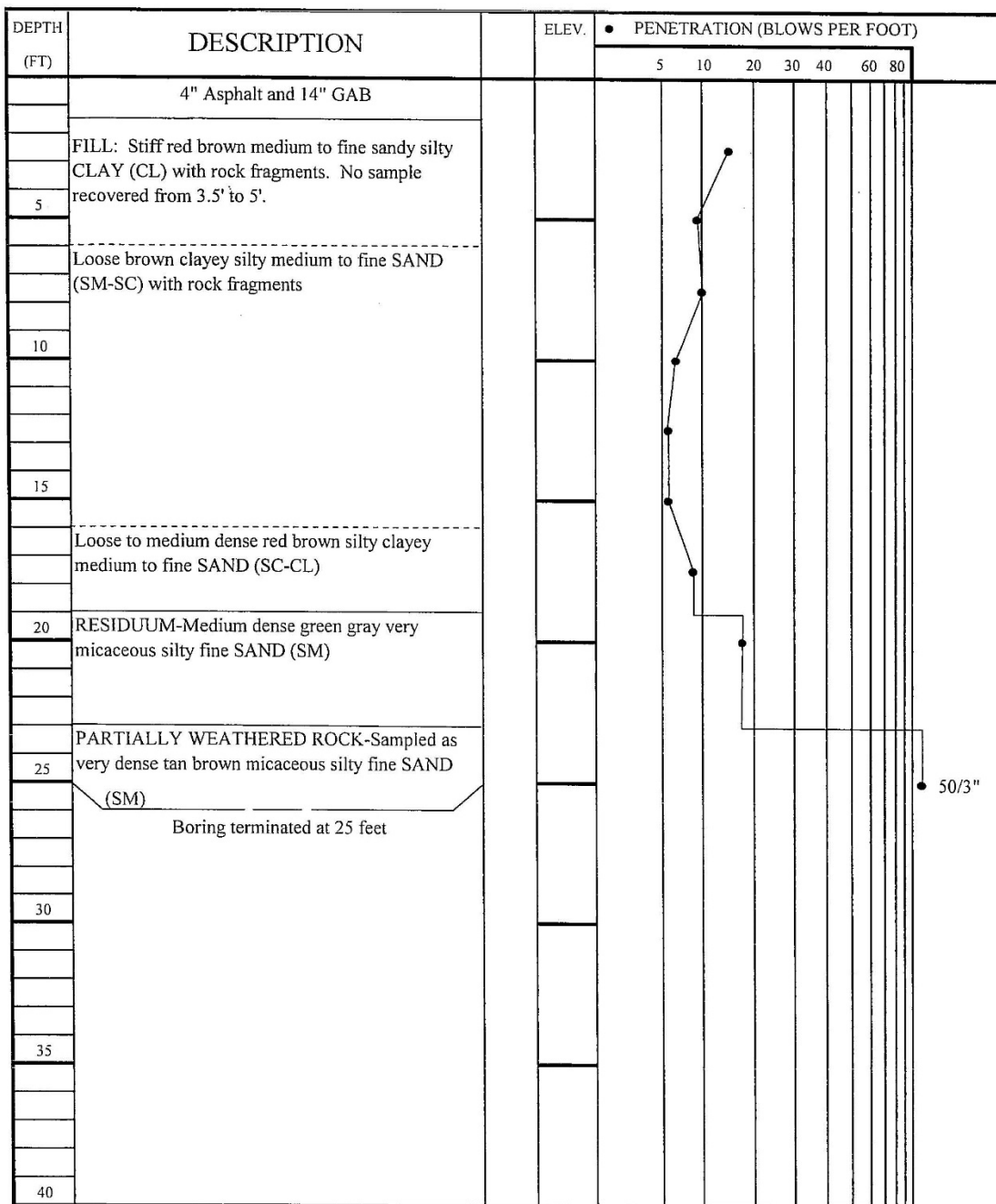
SOIL BORING RECORD

Boring B-3A offset 2 feet upstream from boring B-3.
Boring abandoned and backfilled using cement/bentonite grout on 5/23/06.

BORING NUMBER	B-3A
DATE DRILLED	5/22/06
PROJECT NUMBER	106107
PAGE	1/1



PIEDMONT GEOTECHNICAL CONSULTANTS, INC.



SOIL BORING RECORD

Boring abandoned and backfilled using cement/bentonite grout on 5/23/06.
No groundwater encountered at time of boring.

BORING NUMBER	B-4
DATE DRILLED	5/23/06
PROJECT NUMBER	106107
PAGE	1/1



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South Fork Camp Creek

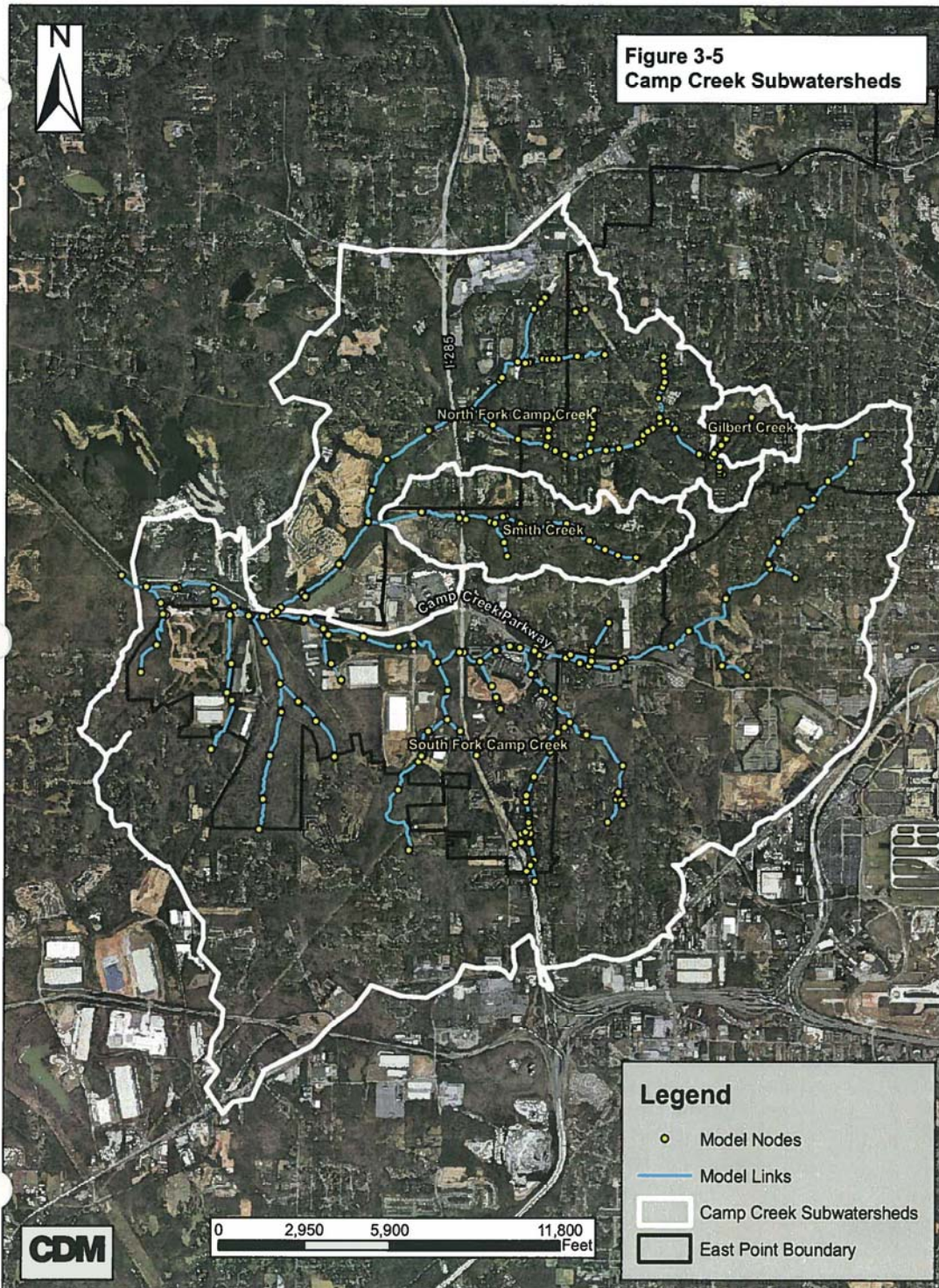
The following locations on South Fork Camp Creek are predicted by the model to experience flooding in one or more storm events under existing and/or future land use conditions. CDM does not recommend any hydraulic improvements be implemented in these locations because they are either confined to private property, they flood only in larger storm events and meet their desired level of service, or they flood only under proposed future land use conditions.

- Arlington Road (model node CT103) floods in the 100-year storm event under existing land use conditions. The road is passable in all the other storm events (2-year through 50-year storms) and does not flood under future land use conditions so no improvements are recommended in this location. Arlington Road is one of the few locations in the City where proposed future conditions in the hydrologic unit are predicted to generate less runoff than existing conditions. This change is due to the fact that the proposed future conditions in this hydrologic unit call for some existing commercial property to be redeveloped as single-family residential parcels. Since parcel 2875 Arlington Road may be potentially flooded, CDM recommends an FFE survey at this location. Alternate emergency access to residences on Arlington Road can be provided from Washington Road via Potomac Drive.
- Yard and driveway flooding occurs at 4513 Catalina Circle in the 25-year and larger storm events. Model results also indicate flooding in the backyards of several residences along Sun Valley Boulevard north of Acapulco Way. The structure at 4411 Catalina Circle may also be potentially flooding in larger storm events, so CDM recommends a FFE survey of this structure. Detailed discussion and analysis of flooding locations are addressed in the Sun Valley TM (Priority reach, detailed TM included in Appendix-A). Alternate emergency access is available to residences on Acapulco Way, Catalina Circle, and Sun Valley Boulevard as these streets are all connected in a loop.
- Hammarskjold Avenue (model node CTC01) floods in the 50-year and 100-year storm events under existing land use conditions. The road floods in the 25-year and larger storm event under future land use conditions. Since the road meets the desired level of service under existing conditions, no improvements are recommended. Alternate emergency access to residences on Hammarskjold Avenue can be provided from Washington Road via Candlewood Drive to Fox Hunt Lane and through the parking lot of the Fulton County Board of Education building.
- Laurel Ridge Drive (model node CTC07) floods in the 100-year storm event under proposed future development. This location does not flood in any of the modeled storm events under existing land use conditions so improvements are not recommended at this location.

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- The pond for Lakeside Country club (model nodes CT507 and CT510), which is built in the flood plain, is predicted to overflow during the 2-year storm event and flood the surrounding golf course. Predicted flooding is limited to the private golf course property and no roadways or structures in this area are predicted to be impacted, so no improvements are recommended.
- The Lakeside Preserve detention pond (model node CT602) at the intersection of Old Fairburn Road and Lakeside Boulevard is predicted to overflow in the 10-year storm event under proposed future land use conditions. Since no flooding is predicted under existing land use conditions, improvements are not recommended.

Gilbert Creek

A few flooding issues were noted in some locations along Gilbert Creek.

- Model node GC03, the existing detention pond owned by Georgia Power Company floods beginning the 2-year storm event. Though the pond is privately owned, improvements are recommended at this location to help reduce flooding stages downstream of this location.
- Model link GC07 floods in the 25-year and larger storm events under existing and proposed future land use conditions. The conduit passes through the back yard of 3008 Meadow Lark Drive and no structures, streets, or driveways are affected. Model links GC09 and GC013 overtop in the 100-year storm event only under proposed future land use conditions. Because all these locations are private driveways, no improvements are recommended.

North Fork Camp Creek

- Minor flooding occurs under proposed future land use conditions during the 100-year event in model node NF010 located on the upstream side of Beech Drive. The roads remain passable in all other storm events and hence no improvements are recommended.
- Model node NF020 located on the upstream end of Meadow Lark Lane floods beginning in the 2-year storm event. The headwaters of North Fork Camp Creek and Gilbert Creek confluence at this location. Flow is conveyed by a single 36-inch RCP across Meadow Lark Lane, which then goes through a junction box and then exits through a 42-inch CMP at the downstream end. The 36-inch RCP acts as a constriction causing Meadow Lark Lane to overtop. Pipe improvements are recommended at this location to reduce the depth and frequency of overtopping. Beech Drive could be used as an alternate access route to the properties along Meadow Lark Lane in the event of flooding.
- Minor flooding occurs along the western roadside of Rockwood Road just north of Cherry Blossom Lane (model nodes NFTA10, NFTA15, and NFTA20) accompanied by flooding of Rockwood Road (model nodes NFTA05 and NFTA07) during the less frequent 50-year and 100-year storm events under existing conditions. Since

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this road meets its level of service, CDM does not recommend any improvements in this location. Emergency access is available to Rockwood Road from Hogan Road or Cherry Blossom Lane.

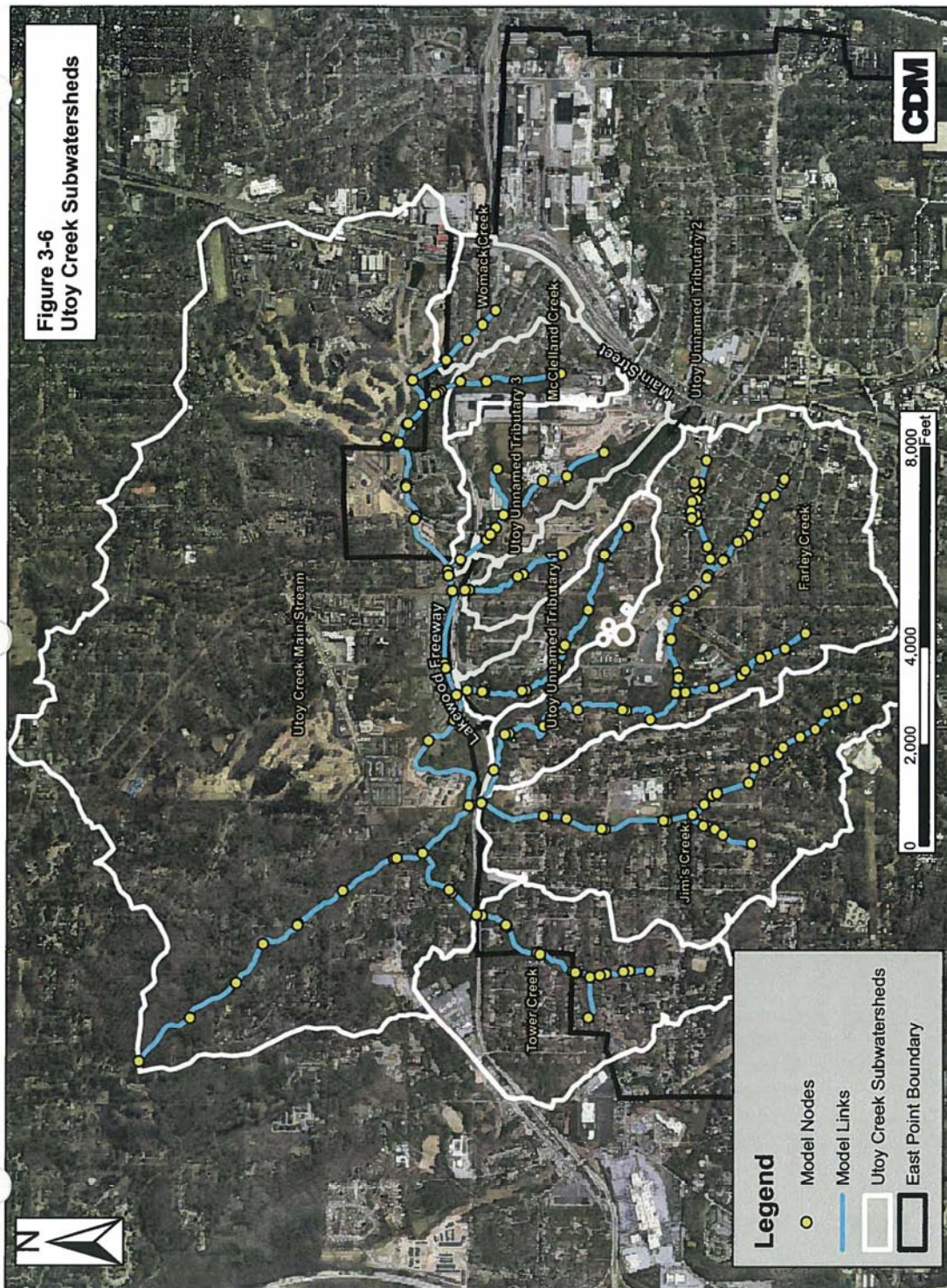
- Driveway and yard flooding situations that exist at 3030 and 3042 Dodson Drive (model nodes NF071 and NF073) are addressed in the separate 3030 Dodson Drive TM (Priority reach, detailed TM included in Appendix-A).

Smith Creek

- Sir Henry Street (model Node NFSM50) floods in the 50-year and 100-year storm event under proposed future land use conditions. This location does not flood under existing land use conditions and hence no improvements are recommended.
- Potential structural flooding is noted at 3380 Prince George Street beginning in the 10-year storm event. Queen Elizabeth Street serves as an alternate access to this property. CDM recommends a FFE survey at this location to determine whether or not structural flooding occurs.
- The culverts installed under North Desert Drive (model node SMT115) surcharge in the 5-year storm event under proposed future land use conditions. North Dessert Drive is currently not in service at this location. This road does not flood under existing land use conditions and hence no improvements are recommended.
- The temporary construction culvert that has been installed within the floodway of Smith Creek just north of BJ's and just east of the confluence with North Fork Camp Creek (model nodes NFSM93 and NFSM94) floods beginning in the 5-year storm event. The City of East Point needs to have the culvert removed if it's temporary or have the owner install a properly sized culvert and file for a Conditional Letter of Map Revision (CLOMR) with FEMA in the event that it's permanent.

3.3.2 Utoy Creek Watershed Hydraulic Improvements Evaluation

Below is a discussion of problem areas in each of the 7 tributaries within the Utoy Creek watershed. Figure 3-6 shows the 7 tributaries and the subwatersheds in Utoy Creek. The following locations in Utoy Creek are predicted by the model to experience flooding in one or more storm events under existing and/or future land





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use conditions. CDM does not recommend any hydraulic improvements be implemented in these locations because they are either confined to private property, they flood only in larger storm events and meet their desired level of service, or they flood only under proposed future land use conditions.

Utoy Creek Main Stem

Stanton Road near Fort Valley Drive (model node UCMS20) floods in the 100-year storm event under existing land use conditions. The road is passable in all the other storm events (2-year through 50-year storms) and does not flood under future land use conditions so no improvements are recommended in this location. Stanton Road is one of the few locations in the City where proposed future conditions in the hydrologic unit are predicted to generate less runoff than existing conditions. This change is due to the fact that the proposed future conditions in this hydrologic unit call for some existing industrial property to be redeveloped as public institutional parcels resulting in an approximate 8% reduction in impervious area. Alternate emergency access to residences on Stanton Road is available via Fort Valley Drive and McClelland Drive or Alison Court.

McClelland Creek

McClelland Drive (model node UCMC20) floods in the 25-year storm event under existing land use conditions. Flow from the 7-foot by 7-foot RCB under Lakewood Freeway is conveyed into the 72-inch RCP under McClelland Drive resulting in flooding in the 25-year and larger storm events. The road floods in the 10-year and larger storm events under future land use conditions. Since the road meets the desired level of service under existing conditions, no improvements are recommended. Emergency access to residences on McClelland Drive is available via Womack Avenue or McClelland Drive via Stanton Road.

Utoy Creek Unnamed Tributary 3

- Private industrial property (Mullins Bros., model node UCT3A3) located at 1688 Empire Avenue could be potentially flooded beginning the 5-year storm event under existing land use condition. Future conditions predict flooding in this property beginning in the 2-year storm event. Predicted flooding is limited to the structures in this property and no roadways are predicted to be impacted, so no improvements are recommended. However, CDM recommends FFE survey of the structures within the property.
- Stanton Road near Woodberry Avenue (model node UCT315) floods in the 25-year and larger storm events under existing land use conditions. The road floods in the 10-year and larger storm event under future land use conditions. Since the road meets the desired level of service under existing conditions, no improvements are recommended. Alternate emergency access to structures on Stanton Road is available from Woodberry Avenue and Stanton Road via Connally Drive.



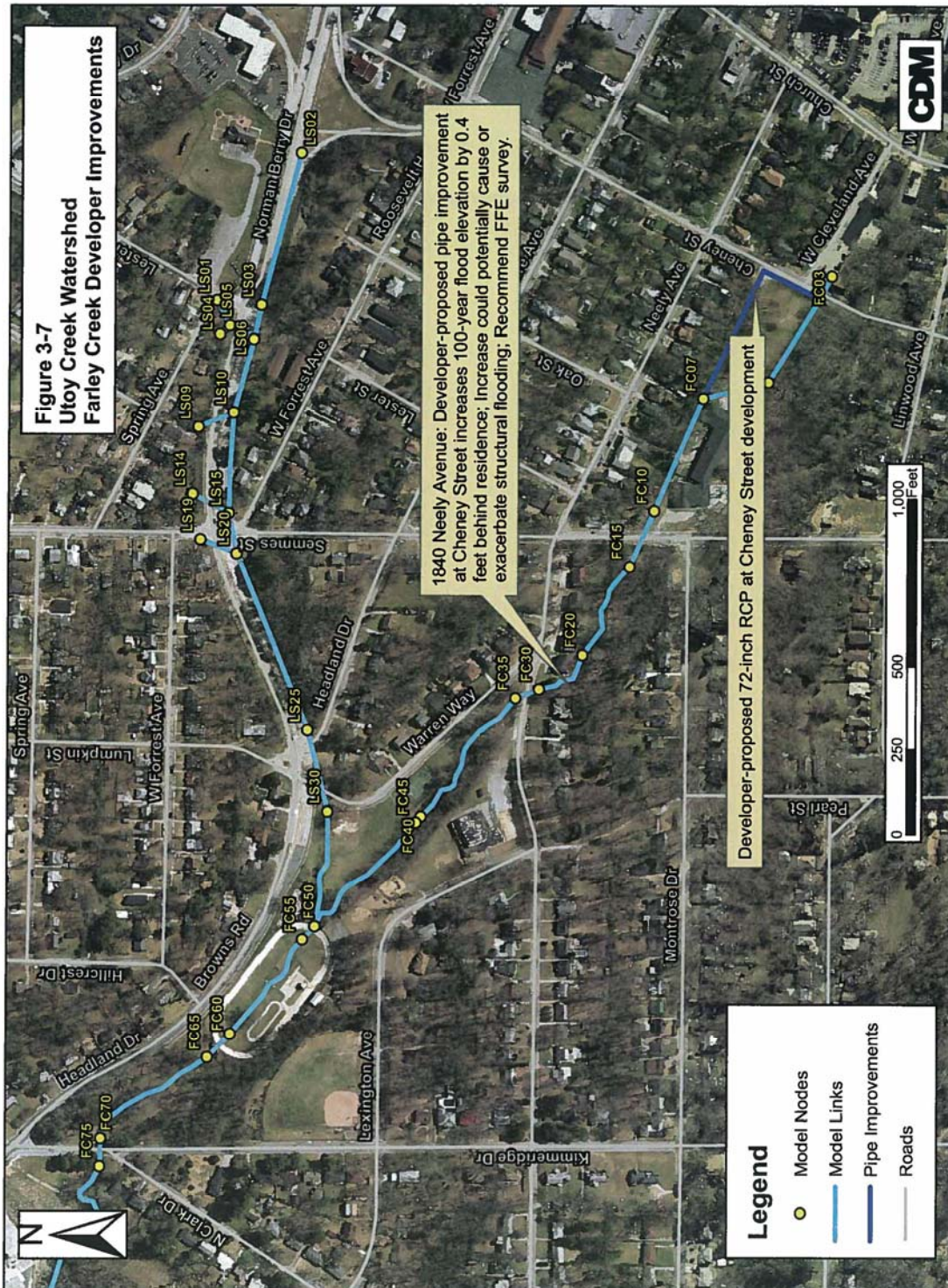
Utoy Creek Unnamed Tributary 2

Westover Drive (model node UCT210) floods in the 50-year and 100-year storm events under existing and future land use conditions. Since the road meets the desired level of service under both land use conditions, no improvements are recommended. Alternate emergency access to residences on Westover Drive is available through Connally Drive, Jessup Avenue, Pointview Drive, and West Woodberry Avenue as they are all connected in a loop.

Farley Creek

A few flooding problems were observed in some locations along Farley Creek.

- Cheney Street (model nodes FC03 and FC05) flood beginning in the 10-year storm event under existing land use conditions. The future land use conditions cause Cheney Street to flood beginning the 2-year storm event.
 - a. 2715 Cheney Street, owned by Cheney Street Partners LLC, is an existing vacant parcel that is proposed to be constructed as a multi-family residential unit. The Cheney Street Development (Cheney Street Partners, LLC, 2006) construction plans show that the developer proposes to replace the existing 60-inch CMP and 66-inch x 42-inch arch pipe that runs across the property with 72-inch RCP. The developer's improvements were represented in the improved model and the results showed Cheney Street flooding only in the 50-year and 100-year storm event under existing land use conditions. So no further improvements are recommended in this location.
 - b. The developer-proposed pipe improvements showed increases in peak stages, peak flows, and velocities downstream in Farley Creek from the new 72-inch RCP down to Kimmeridge Drive (model nodes FC03 through FC70). Most of the flow increases are contained within the pipe and channel network. However, the increases could potentially flood Sumner Park and the private residence at 1840 Neely Avenue. CDM recommends FFE surveys of the structures on these parcels. Alternate access to residences on Neely Avenue is available via Lexington Avenue and Warren Way. **Figure 3-7** shows the developer proposed pipe and locations that could be potentially impacted.
 - c. Future land use condition results predict flooding of Cheney Street from the 5-year storm event with the developer-proposed 72-inch RCP.





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Therefore, all future developments in this location have to be strictly regulated as per the City's stormwater ordinance to prevent any increases in stages or flows from existing conditions.

- Kimmeridge Drive (model node FC70) floods beginning in the 25-year storm event under existing land use conditions. The road floods in the 100-year storm event under future land use conditions. Since the road meets the desired level of service under existing land use conditions no improvements are recommended at this location. Emergency traffic access to residences on Kimmeridge Drive from Headland drive is available either via Warren Way to Neely Avenue or Delowe Drive to Neely Avenue.
- Minor flooding occurs under proposed future land use conditions during the 100-year event in Delowe Drive (model node FC85). This location does not flood in any of the modeled storm events under existing land use conditions so improvements are not recommended at this location
- Structural flooding is possible at 2029 Thompson Avenue (model node FCT103) beginning in the 2-year storm event. Predicted flooding is limited to the private property and no roadways in this area are predicted to be impacted. CDM recommends a FFE survey of the structure within this parcel.
- Linwood Avenue (model node FCT105) is predicted to overflow in the 50-year storm event under proposed future land use conditions. This location does not flood in any of the modeled storm events under existing land use conditions. This change is due to the fact that the proposed future conditions in this hydrologic unit call for some existing single-family residential property to be redeveloped as medium density residential parcels. Since no flooding is predicted under existing land use conditions, improvements are not recommended.
- Model node FCT140, located on the upstream side of Leith Avenue floods beginning in the 25-year storm event under existing land use conditions. Future land use conditions results in flooding this location in the 10-year and larger storm events. Since the road passes the desired level of service under existing land use conditions, no improvements are recommended. Delowe Drive and Lancaster Drive can be used as emergency access roads to the residences in this location in the event of flooding.

Tower Creek

A few flooding issues were noted in some locations along Tower Creek.

- Model link UTC027 floods in the 100-year storm event under existing land use conditions. Future land use conditions cause this location to flood in the 50-year and 100-year storm event. The channel passes through the back yards of 2772 and 2710 Hayden Drive and could potentially impact the houses in these parcels. CDM recommends FFE surveys of the houses in these parcels.

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- 2715 Hayden Drive (model node UTC035) floods in the 100-year storm event under both existing and future land use conditions. Predicted flooding is limited to the private property and no roadways in this area are predicted to be impacted. CDM recommends a FFE survey of the structure within this parcel.
- Dodson Drive near Dewey Avenue (model node UTC055) overtops beginning in the 10-year storm event under existing and future land use conditions. Triple 60-inch CMPs convey flow under the street. The pipes convey flow to a channel (model link UTC060) which eventually discharges into an 8-foot by 9-foot RCB that conveys flow under Lakewood freeway into City of Atlanta. Analyzed pipe improvements across Dodson drive resulted in flow increases further downstream outside City of East Point's jurisdiction. The channel (model link UTC060) has steep overbanks offering little room for any overbank storage options. Further, all peak flow and velocity increases need to be contained within the channel as flow immediately downstream enters the City of Atlanta jurisdiction. The peak depths, durations, and velocities of overtopping at this location are 0.2 feet, 8 minutes, and 1.4 feet per second in the 10-year storm and 0.5 feet, 22 minutes, and 2.7 feet per second in the 25-year storm, respectively. Since the road remains passable in the 10-year and 25-year storm events and therefore very nearly meets the level of service, no improvements are recommended at this location. CDM recommends FFE surveys of 2169 and 2177 Dodson Drive as these structures could be potentially impacted by peak stages at this location. Emergency access to residences near the stream crossing is available from Campbellton Road or Connally Drive.

The following discussion lists locations in Utoy Creek where flooding situations warrant recommendations for improvements. These improvement recommendations are presented in detail in Section 4.

Utoy Creek Unnamed Tributary 1

- Grove Avenue (model node UCT105) floods beginning in the 5-year storm event. The headwater flows of this unnamed tributary are conveyed by twin 18-inch RCPs under Grove Avenue. The pipes are undersized to convey the runoff from this hydrologic unit causing Grove Avenue to overtop. Pipe improvements are recommended at this location to reduce the depth and frequency of overtopping. Lumpkin Street, Grove Avenue, Semmes Street and Connally Drive are in a loop and can provide access to the residences on Grove Avenue in the event of flooding.

Lester Street and Spring Avenue

- Street, yard, and basement flooding has been reported in the vicinity of Lester Street and Spring Avenue. The current conditions model results verified the citizen complaints and predicted flooding in the back yards of several residences along Spring Avenue and inundation of the intersection at Lester Street and Spring Avenue. The yard and basement of the property located at 1740 Spring Avenue was predicted to flood in all modeled storm events. Detailed discussions and analyses of these flooding locations are presented in the Lester Street/ Spring Avenue TM

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(Priority reach, detailed TM included in Appendix-A). Emergency access to residences on Spring Avenue is available from Norman Berry Drive and Semmes Street.

Jim's Creek

- Model results predicted flooding in Englewood Drive beginning in the 5-year storm event. Minor flooding was predicted in Headland drive in the 50-year and 100-year storm events. Detailed discussion of flooding locations and analysis are presented in the Jim's Creek TM (Priority reach, detailed TM included in Appendix-A). Emergency access to residences in Englewood Drive is available via Riggs Drive and Graywall Street while access to residents on Headland Drive is available via Bryant Drive and Headland Terrace.

3.3.3 South River Watershed Hydraulic Improvements Evaluation

This sub-section is a discussion of problem areas within the South River main stem and its four tributaries within the City. **Figure 3-8** shows the 4 tributaries and subwatersheds in South River. The following locations in South River are predicted by the model to experience flooding in one or more storm events under existing and/or future land use conditions. CDM does not recommend any hydraulic improvements be implemented in these locations because they are either confined to private property, they flood only in larger storm events and meet their desired level of service, or they flood only under proposed future land use conditions and future development controls be used to maintain existing flood stages and velocities.

South River Main Stem

- Bayard Street (model node SR006) floods in the 100-year storm event (0.12 feet-NAVD and 2.01 feet per second in 100-year) under existing land use conditions. The road is passable in all smaller storm events (2-year through 50-year storms) and floods in the 50-year storm event under future land use conditions. Since the road meets the desired level of service under both existing and future land use conditions no improvements are recommended in this location. Alternate emergency access to residences on Bayard Street is available from Central Avenue and North Martin Street.





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- North Martin Street (model node SR007) floods in the 100-year storm event under proposed future development. This location does not flood in any of the modeled storm events under existing land use conditions so improvements are not recommended at this location.
- Model node SR008 which is also located in North Martin Street floods in the 100-yr storm event under existing land use conditions (0.22 feet-NAVD and 0.95 feet per second in 100-year). This node floods in the 50-year and larger storm events under future land use conditions. Since the road meets the desired level of service under existing and proposed land use conditions no improvements are recommended. Alternate emergency access is available through Central Avenue, via Bayard Street or Norman Berry Drive.
- Model nodes SFR01 (1.61 feet-NAVD and 4.17 feet per second), SFR05 (1.01 feet-NAVD and 7.05 feet per second), and SFR07 (1.63 feet-NAVD and 5.41 feet per second in 100-year), located along Norman Berry Drive, flood in the 50-year and 100-year storm events under existing and future land use conditions. Since the road meets the desired level of service no recommendations for improvements are made. Alternate emergency access is available through Willingham Drive, Central Avenue, Bayard Street and North Martin Street.
- Blount Street near Cedar Avenue (model node SR060) floods in the 50-year and 100-year storm events under existing land use conditions (0.70 feet -NAVD and 6.91 feet per second in 100-year). The road floods in the 25-year and larger storm event under future land use conditions. Since the road meets the desired level of service under existing conditions, no improvements are recommended. Alternate emergency access to property on Blount Street is available from Cedar Avenue via Harlan Drive and Washington Avenue.
- Harlan Drive (model node SR075) is predicted to overtop in the 50-year storm event under proposed future land use conditions. Since no flooding is predicted under existing land use conditions, improvements are not recommended.
- Sylvan Road (model nodes SR085 and SR090) floods in the 100-year storm event under existing land use conditions (0.69 feet-NAVD and 4.70 feet per second in 100-year). The road is passable in all smaller storm events (2-year through 50-year storms) and floods in the 50-year storm event under future land use conditions. Since the road meets the desired level of service under both existing and future land use conditions no improvements are recommended in this location. Alternate emergency access to commercial property on Sylvan Road is available from Cleveland Avenue, Cheryl Drive and Fredell Place.
- The commercial structure located at 876 Cleveland Avenue (model nodes SR095 and SR100) potentially floods in the 100-year storm event under both existing and future land use conditions. Predicted flooding is limited to the building in the

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private property. CDM recommends a FFE survey of the structures within this parcel to verify flooding.

- East Cleveland Avenue (model node SR100) floods in the 100-year storm event under proposed future land use conditions. This location does not flood under existing land use conditions and hence no improvements are recommended.

South River Unnamed Tributary 3

- Structural flooding is possible at 2920 and 2908 Harlan Drive (model node ST3010) beginning in the 2-year storm event. Predicted flooding is limited to the private property and no roadways in this area are predicted to be impacted. CDM recommends FFE surveys of the structures within these parcels to verify flooding.
- 2855 Harlan Drive (model node ST3040) floods in the 50-year and 100-year storm event under existing land use conditions. Future land use conditions cause this location to flood in the 25-year and larger storm events. Predicted flooding is limited to the private property and no roadways in this area are predicted to be impacted. CDM recommends a FFE survey of the structure within this parcel to verify flooding.

Brookdale Park Reach

- Jefferson Terrace (model node SBP015) floods in the 100-year storm event under existing (0.15feet-NAVD and 0.57 feet per second in 100-year) and future land use conditions. Predicted flooding is limited to the ROW. Since the road meets the required level of service no improvements are recommended. Alternate emergency access to residences in Jefferson Terrace is available via Glendale Drive.
- Jefferson Avenue SW (model nodes SBP080 and SBP085) floods beginning the 5-year storm event under existing and future land use conditions. About 455 acres of development contributes runoff to the single 8-foot by 6-foot RCB under Jefferson Avenue SW, with roughly half of the tributary area developed as industrial. The pipe discharges into a natural channel which conveys flow into the City of Atlanta. Several analyzed pipe improvement alternatives resulted in peak stage, flow, and velocity increases downstream in City of Atlanta’s jurisdiction. CDM therefore recommends no hydraulic improvements at this location. CDM recommends that the City strictly regulate the stormwater runoff from every development draining to this hydrologic unit on a case by case basis to implement best management practices for onsite stormwater detention and attenuation of flows discharging to the Brookdale Park reach.

South River Unnamed Tributary 1

Sylvan road (model node STA005) floods in the 10-year storm event under existing and future land use conditions. The 28-acre hydrologic unit that discharges into the 36-inch RCP under Sylvan Road is a completely built-up industrial area, comprised of 81% directly connected impervious area. CDM recommends that the City regulate the private industrial development in this location to implement onsite stormwater





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detention and best management practices in accordance with the City's stormwater ordinance. Alternate emergency access to property on Sylvan road is available via Oakleigh Drive and Miledge Street.

The following discussion lists locations in South River where flooding situations warrant recommendations for improvements. These improvement recommendations are presented in detail in Section 4.

South River Main Stem

The headwaters of the South River main stem consist of a piped network beginning at node SR001 and continuing through node SR025, where the South River transitions into a natural channel. Most of this piped network is made up of 60-inch and 72-inch CMPs that transition to an open channel at SR025. The upstream portion of the South River main stem has several nodes (SR006, SR007, SR008) discussed previously that met the desired level of service. However, several model nodes along Norman Berry Drive and Maria Head Terrace flood beginning the smaller storm events under both existing and future land use conditions. To address these problems, alternatives consisting of regional storage along with pipe improvements were analyzed at this location.

- Norman Berry Drive north of the junction of Maria Head Terrace (model node SR020) floods beginning in the 2-year storm event under existing and future land use conditions. Model analyses showed that simply increasing the trunk pipe diameter at this location would increase flooding problems further downstream at Calhoun Avenue. Therefore, CDM sought to provide regional storage on the South River main stem upstream of SR020 to detain peak flows and reduce the depth of flooding at this location. The undeveloped parcel adjacent to 3100 Martin Street (model node SR010) is owned by the City and provides an opportune location to provide such storage. Due to the depth of the existing trunk stormwater pipes and the presence of sanitary sewer pipes and manholes at this parcel, surface detention is not a feasible option. For these reasons, CDM evaluated an underground detention facility at this location.
- A single 42-inch CMP conveys flow under Maria Head Terrace, which changes to a 60-inch CMP under Norman Berry Drive that parallels the South River trunk pipe and then transitions into the natural channel at node SR025. The upstream end of the tributary under Maria Head Terrace (model node ST5005) floods beginning in the 5-year storm event under existing land use conditions. Model nodes ST5010 and ST5015 at the intersection of Maria Head Terrace and Norman Berry Drive flood in the 10-year storm event under existing land use conditions. All nodes along the Maria Head Terrace tributary flood in the 2-year storm event under future land use conditions.

To address these problems, CDM analyzed multiple pipe upgrade alternatives. However, as with the trunk pipe along Norman Berry, any increases in pipe size under Maria Head Terrace resulted in increased flooding downstream at Calhoun



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Avenue. Therefore, CDM evaluated the benefits of constructing a containment berm or wall along the northern site boundary of the property immediately south of the multi-family residential development along Maria Head Terrace. Such a berm or wall would serve to take advantage of the natural surface storage provided by the topography on this undeveloped parcel. CDM also analyzed connecting the Maria Head Terrace tributary to the South River trunk pipe with an equalizer pipe between nodes ST5015 and SR020. Such a pipe would provide overflow relief from the tributary and take further advantage of the regional storage facility.

- Calhoun Avenue (model node SR030) floods beginning in the 5-year storm event under existing land use conditions and in the 2-year storm event under future land use conditions. The regional storage alternative provides some relief at this location. To reduce the frequency and depth of overtopping at Calhoun Avenue CDM evaluated a short wall or berm along the southwest corner of the Norman Berry Drive/Calhoun Avenue intersection in conjunction with pipe improvements under Calhoun Avenue.

Norman Berry Reach

Street, yard, and basement flooding problems were reported by homeowners on the south side of East Forrest Avenue west of the Randall Street intersection, including the property and potentially the structure at 1372 East Forrest Avenue. Model results confirmed the flooding problems reported by the homeowners. Flooding problems at this location begin in the 2-year storm event under existing land use conditions. Multiple alternatives including surface storage along with pipe and collection system improvements were analyzed at this location. A summary of all the recommendations made for this location is presented in Section 5. Detailed discussion and analysis of flooding locations are addressed in the Norman Berry/Randall Street TM (Priority reach, detailed TM included in Appendix-A).

South River Unnamed Tributary 3

The piped network in this tributary flows south to north and splits at Washington Avenue. The western branch remains enclosed in a pipe that parallels Harlan Drive (ST3015 to ST3017 and ST3035) while the eastern branch transitions into a short open channel on the north side of Washington Avenue. The eastern branch then flows back into a pipe to cross under Harlan Drive where the two branches confluence at model node ST3035. Shortly downstream of the confluence, the tributary crosses Cedar Avenue. CDM recommends channel overbank storage and replacement of the pipe sizes at this location to reduce the frequency and depth of overtopping.

Washington Avenue (model nodes ST3015 and ST3020) floods beginning in the 5-year storm event under existing land use conditions. This location floods in the 2-year storm event under future land use conditions. Harlan Drive (model nodes ST3025 and ST3035) floods in the 5-year storm event under existing and future land use conditions. Model analyses show the existing pipes are undersized to convey peak flows so CDM examined multiple improvement alternatives including localized



Loss Statistics from Jan 1, 1978 through report "AS OF" date below

LOSS STATISTICS GEORGIA AS OF 01/31/2015						
COUNTY NAME	COMMUNITY NAME	TOTAL LOSSES	CLOSED LOSSES	OPEN LOSSES	CWOP LOSSES	TOTAL PAYMENTS
FLOYD COUNTY	CAVE SPRING, CITY OF	21	18	0	3	104,488.14
	FLOYD COUNTY*	53	35	0	18	247,583.44
	ROME, CITY OF	276	224	0	52	2,039,866.00
FORSYTH COUNTY	CUMMING, CITY OF	1	0	0	1	.00
	FORSYTH COUNTY *	36	18	1	17	313,453.69
FULTON COUNTY	ALPHARETTA, CITY OF	17	10	1	6	211,596.64
	EAST POINT, CITY OF	96	60	0	36	542,220.45
	FAIRBURN, CITY OF	2	0	0	2	.00
	FULTON COUNTY *	538	407	1	130	7,910,497.02
	HAREVILLE, CITY OF	6	4	0	2	35,580.33
	JOHNS CREEK, CITY OF	1	0	0	1	.00
	MOUNTAIN PARK, CITY OF	3	2	1	0	18,487.01
	ROSWELL, CITY OF	79	47	1	31	1,317,711.38
	SANDY SPRINGS, CITY OF	5	5	0	0	45,881.64
	UNION CITY, CITY OF	1	1	0	0	27,919.22
GILMER COUNTY	FAST FULTON, CITY OF	18	14	0	4	1,106,589.57
	ELLIJAY, CITY OF	24	24	0	0	473,951.32
	GILMER COUNTY*	83	70	0	13	2,693,394.50
GLYNN COUNTY	BRUNSWICK, CITY OF	133	80	0	53	929,995.91
	GLYNN COUNTY *	469	312	0	157	3,913,025.03
	JEKYLL ISLAND, STATE PARK AUTH	36	2	0	34	51,607.47
GORDON COUNTY	CALHOUN, CITY OF	7	4	0	3	185,475.93
	GORDON COUNTY*	13	11	0	2	158,376.65
GRADY COUNTY	GRADY COUNTY*	10	7	0	3	162,988.36
GWINNETT COUNTY	BERKELEY LAKE, CITY OF	1	1	0	0	5,236.58
	BUFORD, CITY OF	1	0	0	1	.00



Section 3: BMP Priority Implementation

The BMPs selected in the previous section will be implemented by the City according to available budget for new BMPs. The City would need to implement certain BMPs every year. These BMPs would include public education and water quality monitoring. Other BMPs would be implemented on a three to five year schedule according to available budget and changes in water quality. The City may choose to focus on improving one watershed first. Table 13 presents the proposed schedule for implementing priority watershed improvement BMPs. BMP locations for the Hog Waller Creek, Foe Killer Creek, and Big Creek are shown in Figure 3 through Figure 5. Other measures not identified as priority BMPs including debris removal and streambank restoration. These measures are discussed for implementation with grant funds or to be implemented if the opportunity is available.

Table 13
City of Roswell
City Wide Watershed Protection Plan
Preliminary BMP Rotating Schedule

BMPs	Year 1	Year 2	Year 3	Year 4	Year 5
Public education campaign	X	X	X	X	X
Water quality monitoring	X	X	X	X	X
Septic tank elimination plan	X				
Roswell neighborhood of excellence			X		
Watershed improvements City facilities		X			
Hog Waller Creek					
Install bioretention areas	X				
Install rain barrels	X				
Bacteria source tracking		X			
Improve/install stormwater detention ponds	X				
Disconnect impervious surfaces					X
Foe Killer Creek					
Install bioretention areas		X			
Install rain barrels		X			
Bacteria source tracking		X			
Improve/install stormwater detention ponds				X	
Disconnect impervious surfaces		X			
Big Creek					
Install bioretention areas			X		
Install rain barrels			X		
Bacteria source tracking		X			
Improve/install stormwater detention ponds					X
Reduce/Disconnect impervious surfaces					X



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Table 12
City of Roswell
City Wide Watershed Protection Plan
Priority Matrix of Recommended BMPs

BMP goal criteria	Public Education										Non-structural					Structural				
	Develop a FOG Education and Reporting Program	Develop a Watershed Website	School Education	Pet Waste Posters	Rain Barrel Workshops	Rain Garden Workshops	Stream Bank Restoration	Septic tank maintenance	Septic Tank Elimination Program	Water Quality Monitoring	Bacteria Source Tracking	Remove Debris from Structures	Roswell Neighborhood of Environmental Excellence	Rain Barrels	Rain Gardens	Stormwater Detention Ponds	Stream Bank Restoration	Disconnect / Reduce Impervious	Alum Treatment in Stormwater Structures	
Protect public health and safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Comply with regulatory requirements	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Improve the quality of the environment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Engage the public	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Enhance quality of life	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Promote sustainable solution	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Effectiveness	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Ease of implementation	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Stakeholder involvement	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Property required	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Upstream of water intake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Located within City of Roswell	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Low cost	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Applied City wide	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	



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Table 8
City of Roswell
City Wide Watershed Protection Plan
Summary of Stream Segments and BMP Application

City-wide Watersheds	Segment Status	BMP Application
Big Creek	Not Supporting	S, NS, PE
Foe Killer Creek	Not Supporting	S, NS, PE
Hog Waller Creek	Not Supporting	S, NS, PE
Rocky Creek	Partially Supporting	NS, PE
Willeo Creek	Partially Supporting	NS, PE
Ever Road Trib to Chat.	Supporting	PE
Horseshoe Bend Trib to Chat.	Supporting	PE
Martins landing East Trib to Chat.	Supporting	PE
Martins Landing Trib to Chat.	Supporting	PE
River Cliff Trib to Chat.	Supporting	PE
Scott Road Trib to Chat.	Supporting	PE
Trib. to Little River	Supporting	PE
West Trib to Chat.	Supporting	PE

S - Structural BMPs, NS – Non-Structural BMPs, PE – Public Education/Involvement

Public Education and Involvement

Public Education and public involvement are critical to any watershed protection plan. Reducing pollution from the environment is more efficient and cost effective when compared to treating pollution in the environment. Public involvement will allow the City to gain key stakeholders that will take an active role in improving water quality within the City. The following public education programs presented in Table 9 were identified in various Watershed Improvement Plans or recommended as additional public education programs that might be considered for implementation.

Table 9
City of Roswell
City Wide Watershed Protection Plan
Summary of Recommended Public Education Programs

	City-Wide	Big Creek	Foe Killer Creek	Hog Waller Creek	Rocky Creek	Willeo Creek
Develop a FOG Education and Reporting Program	X					
Develop a Watershed Website	X					
School Education	X					
Pet Waste Posters		X	X	X		
Rain Barrel Workshops	X					
Rain Garden Workshops	X					
Stream Bank Restoration Workshop		X	X	X	X	X
Septic Tank Maintenance Workshop			X			X



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Non-Structural BMP Measures

Non-structural BMPs are recommended for stream segments listed as partially supporting and not supporting their designated use assigned by the state. Currently two stream segments, Rocky Creek and Willeo Creek, within the City of Roswell are partially supporting their designated use and would benefit from non-structural BMPs. The following non-structural BMPs presented in Table 10 were identified in various Watershed Improvement Plans.

Table 10
City of Roswell
City Wide Watershed Protection Plan
Summary of Recommended Non-Structural BMPs

	City- Wide	Big Creek	Foe Killer Creek	Hog Waller Creek	Rocky Creek	Willeo Creek
Water Quality Monitoring		X	X	X	X	X
Septic Tank Elimination Program	X					
Source Water Assessment Program		X				
Bacteria Source Tracking		X	X	X		
Wildlife Deterrents					X	X
Remove Debris from Structures		X	X			
Partner with Cobb County Stormwater Division						X
Roswell Neighborhood of Environmental Excellence					X	X

Structural BMP Measures

Structural BMPs are recommended for streams that are listed as not supporting their designated water use. Three stream segments, Big Creek, Foe Killer Creek and Hog Waller Creek are listed as not supporting their designated use. These stream segments would benefit from implementing structural BMPs. The following structural BMPs presented in Table 11 were identified in various Watershed Improvement Plans or recommended as additional structural BMPs that might be considered for implementation.

Table 11
City of Roswell
City Wide Watershed Protection Plan
Summary of Recommended Structural BMPs

	City- Wide	Big Creek	Foe Killer Creek	Hog Waller Creek	Rocky Creek	Willeo Creek
Rain Barrels		X	X	X	X	X
Rain Gardens		X	X	X	X	X
Stormwater Detention Ponds		X	X	X		
Stream Bank Restoration		X	X	X	X	X
Disconnect / Reduce Impervious Surfaces		X	X	X		
Remove Old Structures				X		
Alum Treatment in Stormwater Structures						



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Table 19
City of Roswell
City Wide Watershed Protection Plan
Preliminary Program Costs

Year One	Cost	Units	Qty	Total
Public Education	\$4,160	each	1	\$4,160
Septic Tank Elimination Plan*	\$10,000	each	1	\$10,000
Water Quality Monitoring *	\$9,344	annually	1	\$9,344
Hog Waller Creek Bioretention Project	\$50,000	per basin	3	\$150,000
Hog Waller Creek Stormwater Detention Project	\$60,000	per basin	3	\$180,000
Install Rain Barrels Hog Waller Creek Project	\$100	per barrel	12	\$1,200
Year One Total				\$354,704
Year Two	Cost	Units	Qty	Total
Public Education	\$4,160	each	1	\$4,160
Water Quality Monitoring	\$9,344	annually	1	\$9,344
Foe Killer Creek Bioretention Project	\$23,100	per basin	5	\$115,500
Install Rain Barrels Foe Killer Creek Project	\$100	per barrel	12	\$1,200
Bacteria Source Tracking	\$900	each	6	\$5,400
Disconnect Impervious Surfaces FKC Project	\$30,000	per acre	3.15	\$94,500
Watershed Improvement Dobbs Drive	\$189,570	project	1	\$189,570
Year Two Total				\$419,674
Year Three	Cost	Units	Qty	Total
Public Education	\$4,160	each	1	\$4,160
Water Quality Monitoring	\$9,344	annually	1	\$9,344
Roswell Neighborhood of Excellence	\$100	each	50	\$5,000
Big Creek Bioretention Project	\$23,100	per basin	6	\$138,600
Install Rain Barrels Big Creek Project	\$100	per barrel	12	\$1,200
Streambank Restoration HWC	\$65	per LF	1156	\$75,140
Watershed Improvement Recycle Center	\$165,050	project	1	\$165,050
Year Three Total				\$398,494
Year Four	Cost	Units	Qty	Total
Public Education	\$4,160	each	1	\$4,160
Water Quality Monitoring	\$9,344	annually	1	\$9,344
Foe Killer Creek Stormwater Detention Project	\$60,000	per basin	3	\$180,000
Streambank Restoration FKC	\$65	per LF	1127	\$73,255
Year Four Total				\$266,759
Year Five	Cost	Units	Qty	Total
Public Education	\$4,160	each	1	\$4,160
Water Quality Monitoring	\$9,344	annually	1	\$9,344
Big Creek Stormwater Detention Project	\$60,000	per basin	2	\$120,000
Disconnect Impervious Surfaces HWC and BC	\$30,000	per acre	3.5	\$105,000
Year Five Total				\$238,504

*Currently Funded, **Potential Grant Funds



Best Management Practices Description

Public Awareness to Reduce FOGs (Fats, Oils, and Grease):

Fulton County Sewer Use Ordinance limits Fats, Oils and Grease (FOGs) disposal from commercial facilities (Chapter 82 Article IV). However, spill reports indicate FOGs to be a leading cause of sewer overflows. The City of Roswell should develop a web campaign and distribute brochures to reduce fats, oils, and grease from residents causing sanitary sewer overflows (SSOs). The brochures should be designed to inform homeowners of the consequences of grease build up in the sanitary sewer lines. Brochures should be designed for both English and Spanish readers. The City of Roswell should develop grease disposal kits to distribute to homeowners as an alternate disposal for grease.

Home Owner Education Workshops:

The City of Roswell should partner with home owners within the sub-watershed to reduce stormwater runoff and pollution prevention. Workshop topics to be covered include:

- Stream bank landscapes and encouraging the growth of natural stream bank cover.
- Pollution prevention near the stream; reducing yard waste, debris and pet waste.
- Septic tank maintenance and care. Opportunities to connect to sewer if available.
- Installing rain barrels and rain gardens.

School Education Activities:

The City of Roswell should partner with local schools within the watershed basin to reduce stormwater runoff from buildings and parking areas. The City of Roswell should distribute lesson plans about stormwater runoff and could encourage class projects including painting rain barrels or building rain gardens.

Septic Tank Elimination Program:

Septic Tank Elimination Program (STEP) is to encourage home owners on septic systems to connect to available sewer. Elevated levels of fecal coliform in dry weather could be a result of failing septic systems or leaking sewers.

The STEP Program should include the following program elements.

- Review of current regulations.
- Prioritize areas to connect to sewer.
- Work with Fulton County to determine capacity analysis.
- Educate homeowners on process for connecting to existing sewers.
- Work with Fulton County to develop sewers in areas on septic only.
- Determine use and design of financial assistance program if any.

Increase Water Quality Monitoring:

The City of Roswell should continue monitoring each Creek for fecal coliform and E. coli. Additional monitoring stations are recommended for each basin to identify areas of potential pollutant sources and determine the influence of stormwater on bacteria levels in the stream.



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This sampling will provide the City with the data needed to evaluate its streams and the current impact of stormwater on water quality. The monitoring should be conducted according to the City's approved Sampling Quality Assurance Plan (SQAP). Bacteria sampling is suggested to be performed at the additional recommended sites within each Creek sub-watershed.

Remove Debris from Structures:

The majority of the debris is a result of fallen trees from stream bank scour. In some areas these trees have floated downstream and become lodged against exposed sewer crossings. This can cause a decrease in the capacity of the stream and cause some areas to flood. Debris removal is recommended on some sewer crossing locations.

Bacteria Source Tracking:

Bacteria Source Tracking (BST) is a new methodology to determine the source of fecal pathogen contamination in environmental samples. BST techniques appear to provide the best method to determine the origins of fecal contamination in water bodies. BST uses DNA sampling of the *E. Coli* bacteria found in the water sample and compares the samples to a DNA library to identify if the *E. Coli* source is human, dog, geese, deer or another wildlife source. Once the source of bacteria is identified specific target BMPs can be used to reduce the amount of fecal contamination in the water body.

Deterrents for Canada Geese:

The City may consider developing a program to get rid of geese by using swan decoys, predator decoys, herding dogs, altering landscape along the shore to prevent Canada geese from nesting, using chemical deterrents, and educating homeowners on lakes and ponds about these options and discouraging feeding Canada geese.

Roswell Neighborhood of Environmental Excellence:

The City of Roswell Public Works Department should consider partnering Keep Roswell Beautiful and local homeowners associations to develop a program of neighborhoods of environmental excellence. The program could include several elements such as:

- Public education classes and workshops,
- Installing rain gardens,
- Installing rain barrels,
- Disposing of pet waste in trash receptacles,
- Disposing of grease and oil in trash receptacles,
- Reducing the amount of fertilizers and pesticides, and
- Installing pervious pavers for driveways and other impervious areas.

The Excellence program would encourage a percentage of homes in the neighborhood to adopt these environmentally friendly measures to qualify the neighborhood for the program. Program initiates could receive a sign for the neighborhood or a plaque for the clubhouse.

Partner with Cobb County Stormwater Division:

The City of Roswell Public Works Department should consider partnering with Cobb County's Stormwater Management Division to pool resources in an effort to delist Willeo Creek which forms the boundary between the City of Roswell and Cobb County. One third of the Willeo Creek watershed is within the City of Roswell while the remaining portion is within Cobb County. Establishing a partnership



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with Cobb County may allow the City to apply for additional grant money and or obtain sampling data if available from Cobb County.

Source Water Protection:

Big Creek supplies a portion of the City’s drinking water supply. The City of Roswell has developed a Source Water Assessment (2001) in partnership with the Atlanta Regional Commission. The source water assessment includes the entire Big Creek basin area (66,386 acres), an inventory of potential pollutant sources, and a susceptibility rating for the watershed. The City should continue efforts to protect source water and improve water quality within the Big Creek watershed.

Stormwater Detention Basin:

Stormwater detention ponds are storm water control structures providing both retention and treatment of contaminated storm water runoff. Stormwater detention ponds are among the most cost-effective and widely used stormwater practices. It reduces fast runoff to enter natural waterway, thus protects areas downstream from flooding and erosion. It also functions to trap pollutants in runoff such as nutrients, metals, and sediments. It provides significant retrofit coverage for existing development.

Stormwater Bioretention or Rain Gardens:

A rain garden is a planted depression that allows rainwater runoff from impervious urban areas like roofs, driveways, walkways, parking lots, and compacted lawn areas the opportunity to be absorbed. Rain garden is to capture the first flush of pollutants from the areas around it and provide volume storage of stormwater prior to discharging. It reduces volume and velocity by providing a pervious area for water to be stored and reduces the volume and velocity of stormwater contributing to stream bank erosion.

Rain Barrels:

A rain barrel is a system that collects and stores rainwater from roof that would otherwise be lost to runoff and diverted to storm drains and streams. Usually a rain barrel is composed of a 55 gallon drum, a vinyl hose, PVC couplings, a screen grate to keep debris and insects out, and other off-the-shelf items, a rain barrel is relatively simple and inexpensive to construct and can sit conveniently under any residential gutter down spout. It also saves money and energy by reusing the captured water.

Stream Bank Restoration:

Stream banks have been reduced as a result of local scour. Local scour areas are result of the high velocity and volume associate with stormwater runoff. The silt sand stream banks have eroded undercutting vegetation along the stream. The City should increase the natural plantings along the stream bank to restore stream banks. These measures are described in detail in the Guidelines for Streambank Restoration by the Georgia Soil and Water Conservation Commission.

Disconnect Impervious Areas:

Impervious areas directly connected to the storm drain system are a great contributor to nonpoint source pollution. Basic site planning principle for stormwater management is to minimize these directly connected impervious areas. This can be done by limiting overall impervious land coverage and disconnecting impervious areas by directing runoff from these impervious areas to pervious areas or small depressions. Locate impervious areas to drain to natural systems and when this is not possible, direct flows from impervious areas (roofs and paved surfaces) to bioretention areas, infiltration devices, drainage swales, retention areas, natural systems, or vegetated buffer. Disconnection can also reduce the calculated peak discharge rate by increasing the time of concentration.



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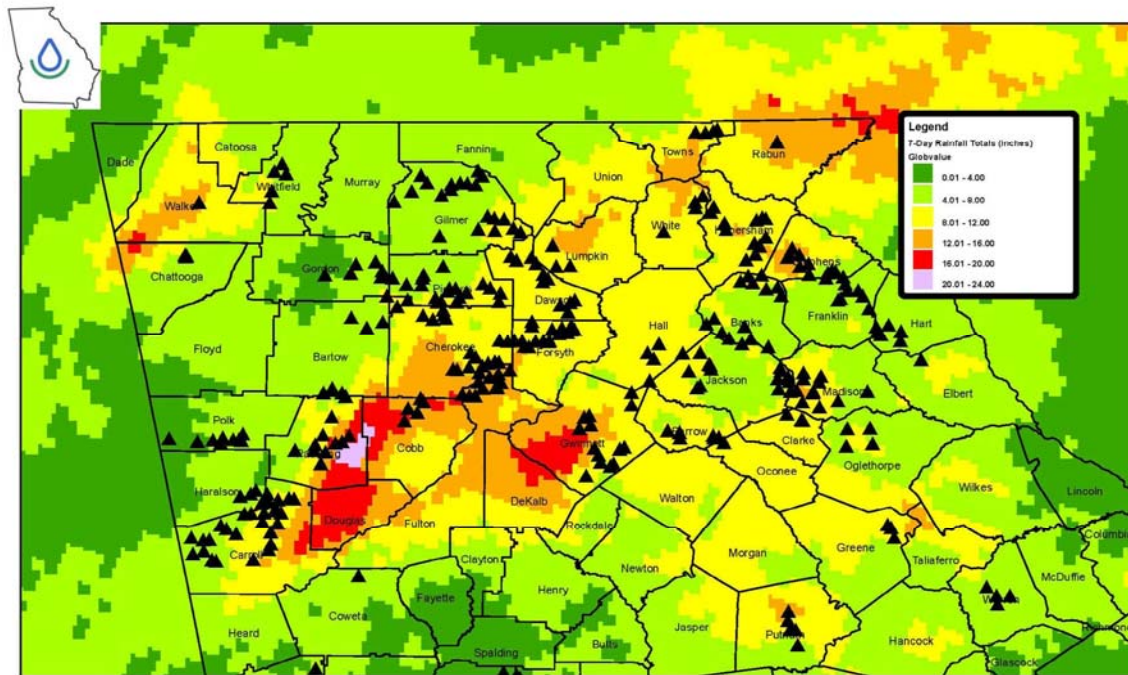
Reduce Impervious Surfaces:

Impervious areas repel rainwater and do not permit it to soak into the ground. Instead, water flows quickly into nearby streams, causing unnaturally large and sudden flows that contribute to stream erosion. As rainwater flows across impervious surfaces, it picks up pollutants such as oil and other engine fluids, and carries them into streams and marine areas, where they can harm aquatic plants and animals. The City will consider reducing the impervious areas and increasing streetscape plantings, increasing parking islands, and replacing impervious areas with pervious areas. Reducing impervious surfaces will help to minimize water velocity and run-off. It will aid the reduction of pollutants and sediment deposits in waterways and reduce estuarial water temperatures. The City may consider adopting an ordinance or overlay district to reduce impervious surfaces in developed watersheds.

Alum Treatment of Stormwater Runoff:

Alum treatment of stormwater runoff is the way to inject liquid alum into major storm sewer lines or water bodies. After being added to runoff, alum forms nontoxic precipitates of $Al(OH)_3$ and $AlPO_4$ which combine with suspended solids, phosphorus and heavy metals, causing them to be removed rapidly from the treated water. Alum treatment of stormwater runoff can consistently achieve a 90% reduction in total phosphorus, 50-70% reduction in total nitrogen, 50-90% reduction in heavy metals, and >99% reduction in fecal coli-form. The removal efficiencies obtained with alum stormwater treatment are similar or exceed the removal efficiencies obtained using a dry retention or wet detention stormwater management facility. This treatment system is substantially less expensive than traditional treatment methods and often requires no additional land purchase.





More than 20 inches of rain fell in parts of Cobb and Paulding County, Georgia in a 7-Day period, with slightly less rainfall in other parts of the 17-County disaster area. This is a map of Cumulative Rain Data as of 9/22/2009. The black triangles represent NRCS Watershed Dams. Of the 357 NRCS watershed dams in Georgia, more than 340 are in the northern part of the state.



The Georgia Emergency Management Agency estimates \$500 Million in damages from flooding over a 7-day period.

Flood Protection



Little Tallapoosa Watershed Dam No. 20 – Carroll County

Working as Designed--Flow over top of dam and in auxiliary spillway. There is an estimated \$1.5 billion in infrastructure below NRCS watershed dams. GEMA's \$250 million damage estimate would be much higher without these dams in place.

Flood Protection



Yellow River Watershed Dam No. 15 – Gwinnett County

Working as Designed--Flow Over Roller Compacted Concrete Spillway. There are an estimated 17,000 residents below structures like this one were protected from flooding.



Working as Designed--Flow through the Auxiliary Spillway. This site is at Kennesaw State University with over 100 people working in offices within 300 yards below the dam.



There are an estimated 25 offices in this area below the dam. These offices and road would be flooded without Noonday Creek No. 15.



Douglas County, Georgia experienced some of the most significant flood damages. There are no NRCS Watershed Dams in Douglas County.





Damage at Taylor Road Downstream of Yellow River 16 in Gwinnett County. Without the watershed structure, this road would have been completely washed out. Some 3,750 bridges exist below NRCS structures in Georgia. Many were protected by NRCS dams.

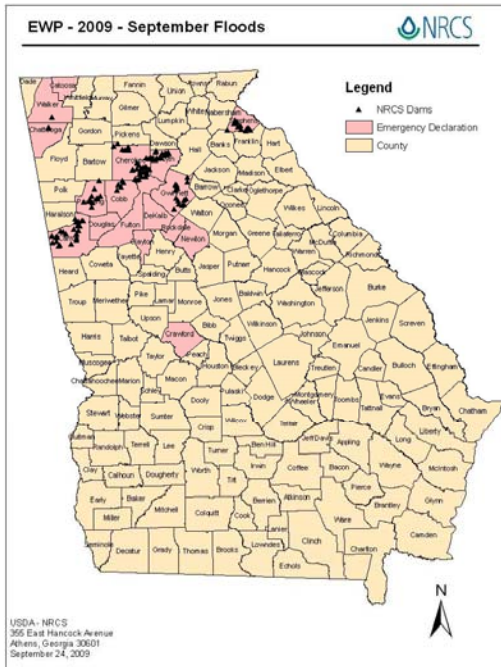
Remedial Repairs



No NRCS dams have breached in Georgia to date; however, we estimate that over 30 dams have had the auxiliary spillway activate. Many, like this one, may be in need of remedial repairs.



Summary



Some 120 NRCS assisted dams are included in the 17-county disaster area. These dams protected an estimated 1,788 homes valued at \$358 million, and 572 road crossings valued at \$57 million. Without the service of NRCS watershed dams, GEMA's \$500 million damage estimate would likely have almost doubled to over \$975 million.





Appendix H

STAPLEE



Appendix H STAPLEE

Appendix H contains a copy of the original STAPLEE scores assigned to mitigation projects by local jurisdictions in order to serve as a point of reference in the future.



Prioritization

Number: _____

Mitigation Action/Initiative: _____

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		

****NOTE****Please use this sheet to help provide a STAPLEE score / priority for each new action identified in your jurisdictions draft Annex.

The following pages are provided if you need additional resources to assist with completing the entries for your mitigation actions. 100 % accuracy of cost estimates, potential funding sources etc. is not required at this time as long as it is a best estimate and provides a future bench mark.



Guidance to Complete the Evaluation/Prioritization Table

Complete this table to help evaluate and prioritize each mitigation action being considered by your municipality. Please use these 14 criteria to assist in evaluating and prioritizing new mitigation actions identified. Specifically, for each new mitigation action, assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria in the provided table, defined as follows:

- 1 = Highly effective or feasible
- 0 = Neutral
- 1 = Ineffective or not feasible

Use the numerical results of this exercise to help prioritize your actions as “Low”, “Medium” or “High” priority. Your municipality may recognize other factors or considerations that affect your overall prioritization; these should be identified in narrative in the Priority field of the worksheet.

The 14 evaluation/prioritization criteria are:

Life Safety – How effective will the action be at protecting lives and preventing injuries?

Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?

Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

Political – Is there overall public support for the mitigation action? Is there the political will to support it?

Legal – Does the jurisdiction have the authority to implement the action?

Fiscal - Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?

Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?

Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?

Multi-hazard – Does the action reduce the risk to multiple hazards?



Timeline - Can the action be completed in less than 5 years (within our planning horizon)?

Local Champion – Is there a strong advocate for the action or project among the jurisdiction’s staff, governing body, or committees that will support the action’s implementation?

Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?

Below is an example of completed Score for the Fulton County Update

<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe For Completion</u>	<u>STAPLEE Score</u>
00.0001	Example	Your Jurisdiction	Flooding	1.2 2.7	Structural Project	\$10,000	HMA, FMA, Local	3 – 5 years from funds availability	3
Comments: Although the houses are not in the floodplain, the road is and floods when the Chattahoochee River overflows.									



Guidance to Complete the Mitigation Action Worksheet

If you need assistance on how to identify hazards, costs, objectives etc. The following provides additional guidance on how to complete the Mitigation Project Capture Sheet. If you have any questions, please contact:

Jim McIntosh
Tetra Tech, Inc.
678-777-2678

Assessing the Risk

Hazard(s) addressed: Please enter the hazard(s) of concern you are mitigating. For this plan, the hazards of concern identified for the planning area are:

- All Hazards
- Tornadoes
- Severe Weather
- Flood
- Winter Storm
- Tropical System
- Heat Wave
- Dam Failure
- Drought
- Wildfire/Urban Interface
- Earthquake Sinkhole

Specific problem being mitigated: Please describe the specific problem being mitigated.

Evaluation of Potential Actions/Projects

Actions/Projects Considered: Please consider different options to mitigate the problem identified. One alternative is always to accept the current level of risk (tolerate the vulnerability/problem) by deciding to take no action at this time. If you choose to take no action, please complete the worksheet up to and including this section and this will be noted in the Plan.

Please include the name of the action considered and a brief reason as to why the action was not selected. The reasoning documents the consideration of these alternatives.



Action/Project Intended for Implementation

Description of the Selected Project: Please provide a brief description of the selected project.

FEMA Category / Mitigation Action Type:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP)- These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NRP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

Objectives: Please insert the plan objectives (by number) that would be met if the action/project is implemented.

Fulton County Plan Goals and Objectives:

Table 6-2: Hazard Mitigation Plan Goals and Objectives	
Goal 1: Protect Public Health and Safety	
Objective 1.1	Improve systems that provide early warning and emergency communications and ensure interoperability of all systems
Objective 1.2	Reduce the impacts of hazards on vulnerable populations
Objective 1.3	Strengthen local building code enforcement
Objective 1.4	Ensure protection of people from dangerous high winds caused by tornadoes and severe storms through special regulatory standards for safe room and shelter construction
Objective 1.5	Encourage all municipalities to develop and maintain an all-hazard Emergency Operations Plan and other supporting plans and procedures that are consistent with the county's plan, National Response Framework, the National Incident Management Plan, and FEMA's Comprehensive Planning Guidance (CPG) 101
Objective 1.6	Develop and/or enhance interlocal agreements for better resource sharing such as buildings for backup EOCs



Table 6-2: Hazard Mitigation Plan Goals and Objectives	
Objective 1.7	Support interjurisdictional planning safety efforts that enhance evacuation, communication, sheltering, shelter-in-place, and response efforts
Objective 1.8	Enhance the interoperability of all communications systems that support public safety operations through plans, policies, procedures, facilities, and equipment
Goal 2: Protect Property	
Objective 2.1	Consider known hazards, and the potential for likelihood, when identifying sites for new facilities and systems
Objective 2.2	Create redundant supply and interconnectivity for critical networks such as water, sewer, digital data, power, and communications
Objective 2.3	Integrate new hazard and risk information into building codes and land use planning mechanisms
Objective 2.4	Educate public officials, developers, realtors, contractors building owners, and the public about hazard risk and building requirements
Objective 2.5	Incorporate effective mitigation strategies into county and municipal capital improvement projects, in support of continued NFIP compliance.
Objective 2.6	Promote post-disaster mitigation as part of restoration and recovery
Objective 2.7	Eliminate recurring flood and other natural hazard damages to existing buildings through property acquisition program, including, but not limited to, the demolition of vulnerable buildings and the establishment of permanent open space, in support of continued NFIP compliance.
Objective 2.8	Reduce exposure of existing buildings to flood damage by raising the finish floor elevations above the 100-year flood elevations to prevent interior water damage, in support of continued NFIP compliance.
Objective 2.9	Flood proof existing non-residential and residential buildings to safeguard against possible damages from natural hazards, in support of continued NFIP compliance.
Objective 2.10	Protect critical facilities from potential damages and occupants from harm in the event of natural hazards through retrofits or relocations of existing facilities located in high risk zones or construction of new facilities for maximum protection from all hazards
Objective 2.11	Maintain electric power in the event of loss during severe storms and other natural hazards to ensure uninterrupted operations of critical facilities and prevent major disruptions and consequential damages
Goal 3: Promote a sustainable economy	
Objective 3.1	Form partnerships to leverage and share resources.
Objective 3.2	Partner with private sector to promote structural and non-structural hazard mitigation as part of standard business practice
Objective 3.3	Educate businesses about contingency planning, targeting small businesses and those businesses located in high risk areas
Objective 3.4	Partner with private sector to promote employee/employer education about disaster preparedness while at work and home



Table 6-2: Hazard Mitigation Plan Goals and Objectives	
Objective 3.5	Partner with private sector to support public safety, preparedness and response operations including warning, notification, evacuations, sheltering, shelter-in-place, and transportation
Objective 3.6	Partner with the Atlanta Regional Commission, Hartsfield-Jackson International Airport, Chambers of Commerce, and the larger business community to integrate regional economic development planning and regional economic mitigation opportunities
Goal 4: Manage development to minimize risks of loss	
Objective 4.1	Implement comprehensive planning programs that promote the principles of sustainable community development
Objective 4.2	Ensure capital improvement planning includes capital projects recommended this hazard mitigation plan
Objective 4.3	Establish or review subdivision standards that sufficiently prevent damages to property from natural hazards, in support of continued NFIP compliance.
Objective 4.4	Review local codes for effectiveness of standards to protect buildings and infrastructure from hazard damages, in support of continued NFIP compliance.
Objective 4.5	Continue to implement floodplain management programs which meet or exceeds the minimum standards of the National Flood Insurance Program (NFIP)
Objective 4.6	Encourage participation in the Community Rating System (CRS) program
Objective 4.7	Encourage participation in the NFPA's Firewise Communities program to reduce risk of life and property losses due to wildfire and/or urban interface fires
Objective 4.8	Manage the impacts of land development to local drainage systems and waterways through comprehensive regulations designed to control the rate of post-development storm water discharge and adverse erosion and sedimentation impacts, in support of continued NFIP compliance.
Objective 4.9	Improve storm water management impacts through interjurisdictional coordination and collaboration
Objective 4.10	Continue to implement a comprehensive dam safety inspection and monitoring program to ensure proper maintenance, in support of continued NFIP compliance.
Objective 4.11	Enforce maintenance of dam faces, storm water control facilities, and water conveyance infrastructure, including privately owned structures, in support of continued NFIP compliance.
Objective 4.12	Enforce regulations to prevent dumping and littering in the public Right of Way and share maintenance responsibilities with adjoining property owners



Table 6-2: Hazard Mitigation Plan Goals and Objectives	
Objective 4.13	Perform assessment of critical facilities (hospitals, schools, fire and police stations, emergency operations centers, special needs housing, and others) to address building and site vulnerabilities to hazards. Identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events
Objective 4.14	Complete and/or maintain a comprehensive GIS database of hazard locations, socioeconomic data, infrastructure, and critical facilities inventory
Objective 4.15	Incorporate mitigation strategies into community redevelopment or revitalization plans
Objective 4.16	Incorporate mitigation strategies and actions into post disaster redevelopment plans, in support of continued NFIP compliance.
Objective 4.17	Support engagement of all communities to participate in the hazard mitigation grant process and its programs
Goal 5: Natural Resources Protection	
Objective 5.1	Mitigate the long-term effects on the environment by promoting climate change adaptation strategies
Objective 5.2	Protect wetlands by preventing adverse development impacts and preserve their capabilities to store flood waters, reduce downstream flows and filter water
Objective 5.3	Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands to assure permanent protection of these natural resources
Objective 5.4	Restore and protect river and stream corridors to assure their natural and beneficial functions to manage floods and filter runoff
Objective 5.5	Maintain a healthy forest that can help mitigate the damaging impacts of wildfires, flooding, erosion, and landslides such as through selective cutting and other measures
Objective 5.6	Protect water quantity and quality through water conservation programs that can mitigate the effects of drought and help ensure uninterrupted water supplies
Objective 5.7	Convert Class 1 high hazard dams into multiple Class 2 low hazard dams
Goal 6: Apply engineered structural modifications to reduce impacts of hazards	
Objective 6.1	Control flooding through reservoirs and other cost effective, feasible structural improvements such as levees/floodwalls, diversions, channel modifications, dredging, draining modifications, and storm sewers
Objective 6.2	Perform regular maintenance of streams and drainage ways to ensure adequate conveyance of flood waters and storm water runoff
Objective 6.3	Ensure restraining structures, such as retaining walls, are adequately engineered to prevent damage from the effects of erosion
Objective 6.4	Reduce the potential for damage to structures from high winds by ensuring sufficient wind loading capabilities of structures



Table 6-2: Hazard Mitigation Plan Goals and Objectives	
Objective 6.5	Upgrade flow capacity of dams due to downstream development and locate funding sources for these activities, in support of continued NFIP compliance.
Objective 6.6	Enforce maintenance of dam faces and stormwater control facilities and conveyance infrastructure including privately owned structures, in support of continued NFIP compliance.
Objective 6.7	Reduce the damaging effects of lightening to critical facilities and systems through the use of adequate surge protection
Objective 6.8	Collaborate with state agencies, such as DOT, to identify, inventory, and develop specific strategies reduce damage to critical transportation infrastructure (including bridges, culverts) and critical traffic control systems caused by severe weather events
Goal 7: Public Education and Awareness	
Objective 7.1	Distribute and educate the hazard mitigation plan to elected officials, businesses, and residents using all available means of publication and distribution
Objective 7.2	Provide public access to Flood Insurance Rate Map (FIRM) information
Objective 7.3	Conduct ongoing outreach projects to increase public awareness of hazard risks and provide information regarding steps to protect themselves and their properties
Objective 7.4	Utilize local library resources to educate the public on hazard risks and mitigation alternatives
Objective 7.5	Ensure availability of qualified local government staff to provide technical assistance to advise property owners of various hazard risks and mitigation alternatives
Objective 7.6	Use school and other community education resources to conduct programs on topics related to hazard risks and mitigation measures
Objective 7.7	Utilize all available mass media (i.e. newspapers, radio, TV, cable access, internet, etc.) to increase public awareness and distribute public information on hazard mitigation topics
Objective 7.8	Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means of advance warning
Objective 7.9	Promote signage regarding hazards to motorists pertaining to flooded or iced roadways and bridges

Benefits: If applicable in the notes please describe the losses avoided when the project is implemented. This includes physical property damage; loss of function; road closing/detours; etc.

Estimated Cost:

Please provide the estimated cost or use the following ranges:

Low = < \$10,000 Medium = \$10,000 to \$100,000 High = > \$100,000



Priority: Please enter the STAPLEE Score. Refer to the prioritization exercise and table ,at the beginning of this document.

Plan for Implementation

Potential Funding Source: Please identify the anticipated funding source, which could be “Grant funding with local cost share”. Sources may include federal, state and local sources.

Timeline for Completion: Short = 1 to 5 years. Long Term= 5 years or greater. OG = On-going program.

Reporting on Progress

Note: This is for long term project progress review and need not be completed at this time.

Please provide a status update on the selected action/project. Along with this description, please indicate if the action/project is completed or not completed.

Actions which are not complete may be dropped with a rational provided (e.g., project deemed unfeasible...). Other incomplete actions should clearly be indicated as continuing; indicate percent complete, and identify any hurdles/obstacles/reasons for change in schedule. Even actions that have had no progress to date can be identified as continuing. For any action that is not yet complete and will continue, always consider modifying the action to promote implementation.

Please note this report on progress should be done, at minimum, each year prior to the annual Planning Committee update outlined in the plan maintenance procedures in Chapter 7 (Plan Maintenance).



Baseline Scores for Reference

STAPLEE ACTION EVALUATION TABLE		STAPLEE Criteria Considerations												Score											
Mitigation Actions City of Atlanta	S (Social)	T (Technical)			A (Administrative)		P (Political)			L (Legal)			E (Economic)			E (Environmental)									
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/ Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws		
Acquire generator for emergency power for City of Atlanta Fire Department Headquarters Building	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	+	13
Retrofit glass old window glass at the City of Atlanta Fire Department Headquarters building for increased impact resistance	+	+	+	+	+	N	+	+	+	+	+	N	N	N	·	+	+	N	+	N	N	N	N	+	11
Acquire generator for emergency power for 40 City of Atlanta Fire Stations	+	+	+	+	+	N	+	+	+	+	+	N	N	N	+	+	+	+	+	N	N	N	N	+	13
Retrofit bay doors of 40 Fire Stations in the City of Atlanta	+	+	+	+	+	N	+	+	+	+	+	N	N	N	+	+	+	+	+	N	N	N	N	+	13
Retrofit All 40 Fire Stations in the City of Atlanta with Lightning Rods	+	+	+	+	+	N	+	+	+	+	+	N	N	N	+	+	+	+	+	N	N	N	N	+	13



STAPLEE ACTION EVALUATION TABLE

Mitigation Actions City of Atlanta	STAPLEE Criteria Considerations													Score									
	+ Favorable - Less favorable N Not Applicable																						
	S (Social)			T (Technical)			A (Administrative)		P (Political)			L (Legal)			E (Economic)			E (Environmental)					
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority		Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws
Place 80 Warning Sirens in Residential Areas in the City of Atlanta	+	+	+	+	+	N	-	+	+	+	N	N	N	N	+	+	+	N	N	N	N	+	13
Acquire generator for emergency power for City of Atlanta Fire Department Headquarters Building	+	+	+	+	+	N	-	+	+	+	N	N	N	N	+	+	+	N	N	N	N	+	13
Acquire generator for emergency power for 15 Police Facilities in the City of Atlanta	+	+	+	+	N	N	-	+	N	+	N	N	N	+	-	+	N	N	N	N	N	N	7
Evaluate City of Atlanta Police Facilities at 1500 Key Road for Flood Potential	+	+	+	+	N	N	-	+	N	+	N	N	N	+	-	+	N	N	+	N	+	+	8
Relocate City of Atlanta SWAT Offices & Storage, Classrooms, Ranger Offices & Storage, Gym, Explosive Bldg, and Equipment Facility at 1500 Key Rd outside of	+	+	+	+	N	N	-	+	N	+	N	N	N	+	-	+	N	N	+	N	+	+	8



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	S (Social)		T (Technical)			A (Administrative)		P (Political)			L (Legal)			E (Economic)			E (Environmental)																							
Raise roadway and structure by 2 ft. at Northside Drive at Peachtree Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	Staffing	-	Funding Allocation	+	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N	
	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N		
	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N
Raise roadway and structure by 4 ft. at Northwest Dr. at Proctor Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N
Raise roadway and structure by 3.3 ft. at Sanford Dr. (AKA Kerry Cir.) at Proctor Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N
Raise roadway and structure by 5 ft. at Gun Club Park Bridge at Proctor Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N
Raise roadway and structure by 8 ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N
Raise roadway and structure by 6.5ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	Community Acceptance	+	Effect on Segment of Population	+	Technically Feasible	+	Long-Term Solution	+	Secondary Impacts	+	Staffing	-	Funding Allocation	-	Maintenance/Operations	+	Political Support	+	State Authority	+	Existing Local Authority	+	Potential Legal Challenge	.	Benefit of Action	+	Cost of Action	+	Contributes to Economic	N	Outside Funding Required	+	Effect on Land/Water	N	Effect on Endangered	N	Consistent with Community Environmental Goals	N	Consistent with Federal Laws	N



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	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Raise roadway and structure by 5 ft. at Burbank Dr. at Proctor Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 9 ft. at Sharon St at Proctor Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 8 ft at Windsor Pkwy. at Nancy Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 2 ft. at Peachtree Dunwoody Rd at Nancy Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 3.2 ft. at Great Southwest Pkwy at Utoy Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – EB at Utoy Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N
Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – WB at	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N



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		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws
Raise roadway and structure by 3.2 ft. at Danforth Rd. at Niskey Creek		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N
Raise roadway and structure by 6 ft. at Niskey Lake Rd.		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N
Raise roadway and structure by 2 ft. at Boulder Park Dr. at Wildwood Lake Tributary		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N
Raise roadway and structure by 2.2 ft. at Branch Rd. at Wildwood Lake Tributary		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N
Raise roadway and structure by 2.2ft at Hasty Place at Mozley Park Tributary		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N
Raise roadway and structure by 1.5 ft. at Hightower Rd. at Center Hill Tributary		+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N



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		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Branch	Raise roadway and structure by 2 ft. at Headland Dr. at Headland Branch	+	+	+	+	+	-	-	+	+	+	+	+	+	.	+	+	N	+	N	N	N	N	11
Branch	Raise roadway and structure by 5.5ft. at Lakewood Raceway – Southern Leg at Middle Branch of South River	+	+	+	+	+	-	-	+	+	+	+	+	+	.	+	+	N	+	N	N	N	N	11
	Raise roadway and structure by 4 ft. at Bohler Rd. at Peachtree Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	.	+	+	N	+	N	N	N	N	11
	Raise roadway and structure by 2 ft. at Northside Drive at Peachtree Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	.	+	+	N	+	N	N	N	N	11
	Raise roadway and structure by 4 ft. at Northwest Dr. at Proctor Creek	+	+	+	+	+	-	-	+	+	+	+	+	+	.	+	+	N	+	N	N	N	N	11
	Raise roadway and structure by 3.3 ft. at Sanford Dr. (AKA Kerry Cir.) at	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	13



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Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws		
Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 5 ft. at Gun Club Park Bridge at Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 8 ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 6.5 ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 5 ft. at Burbank Dr. at Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 9 ft. at Sharon St at Proctor Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 8 ft at Windsor Pkwy. at Nancy Creek		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11
Raise roadway and structure by 2 ft.		+	+	+	-	-	+	+	+	+	+	+	-	+	+	N	+	N	N	N	N	N	11



Mitigation Actions City of Atlanta		STAPLEE Criteria Considerations																Score						
		+ Favorable - Less favorable N Not Applicable																						
S (Social)	T (Technical)	A (Administrative)		P (Political)			L (Legal)			E (Economic)			E (Environmental)											
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws	
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11
		+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	N	+	N	N	N	N	N	11



Mitigation Actions City of Atlanta		STAPLEE Criteria Considerations													Score										
		+ Favorable - Less favorable N Not Applicable																							
S (Social)	T (Technical)	A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)											
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws		
Creek																									
Raise roadway and structure by 2 ft. at Dawn Ln. at East Whetstone Creek																									
Raise roadway and structure by 6 ft. at Sumter St. at East Whetstone Creek																									
Raise roadway and structure by 2.5 ft. at Connelly Dr at Headland Branch																									
Raise roadway and structure by 2 ft. at Headland Dr. at Headland Branch																									
Build two separate 2,500 tons sand domes for storage of materials during cold and icy weather																									
Build retaining structure at the solid																									



Mitigation Actions City of Atlanta		STAPLEE ACTION EVALUATION TABLE																Score						
		STAPLEE Criteria Considerations																						
		+ Favorable - Less favorable N Not Applicable																						
		S (Social)		T (Technical)			A (Administrative)		P (Political)			L (Legal)			E (Economic)			E (Environmental)						
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic	Outside Funding Required	Effect on Land/Water	Effect on Endangered	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Continue program for natural/vegetative stabilization of stream banks (average 1300 feet per year) to secure infrastructure		+	+	+	+	+	N	-	+	+	+	+	+	+	+	+	+	+	+	N	N	N	+	16
Relocate Parks NE and SE District Maintenance Depots		+	+	+	+	+	N	-	+	+	+	+	+	+	+	+	+	+	+	N	N	N	+	16
Tree Maintenance Program in Hazard and Urbanized Areas		+	+	+	+	+	N	-	+	+	+	+	+	+	+	+	+	+	+	N	N	N	+	16
Reconstruct Roofs and generators on Facilities where Residents can gather in event of displacement or natural disasters		+	+	+	+	+	N	-	+	+	+	+	+	+	+	+	+	+	+	N	N	N	+	16



Mitigation Actions		STAPLEE ACTION EVALUATION TABLE																Score						
		STAPLEE Criteria Considerations																						
		S (Social)				T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)			
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
	College Park																							
	Project Number 15.0001 Camp Creek Pkwy 3 box culvert replacement	+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	N	+	+	14
	Project Number 15.0002 Storm sewer improvement project on Cambridge, Walker, Mercer, Lyle, and Vista Avenues	+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	N	+	+	14
	Project Number 15.0003 Increase flow-through capacity of box culvert on Parkview Lane	+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	N	+	+	14
	Project Number 15.0004 Increase flow-through capacity of box culvert the intersection of Harris and Rugby Ave.	+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	N	+	+	14
	Project Number 15.0005 Increase capacity of city-owned	+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	N	+	+	14



Mitigation Actions College Park		STAPLEE ACTION EVALUATION TABLE																Score					
		STAPLEE Criteria Considerations																					
		+ Favorable - Less favorable N Not Applicable																					
		S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)				
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws
detention ponds																							
Project Number 15.0006 Replace traffic lights with more weather resistant mast arms		+	N	+	N	+	-	+	+	N	+	+	+	+	+	+	-	N	-	N	N	N	N
Project Number 15.0007 Retrofit Public Works Building		+	N	+	+	+	+	-	+	+	+	+	N	+	+	+	-	+	-	N	N	N	N
Project Number 15.0008 Park Terrace Culvert		+	N	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	N	N	N	N
Project Number 15.0009 Retrofit Power Department		+	N	+	+	+	+	-	+	+	+	+	N	+	+	+	-	+	-	N	N	N	N



Mitigation Actions East Point		STAPLEE Criteria Considerations																SCORE						
		S (Social)		T (Technical)			A (Administrative)			P (Political)		L (Legal)			E (Economic)				E (Environmental)					
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Project 20.0001	Camp Creek Pkwy drainage improvements (with DOT)	+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16
Project 20.0002	Norman Berry drainage capacity improvements	+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16
Project 20.0003	Cleveland Ave drainage capacity improvements	+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16
Project 20.0004	Martin St & Norman Berry drainage improvements	+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16
Project 20.0005	Fire Station subsurface failure & retaining wall	+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16
Project 20.0006		+	N	+	+	+	+	+	+	+	N	+	+	+	-	+	+	+	N	+	N	+	+	16



STAPLEE ACTION EVALUATION TABLE																							
STAPLEE Criteria Considerations																							
+ Favorable - Less favorable N Not Applicable																							
Mitigation Actions East Point	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)			SCORE		
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species		Consistent with Community Environmental Goals	Consistent with Federal Laws
Harden EOC																							
Project 20.0007 Sun Valley Creek drainage improvements	+	+	+	+	+	+	+	+	N	+	+	+	+	-	+	+	N	+	N	N	N	N	15
Project 20.0008 Lester St/Spring Ave drainage improvements	+	+	+	+	+	+	+	+	N	+	+	+	+	-	+	+	N	+	N	N	N	N	15
Project 20.0009 Randall St & East Forest Ave drainage improvements	+	+	+	+	+	+	+	+	N	+	+	+	+	-	+	+	N	+	N	N	N	N	15
Project 20.0010 3030 & 3042 Dodson Dr culvert repair	+	+	+	+	+	+	+	+	N	+	+	+	+	-	+	+	N	+	N	N	N	N	15



STAPLEE ACTION EVALUATION TABLE																							
STAPLEE Criteria Considerations																							
+ Favorable - Less favorable N Not Applicable																							
Mitigation Actions Hapeville	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)		E (Economic)			E (Environmental)			SCORE			
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water		Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws
Project Number 30.0001 Install surge protection at City Hall	+	N	+	+	N	N	+	N	+	N	N	+	N	+	N	N	-	N	N	N	N	N	8
Project Number 30.0002 Install surge protection at Public Services Building	+	N	+	+	N	N	+	N	+	N	N	+	N	+	N	N	-	N	N	N	N	N	8
Project Number 30.0003 Install surge protection at Police Station	+	N	+	+	N	N	+	N	+	N	N	+	N	+	N	N	-	N	N	N	N	N	8
Project Number 30.0004 Install surge protection at Fire Station #2	+	N	+	+	N	N	+	N	+	N	N	+	N	+	N	N	-	N	N	N	N	N	8
Project Number 30.0005 Install surge protection at the Community Services Building	+	N	+	+	N	N	+	N	+	N	N	+	N	+	N	N	-	N	N	N	N	N	8
Project Number 30.0006 Revise site plan review process	+	N	+	+	N	N	+	N	-	N	N	+	N	+	N	N	N	N	N	N	+	N	9
Project Number 30.0007 Acquire 7 parcels south of	-	N	+	+	N	N	-	N	+	N	N	+	N	-	N	N	N	N	N	N	+	N	3



Mitigation Actions Hapeville		STAPLEE ACTION EVALUATION TABLE															SCORE							
		STAPLEE Criteria Considerations																						
		S (Social)			T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)				
		+ Favorable			- Less favorable			N Not Applicable																
Woodrow		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Project Number 30.0008 Perform stream bank restoration		+	N	+	-	N	N	-	N	+	N	+	N	+	N	+	-	N	-	+	N	+	N	4
Project Number 30.0009 Improve drainage at Claire & Parkway		+	N	+	+	N	N	-	N	+	N	+	N	+	N	+	+	N	-	+	N	+	N	8
Project Number 30.00010 Improve drainage in the area of South Central Ave.		+	N	+	+	N	N	-	N	+	N	+	N	+	N	+	+	+	-	+	N	+	N	9
Project Number 30.00011 Perform curb modification on Oakdale Rd		+	N	+	+	N	N	-	N	+	N	+	N	+	N	+	+	+	-	+	N	+	N	9



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations																SCORE							
		S (Social)			T (Technical)			A (Administrative)			P (Political)			L (Legal)		E (Economic)				E (Environmental)					
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/ Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws	
		+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable	+ Favorable	- Less favorable	- Not Applicable
Mitigation Actions Milton																									
Project Number 56.0001 Fire Station Retrofit		+	+	-	+	+	+	+	+	N	+	+	+	+	N	+	-	N	-	+	N	N	+	+	
Project Number 56.0002 Roadway Right of Way Maintenance Program		N	N	+	-	N	+	+	+	N	-	+	+	+	N	+	N	N	-	-	N	N	-	+	
Project Number 56.0003 Bridge Support Wing Walls		N	N	+	+	+	+	+	+	N	+	+	+	+	-	+	+	N	+	+	N	N	+	N	
Project Number 56.0004 GIS Mapping		+	+	+	-	+	-	+	+	N	+	+	+	+	N	+	+	+	N	N	N	N	N	N	
Project Number 56.0005 NIXEL outreach campaign		+	+	+	-	+	-	+	+	N	+	+	+	+	N	+	+	+	N	N	N	N	N	N	



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations												SCORE										
		S (Social)			T (Technical)			A (Administrative)		P (Political)		L (Legal)			E (Economic)		E (Environmental)							
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Mitigation Actions Mountain Park																								
Project Number 35.0001	Convert open storm drainage water ditches	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	+	+	+	+	+	+	+	15
Project Number 35.0002	Improve storm water drainage ditches	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	+	+	+	+	+	+	+	15
Project Number 35.0003	Acquire generator for EOC/Fire Station	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	+	+	+	N	N	N	+	12
Project Number 35.0004	Install surge protection equipment	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	+	+	+	N	N	N	+	12
Project Number 35.0005.a	Flood proof Fire Station which is in flood area	+	+	+	+	-	-	+	+	+	+	+	N	+	-	+	+	+	+	N	N	N	+	12
Project Number 35.0005.b	Acquire property and relocate fire	-	+	+	+	-	-	+	N	+	-	-	N	+	+	+	+	+	+	N	N	N	+	8



Mitigation Actions Mountain Park		STAPLEE ACTION EVALUATION TABLE																SCORE					
		STAPLEE Criteria Considerations																					
		+ Favorable			- Less favorable			N Not Applicable															
S (Social)	Community Acceptance Effect on Segment of Population	T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)						
		Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species		Consistent with Community Environmental Goals	Consistent with Federal Laws	
	station out of flood area																						
	Project Number 35.0006 Improve roadbed across lower dam	-	+	-	-	+	-	+	+	-	+	+	+	+	+	+	+	N	N	N	N	8	
	Project Number 35.0007 Harden city hall for wind resistance	+	+	-	-	+	-	+	+	+	+	+	+	+	+	+	+	N	N	N	N	12	
	Project Number 35.0008 Acquire property to relocate City Works Building	-	+	-	-	+	-	+	+	-	+	+	+	+	+	+	+	N	N	N	N	8	
	Project Number 35.0009 Dredge Lake Garrett	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	17	
	Project Number 35.0010 Dredge Lake Cherful	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	17	
	Project Number 35.0011 Harden spillway structure	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	17	



Mitigation Actions Multi-Jurisdictions and/or Countywide Projects		STAPLEE ACTION EVALUATION TABLE														SCORE						
		STAPLEE Criteria Considerations																				
		S (Social)		T (Technical)			A (Administrative)		P (Political)		L (Legal)			E (Economic)			E (Environmental)					
		Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
		Effect on Segment of Population																				
projects																						
Project Number 99.0007 Multi-jurisdictional storm water modeling study		N	+	N	N	-	N	+	+	N	N	+	N	+	+	+	-	N	N	+	+	8
Project Number 99.0008 Ordinance for fire hydrant maintenance		+	+	N	+	+	N	+	+	+	N	+	N	+	+	N	N	N	N	N	N	13
Project Number 99.0009 Standardize hydrant connections		+	+	N	N	-	N	+	+	+	N	+	N	+	-	N	-	N	N	+	N	6
Project Number 99.0010 Update comp plans, work programs, and CIP for future growth and Development consistent with AFCEMA HMP		+	+	N	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	+	+	19
Project Number 99.0011 Ensure that CIP include capital projects to implement the projects identified in the Mitigation Strategy		N	+	N	N	+	N	+	N	N	N	+	N	+	+	+	N	N	N	+	+	10



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations												SCORE												
		S (Social)			T (Technical)			A (Administrative)		P (Political)		L (Legal)			E (Economic)			E (Environmental)								
		+ Favorable			- Less favorable			N Not Applicable																		
Mitigation Actions Multi-Jurisdictions and/or Countywide Projects	Community Acceptance																									
	Effect on Segment of Population																									
	Technically Feasible																									
	Long-Term Solution																									
	Secondary Impacts																									
	Staffing																									
	Funding Allocation																									
	Maintenance/Operations																									
	Political Support																									
	Local Champion																									
	Public Support																									
	State Authority																									
Existing Local Authority																										
Potential Legal Challenge																										
Benefit of Action																										
Cost of Action																										
Contributes to Economic Goals																										
Outside Funding Required																										
Effect on Land/ Water																										
Effect on Endangered Species																										
Consistent with Community Environmental Goals																										
Consistent with Federal Laws																										
arms																										
Project Number 99.0017 Develop local ordinances & enforcement mechanisms for maintenance of privately owned dams																										
Project Number 99.0018 Enactment of local ordinances to require community storm shelters or safe rooms for MHP, RV parks, and subdivisions																										
Project Number 99.0019 Maintain risk assessment data in GIS																										
Project Number 99.0020 Integrate FEMA HAZUS-MH applications for hazard loss estimations																										



Mitigation Actions Multi-Jurisdictions and/or Countywide Projects		STAPLEE ACTION EVALUATION TABLE														SCORE								
		STAPLEE Criteria Considerations																						
		S (Social)			T (Technical)			A (Administrative)		P (Political)		L (Legal)		E (Economic)			E (Environmental)							
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
		+ Favorable	- Less favorable	N Not Applicable																				
Project Number 99.0021 Work with DNR, NCRS, and local GIS departments to maintain dam inundation maps		N	N	+	+	N	+	N	N	+	+	N	N	+	N	+	N	N	N	+	+	N	N	12
Project Number 99.0022 Evaluate all available notification systems		+	+	+	+	N	+	N	N	+	+	N	N	+	N	+	N	N	N	N	N	N	N	11
Project Number 99.0023 Develop countywide multi-jurisdictionally coordinated notification plan		+	+	+	+	N	+	N	N	+	+	N	N	+	N	+	N	N	N	N	N	N	N	10
Project Number 99.0024 Install automatic icing indicators on critical bridges & overpasses		+	+	+	+	N	N	-	-	+	N	N	N	+	N	+	N	N	-	N	N	N	N	3
Project Number 99.0025 Implement voluntary program of flood protection and property acquisition for high risk residences		+	N	+	+	N	+	N	N	+	+	N	N	+	N	+	N	N	N	N	N	N	N	9



STAPLEE ACTION EVALUATION TABLE																							
STAPLEE Criteria Considerations																							
+ Favorable - Less favorable N Not Applicable																							
Mitigation Actions Multi-Jurisdictions and/or Countywide Projects	S (Social)		T (Technical)			A (Administrative)		P (Political)		L (Legal)		E (Economic)			E (Environmental)			SCORE					
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals		Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws
Project Number 99.0026 Coordination of educational material regarding mitigation strategies	+	+	+	+	N	+	N	N	+	N	N	+	N	N	+	N	N	N	N	N	+	N	12
Project Number 99.0027 Support resiliency of the county's private sector through info sharing	+	+	+	+	N	+	N	N	N	+	N	N	N	N	+	N	N	N	N	N	N	N	11
Project Number 99.0028 Establish pre-arranged MOUs for facility sharing and equipment	N	N	+	N	N	+	+	N	+	N	N	N	N	N	+	N	N	N	N	N	N	N	8
Project Number 99.0029 Develop & implement plans to flood proof WTPs and WWTPs	N	N	+	+	N	+	+	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	8
Project Number 99.0030 Participate in the NWS annual Flood Awareness Week	+	+	+	+	N	+	N	N	+	N	N	+	N	N	+	N	N	N	N	N	N	N	11
Project Number 99.0031 Participate in the NWS annual	+	+	+	+	N	+	N	N	+	N	N	+	N	N	+	N	N	N	N	N	N	N	11



Mitigation Actions Multi-Jurisdictions and/or Countywide Projects		STAPLEE Criteria Considerations																SCORE						
		S (Social)		T (Technical)			A (Administrative)			P (Political)		L (Legal)			E (Economic)				E (Environmental)					
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Winter Weather Awareness Week																								
Project Number 99.0032 Participate in NOAA weather radio program		+	+	+	N	N	N	-	N	+	+	+	N	N	N	+	+	N	.	N	N	N	N	6
Project Number 99.0033 Sponsor educational programs for seniors for accessing gov't websites		+	+	+	N	N	+	+	+	+	+	N	N	N	N	+	+	N	N	N	N	N	N	11
Project Number 99.0034 Continue presentations in school system		+	+	+	N	N	+	+	+	+	+	N	N	N	N	+	+	N	N	N	N	N	N	12
Project Number 99.0035 Promote Ready.gov		+	+	+	+	N	+	+	+	+	+	N	N	N	N	+	+	N	N	N	N	N	N	12
Project Number 99.0036 Increase jurisdictional participation in annual dissemination of flooding information and awareness		+	+	+	+	N	+	+	+	+	N	N	N	N	N	+	+	N	N	N	N	+	N	13
Project Number 99.0037		+	+	+	N	N	+	+	+	+	+	N	N	N	N	+	+	N	N	N	N	N	N	11



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations												SCORE											
		+ Favorable			- Less favorable			N Not Applicable																	
S (Social)	T (Technical)	A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)											
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/ Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Mitigation Actions City of Palmetto		+	+	+	+	+	N	-	+	+	+	N	+	+	N	+	N	-	N	N	N	N	N	N	8
		+	+	+	+	+	N	-	-	+	+	+	N	+	N	+	N	-	-	N	N	N	N	N	7
		+	+	+	+	+	N	-	-	+	+	+	N	+	N	+	N	-	-	N	N	N	N	N	7



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations												SCORE									
		S (Social)			T (Technical)			A (Administrative)		P (Political)		L (Legal)			E (Economic)			E (Environmental)					
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws
Mitigation Actions Roswell																							
Project Number 45.0001	Reroute Azalea Dr	+	N	-	+	N	N	-	N	+	N	+	N	+	N	+	N	N	-	N	N	+	N
Project Number 45.0002	Elevate Willeo Rd	+	N	+	+	N	N	-	N	+	N	+	N	+	N	+	N	N	-	N	N	N	N
Project Number 45.0003	Improve culvert capacity in the Roswell Area Park	+	N	+	+	N	N	-	N	+	N	+	N	+	N	+	N	N	N	N	N	+	N
Project Number 45.0004	Install surge protection at city fuel island	N	N	+	N	N	N	-	N	+	N	N	N	+	N	+	N	N	N	N	N	N	N
Project Number 45.0005	Improve basin structure to the inland area of Oxbo Rd.	+	N	+	+	N	N	-	N	+	N	N	N	+	N	+	N	N	-	+	N	+	N
Project Number 45.0006	Retrofit roof of the 911 Center	+	N	+	N	N	N	-	N	+	+	+	N	N	N	+	+	N	-	N	N	N	N
Project Number 45.0007		+	N	+	N	N	N	-	-	+	+	+	N	+	N	+	-	N	N	+	N	+	N



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations											SCORE							
		+ Favorable		- Less favorable		N Not Applicable		E (Economic)		E (Environmental)										
Mitigation Actions Roswell	S (Social)	T (Technical)		A (Administrative)		P (Political)		L (Legal)		E (Economic)		E (Environmental)								
		Perform stream stabilization and repair erosion along stream corridors	Community Acceptance	Technically Feasible	Long-Term Solution	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species
Effect on Segment of Population	Secondary Impacts																			



STAPLEE ACTION EVALUATION TABLE																							
STAPLEE Criteria Considerations																							
+ Favorable - Less favorable N Not Applicable																							
Mitigation Actions Sandy Springs	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)		E (Economic)			E (Environmental)			SCORE			
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water		Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws
Project 59.0001 Riverside Dr/North Harbor	+	N	+	+	+	+	-	+	+	+	N	+	N	+	+	+	N	+	+	N	+	+	15
Project 59.0002 Colewood Creek Basin	+	+	+	+	+	+	-	+	-	+	N	+	-	+	-	+	+	+	+	N	+	+	12
Project 59.0003 Pine Forest – Nancy Creek Basin	+	+	+	+	+	+	-	+	-	+	N	+	-	+	-	+	+	+	+	N	+	+	12
Project 59.0004 North Mill Area	+	+	+	+	+	+	-	+	-	+	N	+	-	+	-	+	+	+	+	N	+	+	12
Project 59.0005 Culvert slip lining	+	+	+	+	+	+	+	+	+	+	N	+	N	+	+	+	+	+	+	N	+	+	17
Project 59.0006 Rehab City Detention Ponds	+	+	+	+	+	+	-	+	+	+	N	+	-	+	-	+	+	+	+	N	+	+	14
Project 59.0007 Morgan Falls retaining wall	+	N	+	+	+	+	-	+	+	+	N	+	N	+	-	+	+	+	+	N	+	+	14
Project 59.0008 Lake Forest Rd retaining wall	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	19



STAPLEE ACTION EVALUATION TABLE

		STAPLEE Criteria Considerations												Score										
		+ Favorable			- Less favorable			N Not Applicable																
Mitigation Actions Union City	S (Social)	T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)			E (Environmental)							
		Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws	
Project Number 50.0001 Replace drainage pipe on Shannon Parkway with a bridge	+	+	+	-	N	-	N	N	+	+	+	+	+	N	+	-	+	+	+	+	N	+	+	12
Project Number 50.0002 Improve aging storm water infrastructure on Lester Rd which is circa 1950 and of insufficient capacity for storm water runoff	+	-	+	+	-	N	-	N	+	+	+	+	+	N	+	-	+	+	+	+	N	+	+	10
Project Number 50.0003 Elevate areas of Lester Rd where creeks cross the roadway	+	-	+	+	-	N	-	N	+	+	+	+	+	N	+	-	+	+	+	+	N	+	+	10
Project Number 50.0004 Dredge Windham Creek that runs through the city to be wider and deeper to increase volume	+	+	+	-	-	N	-	N	+	+	+	+	+	N	+	-	+	+	+	+	N	+	+	12
Project Number 50.0005	+	+	+	-	-	N	-	N	+	+	+	+	+	N	+	-	+	+	+	+	N	+	+	12



STAPLEE ACTION EVALUATION TABLE																										
STAPLEE Criteria Considerations																										
+ Favorable - Less favorable N Not Applicable																										
	S (Social)		T (Technical)			A (Administrative)		P (Political)		L (Legal)		E (Economic)		E (Environmental)		Score										
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action		Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Consistent with Community Environmental Goals	Consistent with Federal Laws			
Mitigation Actions Union City																										
Replace wooden pipe at Dixie Lake Dam as designed by the city engineers																										
Project Number 50.0006 Research and adopt an early warning system for the city to work in conjunction with the county wide system	+	+	+	+	+	+	-	+	+	+	+	+	+	N	+	-	+	+	N	N	N	N	N	N	N	13
Project Number 50.0007 Improve emergency responder communication interoperability by implementing an 800 MHz radio system	+	+	+	+	+	+	-	+	+	+	+	+	+	N	+	-	+	+	N	N	N	N	N	N	N	13
Project Number 50.0008 Install emergency backup power for facilities with critical operations: City Hall, Public Services, and IT	+	+	+	+	+	N	-	+	+	+	+	N	+	N	+	-	+	+	N	N	N	N	N	N	N	12



Appendix I

Plan Review Tool



APPENDIX I PLAN REVIEW TOOL

Appendix I will contain a copy of the final local mitigation plan review tool once the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan completes the GEMA and FEMA review process.



LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction:	Title of Plan:	Date of Plan:
Local Point of Contact:		Address:
Title:		
Agency:		
Phone Number:		
		E-Mail:

State Reviewer:	Title:	Date:
------------------------	---------------	--------------

FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region <i>(insert #)</i>		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		



**SECTION 1:
REGULATION CHECKLIST**

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))			
ELEMENT A: REQUIRED REVISIONS			



1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))			
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))			
B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))			
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))			
<u>ELEMENT B: REQUIRED REVISIONS</u>			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))			
C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))			
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))			
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))			
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))			
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))			
<u>ELEMENT C: REQUIRED REVISIONS</u>			



1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))			
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))			
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))			
<u>ELEMENT D: REQUIRED REVISIONS</u>			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			
<u>ELEMENT E: REQUIRED REVISIONS</u>			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1. Does the plan document opportunities for participation by neighboring communities, businesses and other interested parties? (Invitation letters, sign in sheets, etc.)			
F2. Does the plan document opportunities for public input and participation? (copies of meeting notices, sign in sheets, or other applicable documentation)			
F3. Does the plan discuss the review of the following planning mechanisms, at a minimum, for incorporation as applicable? <ul style="list-style-type: none"> • Comprehensive Plan • Flood Mitigation Assistance Plan (if one exists) • Flood Insurance Study (If one exists) • Community Wildfire Protection Plan • Local Emergency Operations Plan • State Hazard Mitigation Strategy 			
F4. Has the Critical Facilities Inventory been completed online?			



1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans) F5. Have the GMIS Critical Facilities reports and maps, or maps from a superior system, been provided?			
<u>ELEMENT F: REQUIRED REVISIONS</u>			



SECTION 2: PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.



A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*



Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- Key problems identified in, and linkages to, the vulnerability assessment;
- Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;
- Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;
- An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);
- Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;
- Integration of mitigation actions with existing local authorities, policies, programs, and resources; and
- Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- Status of previously recommended mitigation actions;
- Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;
- Documentation of annual reviews and committee involvement;
- Identification of a lead person to take ownership of, and champion the Plan;
- Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;
- An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);
- Discussion of how changing conditions and opportunities could impact community resilience in the long term; and
- Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.



B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*



**SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require- ments
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												



MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/township/village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
16												
17												
18												
19												
20												



Jurisdictional Annexes

Annex 1: City of Alpharetta, Georgia Mitigation Action Plan

Annex 2: City of Atlanta, Georgia Mitigation Action Plan

Annex 3: Chattahoochee Hills, Georgia Mitigation Action Plan

Annex 4: City of College Park, Georgia Mitigation Action Plan

Annex 5: City of East Point, Georgia Mitigation Action Plan

Annex 6: City of Fairburn, Georgia Mitigation Action Plan

Annex 7: City of Hapeville, Georgia Mitigation Action Plan

Annex 8: City of Johns Creek, Georgia Mitigation Action Plan

Annex 9: City of Milton, Georgia Mitigation Action Plan

Annex 10: City of Mountain Park, Georgia Mitigation Action Plan

Annex 11: City of Palmetto, Georgia Mitigation Action Plan

Annex 12: City of Roswell, Georgia Mitigation Action Plan

Annex 13: City of Sandy Springs, Georgia Mitigation Action Plan

Annex 14: Unincorporated Fulton County, Georgia Mitigation Action Plan

Annex 15: Union City, Georgia Mitigation Action Plan



Annex 1

CITY OF ALPHARETTA, GEORGIA MITIGATION ACTION PLAN

Geography/History

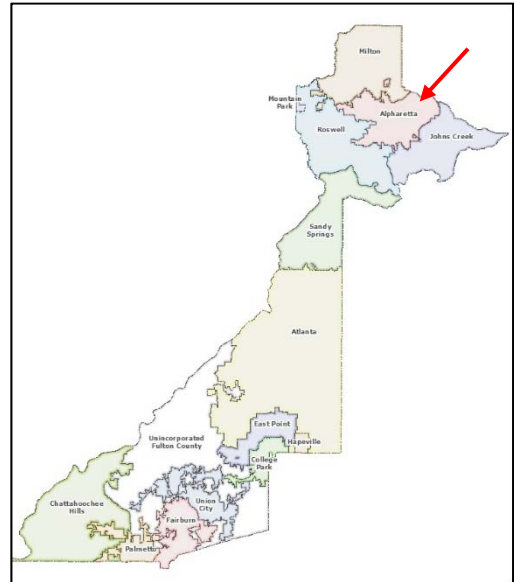
The history of Alpharetta, Georgia dates back to the 1830's. During this period, many settlers and pioneers traveled to the area seeking the promise of community in land ownership, raising families and fertile farmland. On December 11, 1858, the City of Alpharetta was founded.

In 1863, an epidemic of smallpox broke out in the South and a period of economic recession soon followed. Throughout these hardships, Alpharetta remained resilient and retained sustainable growth. In the 1860's, the City of Alpharetta was thriving with numerous hotels, a multi-room school, and an abundance of stores and churches.

General Sherman's March to the Sea, during the Civil War, left a trail of devastation through the South and many of Alpharetta's early records were in ruins. Luckily, a local resident named Dr. O. P. Skeleton was able to salvage several historical documents from the courthouse. These have proved invaluable as many other towns lost all historical documents.

In 1932, with the Great Depression ravaging the country, Milton County and Fulton County merged into one single entity. As a result, Fulton County's population and outreach grew tremendously. After the merger, the first roads began to be paved. In 1981, Alpharetta's population was 3,000 three decades later the population jumped to 65,168 and continues to grow to this day.

Today, Alpharetta is one of the fastest growing communities in the South. Its environment is ideal for raising families, enjoying a quality lifestyle and a thriving business climate.



Significant Characteristics

The City of Alpharetta hosts three parks that highlight nature and walking tours. Running north to south, the 7 mile Greenway is a paved trail following the Big Creek Corridor, the Alpharetta Arboretum at Wills Park which was established in September 2008 and the Alpharetta Arboretum at Cogburn Park which was established in December 2008.

Alpharetta is home to North Point Mall. Completed in 1993, this retail center has over 1.3 million square feet of retail shopping. Also located in Alpharetta, the Avalon development is a mixed use luxury community made up of retail, restaurants, entertainment, rental condos and luxury single family homes. Alpharetta also has the Verizon Wireless Amphitheatre at Encore Park, which is an outdoor venue with the seating capacity of 12,000.



Another main attraction in the City of Alpharetta is the Walk of Memories, which is located at American Legion Post 201 and pays tribute to veterans of the U.S. Armed Forces, community and friends, through a brick walk inscribed with the names of all Georgia residents killed in service including and following WWII. A separate section is reserved for those who served in the military and survived.

Population and Demographics

As of the census of 2010, there were 57,551 people, 13,911 households, and 8,916 families residing in the City. The population density was 1,631.6 people per square mile (630.0/km²). There were 14,670 housing units at an average density of 686.7 per square mile (265.2/km²). The population has been gradually increasing over the last decade. During the workday, the City swells to more than 120,000 residents, workers, and visitors, due to the more than 3,600 businesses that are located in the City.

There were 13,911 households out of which 36.2% had children under the age of 18 living with them, 54.1% were married couples living together, 7.3% had a female householder with no husband present, and 35.9% were non-families. 27.7% of all households were made up of individuals and 4.2% had someone living alone who was 65 or older. The average household size was 2.50 and the average family size was 3.13.

In the City, 27.0% of the population was under the age of 18, 7.2% from 18 to 24, 40.5% from 25 to 44, 19.4% from 45 to 64, and 5.8% who were 65 years of age or older. The median age was 33. For every 100 females, there were 98.3 males. For every 100 females age 18 and over, there were 94.9 males.

The median income for a household in the City was \$95,888, and the median income for a family was \$111,918. The per capita income for the City was \$42,431. Males had a median income of \$79,275 versus \$59,935 for females. About 2.9% of families and 1.2% of the population were below the poverty line, including 3% of those under age 18 and 6% of those age 65 or over.

Table 1
City of Alpharetta Population Since 1990

Year	1990	2000	2010	2014
Population	13,996	46,607	57,551	63,038 est.

Economy

The median income for a household in the City is \$86,355, while the median income for a family is \$105,401. The per capita income for the City is \$41,821. About 4.4 percent of families and 4.3 percent of the population are below the poverty line, including 4.9 percent of individuals 18 and under and 6.4 of those ages 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau, when 86,355 was the population of the City of Alpharetta:



Table 2
Leading Industries Based on Data from 2012

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	161	3,714
Retail Trade	372	7,362
Information	221	15,848
Real Estate, Rental, Leasing	203	1,412
Professional, Scientific, and Technical Services	847	13,182
Administrative and Support and Waste Management and Remediation Service	296	13,737
Accommodation and Food Services	286	6,486
Finance and Insurance	449	10,357
Transportation & Warehousing	47	2,026

Below is a list of City-issued permits for the construction of single-family homes dating from 2001 to 2014.

Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	246
2002	258
2003	267
2004	233
2005	388
2006	365
2007	280
2008	76
2009	32
2010	57
2011	94
2012	119
2013	121
2014	55



Infrastructure

Unique to Fulton County, under the supervision of the Director of Public Safety, Alpharetta operates a Department of Public Safety where the Fire Division, Police Division, and 911/Communications Division coordinate and collaborate under a unified administration staff. Functions include Patrol, Criminal Investigations, Community Services, Records, Traffic, Fire Suppression, Fire Marshall, Fire Prevention, and Training. Alpharetta also has its own Engineering/Public Works and Recreation and Parks Departments. The school system within the City limits consists of the items listed in Table 4:

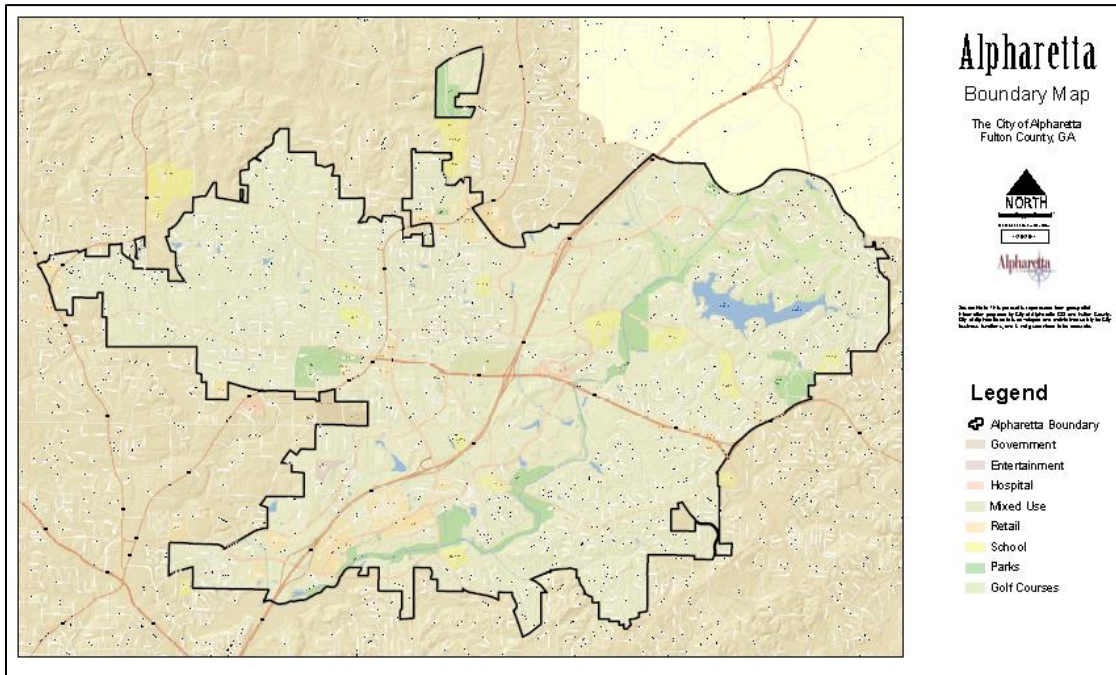
Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	1,620
Kindergarten to 12 th grade	Public	12,771
College, undergraduate	Public	2,076
Graduate, professional school	Public	771

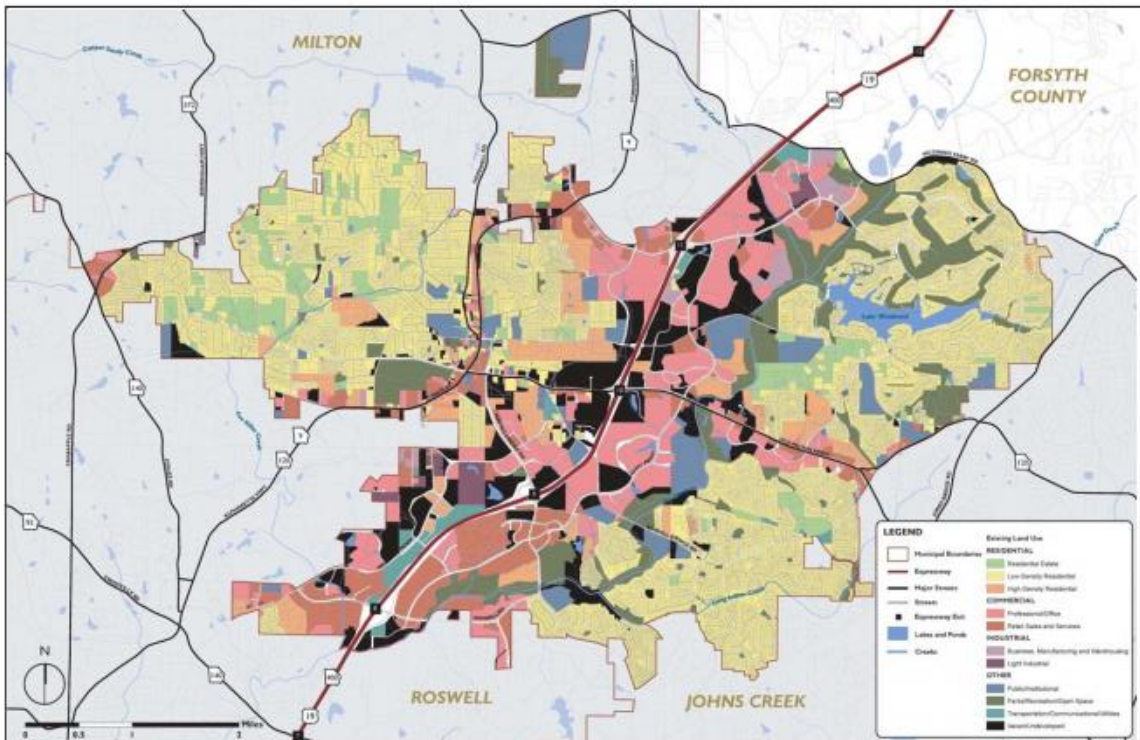
Land Usage

The City has a total area of 27.3 square miles all of which is land. The City of Alpharetta is generally a residential City. However, there are major areas of commercial activity near State Highway 400. Many people commute into the City from other nearby cities or unincorporated areas of North Georgia. This is the reason the City population can double or almost triple during a typical workday. Most of these commuters will stay within the commercial corridor. This City does not have many areas designed for Industrial. The map below shows the distribution of major land use categories within the City limits.

**Figure 1
Major Land Use Categories**



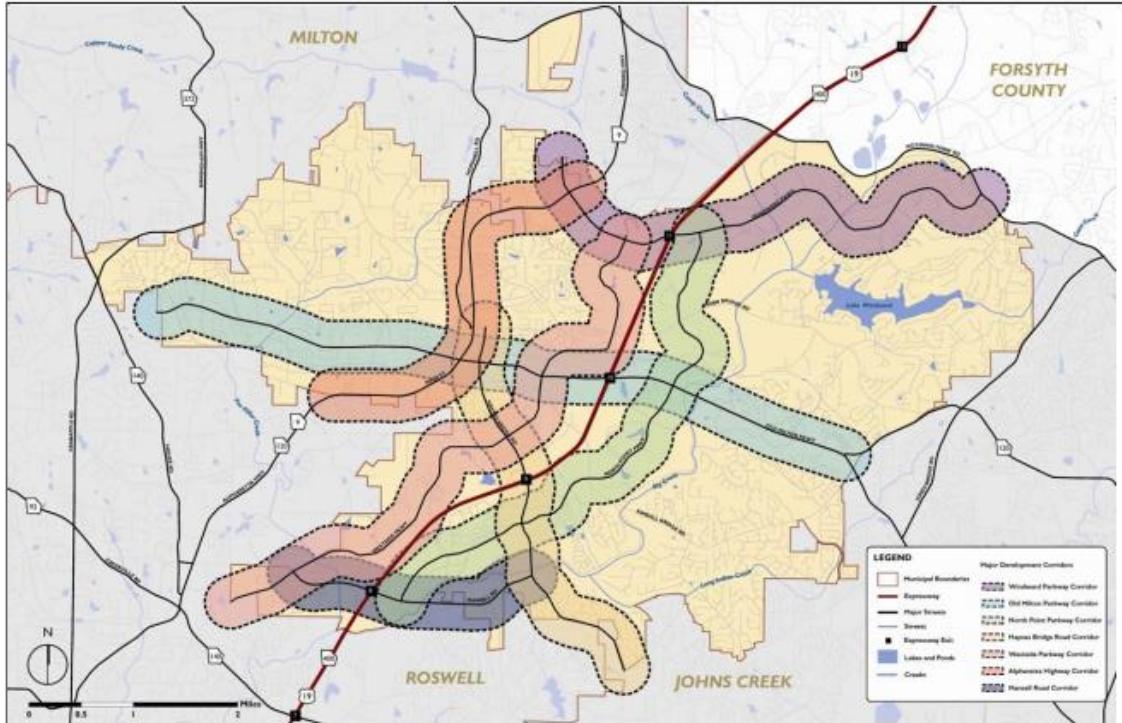
**Figure 2
Existing Land Use**



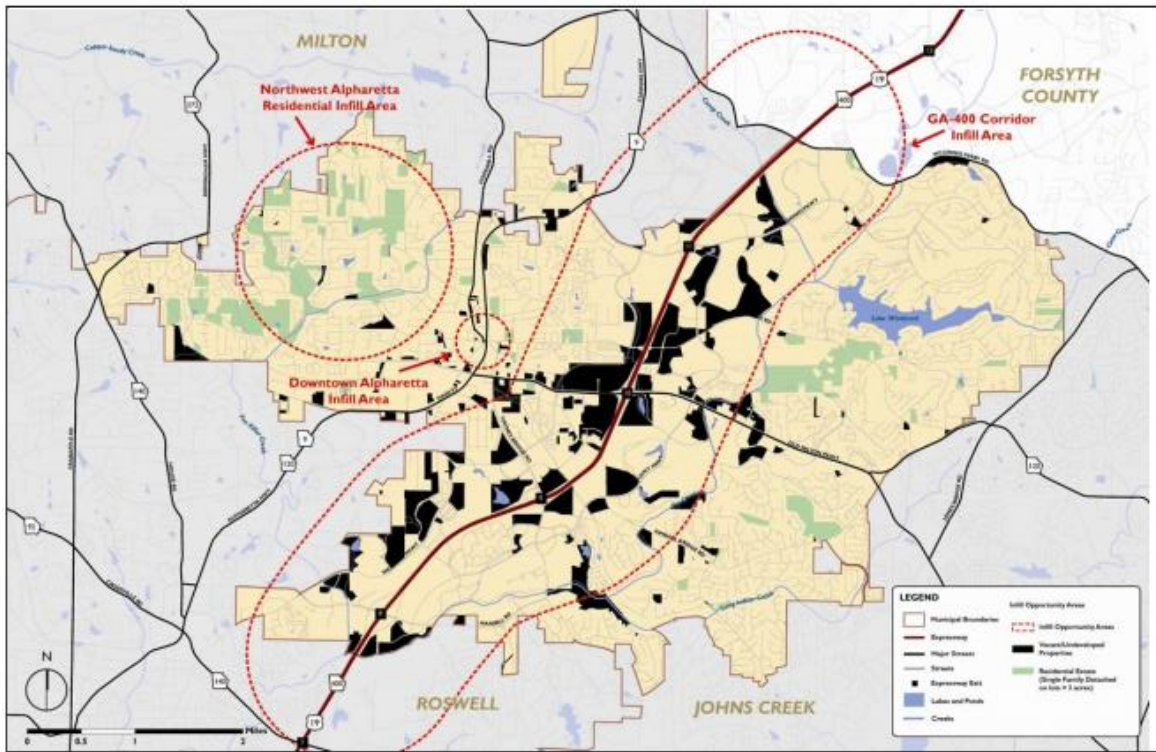
Growth/Development Trends

The following Figures are from the Alpharetta 2030 Comprehensive Plan and demonstrate potential growth and development.

**Figure 3
Major Development Corridors**



**Figure 4
Infill Opportunities**



Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 5
Planning and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	Community Development Department, Recreation and Parks Department	Downtown Master Plan Update, Recreation and Parks Master Plan 2025
Capital Improvements Plan	Yes	Local	Finance	Capital Improvement Plan
Floodplain Management /	Yes	Local	Community	Article 3 (Ordinance 4)



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Basin Plan			Development/ Public Works	
Stormwater Management Plan	Yes	Local	Public Works	MS4 Phase 1 Permit (January 2015)
Open Space Plan	Yes	Regional, Local	Atlanta Regional Commission Community Development Department, Recreation and Parks Department	ARC The Region's Plan 2015, City of Alpharetta 2030 Comprehensive Plan Downtown Master Plan Update, Recreation and Parks Master Plan Update 2025
Stream Corridor Management Plan	Yes	Local	Community Development	
Watershed Management or Protection Plan	No			WIP Big Creek – (September 2011), WIP Foe Killer Creek – (2006, currently updating study, completion expected fall 2015)
Economic Development Plan	Yes	Local	Economic Development	
Comprehensive Emergency Management Plan	Yes	Local	Emergency Management	Emergency Operations Plan 2015
Emergency Operation Plan	Yes	Local	Emergency Management	Emergency Operations Plan 2015
Post-Disaster Recovery Plan	Yes	Local	Emergency Management	Emergency Operations Plan 2015
Transportation Plan	Yes	Local	Finance/ Community Development /Public Works	Capital Improvement Plan
Strategic Recovery Planning Report	No			
Other Plans:	N/A			
Regulatory Capability				
Building Code	Yes	State & Local	DCA & AHJ	2015 I-codes, 2015 NEC, 2009 IECC
Zoning Ordinance	Yes	Local	Community Development Department	Unified Development Code, Article 2 – Use of Land and Structures
Subdivision Ordinance	Yes	Local	Community	Unified Development Code,



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
			Development Department	Article 3 – Land Development Activities and Article 4 - Procedures
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Community Development and Public Works	Unified Development Code, Article 3, Section 3.4 (September 2014)
NFIP: Cumulative Substantial Damages	No			
NFIP: Freeboard	Yes	State, Local	Community Development and Public Works	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types, Local mandated BFE+3 for residential
Growth Management Ordinances	Yes	State, Regional, Local	Georgia DCA, Atlanta Regional Commission, Community Development Department	ARC The Region’s Plan 2015, City of Alpharetta 2030 Comprehensive Plan
Site Plan Review Requirements	Yes	Local	Community Development Department	Unified Development Code, Section 4.4.3 Land Disturbance Permit
Storm water Management Ordinance	Yes	Local	Community Development and Public Works	Unified Development Code, Article 3 (December 2008)
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Community Development and Public Works	MS4 Phase 1 Permit (January 2014)
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	N/A			



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Alpharetta.

**Table 6
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Community Development Department
Mitigation Planning Committee	Yes	All Departments
Environmental Board/Commission	Yes	Community Development and Public Works – Natural Resources Commission
Open Space Board/Committee	Yes	Community Development
Economic Development Commission/Committee	Yes	Economic Development
Maintenance Programs to Reduce Risk	No	
Mutual Aid Agreements	Yes	Public Safety
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Community Development – Zoning Administrator, Development Services Engineer – Storm water Public Works – Senior Storm water Engineer
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Community Development - Development Services Engineer – Store water Chief Building Official Public Works – Senior Storm water Engineer
Planners or engineers with an understanding of natural hazards	Yes	Community Development - Development Services Engineer – Store water Chief Building Official Public Works – Senior Storm water Engineer
NFIP Floodplain Administrator	Yes	Public Works – Senior Storm water Engineer
Surveyor(s)	Yes	Contracted by the City of Alpharetta
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Community Development – GIS Specialist/Planner Public Works – Senior Storm water Engineer Senior Engineer Technician (Storm



Resources	Is This In Place?	Department/ Agency/Position
		water) Information Technology – GIS Manager, Database Administrator
Scientist familiar with natural hazards	Yes	Public Works – Senior Water Resources Analyst Environmental Programs Coordinator
Emergency Manager	Yes	Public Safety
Grant Writer(s)	Yes	Finance
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Emergency Management

Fiscal Capability

The table below summarizes financial resources available to the City of Alpharetta.

**Table 7
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater Utility Fee	No – N/A
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	NA
Other Federal or State Funding Programs	Yes through grants – Community Development, Public Works, Public Safety
Open Space Acquisition Funding Programs	Yes
Other	

Community Classifications



The table below summarizes classifications for community program available to the City of Alpharetta.

**Table 8
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	NP		
Building Code Effectiveness Grading Schedule (BCEGS)	Yes		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Class 1	June 1, 2015
Storm Ready	No		
Firewise	No		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Yes	Steering Committee	
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Alpharetta’s current hazard mitigation capability.

**Table 9
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities.			X



NFIP Participation

The City of Alpharetta has a number of administrative and technical capabilities. City departments' include Administrative, Community Development, Court Services, Economic Development, Finance, Human Resources, Information Technology, Public Safety, Public Works and Recreation and Parks. The City government includes six City council members and a mayor. The City council and mayor all serve a four-year term.

National Flood Insurance Program

NFIP Floodplain Administrator: Jill Bazinet, PE CFM – Senior Stormwater Engineer.

The City of Alpharetta is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Alpharetta has completed Community Assistance Visits (CAV), with the most recent visit completed in 2009.

Loss History and Mitigation

As of August 2015, there two Repetitive Loss or Severe Repetitive Loss properties in the Alpharetta. Both are residential. No properties have officially indicated interest in elevation or acquisition. None is currently in the process of mitigation.

Planning and Regulatory Capabilities

Alpharetta's NFIP Flood Damage Prevention Ordinance was last updated in September 2014 and can be found in the Unified Development Code, Article 3, Section 3.4

Floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. Alpharetta also performs site plan review and building plan review, which both include checks of floodplain and local "future floodplain" designations. A preliminary staff review and recommendation occurs prior to Planning Board and Zoning Board considerations.

Administrative and Technical Capabilities

The community identifies the Senior Stormwater Engineer as the local NFIP Floodplain Administrator, currently Jill Bazinet, for which floodplain administration is an auxiliary duty. Two additional staff members are utilized to assist as needed.

Duties and responsibilities of the NFIP Administrator are permit review, damage assessments, record keeping, inspections, GIS, education and outreach, and capital mitigation projects. If Substantial Damage Estimates were necessary, the Floodplain Administrator would be responsible.

The NFIP Administrator feels she is adequately supported and trained to fulfill his responsibilities as the municipal Floodplain Administrator. She also would consider attending continuing education and/or certification training on floodplain management if it were offered in the County for all local floodplain administrators.



Public Education and Outreach

Education and Outreach regarding flood/hazard risk, and flood risk reduction through NFIP insurance is primarily provided to the community through the City website. Additional outreach is provided with adult informational workshops and through classroom teaching with students (using WARD's Scientific Floodplain model).

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Alpharetta.

Community Rating System

Alpharetta does not currently participate in the CRS program. The City has considered joining, but the cost for resources to complete the necessary items for the program outweigh the benefits.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each municipality was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that have been/will be incorporated into municipal procedures which may include former mitigation initiatives that have become continuous/ongoing programs and may be considered mitigation 'capabilities'.

Land Use Planning/Comprehensive Planning

The City of Alpharetta 2030 Comprehensive Plan (dated November 2011) is currently adopted. This plan considers the following areas of natural hazard risk:

"Alpharetta protects a wide range of sensitive environmental features with adopted environmental planning regulations. These include provisions for watershed protection, groundwater recharge areas, and wetlands, flood hazard, soil erosion and sedimentation control, and stormwater management ordinances to protect flood plains, wetlands, water resources, and soil. In addition, with its water conservation permit (requires a minimum of 10% water use reduction for new construction projects) Alpharetta encourages site planning and design based on the understanding that water is a valuable natural resources that should be used conservatively, cleaned and reused on site. The City is working in conjunction with DNR and FEMA to update the current flood maps. Preliminary maps are expected July 2011. Open house meetings will be scheduled for the public to view the maps and a 90-day comment period will follow for the public to make appeals and protests to items shown on the maps. The City expects to adopt final maps in July 2012. When finished the new digital flood maps will provide detailed, property-specific flood risk data to guide construction and flood



insurance decisions. Alpharetta residence and business owners will have up to date, reliable, Internet accessible data about the flood hazards they face.”

Alpharetta has the plans listed in Table 7.1 to help to manage natural hazard risk. Additionally, the Downtown Master Plan Update includes regulations for open space and tree protection. The Recreation and parks Master Plan 2025 includes plans for the protection of flood plains and open spaces and Alpharetta has adopted the Comprehensive Emergency Management Plan for Fulton County, which refers to the Hazard Mitigation Plan (HMP). Alpharetta is an MS4 Regulated Community (Phase 1), and staff indicated they have a formal Stormwater Management Plan that specifies projects/actions/initiatives to reduce the volume of stormwater, or otherwise mitigate stormwater flooding.

Regulatory

Alpharetta’s zoning and subdivision regulations take natural hazard risk into consideration. The City’s Unified Development Code (UDC) includes both zoning and subdivision regulations, which regulate impacts on local floodplains and requires developers to take additional actions to mitigate natural hazard risk. The UDC includes a stream buffer protection with a 50 foot undisturbed stream buffer on both banks of a non-perennial stream and an additional 25-foot impervious cover setback. In addition the City’s UDC includes regulations for stormwater management and the NFIP Flood Damage ordinance includes provisions which exceed the minimum federal and State NFIP regulatory requirements.

The City’s Community Development staff have access to GIS Maps, review and provide recommendations based on natural hazard risk prior to Planning Board and Zoning Board decisions. The City’s Planning Commission and Board of Zoning Appeals uses the regulations in the City’s UDC and professional staff opinion to guide their decision making process.

Administrative / Technical Resources and Programs

Alpharetta’s Planning Commission is an advisory body, which makes recommendations to City council for comprehensive plan amendments, rezoning, master plans, and variances of more than 50% of the code requirement. The City’s board of Zoning Appeals is an approving body that considers variances of less than 50% of the code requirement. Alpharetta also has a land disturbance permit team consisting of planners, engineers, arborists, and fire marshal that review and approve all site plans for new development and redevelopment. Stormwater management functions are performed by the Senior Stormwater Engineer and the Development Services Engineer (Stormwater). NFIP Floodplain management functions are performed by the Senior Stormwater Engineer and the Chief Building Official.

The City of Alpharetta has staff in place who can perform Substantial Damage Estimates, Benefit-Cost Analysis and prepare applications for mitigation projects. City staff regularly attend training and conferences to promote continuing professional education, including the American Planning Association (APA), Georgia Chapter of APA and Georgia Association of Zoning Administrators. Additionally, a staff member from Public Works receives continuing education to maintain her Certified Floodplain Manager and a Public Safety official receives Emergency Management continuing education and is also a member of the Fulton County All Hazards Council.

The City of Alpharetta also has several staff with job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazards. These positions include the Senior Stormwater Engineer, Urban forestry Program



Manager, Civil Engineer (Stormwater), Senior Engineering Technician (Stormwater), Senior Water Resources Analyst, Environmental Program coordinator, Development Services Engineer (Stormwater), Zoning Administrator, Senior Transportation Engineer, Stormwater Engineer, City Arborist, Fire Marshal and Emergency Management Coordinator.

Public Education and Outreach

Alpharetta utilizes the City website and various adult workshops and student classroom teaching opportunities as platforms to inform citizens of natural hazards. During the assessment staff indicated that they identified the use of social media as a way to enhance further public outreach and education with respect to natural hazard risk management in the community.

Fiscal Resources

The City of Alpharetta includes line items in its operating and capital improvement budgets for mitigation related projects and activities. The City has also received previous grant funds for mitigation related projects but none were received during the period reflected in this plan update.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

Table 10
Local Hazard Event History 2010 - 2015

Dates of Event	Event Type (Disaster Declaration, if applicable)	Fulton County Designated?	Notes on Damages Within County
October 14, 2014	F-1 Tornado	No	Debris, residential structure damage, down power lines, road closures. Residence did not request additional assistance from Alpharetta. Clean-up, overtime and repair costs for Public Works was \$20,758.96
February 10–15, 2014	Severe Winter Storm	Yes	Winter Storm damages and road closures. Several stranded individuals needed shelter in Public Safety facilities. No reported injury or death. Additional costs of less than \$3,000
February 25–26, 2015	Winter Storm	No	Treatment of roads, minor road closures, and minor debris removal



Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.



- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by Hazard Mitigation Planning Committee members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

Table 11
Assessment of Vulnerability per the Mitigation Planning Committee

Alpharetta Risk Assessment Matrix						
Hazard Type	Level I	Level II	Level III	Level IV	Score	
Tornadoes	L	L	L	H		13
Severe Weather	P	L	H	H		13
Winter Storm	P	L	L	H		12
Drought	P	P	L	L		10
Flood	P	P	L	L		10
Dam Failure	U	P	L	L		9
Heat Wave	P	P	P	P		8
Wildfire/Urban Interface	U	P	P	P		7
Tropical System	U	P	P	P		7
Earthquake	U	U	P	P		6
Sinkhole	U	U	U	P		5
Average Risk by Level	1.63	2.09	2.55	2.82		

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)



Mitigation Actions

Each jurisdiction participating in this plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

Past and Ongoing Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 12
Status of Mitigation Activity**

2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Webb Bridge Park – Erosion Control and Stream Bank Restoration	Public Works	No Progress	50% complete – one stream restoration done, to water quality ponds added, a third pond to be built 2015-2016	<i>Include in 2016 HMP</i>	Include in 2016 plan – do not change language.
Satellite Storage Facility for sand and salt	Public Works	Complete	100% Complete	<i>Discontinue</i>	Remove from the plan as this project is complete.
Purchase City wide notification system	Public Safety	Complete	100% Complete	<i>Discontinue</i>	Remove from the plan as this project is complete.
Purchase lighting detection equipment for public parks	Recreation and Parks	Complete	100% Complete	<i>Discontinue</i>	Remove from the plan as this project is complete.
Purchase additional Community Emergency Response Team (CERT) equipment	Public Safety	Complete	100% Complete	<i>Discontinue</i>	Remove from the plan as this project is complete.



2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Replace early warning software	Public Safety	In Progress	This is an ongoing project	<i>Include in 2016 HMP</i>	This software will be updated every 5 years.
Replace outdoor early warning equipment	Public Safety	In Progress	This is an ongoing project	<i>Include in 2016 HMP</i>	This will be an ongoing project.
Satellite storage facilities for sand and salt	Public Works	Complete	100% Complete	<i>Discontinue</i>	Remove from the plan as this project is complete.
Variable message boards	Public Safety and Public Works	In Progress	50% Complete Some equipment was purchased. Still trying to obtain more portable electronic signs.	<i>Include in 2016 HMP</i>	Public Safety Traffic Division would like to purchase two more electronic portable signs.

Proposed Hazard Mitigation Initiatives for the Plan

The City of Alpharetta identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 13 identifies the municipality’s updated local mitigation strategy.



**Table 13
Proposed Mitigation Actions**

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0001	Complete dam breach analysis on Lake Windward.	Alpharetta	Public Works	Flooding	2.1	Property Protection	\$30,000	HMA, Local	2016-2021	9
01.0002	Acquire approximately 15 homes in the Mayfield Circle / Maple Lane area near Foe Killer Creek	Alpharetta	Community Development	Flooding; Severe Weather; Tropical Storms	2.7	Property Protection	\$3,000,000	HMA, Local FMA, Local	2016-2021	9
01.0003	Update City GIS system with more accurate parcel data	Alpharetta	IT	All Hazards	4.14	Prevention	\$90,000	HMA, Local	2016-2021	6
Comments: Current data does not line up with aerial imagery, lidar topography, or mapped flood risk modeling										
01.0004	Complete HAZUS — MH study of natural hazard impact on the city	Alpharetta	Public Works	All Hazards	4.14	Prevention	\$100,000	HMA, Local	2016-2021	6
01.0005	Outreach education to all parcels impacted by new RiskMAPs (letters, information packets)	Alpharetta	Engineering	Flooding	4.14	Prevention	\$20,000	HMA, Local	2016-2021	4
Comments: Can only be completed after the parcel maps are updated										
01.0006	Evaluate benefit of joining CRS with impact of new FEMA maps	Alpharetta	Engineering	Flooding	4.6	Prevention	\$100,000	HMA, Local	2016-2021	2
					7.1					
					7.3					
Comments: Can only be completed after the parcel maps are updated										
01.0007	Design and install master detention facility for water	Alpharetta	Engineering	Flooding	5.2	Natural Resource	\$500,000	HMA,	2016-2021	9



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
	quality and flood control at Wills Park				5.4 6.1	Protection		Local		
01.0008	Foe Killer Creek— Design and implementation of projects to reduce elevated levels of bacteria	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$250,000	HMA, Local	2016-2021	7
01.0009	Webb Bridge Park— Erosion control and stream bank restoration	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$400,000	HMA, Local	2016-2021	8
01.0010	Perform stream stabilization and repair erosion along stream corridors	Alpharetta	Engineering	Flooding; Severe Weather; Tropical Storms	5.4 6.2 6.3	Natural Resource Protection	\$1,500,000	HMA, Local	2016-2021	6
01.0011	Stream bank restoration Big Creek at Webb Bridge	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$250,000	HMA, Local	2016-2021	8
00.0012	Stream bank restoration Big Creek at Haynes Bridge rd.	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$225,000	HMA, Local	2016-2021	8
01.0013	Stream bank restoration Foe Killer Creek — Squirrel Run to Rucker Road	Alpharetta	Engineering	Flooding	5.4 6.2	Natural Resource Protection	\$150,000	HMA, Local	2016-2021	6



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0014	Reinforce old culverts with slip line	Alpharetta	Engineering	Flooding; Severe Weather; Tropical Storms	6.1	Structural Project	\$2,000,000	HMA, Local	2016-2021	5
01.0015	Improve stormwater drainage at Church Street	Alpharetta	Engineering	Flooding	6.1 6.8	Structural Project	\$200,000	HMA, Local	2016-2021	4
01.0016	Improve stormwater drainage at Hwy 9 at Canton Street	Alpharetta	Engineering	Flooding	6.1 6.8	Structural Project	\$200,000	HMA, Local	2016-2021	4
01.0017	Improve stormwater drainage at Southlake Drive culvert	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$600,000	HMA, Local	2016-2021	4
Comments: Replace triple 4' CM P culvert to handle capacity, this area currently does not handle the 2-year flow										
01.0018	Improve stormwater drainage at Cape York Trace at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
Comments: Replace single 4' CMP culvert to handle capacity, this area currently does not handle the 2-year flow										
01.0019	Improve stormwater drainage at Glenn Knoll Court at Long Indian Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
Comments: Replace single 2' CMP culvert to handle capacity, this area currently does not handle the 2-year flow										



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0020	Improve stormwater drainage at Mid Broadwell at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 4.5' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0021	Improve stormwater drainage at Newport Bay Passage at Caney Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 3.5' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0022	Improve stormwater drainage at Webb Bridge Court at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace double 8'x6' and single 4.35'x6.5' box culverts to handle capacity, this area currently does not handle the 2-year flow									
01.0023	Improve stormwater drainage at McGinnis Ferry Road at Big creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$500,000	HMA, Local	2016-2021	4
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0024	Improve stormwater drainage at Pine Grove Drive at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 4' CMP culvert to handle capacity, this area currently does not handle the 2-year flow									



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0025	Improve stormwater drainage at Arrowwood Lane at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$325,000	HMA, Local	2016-2021	4
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0026	Improve stormwater drainage at Wills Road at Foe Killer Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$350,000	HMA, Local	2016-2021	4
	Comments: Replace single 6' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0027	Improve stormwater drainage at Northwinds Parkway at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$400,000	HMA, Local	2016-2021	4
	Comments: Replace double 5' RCP culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0028	Improve stormwater drainage at Academy Street at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$500,000	HMA, Local	2016-2021	4
	Comments: Replace single 9'x6' box culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0029	Improve stormwater drainage at Rock Mill Road at Big Creek Trib	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$400,000	HMA, Local	2016-2021	4
	Comments: Replace double 5'x5' box culvert to handle capacity, this area currently does not handle the 2-year flow									



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0030	Improve stormwater drainage at North Park Road at Cooper Sandy Creek	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$250,000	HMA, Local	2016-2021	4
	Comments: Replace single 4' RCP box culvert to handle capacity, this area currently does not handle the 2-year flow									
01.0031	Improve stormwater drainage at culverts without capacity to handle the 5-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$2,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 7 locations.									
01.0032	Improve stormwater drainage at culverts without capacity to handle the 10-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$3,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 9 locations.									
01.0033	Improve stormwater drainage at culverts without capacity to handle the 25-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$4,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 10 locations.									
01.0034	Improve stormwater drainage at culverts without capacity to handle the 50-year storm	Alpharetta	Engineering	Flooding	6.1 6.2 6.8	Structural Project	\$5,000,000	HMA, Local	2016-2021	4
	Comments: The city has identified 4 locations.									



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0035	Detour roadway map for flood evacuation plans	Alpharetta	Public Safety	Flooding	1.2	Emergency Services	\$100,000	HMA, Emergency Management	2016-2021	7
01.0036	Install traffic warning signs on all road crossings that are submerged during a 25-year flood or greater	Alpharetta	Public Works	Flooding	7.9	Emergency services; Property Protection	\$100,000	HMA, Public Works	2016-2021	6
01.0037	911 — phone call warning alert system	Alpharetta	Public Safety	All Hazards	1.1	Emergency Services	\$22,000	HMA, Public Safety	2016-2021	6
01.0038	Variable message signage — for use during emergency situations that can be updated from the command center	Alpharetta	Public Safety	All Hazards	7.9 7.3	Emergency Services, Property Protection	\$15,000	HMA, Public Works and Public Safety	2016-2021	6
01.0039	Replace early warning software system	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	1.1	Emergency Services; Prevention	\$375	HMA, Public Safety	2016-2021	9
01.0040	Replace early outdoor warning systems	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical	1.1	Emergency Services; Prevention	483,000	HMA, Public Works	2016-2021	8



ALPHARETTA MITIGATION ACTION PLAN

Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0042	Install built-in surge protection at all Public Safety buildings	Alpharetta	Public Safety	All Hazards	2.11	Property Protection	\$150,000	HMA, Public Works	2016-2021	6
01.0044	Purchase a web based severe weather monitoring service	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	1.1	Emergency Services	\$20,000	HMA, Emergency Management	2016-2021	6
01.0045	Purchase cones and brigades for pedestrian traffic on Green Ways	Alpharetta	Public Works	Flooding	7.9	Emergency services; Property Protection	\$5,000	HMA, Public Works	2016-2021	4
01.0046	Replace the Fire Dept. Boat for rescue and evacuation on Lake Windward	Alpharetta	Public Safety	Flooding	7.5	Emergency services	\$35,000	HMA, Fire Dept.	2016-2021	8
01.0047	Replace chain saws and blades for removal of trees during an emergency	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	6.2	Emergency services	\$6,800	HMA, Fire Dept.	2016-2021	6



Project Number*	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score**
01.0048	Replace rope and technical rescue equipment	Alpharetta	Public Safety	Severe Weather; Winter Storm; Tropical System; Tornadoes	7.5	Emergency services	\$10,000	HMA, Fire Dept.	2016-2021	4
01.0049	Implement dam inspection on Lake Windward	Alpharetta	Engineering	Flooding; Dam Failure	4.10	Property Protection	\$25,000 Annually	HMA, Engineering	2016-2021	5
01.0050	Stream gauge with flow meter, rain gauge and stream height for Foe Killer Creek.	Alpharetta	Engineering	Flooding, Environmental issues	6.1 6.2 6.8	Property Protection, Environmental issues	\$14,500 Annually	HMA FMA Local	2016-2021	6

*The project number is intentionally left in the format to allow for incorporation into the Countywide Plan while also uniquely identifying projects for the City
 ** The STAPLEE will be applied if/when project funding becomes available. The City is generally prioritizing actions for flood and/or essential facilities as highest need projects for the purposes of this plan

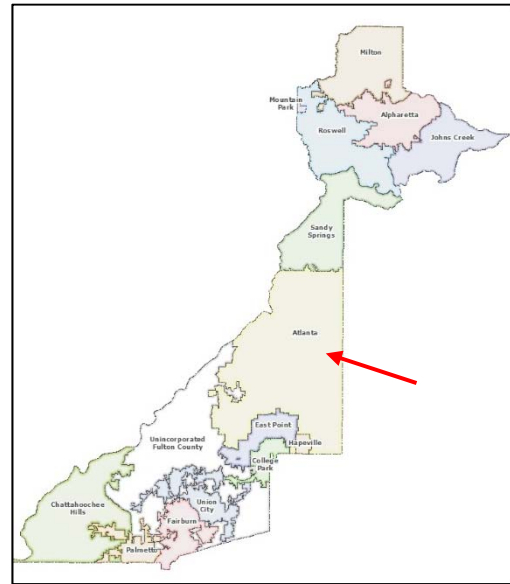


Annex 2

CITY OF ATLANTA, GEORGIA MITIGATION ACTION PLAN

Geography/History

Atlanta is situated among the foothills of the Appalachian Mountains, and at 1,050 feet above mean sea level. Atlanta has the highest elevation of any major city east of the Mississippi River. Atlanta straddles the Eastern Continental Divide, such that rainwater that falls on the south and east side of the divide flows into the Atlantic Ocean, while rainwater on the north and west side of the divide flows into the Gulf of Mexico. Atlanta sits atop a ridge south of the Chattahoochee River, which is part of the Apalachicola –Chattahoochee- Flint (ACF) River Basin. Located at the far northwestern edge of the city, much of the river's natural habitat is preserved, in part by the Chattahoochee River National Recreation Area.



During the Civil War, multiple railroads in Atlanta made the city a hub for the distribution of military supplies. On November 11, 1864, it was ordered that Atlanta was to be burned to the ground, sparing only the city's churches and hospitals. After the Civil War ended in 1865, Atlanta was gradually rebuilt. Due to the city's superior rail transportation network, the state capital was moved to Atlanta from Milledgeville in 1868. Beginning in the 1880s, The Atlanta Constitution newspaper editor, Henry W. Grady, promoted Atlanta to potential investors based upon a modern economy which was less reliant on agriculture.

Significant Characteristics

Atlanta provides a wide range of cultural activities such as theaters, museums, music and arts. Atlanta is one of few United States cities with permanent, professional, resident companies in all major performing arts disciplines. Atlanta also attracts many touring Broadway acts, concerts, shows, and exhibitions catering to a variety of interests. As a national center for the arts, Atlanta is home to significant art museums and institutions. The renowned High Museum of Art is arguably the South's leading art museum and among the most visited art museum in the world.

Atlanta is also welcomes millions of tourists each year. Some of the more popular attractions around the city are the Georgia Aquarium, the Martin Luther King, Jr. National Historic Site, Atlanta Cyclorama and Civil War Museum, World of Coca-Cola, College Football Hall of Fame, National Center for Civil and Human Rights, Margaret Mitchell House and Museum.

Atlanta also contains various outdoor attractions. The Atlanta Botanical Gardens has a 40-foot-high skywalk that allows visitors to tour one of the city's last remaining urban forests from above,



Zoo Atlanta is a popular attraction, and the city hosts many festivals showcasing arts and crafts, film, and music.

Atlanta is also home to three professional sports leagues. The Atlanta Braves (baseball), the Atlanta Hawks (basketball), the Atlanta Falcons (football).

Atlanta has also been the host city for various international, professional and collegiate sporting events. Atlanta hosted the Centennial 1996 Summer Olympics. Super Bowl XXVIII (1994) and Super Bowl XXXIV (2000), the final PGA Tour, PGA Championship, 56th NHL All-Star Game (2008), WrestleMania (2011), NCAA Final Four (2013) and for college football, Atlanta hosts the Chick-Fil-A Kickoff Game, SEC Championship Game and the Chick-Fil-A Peach Bowl.

Atlanta also has 343 parks, nature preserves, and gardens covering 3,622 acres. Atlanta offers resources and opportunities for amateur and participatory sports and recreation.

Population and Demographics

The 2010 U.S. Census reported that Atlanta had a population of 420,003. The racial makeup and population of Atlanta was 54.0% African American, 38.4% White, 3.1% Asian and 0.2% Native American. Those from some other race made up 2.2% of the city's population, while those from two or more races made up 2.0%. Hispanics of any race made up 5.2% of the city's population.

In the 2010 Census, Atlanta was recorded as the nation's fourth largest majority black city, and the city has long been known as a center of African American political power, education, and culture. Although Atlanta has recently undergone a drastic demographic increase in its white population. Between 2000 and 2010, the proportion of whites in the city's population grew faster than that of any other U.S. city. In that decade, Atlanta's white population grew from 31% to 38% of the city's population, an absolute increase of 22,753 people, more than triple the increase that occurred between 1990 and 2000.

Table 1
City of Atlanta Population Since 1990

Year	1990	2000	2010	2014
Population	394,017	416,474	420,003	456,002 est.

Economy

The median income for a household in the city was \$45,171. The per capita income for the city was \$35,453. 22.6% percent of the population was living below the poverty line. However, compared to the rest of the country, Atlanta's cost of living is 6.00% lower than the U.S. average.

The following is a chart of main industries based on data from the United States Census Bureau from 2012 for the City of Atlanta:



Table 2
Industries Based on Data from 2012 – Fulton County Portion of Atlanta

Industry Description	Number of Establishments	Number of Employees
Utilities	36	2,500 – 4,999
Manufacturing	287	5,000 – 9,999
Wholesale Trade	683	11,465
Retail Trade	1,774	23,288
Information	653	26,822
Real Estate, Rental, Leasing	1,065	5,000 – 9,999
Professional, Scientific and Technical services	3,339	52,562
Administrative and Support and Waste Management and Remediation Service	793	32,757
Educational Services	159	1,108
Health Care and Social Assistance	1,560	36,469
Accommodation and Food Services	1,546	41,019
Other Services	1,192	14,721

Below is a list of city issued permits for the construction of single family homes dating from 2001 to 2014.

Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	781
2002	759
2003	980
2004	1,356
2005	1,564
2006	1,842
2007	1,247
2008	502
2009	169
2010	83
2011	227
2012	359



Year	Permits
2013	473
2014	118

Infrastructure

The City of Atlanta services its own Police Department with over 2,000 sworn officers and its own Fire Department that includes 35 fire stations and has more than 1,000 employees (sworn and civilian). Atlanta is also located near several major interstates. I-20, I-75, and I-85 criss cross the city and I-285 provides a perimeter around Atlanta. Atlanta is also the home to one of the largest airports in the country, Hartsfield-Jackson Atlanta International Airport. The Atlanta school system consists of the following items listed in Table 4:

**Table 4
Atlanta School Infrastructure**

School	Type	Enrollment
Nursery School, preschool	Public	1,759
Kindergarten to 12 th grade	Public	76,030
College, undergraduate*	Public	40,010
Graduate, professional school*	Public	17,189

*GA Tech and GA State

Land Usage

Atlanta is 134.0 square miles with 133.2 square miles of that being land and 0.8 square miles of water. Atlanta has a large metropolitan area of 8,376 square miles with a smaller urban area of 1,963 square miles.

Growth/Development Trends

The following maps illustrate development that occurred in the City of Atlanta over the past five years, as well as known or anticipated future development in the next five (5) years.

Figure 1: New Development 2010-2015

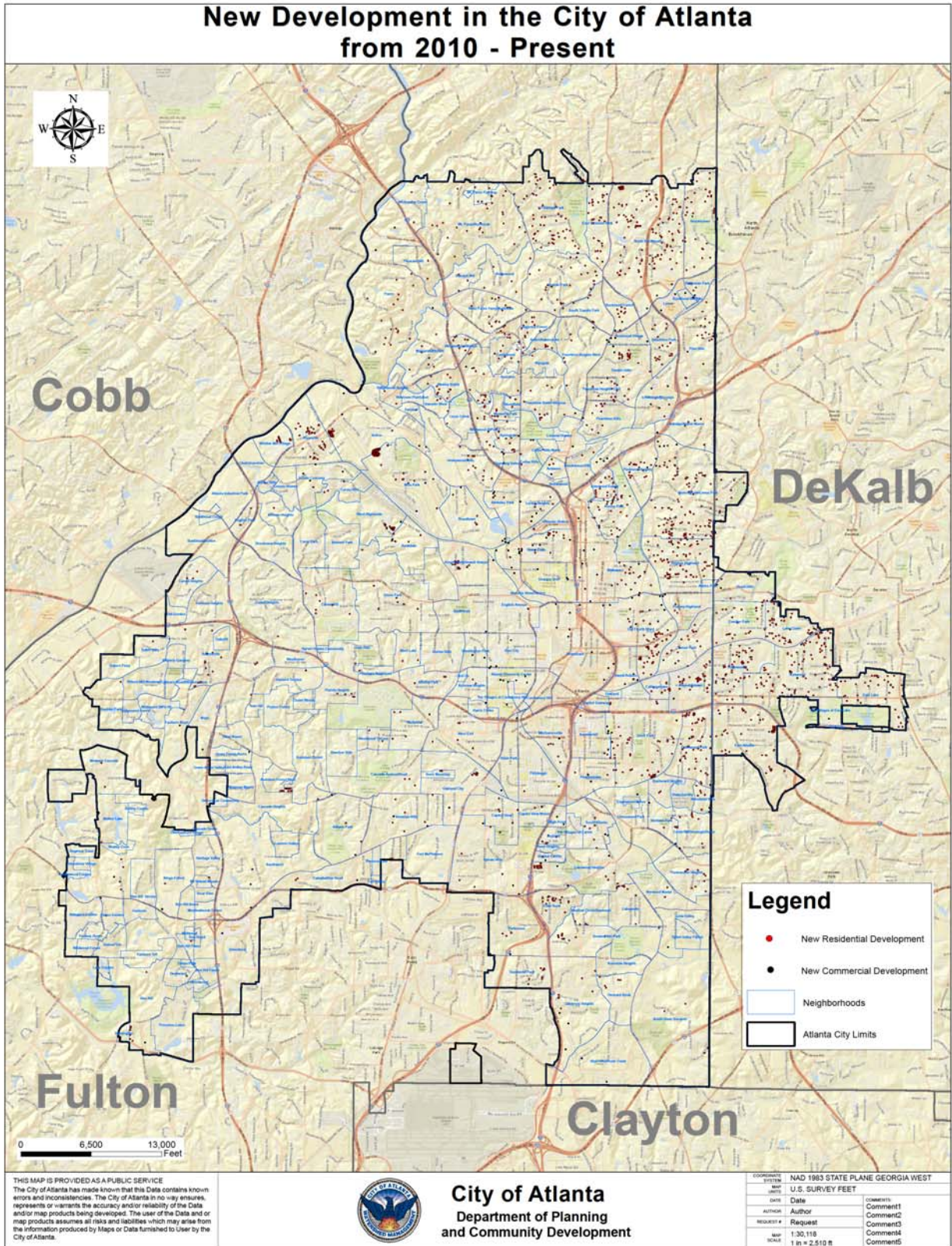
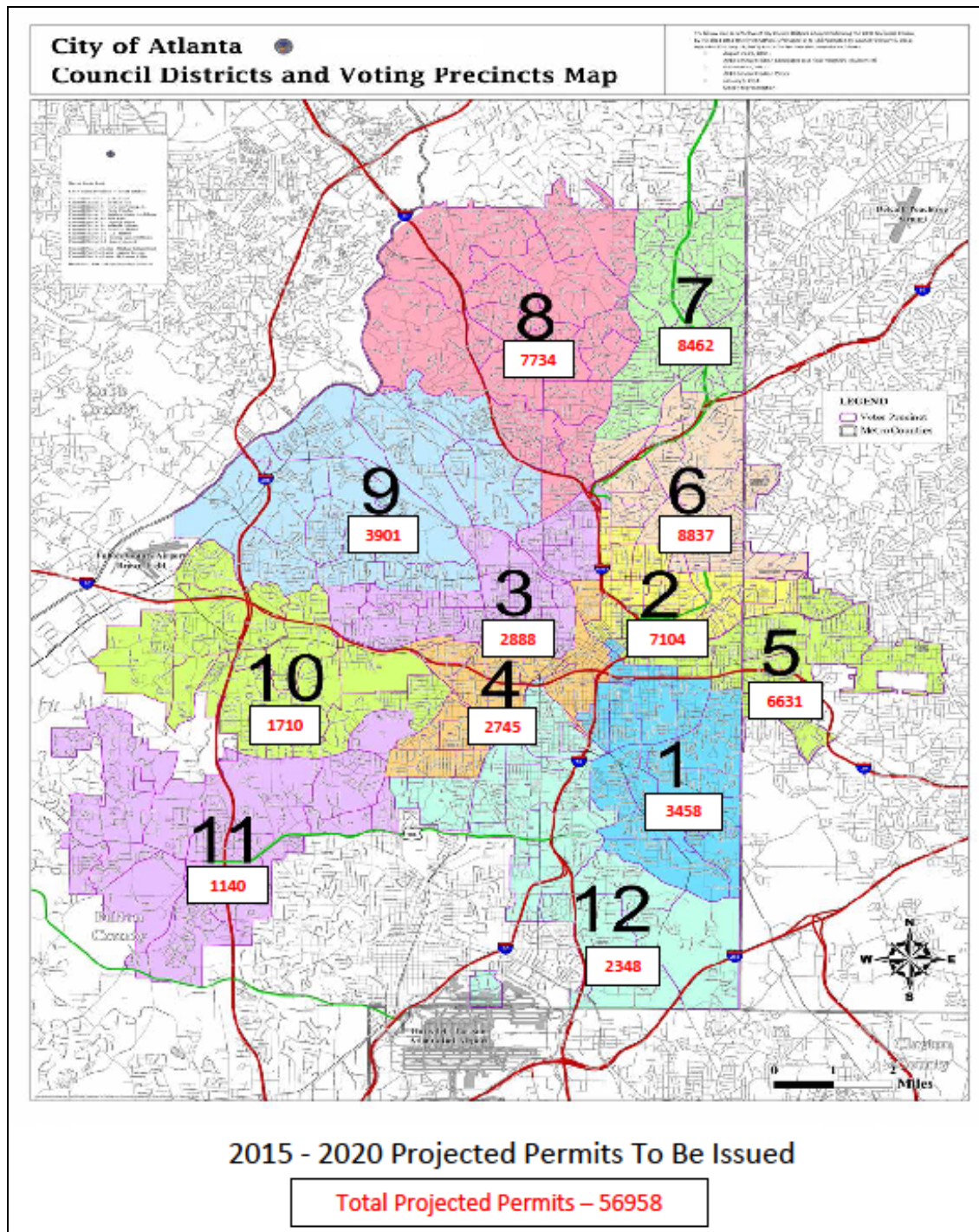


Figure 2: Projected Permits 2015-2020





Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states, local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 5
Legal and Regulatory Capability**

Tool / Program	Do you have this?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	County	Fulton	
Capital Improvements Plan	Yes	Local	DP&CD	COA CIP
Floodplain Management / Basin Plan	Yes	Local	DWM	Section 74 201 – 209 flood Plain Ordinance
Stormwater Management Plan	Yes	Local	DWM	Sec 74 501-524 / Clean Water Act / Clean Water Atlanta
Open Space Plan	Yes	Local	DP&CD	Sec. 16-28.008 .011 Open Space / Atlanta Greenspace Plan
Stream Corridor Management Plan	Yes	Local	DWM	Metropolitan River Protection Act (2)
Watershed Management or Protection Plan	Yes	Local	DWM	Sec 74 401-406 / Clean Water Act / Safe Drinking Water Act / Clean Water Atlanta
Economic Development Plan	Yes	Local	COA	Georgia Planning Act 1989 / Charter of COA Section 3-601
Comprehensive Emergency Management Plan	Yes	Executive Directive/county/Local Legislation	AFCEMA/AFRD	Section 50 26 -34 Emergency Management Ordinance / Stafford Act / GA Emergency Act AFRD 2014 Risk Assessment and Standards of Cover, dated June 2014 Commission of Fire Accreditation



Tool / Program	Do you have this?	Authority	Dept. /Agency Responsible	Code Citation and Comments
				International, Re-Accreditation, dated July 12, 2014
Emergency Operation Plan	Yes	County/Local	AFCEMA/AFRD	Section 50 26 -34 Emergency Management Ordinance / Stafford Act / GA Emergency Act AFRD 2014 Risk Assessment and Standards of Cover, dated June 2014 Commission of Fire Accreditation International, Re-Accreditation, dated July 12, 2014
Post-Disaster Recovery Plan				Section 50 26 -34 Emergency Management Ordinance / Stafford Act / GA Emergency Act
Transportation Plan	Yes	Local	DPW	
Strategic Recovery Planning Report	Yes	County	AFCEMA	Stafford Act / GA Emergency Act / Section 50 26 -34 Emergency Management Ordinance
Other Plans: Climate Action Plan	Yes	Local	Sustainability	
Other Plans: Urban Redevelopment Plan	Yes	Local	DP&CD	
Other Plans: Connect Atlanta Plan	Yes	Local	DP&CD	
Regulatory Capability				
Building Code	Yes	Local	DP&CD	NFPA Section 101, 2012 1BC/1RC
Zoning Ordinance	Yes	Local	DP&CD	Sec. 16-01.004 1982
Subdivision Ordinance	Yes	Local	DP&CD	Sec. 15
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	DWM	Section 74 201-209 Floodplain Ordinance



Tool / Program	Do you have this?	Authority	Dept. /Agency Responsible	Code Citation and Comments
NFIP: Cumulative Substantial Damages	Yes	Local	DWM	Sec 74
NFIP: Freeboard	Yes	State, Local	DWM	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Yes	Local	DWM	Land Use Plan
Site Plan Review Requirements	Yes	Local	DP&CD/DWM	Sec. 16-19.005 Site Development Plan
Storm water Management Ordinance	Yes	Local	DWM	Sec 74 501-524/Clean Water Act/Clean Water Atlanta
Municipal Separate Storm Sewer System (MS4)	Yes	Local	DWM	Sec 74 501-524/Clean Water Act/Clean Water Atlanta
Natural Hazard Ordinance	Yes	Local	DWM	City Floodplain Ordinance
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Atlanta.

**Table 6
Administrative and Technical Capabilities**

Resources	Is this in place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	DP&CD
Mitigation Planning Committee	Yes	COA
Environmental Board/Commission	Yes	DWM
Open Space Board/Committee	Yes	DP&CD



Resources	Is this in place?	Department/ Agency/Position
Economic Development Commission/Committee	Yes	COA
Maintenance Programs to Reduce Risk	Yes	OEAM/AFRD
Mutual Aid Agreements	Yes	AFRD/APD/COA/AFCEMA
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	DPW/DWM
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	DPW/DWM
Planners or engineers with an understanding of natural hazards	Yes	DPW/AFRD/DWM/DP&CD
NFIP Floodplain Administrator	Yes*	DWM
Surveyor(s)	Yes	DWM/DPW
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	DPW/DWM
Scientist familiar with natural hazards	Yes	DWM/DPW
Emergency Manager	Yes	AFCEMA/DWM
Grant Writer(s)	Yes	COA
Staff with expertise or training in benefit/cost analysis	Yes	COA
Professionals trained in conducting damage assessments	Yes	AFCEMA/DWM/DP&CD

*If you participate in the NFIP, then you have a Floodplain Administrator.

Fiscal Capability

The table below summarizes financial resources available to Atlanta.

**Table 7
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for specific purposes	No
User fees for water, sewer, gas or electric service	Yes



Financial Resources	Accessible or Eligible to Use
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	No
Other Federal or State Funding Programs	Yes
Open Space Acquisition Funding Programs	Yes
Other	

Community Classifications

The table below summarizes classifications for community program available to Atlanta.

**Table 8
Community Classifications**

Program	Do you have this?	Classification	Date Classified
Community Rating System (CRS)	Yes	7	Oct 2015
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	4 – for 1&2 family residential, commercial, and industrial property	July 2015
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Public Protection Classification Rating – 1	2014 (Ref. Page 6, para. 2, Commission of Fire Accreditation International, Re-Accreditation Report, dated July 12, 2014)
Storm Ready	Yes		
Firewise	No		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Yes		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



Hazard Mitigation Capability

The table below summarizes a self-assessment of Atlanta’s current hazard mitigation capability.

**Table 9
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles?)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities.		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Raymond J. Wilke, Director-OES-SAMD

The City of Atlanta is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Atlanta completed its latest compliance audit in April 2015 as it began the process to enter into the CRS program.

Loss History and Mitigation

As of September 2015 there were 13 residential Repetitive Loss and/or Severe Repetitive Loss properties in the process of mitigation. This will result in 5.6 acres of land acquisition by the City (See table 10 below). No additional properties are currently known to have indicated interest in elevation or acquisition.

Planning and Regulatory Capabilities

Atlanta’s NFIP Flood Damage Prevention Ordinance was last updated in May 2013 and can be found on the City of Atlanta’s website: <http://www.atlantawatershed.org/floodplain-ordinance/>.

Floodplain management regulations and ordinances meet the minimum requirements set forth by both FEMA and the State of Georgia. Atlanta also performs site plan review and building plan review which include checks of floodplain designations.

Administrative and Technical Capabilities

The community does have a local NFIP Floodplain Administrator who is supported by two additional staff members consisting of a Floodplain Coordinator and a GIS Staffer. Information collected during the update process suggests the NFIP Administrator feels they are adequately supported and trained to fulfill his responsibilities as the municipal floodplain administrator. The



Administrator would also consider attending continuing education and/or certification training on floodplain management.

Substantial Damage estimates are typically completed by Site Development when necessary.

Public Education and Outreach

Education and Outreach regarding flood/hazard risk, and flood risk reduction through NFIP insurance is provided annually. This education and outreach is designed to assist citizens with information concerning their FEMA floodplain status, yearly repetitive loss notification and new map notification.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Atlanta.

Community Rating System

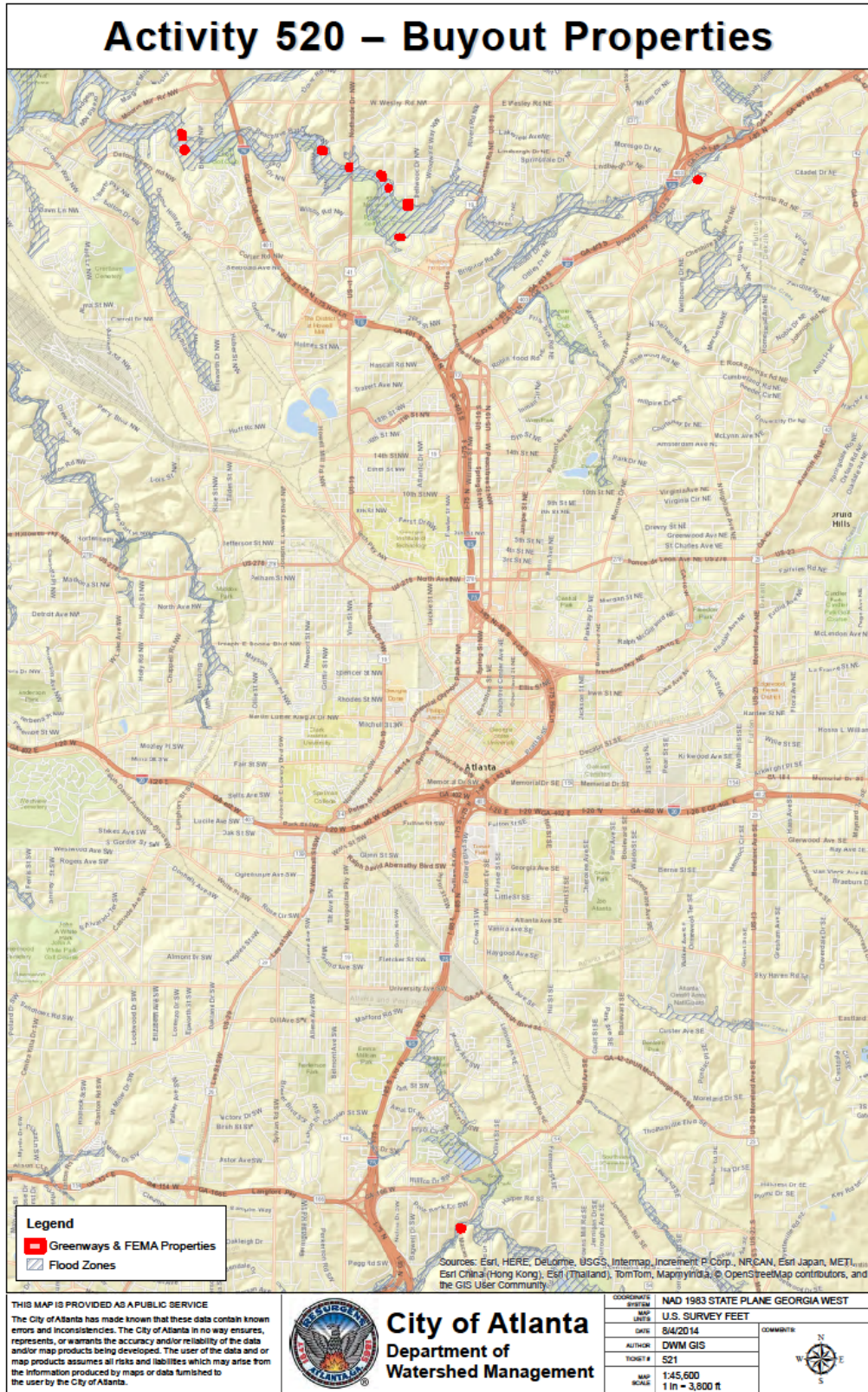
Atlanta does currently participate in the Community Rating System (CRS) program and officially entered as of October, 2015 as a Class 7. This will result in a 15% discount for all flood insurance premiums in the City.

**Table 10
FEMA Property Acquisition
Property Acreage**

Phase I			
	Property Address	Acreage	Most Recent Sale Value (Tax Assessor)
	2381 Armand Road, Atlanta, Ga. 30324	0.412	\$353,000
	757 Woodward Way, Atlanta, Ga. 30305	0.451	\$426,200
	391 Golfview Road, Atlanta, Ga. 30305	0.285	\$326,000
	1342 Hanover West Drive, Atlanta, Ga. 30327	0.566	\$619,500
	2235 Havenridge Drive, Atlanta, Ga. 30305	0.432	\$328,000
	2243 Havenridge Drive, Atlanta, Ga. 30305	0.365	\$400,000
	2249 Havenridge Drive, Atlanta, Ga. 30305	0.365	\$445,000
	473 Woodward Way, Atlanta, Ga. 30305	0.846	\$244,100
Total		3.722	\$3,141,800
Phase II			
	Property Address	Acreage	
	1355 Battleview Drive, Atlanta, Ga. 30327	0.844	\$398,000
	2251 Macon Drive, Atlanta, Ga. 30315	0.434	\$42,980
	429 Woodward Way, Atlanta, Ga. 30305	0.227	\$327,500
	609 Woodward Way, Atlanta, Ga. 30327	0.373	\$277,000
	Area of Biscayne Drive, Atlanta, Ga. 30309 (tbd)	tbd	
Total		1.878	\$1,045,480
Total Acreage		5.6	\$4,187,280



Figure 3: Activity 520 Buyout Properties





Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (Disaster Declaration if applicable)	Atlanta-Fulton County Designated?	Notes on damages within County
February 10-15, 2014	DL-4165	Yes	Est \$12.3M of damage including emergency debris removal, fallen trees, road treatment , utility damages, cost incurred for warming centers, and overtime. as outlined in FEMA PW321 and FEMA PW322.
April 5, 2011	Wind/Rain	No	Spring Storm, Debris cleaning. Fallen trees throughout the city. Requiring tree removal and facility and fence repair. Several fallen trees caused damage to water lodge roof, picnic tables and security fence. Est 30k
January 6 - 10, 2014	Severe Winter Storm	No	Overtime
Jan 28- Jan30, 2014	Winter Storm	No	Utility Damages

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.
 - Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
 - Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a month.
 - Property: More than 50 percent of the property located in the proximity of the City is severely damaged.
- Level II – Critical
 - Personnel: Permanent disability, severe injury or illness.
 - Public: Permanent disability, severe injury or illness.



- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
 - Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than two weeks.
 - Property: More than 25 percent of the property located in the proximity of the City is severely damaged.
- Level III – Marginal
- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
 - Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
 - Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
 - Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a week.
 - Property: More than 10 percent of the property located in the proximity of the City is severely damaged.
- Level IV: Negligible
- Personnel: Treatable first aid injury.
 - Public: Minor quality of life loss.
 - Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
 - Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
 - Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by Hazard Mitigation Planning Committee members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall county



risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall county risk assessment matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

Table 12
Assessment of Vulnerability per the Mitigation Planning Committee

Atlanta Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Flood	P	L	L	H	12
Tornadoes	P	L	L	H	12
Severe Weather	P	L	L	H	12
Winter Storm	P	P	L	H	11
Heat Wave	P	P	L	H	11
Drought	P	P	L	L	10
Dam Failure	U	P	P	P	7
Tropical System	U	P	P	U	6
Sinkhole	U	U	U	L	6
Wildfire/Urban Interface	U	U	U	P	5
Earthquake	U	U	U	P	5
Average Risk by Level	1.55	2.00	2.27	3.00	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted mitigation action plan. In each mitigation action plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0023	Improve storm water drainage capacity and design in the area of Piedmont and Auburn Ave to allow better tie in to the Claire Creek overflow	DWM	No Progress	Lack of funding	<i>Include in 2016 HMP</i>	Secure funding
05.0024	Station 21: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	The generator for Station 21 has not been replaced and is not scheduled to be replaced this year.	<i>Include in 2016 HMP</i>	Completion of hardening measures to improve wind and impact resistance.
05.0025	Station 8: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	Generator is currently being replaced.	<i>Include in 2016 HMP</i>	Completion of hardening measures to improve wind and impact resistance.
05.0026	Station 28: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	Complete	Station 28 is a new station and all improvements are completed. Construction standards used for building Fire Station 28 are consistent with/met hardening requirements	N/A	N/A
05.0027	Station 1: Harden to improve wind and impact resistance; increase generator	OEAM/AFRD	In Progress	Generator has not been replaced and was not one of the stations scheduled	<i>Include in 2016 HMP</i>	Completion of hardening measures to improve wind and impact resistance.



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	capacity			to be replaced this year.		
05.0028	Stations 9, 20, 22, & 25: Harden to improve wind and impact resistance; increase generator capacity	OEAM/AFRD	In Progress	Only Station 9's generator was replaced with a 60kw natural gas generator.	Include in 2016 HMP	Completion of hardening measures to improve wind and impact resistance at Stations 9, 20, 22, & 25. Replace generators at Stations 20, 22, & 25.
05.0029	Improve wind resistance of roof to the Maddox Park building which houses fleet operations. Roof is not wind rated	OEAM/ DPR	In Progress	OEAM/ DPR assessing the roof at Maddox Park building to determine if the roof will be replaced. Numerous repairs were made in FY12, 13 &14	Include in 2016 HMP	OEAM/ DPR assessing the roof to determine if it will be replaced
05.0030	Build retaining structure at the solid waste landfill area to prevent further slope and erosion damage	DPW	Complete	N/A	N/A	N/A
05.0031†	R.M. Clayton Waste Water Treatment Plan: Flood-proof the plant through raising the height of the banks	DWM	No Progress	Project put on hold. not funded	Include in 2016 HMP	Projected funded in FY17
05.0032	Piedmont Park natural creek bank restoration and stabilization by reducing slopes and burying tree logs that are natural features	DWM	Complete	Project Completed	N/A	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0033	Acquire generator for emergency power for Fire Department Headquarters Building	OEAM	In Progress	Confirmation required of power generation and UPS technical specifications used when PSH was built to verify necessity/requirement for upgrade.	<i>Include in 2016 HMP</i>	Verification of upgrade requirement.
05.0034	Retrofit old window glass at the Fire Department Headquarters building for increased impact resistance	OEAM	In Progress	Confirmation required for technical specifications used for windows when PSH was built to verify necessity/requirement for upgrading windows.	<i>Include in 2016 HMP</i>	Verification of upgrade requirement.
05.0035	Acquire generator for emergency power for Fire Stations	OEAM/AFRD	In Progress	Installation of replacement generators with new energy efficient NG 60KW generators has begun. 11 of the 40 stations are currently replaced. No doors have been retrofitted. The cost to retrofit a door is \$20,000 – \$40,000 each. Only 3 of our stations (13, 18, & 28) have bay doors that are hurricane / tornado rated, soon to be four (Station 7).	<i>Include in 2016 HMP</i>	Replace the generators at the remaining stations.
05.0036	Retrofit bay doors of Fire Stations	OEAM	In Progress		<i>Include in 2016 HMP</i>	Completion of external funding/budget analysis, review, and approval process to continue/complete retro-fitting bay doors.



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0037	Retrofit All Fire Stations with Lightning Rods	OEAM	No Progress	Research and analysis to determine functional and technical requirements. Research and analysis to determine functional and technical requirements for the procurement, installation, operation (policy & procedures), and maintenance of and siren audible and voice activated system.	Include in 2016 HMP	Research and analysis (feasibility study).
05.0038	Place Warning Sirens in Residential Areas	AFRD	No Progress	Cost estimates developed Obstacles – lack of funding	Include in 2016 HMP	Research and analysis (feasibility study).
05.0039	Acquire generator for emergency power for Police Facilities	APD	No Progress		Include in 2016 HMP	Plan for immediate smaller rollout of the main precincts in FY17.
05.0041†	Relocate SWAT Offices & Storage, Classrooms, Ranger Offices & Storage, Gym, Explosive Bldg, and Equipment Facility at 1500 Key Rd outside of Floodplain	APD	No Progress	Lack of funding Not priority in facility renovation listing.	Include in 2016 HMP	Include in FY17 CIP plan request.
05.0042†	Relocate Firing Range Facility at 1500 Key Rd outside of Floodplain	APD	No Progress	Lack of funding Not priority in facility renovation listing.	Include in 2016 HMP	Required amount adjusted to \$2,125,000. Include in FY17 CIP plan request.
05.0043	Site at 1500 Key Road includes SWAT,	DPW/APD	No Progress	Lack of funding	Include in 2016 HMP	Required amount adjusted to



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Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	flooding of the road severely impacts ability to respond. Multiple pieces of critical tactical equipment are located there as well as the Police Firing Range					\$1,500,000. Include in FY17 CIP plan request.
05.0044	Install traffic warning signs on at all road crossing at creeks and streams that are submerged during a 100 & 500 year flood or greater.	DPW	No Progress	Lack of funding	Include in 2016 HMP	Install traffic warning signs at all road crossing at streams that are flooded during a 100 year flood or greater.
05.0045	Install generators at Public Work Facilities involving 25 sites involving Fueling Operations, and Vehicle Maintenance	DPW	In Progress	FY 15-16 OEAM received 30.5M to address life safety items which will address generators and roof repairs.	Include in 2016 HMP	Implement work via City Wide procurement program.
05.0046	Raise roadway & Structure by 3.3 ft. at Pryor Rd. Culvert at North Fork of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0047	Raise roadway and structure by 17 ft. at Thornton St. Culvert at North Fork of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0048	Raise roadway and structure by 9.3 ft. at Arthur Langford Jr. Pl. at North Fork of South River	DPW	No Progress	Lack of funding	Discontinue	N/A
05.0049†	Raise roadway by 2.5ft at Macon Dr at South Fork of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0050†	Raise roadway and structure by 5.5ft. at Lakewood Raceway – Southern Leg at Middle Branch of South River	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0051†	Raise roadway and structure by 4 ft. at Bohler Rd. at Peachtree Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0052†	Raise roadway and structure by 2 ft. at Northside Drive at Peachtree Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0052† (53?)	Raise roadway and structure by 4 ft. at Northwest Dr. at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0054†	Raise roadway and structure by 3.3 ft. at Sanford Dr. (AKA Kerry Cir.) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0055†	Raise roadway and structure by 5 ft. at Gun Club Park Bridge at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0056†	Raise roadway and structure by 8 ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0057†	Raise roadway and structure by 6.5ft at Joseph E Boone Blvd (AKA Simpson Road) at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0058†	Raise roadway and structure by 5 ft. at Burbank Dr. at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0059†	Raise roadway and structure by 9 ft. at Sharon St at Proctor Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0060†	Raise roadway and structure by 8 ft at Windsor Pkwy. at Nancy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0061†	Raise roadway and structure by 2 ft. at Peachtree Dunwoody Rd at Nancy Creek	DPW	No Progress	Lack of funding..	Discontinue	N/A
05.0062†	Raise roadway and structure by 3.2 ft. at Great Southwest Pkwy at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0063†	Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – EB at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0064†	Raise roadway and structure by 4 ft. at Fulton Industrial Blvd – WB at Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0065†	Raise roadway and structure by 4 ft. at Fairburn Rd at North Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0066†	Raise roadway and structure by 3.5 ft. at Benjamin E. Mays Dr. Rd. at North Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0067†	Raise roadway and structure by 2.2 ft. at Brownlee Rd. at North Uttoy Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0068†	Raise roadway and structure by 11.2ft at	DPW	No Progress	Lack of funding.	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	Sandy Creek Rd					
05.0069†	Raise roadway and structure by 6 ft. at South River Industrial Blvd. at Federal Prison Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0070†	Raise roadway and structure by 11ft at Woodland Ave. at Intrenchment Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0071†	Raise roadway and structure by 3.2 ft. at Danforth Rd. at Niskey Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0072†	Raise roadway and structure by 6 ft. at Niskey Lake Rd.	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0073†	Raise roadway and structure by 2 ft. at Boulder Park Dr. at Wildwood Lake Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0074	Raise roadway and structure by 2.2 ft. at Branch Rd. at Wildwood Lake Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0075†	Raise roadway and structure by 2.2ft at Hasty Place at Mozley Park Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0076†	Raise roadway and structure by 1.5 ft. at Hightower Rd. at Center Hill Tributary	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0077†	Raise roadway and structure by 2 ft. at Donald Lee Hollowell	DPW	No Progress	Lack of funding.	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	Pkwy (AKA Bankhead Hwy) at Center Hill Tributary					
05.0078†	Raise roadway and structure by 5 ft. at Bolton Rd. at Whetstone Creek	DPW	No Progress	Lack of funding..	Discontinue	N/A
05.0079†	Raise roadway and structure by 6.5 ft. at Adams Dr at East Whetstone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0080†	Raise roadway and structure by 2 ft. at Dawn Ln. at East Whetstone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0081†	Raise roadway and structure by 6 ft. at Sumter St. at East Whetstone Creek	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0082†	Raise roadway and structure by 2.5 ft. at Connelly Dr at Headland Branch	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0083†	Raise roadway and structure by 2 ft. at Headland Dr. at Headland Branch	DPW	No Progress	Lack of funding.	Discontinue	N/A
05.0084	Build two separate 2,500 tons sand domes for storage of materials during cold and icy weather	DPW	Complete	N/A	N/A	N/A
05.0085	Build retaining structure at the solid waste landfill area to prevent further slope and erosion damage	DPW	Complete	N/A	N/A	N/A
05.0086†	Raise levee and other work along	DWM	No Progress	Project put on hold.	Include in 2016 HMP	Projected funded in FY17



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
	Chattahoochee River and Peachtree Creek to prevent flood waters from the Chattahoochee River raising into the R.M. Clayton Water Reclamation Center					
05.0087	Acquire flood prone properties located in the FEMA mapped floodplains throughout the City of Atlanta.	DWM	In Progress	12 properties acquired with HMGP 1758 funds.	Include in 2016 HMP	Acquire additional homes, as identified
05.0088†	Elevate flood prone properties located in the FEMA mapped floodplains throughout the City of Atlanta	DWM	No Progress	No feasible program for city to implement on private property.	Discontinue	N/A
05.0089	Educate the public about the risk of flooding and the importance of obtaining flood insurance	DWM	In Progress	Flyers and newsletters, Information on DWM website. Continue to update website as needed.	Include in 2016 HMP	Comprehensive outreach plan under development
05.0090	Implement program for natural/ vegetative stabilization of stream banks (average 1300 feet per year) to secure infrastructure	DWM	No Progress	Project put on Hold	Include in 2016 HMP	Project slated for Re-Bidding FY16
05.0091	Relocate Parks NE and SE District Maintenance Depots	DPR	In Progress	Additional space for welding and small equipment. Looking for opportunity to aggregate both compounds together with fleet (recreation). Price	Include in 2016 HMP	DPR is looking for alternative sites that may allow for aggregating maintenance and service sites



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
05.0092	Tree Maintenance Program in Hazard and Urbanized Areas	DPR	In Progress	Preventative maintenance plan for ROW could require significantly higher funding if implemented citywide. Emergency vehicles for Forestry could be purchased – knuckle boom - \$200,000	Include in 2016 HMP	DPR looking for funding to purchase additional knuckle booms and other pertinent equipment
05.0093	Reconstruct roofs and generators on shelter facilities	DPR	In Progress	Generators located at Ben Hill, Old Adamsville and Adamsville. All need upgrades to produce full service power restoration, generators needed at additional sites: Central, Rosel Fann, Bessie Branham, Peachtree Hills 7,500,00+	Include in 2016 HMP	Preventative maintenance has been completed on generators currently located at various DPR locations. Upgrades are needed to provide additional emergency service to DPR facilities.
05.0094	Implement creek netting program to prevent damming of creeks and stream by debris and improve water quality by reducing the effect of pollutants entering the water	DWM	No Progress	Funding or staffing not available	Discontinue	N/A



Potential Hazard Mitigation Initiatives for the Plan

Atlanta identified additional mitigation initiatives they would like to potentially pursue in the future. Table 14 identifies the municipality's potential Hazard Mitigation Actions.

**Table 14
Potential Mitigation Actions**

Mitigation Action	Lead Agency	Comments and Details
Forestry Compound Renovations	Parks	<p>RR's and HVAC updated Stay over room in progress Current and projected estimate is \$125K</p> <p>These items were purchased/completed to fulfill daily operation needs but also serve as emergency functions and housing during severe weather event.</p>
Ben Hill Generator	Parks	<p>System tested and tried into portions of building (does not provide complete functionality) Funded through current accounts</p> <p>These items were purchased/completed to fulfill daily operation needs but also serve as emergency functions.</p>
Emergency Generators for Old Adamsville, Rosel Fann, and other recreation centers used as warming/cooling stations	Parks	<p>Additional power needs/back up needed during activation of warming and cooling stations. Back up power required.</p>
Emergency generators an dual power feed capabilities at water reclamation and water treatment plant,	DWM	<p>Backup generators needed at reclamation and water treatment plant as current generators are inadequate to provide power for all pumps and other critical pumps</p>



Mitigation Action	Lead Agency	Comments and Details
Watershed Improvement Projects	DWM	Storm water control, green infrastructure, and stream restoration projects identified in Watershed Improvement Plans for 10 city watersheds.
Purchase and install back-up 250kw Gas Generator for IT Sever room	DWM	To back-up the 2 City Plaza Data Center. Approximate cost of \$287,500.00
Purchase of 6 Tandem Trucks with snow plow and spreader attachments	DWM	Estimated cost 200K per truck
Protect individuals and facilities from lightning strikes. Request lightning detection software for campus buildings and athletic fields.	Ga. State University	To include research labs, football practice fields, future football and baseball stadiums.
Protect individuals from tornadoes. Request 3 additional rooftop tornado sirens throughout the Downtown Atlanta campus.	Ga. State University	Downtown Atlanta Campus
Generator tests/preventive repairs	Atlanta Medical Center	Downtown and East Point Campuses
Building life safety- fire suppression, access control, infant abduction systems	Atlanta Medical Center	Downtown and East Point Campuses
Extra supplies on hand (to sustain 96 hours in ideal conditions)	Atlanta Medical Center	Downtown and East Point Campuses
Training for staff regarding Mass Casualty Response	Atlanta Medical Center	Downtown and East Point Campuses
Regional Coordination/participation with Regional Coordinating Hospital and State Public Health	Atlanta Medical Center	Downtown and East Point Campuses



Mitigation Action	Lead Agency	Comments and Details
Constant training with community partners- police, fire, air services, FBI, Georgia Department of Corrections	Atlanta Medical Center	Downtown and East Point Campuses

Proposed Hazard Mitigation Initiatives for the Plan

Atlanta identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 identifies the municipality's updated local mitigation strategy.



**Table 15
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEIMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
05.0023	Improve storm water drainage capacity and design in the area of Piedmont and Auburn Ave to allow better tie in to the Claire Creek overflow	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.5 6.1	SIP	\$5,000,000	HMA, Local	2016-2021	12
<p>Comment: This is an area of identified need as part of the Combined Sewer Overflow (CSO) Remediation Plan which can be found at http://www.cleanwateratlanta.org.</p>										
05.0024	Station 21: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Tornadoes; Winter Storms	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9
<p>Comments: This is a heavy rescue special operations station. Houses rescue boat, collapse rescue equipment, trench rescue equipment, and technical rescue equipment. ALS engine is station at this location. GSAR is housed at this station. Station has large amount of plate glass, including bay doors. Bay doors are older and are not up to current code.</p>										
05.0025	Station 8: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9
<p>Comment: This is the Hazardous Materials station and contains HazMat related personnel and equipment.</p>										
05.0026	Station 1: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$500,000	HMA, SCG, Local	2016-2021	9



Comments: This station is the Decontamination Station and houses decontamination equipment. It also houses CBRNE equipment and serves as the backup station to the HazMat team in Station 8.										
05.0027	Stations 9, 20, 22, & 25: Harden to improve wind and impact resistance; increase generator capacity	Atlanta	Office of Enterprise Assets Management (OEAM)/ Fire & Rescue	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 2.11 6.4	SIP	\$2,000,000	HMA, SCG, Local	2016-2021	7
05.0028	Improve wind resistance of roof to the Maddox Park building which houses fleet operations. Roof is not wind rated	Atlanta	Office of Enterprise Assets Management (OEAM)/ Parks & Recreation	Flooding; Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10	SIP	\$1,000,000	HMA, Local	2016-2021	10
Comments: OEAM/ DPR assessing the roof at Maddox Park building to determine if the roof will be replaced. Numerous repairs were made in FY12, 13 & 14										
05.0029†	R.M. Clayton Waste Water Treatment Plan: Flood-proof the plant through raising the height of the banks	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.10	SIP	\$2,500,000	HMA, FMA, Local	2016-2021	13
Comment: This plant flooded from Proctor Creek during the floods of Sept. 2009. It has received some PDM funds for repairs, but further mitigation is needed to improve flood-proofing of this facility. This facility serves East Point, College Park, and Hapeville. The plant cannot treat sewage and is causing environmental problems in West Point Lake. It also affects the communities' ability to draw water.										
05.0031	Acquire generator for emergency power for Fire Department Headquarters Building	Atlanta	Fire & Rescue	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	SIP	\$1,300,000	HMA, SCG, Local	2016-2021	13
05.0032	Retrofit glass old window glass at the Fire Department Headquarters building for increased impact resistance	Atlanta	Fire & Rescue	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	SIP	\$1,500,000	HMA, SCG, Local	2016-2021	11



05.0033	Acquire generator for emergency power for 40 Fire Stations	Atlanta	Fire & Rescue	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	SIP	\$4,000,000	HMA, SCG, Local	2016-2021	13
05.0034	Retrofit bay doors of Fire Stations	Atlanta	Fire & Rescue	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	SIP	\$5,000,000	HMA, SCG, Local	2016-2021	13
05.0035	Retrofit All Fire Stations with Lightning Rods	Atlanta	Fire & Rescue	All Hazards	2.10	SIP	\$ 800,000	HMA, SCG, Local	2016-2021	13
05.0036	Place Warning Sirens in Residential Areas	Atlanta	Fire & Rescue	Severe Weather	1.1 1.2 1.7	EAP/SIP	\$4,000,000	HMA, Local	2016-2021	13
05.0037	Acquire generator for emergency power for Police Facilities	Atlanta	Police	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	SIP	\$2,500,000	HMA, DHS, Local	2016-2021	7
Comment: Plan for immediate smaller rollout of the main precincts (6) in FY17.										
05.0038†	Relocate SWAT Offices & Storage, Ranger Offices & Storage, Gym, Explosive Bldg, and Equipment Facility at 1500 Key Rd outside of Floodplain	Atlanta	Police	Flooding	2.10, 4.11	SIP	\$3,750,000	DHS, Local	2016-2021	10
05.0039†	Relocate Firing Range Facility at	Atlanta		Flooding	2.10,4.11	SIP	\$2,125,000	Local	2016-2021	8



05.0040	1500 Key Rd outside of Floodplain Site at 1500 Key Road includes SWAT, flooding of the road severely impacts ability to respond. Multiple pieces of critical tactical equipment are located there as well as the Police Firing Range	Atlanta	Police	Flooding	4.11, 7.9	SIP	\$1,500,000	Local, HMA	2016-2021	8
05.0041	Install traffic warning signs on at all road crossing at creeks and streams that are submerged during a 100 & 500 year flood or greater. Approximately 100 locations	Atlanta	Public Works	Flooding	4.11, 7.9	SIP	\$100,000	Local	2016-2021	13
05.0042	Install generators at Public Work Facilities involving 25 sites involving Fueling Operations for the City, Operations, and Vehicle Maintenance	Atlanta	Public Works	Severe Weather, Flooding	4.11, 2.11	SIP	\$2,500,000	HMA, Local	2016-2021	11
05.0078 ⁺	Raise levee and other work along Chattahoochee River and Peachtree Creek to prevent flood waters from the Chattahoochee River raising into the R.M. Clayton Water Reclamation	Atlanta	Department of Water Management	Flooding	4.11	SIP	\$5,000,000	HMA, FMA, Local	2016-2021	14



ATLANTA MITIGATION ACTION PLAN

05.0079	Center	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.7	SIP/LPR	\$2,500,000	HMA, FMA, Local	2016-2021	14
Comment: 1 remaining to acquire FY16										
05.0081	Educate the public about the risk of flooding and the importance of obtaining flood insurance	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	2.4 7.2 7.3 7.4	SIP/EAP	\$50,000.00/Yearly	Local	2016-2021	14
Comment: Flyers and newsletters, Information on DWM website. Continue to update website as needed.										
05.0082	Continue program for natural/vegetative stabilization of stream banks (average 1300 feet per year) to secure infrastructure	Atlanta	Department of Water Management	Flooding; Severe Weather; Tropical Systems	5.1, 5.2, 5.4, 5.5	SIP/NRPP	\$200,500/year	Local	2016-2021	13
05.0083	Relocate Parks NE and SE District Maintenance Depots	Atlanta	Parks, Recreation, & Cultural Affairs	Flooding	2.1, 2.10, 4.11	SIP	\$800,000 Land \$1,500,000 Design & Construction	Local	2016-2021	14
Comments: Additional space for welding and small equipment. Looking for opportunity to aggregate both compounds together with fleet (recreation). Price could be \$1.5 million for land and \$3 million for construction of new site. DPR is looking for alternative sites that may allow for aggregating maintenance and service sites.										
05.0084	Tree Maintenance Program in Hazard and Urbanized Areas	Atlanta	Parks, Recreation, & Cultural Affairs	Heat Wave; Drought; Severe weather	5.1, 5.2, 5.4, 5.5	SIP/NRPP	\$300,000 Equipment; \$400,000 annually	Local	2016-2021	14
Comment: Preventative maintenance plan for ROW could require significantly higher funding if implemented citywide. Emergency vehicles for Forestry could be purchased – knuckle boom - \$200,000										



ATLANTA MITIGATION ACTION PLAN

05.0085	Reconstruct roofs and generators on shelter facilities	Atlanta	Parks, Recreation, & Cultural Affairs	All Hazards	2.9 3.5 4.13	SIP	\$7,500,000	Local	2016-2021	14
Comment: Generators located at Ben Hill, Old Adamsville and Adamsville, All need upgrades to produce full service power restoration, generators needed at additional sites: Central, Rosel Fann, Bessie Branham, Peachtree Hills 7,500,00+										
05.0087	Upgrade outdoor siren warning system speakers.	Georgia Institute of Technology	Office of Emergency Preparedness	All Hazards	1.1	EAP	Estimated cost for 6 speakers: \$186,000.	Local, Others not yet identified	2016-2021	10
05.0088	Generators to supply power to fueling Stations.	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.11	SIP	\$100,000	Local, Others not yet identified	2016-2021	9
05.0089	Installation of above ground fuel storage tanks	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.5	SIP	\$100,000	Local, Others not yet identified	2016-2021	7
05.0090	Potable Clean Water Conveyance/Storage	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.5	SIP	\$300,000	Local, Others not yet identified	2016-2021	8
05.0091	High Impact Window Glass/treatment	Atlanta Public Schools	Office of Safety & Security	Severe weather, Hurricanes, Tornadoes	6.4	SIP	\$1,000,000	Local, Others not yet identified	2016-2021	4
05.0092	Generators in support of Schools/Buildings as Shelters	Atlanta Public Schools	Office of Safety & Security	All Hazards	2.11	SIP	\$2,550,000	Local, Others not yet identified	2016-2021	10
05.0093	Install lightning detection equipment/software for campus buildings and athletic fields.	Ga. State University	Emergency Management	Severe weather, Hurricanes, Tornadoes	1.1 1.2 1.4	EAP	\$30,000	Local, Others not yet identified	2016-2021	10
05.0094	Install tornado sirens throughout the Downtown Atlanta campus.	Ga. State University	Emergency Management	Severe weather, Hurricanes, Tornadoes	1.1 1.2 1.4	EAP/SIP	\$30,000	Local, Others not yet identified	2016-2021	10



Annex 3

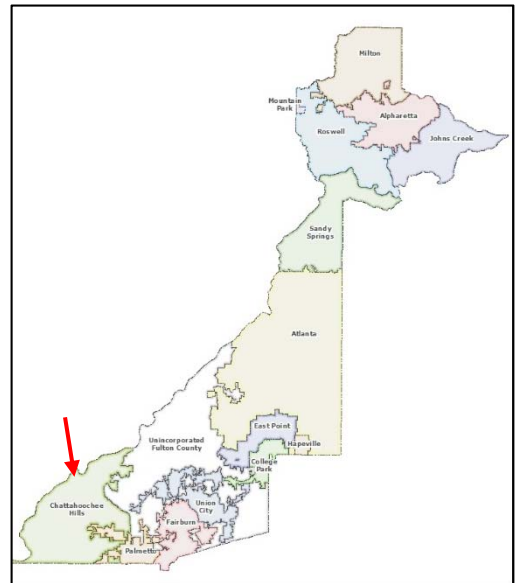
CHATTAHOOCHEE HILLS, GEORGIA MITIGATION ACTION PLAN

Geography/History

Chattahoochee Hills (formerly Chattahoochee Hill Country) is a City in southern Fulton County in Georgia. The majority of the wider area comprises the west-southwest part of southern Fulton, and smaller adjacent parts of southern Douglas, eastern Carroll, and northern Coweta counties.

On June 19, 2007, residents voted by an 83% to 17% margin to incorporate the 33,000-acre (130 km²) portion within Fulton as the City of "Chattahoochee Hill Country" in a local referendum. Later annexation could incorporate the portions remaining in other counties.

Chattahoochee Hill Country became a City on December 1, 2007, with the first elected officials taking office a few days later. On September 23, 2008, the City was renamed by an ordinance from Chattahoochee Hill Country to "Chattahoochee Hills."



Significant Characteristics

Chattahoochee Hills is a quiet and rural area with natural hills and lakes located outside of Atlanta. It sits along the Chattahoochee River and is home of TomorrowWorld. In September of 2014, TomorrowWorld welcomed 160,000 visitors from over 75 countries to the Chattahoochee Hills. This marked the second international edition of Tomorrowland, the world's most popular electronic music festival, held in Belgium each year. TomorrowWorld is a 3-day festival (and 5-day camping experience) held annually.

Population and Demographics

It is worth noting that historical information fixing the City of Chattahoochee Hills' population prior to 2007 is not available with absolute certainty. The City was newly incorporated in 2007 so no records exist for the exact geographical area that is now Chattahoochee Hills. Fulton County did keep some records for a larger area that included Chattahoochee Hills and nearby unincorporated areas, referenced in the 2025 Fulton County Comprehensive Plan as "Southwest Fulton County". However, "Southwest Fulton County," as referenced in the Fulton County Comprehensive Plan (Focus Fulton 2025), was significantly bigger and more populous than the City of Chattahoochee Hills.



According to the census data from 2010, there were 2,378 people, 941 households, and 679 families residing in the City. The population density was 47.56 people per square mile (18.37/km²). There were 1,080 housing units at an average density of 21.6 per square mile (8.34/km²). The racial makeup of the City was 68.6% White, 28.0% African American, 0.2% Native American, 0.3% Asian, 1.9% from other races, and 1.0% from two or more races. Hispanic or Latino of any race was 5.6% of the population.

There were 941 households out of which 24.2% had children under the age of 18 living with them, 55.3% were married couples living together, 12.9% had a female householder with no husband present, and 27.8% were non-families. 29.0% of all households were made up of individuals under 18 and 29.1% had someone living alone who was 65 years of age or older. The average household size was 2.53 and the average family size was 2.95.

The population was spread out with 39.6% under the age of 18, 3.3% from 18 to 21, 56.4% from 22 to 64, and 16.1% who were 65 years of age or older. The median age was 45.8 years.

**Table 1
City of Chattahoochee Hills Population Since 1990**

Year	1990	2000	2010	2014
Population	--	2,409	2,378	2,610 est.

Economy

The median income for a household in the City is \$59,332, while the median income for a family is \$80,499. The per capita income for the City is \$37,774. The unemployment rate in Chattahoochee Hills, Georgia, is 7.40%, with job growth of 1.77%. Future job growth over the next ten years is predicted to be 36.10%. The local tax rate is 8.00%. Income tax is 6.00%.

A history of specific industry and economy data for Chattahoochee Hills is not currently available due to the City’s formation in 2007. The chart below should be completed as the information becomes available. Below is a chart of main industries based on data from the United States Census Bureau:

**Table 2
Main Industries Based on Census Data**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	Not currently available	Not currently available
Retail Trade	Not currently available	Not currently available
Information	Not currently available	Not currently available
Real Estate, Rental, Leasing	Not currently available	Not currently available
Professional, Scientific and Technical services	Not currently available	Not currently available
Administrative and Support and Waste Management and Remediation Service	Not currently available	Not currently available



Industry Description	Number of Establishments	Number of Employees
Educational Services	Not currently available	Not currently available
Health Care and Social Assistance	Not currently available	Not currently available
Accommodation and Food Services	Not currently available	Not currently available
Other Services	Not currently available	Not currently available

Information on the overall Fulton County Economy can be found in the County Profile section of the Fulton County 2016 Multijurisdictional Hazard Mitigation Plan. Although none of the US Census information below is available for the City of Chattahoochee Hills, anecdotal information about the City’s population and information from the City’s Comprehensive Plan survey may explain how the City differs from Fulton County economically.

**Table 3
Previous Statistics from 2010 Comprehensive Plan**

Employment by Industry	1980	1990	2000
Total Employed Civilian Population	258,911	320,149	392,627
Agriculture, Forestry Fishing, hunting and mining	2,167	3,691	1,057
Construction	12,998	16,214	20,789
Manufacturing	35,400	32,351	32,951
Wholesale trade	13,674	19,114	15,369
Retail Trade	41,804	51,432	42,415
Transportation Warehousing and utilities	27,633	33,518	23,027
Information	NA	NA	24,461
Finance , Insurance and Real Estate	21,775	33,651	38,440
Professional, Scientific, management, administrative, and waste management services	15,016	23,490	66,113
Educational, Health and Social Services	39,484	45,125	59,162
Arts, entertainment, recreation, accommodation and food services.	18,343	4,375	36,424



Employment by Industry	1980	1990	2000
Other services	14,578	41,522	17,542
Public Administration	16,039	15,666	14,877

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

Table 4
Single-Family New House Construction Building Permits

Year	Permits
2008	0
2009	2
2010	4
2011	9
2012	12
2013	26
2014	8

Infrastructure

Chattahoochee Hills has a Police Department with a Chief of Police and seven sworn full time sworn officers. In addition to the Police Department, the City also has its own Fire and Rescue, which includes an Administration division, Fire Operations and Fire Prevention and Education. The school system within City limits consists of the following items listed in Table 5:

Table 5
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Private	57
Kindergarten to 12 th grade	N/A	0
College, undergraduate	N/A	0
Graduate, professional school	N/A	0

Land Usage

Chattahoochee Hills has an area of just over 32,000 acres. It is the incorporated part of a region called "Chattahoochee Hill Country", an area encompassing approximately 60,000 acres southwest of Atlanta, bordered on the northwest side by the Chattahoochee River. Chattahoochee Hills is still relatively undeveloped, and most of its rural character remains



unchanged. Table 6 below lists the land use categories according to information in the 2010 Comprehensive Plan and Community Assessment.

Table 6
Land Use within City Limits (rounded)

Land Use Category	Acres	Percentage of City
Residential	2296	6%
Commercial	17	Less than 1%
Industrial	0	0%
Public/Institutional	28	Less than 1%
Transportation/Communication/Utilities	6060	16%
Park/Recreation/Conservation	1958	5%
Agriculture/Forestry	27586	71%
Undeveloped/Vacant	138	Less than 1%
Mixed-Use	545	1%
Total	38628	100%

Figure 1
Location of Community Facilities

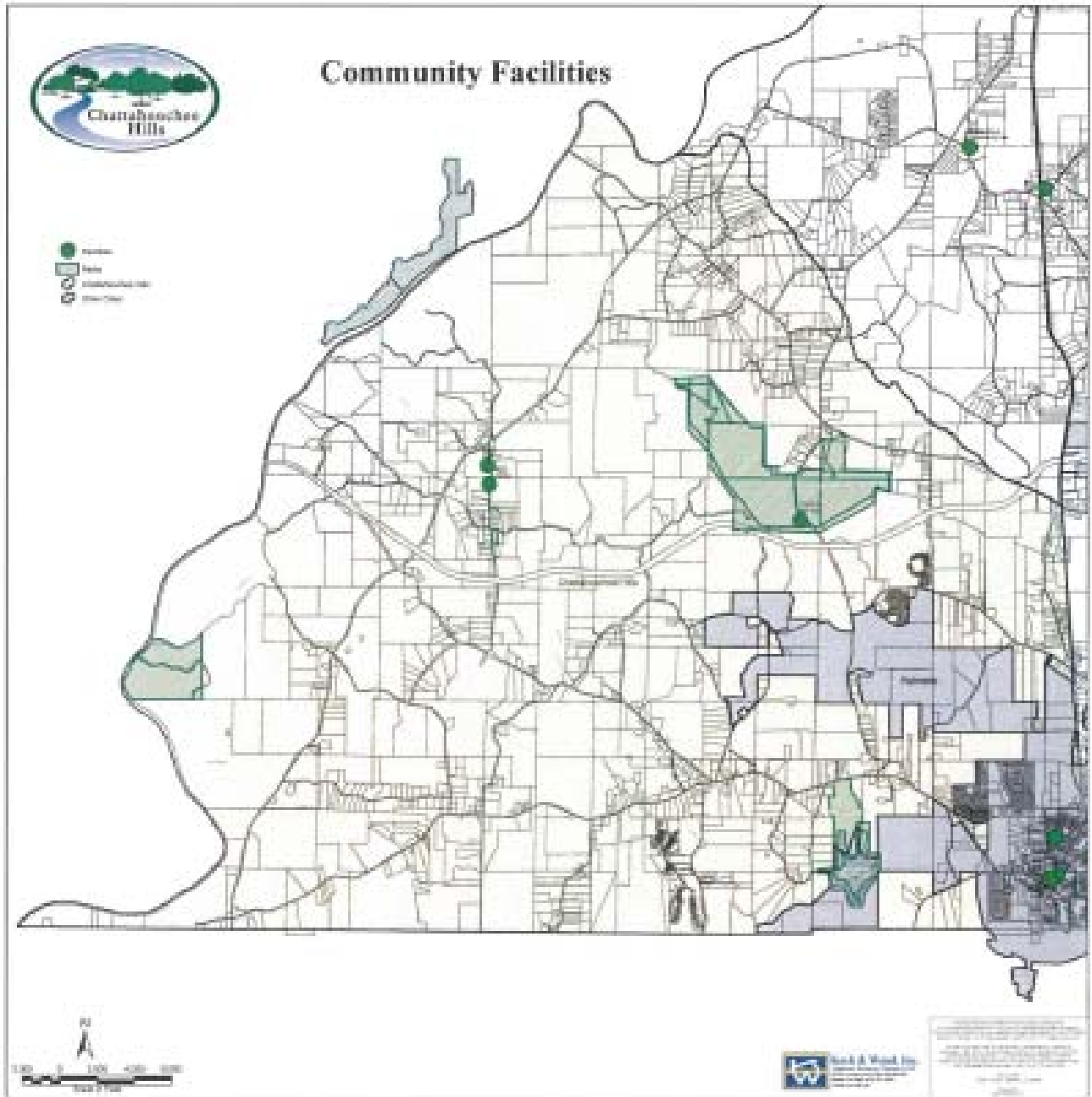




Figure 2
100 Year Flood Plain

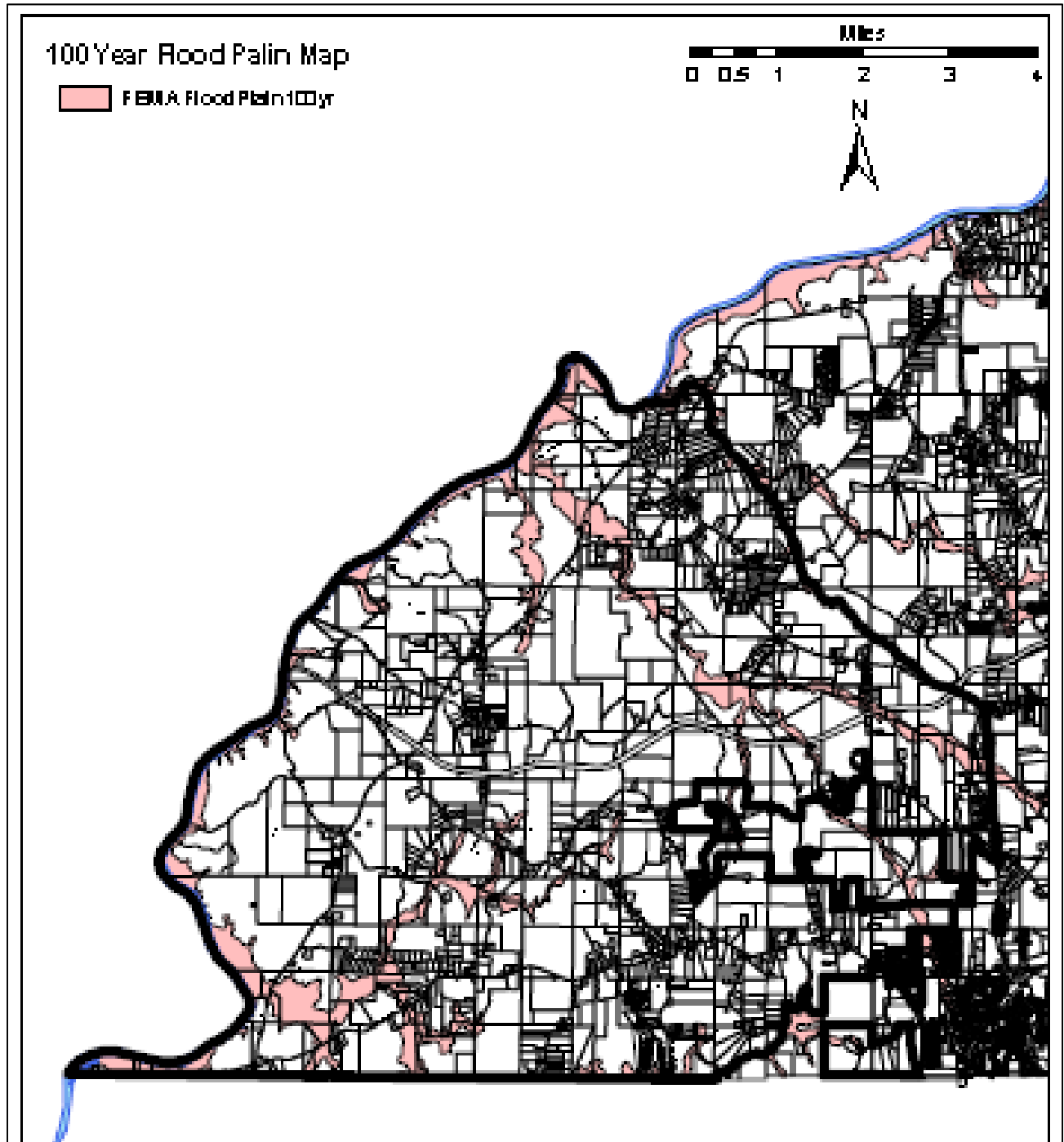


Figure 3
Wetlands Map

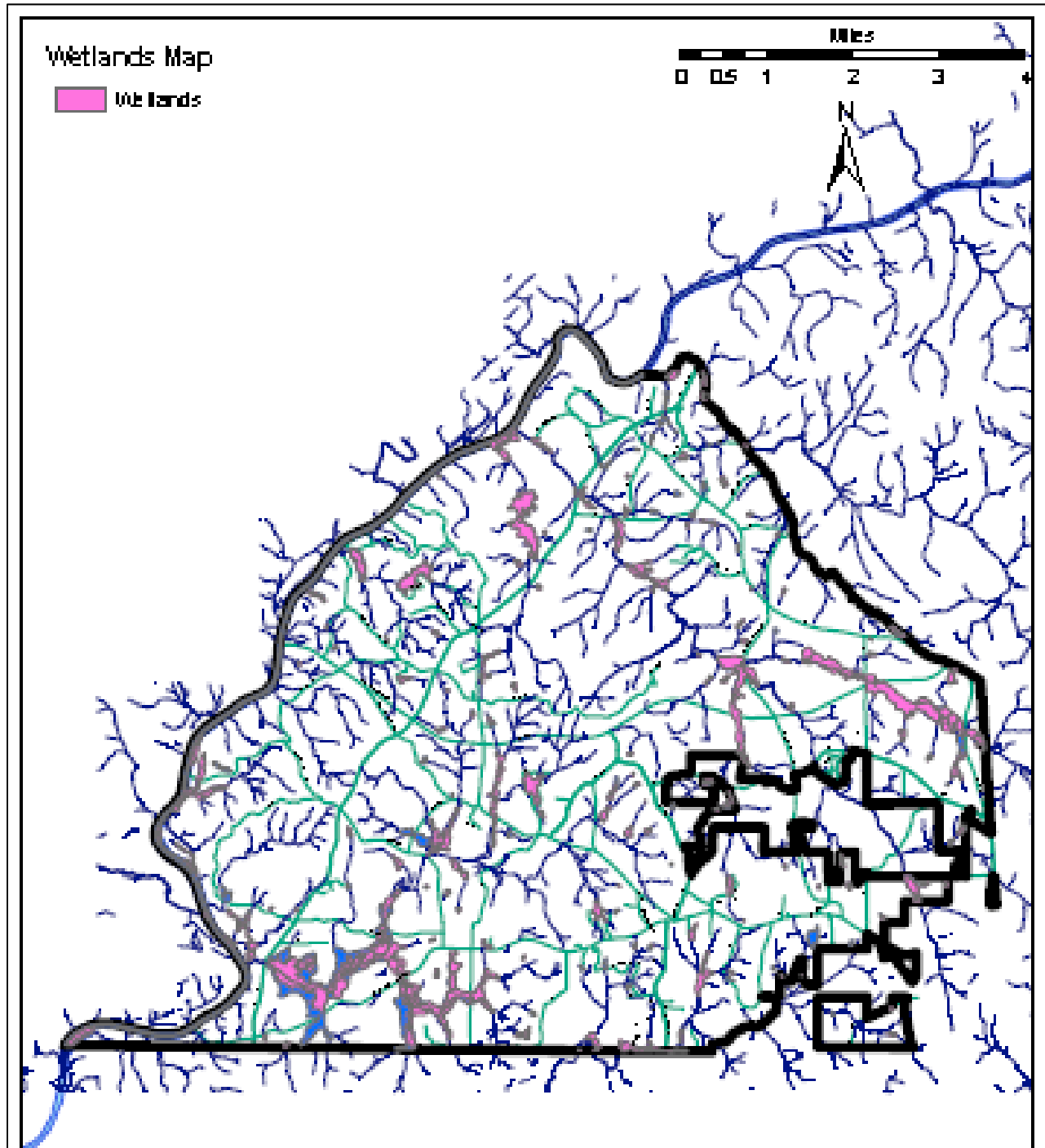
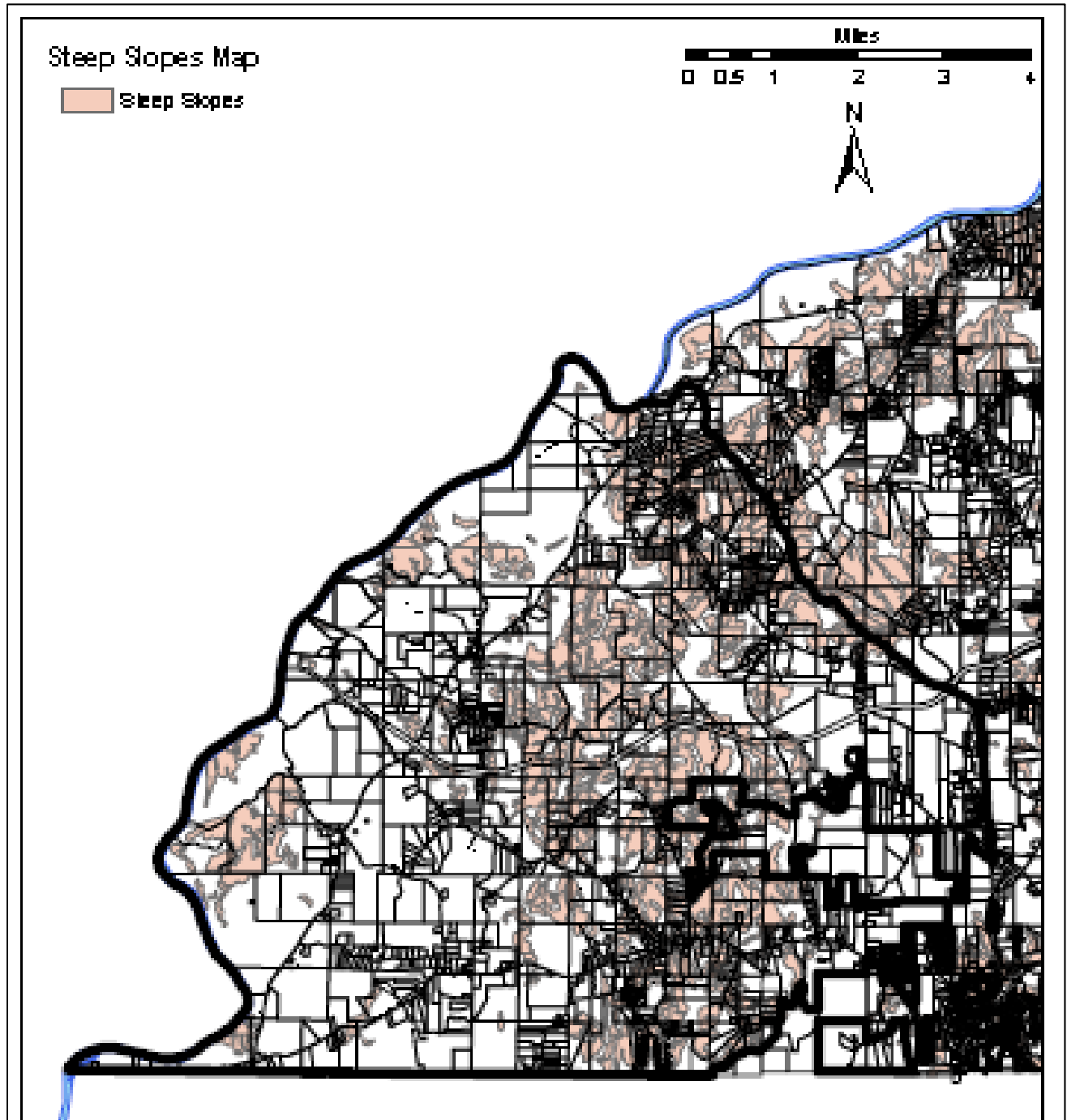


Figure 4
Steep Slopes Map





Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.

Table 7
Recent Development – 2011 to Present

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
Serenbe Phase 3	Residential and mixed-use	300 lots	Atlanta-Newnan Rd.	High density development; wildland interface	50% complete
Serenbe Phase 1 & 2	Residential and mixed-use	200 lots	Atlanta-Newnan Rd.	High density development; wildland interface	100% completed
Bear Creek	residential	124 lots	Wilkerson Mill Rd.	Stormwater, wildland interface	suspended
Estates of Cedar Grove	residential	35 lots	Cedar Grove Rd.	Stormwater; wildland interface	suspended
Friendship Village	residential	200 lots	Cedar Grove Rd.	Stormwater; wildland interface	suspended
Rocky's Hamlet	Residential and mixed-use	200 lots	Campbellton-Redwine Rd.	Stormwater; wildland interface	Planning stage
Heatherwood	Residential	59 lots	Cedar Grove Rd.	Stormwater; wildland interface	Platted...no residential construction at present
Known or Anticipated Development in the Next Five (5) Years					
To be determined					

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.



**Table 8
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	Comm Dev	Comprehensive Plan
Capital Improvements Plan	Not at this time			
Floodplain Management / Basin Plan	Not at this time			
Stormwater Management Plan	Not at this time			
Open Space Plan	Yes	Local	Comm Dev	Comprehensive Plan
Stream Corridor Management Plan	Not at this time			
Watershed Management or Protection Plan	Not at this time			
Economic Development Plan	Not at this time			
Comprehensive Emergency Management Plan	Yes	Local	EMA/Fire	
Emergency Operation Plan	Not at this time			
Post-Disaster Recovery Plan	Not at this time			
Transportation Plan	Not at this time			South Fulton C.T.P.
Strategic Recovery Planning Report	Not at this time			
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local		City Code Chapt. 9
Zoning Ordinance	Yes	Local	Comm Dev	Chapt. 20, 05/05/2015
Subdivision Ordinance	Yes	Local	Comm Dev	Chapt. 20, 05/05/2015
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local		
NFIP: Cumulative Substantial Damages	Not at this time			



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
NFIP: Freeboard	Yes	State, Local		State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Growth Management Ordinances			
Site Plan Review Requirements	Site Plan Review Requirements	Yes		
Storm water Management Ordinance	Stormwater Management Ordinance	Yes	Local/State	Comm Dev
Municipal Separate Storm Sewer System (MS4)	Municipal Separate Storm Sewer System (MS4)	No		
Natural Hazard Ordinance	Natural Hazard Ordinance			
Post-Disaster Recovery Ordinance	Post-Disaster Recovery Ordinance			
Real Estate Disclosure Requirement	Real Estate Disclosure Requirement	Yes	State	
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Chattahoochee Hills.

**Table 9
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	
Mitigation Planning Committee	No	



Resources	Is This In Place?	Department/ Agency/Position
Environmental Board/Commission	No	
Open Space Board/Committee	No	
Economic Development Commission/Committee	No	
Maintenance Programs to Reduce Risk	Yes	Public Works Dept.
Mutual Aid Agreements		Fire, Police
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Community Development
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	By Contract, Building Official
Planners or engineers with an understanding of natural hazards	Yes	
NFIP Floodplain Administrator	Yes*	
Surveyor(s)	No	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	
Scientist familiar with natural hazards	No	
Emergency Manager	Yes	
Grant Writer(s)	Yes	City Manager, Fire Chief, Parks Commission
Staff with expertise or training in benefit/cost analysis	Yes	
Professionals trained in conducting damage assessments	No	

*If you participate in the NFIP, then you have a Floodplain Administrator.

Fiscal Capability

The table below summarizes financial resources available to Chattahoochee Hills.

**Table 10
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	No
Authority to levy taxes for specific purposes	Yes



Financial Resources	Accessible or Eligible to Use
User fees for water, sewer, gas or electric service	No
Impact Fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state funding programs	LMIG, RTP
Open space acquisition funding programs	
Other	Yes

Community Classifications

The table below summarizes classifications for community program available to Chattahoochee Hills.

**Table 11
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	No		
Building Code Effectiveness Grading Schedule (BCEGS)	No		
Public Protection (ISO Fire Protection Classes 1 to 10)	TBD	PCR 10	12/2007
Storm Ready	No		
Firewise	No		
Disaster/Safety Programs in/for Schools	TBD		
Organizations with Mitigation Focus (advocacy group, non-government)	No		
Public Education Program/Outreach (through website, social media)	TBD		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



Hazard Mitigation Capability

The table below summarizes a self-assessment of Chattahoochee Hills’s current hazard mitigation capability.

**Table 12
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability	X		
Community Political Capability	X		
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities.		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Mike Morton, City Planner

The City of Chattahoochee Hills is currently an active member of the NFIP, and is believed to be in good standing with no known outstanding compliance issues. At the time of data collection, it was undetermined when their last Community Assistance Visits (CAV) took place. There is no CAV on record since constitution of City in 2007.

Loss History and Mitigation

Chattahoochee Hills does not currently maintain a list of properties that have been flood damaged; however, there are none to date. To date no property owners are known to have expressed an interest in the mitigation process.

Planning and Regulatory Capabilities

Chattahoochee Hills does use local ordinance, plans and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. Chattahoochee Hills performs permit review, inspection of properties under development, record keeping, and correlation with GIS.

Actions to Strengthen the Program



During the data collection process staff indicated there was a need to finalize development of a comprehensive floodplain management program with funding for implementation/administration. Personnel also expressed the desire for additional training and support of the program.

Community Rating System

Chattahoochee Hills does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

Table 13
Local Hazard Event History 2009–2015

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
September 2009	Flooding	Yes	Closure of South Fulton Pkwy/Chattahoochee River bridge, 2009 flooding. Damage to South Fulton Pkwy/Chattahoochee River bridge and Garrett's Ferry bridge
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.
 - Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
 - Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a month.
 - Property: More than 50 percent of the property located in the proximity of the City is severely damaged.
- Level II – Critical
 - Personnel: Permanent disability, severe injury or illness.
 - Public: Permanent disability, severe injury or illness.



- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process Appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the



respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 14
Risk Assessment per the Mitigation Planning Committee**

Chattahoochee Hills Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	L	L	L	L	12
Tornadoes	L	L	L	P	11
Winter Storm	P	P	P	L	9
Drought	P	P	P	P	8
Flood	U	P	P	L	8
Wildfire/Urban Interface	P	P	P	P	8
Heat Wave	P	P	P	P	8
Earthquake	U	U	U	P	5
Tropical System	U	U	U	U	4
Dam Failure	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.73	1.82	1.82	2	

- H = Highly Likely (4 points)
- L = Likely (3 points)
- P = Possible (2 points)
- U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

It is worth noting that City Hall serves as the primary location for an emergency operations center (EOC); however, planning to fully retrofit this 1960s school facility to the level of “full functional” EOC or disaster shelter has not been enacted. Funding for these improvements is the greatest hurdle. The City’s single fire station can/does serve as an EOC and shelter (since it has generator power and communications), but this facility lacks space.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 15
Status of Mitigation Actions**

Jurisdiction	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
Chattahoochee Hills	Develop Stormwater Plan	Planning/Dev	No Progress	4. 0% complete 5. Lack of trained staff and funding	Include in 2016 HMP	Identify as 2016 goal to admin team and planning/dev dept. Develop Stormwater Plan
Chattahoochee Hills	Harden/retrofit City hall	City Manager and Public Works	In Progress	2. Generator acquired and partial cost study done Surplus/donation of equipment	Include in 2016 HMP	Identify as 2016 goal and establish time-line. Harden/retrofit City hall.
Chattahoochee Hills	Improve storm water run-off on caps ferry	Public Works	No Progress	2. 0% complete Lack of trained staff and funding	Include in 2016 HMP	Develop plan utilizing outside contractor/advisor during 2016. Improve storm water run-off on caps ferry.
Chattahoochee Hills	Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator	Fire Chief	In Progress	2. Generator acquired Surplus/donation of equipment	Include in 2016 HMP	Identify as 2016 goal and establish funding during fy2016 budget along with project time-line. Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator.
Chattahoochee Hills	Acquire abandoned subdivisions bear creek and arbor reserve	City Manager, Planning Dir	No Progress	6. 0% complete No plan established	Discontinue	Acquire abandoned subdivisions bear creek and arbor reserve.



Potential Hazard Mitigation Initiatives for the Plan

Chattahoochee Hills identified additional mitigation initiatives they would like to potentially pursue in the future. Table 16 identifies the municipality's potential hazard mitigation actions.

**Table 16
Potential Mitigation Actions**

Mitigation Action	Lead Agency	Comments and Details
<u>Proposed:</u> Develop second fire station with ladder-truck	Fire Dept.	Pursue acquisition of AT&T (empty) tower facility; secure local contributions for renovation; plan fy2016 funding for apparatus and station equipment purchase
<u>Proposed:</u> Construction of permanent public works facilities (shop) for equipment repair/storage and surplus of perishable road maintenance materials	City Manager, Public Works	Identify type/cost of metal structure; plan fy2016-2017 funding for purchase and installation
<u>Proposed:</u> Replacement of Garrett's ferry bridge	City Manager, Public Works	Engineering study already completed; research federal and state funding options to initiate replacement during 2016
<u>Proposed:</u> Expand EMA program and community support resources	Fire Chief/EMA Dir	Publish response plan to citizens; acquire/implement enhanced early warning systems; acquire "on-hand" materials for shelter and/or incident response
<u>Proposed:</u> Research/publish mitigation "opportunities" for citizen individual/group commitment	EMA Director	Identify/publish information about property insurance savings to property/home/business owners to encourage individual/group participation in mitigation and support for public safety services (needs)



Proposed Hazard Mitigation Initiatives for the Plan

Chattahoochee Hills identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 17 on the following page identifies the municipality's updated local mitigation strategy.



**Table 17
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
65.001	Develop storm water plan	Chattahoochee Hills	Planning/Development	Severe Weather; Tropical Systems; Winter Storms	4.5 4.4 4.15 4.8	Prevention	\$10,000	HMA, Local	2016-2021	9
Comments:										
65.002	Harden/retrofit City hall	Chattahoochee Hills	City Manager/Public Works	Severe Weather; Tropical Systems; Tornadoes; Winter Storms	2.10 6.4	Property Protection	\$75,000	HMA, EOC, Local	2016-2021	9
Comments: Generator acquired and partial cost study done. Surplus/donation of equipment.										
65.003	Improve storm water run-off on caps ferry	Chattahoochee Hills	Public Works	Severe Weather; Flooding; Tropical Systems	6.1	Structural Projects	\$10,000	HMA, Local	2016-2021	15
Comments: Developing plan utilizing outside contractor/advisor during 2016. Due to the proximity to the Chattahoochee River, the creek backs up and floods the road which, in turn, cuts off access to three counties.										
65.004	Harden fire station with impact resistant glass, garage doors and roof; upgrade station generator.	Chattahoochee Hills	Fire	Severe Weather; Tropical Systems; Winter Storms; Tornadoes	2.10 6.5	Property Protection	\$200,000	HMA, SCG, Local	2016-2021	9
Comments: Generator acquired. Surplus/donation of equipment.										



CHATTAHOOCHEE HILLS MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
65.005	Replacement of Garrett's ferry bridge.	Chattahoochee Hills	Public Works	Severe Storm; Hurricane; Tornadoes	6.4	Structural Project	\$200,000	Local, others not currently identified	2016-2021	15
Comments: Engineering study already completed; research federal and state funding options to initiate replacement during 2016										
65.006	Research/publish mitigation "opportunities" for citizen individual/group commitment.	Chattahoochee Hills	Planning	All hazards	7.1 7.2 7.3 7.4 7.7	Public Education and Awareness; Property Protection; Emergency Services	\$2,500	Local	2016-2021	6
Comments: Identify/publish information about property insurance savings to property/home/business owners to encourage individual/group participation in mitigation and support for public safety services (needs).										



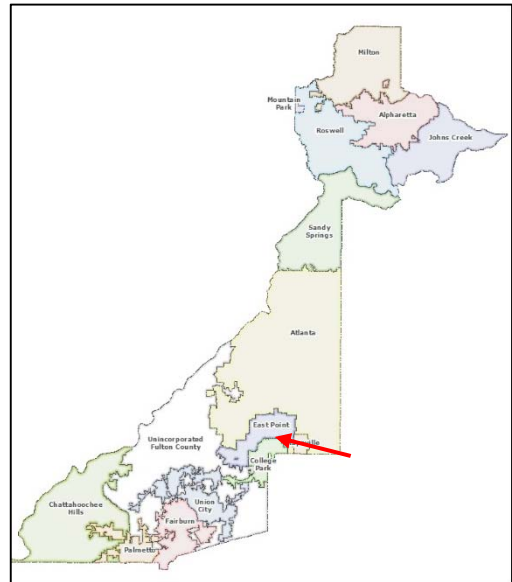
Annex 4

CITY OF COLLEGE PARK, GEORGIA MITIGATION ACTION PLAN

Geography/History

College Park is located on the border of Fulton and Clayton counties. The City has a total area of 10.1 square miles, of which 0.019 square miles is water. The community that would become College Park was founded as Atlantic City in 1890 as a depot on the Atlanta and West Point Railroad. The town was renamed Manchester when it was incorporated as a City in 1891. It was renamed again as the City of College Park in 1896.

The City has 853 properties listed on the National Register of Historic Places by the United States Department of the Interior. The City's name came from being the home of Cox College and Georgia Military Academy.



Significant Characteristics

The College Park Woman's Club, one of the oldest in Georgia, is located in Camellia Hall on Main Street.

College Park has three City recreation centers (the Wayman & Bessie Brady Recreation Center, the Hugh C. Conley Recreation Center, and the Godby Road Recreation Center). The City also has four parks: Barrett Park, which is located along Rugby Avenue; Brenningham Park, which surrounds the Brady Center; Jamestown Park; and Richard D. Zupp Park, which was named in honor of a well-respected College Park resident.

College Park is home to the College Park Municipal Golf Course, which was established in 1929. The course is nine holes and is built on very hilly terrain.

Population and Demographics

The U.S. census reported in 2000, there were 20,382 people, 7,810 households, and 4,600 families residing in the City. The population density was 2,099.8 people per square mile. There were 8,351 housing units at an average density of 860.3 per square mile. The racial makeup of the City was 12.39% White, 81.81% African American, 0.17% Native American, 0.61% Asian,



3.33% from other races, and 1.69% from two or more races. Hispanics or Latino of any race was 6.86% of the population.

Table 1
City of College Park Population Since 1990

Year	1990	2000	2010	2014
Population	19,973	20,288	13,942	14,598 est.

Economy

The median income for a household in the City is \$26,702, while the median income for a family is \$34,436. The per capita income for the City is \$17,180.

Below is a chart of main employment industries based on data from the College Park Comprehensive Plan 2011-2031, when 13,942 was the population of the City of College Park:

Table 2
Employment Industries Based on Data from College Park Comprehensive Plan 2011-2031

Industry Description	Number of Establishments	Number of Employees
Agriculture, Forestry and Mining	1	10
Construction	38	875
Manufacturing	22	279
Transportation, Communication and Utilities	210	2,078
Wholesale Trade	219	226
Finance, Insurance and Real Estate	256	2557
Services	425	7,118
Government	0	579
Other	37	94

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	9
2002	37
2003	77
2004	33



Year	Permits
2005	95
2006	87
2007	18
2008	5
2009	1
2010	0
2011	7
2012	4
2013	1
2014	3

Infrastructure

College Park's City Hall is 8 miles southwest of downtown Atlanta. College Park has several interstates and highways that pass through the City. The western part of Hartsfield–Jackson Airport, including its domestic terminal, occupies the eastern side of the City.

College Park has its own Police Department as well as its own Fire Department. The College Park school system consists of the following items listed in Table 4:

Table 4
College Park School Infrastructure

School	Type	Enrollment
Nursery School, preschool	Public	364
Kindergarten to 12 th grade	Public	11,818
College, undergraduate	N/A	0
Graduate, professional school	N/A	0

Land Usage

College Park is a total of 10.1 square miles with all of that being land. There is not any water ways located within the City. Below is a land usages map for College Park:



Figure 1
Land Use Map

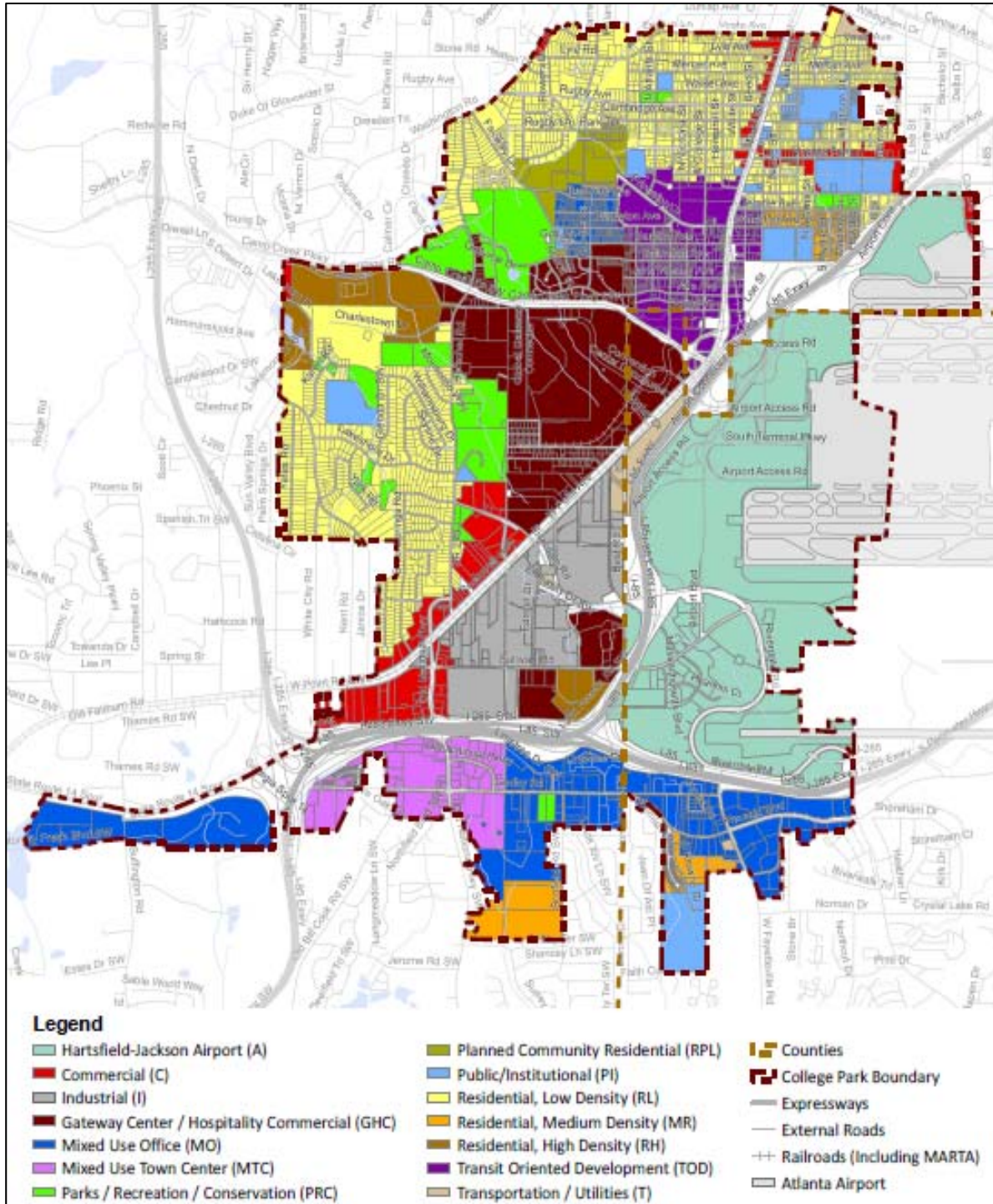




Figure 2
Zoning Map

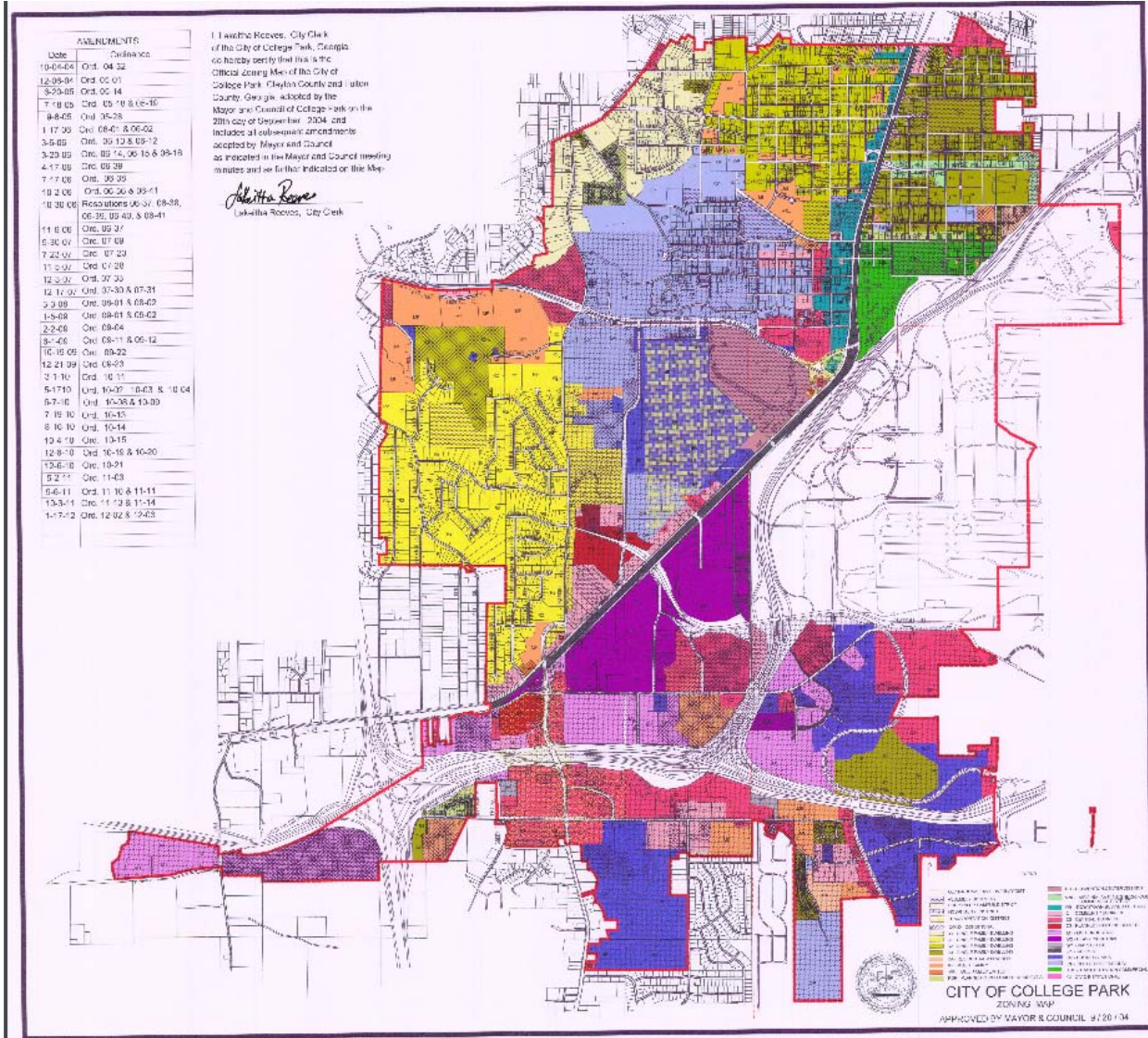
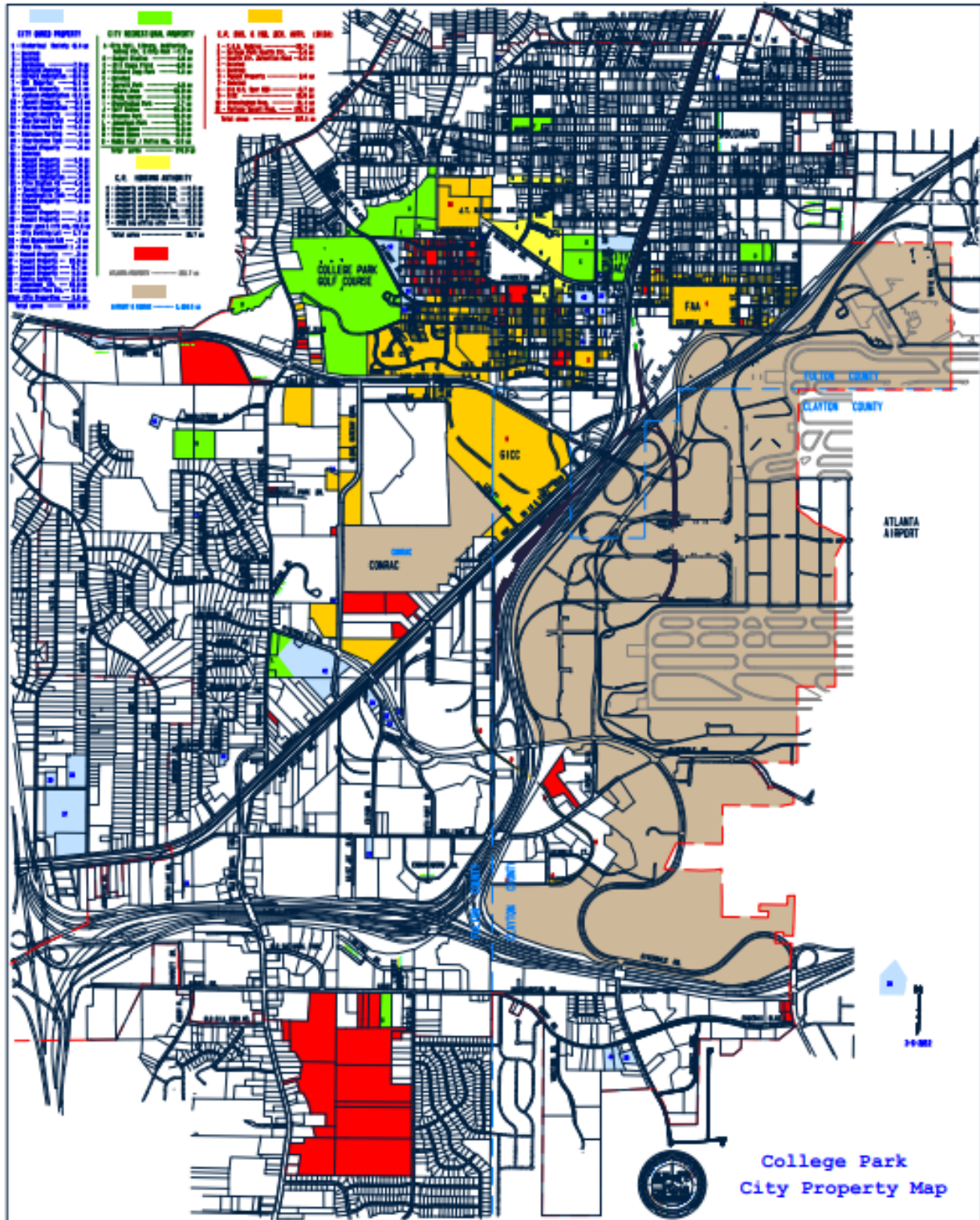


Figure 3
City Property Map





Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 5
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes, 10/31/11	Local but State DCA reviewed	The Collaborative Firm	Comprehensive Plan
Capital Improvements Plan	Yes, 7/20/15	Local	Finance	5 Year CIP
Floodplain Management/Basin Plan	Yes, 9/18/13	Federal Emergency Management Agency (FEMA)	Engineering	City Code, Chapter 5
Stormwater Management Plan	Yes, 6/21/14	GEPD	Public Works	City Code, Chapter 5
Open Space Plan	Yes, 7/1/08	Local	Public works	Greenspace
Stream Corridor Management Plan	No			
Watershed Management or Protection Plan	Yes, 10/31/11	Local	Public works	Groundwater recharge
Economic Development Plan	Yes	Local	Economic Development	College Park Business and Industrial Development Authority (BIDA)
Comprehensive Emergency Management Plan	Yes, 7/1/12	Local	Police	COOP
Emergency Operation Plan	Yes, 7/1/12	Local	Police	COOP
Post-Disaster Recovery Plan	No			
Transportation Plan	Yes, 9/1/13	Fulton County	Public Works	South Fulton Comprehensive Transportation Plan
Strategic Recovery Planning	No			



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Report				
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local	Building Inspection	City Code, Chapter 5
Zoning Ordinance	Yes	Local	The Collaborative Firm	City Code, Appendix A
Subdivision Ordinance	Yes	Local	Engineering	City Code, Chapter 17
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Engineering	City Code, Chapter 5
NFIP: Cumulative Substantial Damages	Yes	Local	Engineering	City Code, Chapter 5
NFIP: Freeboard	Yes	State, Local	Engineering	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Not at this time			
Site Plan Review Requirements	Yes	Local	Building Inspection	City Code, Chapter 5
Storm water Management Ordinance	Yes	Local	Engineering	City Code, Chapter 5
Municipal Separate Storm Sewer System (MS4)	Yes	Local, State	Public Works	City Code, Chapter 5
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Not at this time	State?		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to College Park.

**Table 6
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	The Collaborative Firm
Mitigation Planning Committee	Not at this time	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Yes	College Park Business and Industrial Development Authority (BIDA)/ 4
Maintenance Programs to Reduce Risk	Yes	Public Works Department/ Storm Water Utility Division
Mutual Aid Agreements	Yes	Fire
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	The Collaborative Firm and two Engineers
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	One Professional Engineer (PE) and one engineer
Planners or engineers with an understanding of natural hazards		The Collaborative Firm and two Engineers
NFIP Floodplain Administrator	Yes*	Engineering/ Engineering director
Surveyor(s)	Not at this time	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Engineering/GIS-CAD Technician
Scientist familiar with natural hazards	No Not at this time	
Emergency Manager	Yes	Police/ Lt. Bruce Braxton
Grant Writer(s)	Yes	City Manager/City engineer
Staff with expertise or training in benefit/cost	Yes	Engineering/Engineering Director



Resources	Is This In Place?	Department/Agency/Position
analysis		
Professionals trained in conducting damage assessments	Yes	Engineering/Engineering Director

**If you participate in the NFIP, then you have a Floodplain Administrator.*

Fiscal Capability

The table below summarizes financial resources available to College Park.

**Table 7
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	
Capital improvements project funding	
Authority to levy taxes for specific purposes	
User fees for water, sewer, gas or electric service	
Impact Fees for homebuyers or developers of new development/homes	
Stormwater utility fee	
Incur debt through general obligation bonds	
Incur debt through special tax bonds	
Incur debt through private activity bonds	
Withhold public expenditures in hazard-prone areas	
Other federal or state funding programs	
Open space acquisition funding programs	
Other	

Community Classifications

The table below summarizes classifications for community program available to College Park.

**Table 8
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Yes	Class 6	October 1, 2002



Program	Do You Have This?	Classification	Date Classified
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Class 4	July 1, 2014
Storm Ready	Not at this time		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Yes	Fulton County Board of Education	
Organizations with Mitigation Focus (advocacy group, non-government)	No Not at this time		
Public Education Program/Outreach (through website, social media)	Yes	Reverse 911	
Public-Private Partnerships	No Not at this time		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The following table summarizes a self-assessment of College Park’s current hazard mitigation capability.

**Table 9
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (if limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability			X
Fiscal Capability			X
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities			X



NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: William Moore

The City of College Park is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Their last Community Assistance Visits (CAV) was completed in 2012.

Loss History and Mitigation

College Park does have a system in place to maintain a list of properties that have been flood damaged. Currently there are six apartment buildings that have been flooded. Acquisition funding was not made available so the owners repaired the damage and returned to renting. All six remaining property owners have been interested in acquisition but none are currently in the process.

Planning and Regulatory Capabilities

College Park does use local ordinance, plans and programs to support floodplain management. The City's floodplain management regulations and ordinances meet the minimum requirements set forth by both FEMA and the State of Georgia. The City performs permit review, inspections, damage assessment, record keeping, GIS, education, and outreach. Some of the outreach activities include the distribution of NFIP literature in the local library and sending annual letters to floodplain property owners about the availability of flood insurance.

Actions to Strengthen the Program

During the data collection process staff indicated that additional support was needed to continue running an effective floodplain program in College Park. The floodplain administrator has gotten training at the Association of State Floodplain Managers Association and would be willing to be involved with Fulton County training.

Community Rating System

College Park does currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.



Table 10
Local Hazard Event History 2010 – 2015

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages
January 1, 2015	Judy's Lake drain pipe broke	No	Life safety concern. Private road in East Point was destabilized but was repaired. Temporary inconvenience for apartment residents.

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.



- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

☐ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 11
Risk Assessment per the Mitigation Planning Committee**

Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	U	L	H	H	12
Tornadoes	U	P	P	H	9



Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Flood	U	U	P	H	8
Heat Wave	U	U	P	H	8
Winter Storm	U	U	U	H	7
Wildfire/Urban Interface	U	U	P	L	7
Tropical System	U	U	P	L	7
Sinkhole	U	U	L	L	7
Drought	U	U	U	P	5
Dam Failure	U	U	U	L	5
Earthquake	U	U	U	U	4
Average Risk by Level	1	1.27	1.91	3.18	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 12
Status of Mitigation Actions**

<u>Project Number</u>	<u>2011 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
15.0001 [†]	Replace 3 box culvert on Camp Creek Parkway with a more open design	GDOT	No Progress	0% GDOT lack of concern for storm water	Include in 2016 HMP	Seek Federal aid.
15.0002	Storm sewer improvement project on Cambridge, Walker, Mercer, Lyle, and Vesta Avenues	College Park	In Progress	Walker Avenue and Mercer Avenue effectively complete. NA Storm Water Utility Fund	Include in 2016 HMP	Cambridge, Lyle, and Vesta to remain.
15.0003 [†]	Increase flow-through capacity of box culvert on Park Terrace	College Park	No Progress	0 % Funding	Include in 2016 HMP	House to the east has been flooded and tenant has health issues.
15.0004 [†]	Increase flow-through capacity of box culvert the intersection of Harris and Rugby Ave.	College Park	No Progress	0 % Funding	Include in 2016 HMP	Rugby Avenue has been topped repeatedly presenting a safety concern.
15.0005	Increase capacity of City-owned detention ponds	College Park	No Progress	0% Funding and political motivation.	Discontinue	NA Construction further upstream is more acceptable.
15.0006	Replace traffic lights with more weather resistant mast arms	College Park	In Progress	1 % NA Power Department	Include in 2016 HMP	Lesley Drive and Herschel Road will probably be next.



COLLEGE PARK MITIGATION ACTION PLAN

<u>Project Number</u>	<u>2011 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
15.0007	Retrofit roof at public works facility on Harvard Rd; install surge protection; install emergency generator	College Park	In Progress	1 % NA General fund	Discontinue	NA Will complete in 6 months.
15.0008	Upgrade culvert on Park Terrace (redundant)	College Park	No Progress	0% Funding	Discontinue	NA Redundant with 15.0003.
15.0009	Retrofit the roof at the Power Department Building; replace generator	College Park Power Department	No Progress	0% Funding	Include in 2016 HMP	Wording is OK.
15.0010	Clean up and make minor modifications to existing detention structures along Fur Creek in Greenspring Subdivision	College Park	No Progress	0% Funding	Discontinue	NA Redundant with 15.0005.
15.0011	Modify Fur Creek structure to regulate flow	College Park	No Progress	0 % Funding	Include in 2016 HMP	Install south of Herschel Park Drive.
15.0012	Modify and enlarge existing detention pond on Hopewell Road	College Park	Choose an item.	0% Funding	Discontinue	NA At Capacity.
15.0013	Construct new detention pond to regulate southwest branch of Fur Creek	College Park	No Progress	0% Funding	Include in 2016 HMP	More cost efficient than 15.0010 or 15.0012.
15.0014	Improve Edison/Sullivan Road drainage through the addition of new storm water piping	College Park	No Progress	0 % Funding	Include in 2016 HMP	See wording in Table 6.3
15.0015	Improve capacity of Janice Drive storm drain	College Park	No Progress	0 % Funding	Include in 2016 HMP	Wording is Ok.



Potential Hazard Mitigation Initiatives for the Plan

College Park identified additional mitigation initiatives they would like to potentially pursue in the future. Table 13 identifies the municipality's potential hazard mitigation actions.

**Table 13
Potential Mitigation Actions**

<u>Mitigation Action</u>	<u>Lead Agency</u>	<u>Comments and Details</u>
Two detention basins were expanded to handle future demand for vacant properties surrounding the Georgia International Convention Center (GICC)	College Park and College Park Business and Development Agency (BIDA)	Two Marriott hotels and one 4-story office building has been completed, a third Marriott Hotel (Renaissance) has started construction and a second office building are in a due diligence period for a second office building.
Fire Station #2 Renovation	College Park	Crew had been living in cramped trailers and equipment had been exposed to the weather. Emergency generator has been added to keep operating.
Fire Station #3 (new and under design)	College Park (using Clayton County SPLOST)	Majority of the Fire Calls are for emergency medical services in the apartment complexes south of Interstate 285, which this station will serve.



Proposed Hazard Mitigation Initiatives for the Plan

College Park identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 14 identifies the municipality's updated local mitigation strategy.

**Table 14
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0001†	Replace 3 box culvert on Camp Creek Parkway with a more open design	East Point	Georgia Department of Transport.	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$200,000	HMA, FMA, Local	2016 - 2021	14
Comments: Flooding of Camp Creek Parkway causes traffic problems in College Park. Long, low slope trash rack would be a more cost effective solution to the problem.										
15.0002	Storm sewer improvement project on, Walker Avenue/ Mercer Avenue	College Park	Public Works	Flooding	6.1	Structural Projects	\$500,000	Local	January 31, 2016	14



COLLEGE PARK MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0002	Storm Sewer improvement project Cambridge Avenue (designed), Lyle/Vesta (not designed).	College Park	Public Works	Flooding	6.1	Structural Projects	\$1,000,000	HMA, Storm Water Utility Fund	2016 - 2021	14
15.0003†	Increase flow-through capacity of box culvert on Park Terrace	College Park	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$100,000	HMA, Local	2016 - 2012	14
Comments: During heavy rains, the flow-through capacity is insufficient causing debris to accumulate and block water flow.										
15.0004†	Increase flow-through capacity of box culvert the intersection of Harris and Rugby Ave.	College Park	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$100,000	HMA, Local	2016 - 2012	14
Comments: During heavy rains, the flow-through capacity is insufficient causing debris to accumulate and block water flow. Trash rack could be built upstream at Lyle Avenue where nearest house is at a higher elevation.										



COLLEGE PARK MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0005	Replace traffic lights with more weather resistant mast arms.	College Park	Power Department	Severe Weather; Tornadoes; Tropical Systems	6.8	Structural Projects	\$150,000 each one replaced at Godby Road, two candidates on Roosevelt Highway	HMA, DOT, Local	2016 – 2021	8
15.0006	Retrofit the roof at the Power Department Building; replace generator.	College Park	Power Department	Severe Weather; Tornadoes; Winter Storm; Tropical Systems	6.4 6.5	Property Protection	\$50,000	HMA, Local	2016 – 2021	10
Comments: This building houses the operations for the City-owned power utility as well as the water and sewer department and the warehouse. The current generator is small and underpowered for current needs. The computer system that is housed at this location runs all of their system data.										
15.0007	Install Fur Creek structure at Herschel Park Drive to regulate flow.	College Park	Public Works	Flooding	6.1	Property Protection	\$100,000	HMA, Local	2016 – 2021	14
15.0008 (refer to 15.0005)	Construct new detention pond to regulate southwest branch of Fur Creek.	College Park	Public Works	Flooding	6.3	Property Protection	\$1,000,000	HMA, Local	2016 – 2021	14



COLLEGE PARK MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
15.0014	Improve Embassy Drive, T. Owen Smith Connector, Best Road, and Sullivan Road stormwater control, by installing trash racks.	College Park	Public Works	Flooding	6.1	Property Protection	\$400,000	HMA, Storm Water Utility Fund	2016 – 2021	14
15.0015	Replace 48" CMP with 7' by 7' box culvert to improve capacity of Janice Drive storm drainage.	College Park	Public Works	Flooding	6.1	Property Protection	\$100,000	HMA, Local	2016 – 2021	14



Annex 5

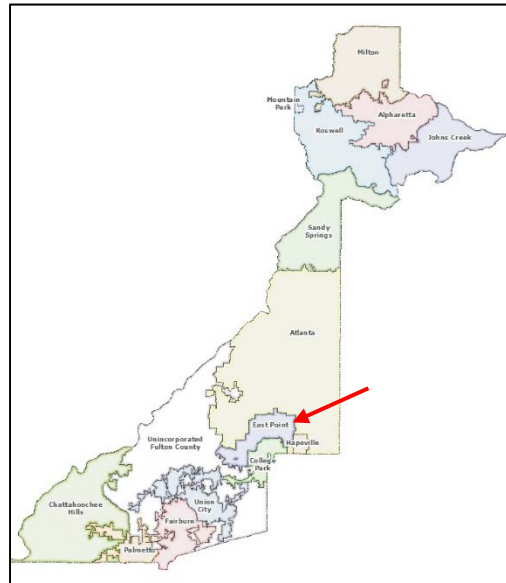
CITY OF EAST POINT, GEORGIA MITIGATION ACTION PLAN

Geography/History

The City of East Point started with only 16 original families in 1870, but grew quickly after it became an inviting place for industry to develop. Soon it boasted the railway, two gristmills, and a government distillery. One of the earliest buildings was the factory of the White Hickory Manufacturing Company, built by B.M. Blount and L.M. Hill.

By 1880 the town had two churches, a common school, steam-gin, sawmill, post office, telegraph office, and its own weekly newspaper. East Point ranked as a grain and cotton-growing center, and with its pleasant climate and proximity to the railway, had also become a popular summer resort.

In 1890, East Point had its first housing boom, when a major portion of property along East Point Avenue was subdivided and developed, opening the way for more homes, more churches, more people and more places of employment. By 1892 Main Street was completed, despite protests from a few early settlers who maintained that one major thoroughfare, Newnan Road, was more than sufficient.



Significant Characteristics

East Point has seven recreation parks; Sumner Park, Sykes Park, Brookdale Park, Grayson Field, Jefferson Park, John Milner Park and Chris Stacks Field.

In 1974, the Dick Lane Velodrome (named after a longtime City Council member) was built. It was inspired by a group of residents and City officials that visited the Munich Olympics. It is located eight miles south of downtown Atlanta. The Dick Lane Velodrome is a banked concrete track for bicycle racing, set in Sumner Park. Dick Lane is the only velodrome in the world with a green space that contains a large oak tree and a creek running through the in-field. The City of East Point owns the velodrome and has a long-term partnership with The East Point Velodrome Association, Inc. (EPVA) to manage the Dick Lane Velodrome. The EPVA conducts Youth Service Activities for children at no cost to the City or state. These activities include the highly acclaimed Bicycle Little League, summer camps, and bicycle safety clinics.



Population and Demographics

The U.S. census reported that in 2010, there were 33,712 people, 13,333 households, and 7,735 families residing in the City. There were 17,225 housing units at an average density of 1,137.0 per square mile. The racial makeup of the City was 76.2% African American, 17.3% White, 0.9% Native American, 1.1% Asian, 0.1% Pacific Islander, 3.40% from other races, and 1.42% from two or more races. Hispanic and Latino of any race were 7.57% of the population. Since 2000, the population of East Point has decreased, as many families have moved out of the area and relocated. Several businesses which flourished in East Point in the 1960's and 1970's have since closed, including the City's once large group of local movie theatres.

There were 13,333 households there in 2010, out of which 33.3% had children under the age of 18 living with them, 25.2% were married couples living together, 26.1% had a female householder with no husband present, and 42.0% were non-families. 33.5% of all households were made up of individuals and 17.6% had someone living alone who was 65 years of age or older. The average household size was 2.5 and the average family size was 3.25.

In the City the population was spread out with 29.3% under the age of 18, 11.9% from 18 to 24, 31.3% from 25 to 44, 19.5% from 45 to 64, and 7.9% who were 65 years of age or older. The median age was 30 years. For every 100 females, there were 89.5 males. For every 100 females age 18 and over, there were 84.8 males.

Table 1
City of East Point Population Since 1990

Year	1990	2000	2010	2014
Population	34,402	39,595	33,712	35,488 est.

Economy

The median income for a household in the City was \$35, 002, and the median income for a family was \$38,895. Males had a median income of \$27,114 versus \$25,839 for females. The per capita income for the City was \$15,175. About 17.2% of families and 20.7% of the population were below the poverty line, including 30.0% of those under age 18 and 13.6% of those aged 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau 2012:

Table 2
Main Industries Based on Data from 2012

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	30	640
Retail Trade	90	1196
Information	9	207
Real Estate, Rental, Leasing	33	301
Professional, Scientific and Technical services	51	Not Available
Administrative and Support and	30	1910



Industry Description	Number of Establishments	Number of Employees
Waste Management and Remediation Service		
Educational Services	9	206
Health Care and Social Assistance	100	2002
Accommodation and Food Services	72	1504
Other Services	45	772

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

**Table 3
Single-Family New House Construction Building Permits**

Year	Permits
2001	17
2002	17
2003	19
2004	20
2005	585
2006	325
2007	150
2008	44
2009	63
2010	23
2011	19
2012	29
2013	24
2014	9

Infrastructure

East Point is served by its own Police Department, which is a full service police department that consists of patrol units, investigators, and various other support services and personnel to facilitate the needs of the department and community. The East Point Police Department is an accredited member of the Georgia Police Accreditation Coalition (GPAC). The City also has its own Fire Department, which includes an Operations division that handles fire calls and emergency medical calls. In addition to responding to these, the East Point Fire Department has taken an approach to reducing the number of fire fatalities and injuries within the community by



developing a variety of community risk reduction and public education programs. The school system within the City limits consists of the following items listed in Table 4:

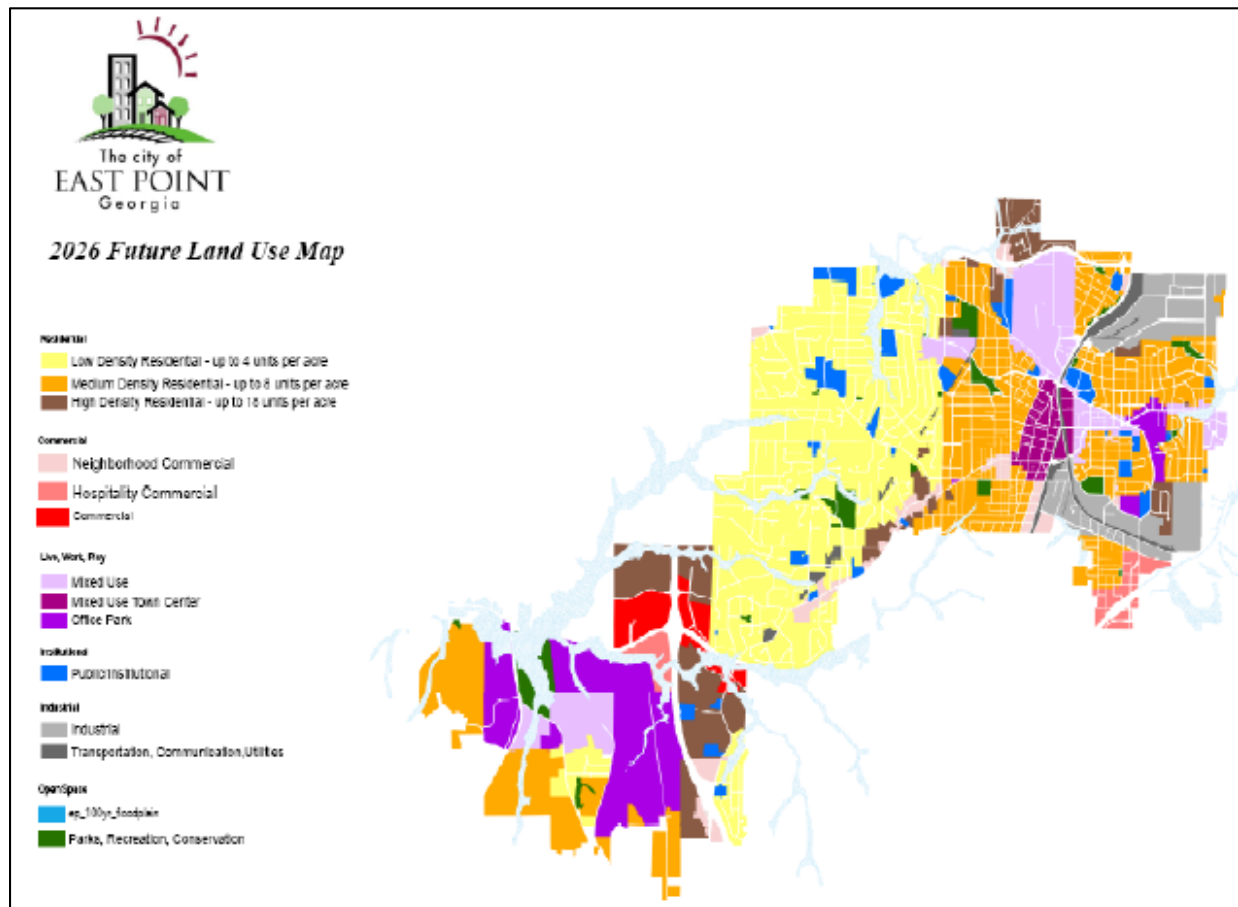
**Table 4
School Infrastructure within City Limits**

School	Type	Enrollment
Nursery School, preschool	Public	315
Kindergarten to 12 th grade	Public	6,797
College, undergraduate	Not identified	Not identified
Graduate, professional school	Not identified	Not identified

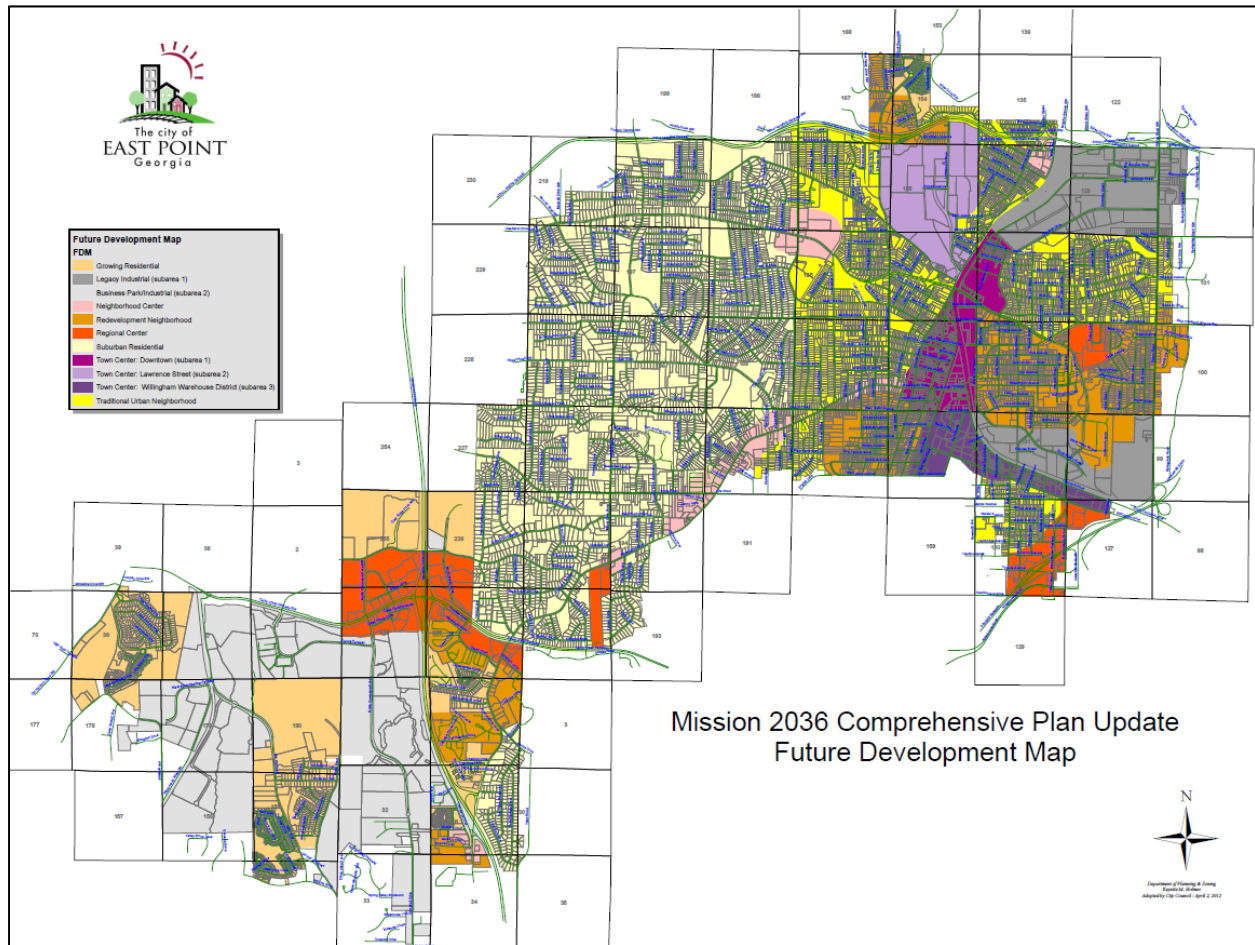
Land Usage

The City is 13.8 square miles with no water ways located within the City limits. The City of East Point is mostly residential with a smaller portion for commercial. Several new developments in both residential and commercial areas are planned. Below are two future land use and development maps projected for 2036.

**Figure 1
Future Land Use**



**Figure 2
Future Development**



Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.

**Table 5
Future Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Fire Station #4	Commercial	2	2222 Ben Hill Rd	No	Planning
Government Center	Commercial	1	2757 East Point St	No	Planning



Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Not at this time			
Capital Improvements Plan	Not at this time			
Floodplain Management / Basin Plan	Yes	Local	Public Works	Part 10, Chapter 5 East Point Code of Ordinances
Stormwater Management Plan	Yes	Local	Public Works	Part 10, Chapter 11 East Point Code of Ordinances
Open Space Plan	Yes	Local		Part 10 East Point Code of Ordinances
Stream Corridor Management Plan	Yes	Local	Public Works	Part 10, Chapter 12 East Point Code of Ordinances
Watershed Management or Protection Plan	Yes	Local	Public Works	Part 10, Chapters 10, 11, 12 East Point Code of Ordinances
Economic Development Plan	Not at this time			
Comprehensive Emergency Management Plan	Yes	Local	Fire	Comprehensive Emergency Management Plan
Emergency Operation Plan	Yes	Local	Fire	Comprehensive Emergency Management Plan
Post-Disaster Recovery Plan	Yes	Local	Fire	Comprehensive Emergency Management Plan



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Transportation Plan	Not at this time			
Strategic Recovery Planning Report	Not at this time			
Other Plans:	Not at this time			
Regulatory Capability				
Building Code	Yes	State & Local	Planning & Community Development	DCA Minimum Standards (ICC), Part 10, Chapter 3 East Point Code of Ordinances
Zoning Ordinance	Yes	Local	Planning & Community Development	Part 10, Chapter 2 East Point Code of Ordinances
Subdivision Ordinance	Yes	Local	Planning & Community Development	Part 10, Chapter 4 East Point Code of Ordinances
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local		
NFIP: Cumulative Substantial Damages	Not at this time			
NFIP: Freeboard	Yes	State, Local		
Growth Management Ordinances	Yes	Local	Planning & Community Development	Mission 2036 Comprehensive Plan & Future Development Map
Site Plan Review Requirements	Yes	Local		http://www.eastpointcity.org/index.aspx?NID=236
Storm water Management Ordinance	Not at this time			
Municipal Separate Storm	Not at this			



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Sewer System (MS4)	time			
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to East Point.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning & Community Development
Mitigation Planning Committee	Yes	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Not at this time	
Maintenance Programs to Reduce Risk	Not at this time	
Mutual Aid Agreements	Yes	Atlanta, College Park, Hapeville, Fulton County
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of	Yes	Planning & Community Development,



Resources	Is This In Place?	Department/Agency/Position
land development and land management practices		Public Works, Water & Sewer, East Point Power
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Planning & Community Development, Public Works, Water & Sewer, East Point Power
Planners or engineers with an understanding of natural hazards	Yes	Planning & Community Development, Public Works, Water & Sewer, East Point Power
NFIP Floodplain Administrator	Yes*	Public Works/East Point/Floodplain Administrator
Surveyor(s)	Not at this time	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Not at this time	
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	Fire Department/East Point/Fire Chief
Grant Writer(s)	Yes	Finance/East Point/Grant Writer
Staff with expertise or training in benefit/cost analysis	Not at this time	
Professionals trained in conducting damage assessments	Not at this time	

**If you participate in the NFIP, then you have a Floodplain Administrator.*

Fiscal Capability

The table below summarizes financial resources available to East Point.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Not at this time
Capital improvements project funding	Not at this time
Authority to levy taxes for specific purposes	Not at this time
User fees for water, sewer, gas or electric service	Not at this time
Impact Fees for homebuyers or developers of new development/homes	Not at this time
Stormwater utility fee	Not at this time
Incur debt through general obligation bonds	Not at this time



Financial Resources	Accessible or Eligible to Use
Incur debt through special tax bonds	Not at this time
Incur debt through private activity bonds	Not at this time
Withhold public expenditures in hazard-prone areas	Not at this time
Other federal or state funding programs	Not at this time
Open space acquisition funding programs	Not at this time
Other	Not at this time

Community Classifications

The table below summarizes classifications for community program available to East Point.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Yes		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	4	
Storm Ready	Not at this time		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Not at this time		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Not at this time		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



Hazard Mitigation Capability

The table below summarizes a self-assessment of East Point’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)	Moderate	High
Planning and Regulatory Capability		Not indicated	
Administrative and Technical Capability		Not indicated	
Fiscal Capability		Not indicated	
Community Political Capability		Not indicated	
Community Resiliency Capability		Not indicated	
Capability to Integrate Mitigation into Municipal Processes and Activities		Not indicated	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Reza Aral CFM, CPESC Floodplain Administrator

The City of East Point is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Their last Community Assistance Visits (CAV) were completed in 2013. East Point provides its citizens with a variety of resources as a part of their community outreach and resilience efforts. Local floodplain management and NFIP information can be found on the City website at <http://www.eastpointcity.org/index.aspx?NID=1586>.

Loss History and Mitigation

East Point does have a system in place to maintain a list of properties that have been flood damaged and the floodplain administrator has the ability to make substantial damage estimates if needed. East Point has 11 Repetitive Loss Properties with 2 that have expressed interest in mitigation actions through property acquisition (home buyout) in the areas of Woodhill Lane and Hayden Dr.

Planning and Regulatory Capabilities

East Point does use local ordinance, plans and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. East Point performs permit review, inspections, damage assessments, and record-keeping, GIS, education and outreach.



East Point has a floodplain review checklist and the local ordinance requires 3 feet above BFE. The planning board or zoning board always consider efforts to reduce flood risk when reviewing variances such as height restrictions.

Actions to Strengthen the Program

During the data collection process staff indicated that limited funding is a barrier to their floodplain program and they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

In 2013 the City of East Point Joined the CRS with the Rating of 7 and is always trying hard to lower the rate to make our community floodplain safe.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 – 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.



□ Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.



This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

Table 12
Risk Assessment per the Mitigation Planning Committee

East Point Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Drought	P	P	P	H	10
Flood	U	P	L	H	10
Tropical System	U	U	L	H	9
Severe Weather	U	U	L	H	9
Tornadoes	U	U	L	H	9
Winter Storm	U	U	L	H	9
Wildfire/Urban Interface	U	U	L	L	8
Sinkhole	U	U	U	H	7
Heat Wave	U	U	U	L	6
Earthquake	U	U	U	P	5
Dam Failure	U	U	U	U	4
Average Risk by Level	1.08	1.17	2.17	3.25	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
20.0001	Coordinate with Department of Transportation (DOT) regarding improved conveyance capacity and drainage on Camp Creek Pkwy between Washington Rd and Desert Dr	DPW	No Progress	<ol style="list-style-type: none"> 1. No activity 2. Contact Georgia Department of Transportation (GDOT) for update 	<i>Include in 2016 HMP</i>	The project will be review with GDOT for Prioritization 2016 - 2021
20.0002	Improve drainage capacity on Norman Berry Rd	DPW	In Progress	<ol style="list-style-type: none"> 1. Evaluation and monitoring area during rainfall event – funds 2. FY2016, Storm water infrastructure inventory project to identify structure 	<i>Include in 2016 HMP</i>	<ol style="list-style-type: none"> 1. After evaluation is complete in FY16 budget year, project schedule when funds available
20.0003	Improve drainage capacity in the 800 block of Cleveland Ave	DPW	In Progress	<ol style="list-style-type: none"> 1. Culvert improvement complete w/erosion Improvement @ 871 Cleveland parking lot Area – Local funds 	<i>Discontinue</i>	<ol style="list-style-type: none"> 1. Monitor and evaluate stream flow @ location mentioned
20.0004	Improve drainage design in the area of Martin St. and Norman Berry due to insufficient infrastructure capacity	DPW	In Progress	<ol style="list-style-type: none"> 1. Nothing has been complete 2. Infrastructure inventory project will assist w/evaluation of flooding in the area – local funds 	<i>Include in 2016 HMP</i>	<ol style="list-style-type: none"> 1. Monitor and evaluate stream flow @ location w/potential of project in the future
20.0005	Improve retaining wall at the Fire Station due to slope	DPW	Complete	<ol style="list-style-type: none"> 1. 100% Complete 	<i>Discontinue</i>	<ol style="list-style-type: none"> 1. Project complete



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0007	Drainage improvements in the Sun Valley/Camp Creek Watershed area	DPW	No Progress	1. Evaluation of storm water system in progress and evaluation of area for potential project in the future; local funds	Include in 2016 HMP	1. After evaluation and infrastructure inventory. 2. Evaluate additional work
20.0008	Drainage improvements at Lester St & Spring Ave. in the Uttoy Watershed	DPW	No Progress	1. Evaluation of condition during rain event and downstream. Local funding	Include in 2016 HMP	1. Infrastructure inventory to evaluate necessity of additional work
20.0009	Drainage improvements at Randall St & East Forrest Ave	DPW	In Progress	1. Drainage in area have been cleaned and Repairs of broken pipe. 2. Local funding for inventory of infrastructure	Include in 2016 HMP	1. RFP will be issued for construction
20.0010	Culvert improvements at 3030 & 3042 Dodson Dr.	DPW	In Progress	1. Site plan approved by State Local funding	Include in 2016 HMP	1. RFP will be issued for construction
20.0011	Drainage Improvements in the Jim's Creek area	DPW	In Progress	1. No progress w/any improvement.	Include in 2016 HMP	Will move to later date for evaluation/2017
20.0012	North Martin St. catch basin replacement	DPW	No Progress	Evaluation of current drainage in the area to determine funding source. Combine with project, 20.0012 and 20.0013	Discontinue	Project number 20.0013 Address project 20.0012
20.0013	North Martin St. regional storage improvement	DPW	No Progress	1. No activity on project 2. Evaluation will be performed in 2016	Include in 2016 HMP	1. Evaluation of project
20.0014	Calhoun Ave pipe replacement	DPW	No Progress	1. No activity	Include in 2016 HMP	1. Evaluation of project



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
20.0015	South River unnamed tributary 3 improvements	DPW	No Progress	1. No activity	Include in 2016 HMP	1. Evaluation of project
20.0016	Pipe replacement on Norman Berry Dr, near Maria Head Terrace	DPW	In Progress	1. Storm drain pipe let clean 2. Headwall maintenance	Include in 2016 HMP	1. Evaluation of potential issue
20.0017	Maria Head Terrace Berm Construction	DPW	No Progress	1. No activity 2. No proof of project required	Discontinue	1. No information of issue. 2. Discontinue
20.0018	Georgia Power Pond	DPW	In Progress	1. No activity	Include in 2016 HMP	1. Evaluation in 2015-2016
20.0019	Meadow Lark Lane Pipe Replacement	DPW	In Progress	1. No activity	Include in 2016 HMP	1. Evaluation of project
20.0020	Grove Ave. pipe replacement	DPW	No Progress	1. No progress	Include in 2016 HMP	1. Evaluation of project

Proposed Hazard Mitigation Initiatives for the Plan

East Point identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 14 identifies the municipality's updated local mitigation strategy.



**Table 14
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0001	Coordinate with DOT regarding improved conveyance capacity and drainage on Camp Creek Pkwy between Washington Rd and Desert Dr.	East Point	Public Works	Flooding; Severe Weather; Tropical Systems	6.8	Structural Projects	\$1,500,000	HMA, FMA, DOT, Local	2016-2021	16
	Comment: DOT is preparing to widen Camp Creek and it owns the draining infrastructure; however, there are design impacts that may affect the City that need to be coordinated.									
20.0002	Improve drainage capacity on Norman Berry Rd	East Point	Public Works	Flooding; Severe Weather; Tropical Systems	6.1	Structural Projects	\$2,500,000	HMA, Local	2016-2021	16
	Improve drainage design in the area of Martin St. and Norman Berry due to insufficient infrastructure capacity	East Point	Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	2,000,000	HMA, Local	2016-2021	16
Comments: This area collects from 3 or 4 different points that drain into one location. Either a larger drain or rerouting of drainage points to multiple locations are needed.										





EAST POINT MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0004	Harden City EOC (2727 East Point St) by adding more impact resistant glass	East Point	Public Works	Severe Weather; Tropical Systems; Tornadoes	6.4	Property Protection	10,000	HMA, EOC, Local	2016-2021	16
20.0005	Drainage improvements in the Sun Valley/Camp Creek Watershed area	East Point	Public Works	Flooding	6.1	Structural Projects	\$800,000	HMA, Local	1 – 2 years from funds availability	15
20.0006	Drainage improvements at Lester St & Spring Ave. in the Utoy Watershed	East Point	Public Works	Flooding	6.1	Structural Projects	\$2,200,000	HMA, Local	1 – 2 years from funds availability	15
20.0007	Drainage improvements at Randall St & East Forrest Ave	East Point	Public Works	Flooding	6.1	Structural Projects	\$500,000	HMA, Local	2016-2021	15
20.0008	Culvert improvements at 3030 & 3042 Dodson Dr	East Point	Public Works	Flooding	6.1	Structural Projects	\$200,000	HMA, Local	2016-2021	15
20.0009	Drainage Improvements in the Jim's Creek area	East Point	Public Works	Flooding	6.1	Structural Projects	\$1,900,000	HMA, Local	2016-2021	16
20.0010	North Martin St. regional storage improvement	East Point	Public Works	Flooding	6.1	Structural Projects	\$0	HMA, FMA, Local	2016-2021	16



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
Comments: There is major road flooding; regional improvements for downstream flooding problems.										
20.0011	Calhoun Ave pipe replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$670,000	HMA, FMA, Local	2016-2021	16
Comments: There is major road flooding at the intersection of Calhoun Ave. and Norman Berry Dr.										
20.0012	South River unnamed tributary 3 improvements	East Point	Public Works	Flooding	6.1	Structural Projects	\$4,000,000	HMA, FMA, Local	2016-2021	16
Comments: There is secondary road flooding with potential structural flooding.										
20.0013	Pipe replacement on Norman Berry Dr, near Maria Head Terrace	East Point	Public Works	Flooding	6.1	Structural Projects	\$180,000	HMA, FMA Local	2016-2021	16
Comment: There is major roadway flooding.										
20.0014	Georgia Power Pond	East Point	Public Works	Flooding	6.1	Structural Project	\$280,000	HMA, Local	2016-2021	16
Comments: There is secondary road flooding; alternate access to residences; coordinate with Meadow Lark improvements. The detention pond suggested is within the area of a Georgia Power easement in the Meadowlark drive community. There is no direct association with Georgia Power Company project.										
20.0015	Meadow Lark Lane Pipe Replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$1,500,000	HMA, Local	2016-2021	15
Comments: There is secondary road flooding; alternate access to residences.										



EAST POINT MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
20.0016	Grove Ave. pipe replacement	East Point	Public Works	Flooding	6.1	Structural Projects	\$60,000	HMA, Local	2016-2021	15
Comments: There is secondary road flowing; alternate access to residences.										
20.0017	Promote public education of water saving measures – Rebates/vouchers for low flow water fixtures, household water saving tips	East Point	Public Works	Drought	7.7	B	\$13,000	HMA, FMA, Local	2016-2021	12
20.0018	Implement water restrictions, prioritizing water use	East Point	Public Works	Drought	1.5	B	\$13,000	HMA, FMA Local	2016-2021	9

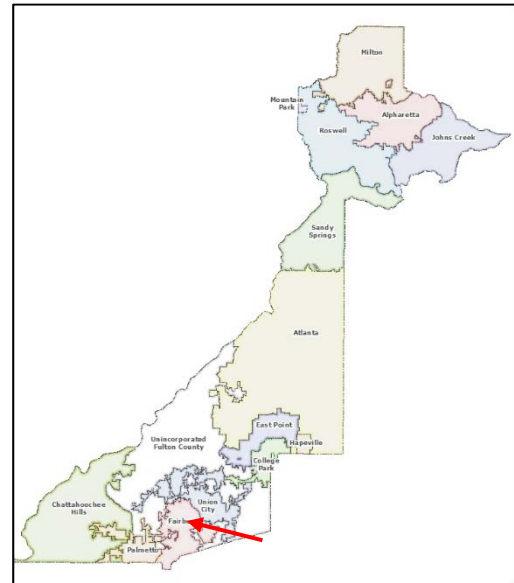


Annex 6

CITY OF FAIRBURN, GEORGIA MITIGATION ACTION PLAN

Geography/History

The City of Fairburn is located just 25 minutes south of Atlanta along a railroad line and was the County seat of Campbell County starting in 1870. The City has experienced phenomenal growth in business, industry, and residential neighborhoods in recent years. The government of Campbell County went bankrupt in 1931 during the Great Depression and was absorbed into Fulton County when 1932 began.



Significant Characteristics

The downtown Commercial District, listed in the National Register of Historic Places, includes 20 different commercial buildings and two train depots dating from the late 19th and early 20th centuries. Fairburn maintains a traditional small town atmosphere with the advantages of a nearby metropolitan area.

Population and Demographics

In 2010, the census recorded there were 12,950 people, 4,691 households, and 3,219 families residing in the City. There were 5,430 housing units at an average density of 275.5 per square mile. The racial makeup of the City was 69.9% African American, 20.1% White, 0.4% Native American, 1.7% Asian, 6.5% from other races, and 2% from two or more races. Hispanic or Latino of any race were 11.9% of the population.

There were 1,745 households out of which 37.2% had children under the age of 18 living with them, 39.4% were married couples living together, 23.1% had a female householder with no husband present, and 31.4% were non-families. 26.5% of all households were made up of individuals and 13.5% had someone living alone who was 65 years of age or older. The average household size was 2.74 and the average family size was 3.33.

In the City the population was spread out with 69.7% over the age of 18, 6% from 20 to 24, 31.7% from 25 to 44, 22.6% from 45 to 64, and 6.9% who were 65 years of age or older. The median age was 32 years. The male population is 46.5% and the female population is 53.5%.



Table 1
City of Fairburn Population Since 1990

Year	1990	2000	2010	2015
Population	4,013	5,464	12,950	13,696 est.

Economy

The median income for a household in the City was \$49,421, and the median income for a family was \$49,744. Males had a median income of \$32,708 versus \$28,940 for females. The per capita income for the City was \$20,215. About 6.1% of families and 7.7% of the population were below the poverty line, including 11.9% of those under age 18 and 2.8% of those age 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau 2012:

Table 2
Main Industries Based on Data from 2012

Industry Description	Number of Establishments	Number of Employees
Manufacturing	11	1061
Wholesale Trade	17	930
Retail Trade	43	325
Information	1	0
Real Estate, Rental, Leasing	11	Not available
Professional, Scientific and Technical Services	12	36
Administrative and Support and Waste Management and Remediation Service	16	149
Educational Services	3	9
Health Care and Social Assistance	16	291
Accommodation and Food Services	24	321
Other Services	19	229



Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2015.

Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	205
2002	81
2003	230
2004	367
2005	393
2006	361
2007	144
2008	19
2009	1
2010	8
2011	0
2012	1
2013	16
2014	3
2015	96

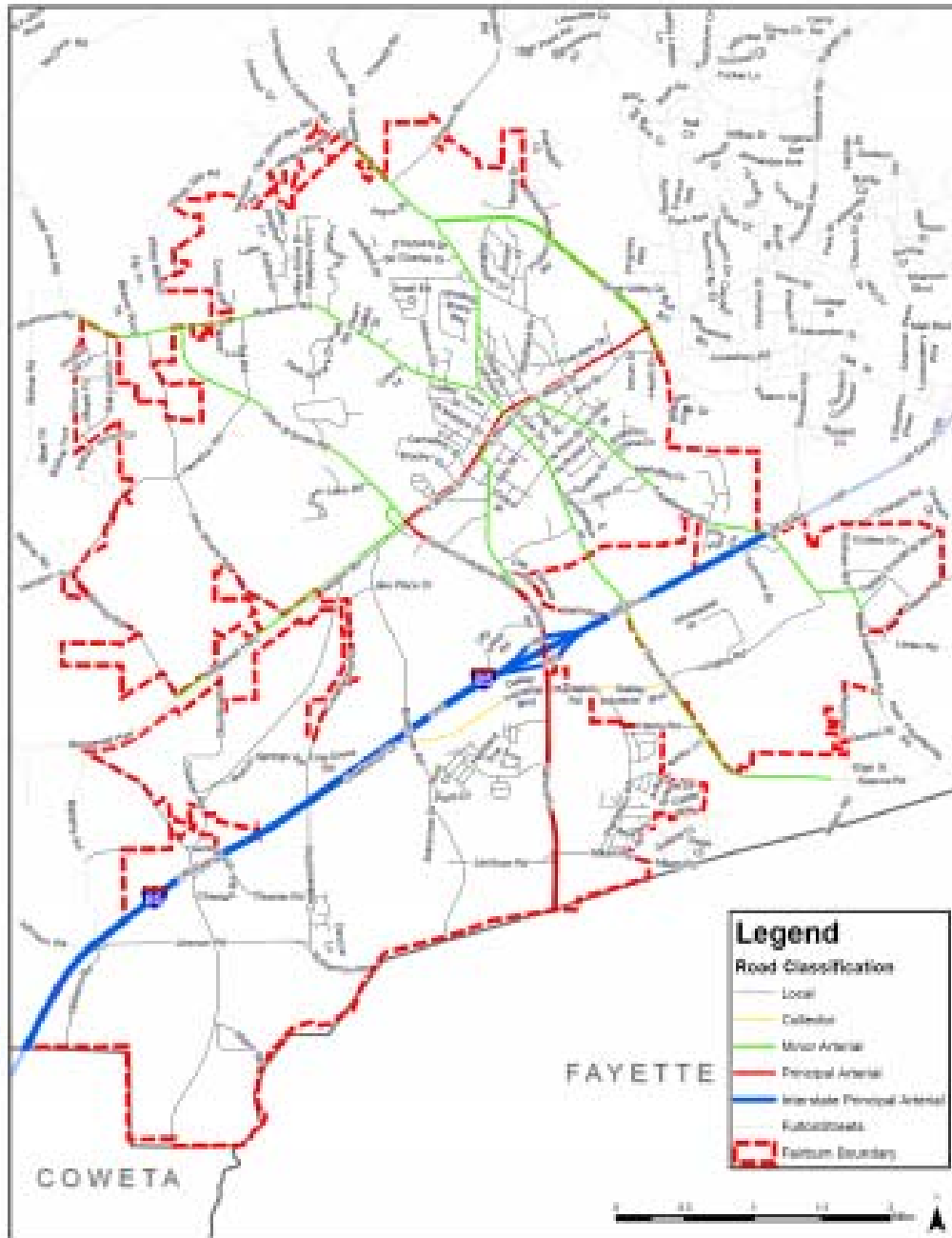
Infrastructure

The City of Fairburn’s Police Department has three division; the Office of the Chief, the Uniform Patrol Division and the Criminal Investigative Division. Fairburn also has a Fire Department that serves the City. The Fairburn Fire Department consists of an Administrative Division, a Fire Marshal’s Office, a Training Division, and an Operations Division. The school system within the City limits consists of the following items listed in Table 4:

Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	90
Kindergarten to 12 th grade	Public	8,168
College, undergraduate	(1) Military and (1) Public	Not Reported
Graduate, professional school	Not Reported	Not Reported

Figure 1
Road Classifications – 2035 Comprehensive Plan





Land Usage

The City has a total of 17.1 square miles with 16.9 square miles being land and 0.2 square miles being water. The City of Fairburn offers industrial, commercial, and retail zoning in close distance to family oriented residential areas. The map below details the zoning areas for the City:

Figure 2
Zoning Areas

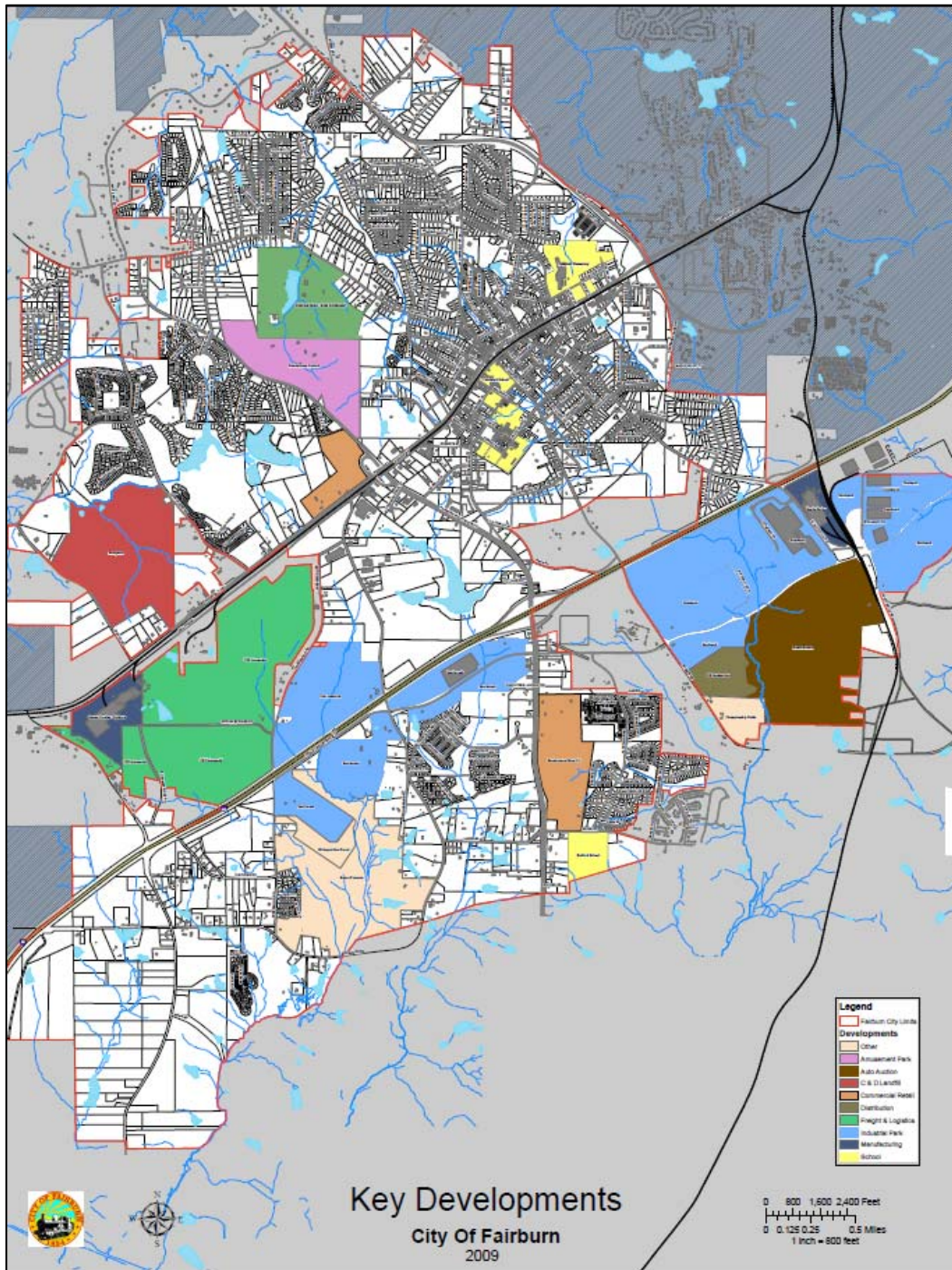


Figure 3
Future Development Map - 2035 Comprehensive Plan

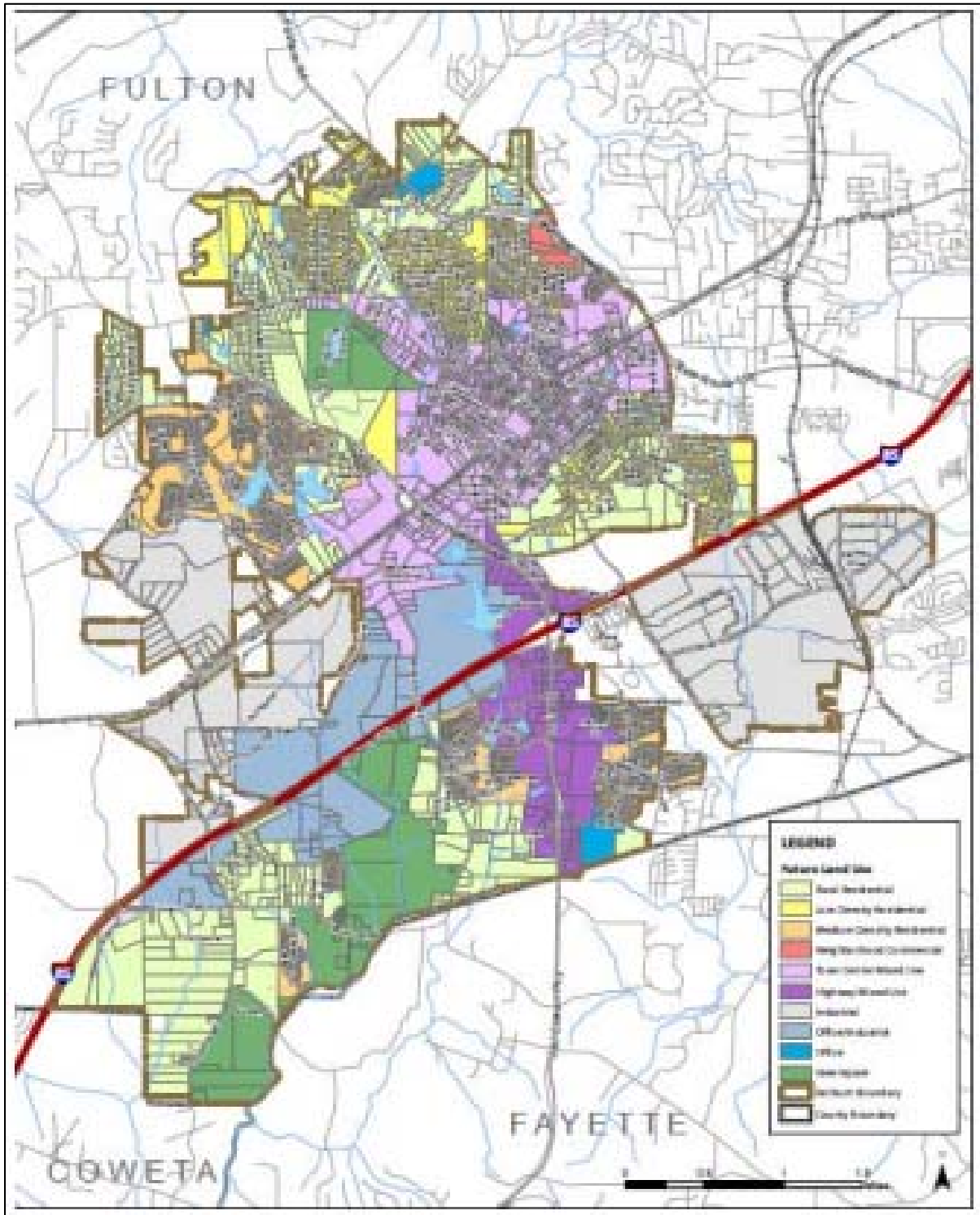
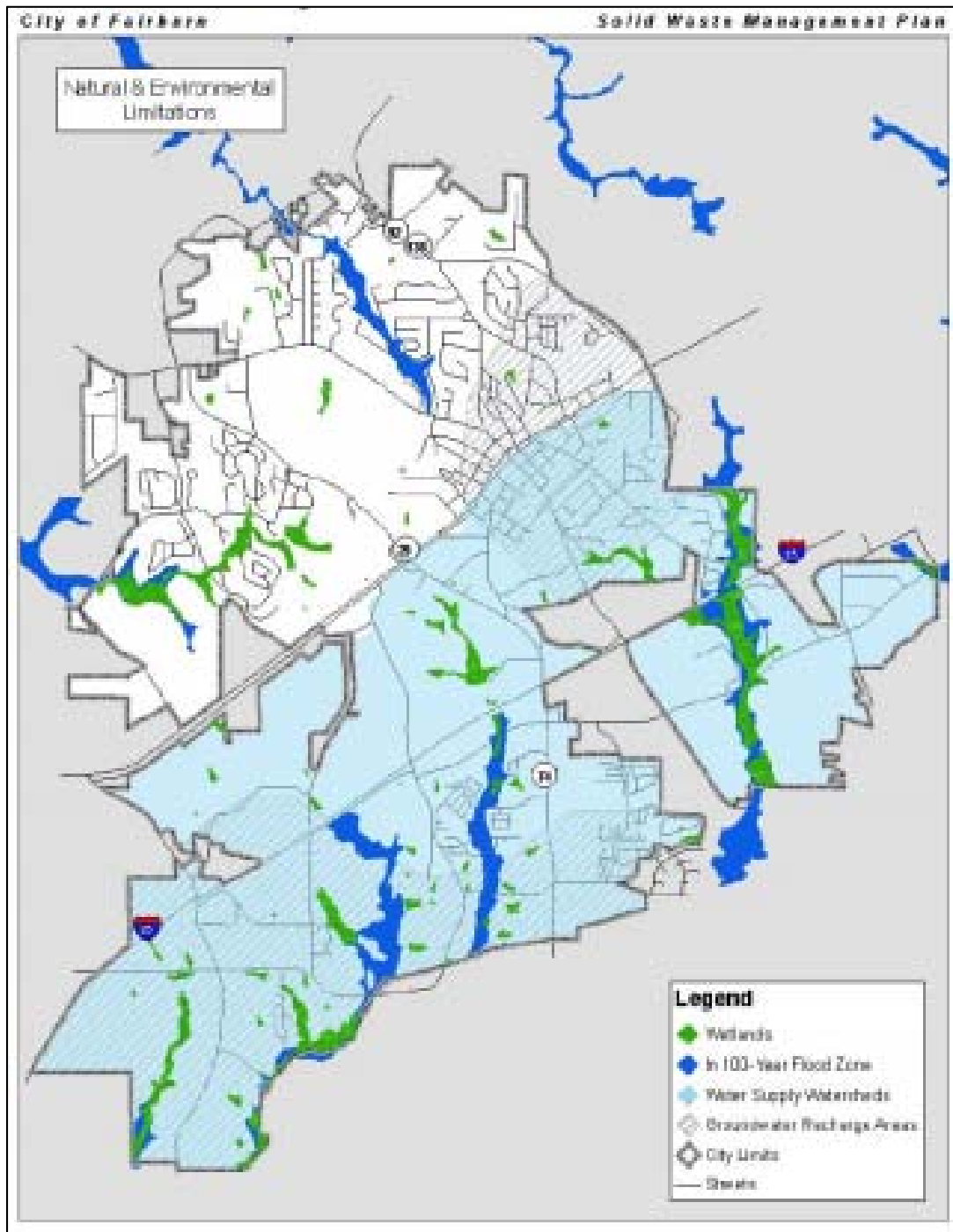


Figure 4
Natural & Environmental Limitations - 2035 Comprehensive Plan





Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 5
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	Admin	
Capital Improvements Plan	Not at this time	Local	Admin	
Floodplain Management / Basin Plan	Yes	Local	Engineering	
Stormwater Management Plan	Yes	Local	Water	
Open Space Plan	Not at this time			
Stream Corridor Management Plan	Not at this time			
Watershed Management or Protection Plan	Yes	Local	Engineering	
Economic Development Plan	Not at this time			
Comprehensive Emergency Management Plan	Yes	County	AFCEMA	
Emergency Operation Plan	Yes	Local	Fire	EOP
Post-Disaster Recovery Plan	Not at this time			
Transportation Plan	Not at this time			Working on
Strategic Recovery Planning Report	Not at this time			
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local	Building Fire	IBC, NFPA, PCA



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Zoning Ordinance	Yes	Local	Zoning	
Subdivision Ordinance	Yes	Local	Admin	
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local		
NFIP: Cumulative Substantial Damages				
NFIP: Freeboard	Yes	State, Local		State mandated BFE+2 for single two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	No			
Site Plan Review Requirements	Yes	Local	Fire Engineering	
Storm water Management Ordinance				
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Water	
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Fairburn.

**Table 6
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	
Mitigation Planning Committee	Not at this time	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Not at this time	
Maintenance Programs to Reduce Risk	Not at this time	
Mutual Aid Agreements	Yes	Fire
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Water/ELEC
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	2 – PE 2 – Engineer	Engineering, Water, ELEC
Planners or engineers with an understanding of natural hazards	Yes	Water
NFIP Floodplain Administrator	Yes*	
Surveyor(s)	Not at this time	Contract
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Not at this time	
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	Fire
Grant Writer(s)	Yes	Contract
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Building

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Fairburn.

**Table 7
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Not at this time
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Not at this time
Stormwater utility fee	Not at this time
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Not at this time
Incur debt through private activity bonds	Not at this time
Withhold public expenditures in hazard-prone areas	Not at this time
Other federal or state funding programs	Not Sure
Open space acquisition funding programs	Not at this time
Other	

Community Classifications

The table below summarizes classifications for community program available to Fairburn.

**Table 8
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	ISO Class 1	1-26-2015
Storm Ready	Not at this time		
Firewise	Not at		



Program	Do You Have This?	Classification	Date Classified
	this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Fairburn’s current hazard mitigation capability.

**Table 9
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability			X
Fiscal Capability			X
Community Political Capability			X
Community Resiliency Capability			X
Capability to Integrate Mitigation into Municipal Processes and Activities			X

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: City Engineer

The City of Fairburn is currently an active member of the NFIP, in good standing with no outstanding compliance issues. It is currently undetermined when their last Community Assistance Visits (CAV) were completed.

Loss History and Mitigation

Fairburn does have a system in place to maintain a list of properties that have been flood damaged; however, there are none to date. The floodplain administrator has the ability to make



substantial damage estimates if needed. To date no property owners have expressed an interest in the mitigation process. If mitigation actions were sought in Fairburn it is believed the funding source would primarily be the property owner and insurance. *Planning and Regulatory Capabilities*

Fairburn does use local ordinance, plans, and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. Fairburn reviews all site plans and building plans for flood compliance, provide all inspections in house, maintain records of all developments and buildings, outreach information about flooding is on web site, assistance is provided to residents and professionals about FEMA requirements, and provide additional mapping information.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Fairburn; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Fairburn does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 10
Local Hazard Event History 2010 – 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages
November 15, 2015	F-1 Tornado	Yes	Severe Wind Storm damages



Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.



- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 11
Risk Assessment per the Mitigation Planning Committee**

Fairburn Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	H	H	H	H	16
Tornadoes	H	H	H	H	16
Winter Storm	P	P	P	P	8
Flood	P	P	P	P	8
Wildfire/Urban Interface	P	P	P	P	8
Drought	P	P	U	P	8
Sinkhole	P	P	P	P	8
Dam Failure	U	U	U	H	7
Heat Wave	U	U	U	L	6
Tropical System	U	U	U	U	4
Earthquake	U	U	U	U	4
Average Risk by Level	1.00	1.25	1.42	2.75	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)



Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 12
Status of Mitigation Actions**

<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
25.0001	Improve drainage at the bridge at Rivertown Road and Malone by adding drain to tie into the storm water drainage system.	Public Works/Engineering Department	In Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.
25.0002	Acquire the upstream property (currently privately owned) on Rivertown Road to provide City access to clean and prevent debris in stream.	Engineering Department	No Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.
25.0003	Acquire privately owned agriculture land to prevent further development that is consistent with current land use policies.	Engineering Department	No Progress	Still in planning stage	<i>Include in 2016 HMP</i>	Continue in long term planning.



Proposed Hazard Mitigation Initiatives for the Plan

Fairburn identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 13 identifies the municipality's updated local mitigation strategy.

**Table 13
Proposed Mitigation Actions**

<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
25.0001	Improve drainage at the bridge at Rivertown Road and Malone by adding drain to tie into the storm water drainage.	Fairburn	Public Works/Engineering Department	Flooding	6.1	Structural Project	\$150,000	HMA, FMA, Local	2016-2021	16
Comments: Debris backs up under the bridge at Malone. Need to add a drain to tie into the system.										
25.0002	Acquire the upstream property (currently privately owned) on Rivertown Road to provide City access to clean and prevent debris in stream.	Fairburn	Engineering Department	Flooding	5.3 6.2	Property Protection	\$100,000	HMA, FMA, Local	2016-2021	16



FAIRBURN MITIGATION ACTION PLAN

<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
25.0003	Acquire privately owned agriculture land to prevent further development that is consistent with current land use policies.	Fairburn	Engineering Department	All Hazards	5.3	Property Protection	\$100,000	HMA, Local	2016-2021	19
<p>Comments: Acquisition would be used to promote less dense land usage and expand nature preserve, which is consistent with the natural conservation projects already being implemented in the area.</p>										

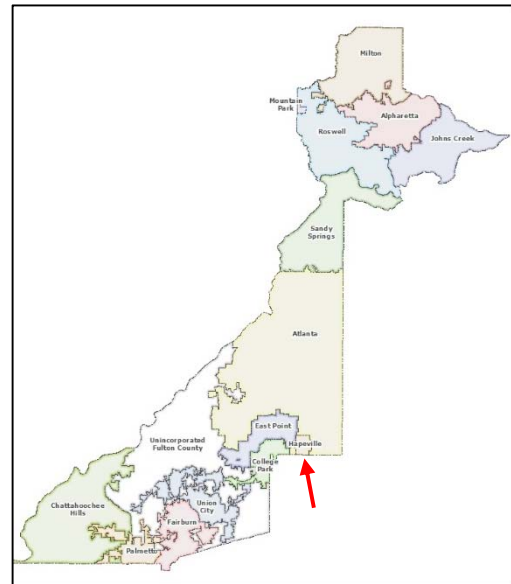


Annex 7

CITY OF HAPEVILLE, GEORGIA MITIGATION ACTION PLAN

Geography/History

During the 1950s and 1960s, Hapeville was a thriving part of the Tri-City (Hapeville, East Point, College Park) area and its post-WWII population supported three elementary schools (Josephine Wells, North Avenue, and College Street) and one high school. During the next 40 years, it became regarded as a somewhat depressed industrial area. Hapeville has since been discovered by young professionals looking for historic neighborhoods close to downtown Atlanta, and there has been a great deal of new residential construction. This new residential development has led to a revived historic downtown. Hapeville has also been discovered by metro Atlanta's arts community, and the beginnings of an artist colony have taken shape with the formation of the Hapeville Arts Alliance. The Hapeville Historic District is listed on the National Register of Historic Places.



Significant Characteristics

Since 1947, Hapeville was home to the Ford Atlanta Assembly Plant, but it closed in 2006. There are development plans to open a multi-use development, on the site, which is immediately adjacent to Atlanta Airport. Currently, Porsche North America is building its North America Headquarters on the Ford site.

Population and Demographics

In 2010, the U.S. Census recorded that Hapeville had a population of 6,373. The racial and ethnic composition of the population was 42.8% white, 28.8% black or African American, 1.1% Asian Indian, 4.6% other Asian, 0.6% Native American, 18.8% from some other race (0.2% non-Hispanic from some other race) and 3.3% from two or more races. 35.1% of the population was Hispanic or Latino of any race.

At the 2000 census there were 2,375 households, out of which 26.4% had children under the age of 18 living with them, 35.2% were married couples living together, 15.1% had a female householder with no husband present, and 41.3% were non-families. 32.1% of all households were made up of individuals and 9.3% had someone living alone who was 65 years of age or older. The average household size was 2.60 and the average family size was 3.29.



In the City the population was spread out with 24.4% under the age of 18, 11.2% from 18 to 24, 33.4% from 25 to 44, 20.1% from 45 to 64, and 10.8% who were 65 years of age or older. The median age was 33 years. For every 100 females, there were 108.3 males. For every 100 females age 18 and over, there were 111.4 males.

**Table 1
City of Hapeville Population Since 1990**

Year	1990	2000	2010	2014
Population	5,483	6,180	6,373	6,669 est.

Economy

The median income for a household in the City was \$35,831, and the median income for a family was \$39,759. Males had a median income of \$25,127 versus \$23,766 for females. The per capita income for the City was \$21,164. About 13.7% of families and 17.9% of the population were below the poverty line, including 20.1% of those under age 18 and 11.7% of those aged 65 or over. The chart below lists a sample of establishments in Hapeville, some data is still in the process of being tabulated. It is also worth noting the estimated population of Hapeville is approximately 55,000 to 60,000 between 8:00 a.m. and 5:00 p.m. M-F while after 5:00 p.m. the population drops to near 6,700.

**Table 2
Main Industries Based on Data from 2012**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	3	Not Available
Retail Trade	22	192
Information	2	Not Available
Real Estate, Rental, Leasing	15	88
Professional, Scientific and Technical Services	15	54
Administrative and Support and Waste Management and Remediation Service	13	Not Available
Educational Services	1	Not Available
Health Care and Social Assistance	18	Not Available
Accommodation and Food Services	53	1,170
Other Services	15	Not Available

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.



Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	4
2002	0
2003	5
2004	11
2005	26
2006	23
2007	32
2008	2
2009	2
2010	1
2011	0
2012	1
2013	1
2014	0

Infrastructure

Hapeville’s Police Department is composed of Administration, Uniform Patrol Division, Detective Division, Code Enforcement, Animal Control, Communications, and Crime Prevention. The Hapeville Fire Department has 30 Firefighter/EMTs. The Administration has three personnel; the Fire Chief, Fire Marshal, and an Administrative Assistant. The school system within the City limits consists of the following items listed in Table 4:

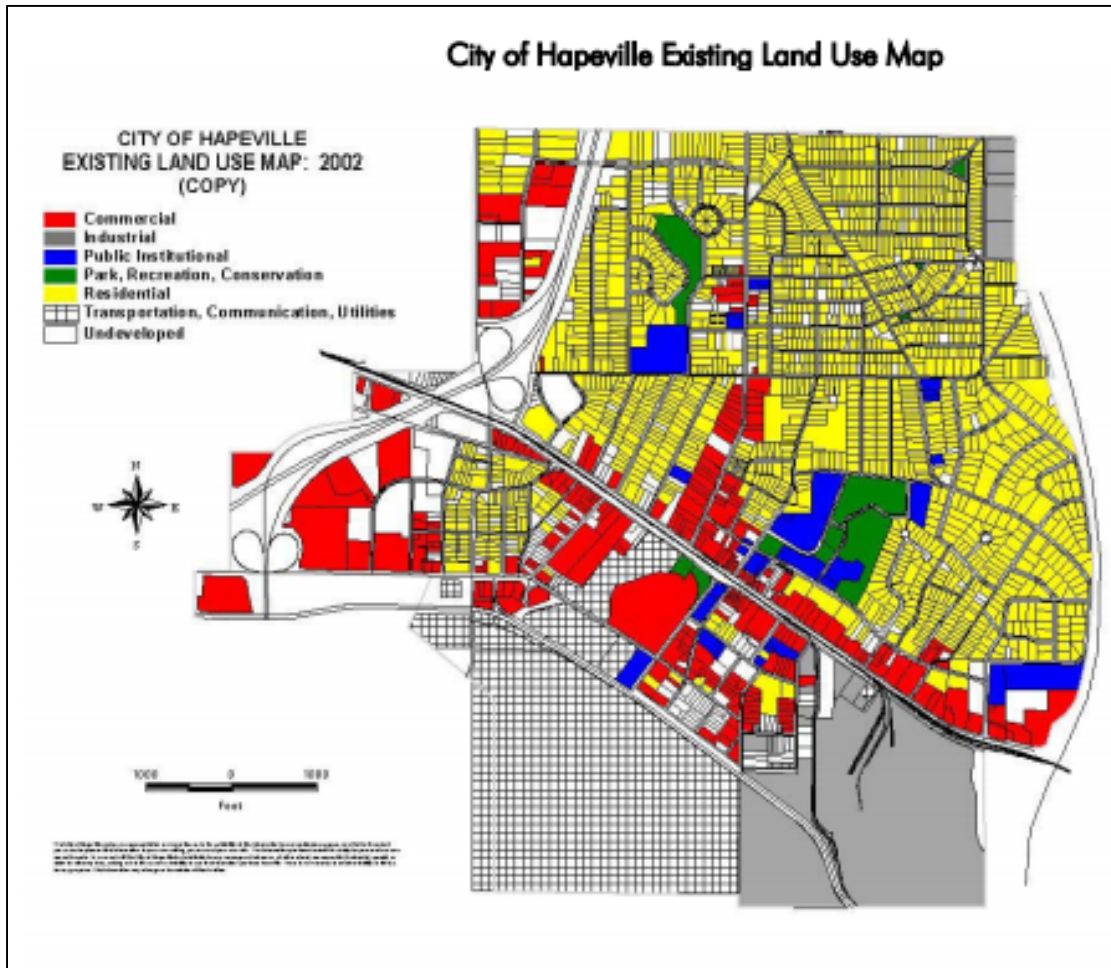
Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	68
Kindergarten to 12 th grade	Public	1,347
College, undergraduate	NA	NA
Graduate, professional school	NA	NA

Land Usage

Hapeville is 2.4 square miles with all of that being land. Below is a series of existing and proposed future development maps from the 2025 Comprehensive Plan showing the use of land within the Hapeville City limits. A map of the Hapeville Flood Zones is also included (Figure 4).

Figure 1
Existing Land Use Map



**Figure 2
Future Land Use Map**

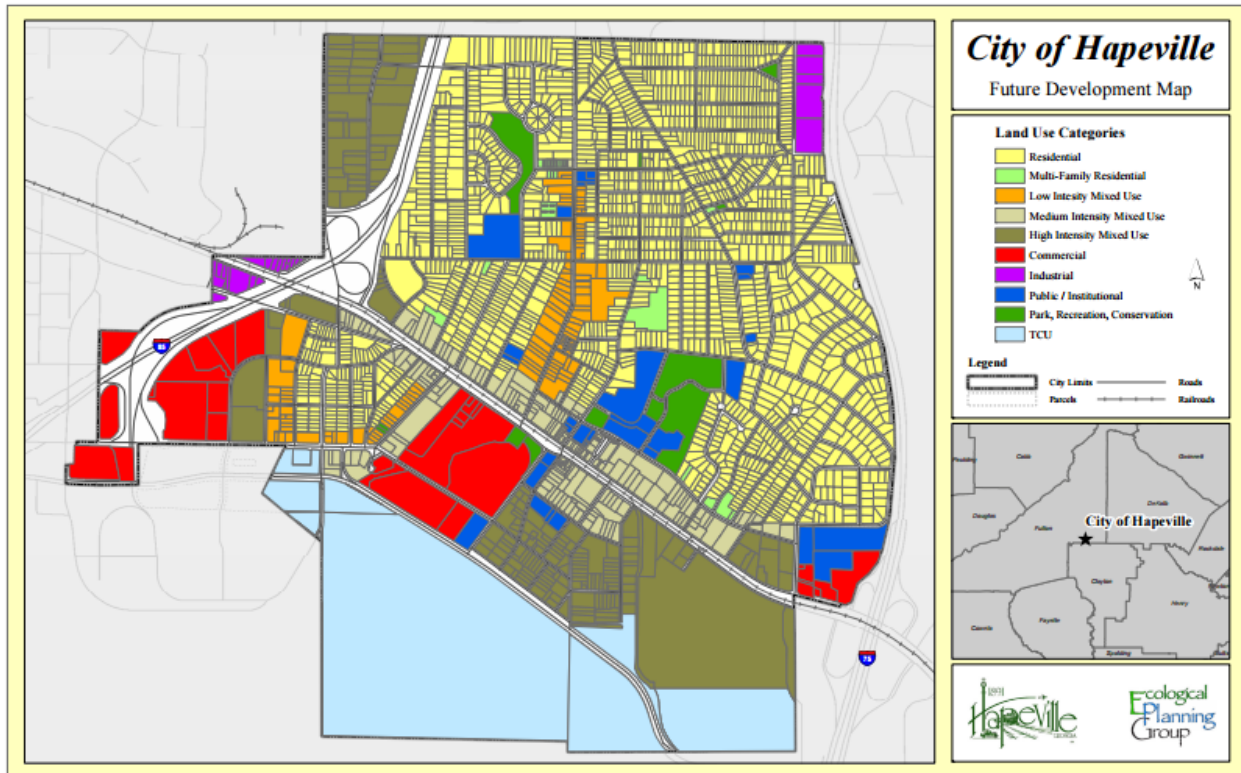
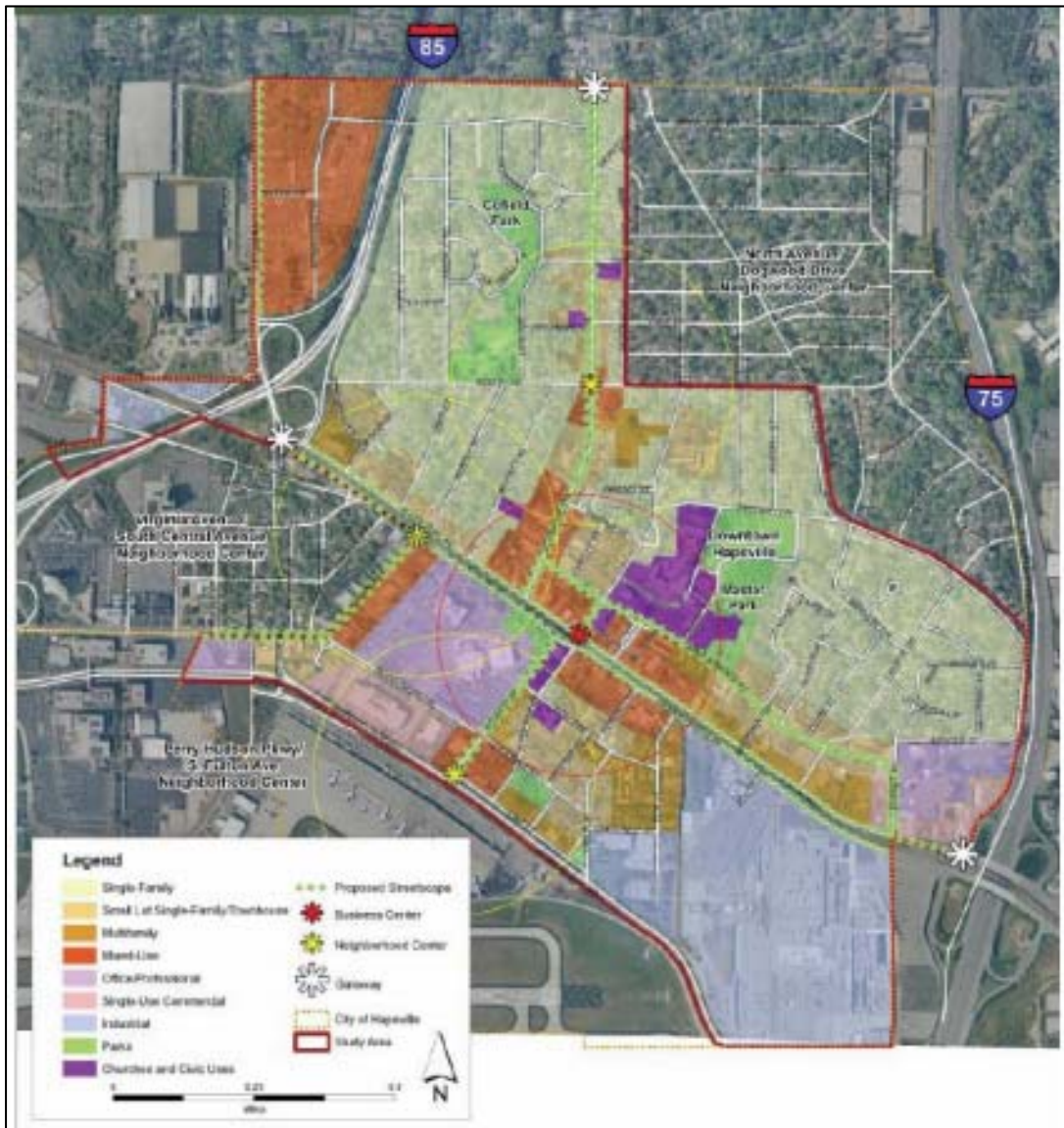
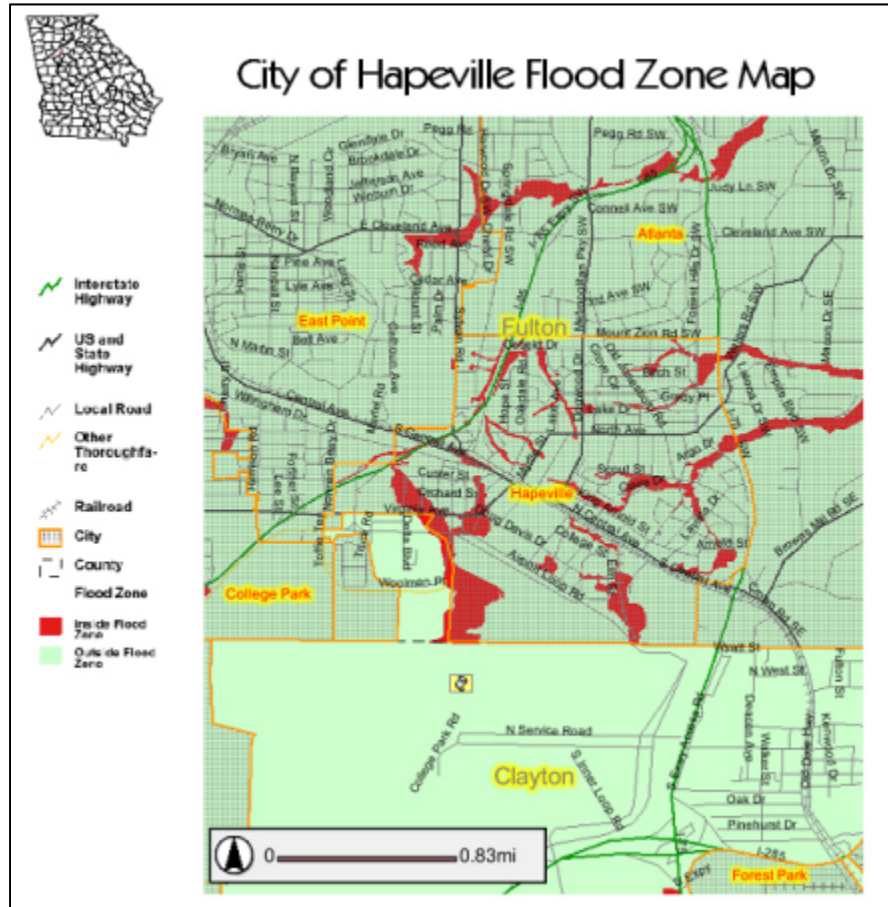


Figure 3
Future Land Use Map (2014 proposed updates)



**Figure 4
Hapeville Flood Zone Map**



Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.

**Table 5
Recent Development – 2011 to Present**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
700,000-800,000 sq. ft. commercial development	Commercial	Commercial	Porsche Ave	None	Planning Phase
2 new Hotels	Commercial	400+	Porsche Ave	None	Planning Phase
Main St partner Group	Comm/ Residential	1,212, units	South Fulton Ave	None	Planning Phase



Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local		Comprehensive Plan
Capital Improvements Plan	Yes	Local	Community Services	
Floodplain Management / Basin Plan	Yes	Local	Community Services	
Stormwater Management Plan	Yes	Local	Community Services	
Open Space Plan	Not at this time			
Stream Corridor Management Plan	Not at this time			
Watershed Management or Protection Plan	Not at this time			
Economic Development Plan	Not at this time			In Process
Comprehensive Emergency Management Plan	Not at this time		Fire Department	In process
Emergency Operation Plan	Yes		Fire Department	In Process
Post-Disaster Recovery Plan	Not at this time		Fire Department	In Process
Transportation Plan	Not at this time			
Strategic Recovery Planning Report	Not at this time			
Other Plans:				
Regulatory Capability				
Building Code	Yes	State &	Community	International Building Code



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
	1-8-2002	Local	Services	
Zoning Ordinance	Yes 6-3-14			
Subdivision Ordinance	Yes 8-19-14			
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Community Services	
NFIP: Cumulative Substantial Damages	Not at this time			
NFIP: Freeboard	Yes	State, Local	Community Services	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Not at this time			
Site Plan Review Requirements	Yes 1-1-2012	Local	Community Services	
Storm water Management Ordinance	Yes 9-6-1994			
Municipal Separate Storm Sewer System (MS4)	Yes 4-3-2010			
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Hapeville.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	
Mitigation Planning Committee	Not at this time	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Not at this time	
Maintenance Programs to Reduce Risk	Not at this time	
Mutual Aid Agreements	Yes	Fire and Police
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Community Services
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Community Services
Planners or engineers with an understanding of natural hazards	Yes	Community Services
NFIP Floodplain Administrator	Yes*	
Surveyor(s)	Not at this time	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Not at this time	
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	Fire Department/Larry Richardson
Grant Writer(s)	Yes	City Manager
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Community Services/ Fire Department

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Hapeville.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Not at this time
Stormwater utility fee	No, but will be coming in 2016, 2017
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Not at this time
Other Federal or State Funding Programs	Yes
Open space acquisition funding programs	Not at this time
Other	Special District Fire Tax

Community Classifications

The table below summarizes classifications for community program available to Hapeville.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	ISO rating of 2	
Storm Ready	Not at this time		
Firewise	Not at		



Program	Do You Have This?	Classification	Date Classified
	this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Yes		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Hapeville’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability	Very limited staff		
Capability to Integrate Mitigation into Municipal Processes and Activities	Very limited staff		

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Lee Sudduth, Community Services Director

The City of Hapeville is currently an active member of the NFIP, in good standing with no outstanding compliance issues. At the time of data collection, it was undetermined when their last Community Assistance Visits (CAV) were completed.

Loss History and Mitigation

Hapeville does not currently maintain a list of properties that have been flood damaged; however, there have been five business properties and three structures damaged in the area of



South Central Ave. Fire Station 2 houses first responder fire apparatus and crew 24-365 and is also flooded routinely during inclement weather. To date no property owners have expressed an interest in the mitigation process

Planning and Regulatory Capabilities

Hapeville does use local ordinance, plans and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. The City of Hapeville Engineer reviews site plans, map revision and removal requests. We will sign a letter of concurrence for removal from flood plan if resident certifies it with engineer.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Hapeville; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Hapeville does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 – 2015**

Dates of Event	Event Type (Disaster Declaration if applicable)	Notes on Damages Within County
10/30/2010	no	Traffic/Materials
05/22/2011	no	Loss of Power/Business Traffic
05/26/2011	no	Loss of Power/Business Traffic
05/26/2011	no	Loss of Power/Business Traffic
06/18/2011	no	Loss of Power
09/01/2011	no	Loss of Power/Business Traffic



Dates of Event	Event Type (Disaster Declaration if applicable)	Notes on Damages Within County
11/15/2011	no	Loss of Power/Business Traffic
04/23/2012	no	Loss of Power/Business Traffic
04/24/2012	no	Loss of Power/Business Traffic
07/27/2012	no	Loss of Power/Business Traffic
10/04/2012	no	Loss of Power/Business Traffic
10/29/2012	no	Loss of Power/Business Traffic
01/30/2013	no	Loss of Power/Business Traffic
03/25/2013	no	Loss of Power/Business Traffic
05/03/2013	no	Loss of Power/Business Traffic
05/14/2013	no	Loss of Power/Business Traffic
05/26/2013	no	Loss of Power/Business Traffic
06/28/2013	no	Loss of Power/Business Traffic
07/04/2013	no	Loss of Power/Business Traffic
02/12/2014	no	Loss of Power/Business Traffic
02/12/2014	no	Loss of Power/Business Traffic
02/13/2014	no	Loss of Power/Business Traffic
04/03/2014	no	Loss of Power/Business Traffic
February 10-15, 2014	Severe Winter Storm	Severe Winter Storm damages
May 10, 2014	Storm	Debris in roadway
June 5, 2014	Power Lines Down	Debris removal
June 5, 2014	Storm	Debris removal tree down
June 5, 2014	Storm	Debris removal tree down
June 5, 2014	Storm	Debris removal tree down
June 6, 2014	Storm	Debris removal tree down
June 25, 2014	Severe Weather	Debris removal



Dates of Event	Event Type (Disaster Declaration if applicable)	Notes on Damages Within County
July 4, 2014	Storm	Debris removal tree limbs into power lines loss of power
July 19, 2014	Power Lines Down	Tree down debris removal loss of power
July 22, 2014	Building or structural collapse	Tree down debris removal
August 1, 2014	Trapped by Power Lines	Loss of power had to shut down main grid to remove Driver
August 8, 2014	Lighting Strike	Debris removal from tree loss of power
August 8, 2014	Flood Assessment	Storm drainage backup
August 10, 2014	Severe Weather	Tree down onto house and vehicles
August 21, 2014	Power Lines Down	Tree down loss of power
March 4, 2015	Power Lines Down	Debris removal tree down
June 9, 2015	Storm	Tree down debris removal
June 14, 2015	Power Lines Down	Debris removal loss of power
July 18, 2015	Lighting Strike	Tree Down debris removal
July 21, 2015	Building or Structural Collapse	Safety Zones established and debris removal
August 31, 2015	Storm	Debris removal
September 3, 2015	Lighting Strike	House Fire
February 12, 2014	Storm	House Fire
February 12, 2014	Power Lines Down	Tree down debris removal loss of power
February 12, 2014	Storm	Tree down debris removal
February 13, 2014	Power Lines Down	Debris removal loss of power
September 4, 2013	Bomb Scare	Safety zones established Notified outside agencies
July 8, 2015	Bomb Scare	Safety zones established Notified outside agencies



Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.



- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.



Table 12
Risk Assessment per the Mitigation Planning Committee

Hapeville Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Winter Storm	P	L	L	H	12
Tornadoes	P	P	L	H	11
Severe Weather	P	P	L	H	11
Heat Wave	P	P	L	H	11
Drought	U	P	P	H	9
Tropical System	U	P	P	L	8
Earthquake	P	P	P	P	8
Wildfire/Urban Interface	U	P	P	P	7
Flood	U	U	U	L	6
Sinkhole	U	U	U	P	5
Dam Failure	U	U	U	U	4
Average Risk by Level	1.08	1.33	1.75	2.67	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each mitigation action plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
30.0001	Install surge protection for City Hall which houses server databases	Community Services	In Progress	Will surge protect within 90 days	Include	
30.0002	Install surge protection and emergency generator at the Public Services building	Community Service	No Progress	Not needed at this building	Discontinue	
30.0003	Install surge protection at the Police Station which houses its own database servers	Community Services	In Progress	Will surge protect within 90 days	Include	
30.0004	Install surge protection at Fire Station #2	Community Services	In Progress	Will surge protect in the next 180 days	Include	
30.0005	Install surge protection at the Community Services building	Community Services	Complete	Will surge protect in 180 days	Include	
30.0006†	Revise site plan review process to ensure that site plan review is part of the interdepartmental plan review process	Community Services	Complete	Reviews are performed by Keck and Wood who provide reports and studies	Include	
30.0007	Acquire 7 parcels located south of Woodrow and west of Wheeler (north of the Lake)	Community Services	No Progress		Discontinue	
30.0008	Perform stream bank stabilization in the stream that flows into the South River	Community Services	Complete	Stabilized known areas	Discontinue	



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
30.0009	Improve drainage at Claire and Parkway by increasing the size of the underground storm drain line	Community Services	No Progress		Discontinue	
30.0010	Improve drainage in the area of South Central Avenue by increasing the size of the underground storm drain	Community Services	In Progress		Include	West end of S. Central is often prone to flooding and needs to be studied. High Priority
30.0011	Perform curb modification on Oakdale Road, which currently has header rocks. Installation of curb and gutters will improve storm water drainage	Community Services	No Progress		Include	

Potential Hazard Mitigation Initiatives for the Plan

Hapeville identified additional mitigation initiatives they would like to potentially pursue in the future. Table 14 identifies the municipality's potential hazard mitigation actions.

**Table 14
Potential Mitigation Actions**

Mitigation Action	Lead Agency	Comments and Details
Bring City wells back online	Community Services	Lake Drive Well, 50,000
Police Department generators for power	Community Services	High Priority 60,000
New communication system	Community Services Fire Department	Medium Priority 25,000



Mitigation Action	Lead Agency	Comments and Details
Generator for Hoyt Smith Rec. Center (primary location for disaster shelter)	Community Services	Medium Priority
Identify community shelters and have them evaluated	Fire Department EM Coordinator	High Priority
Obtain new and updated mutual aid agreements with surrounding municipalities and private businesses with the City	Fire Department Police Department	
Update all hazardous material response capabilities to Haz-Mat Ops Level and increase training among personnel	Fire Department	\$35,000-50,000 for equipment renewal and mode of transportation
Purchase of Pro-PAC Shelter Cert Kit	Fire Department EM coordinator	\$47,000 for 200 person disaster relief
Isolation Systems 40,000 BTU movable heaters	Fire Department EM Coordinator	X4 ---\$12,000
Create evacuation routes and install signs	Fire Department Community Services	
Increase minimum staffing of Fire Department to a minimum of 10 per shift	Fire Department	Possible use of Safer Grant
Purchase x2 Portable light tower/ generators	Fire Department Police Department	16,000



Mitigation Action	Lead Agency	Comments and Details
3 digital reader boards for community awareness	Fire Department City Administration	Increase Emergency Alert Capability
1250 gallon towable water buffalo	Comm. Services Fire Department	
Purchase 36 porta cool fans	Fire Department EM Coordinator	\$12,000
Re-assess location for emergency operations center (EOC) and harden all City structure	Fire Department Police Department City Manager	Possible grant procurement
Mobile Command Vehicle	Fire Department Police Department	100K+
Develop a Comprehensive Emergency Management Plan that encompasses all City functions in Emergency Operations Plan. Post-Disaster Recovery Plan	Fire Department EM Coordinator	High Priority
Develop a COOP/ COG plan that will serve as the framework to protect City operations	Fire Department EM Coordinator	High Priority
Develop a grant procurement team that will handle all grant procurement	Fire Department City Administration	High Priority
Increase training for essential personnel in NIMS training and Unified Multi-Hazard incident Command	Fire Department Police Department Department heads	High Priority
Full complement of riot gear for all HPD personnel including tactically trained emergency medical services (EMS) personnel	Police Department	



Mitigation Action	Lead Agency	Comments and Details
New gas masks and filters for all HPD personnel and tactically trained EMS personnel	Police Department	

Proposed Hazard Mitigation Initiatives for the Plan

Hapeville identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 identifies the municipality's updated local mitigation strategy.



**Table 15
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
30.0001	Install surge protection for City Hall which houses server databases	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$2000	HMA, Local	2016-2021	8
30.0002	Install surge protection at the Police Station which houses its own database servers	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$5000	HMA, DHS, Local	2016-2021	8
30.0003	Install surge protection at Fire Station #2	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$1000	HMA, SCG, Local	2016-2021	8
Comments: Lightning surges can damage older repeaters, which serve as their backup communications system.										
30.0004	Install surge protection at the Community Services building	Hapeville	Community Services	Severe Weather	2.2 2.11	Property Protection	\$1000	HMA, Local	2016-2021	8
	Comments: This building which IT Administration; Planning & Zoning; Public Works Administration; Plan Review Data and other data records. All GIS data is located at this building as well which is on a server with no external backup.									
30.0005†	Revise site plan review process to ensure that site plan review is part	Hapeville	Community Services	All Hazards	2.3, 4.1 4.2 4.4	Prevention	\$2000	Local	2016-2021	9



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	of the interdepartmental plan review process									
	<p>Comments: Currently the site plan review is performed by a position that is a political appointment and the planning commission may not be receiving technical expert reports and studies such as slope and connections to infrastructure. The current process only provides information on setbacks, landscape, etc.</p> <p>Comment: The current pipe capacity causes flooding in the park and roadway resulting in damage to the road and causing people to be caught in the flood waters.</p>									
30.0006	Improve drainage in the area of South Central Avenue by increasing the size of the underground storm drain	Hapeville	Community Services	Flooding	6.1	Structural Project	\$50,000	HMA, FMA, Local	2016-2021	9
	<p>Comments: Flooding impacts the business district and floods on both sides of the railroad tracks. Businesses are moving out of the area causing economic harm to the City. It also results in flooding at the fire station located at 870 S. Central Ave in which flood waters have flowed through the front garage door and out the back. The City would like to reroute the piping under the railroad. Refer to Hapeville flooding map for location of these choke points.</p>									
30.0007	Perform curb modification on Oakdale Road, which currently has header rocks. Installation of curb and gutters will improve storm water drainage	Hapeville	Community Services	Flooding	6.1	Structural Project	10,000	HMA, Local	2016-2021	9



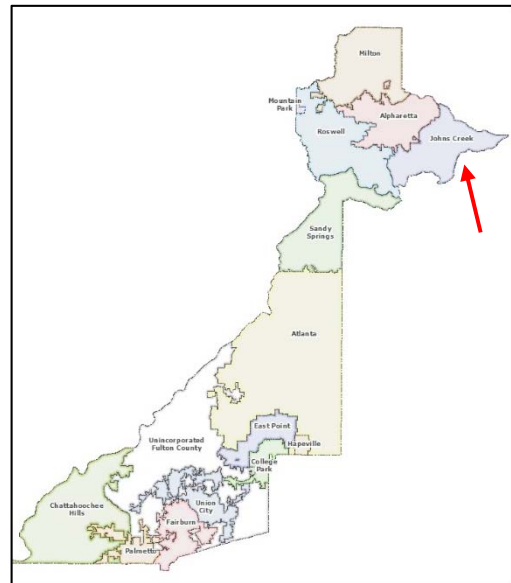
Annex 8

CITY OF JOHNS CREEK, GEORGIA MITIGATION ACTION PLAN

Geography/History

The City is a northeastern suburb of Atlanta. Johns Creek is bounded by Roswell to the west and south, Alpharetta to the northwest, Forsyth County and the City of Suwanee to the north, and Gwinnett County to the south and east.

In the early 19th century, the Johns Creek area had several trading posts along the Chattahoochee River. Some trading posts gradually became crossroads communities where pioneer families gathered to visit and sell their crops. By 1820, the community of Sheltonville was a ferry-crossing site, with the McGinnis Ferry and Rogers Ferry carrying people and livestock across the river for a small fee. Further south, the Nesbit Ferry did the same near another crossroads community known as Newtown. In 1831, much of the land in the former Cherokee Nation north of the Chattahoochee was combined into the massive Cherokee County. When Johns Creek County was formed in 1858, the Johns Creek area was folded into it. In the 1930s, during the Great Depression, Johns Creek County was dissolved and all of its land was then absorbed into Fulton County.



By 2000, a grassroots movement to incorporate the Johns Creek area into a City was slowly developing. Residents wanted more control over issues such as traffic, growth, development and their quality of life. In 2005, a legislative campaign was started to incorporate the Johns Creek community. House Bill 1321 was passed by the state legislature, signed by Gov. Sonny Perdue in March 2006, and approved by the residents of northeast Fulton County in a July 18, 2006 voter referendum. In November 2006, the City's first elected officials were voted into office, with the City of Johns Creek becoming official December 1, 2006.

According to Money Magazine, Johns Creek is the 13th highest-earning City in the United States.

Significant Characteristics

In 1981, a group of Georgia Institute of Technology graduates bought 1,700 acres of farmland and woods near McGinnis Ferry and Medlock Bridge Roads for a high-tech office park. The new office park was to mirror one built in 1970 in nearby Peachtree Center, known as Technology Park/Atlanta. This is the first reference to Johns Creek as a place. The area grew over the years



to become the home of 200 companies with nearly 11,000 people spread over 6,000,000 square feet of office, retail, and industrial space. With the jobs came houses and shopping centers, and the population increased to about 60,000.

Today, Johns Creek has metro Atlanta’s only part-time, fully professional symphony orchestra, the Johns Creek Symphony Orchestra under the leadership of Music Director, J. Wayne Baughman, the orchestra performs several times each year. Johns Creek also is the home to the Johns Creek Arts Center, which offers classes and camps for aspiring artists in multiple media throughout the year.

There also are several festivals year-round, such as Founders Week in December in which the community celebrates the City’s incorporation with activities and a parade. The “Fall Family Festival” in September is a community get-together at Newtown Park. Arts on the Creek is a juried art show, and also has musical and stage performers. "The Taste of Johns Creek" is an annual food festival in the fall that features more than 40 local restaurants with proceeds supporting public school extracurricular activities.

Johns Creek also has the Autrey Mill Nature Preserve and Heritage Center, which offers a replica of a Creek Indian hut, a 1800s historic village, and wildlife in 46 acres of woodlands. Biking the four-mile Greenway along Georgia 141 is also a popular pastime. The City has plans to develop and connect other pathways to the Greenway, which will tie in with other cities, adding several miles of trails.

Population and Demographics

The 2010 U.S. Census reported 76,728 people live in the City of Johns Creek, a 27.1 percent increase since a 2000 estimate for Georgia's 10th largest City. The racial makeup of the City in the 2010 U.S. Census was 63.5 percent White; 23.4 percent Asian; 9.2 percent African American; 5.2 percent Hispanic or Latino; 0.1 percent Native American; 1.4 percent from other races (totaling more than 100%); and 2.4 percent from two or more races.

As of 2007, there were about 70,050 people estimated, with 23,013 households, and 18,740 families residing in the City. The racial makeup of the City was 73.8 percent White; 13.7 percent Asian; 8.8 percent African American; 4.5 percent Hispanic or Latino; 0.1 percent Native American; 1.3 percent from other races; and 2.2 percent from two or more races.

Table 1
City of Johns Creek Population Since 1990

Year	1990	2000	2010	2014
Population	--	--	76,728	83,102 est.

- *Since the City's December 2006 incorporation, it has used an estimated population of 70,050 for planning purposes. The City did not exist at the time of the U.S. Census in 2000, therefore official U.S. Census data did not exist.*

Economy

Johns Creek's 2013 demographics showed an estimated \$102,251 median household income, a \$108,509 average household income and a \$42,465 per capita income.

Below is a chart of main industries based on the 2012 data from the United States Census Bureau.



**Table 2
Main Industries Based on Census Data**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	67	231
Retail Trade	149	1,831
Information	35	250 -499
Real Estate, Rental, Leasing	99	250-499
Professional, Scientific and Technical services	581	1,819
Administrative and Support and Waste Management and Remediation Service	111	3,411
Educational Services	61	935
Health Care and Social Assistance	160	2,402
Accommodation and Food Services	137	2,100
Other Services	87	250-499

Below is a list of City issued permits for the construction of single-family homes dating from 2006 to 2014.

**Table 3
Single-Family New House Construction Building Permits**

Year	Permits
2006	0
2007	151
2008	162
2009	105
2010	139
2011	133
2012	177
2013	203
2014	115
2015	293

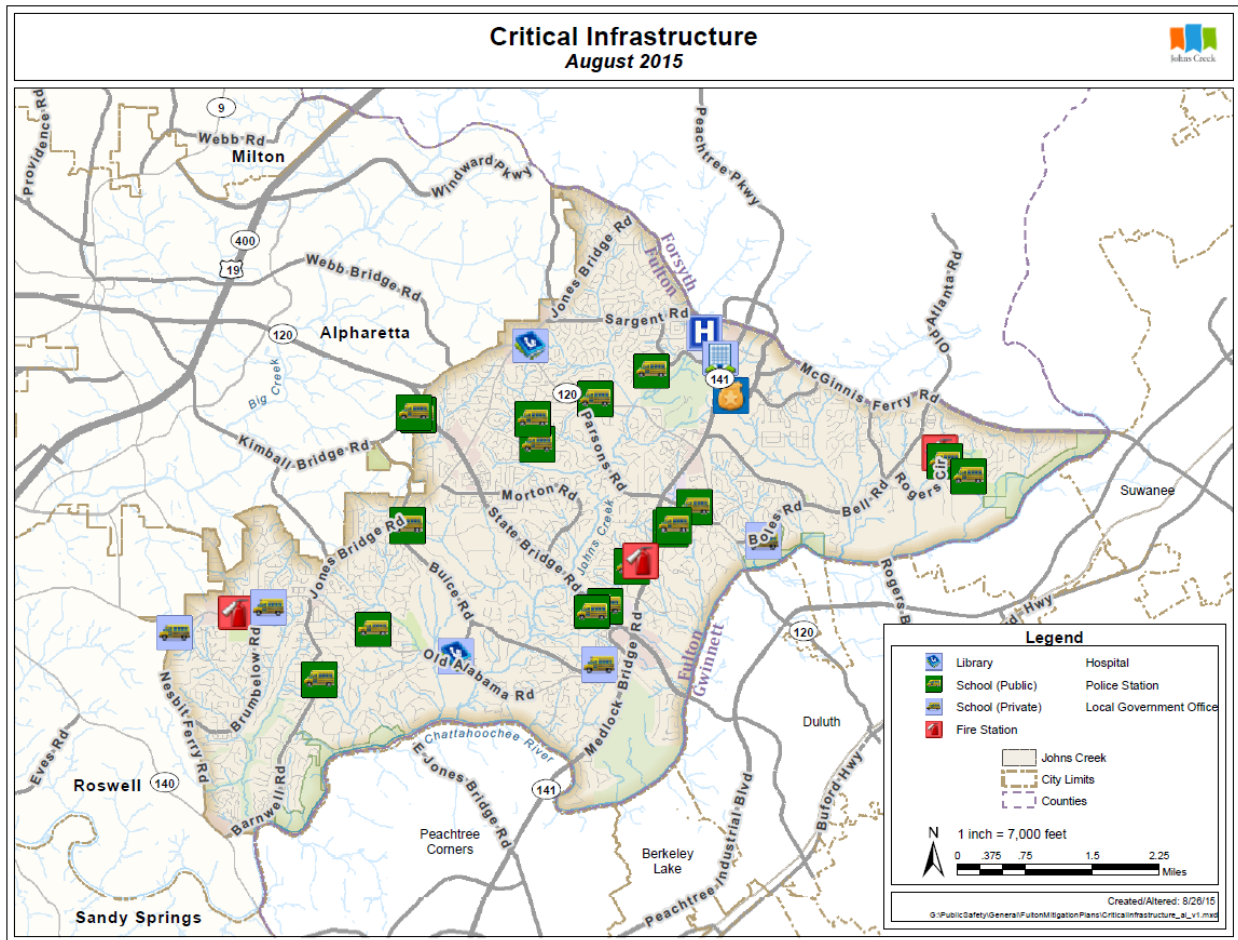
Infrastructure

Johns Creek Police Department is a career-based department that services the residents of the City. Johns Creek also has its local Fire Department, which includes dedicated firefighters,



paramedics, emergency medical technicians (EMTs), and administrative staff. The Fire Department has a continuous focus on fire education and prevention, quality emergency medical care, technical rescue and hazardous materials emergency response – making the community safer each day. The Johns Creek Fire Department (JCFD) maintains a high level of readiness through its professional development and training of our personnel. Below is a map of the critical infrastructures in Johns Creek:

**Figure 1
Critical Infrastructure Locations**



The school system within the City limits consists of the following items listed in Table 4:

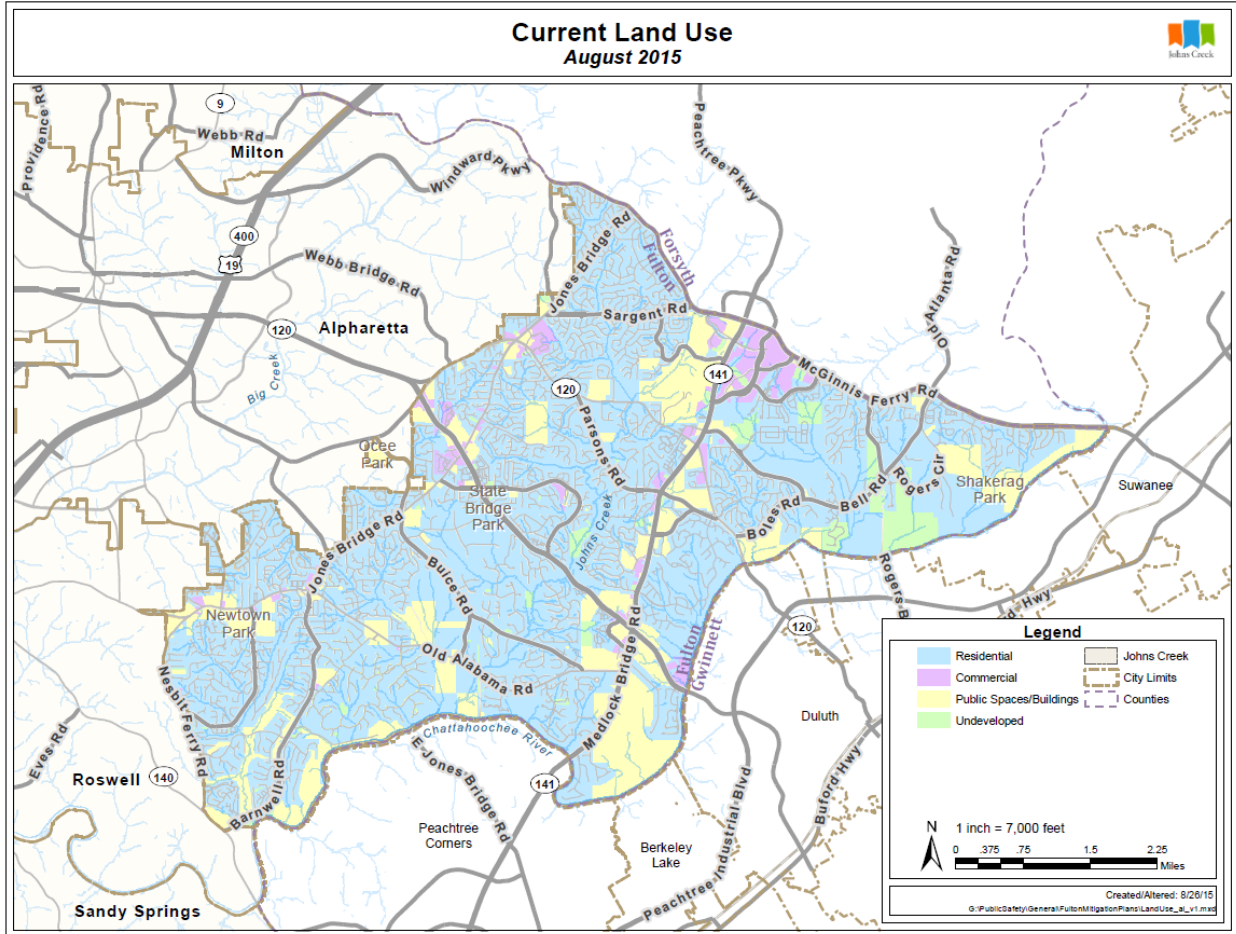
**Table 4
Johns Creek School Infrastructure**

School	Type	Enrollment
Nursery School, preschool	Public	43
Kindergarten to 12 th grade	Public	23,697
College, undergraduate	NA	NA
Graduate, professional school	NA	NA

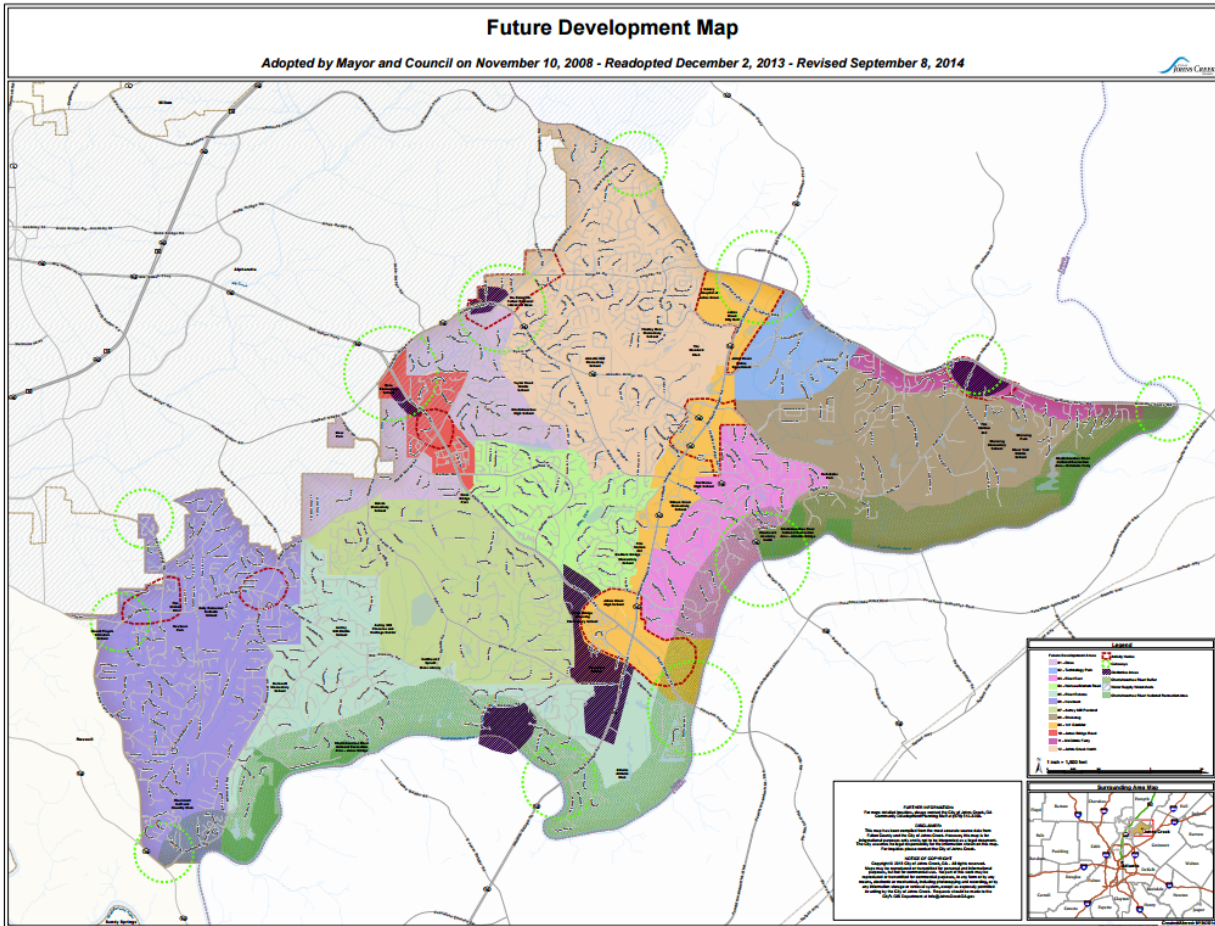
Land Usage

Johns Creek is a total of 32 square miles. At one time, the City was mainly residential, but as the City started growing, innovative businesses soon followed to be near their employee base. Several Fortune 500 companies located in the master-planned Technology Park/Johns Creek helped the the 1,900 acre mixed-use development and the unincorporated community surrounding it to grow. Below is a map that shows the current land use of the City:

**Figure 2
Current Land Use Map**



**Figure 3
Future Development Map**



Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 5
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local		
Capital Improvements Plan	Yes	Local		



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Floodplain Management / Basin Plan	Yes	Local		
Stormwater Management Plan	Yes	Local		
Open Space Plan	No			
Stream Corridor Management Plan	Yes	County		
Watershed Management or Protection Plan	Yes	County		
Economic Development Plan	Yes	Local		
Comprehensive Emergency Management Plan	Yes	Local	EM	
Emergency Operation Plan	Yes	Local	EM	
Post-Disaster Recovery Plan	Yes	Local	EM	
Transportation Plan	Yes	Local		
Strategic Recovery Planning Report	Yes			
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local		
Zoning Ordinance	Yes	Local		
Subdivision Ordinance	Yes	Local		
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local		
NFIP: Cumulative Substantial Damages	Not at this time			
NFIP: Freeboard	Yes	State, Local		State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Not at this time			
Site Plan Review Requirements	Yes			



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Storm water Management Ordinance	Yes			
Municipal Separate Storm Sewer System (MS4)	Yes			
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			Johns Creek does have a COOP for municipal services
Real Estate Disclosure Requirement	Not at this time			
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Johns Creek.

**Table 6
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	
Mitigation Planning Committee	Yes	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Yes	
Maintenance Programs to Reduce Risk	Yes	
Mutual Aid Agreements	Yes	
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	



Resources	Is This In Place?	Department/ Agency/Position
Planners or engineers with an understanding of natural hazards	Yes	
NFIP Floodplain Administrator	Yes*	
Surveyor(s)	Yes	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	
Grant Writer(s)	Yes	
Staff with expertise or training in benefit/cost analysis	Yes	
Professionals trained in conducting damage assessments	Yes	JCOEM Director

*If you participate in the NFIP, then you have a Floodplain Administrator.

Fiscal Capability

The table below summarizes financial resources available to Johns Creek.

**Table 7
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other Federal or State Funding Programs	Yes
Open space acquisition funding programs	Yes



Financial Resources	Accessible or Eligible to Use
Other	Yes

Community Classifications

The table below summarizes classifications for community program available to Johns Creek.

**Table 8
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Yes		
Building Code Effectiveness Grading Schedule (BCEGS)	Yes		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Class 2	2015
Storm Ready	Yes		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Yes		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Johns Creek’s current hazard mitigation capability.

**Table 9
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability		X	
Community Political Capability			X



Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Community Resiliency Capability			X
Capability to Integrate Mitigation into Municipal Processes and Activities			X

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Grant Hickey

Johns Creek is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Their last Community Assistance Visits (CAV) was completed in 2015.

Loss History and Mitigation

Johns Creek does not currently maintain a list of properties that have been flood damaged; however, records do show that four homes have had water in their basements and the City has identified 34 properties in floodplain. The floodplain administrator has the ability to make substantial damage estimates if needed. To date no property owners have expressed an interest in the mitigation process.

Planning and Regulatory Capabilities

Johns Creek does use local ordinance, plans, and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. Johns Creek also performs permit review, inspections, damage assessments, and record keeping, GIS as well as education and outreach through open house, senior lunches, and learning.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Johns Creek; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Johns Creek does currently participate in the CRS program and has a class 8 rating as of May 2015.



Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 10
Local Hazard Event History 2010 – 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated ?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages
September 21, 2009	Flood (DR1858)	Yes	Flood

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.
 - Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
 - Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a month.
 - Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

- Level II – Critical
 - Personnel: Permanent disability, severe injury or illness.
 - Public: Permanent disability, severe injury or illness.
 - Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
 - Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than two weeks.



- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of



protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

Table 11
Risk Assessment per the Mitigation Planning Committee

Johns Creek Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Drought	P	P	L	L	10
Sinkhole	P	P	P	P	8
Flood	U	U	P	L	7
Winter Storm	U	U	P	L	7
Tornadoes	U	U	P	P	6
Heat Wave	U	U	P	P	6
Tropical System	U	U	P	P	6
Severe Weather	U	U	U	P	5
Wildfire/Urban Interface	U	U	U	U	4
Dam Failure	U	U	U	U	4
Earthquake	U	U	U	U	4
Average by Risk	1.18	1.18	1.72	2	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 12
Status of Mitigation Actions**

Project Number	2011 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
0001	Signage for severe weather at parks and open spaces	Parks	No Progress	New action for 2016 plan	Include in 2016 HMP	
0002	Develop a Debris Management Plan	JCOEM	Draft under Development	New action for 2016 plan	Include in 2016 HMP	
0003	Debris Removal Contract	JCOEM	Draft under development	New action for 2016 plan	Include in 2016 HMP	Develop and Post RFP

Proposed Hazard Mitigation Initiatives for the Plan

Johns Creek identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 13 identifies the municipality's updated local mitigation strategy.



**Table 13
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Estimated Timeline for Completion	STAPLEE Score
02.0001	Signage for severe weather at parks and open spaces	Johns Creek	Parks	All Hazards	7.9	Public Education and Awareness; Prevention	\$2000	Local; others not yet identified	2016-2020	8
02.0002	Develop a Debris Management Plan	Johns Creek	Emergency Management	Severe Weather, Winter Storms, Tropical Systems, Tornado, Flood	1.5 4.1 4.15 5.5	Local Plans and Regulations, Natural Resource Protection	\$3600	Local; others not yet identified	2016-2020	8
Comments: Johns creek is currently drafting a debris management plan										
02.0003	Debris Removal Contract	Johns Creek	Emergency Management	Severe Weather, Winter Storms, Tropical Systems, Tornado, Flood	1.5 4.1 4.15 5.5	Local Plans and Regulations, Natural Resource Protection	\$3600	Local; others not yet identified	2016-2020	8
Comments: Johns Creek is looking to establish a pre-event contract for disaster debris removal to include haulers, reduction and site monitors.										
02.0004	Require mandatory water conservation measures during drought emergencies	Johns Creek	JC OEM (Office of Emergency Management)	Water Conservation/ Drought	1.5 4.1 4.15 5.5	Local Plans and Regulations	Staff Time, TBD	HMA, FMA, Local	2016-2021	8
Comments: Johns Creek will adopt ordinances specified by Fulton County to prioritize or control water use, particularly for emergency situations like firefighting and develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc.										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Estimated Timeline for Completion	STAPLEE Score
02.0005	Create a program encouraging to take water-saving measures.	Johns Creek	JC OEM (Office of Emergency Management)	Water Conservation/Drought	1.5 4.1 4.15 5.5	Local Plans and Regulations	Staff Time, TBD	HMA, FMA, Local	2016-2021	8
<p>Comments: Johns Creek will encourage citizens to: install low-flow water saving showerheads and toilets; turn water flow off while brushing teeth or during other cleaning activities, adjust sprinklers to water the lawn and not the sidewalk or street, run the dishwasher and washing machine only when they are full, check for leaks in plumbing or dripping faucets, install rain-capturing devices for irrigation and encourage the installation of graywater systems in homes to encourage water reuse.</p>										

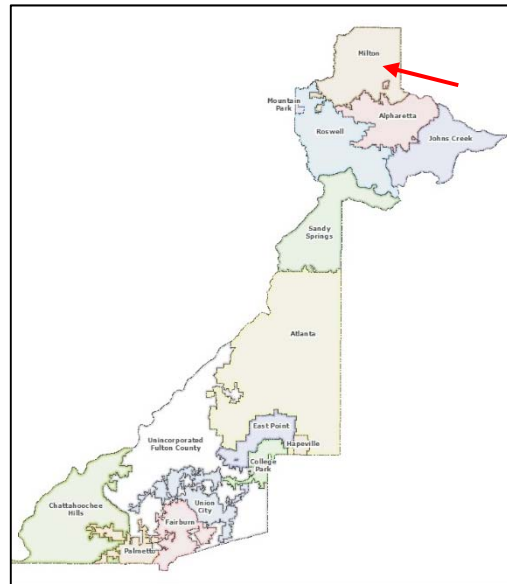


Annex 9

CITY OF MILTON, GEORGIA MITIGATION ACTION PLAN

Geography/History

Milton, which is located in Fulton County, was incorporated on December 1, 2006. It was created out of the entire unincorporated northwestern part of northern Fulton County. Milton is named in honor of the former Milton County, which was named after Revolutionary War Hero John Milton. After debate, the Georgia State House and Senate approved a bill creating the City of Milton on March 9, 2006. On March 28, Governor Sonny Perdue signed the bill into law. In July 2006, voters approved a ballot referendum on July 18. On August 4, 2006, Governor Sonny Perdue appointed a five-person commission to serve as the interim government of Milton. Milton adopted the existing County ordinances on December 1, 2006



Milton is boarded by the cities of Roswell and Alpharetta on the south, and the counties of Forsyth on the east and Cherokee on the north and west.

Significant Characteristics

Milton is a community that is known for small-town life and heritage with its scenic landscapes and peacefulness.

Population and Demographics

According to the Census Bureau's 2010, the population of Milton is 32,661. The City is 76.6% white, 10.4% Asian, 9.0% African American, 6.0% Hispanic or Latino of any race, and 0.2% Native American.

Table 1
City of Milton Population Since 1990

Year	1990	2000	2010	2014
Population	--	--	32,661	36,662 est.



Economy

The median income for a household in the City is \$112,713, while the median income for a family is \$130,881. The per capita income for the City is \$57,673.

Below is a chart of local industries based on data from the United States Census Bureau 2012:

**Table 2
Industries Based on Data from 2012**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	20	147
Retail Trade	56	916
Information	16	159
Real Estate, Rental, Leasing	24	Not Available
Professional, Scientific and Technical Services	205	4,498
Administrative and Support and Waste Management and Remediation Service	62	3509
Educational Services	14	67
Health Care and Social Assistance	29	170
Accommodation and Food Services	44	635
Other Services	33	194

Below is a list of City issued permits for the construction of single-family homes dating from 2006 to 2014.

**Table 3
Single-Family New House Construction Building Permits**

Year	Permits
2006	0
2007	87
2008	175
2009	43
2010	68
2011	105
2012	328
2013	309
2014	91



Infrastructure

The Milton Police Department is a career-based department with a total of 39 officers. The police department was established in 2007. Milton also has its own fire department, which has three fire stations and houses a ladder truck at an Alpharetta station through an automatic aid agreement. The schools within the City limits consists of the following items in Table 4:

Table 4
Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	10
Kindergarten to 12 th grade	Public	756
College, undergraduate	Not Reported	Not Reported
Graduate, professional school	Not Reported	Not Reported

Land Usage

Milton is a total of 38.7 square miles, with 38.5 square miles of that being land. There is 1.3% of the City that is a waterway. Milton is primarily agricultural with spurts of residential and commercial areas. Below is the current zoning and future land use for Milton:

Figure 1
Current Zoning

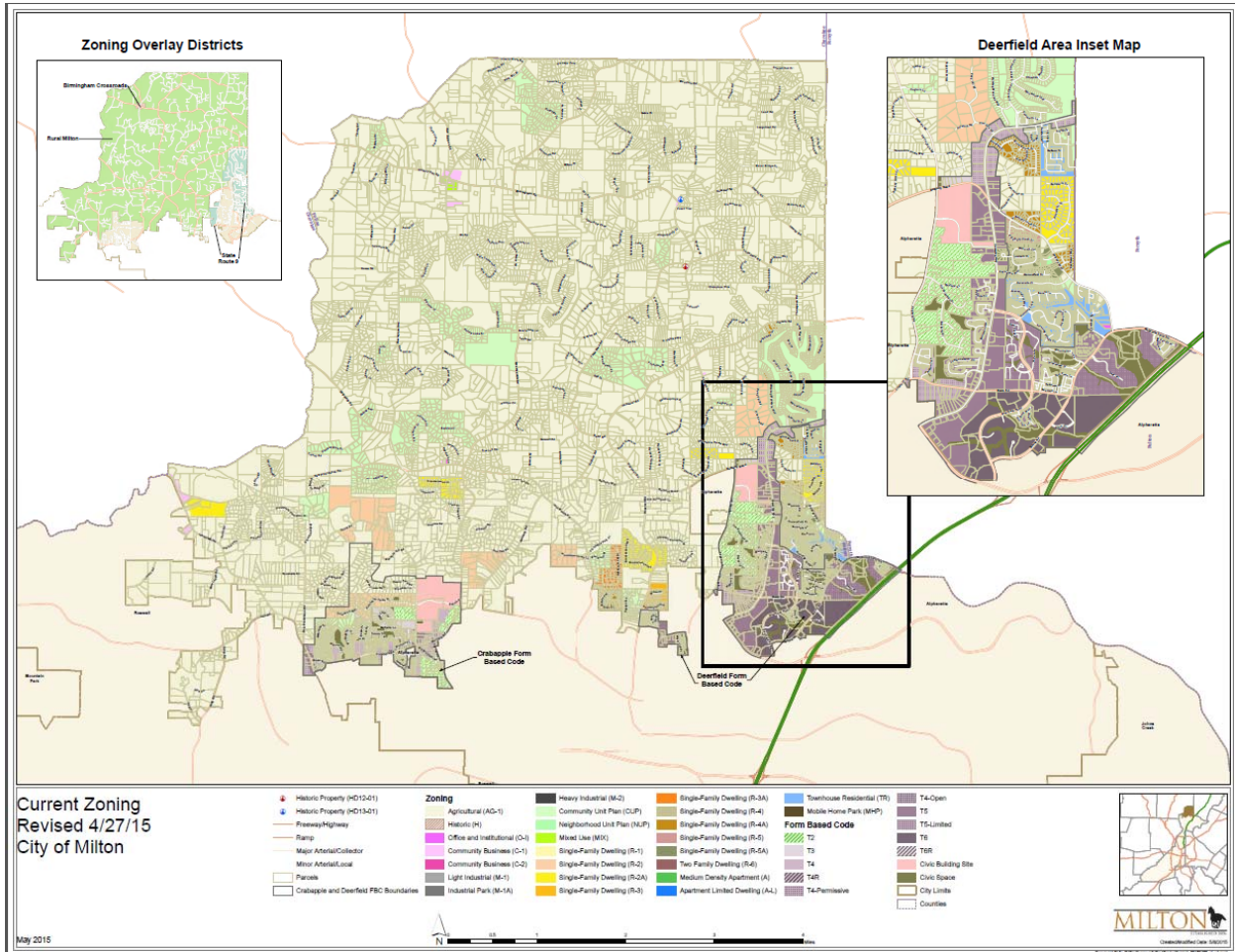
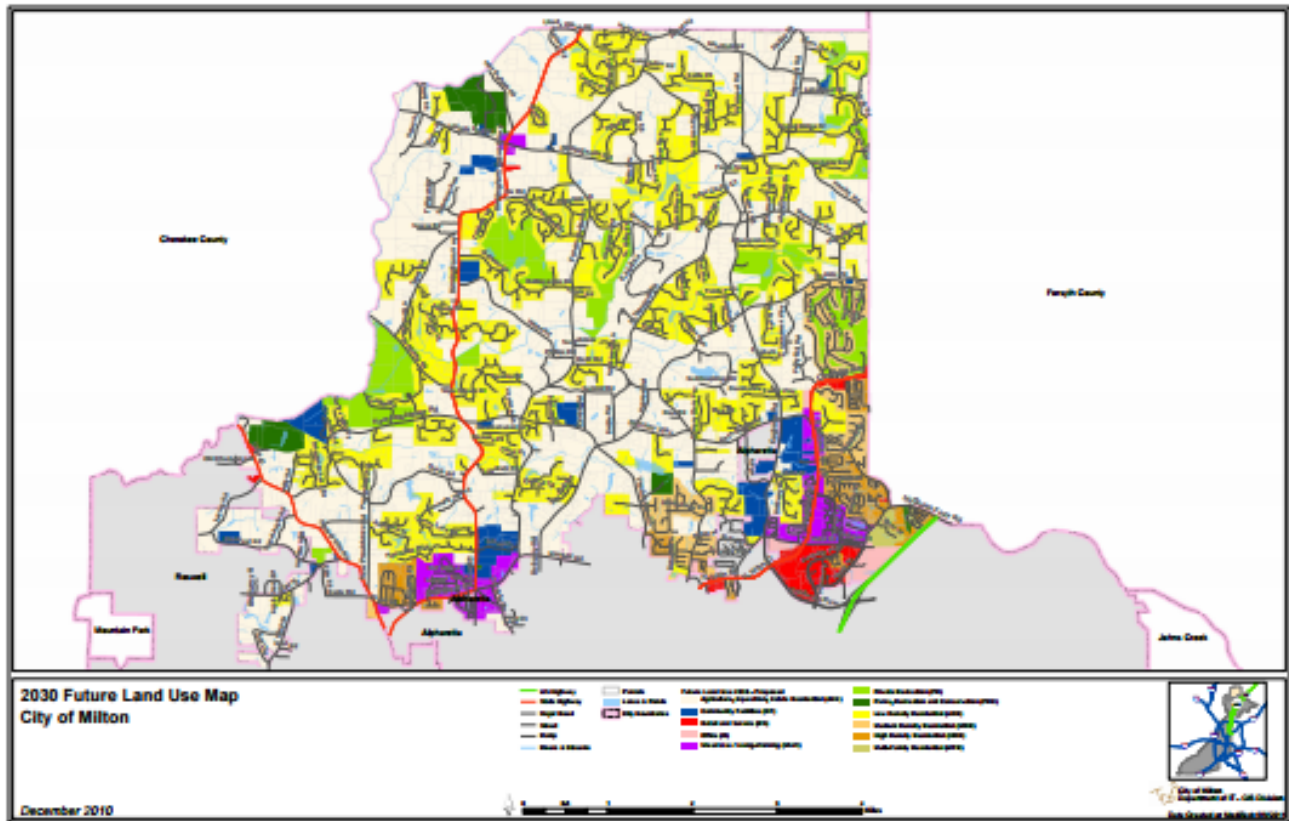
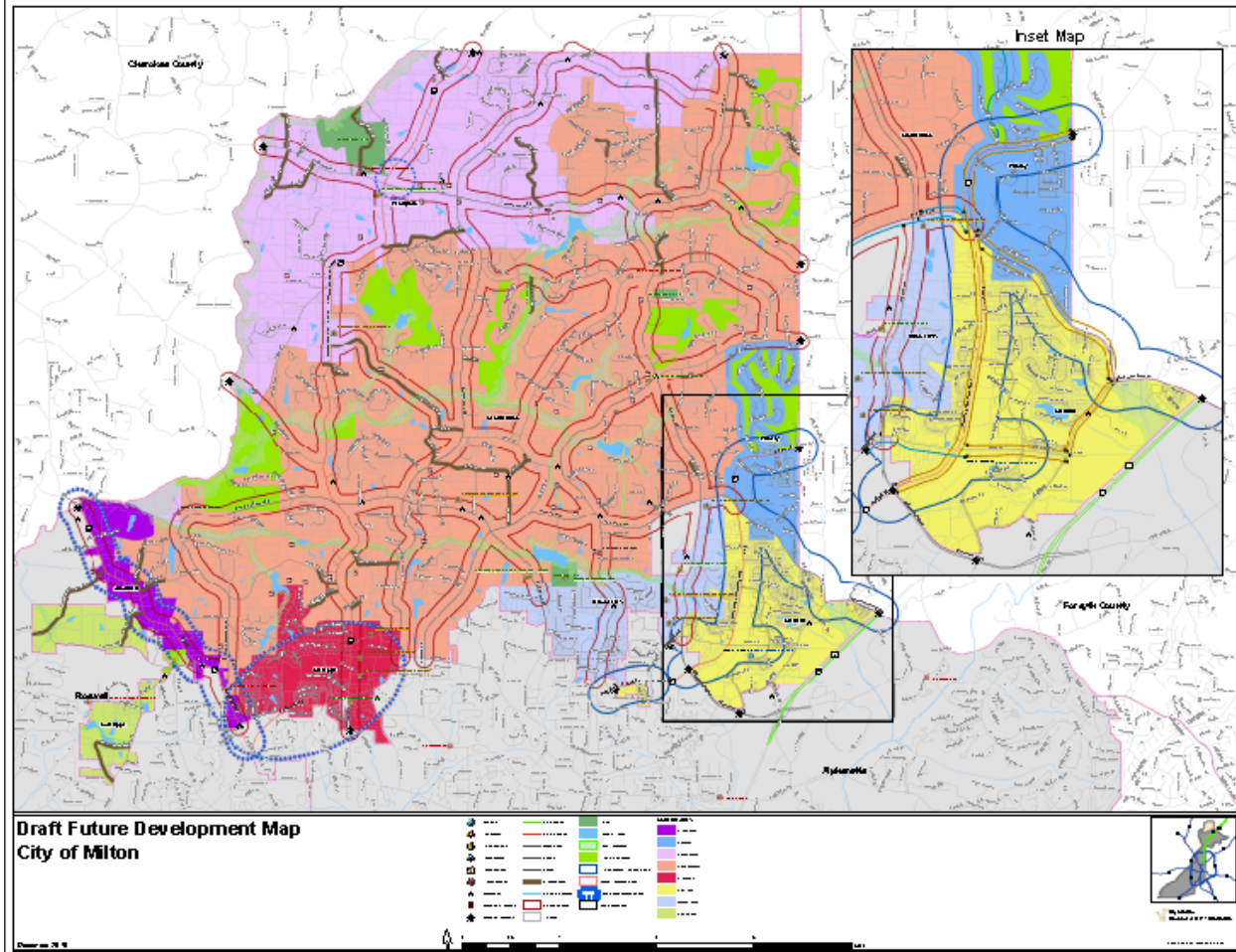


Figure 2
Future Land Use



**Figure 3
Future Development**



Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.

**Table 5
Recent and Known Future Developments**

Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
Braeburn	12	Residential	1135;	Increase Population / Fire Hazard	Built Out
King Estates	15	Residential	1161;1162	Increase	Built Out



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				Population / Fire Hazard	
Glen Haven	24	Residential	1108;1109	Increase Population / Fire Hazard	Built Out
Crabapple Crossroads I, II, III	30	Residential	1135;1136;	Increase Population / Fire Hazard	Built Out
Deerfield Green III	34	Residential	1044;	Increase Population / Fire Hazard	Built Out
Haywood Commons	27	Residential	970;	Increase Population / Fire Hazard	Built Out
Braeburn	12	Residential	1135	Increase Population / Fire Hazard	Built Out
Henderson Landing	15	Residential	1123;	Increase Population / Fire Hazard	Built Out
Deerfield Green IV	31	Residential	1045;	Increase Population / Fire Hazard	Built Out
Crabapple Station	15	Residential	1170;	Increase Population / Fire Hazard	Built Out
Hidden Forrest	10	Residential	972;	Increase Population / Fire Hazard	Built Out
Known or Anticipated Development in the Next Five (5) Years					
Hardeman Store	1	Commercial	679	Commercial	Final
Blue Valley Phase 2	31	Residential	199, 197, 235	Increase Population	Homes Under Construction



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				/ Fire Hazard	
Blue Valley Phase 3	38	Residential	199, 197, 235	Increase Population / Fire Hazard	Homes Under Construction
Muirfield Place	14	Residential	606, 607, 614	Increase Population / Fire Hazard	Homes Under Construction
High Grove	15	Residential	736;777	Increase Population / Fire Hazard	Homes Under Construction
Reserve at Providence	36	Residential	842;843;886;887;914	Increase Population / Fire Hazard	Homes Under Construction
Blue Valley	29	Residential	194;195;196;197;235;237;238	Increase Population / Fire Hazard	Homes Under Construction
Lake Haven	60	Residential	915;958	Increase Population / Fire Hazard	Homes Under Construction
Hawthorne Manor	12	Residential	847;	Increase Population / Fire Hazard	Homes Under Construction
Laura Villa Estates	3	Residential	1028;	Increase Population / Fire Hazard	Homes Under Construction
Triple Crown V	9	Residential	812;813	Increase Population / Fire Hazard	Homes Under Construction
Manorview	72	Residential	181; 182;183;250;251	Increase Population / Fire Hazard	Homes Under Construction
The Manor 2 E 2	11	Residential	323;324	Increase Population	Homes Under Construction



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				/ Fire Hazard	
The Manor 5 B	5	Residential	396;397	Increase Population / Fire Hazard	Homes Under Construction
Hayfield Extension	21	Residential	812;845	Increase Population / Fire Hazard	Homes Under Construction
Taylor Estates	12	Residential	633;	Increase Population / Fire Hazard	Homes Under Construction
Grove at Birmingham	39	Residential	450;451	Increase Population / Fire Hazard	Homes Under Construction
Kingsley Estates	30	Residential	239;	Increase Population / Fire Hazard	Homes Under Construction
Hampshires II	11	Residential	241;	Increase Population / Fire Hazard	Homes Under Construction
Highland @ N Valley	3	Residential	887;	Increase Population / Fire Hazard	Homes Under Construction
The Manor 2 E	62	Residential	1252;1251;	Increase Population / Fire Hazard	Homes Under Construction
The Manor 2 A	6	Residential	398;	Increase Population / Fire Hazard	Homes Under Construction
Valmont	8	Residential	706;663	Increase Population / Fire Hazard	Homes Under Construction
Birmingham Estates	51	Residential	268;269;270	Increase Population	Homes Under Construction



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				/ Fire Hazard	
Killian Manor	14	Residential	381, 412	Increase Population / Fire Hazard	Homes Under Construction
North Point Forest	36	Residential	190, 243	Increase Population / Fire Hazard	Homes Under Construction
Heritage at Crabapple	63	Residential	1096;1137	Increase Population / Fire Hazard	Homes Under Construction
Parkview	14	Residential	1169	Increase Population / Fire Hazard	Homes Under Construction
Hidden Forrest	25	Residential	972	Increase Population / Fire Hazard	Homes Under Construction
Gray Stone Lake	7	Residential	622;	Increase Population / Fire Hazard	Platted
Bakers Farm	5	Residential	190;191	Increase Population / Fire Hazard	Platted
Minor plat	2	Residential	820;863	Increase Population / Fire Hazard	Platted
Minor plat	3	Residential	462;463	Increase Population / Fire Hazard	Platted
Freemanville Crossing	12	Residential	242;	Increase Population / Fire Hazard	Platted
Bentwater	10	Residential	1028;	Increase Population	Platted



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				/ Fire Hazard	
St. Francis Practice Gym	3	Institutional	978, 977	School / Target Hazard	Under Construction
Northwestern MS	1	Institutional	1039, 1040	School / Target Hazard	Under Construction
Crabapple Mercantile	1	Commercial	1136	Commercial	Under Construction
Mill Spring Academy	1	Institutional	803, 854-858	School / Target Hazard	Under Construction
Kensley	73	Residential	1049	Increase Population / Fire Hazard	Under Construction
Manor Enclave	49	Residential	326; 393; 394; 395	Increase Population / Fire Hazard	Under Development
North Point Forest	34	Residential	190; 243	Increase Population / Fire Hazard	Under Development
Rivers Edge	15	Residential	519-521	Increase Population / Fire Hazard	Under Development
Rivers Edge	23	Residential	519-521, 560-562	Increase Population / Fire Hazard	Under Development
Capital City East	23	Residential	878, 879	Increase Population / Fire Hazard	Under Development
Capital City West	18	Residential	877	Increase Population / Fire Hazard	Under Development
Water's Edge	19	Residential	322, 327	Increase Population / Fire	Under Development



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				Hazard	
Ebenezer Pond	18	Residential	1071, 1090	Increase Population / Fire Hazard	Under Development
Milton Crossing	29	Residential	314. 263	Increase Population / Fire Hazard	Under Development
Brickmont Assisted Living	1	Institutional	1048	Increase Population / Fire Hazard / Life Safety	Under Development
Phoenix Senior Living	1	Institutional	831	Increase Population / Fire Hazard / Life Safety	Under Development
Crabapple Green	11	Residential	1166; 1167	Increase Population / Fire Hazard	Under Development
Oakmont	33	Residential	1168	Increase Population / Fire Hazard	Under Development
Thompson Road	27	Residential	472, 466, 465, 399	Increase Population / Fire Hazard	Under Development
Meadowood	3	Residential	1139;	Increase Population / Fire Hazard	Under Review
Wood Acres	3	Residential	699, 742	Increase Population / Fire Hazard	Under Review
Newman Farms	25	Residential	383	Increase Population / Fire Hazard	Under Review
Bethany Bend	27	Residential	832	Increase	Under Review



Property or Development Name	# of Units / Structures	Type (e.g. Res., Comm.)	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				Population / Fire Hazard	
Crescent Ridge	12	Residential	1037	Increase Population / Fire Hazard	Under Review
JW Commercial	1	Commercial	1135	Fire Hazard	Under Review
Del Taco	1	Commercial	1042, `1047	Fire Hazard	Under Review
Birmingham at Birmingham	33	Residential	409, 410, 456	Increase Population / Fire Hazard	Under Review

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	Community Development	
Capital Improvements Plan	Yes	Local	Finance / Departments	The City has a CIP and several departments have an individual CIP within that
Floodplain Management / Basin Plan	Yes	State	Public Works	Chapter 20, Environment
Stormwater Management Plan	Yes	State	Public Works	Chapter 20, Environment
Open Space Plan	Yes	Local	Community Development	
Stream Corridor	Yes	Local	Public Works	Chapter 20, Environment



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Management Plan				
Watershed Management or Protection Plan	No			
Economic Development Plan	No			
Comprehensive Emergency Management Plan	Yes	Local	Fire/EMA	
Emergency Operation Plan	Yes	Local	Fire/EMA	Milton LEOP
Post-Disaster Recovery Plan	Yes	Local/Fed	Fire/EMA	Milton LEOP
Transportation Plan	Yes	Local	Public Works	
Strategic Recovery Planning Report	Not at this time	NA	NA	NA
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local	Building Dept./ Safebuilt	2012 I codes w/ Ga Amendments
Zoning Ordinance	Yes	Local	Com Dev	Chapter 64, Zoning
Subdivision Ordinance	Yes	Local	Com Dev	Chapter 50, Subdivisions
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Com Dev	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
NFIP: Cumulative Substantial Damages	Yes	Local	Com Dev	Chapter 20, Flood Prevention
NFIP: Freeboard	Yes	State, Local	Com Dev	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Yes	Local	Com Dev	Various City Ord / Zoning
Site Plan Review Requirements	Yes	Local/State	Fire Marshal / Building/Engineer	State Codes (2012 IBC, IFC, LSC, etc.)
Storm water Management Ordinance	Yes	Local	Local	Chapter 20, Stormwater Ordinance
Municipal Separate Storm Sewer System (MS4)	Yes	State & Local	Local	State mandate, under EPD review



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Natural Hazard Ordinance	Yes		Com Dev / Fire / EMA	Limited IFC, City Ordinance
Post-Disaster Recovery Ordinance	Not at this time	NA	Fire / EMA	NA
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	N/A			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Milton.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Community Development
Mitigation Planning Committee	Not Standing	Handled ad hoc between EM and ACM/PW
Environmental Board/Commission	No	
Open Space Board/Committee	No	
Economic Development Commission/Committee	Not at this time	
Maintenance Programs to Reduce Risk	Yes	Public Works
Mutual Aid Agreements	Yes	Mutual Aid and PP Partnerships
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Public Works
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	City Architect and Public Works
Planners or engineers with an understanding of natural hazards	Yes	Public Works
NFIP Floodplain Administrator	Yes*	PW/Local/Plan Rev Engineering



Resources	Is This In Place?	Department/ Agency/Position
Surveyor(s)	Yes	Via Contract
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Not at this time	
Scientist familiar with natural hazards	Yes	Fire Marshal / Public Works
Emergency Manager	Yes	Fire Marshal
Grant Writer(s)	Yes	Fire Marshal
Staff with expertise or training in benefit/cost analysis	Yes	Com Dev/Local/City Arch
Professionals trained in conducting damage assessments	Yes	Fire Marshal and Building Official

**If you participate in the NFIP, then you have a Floodplain Administrator.*

Fiscal Capability

The table below summarizes financial resources available to Milton.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes/Community Development
Capital improvements project funding	Yes/Public Works/Fire Department/Police Department
Authority to Levy Taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact Fees for homebuyers or developers of new development/homes	No* (Impact fee ordinance is currently in the review and approval process)
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other Federal or State Funding Programs	Yes
Open space acquisition funding programs	Yes
Other	NA



Community Classifications

The table below summarizes classifications for community program available to Milton.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	2/2x	Spring, 2015
Storm Ready	Not at this time		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Yes	NA	Monthly
Organizations with Mitigation Focus (advocacy group, non-government)	Yes/MFRF	NA	
Public Education Program/Outreach (through website, social media)	Yes	NA	NA
Public-Private Partnerships	Yes	NA	Fall 2006

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



Hazard Mitigation Capability

The table below summarizes a self-assessment of Milton’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability	X (Charter-Set Millage)		
Community Political Capability			X
Community Resiliency Capability			X
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Jimmy Sanders, CFM, Plan Review Engineer

The City of Milton is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Their last Community Assistance Visits (CAV) were completed in late 2009.

Loss History and Mitigation

Milton does have a system in place to maintain a list of properties that have been flood damaged; however, there are none to date. The floodplain administrator has the ability to make substantial damage estimates if needed. To date no property owners have expressed an interest in the mitigation process. If mitigation actions were sought in Milton it is believed the funding source would primarily be the property owner and insurance.

Planning and Regulatory Capabilities

Milton does use local ordinance, plans, and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. Milton reviews all site plans and building plans for flood compliance, provide all inspections in house, maintain records of all developments and buildings, outreach information about flooding is on web site, assistance is provided to residents and professionals about FEMA requirements, and provide additional mapping information.



Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Milton; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Milton does not currently participate in the CRS program. Joining the CRS program has been considered. At that time, there were no flood policies on buildings in the flood plain and no flood losses reported. Staff has attended the CRS course at EMI, but would be willing to attend again if offered locally.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 – 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages within County
January 9-13, 2011	Winter Storm	No	Winter Storm Response/Damages 11,097 in Fire OT (Attached), Approx. 15,000 in PW and Police OT/Equipment. Traffic/Roadway issues. No fatalities reported. Shelter in place.
January 13, 2013	Winter Storm	No	Winter Storm Prep. EOC / No Details beyond Staffing Traffic/Roadway issues. No fatalities reported. Shelter in place.
January 28, 2014	Winter Storm	No	Winter Storm Response Approx. 25,000 Overtime and Materials – Sheltering in business occupancies/school busses, etc. Vehicles abandoned on roadways causing road hazard. Almost all roads impassable during the duration of the event.
October 14, 2014	EF1 Tornado	No	Private loss with home damage, Utility Damage. Approx. 10,000 tree removal / ROW maintenance. Not itemized. Significant debris, vegetation, power line, and moderate structural damage in the path of the storm traversing from southwest to east of City.



Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages \$78,614.80 Minimal use of emergency shelters. No injuries or deaths. Multiple road closures throughout City. Significant temporary infrastructure impact. City offices closed early 14 th and then closed entirely on the 15 th . Numerous Businesses closed (total loss unavailable). No permanent/acute damage from this event. Road markers needed to be replaced throughout the City. No Funding Provided per Stafford Act guidelines for this declaration.
Aug 2010 through July 2015	Fire	No	Fire Loss \$6,080,208 Significant Life Safety. Several Injuries from smoke inhalation. Firefighters transported to the hospital from heat-related issues on at least two occasions. Significant life disruption for the victim (the large-loss fires during this time have <u>ALL</u> been residential fires that have displaced families.

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal



- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.



Table 12
Risk Assessment per the Mitigation Planning Committee

Milton Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	P	L	L	H	12
Winter Storm	P	L	L	H	12
Flood	P	P	L	H	11
Wildfire/Urban Interface	U	P	L	H	10
Tornadoes	P	P	L	L	10
Dam Failure	P	P	P	P	8
Drought	U	P	P	P	7
Heat Wave	U	U	P	P	6
Earthquake	U	U	P	P	6
Sinkhole	U	U	P	P	6
Tropical System	U	U	U	U	4
Average Risk by Level	1.45	1.82	2.36	2.73	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)



Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

Past and Ongoing Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
56.0001	Retrofit Fire Station #42 to be more wind, impact resistant, surge resistant; improve emergency power generator	Fire Marshal / EM	In Progress	Already planned for a complete replace.	Discontinue	
56.0002	Implement roadway right of way maintenance program for Birmingham, Freemansville, Hopewell, Bethany, and Providence Roads	Public Works Director / ACM	In Progress	Implemented.	Discontinue	
56.0003	Replace wooden wing walls on bridges with concrete wing walls; perform bank restoration and stabilization	Public Works Director / ACM	In Progress	Currently in progress.	Include in 2016 HMP	See public works bid plan.



<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
56.0004	Continue development of GIS web mapping project to allow for real time information of road and other hazard areas to be avoided	Fire Marshal / EM	In Progress	Limited progress. GIS mapping is more sophisticated, but not comprehensive.	Include in 2016 HMP	No specific plan for this project.
56.0005	Develop campaign strategy to increase participation in Nixel notification program	Fire Marshal / EM	Complete	Tornado sirens and CodeRed system in place.	Discontinue	

Potential Hazard Mitigation Initiatives for the Plan

Milton identified additional mitigation initiatives they would like to potentially pursue in the future. Table 14 identifies the municipality's potential hazard mitigation actions.

**Table 14
Potential Mitigation Actions**

<u>Mitigation Action</u>	<u>Lead Agency</u>	<u>Comments and Details</u>
Detailed stormwater inventory	Public Works	We are currently in the RFP stage for a detailed inventory and assessment of our stormwater system.
Bridge Inspection and capital improvement program recommendations	Public Works	We are currently working on a detailed inspections and capital improvement plan for our bridges. We currently have three bridges under contract as part of the pilot program.
Emergency Action Plans for dam safety	Public Works	We are developing Emergency Action Plans in the event of issues or concerns with the dams. We are developing the first report this year as part of that pilot program.



<u>Mitigation Action</u>	<u>Lead Agency</u>	<u>Comments and Details</u>
Road/Intersection Improvements at common flood area, Birmingham and Freemanville Rd.	Public Works	Pending
Hardening of EOC at Fire Headquarters	Fire / Emergency Management	Pending

Proposed Hazard Mitigation Initiatives for the Plan

Milton identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 identifies the municipality's updated local mitigation strategy.

**Table 15
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
56.0001	Replace wooden wing walls on bridges with concrete wing walls; perform bank restoration and stabilization	Milton	Public Works	Flooding	6.8	Structural Project	5 Structures at \$75,000 ea. for \$375,000	HMA, FMA, Local	2016-2021	14
Comments: When the creek swells the water seeps in through wooden wing wall cracks which then flows behind the wall and erodes the embankment. Four bridges were significantly damaged in Sept. 2009 and received PDM funds to replace, but can only replace with wooden wing walls, so the problem will re-occur.										



MILTON MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
56.0002	Continue development of GIS web mapping project to allow for real time information of road and other hazard areas to be avoided	Milton	GIS	All Hazards	1.2	Public Education and Awareness	In house staff and time; \$20,000	HMA, DHS, Local	2016-2021	11
56.0003	Develop campaign strategy to increase participation in Nixel notification program	Milton	Planning	All Hazards	1.2	Public Education and Awareness	In house staff and time	HMA Local	2016-2021	11



Annex 10

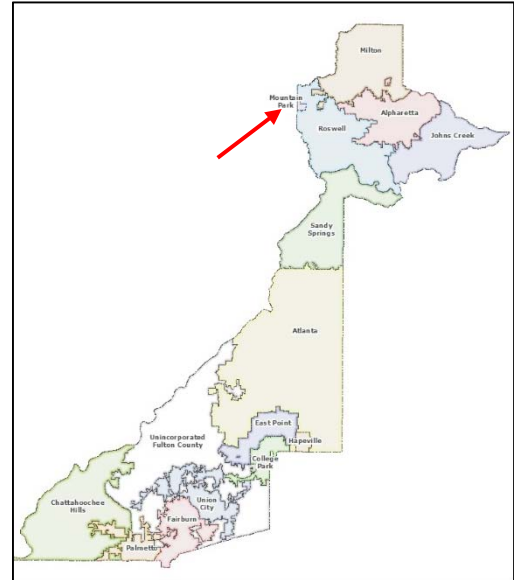
CITY OF MOUNTAIN PARK, GEORGIA MITIGATION ACTION PLAN

Geography/History

Mountain Park is a City primarily in the western part of northern Fulton County, with a small portion extending less than 1,000 feet into southeastern Cherokee County. Mountain Park is surrounded on three sides by the City of Roswell.

Mountain Park was incorporated in 1927 and it is essentially an eclectic community, and is designated a wildlife refuge. There is no zoning for commercial or business uses, only residential.

Mountain Park Volunteer Fire and Rescue was formed in 1977 and is an all-volunteer fire and emergency medical services (EMS) department providing emergency management services to the City. It also provides Automatic Aid to Roswell and mutual aid to the Fulton/Cherokee/Cobb County fire departments. It is state-certified and has roughly 20 members who are state or nationally certified for emergency services.



Significant Characteristics

Mountain Park is an officially designated wildlife refuge, which protects all wildlife including birds, animals, and reptiles.

Population and Demographics

The U.S. Census report in 2010 that there were 547 people, 253 households, and 161 families residing in the City. There were 289 housing units at an average density of 530.4 per square mile. The racial makeup of the City was 98.2% White, 0.7% African American, 1.1% Native American, 0% Asian, 0.5% from other races, and 0.4% from two or more races. Hispanic and Latino of any race were 3.1% of the population.

There were 253 households out of which 23.3% had children under the age of 18 living with them, 48.6% were married couples living together, 11.9% had a female householder with no husband present, and 36.4% were non-families. 32% of all households were made up of individuals and 19.8% had someone living alone who was 65 years of age or older. The average household size was 2.16 and the average family size was 2.70.



In the City the population was spread out with 20.0% under the age of 18, 4.0% from 18 to 24, 33.0% from 25 to 44, 34.6% from 45 to 64, and 8.5% who were 65 years of age or older. The median age was 42 years. For every 100 females there were 101.6 males. For every 100 females age 18 and over, there were 94.7 males.

**Table 1
City of Mountain Park Population Since 1990**

Year	1990	2000	2010	2015
Population	554	506	547	579 est.

Economy

The median income for a household in the City was \$55,875, and the median income for a family was \$61,875. Males had a median income of \$42,500 versus \$35,769 for females. The per capita income for the City was \$31,085. About 2.6% of families and 3.8% of the population were below the poverty line, including 3.0% of those under age 18 and 4.2% of those age 65 or over.

There are not any registered businesses within the City limits of Mountain Park.

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

**Table 2
Single-Family New House Construction Building Permits**

Year	Permits
2001-2014	0

Infrastructure

Law enforcement is provided by the Roswell Police Department on a contract basis. Milton’s Fire Services are operated by City volunteers, which provides first response for all medical and fire emergencies in Mountain Park and mutual aid for the City of Roswell, as well as the counties of Cobb, Cherokee, and Fulton. Members are trained in residential and commercial firefighting, emergency medical response, hazardous materials incidents and more. There are no public schools or colleges located within the City limits of Mountain Park.

Land Usage

According to the U.S. Census Bureau, the City has a total area of 0.5 square miles, of which 0.1 square miles, or 12.96%, is water. Mountain Park is a residential and wildlife refuge community.

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management



tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 3
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Not at this time			
Capital Improvements Plan	Not at this time			
Floodplain Management / Basin Plan	Yes	State	Code Compliance	
Stormwater Management Plan	Yes	County		
Open Space Plan	Yes	Local	Admin	
Stream Corridor Management Plan	Yes	County		
Watershed Management or Protection Plan	Not at this time			
Economic Development Plan	Not at this time			
Comprehensive Emergency Management Plan	Yes	County		
Emergency Operation Plan	Yes	Local	PS	
Post-Disaster Recovery Plan	Yes	Local	PS	
Transportation Plan	Not at this time			
Strategic Recovery Planning Report	Not at this time			
Other Plans:	Not at this time			
Regulatory Capability				
Building Code	Yes	State & Local		
Zoning Ordinance	Yes	Local	Admin	
Subdivision Ordinance	Not at this time			
National Flood Insurance Program (NFIP) Flood	Yes	Federal, State,		



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Damage Prevention Ordinance		Local		
NFIP: Cumulative Substantial Damages	Not at this time			
NFIP: Freeboard	Yes	State		
Growth Management Ordinances	Not at this time			
Site Plan Review Requirements	Yes	Local	Safebuilt	
Storm water Management Ordinance	Not at this time			
Municipal Separate Storm Sewer System (MS4)	Yes	State	Code Compliance	
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Yes	State		Property Condition Disclosure Act
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Mountain Park.

**Table 4
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/ Agency/Position
Administrative Capability		
Planning Board	Not at this time	
Mitigation Planning Committee	Not at this time	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	



Resources	Is This In Place?	Department/ Agency/Position
Economic Development Commission/Committee	Not at this time	
Maintenance Programs to Reduce Risk	Not at this time	
Mutual Aid Agreements	Yes	Fire Safety
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Not at this time	
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Safebuilt
Planners or engineers with an understanding of natural hazards	Not at this time	
NFIP Floodplain Administrator	Yes	
Surveyor(s)	Not at this time	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Fire
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Not at this time	
Grant Writer(s)	Not at this time	
Staff with expertise or training in benefit/cost analysis	Not at this time	
Professionals trained in conducting damage assessments	Not at this time	

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Mountain Park.

**Table 5
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Administrator
Capital improvements project funding	N/A
Authority to Levy Taxes for specific purposes	Council
User fees for water, sewer, gas or electric service	Administrator
Impact Fees for homebuyers or developers of new development/homes	N/A
Stormwater utility fee	N/A
Incur debt through general obligation bonds	Council
Incur debt through special tax bonds	Council/Referendum
Incur debt through private activity bonds	Council/Referendum
Withhold public expenditures in hazard-prone areas	N/A
Other Federal or State Funding Programs	Undetermined
Open space acquisition funding programs	Undetermined
Other	

Community Classifications

The table below summarizes classifications for community program available to Mountain Park.

**Table 6
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	TBD		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	3	May 2015
Storm Ready	Not at this time		
Firewise	TBD		



Program	Do You Have This?	Classification	Date Classified
Disaster/Safety Programs in/for Schools	N/A		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Not at this time		
Public-Private Partnerships	Not at this time		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Mountain Park’s current hazard mitigation capability.

**Table 7
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability			X
Fiscal Capability			X
Community Political Capability		X	
Community Resiliency Capability	X		
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Brandon Carpenter

The City of Mountain Park is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Mountain Park completed their last Community Assistance Visits (CAV) in November 1994 and CAC in October 2009.

Loss History and Mitigation

Mountain Park does have a system in place to maintain a list of properties that have been flood damaged since 2009 and there are currently three residential properties that have experienced flood damage in this community. There is also interest in performing mitigation actions for the



fire station but it is undetermined if the residential property owners are interested in the mitigation process. The floodplain administrator has the ability to make substantial damage estimates based upon inspection and permit records.

Planning and Regulatory Capabilities

Mountain Park uses local plans and programs to support floodplain management such as permit review, inspections, damage assessments, flood protection advice and record keeping. Education and outreach materials are periodically dispersed to 100% of the residence in the City limits through the community newsletter. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia.

Actions to Strengthen the Program

During the data collection process it was indicated that additional staff, additional funding and in house GIS capabilities are potential barriers to running an effective floodplain program in Mountain Park. The current floodplain manager did also state an interest in receiving more training and/or attending conferences if the future to assist with maintaining certification and staying well-informed of industry trends.

Community Rating System

Mountain Park does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 8
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	DL-4165	Yes	Winter Storm Damages
Jan 28-Jan30, 2014	Winter Storm	No	Citywide Road Closures. Road Cleanup. Approximately \$10,000 cost.

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:



☐ Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

☐ Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

☐ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

☐ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:



- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 9
Assessment of Vulnerability per the Mitigation Planning Committee**

Mountain Park Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Wildfire/Urban Interface	L	L	L	H	13
Flood	L	L	L	L	12
Severe Weather	U	U	L	H	9
Tornado	P	P	P	L	9
Winter Storm	U	U	P	H	8
Heat Wave	P	P	P	P	8
Sinkhole	P	P	P	P	8
Dam Failure	P	P	P	P	8
Drought	U	U	P	P	6
Tropical System	U	U	U	U	4
Earthquake	U	U	U	U	4
Average Risk by Level	1.72	1.72	2.09	2.54	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each mitigation action plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 10
Status of Mitigation Actions**

<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
35.0001	Convert open storm water drainage ditches to underground piping system in areas where the ditching system passes the roadway	Mountain Park	In Progress	0% complete Budget constraints	Include in 2016 HMP	Improve culvert system.
35.0002	Improve storm water drainage ditches in areas that do not cross roadways to increase drainage system capacity	Mountain Park	In Progress	City has a plan identifying areas of concern. Budget is a constraint.	Include in 2016 HMP	Improve current culvert system.
35.0003	Acquire generator for Emergency Operations Center (EOC)/Fire Station building	Mountain Park	In Progress	0% complete	Include in 2016 HMP	Continue in long term planning.
35.0004	Install surge protection equipment and measures for the EOC/Fire Station	Mountain Park	No Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
35.0005†	Flood proof Fire Station including, raising generators and other mechanicals, installing drainage pumps, waterproof foundation and seal foundation walls	Mountain Park	In Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
	Acquire property to relocate flood-prone Fire Station	Mountain Park	In Progress	0% complete. Budget constraints.	Include in 2016 HMP	Continue in long term planning.
35.0006	Improve roadbed across lower dam to provide secondary access into the City	Mountain Park	Complete	City paved dam access to provide emergency ingress/egress.	Discontinue	Project complete.





MOUNTAIN PARK MITIGATION ACTION PLAN

<u>Project Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
35.0007	Enhance physical protection of City Hall for increased high wind resistance	Mountain Park	In Progress	0% complete. Budget constraints.	<i>Include in 2016 HMP</i>	Continue in long term planning.
35.0008	Acquire property at the corner of Cardinal Rd & Mountain Park Rd to relocate the City Works building	Mountain Park	No Progress	Property no longer available.	<i>Discontinue</i>	Property no longer available.
35.0009	Improve capacity of Lake Garrett by dredging accumulated sedimentation	Mountain Park	No Progress	0% complete. Budget constraints. Estimated cost \$1.4 million.	<i>Include in 2016 HMP</i>	Continue in long term planning.
35.0010	Improve capacity of Lake Cheerful by dredging accumulated sedimentation	Mountain Park	No Progress	0% complete. Budget constraints.	<i>Include in 2016 HMP</i>	Continue in long term planning.
35.0011 [†]	Harden spillway structure between Lake Cheerful and Lake Garrett to	Mountain Park	No Progress	0% complete. Budget constraints	<i>Include in 2016 HMP</i>	Continue in long term planning.



Proposed Hazard Mitigation Initiatives for the Plan

Mountain Park identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 11 identifies the municipality's updated local mitigation strategy.

**Table 11
Proposed Mitigation Actions**

<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
35.0001	Convert open storm water drainage ditches to underground piping system in areas where the ditching system passes the roadway	Mountain Park	City Public Works	Flooding; Severe Weather; Tropical Systems	2.7 6.1	Structural Project	\$500,000	HMA, Local	2016-2021	15
Comments: City has open ditch drainage system, which causes problems in heavy rain events due to debris in the ditches. When the ditches get clogged, the water overflows onto the road and drivers cannot see where edge of road it and ditch is.										
35.0002	Improve storm water drainage ditches in areas that do not cross roadways to increase drainage system capacity	Mountain Park	City Public Works	Flooding; Severe Weather; Tropical Systems	2.7 6.1 6.2	Structural Project	\$300,000	HMA, Local	2016-2021	15



MOUNTAIN PARK MITIGATION ACTION PLAN

<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
35.0003	Acquire generator for EOC/Fire Station building	Mountain Park	Fire Department	Severe Weather; Tropical Systems;	2.11	Emergency Services	\$32,000	HMA, EOC, SCG, Local	2016-2021	12
35.0004	Install surge protection equipment and measures for the EOC/Fire Station	Mountain Park	Fire Department	Severe Weather	2.7 2.11 6.5	Property Protection; Emergency Services	\$5,000	HMA, EOC, Local	2016-2021	12
35.0005†	Flood proof Fire Station including, raising generators and other mechanicals, installing drainage pumps, waterproof foundation and seal foundation walls	Mountain Park	Fire Department/ Public Works	Flooding; Severe Weather; Tropical Systems	2.7 2.9 2.10	Emergency Services; Property Protection	\$25,000	HMA, EOC, FMA, SCG, Local	2016-2021	12
	Acquire property to relocate flood-prone Fire Station	Mountain Park	Public Works	Flooding; Severe Weather; Tropical Systems	2.7 2.9 2.10	Property Protection	\$200,000	HMA, FMA, SCG, Local	2016-2021	8
Comment: This is a multi-purpose building that also functions at the City's EOC and designated special needs shelter.										



<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
35.0006	Enhance physical protection of City Hall for increased high wind resistance	Mountain Park	Public Works	Severe Weather; Tornadoes; Tropical Systems	2.7 6.4	Property Protection	\$50,000	HMA, Local	2016-2021	12
35.0007	Acquire property at the corner of Cardinal Rd & Mountain Park Rd to relocate the City Works building	Mountain Park	Planning/ Public Works	Flooding; Winter Storms; Severe Weather; Wildfire/Urban Interface	2.7	Emergency Services; Property Protection	\$200,000	HMA, Local	2016-2021	8
Comments: Acquisition of this property would allow for increased storage capacity to store more salt that could benefit additional jurisdictions such as the City of Roswell and Cherokee County										
35.0008	Improve capacity of Lake Garrett by dredging accumulated sedimentation	Mountain Park	Public Works	Flooding; Severe Weather; Winter Storm; Tropical Systems	6.1	Natural Resource Protection	\$700,000 per foot of removal	HMA, Local	2016-2021	17
35.0009	Improve capacity of Lake Cheerful by dredging accumulated sedimentation	Mountain Park	Public Works	Flooding; Severe Weather; Winter Storm; Tropical Systems	6.1	Natural Resource Protection	\$700,000 per foot of removal	HMA, Local	2016-2021	17
35.0010 [†]	Harden spillway structure between Lake Cheerful and Lake Garrett	Mountain Park	Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	\$200,000	HMA, Local	2016-2021	17



<u>Project Number</u>	<u>Mitigation Action and Description</u>	<u>Jurisdiction</u>	<u>Responsible Party</u>	<u>Hazards Addressed</u>	<u>Objective Supported</u>	<u>FEMA Category</u>	<u>Estimated Project Cost</u>	<u>Possible Funding Source(s)</u>	<u>Timeframe for Completion</u>	<u>STAPLEE Score</u>
99.0011†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in the flood plain; improve drainage in the area	Roswell and Mountain Park	Public Works	Flooding; Severe Weather; Tropical Systems	5.2 5.3 5.4 6.1	Property Protection	\$3,000,000	HMA, FMA, Local	2016-2021	10
<p>Comments: Received PDM grant to repair damage from recent flood event. Improvements would lessen risk for future damage.</p> <p>Comment: Area is in flood plain. There is repeated flooding that affects homes and roadway. Have had numerous rescues due to low-lying area. Too much water comes into area that cannot be dispersed.</p>										

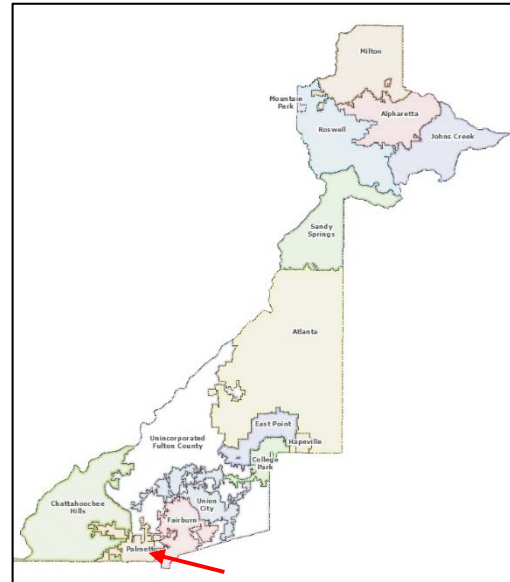


Annex 11

CITY OF PALMETTO, GEORGIA MITIGATION ACTION PLAN

Geography/History

Palmetto was established in 1853 and is a City located mostly in Fulton County and partly in Coweta County. Palmetto is located 25 miles south of Atlanta on U.S. Highway 29 and on the Atlanta and West Point railroad. The railroad was completed from Atlanta to Palmetto in 1851. Palmetto is located on the highest point above sea level between Atlanta and New Orleans. The railroad is built on a water shed divide, so all the water falling east of the railroad flows into the Flint River and all water falling west of the railroad flows into the Chattahoochee River.



Palmetto was first established as Johnson's Store in Coweta County on May 8, 1833, at which time Mr. John H. Johnson was appointed the first postmaster. The name was changed from Johnson's Store to Palmetto on December 8, 1847. The community was located in Campbell County sometime between the years of 1850 and 1851. The town of Palmetto was chartered by a State Legislative Act approved on February 18, 1854. The town was an unincorporated community for several years prior to the charter. When Campbell County disbursed, Palmetto became a part of Fulton County (January 1, 1932).

Significant Characteristics

Palmetto has two very beautiful parks within the City: Wayside Park on Main Street and Veterans Park on Park Street.

Palmetto also has an historic Train Depot, located at 549 Main Street at the corner of Main Street and Church Street. Beside the Train Depot is a Banquet Hall, which is in the old warehouse and still has the charm of the original floors, exposed brick walls and rafters, wooden freight doors and large windows.

Population and Demographics

The 2000 U.S. Census reported there were 3,400 people, 1,223 households, and 881 families residing in the City. There were 1,283 housing units at an average density of 247.6 per square mile. The racial makeup of the City was 47.41% White, 44.18% African American, 0.62% Native



American, 0.03% Asian, 0.03% Pacific Islander, 5.38% from other races, and 2.35% from two or more races. Hispanic or Latino of any race were 11.62% of the population.

There were 1,223 households out of which 38.7% had children under the age of 18 living with them, 42.4% were married couples living together, 23.5% had a female householder with no husband present, and 27.9% were non-families. 24.3% of all households were made up of individuals and 10.1% had someone living alone who was 65 years of age or older. The average household size was 2.78 and the average family size was 3.27.

In the City the population was spread out with 30.1% under the age of 18, 9.9% from 18 to 24, 31.5% from 25 to 44, 18.8% from 45 to 64, and 9.6% who were 65 years of age or older. The median age was 31 years. For every 100 females, there were 91.9 males. For every 100 females age 18 and over, there were 88.9 males.

**Table 1
City of Palmetto Population Since 1990**

Year	1990	2000	2010	2014
Population	2,612	3,400	4,488	4,747

Economy

The median income for a household in the City was \$40,387, and the median income for a family was \$53,870. Males had a median income of \$31,944 versus \$20,417 for females. The per capita income for the City was \$18,191. About 7.8% of families and 11.3% of the population were below the poverty line, including 16.8% of those under age 18 and 6.8% of those age 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau 2012:

**Table 2
Main Industries Based on Data from 2012**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	4	28
Retail Trade	16	Not Available
Finance and Insurance	5	Not Available
Information	Not Available	Not Available
Real Estate, Rental, Leasing	3	Not Available
Professional, Scientific and Technical services	2	Not Available
Administrative and Support and Waste Management and Remediation Service	7	Not Available
Educational Services	Not Available	Not Available
Health Care and Social Assistance	9	Not Available



Industry Description	Number of Establishments	Number of Employees
Accommodation and Food Services	6	77
Other Services	4	12

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	54
2002	93
2003	152
2004	92
2005	65
2006	33
2007	25
2008	18
2009	3
2010	2
2011	0
2012	0
2013	0
2014	0

Infrastructure

The Palmetto Police Department consists of 20 sworn officers including the Police Chief, Deputy Chief, detectives, and patrol officers. The Palmetto Fire Department provides fire inspections, public education and code enforcement services along with the day-to-day life safety of its cities residents. The fire department has 15 full time fire-rescue personnel who operate two Paramedic Engines. The school infrastructure within City limits consists of the following items in Table 4:

Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	52
Kindergarten to 12 th grade	Public	488
College, undergraduate	NA	NA
Graduate, professional school	NA	NA

Land Usage

Palmetto is a total of 11.6 square miles with only 0.2 square miles of that being water. The City is primarily residential with pockets of commercial. On the out skirts, there are zones dedicated for industrial. Below is a zoning map that was adopted in 2011.

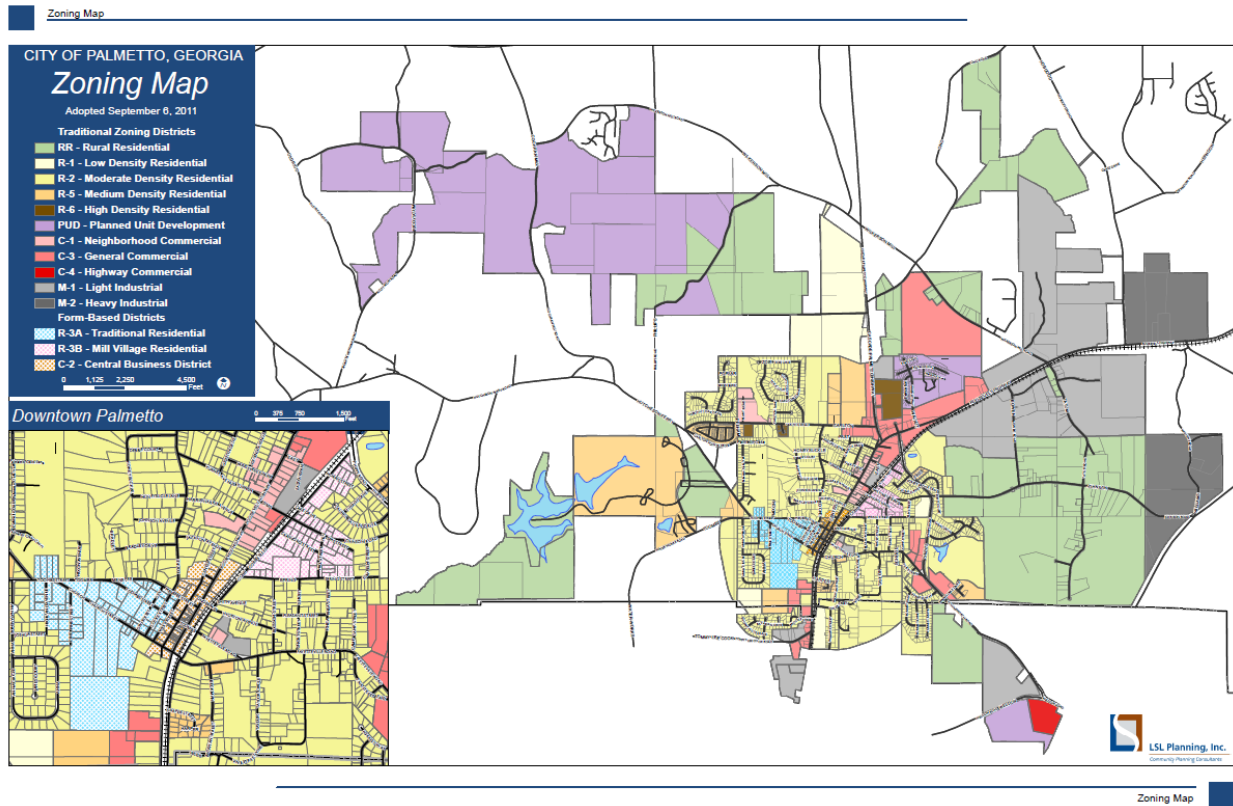


Figure 1: Zoning Map

Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.



**Table 5
Recent and Known Future Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
Palmetto First Baptist Church	Commercial/Place of Assembly		6944 North Highway 29		Under Construction
Fulton County Library	Library		Cascade Palmetto Hwy.		Completed
Your Town Health	Commercial		643 Main Street		Completed
Lowe's Warehouse	Commercial		8400 Tatum Rd.		Redevelopment/Completed
Known or Anticipated Development in the Next Five (5) Years					
NA					

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool/Program (code, ordinance, plan)	Do You Have This? (yes/not at this time) If Yes, Date of Adoption or Update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan	Yes	Local	Administration	
Capital Improvements Plan	Not at this time			
Floodplain Management / Basin Plan	Not at this time			
Stormwater Management	Yes	Local	Code	



Tool/Program (code, ordinance, plan)	Do You Have This? (yes/not at this time) If Yes, Date of Adoption or Update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Plan			Enforcement	
Open Space Plan	Not at this time			
Stream Corridor Management Plan	Not at this time			
Watershed Management or Protection Plan	Yes	Local	Code Enforcement	
Economic Development Plan	Not at this time			
Comprehensive Emergency Management Plan	Yes	County	AFCEMA	
Emergency Operation Plan	Yes	County	AFCEMA	
Post-Disaster Recovery Plan	Not at this time			
Transportation Plan	Not at this time			
Strategic Recovery Planning Report	Not at this time			
Other Plans:	Not at this time			
Regulatory Capability				
Building Code	Yes	State & Local	Administration	
Zoning Ordinance	Yes	Local	Administration	
Subdivision Ordinance	Yes	Local	Administration	
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Code Enforcement	
NFIP: Cumulative Substantial Damages	Not at this time			
NFIP: Freeboard	Yes	State, Local	Administration	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Not at this time			
Site Plan Review	Yes	Local	Zoning	



Tool/Program (code, ordinance, plan)	Do You Have This? (yes/not at this time) If Yes, Date of Adoption or Update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Requirements				
Stormwater Management Ordinance	Yes	Local	Code Enforcement	
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Code Enforcement	
Natural Hazard Ordinance	Not at this time			
Post-Disaster Recovery Ordinance	Not at this time			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Not at this time			

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Palmetto.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This in Place? (yes or not at this time)	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Palmetto Planning and Zoning Board
Mitigation Planning Committee	Yes	
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Yes	Palmetto Development Authority
Maintenance Programs to Reduce Risk	Not at this time	
Mutual Aid Agreements	Yes	Palmetto Fire Department
Technical/Staffing Capability		



Resources	Is This in Place? (yes or not at this time)	Department/Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Contracted
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Contracted
Planners or engineers with an understanding of natural hazards	Yes	Contracted
NFIP Floodplain Administrator	Yes*	Code Enforcement/Zoning Administrator
Surveyor(s)	Yes	Contracted
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Not at this time	
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	Fire Chief/Palmetto Fire Department
Grant Writer(s)	Not at this time	
Staff with expertise or training in benefit/cost analysis	Not at this time	
Professionals trained in conducting damage assessments	Not at this time	

*If you participate in the NFIP, then you have a Floodplain Administrator.

Fiscal Capability

The table below summarizes financial resources available to Palmetto.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (yes/not at this time)
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Not at this time
Stormwater utility fee	Not at this time
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	
Incur debt through private activity bonds	
Withhold public expenditures in hazard-prone areas	



Financial Resources	Accessible or Eligible to Use (yes/not at this time)
Other federal or state funding programs	Yes
Open space acquisition funding programs	Yes
Other	

Community Classifications

The table below summarizes classifications for community program available to Palmetto.

**Table 9
Community Classifications**

Program	Do You Have This? (yes/not at this time)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	3	07/07/15
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	4/9	07/01/13
Storm Ready	Yes		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Not at this time		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



Hazard Mitigation Capability

The table below summarizes a self-assessment of Palmetto’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

**Example obstacles:*

- Limited staff; Few people have numerous roles/responsibilities
- Not aware of FEMA mitigation funding sources

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Frank West, Code Enforcement/Flood Plain Manager

The City of Palmetto is currently an active member of the NFIP, in good standing with no outstanding compliance issues. It is currently undetermined when Palmetto completed their last Community Assistance Visits (CAV).

Loss History and Mitigation

Palmetto does have a system in place to maintain a list of properties that have been flood damaged; however, there are none to date. The floodplain administrator does not make substantial damage estimates and no property owners have expressed an interest in the mitigation process. If mitigation actions were sought in Palmetto it is believed the funding source would primarily be the property owner and insurance.

Planning and Regulatory Capabilities

Palmetto does use local ordinance, plans, and programs to support floodplain management. The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both FEMA and the State of Georgia.



Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Palmetto; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Palmetto does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (disaster declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes PA ID# 121-58884-00	Severe Winter Storm damages. No Sheltering Required. Road Closures, Utility Outages, Commercial Business Closures throughout the City. Numerous Power Lines Down and Electrical Service Interruptions. Total Loss of single-Family Structure from Storm Caused Fire. Protective Services Unreimbursed Costs of \$2000.00
August 4, 2015	Severe Thunderstorm	No	Power Lines Downed – Electrical Surge Damaged City Water Treatment Plant
July 30, 2015	Severe Thunderstorm	No	Multiple Incidences of Power Lines Downed/Structure Damaged by Falling Tree
June 18, 2015	Severe Thunderstorm	No	209 Cobb Street – Structure Hit by Lightning Total Loss to Structure and Contents
Unknown	Excessive Rainfall	No	Honeysuckle Lane / Washout of Culvert/Partial Street Collapse
Unknown	Excessive Rainfall	No	Fayetteville Rd./Collapse of Culvert/Street Collapse
Unknown	Flooding	No	Damage to Structures Due to Flooding as a Result of Beaver Activity



Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.



- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 12
Risk Assessment per the Mitigation Planning Committee**

Palmetto Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	P	L	L	L	11
Heat Wave	P	P	L	L	10
Severe Weather	P	P	L	L	10
Winter Storm	P	P	L	L	10
Drought	P	P	p	P	8
Dam Failure	P	P	P	P	8
Tropical System	P	P	P	P	8
Wildfire/Urban Interface	U	U	P	L	7
Flood	U	U	U	P	5
Earthquake	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.64	1.73	2.09	2.27	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 point)



Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

<u>Project Number</u>	<u>2011 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
40.0001	Acquire generator for emergency power for Fire Department Headquarters Building	Fire Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0002	Retrofit glass old window glass at the Fire Department Headquarters building for increased impact resistance	Fire Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0003	Acquire generator for emergency power for Fire Station	Fire Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0004	Retrofit bay doors of Fire Station	Fire Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0005	Retrofit current flat roof of City hall for improved wind loading capacity	City Administration	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0006	Acquire generator for emergency power for Police Station	Police Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	
40.0007	Retrofit Police Station for improved wind loading capacity	Police Department	No Progress	No Funding Available	<i>Include in 2016 HMP</i>	



<u>Project Number</u>	<u>2011 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u>	<u>Describe Status</u>	<u>Next Step</u>	<u>Describe Next Step</u>
40.0008	Harden Community Center, which functions as a first responder shelter. Reinforce roof for wind loading capacity as well replace windows for wind resistance	City Administration	No Progress	No Funding Available	Include in 2016 HMP	
40.0009†	Acquire stream in Palmetto Oaks to preserved as green space and improve flood plain management	City Administration	No Progress	No Funding Available	Include in 2016 HMP	
40.0010	Acquire land on Mixon Ave to prevent further dense development as part of their green space expansion program	City Administration	No Progress	No Funding Available	Include in 2016 HMP	

Potential Hazard Mitigation Initiatives for the Plan

Palmetto identified additional mitigation initiatives they would like to potentially pursue in the future. Table 14 identifies the municipality’s potential hazard mitigation actions.

**Table 14
Potential Mitigation Actions**

<u>Mitigation Action</u>	<u>Lead Agency</u>	<u>Comments and Details</u>
Acquire Emergency Generator for Water Treatment Plant.	Palmetto Water Dept.	
Acquire Emergency Generator for City Hall.	Administration	
Retrofit Water Treatment Plant with Lightning Protection.	Palmetto Water Dept.	

Proposed Hazard Mitigation Initiatives for the Plan

Palmetto identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 identifies the municipality’s updated local mitigation strategy.



**Table 15
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0001	Acquire generator for emergency power for Fire Department Headquarters Building	Palmetto	Fire Department	Severe Weather; Winter Storm; Tropical System; Tornadoes;	2.11	Emergency Services	\$25,000	HMA, EOC, SCG, Local	2016 - 2021	8
40.0002	Retrofit old window glass at the Fire Department Headquarters building for increased impact resistance	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$10,000	HMA, SCG, EOC, Local	2016 - 2021	8
40.0003	Acquire generator for emergency power for Fire Station	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	HMA, SCG, Local	2016 - 2021	8



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0004	Retrofit bay doors of Fire Station	Palmetto	Fire Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$15,000	HMA, SCG, Local	2016 - 2021	8
Comments: Bay doors are over 40 years old and of residential grade quality. They are of insufficient wind loading capacity and impact resistance.										
40.0005	Retrofit current flat roof of City hall for improved wind loading capacity	Palmetto	City Administration	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$55,000	HMA, Local	2016 - 2021	8
40.0006	Acquire generator for emergency power for Police Station	Palmetto	Police Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	HMA, DHS, Local	2016 - 2021	8
40.0007	Retrofit Police Station for improved wind loading capacity	Palmetto	Police Department	Severe Weather; Tornado; Winter Storm; Tropical System	2.10 6.4	Property Protection	\$15,000	HMA, DHS, Local	2016 - 2021	8



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0008	Harden Community Center, which functions as a first responder shelter. Reinforce roof for wind loading capacity as well replace windows for wind resistance	Palmetto	City Administration	All hazards	2.10 6.4	Property Protection	\$110,000	HMA, Local,	2016 - 2021	8
40.0009†	Acquire stream in Palmetto Oaks to preserved as green space and improve flood plain management	Palmetto	City Administration	Flooding	2.7 5.2 5.3 5.4	Natural Resource Protection	\$300,000	HMA, FMA, Local	2016 - 2021	7



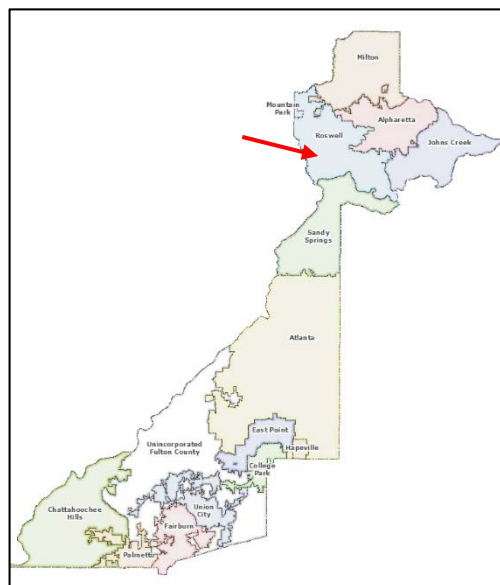
Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
40.0010	Acquire land on Mixon Ave to prevent further dense development as part of their green space expansion program	Palmetto	City Administration	Wildfire/Urban Interface; Tornado; Severe Weather	4.3 5.3 5.5	Natural Resource Protection	\$150,000	HMA, Local	2016 - 2021	7
40.0011	Acquire Emergency Generator for Water Treatment Plant	Palmetto	Public Works	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8
40.0012	Acquire Emergency Generator for City Hall	Palmetto	City Administration	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8
40.0013	Retrofit Water Treatment Plant with Lightning Protection	Palmetto	Public Works	Severe Weather; Tornado; Winter Storm; Tropical System	2.11	Emergency Services	\$25,000	DHS, HMA, Local	2016 - 2021	8

Annex 12

CITY OF ROSWELL, GEORGIA MITIGATION ACTION PLAN

Geography/History

Roswell is a City in north Fulton County and is Georgia's eighth largest City. In 1830, Roswell King passed through the area of what is now Roswell and observed the great potential for building a cotton mill along Victory Creek. Since the land nearby was also good for plantations, his idea was to put cotton processing near cotton production. Toward the middle of the 1830s, King returned to build a mill that would soon become the largest in North Georgia (Roswell Mill). He brought with him 36 African slaves from his own plantation, plus another 42 skilled carpenter slaves bought in Savannah to build the mills. The slaves built the mills, infrastructure, houses, mill worker apartments, and supporting buildings for the new town. The Africans brought their unique culture, language, and religious traditions from the coast to North Georgia. Roswell King invited investors from the coast to join him at the new location. He was also



joined by Barrington King, one of his sons, who succeeded his father in the manufacturing company. Archibald Smith was one of the planters who migrated there to establish a new plantation, also bringing enslaved African Americans from the coastal areas.

The Roswell area was part of Cobb County when first settled, and the County seat of Marietta was a four-hour (one-way) horseback ride to the west. Since Roswell residents desired a local government, they submitted a City charter to be incorporated to the Georgia General Assembly. The charter was approved on February 16, 1854.

Significant Characteristics

As tourism begins to blossom in Roswell; some of the notable places to visit are the Archibald Smith Plantation Home, Bullock Hall, Barrington Hall, Chattahoochee River National Recreation Area, Chattahoochee Nature Center, Faces of War Memorial, Promise Cottage, Teaching Museum North, Atlanta Rowing Club and Historic Roswell District.

Barrington Hall (the home of Barrington King), Smith Plantation (the home of Archibald Smith) and Bulloch Hall (the childhood home of President Theodore Roosevelt's mother, Mittie Bulloch) have been preserved and restored. They are now open to the public.



The Roswell Recreation and Parks department has 18 parks with 800 acres of active and passive parkland and facilities. The goals of the department are to promote a sense of community spirit and athleticism in the youth of Roswell partnering with many local middle and high schools to achieve its goals by lending practice fields and athletic coaches throughout the year. A branch of the Chattahoochee River National Recreation Area, a component of the National Park System, is located in Roswell at Vickery Creek.

Roswell also has several festivals and parades throughout the year, such as; Roswell Memorial Day Ceremony (the largest Memorial Day Ceremony in Georgia), Roswell Roots: A Festival of Black History & Culture, Roswell Criterium Bicycle Race and Historic Roswell Kiwanis Kids Bike Safety Rodeo, Roswell Magnolia Storytelling Festival, Riverside Sounds Concert Series, Roswell Youth Day Parade and Festival, Keep Roswell Beautiful Duck Race, Roswell Annual Fireworks Extravaganza, and the Roswell Wine Festival.

Population and Demographics

The U.S. Census reports in 2010, there were 88,346 people, 36,344 households, and 20,933 families residing in the City. There were 33,945 housing units at an average density of 823.2 per square mile (317.9/km²). The racial makeup of the City was 76.8% White, 12.8% African American, 0.7% Native American, 4.9% Asian, 0.2% Pacific Islander, 7.4% from other races, and 1.90% from two or more races. Hispanic or Latino of any race was 16.6% of the population.

There were 33,945 households out of which 34.1% had children under the age of 18 living with them, 69.0% were married couples living together, 10.5% had a female householder with no husband present, and 31.0% were non-families. 24.8% of all households were made up of individuals and 7% had someone living alone who was 65 years of age or older. The average household size was 2.59 and the average family size was 2.59.

In the City the population was spread out with 24.4% under the age of 18, 8.2% from 18 to 24, 35.1% from 25 to 44, 24.7% from 45 to 64, and 7.5% who were 65 years of age or older. The median age was 37.2 years. For every 100 females there were 100.0 males. For every 100 females age 18 and over, there were 98.0 males.

Table 1
City of Roswell Population Since 1990

Year	1990	2000	2010	2014
Population	47,923	79,334	88,346	94,089 est.

Economy

The median income for a household in the City was \$72,317, and the median income for a family was \$96,760. Males had a median income of \$72,754 versus \$45,979 for females. The per capita income for the City was \$42,244. About 3.2% of families and 5.0% of the population were below the poverty line, including 5.6% of those under age 18 and 0.7% of those age 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau 2012



**Table 2
Main Industries Based on Data from 2012**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	177	1,786
Retail Trade	324	5,202
Information	65	1297
Real Estate, Rental, Leasing	179	787
Professional, Scientific and Technical services	2	Not Available
Administrative and Support and Waste Management and Remediation Service	215	8,952
Educational Services	60	442
Health Care and Social Assistance	389	5,501
Accommodation and Food Services	237	4,531
Other Services	225	Not Available

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.

**Table 3
Single-Family New House Construction Building Permits**

Year	Permits
2001	426
2002	269
2003	459
2004	345
2005	249
2006	289
2007	201
2008	91
2009	48
2010	60
2011	128
2012	148
2013	138
2014	22



Infrastructure

The Roswell Police Department is located 20 miles north of Atlanta. The 200 employee department serves a population of almost 100,000 and 41.95 square miles of property. The Roswell Fire Marshall’s office has a staff of six uniformed and three civilian personal that are supervised by the Fire Marshall. The Fulton County school system within Roswell City limits consists of the following items listed in Table 4:

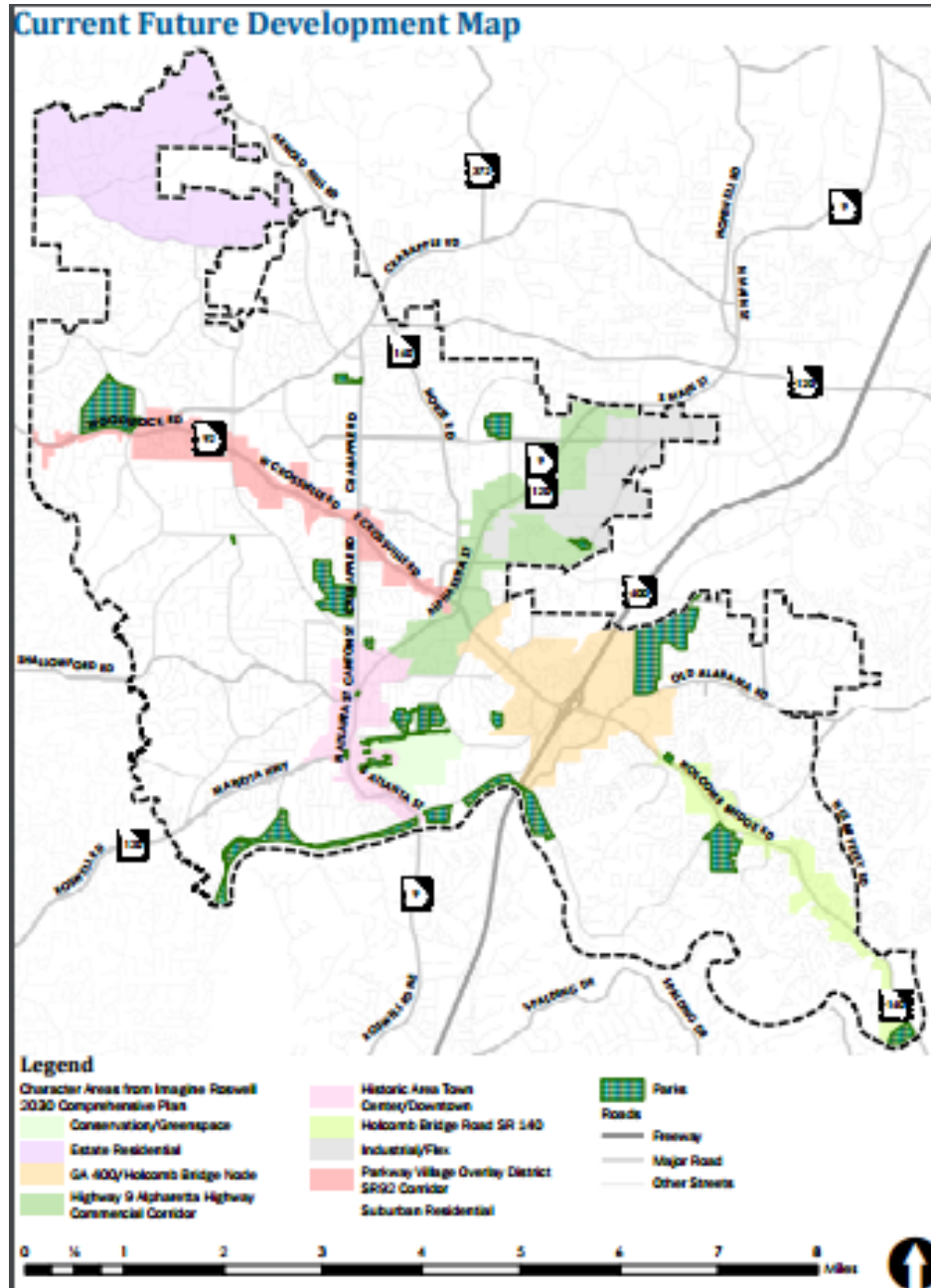
Table 4
School Infrastructure Within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	279
Kindergarten to 12 th grade	Public	13,658
College, undergraduate	Not Reported	Not Reported
Graduate, professional school	Not Reported	Not Reported

Land Usage

Roswell is a total of 41.95 square miles with only 0.6 square miles being water. Roswell has a good mix of residential and commercial; as well as districts for employment and civic/open spaces. Below is the City’s zoning map from 2014.

Figure 2
Development Map



Growth and Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years



**Table 5
Recent and Known Future Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2010 to Present					
Windfaire	Single-Family	15	Eves Rd	No	Complete
Roswell Manor	Single-Family	69	Old Alabama Rd	No	In process
Timbercreek	Townhomes	13	Mansell Rd	No	Complete
Hawthorne	Residential	30	Dogwood Rd	No	In process
Pembroke Hill	Single-Family	20	Grimes Bridge Rd	No	Complete
Mosspointe	Single-Family	27	Willeo Rd	No	In process
Ashley Manor	Single-Family	36	Coleman Rd	No	In process
Pine Grove Estates	Single-Family	12	Pine Grove Rd	No	In process
Adeline Pond	Single-Family	6	Pine Grove Rd	No	In process
Jack Pittman	Single-Family	5	Pine Grove Rd	No	Complete
Parkeast	Single-Family	19	Crabapple Rd	No	In process
Windsor	Single-Family	5	Houze Way	No	Complete
Chatham Park	Single-Family	1	Houze Way	No	In process
Ivey Mills	Single-Family	20	Chaffin Rd	No	Complete
Traditions at Roswell	Single-Family	14	Hardscrabble Rd	No	Complete
Kingswood	Single-Family	14	Etris Rd	No	In process
Nesbit Reserve	Single-Family	18	Nesbit Ferry Rd	No	In process
Heritage at Roswell	Townhomes	10	Hwy 92	No	Complete
Heydon Hall	Single-Family	9	Ebenezer Rd	No	In process
Crabapple Oaks	Single-Family	4	Etris Rd	No	In process
Crabapple Manor	Single-Family	15	Rucker Rd	No	In process
Brandl	Single-Family	11	Rucker Rd	No	Complete



Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Estates					
Berkdale	Single-Family	22	Houze Rd	No	In process
Village on Pine	Single-Family	6	Pine St	No	In process

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan				
Capital Improvements Plan	Yes	Local	Finance	Annual Budget
Floodplain Management / Basin Plan	Yes – 06/02/2008 AND (UDC) 02/24/14	State & Local	Environmental/PW	Code of Ordinances – Art. 7.4 – Flood Damage Ordinance and then UDC – Article 12 – Environmental Protection – Sec. 12.7
Stormwater Management Plan	Yes – 12/16/2002 AND (UDC) 02/24/14	State & Local	Environmental/PW	Code of Ordinances – Article 7.1 – Ordinance 2002-12-04 and then UDC – Article 12 – Environmental Protection – Sec. 12.5
Open Space Plan				
Stream Corridor Management Plan	Yes	State & Local	Environmental/PW	UDC – Article 12 – Environmental Protection – Sec. 12.2
Watershed Management or Protection Plan	Yes – 06/02/2008	State & Local	Environmental/PW	Code of Ordinances – Article 7.1 – Ordinance 2002-12-04 and then



Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
				UDC – Article 12 – Environmental Protection – Sec. 12.5
Economic Development Plan	Yes – 08/13/2012	Local	Community Development	Strategic Economic Development Plan – Resolution #2012-08-36
Comprehensive Emergency Management Plan	Yes	Local	Fire	December 2014 Update
Emergency Operation Plan	Yes	Local	Fire	December 2014 Update
Post-Disaster Recovery Plan	Yes	Local	Fire	Part of EOP
Transportation Plan	Yes – 12/11/2006	Local	Transportation	Transportation Master Plan
Strategic Recovery Planning Report	Yes	Local	All	COOP/COG
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local	Community Development	Code of Ordinances – revised 8/23/12 – Ordinance # 2012-08-13
Zoning Ordinance	Yes – 02/24/2014	Local	Community Development	Unified Development Code – Resolution 2014-02-02 (became effective 6/1/14)
Subdivision Ordinance	Yes – 12/08/03	Local	Community Development	Code of Ordinance – Article 19 – Subdivision; Also in UDC – Art. 11.2 – Streets & Public Improvements (Subdivision)
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Community Development	UDC – Article 12 – Environmental Protection – Sec. 12.7
NFIP: Cumulative Substantial Damages	Yes	Federal, State, Local	Community Development	UDC – Article 12 – Environmental Protection – Sec. 12.7
NFIP: Freeboard	Yes	State, Local	Community Development	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management	Yes	Local	Community	UDC



Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Ordinances			Development	
Site Plan Review Requirements	Yes – UDC – 02/24/15	Local	Community Development	UDC – Article 13 – Administration – Sec. 13.1. – 13.7
Storm water Management Ordinance	Yes – 12/16/2002 AND 2/24/14 (UDC)	State & Local	Environmental/PW	Code of Ordinances – Article 7.1 – Ordinance 2002-12-04 then adoption of UDC – Article 12 – Environmental Protection – Sec. 12.5
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Environmental/PW	Storm sewer system is owned and operated by the City of Roswell and is separate from sanitary sewer system, owned and operated by Fulton County.
Natural Hazard Ordinance	No			
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Yes – UDC 2/24/15	State & Local	Community Development	UDC – Article 12 – Environmental Protection

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Roswell.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Community Development/ Planning Commission
Mitigation Planning Committee	Yes	Fire is the lead – All departments participate
Environmental Board/Commission	Yes	Environmental/Public Works – Also Erosion and Sediment Control Fund Committee – Ordinance No. 2010-06-12 – approved 6/21/10



Resources	Is This In Place?	Department/Agency/Position
Open Space Board/Committee	No	n/a
Economic Development Commission/Committee	Yes	Community Development/SEDP Steering Committee – 5/23/11 – Resolution 2011-05-22
Maintenance Programs to Reduce Risk	Yes	Administration/Facilities Conditions Assessment
Mutual Aid Agreements	Yes	Fire Department - Roswell (12/14/09); Johns Creek (3/16/09); Mt. Park (1/21/09)
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Community Development/Planning and Zoning
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Administration/Building Operations Manager/Certified Professional Facilities Manager
Planners or engineers with an understanding of natural hazards	Yes	Environmental/Public Works, Community Development, Transportation
NFIP Floodplain Administrator	Yes*	Community Development/Engineering
Surveyor(s)	Yes	Transportation
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Community Development/GIS Division, Environmental/Public Works, Transportation
Scientist familiar with natural hazards	No	n/a
Emergency Manager	Yes	Fire Chief
Grant Writer(s)	Yes	Administration/Grants Manager/Grants Coordinator
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Administration/Rick Management/Director

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Roswell.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	No
Other federal or state funding programs	Yes
Open space acquisition funding programs	No
Other	

Community Classifications

The table below summarizes classifications for community program available to Roswell.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Class 2	August 2015
Storm Ready	Not at this time		
Firewise	Not at		



Program	Do You Have This?	Classification	Date Classified
	this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Yes	C.E.R.T.	October 2015
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Roswell’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Danelle Alloway, PE, CFM

The City of Roswell is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Roswell completed their last Community Assistance Visits (CAV) in December 2011.

Loss History and Mitigation

Roswell does have a system in place to maintain a list of properties that have been flood damaged and those who become interested in mitigation. The floodplain administrator does



make substantial damage estimates and one property was considered to be Substantially Damaged in the last 10 years and that home has been demolished. There are 3 Repetitive Loss properties and no Severe Repetitive Loss properties in Roswell. No property owners are currently in the process of mitigation or have expressed an interest in the mitigation process.

Planning and Regulatory Capabilities

Roswell does use local ordinance, plans and programs to support floodplain management and maintains GIS floodplain mapping, resident assistance, participates in the CRS program, performs record keeping, permitting assistance and damage inspections as needed. The City also provides a community outreach brochure that is sent to all properties within the SFHA. Roswell’s floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia. The City also conscientiously regulates stream buffers including City stream buffers that exceed state buffers for waterways exceeding a 20-acres drainage basin.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Roswell; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Roswell does participate in the CRS program and has a rating of 7 which results in a reduction in flood insurance premiums of 15% for homes located in the Special Flood Hazard Area and 5% outside the Special Flood Hazard Area.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (Disaster Declaration if applicable)	Atlanta-Fulton County Designated ?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages



Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.



- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by Hazard Mitigation Planning Committee members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.



Table 12
Risk Assessment per the Mitigation Planning Committee

Roswell Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tornadoes	L	L	L	H	13
Severe Weather	L	L	L	H	13
Flood	U	P	L	H	10
Winter Storm	U	P	L	H	8
Tropical System	U	U	L	L	8
Dam Failure	P	P	P	P	8
Heat Wave	U	U	P	P	6
Drought	U	U	U	L	6
Earthquake	U	U	U	P	5
Wildfire/Urban Interface	U	U	U	U	4
Sinkhole	U	U	U	U	4
Average Risk by Level	1.45	1.64	2.09	2.73	

- H = Highly Likely (4 points)
- L = Likely (3 points)
- P = Possible (2 points)
- U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
45.0001	Reroute Azalea Dr from current location to a more elevated location on hilltop	Roswell DOT	No Progress	Project will not be done	<i>Discontinue</i>	
45.0002†	Elevate Willeo Rd which becomes submerged during heavy rains and floods	Roswell DOT	No Progress	Project will not be done	<i>Discontinue</i>	
45.0003	Improve culvert capacity in the Roswell Area Park to reduce flooding to allow residents and first responders ingress and egress from the area	Parks & Rec	Complete	Completed with local funds	<i>Discontinue</i>	
45.0004	Install surge protection at the City fuel island	Public Works	No Progress	No local funding	<i>Include in 2015 HMP</i>	\$100,000
45.0005	Improve basin structure to the inland areas of Oxbo Rd to protect against turbulent water flows such as with regional detention areas and bank stabilization and restoration below the intake	Public Works	In Progress	Structural work completed but the project has not been completed yet	<i>Include in 2015 HMP</i>	\$1M
45.0006	Retrofit roof of the 911 Center which is susceptible to damage from high winds and water leakage. Retrofit glass with more impact resistant glass	Administration	No progress	FY 2016 Approved Capital Improvement Plan funding. \$170,000	Yes	\$170,000
45.0007	Perform stream stabilization and repair erosion along stream corridors	Public Works	No Progress	No local funding	Yes	Add to the new HMP Plan
99.0001†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in the flood plain; improve drainage in the area	Public Works	No Progress	No local funding	Discontinue	Need estimate and submit application for funding.



Potential Hazard Mitigation Initiatives for the Plan

Roswell identified additional mitigation initiatives they would like to potentially pursue in the future. Table 14 identifies the municipality’s potential hazard mitigation actions.

**Table 14
Potential Mitigation Actions**

Mitigation Action	Lead Agency	Comments and Details
Willeo Road Bridge Replacement - \$800,000	RDOT	Approved CIP for FY 2018. Estimate \$800,000.
Above Ground Storage Tank – City Hall Generator. Prolong operation and avoid seepage into the soil.	City Administration	Currently no approved funding.
Emergency generators for (2) shelters (transfer switch only)	Roswell Rec & Parks	Currently no approved funding.
Secondary access from River Glen Drive and Jones Drive. This project solves the issue regarding 2010 project 45.0001- \$200,000	RDOT	Currently no approved funding.
Vehicular driveway between Grimes Bridge Road/Waller Park Extension/Dobbs Drive. \$170,000	RDOT	Currently no approved funding.

Proposed Hazard Mitigation Initiatives for the Plan

Roswell identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 on the following page identifies the municipality’s updated local mitigation strategy.



**Table 15
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
45.0001	Install surge protection at the City fuel island	Roswell	Public Works	Severe Weather	2.7 2.11 6.5	Property Protection; Emergency Services	35,000	Local	2016-2021	5
45.0002	Retrofit roof of the 911 Center which is susceptible to damage from high winds and water leakage. Retrofit glass with more impact resistant glass	Roswell	Administration	Severe Weather; Winter Storm; Tornadoes; Tropical Systems	2.7 2.10 6.4	Emergency Services; Property Protection	180,000	HMA, EOC, Local	2016-2021	6 /Med
45.0003	Add upstream detention and replace culvert at Warsaw Road near Willow Stream Townhomes	Roswell	Public Works	Flooding; Severe Weather; Tropical Systems	1.2 2.7 6.1	Structural Project; Natural Resource Protection	350,000	HMA, Local	2016-2021	8 / High
<p>Comment: Area is in shaded zone X flood plain. There is repeated flooding that affects homes and roadway.</p>										



ROSWELL MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
45.0004	Perform stream stabilization and repair and erosion along Crossville Creek corridors	Roswell	Public Works	Flooding; Severe Weather; Winter Storms; Tropical Systems	5.4 6.2 6.3	Natural Resource Protection	125,000	HMA, Local	2016-2021	6 / Med
45.0005	Add tamper resistant fittings to all fire hydrants in water system boundary	Roswell	Public Works	Fire	1.2	Preparedness, Property Protection	10,000	HMA, Local	2016-2021	4 / Med
99.0001†	Rehabilitate the flood plain on Oakhaven Dr. through acquisition of 10 structures in the flood plain; improve drainage in the area	Roswell and Mountain Park	Public Works	Flooding; Severe Weather; Tropical Systems	5.2 5.3 5.4 6.1	Property Protection	85,000	HMA, FMA, Local	2016-2021	3 / Low
<p>Comment: Area is in flood plain. There is repeated flooding that affects homes and roadway. Have had to have numerous rescues due to low-lying area. Too much water comes into area that cannot be dispersed. This project score has been dropped because of improvements to the dam overflow structure.</p>										



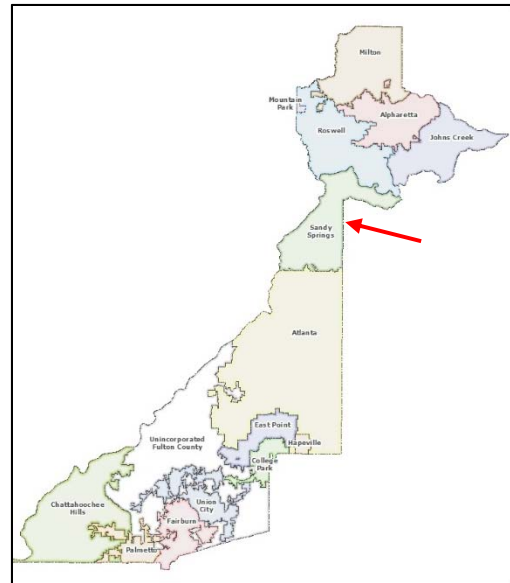
Annex 13

CITY OF SANDY SPRINGS, GEORGIA MITIGATION ACTION PLAN

Geography/History

Sandy Springs is located in northern Fulton County. The boundaries of Sandy Springs are Atlanta to the south, Cobb County (at the Chattahoochee River) to the west and north, Roswell to the north, and Dunwoody and Brookhaven, at the DeKalb County line, to the east. A small panhandle in the northeast extends between the Chattahoochee River to the north and Dunwoody to the south, ending in a very small border with Peachtree Corners in Gwinnett County.

In 1950, the state legislature blocked Atlanta from annexing the community, which remained rural until the Interstate Highway System was authorized by the Federal-Aid Highway Act of 1956. In 1959, Atlanta Mayor William Hartsfield urged residents to support annexation so that the area would have better firefighting protection. Community opposition killed the proposal. In the early 1960s, Georgia 400 and Interstate 285 were constructed, connecting Sandy Springs to metro Atlanta and initiating a housing boom that brought new residents and major land development. In 1966, annexation by Atlanta was defeated in a referendum, with two-thirds voting against.



Debate over incorporation began in the 1970s when the City of Atlanta attempted to use a state law to force annexation of Sandy Springs. The attempt failed when the Supreme Court of Georgia ruled that the law was unconstitutional. In response, the Committee for Sandy Springs was formed in 1975. In every legislative session, state legislators representing the area introduced a bill in the Georgia General Assembly to authorize a referendum on incorporation. Legislators representing Atlanta and southwestern Fulton County, who feared tax revenue that would be lost from incorporation, blocked the bills using the procedural requirement that all local legislation be approved first by a delegation of representatives from the affected area. In 1989, a push was made for Sandy Springs to join neighboring Chattahoochee Plantation in Cobb County. This move was blocked by the Speaker of the House.

When the Republican Party gained a majority in both houses of the General Assembly in 2005, the procedural rules previously used to prevent a vote by the full chamber were changed so that the bill was handled as a state bill and not as a local bill. The Assembly also repealed the requirement that new cities must be at least three miles from existing cities, because the new City limits border both Roswell and Atlanta. The bill allowing for a referendum on incorporation was introduced and passed as HB 37. The referendum initiative was approved by the Assembly and signed by Governor Sonny Perdue.



The referendum was held on June 21, 2005, and residents voted 94% to 6% in favor of incorporation. Many residents expressed displeasure with County services, claiming, based upon financial information provided by the County that the County was redistributing revenues to fund services in less financially stable areas of the County, ignoring local opposition to rezoning, and allowing excessive development. Many residents of unincorporated and less-developed south Fulton County strongly opposed incorporation, fearing the loss of tax revenues that fund County services. County residents outside Sandy Springs were not allowed to vote on the matter.

A mayor and six City council members were elected in early November 2005. Formal incorporation occurred on December 1, making Sandy Springs the third-largest City ever to incorporate in the U.S. The City's police force and fire department began service in 2006. In 2010, the City became the first jurisdiction in Georgia to successfully "bail out" from the preclearance requirements of Section 5 of the Voting Rights Act.

Significant Characteristics

The City of Sandy Springs has several events that are held annually including the Sandy Springs Festival which was established in 1984 to celebrate the cities 30th birthday. Sandy Springs also has the Sandy Springs Artapalooza, Stars and Strips Celebration and the Annual Chattahoochee River Summer Splash.

Throughout the City, there are several points of interest that brings in visitors every year. The Heritage Sandy Springs Museum that opened on March 20, 2010. It is dedicated to the history of the Sandy Springs community and is located in the repurposed Williams-Payne house at Heritage Green. Two notable exhibits are "Sandy Springs: Land and People" which tells the changing story of Sandy Springs as the home of Native Americans, rural farmers, and modern suburbanites and "A Land Nearby" which features a collection of 20 photographs of Georgia's Barrier Island taken by Dr. Curt Hames Jr. Sandy Springs also has a museum devoted to Anne Frank.

Sandy Springs is the home to sixteen parks and green-spaces which offer more than 950 acres of parkland. Some of the more popular parks are the Heritage Green, Hammond Park, Morgan Falls Overlook, Sandy Springs Tennis Center, Abernathy Park, Allen Park, John Ripley Forbes Big Trees Forest Nature Park Ridgeview Park and Abernathy Greenway.

Population and Demographics

The U.S. Census report in 2010 that there were 93,853 people, 42,334 households, and 22,539 families residing in the City. The racial makeup was 67.1% White, 21.3% African American, 0.8% Native American, 5.8% Asian, 0.2% Pacific Islander, 7.8% from other races, and 1.95% from two or more races. Hispanic or Latino of any race were 9.93% of the population.

There were 42,334 households, out of which 24.6% had children under the age of 18 living with them, 40.0% were married couples living together, 9.5% had a female householder with no husband present, and 46.8% were non-families. 37.1% of all households were made up of individuals and 17.7% had someone living alone who was 65 years of age or older. The average household size was 2.21 and the average family size was 2.96.

The age distribution of the population shows 17.8% under the age of 18, 10.5% from 18 to 24, 40.3% from 25 to 44, 21.6% from 45 to 64, and 9.8% who were 65 years of age or older. The



median age was 33 years. For every 100 females there were 96.6 males. For every 100 females age 18 and over, there were 95.0 males.

**Table 1
City of Sandy Springs Population Since 1990**

Year	1990	2000	2010	2014
Population	67,842	85,781	93,908	101,908 est.

Economy

The median income for a household in the City was \$59,196, and the median income for a family was \$100,679. Males had a median income of \$60,053 versus \$50,030 for females. The per capita income for the City was \$51,192. About 3.1% of families and 7.9% of the population were below the poverty line, including 8.9% of those under age 18 and 1.9% of those age 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau 2012:

**Table 2
Main Industries Based on Data from 2012**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	147	3,515
Retail Trade	252	3,933
Information	142	6,186
Real Estate, Rental, Leasing	334	2,561
Professional, Scientific and Technical Services	970	15,638
Administrative and Support and Waste Management and Remediation Service	265	14,848
Educational Services	52	218
Health Care and Social Assistance	666	17,618
Accommodation and Food Services	266	4,373
Other Services	221	1,456

Below is a list of City issued permits for the construction of single-family homes dating from 2006 to 2014.



Table 3
Single-Family New House Construction Building Permits

Year	Permits
2006	0
2007	149
2008	136
2009	27
2010	50
2011	64
2012	213
2013	352
2014	77

Infrastructure

Sandy Springs has a career based Police Department that was established in 2006. The department 127 sworn officers. The City also has a fire rescue department with four fire stations around the City. The fire rescue department is composed of firefighters, emergency medical service staff and a citizen based program called Community Emergency Response Team (CERT). The school system within the City limits consists of the following items listed in Table 4:

Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Public	21
Kindergarten to 12 th grade	Public	638
College, undergraduate	NA	NA
Graduate, professional school	NA	NA

Land Usage

Sandy Springs is a total of 39 square miles with 1.3 square miles being water. In 2005, the City identified existing land usage. The table below shows that the majority of the City is dedicated to residential at a total of 12,248 acres; which is almost half of the total land within the City. Also provided below is a future land use map that was incorporate in 2005.



Existing Land Uses, City of Sandy Springs, 2005

Land Use	Acres	Percent
Low Density Residential (<2 units/acre)	7,048	28.4%
Medium Density Residential (2-5 units/acre)	4,201	16.9%
High Density Residential (5+ units/acre)	999	4.0%
Office	1,173	4.7%
Retail	715	2.9%
Industrial	17	0.1%
Government	57	0.2%
Other Institutional	292	1.2%
School	263	1.1%
Transportation/Communication/Utilities	3,797	15.3%
Private Recreation	401	1.6%
Public Recreation	678	2.7%
Forest	2,519	10.1%
Agricultural – Vacant	585	2.4%
Floodplain	1,336	5.4%
Lake, Pond, Swamp	735	3.0%
No Data	5	0.0%
Total	24,821	100.0%

Source: Fulton County, in Interim Comprehensive Plan for City of Sandy Springs.

Figure 1
Future Land Use Map – 2027 Comprehensive Plan

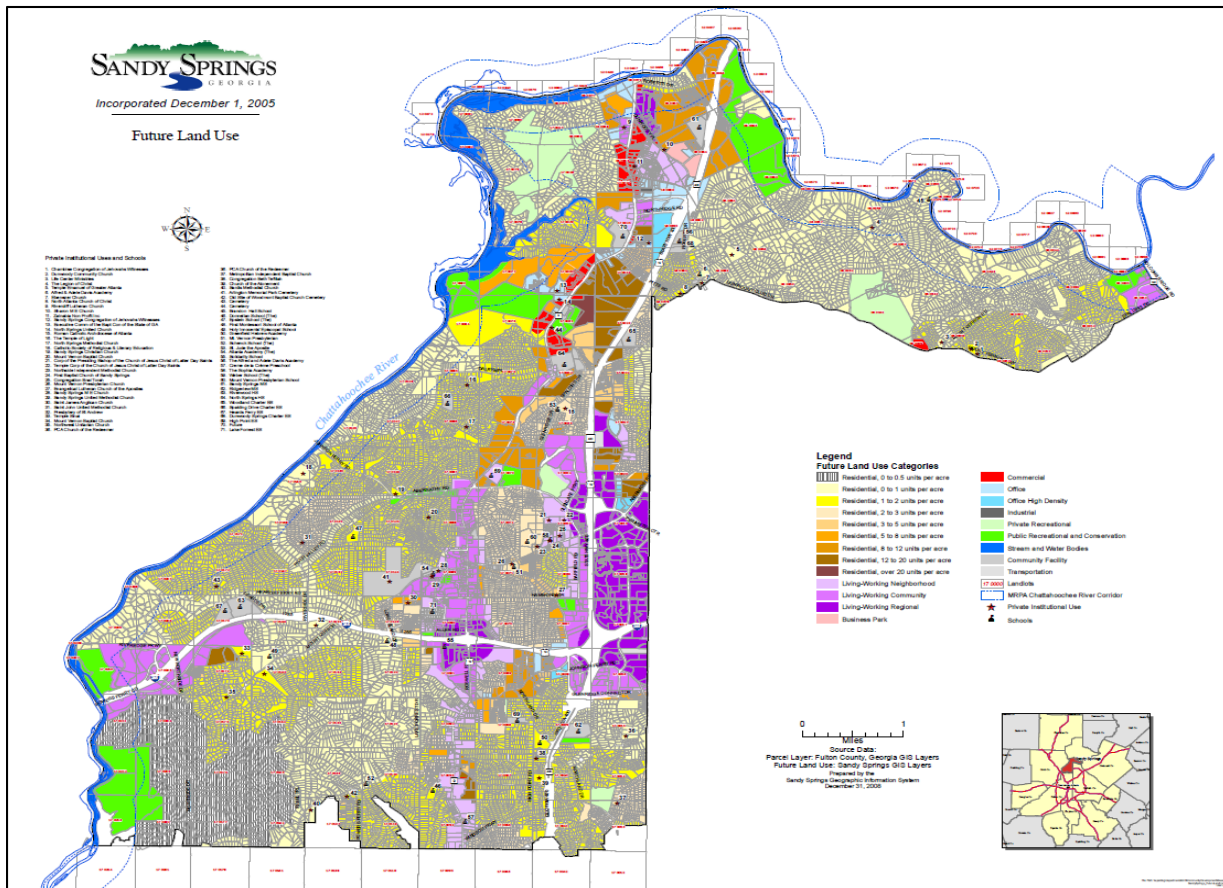


Figure 2
Future Land Use - Town Center 2027 Comprehensive Plan

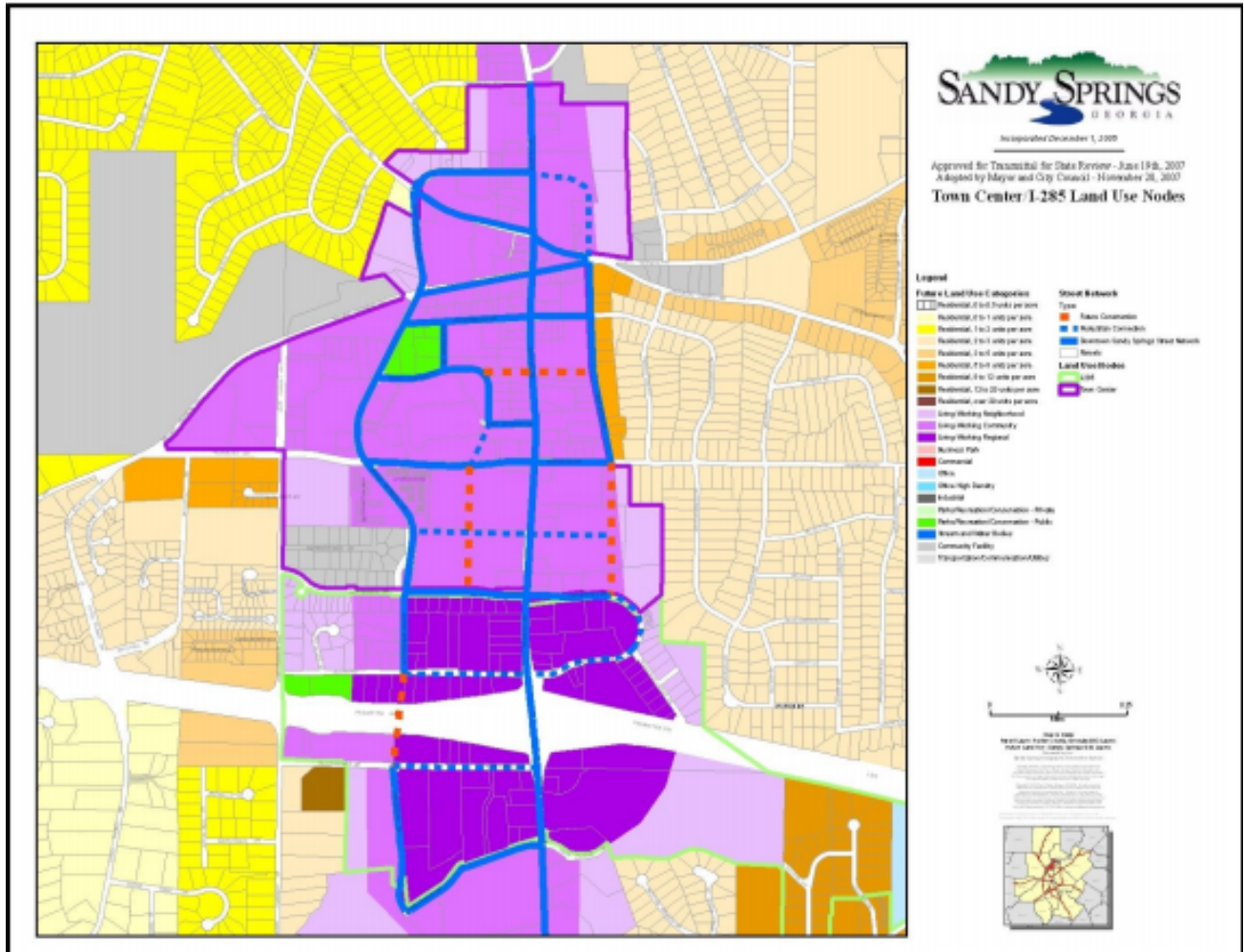
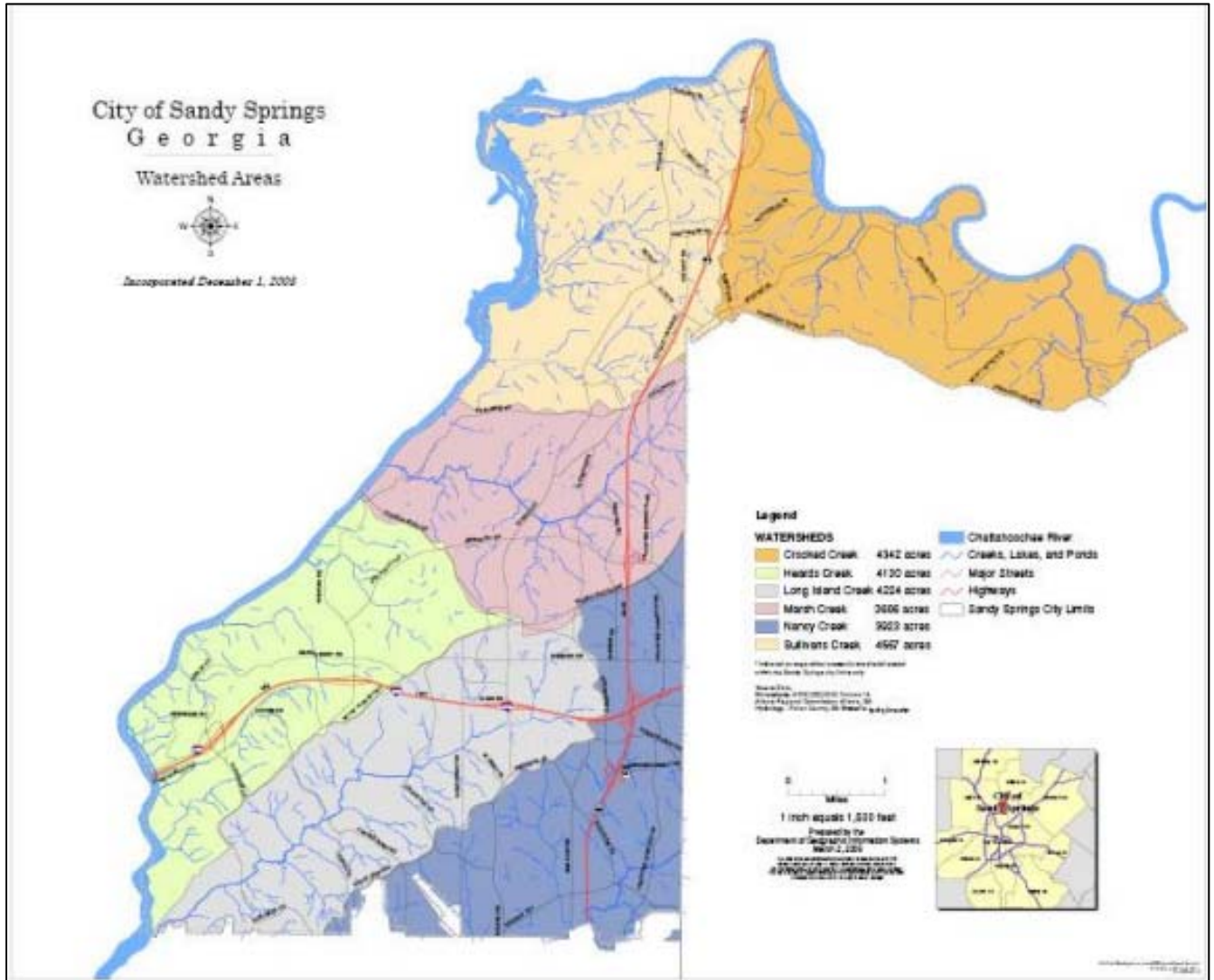


Figure 3
Watershed Areas - 2027 Comprehensive Plan



Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years



**Table 5
Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
City Center	Commercial	5	Johnson Ferry Rd	N/A	Gov. Office, Retail, Residential / Under Construction
One City Place	Commercial	1	City Place	N/A	Residential / Retail Under Construction
Mercedes Benzes	Commercial	1	GlenRidge Drive	N/A	Office Approved, Final development
Gateway	Commercial	7	4500 Roswell Rd	N/A	Retail, Residential Construction almost completed
Cox Communication	Commercial	2	Central Parkway	N/A	High Rise Office Construction completed
New Town Homes	Residential	8	Franklin Rd	N/A	Residential Demolition and Grading
The Cliftwood	Residential / Commercial	1	Cliftwood Rd	N/A	Mid-Rise Office / Residential Under Construction
Fulton County Schools	Educational	2	Powers Ferry Rd	N/A	Middle School and Admin-Offices Completed
Prado	Commercial	5	Roswell Rd	N/A	Commercial / Retail Completed
Known or Anticipated Development in the Next Five (5) Years					
More than can be listed					
Working on a development map					

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.



**Table 6
Legal and Regulatory Capability**

Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	Community Development	
Capital Improvements Plan	Yes	Local	Public Works	
Floodplain Management / Basin Plan	Yes	Local	Public Works	
Stormwater Management Plan	Yes			
Open Space Plan	n/a	Local	Public Works	
Stream Corridor Management Plan	Yes	Local	Public Works	
Watershed Management or Protection Plan	Yes	Local	Public Works	
Economic Development Plan	Yes	Local	Community Development	
Comprehensive Emergency Management Plan	Yes	Local/State	Fire/AFCEMA	
Emergency Operation Plan	Yes	Local/State	Fire/AFCEMA	
Post-Disaster Recovery Plan	Yes	Local/State	Fire/AFCEMA	
Transportation Plan	Yes	Local/State	Public Works	
Strategic Recovery Planning Report				
Other Plans:				
Regulatory Capability				
Building Code	Yes	Local/State	Community Development	
Zoning Ordinance	Yes	Local	Community Development	
Subdivision Ordinance	Yes	Local	Community Development	
National Flood Insurance Program	Yes	Local/State/Federal	Public Works	



Tool / Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
(NFIP) Flood Damage Prevention Ordinance				
NFIP: Cumulative Substantial Damages	undetermined			
NFIP: Freeboard	Yes	Local/State		State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Yes	Local	Community Development	
Site Plan Review Requirements	Yes	Local	Community Development	
Storm water Management Ordinance	Yes	Local	Public Works	
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Public Works	
Natural Hazard Ordinance	N/A			
Post-Disaster Recovery Ordinance	N/A			
Real Estate Disclosure Requirement	Yes			
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Sandy Springs.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning Board/Community Development
Mitigation Planning Committee	Yes	Planning Board/Community Development
Environmental Board/Commission	Yes	Community Development
Open Space Board/Committee	N/A	
Economic Development Commission/Committee	Yes	Community Development
Maintenance Programs to Reduce Risk	Yes	Public Works
Mutual Aid Agreements	Yes	Various agencies around the City
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Planning Board/Community Development
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Planning Board/Community Development
Planners or engineers with an understanding of natural hazards	Yes	Planning Board/Community Development
NFIP Floodplain Administrator	Yes	Planning Board/Community Development
Surveyor(s)	Yes	Public Works
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	GIS
Scientist familiar with natural hazards	No	N/A
Emergency Manager	Yes	Fire
Grant Writer(s)	Yes	CM/PW
Staff with expertise or training in benefit/cost analysis	Yes	CM/PW
Professionals trained in conducting damage assessments	Yes	PW/Fire

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Sandy Springs.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes, Community Development
Capital improvements project funding	Yes, PW and Parks & Rec
Authority to levy taxes for specific purposes	Not at this time
User fees for water, sewer, gas or electric service	Not at this time
Impact Fees for homebuyers or developers of new development/homes	Yes, Community Development
Stormwater utility fee	Not at this time
Incur debt through general obligation bonds	Yes City Council
Incur debt through special tax bonds	Not at this time
Incur debt through private activity bonds	Not at this time
Withhold public expenditures in hazard-prone areas	Yes, City Manager/Storm water
Other federal or state funding programs	Yes, CM, Mayor and Council
Open space acquisition funding programs	Yes, CM, Mayor and Council
Other	

Community Classifications

The table below summarizes classifications for community program available to Sandy Springs.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)			
Building Code Effectiveness Grading Schedule (BCEGS)	Unknown		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	ISO/3	2009
Storm Ready	Not at this time	Fulton County	
Firewise	Not at this time		



Program	Do You Have This?	Classification	Date Classified
Disaster/Safety Programs in/for Schools	Yes	Fulton County?	
Organizations with Mitigation Focus (advocacy group, non-government)	Yes	CERT/Fire Corp	2008
Public Education Program/Outreach (through website, social media)	Yes	Sandy Springs Comm-Dept	2005
Public-Private Partnerships	Yes		2005

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Sandy Spring's current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Gilbert Quinones/Plan Review Engineer/Chief Engineer

The City of Sandy Springs is currently an active member of the NFIP, in good standing with no outstanding compliance issues. It is currently undetermined when Sandy Springs completed their last Community Assistance Visits (CAV) but it has not been since the flood maps were updated in 2013.

Loss History and Mitigation

Sandy Springs does have a system in place to maintain a list of properties that have been flood damaged and those who were interested in mitigation in the past. The floodplain administrator



does not make substantial damage estimates and no property owners are in the process of mitigation or have expressed an interest in the mitigation process.

Planning and Regulatory Capabilities

Sandy Springs does use local ordinance, plans and programs to support floodplain management and the floodplain manager does provide permit reviews. The City's floodplain management regulations and ordinances meet the minimum requirements set forth by both the Federal Emergency Management Agency (FEMA) and the State of Georgia.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Sandy Springs; however, they did state an interest in receiving more training and/or attending conferences if the future.

Community Rating System

Sandy Springs does not currently participate in the CRS program.

Properties with Documented Flood Damage

- 3 in area of E. Powderhorn Rd
- 1 in area of Hitching Post Trail
- 1 in area of Pine Forest Road
- 2 in area of River Shore Pkwy
- 4 in area of Granite Ridge Place
- 1 in area of Tanacrest Court

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

Level I – Catastrophic

- Personnel: Death or fatal injury.
- Public: Death or fatality or fatalities due to direct exposure.
- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.



- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

□ Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.



- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 11
Risk Assessment per the Mitigation Planning Committee**

Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Tropical System	U	P	P	H	9
Tornadoes	P	P	P	P	8
Flood	U	U	P	H	8
Dam Failure	P	P	P	P	8
Sinkhole	U	P	P	L	8
Wildfire/Urban Interface	U	U	P	P	6
Earthquake	U	U	P	P	6
Severe Weather	U	U	U	P	5
Winter Storm	U	U	U	P	5
Heat Wave	U	U	U	P	5
Drought	U	U	U	U	4
Average Risk by Level	1.18	1.36	1.63	2.36	

H = Highly Likely (4 points)
 L = Likely (3 points)
 P = Possible (2 points)
 U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of



subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.

Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 12
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
59.0001†	Improve infrastructure and capacity at Riverside Dr. and North Harbor	PW	Complete		<i>Discontinue</i>	
59.0002	Purchase approximately 45 flooded homes in the Colewood Creek Basin	PW	No Progress	2% complete. With the aid of federal/state/local dollars (HMGP/GEMA/local), the City has purchased one property in Colewood Creek Basin (6285 Rivershore Pkwy). Progress was delayed due to the homeowners no longer interested in selling to the City.	<i>Include in 2016 HMP</i>	



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
59.0003	Purchase approximately 35 flooded houses in Pine Forest along Nancy Creek Basin	PW	In Progress	25% complete. With the aid of federal/state/local dollars (HMGP/PDMP/GEMA/local), the City has purchased nine properties within the Nancy Creek Basin, including five homes in Pine Forest. Progress was delayed due to the homeowners no longer interested in selling to the City. Currently, the City is designing in a park/greenspace to occupy the space remaining after demolition.	Include in 2016 HMP	
59.0004	Acquire approximately 10 homes in the North Mill area and convert to open space	PW	In Progress	10% complete. With the aid of federal/state/local dollars (HMGP/GEMA/local), the City has purchased one home in the North Mill area. Progress was delayed due to the homeowners no longer interested in selling to the City.	Include in 2016 HMP	
59.0005	Reinforce old culverts with slip line	PW	No Progress	0% No reported update	Include in 2016 HMP	
59.0006	Rehabilitate City-owned detention ponds which have previously breached	PW	No Progress	0% Research N/A	Include in 2016 HMP	
59.0007	Build retaining wall on Morgan Falls Rd where erosion is occurring where slope crosses the roadway and has lake below	PW	No Progress	1. 0% 2. Planning, Right of Way issues, Utilities 3. N/A	Include in 2016 HMP	
59.0008	Build retaining wall on Lake Forest Rd to reduce debris sliding onto the roadway	PW	In Progress	Sandy Springs has spent time sloping the bank back, but no wall was built.	Include in 2016 HMP	



Proposed Hazard Mitigation Initiatives for the Plan

Sandy Springs identified the following mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 13 identifies the municipality's updated local mitigation strategy. .

**Table 13
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0001	Purchase approximately 45 flooded homes in the Colewood Creek Basin	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$1.4M	HMA, FMA, Local	2016-2021	12
Comments: Homes are located in the flood plain and are subject to flooding.										
59.0002	Purchase approximately 35 flooded houses in Pine Forest along Nancy Creek Basin	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$1.1M	HMA, FMA, Local	2016-2021	12
Comments: Development is built in the floodplain. It is a 40 to 50 year old development, which was built pre-FIRM.										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0003	Acquire approximately 10 homes in the North Mill area and convert to open space	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems	2.7	Property Protection	\$3M	HMA, FMA, Local	2016-2021	12
Comments: There are a total of about 600 homes in the floodplain. City wishes to purchase the most homes that are most at risk.										
59.0004	Reinforce old culverts with slip line	Sandy Springs	Public Works	Flooding; Severe Weather; Tropical Systems; Sinkholes	6.1	Structural Project	\$3.5M	HMA, Local	2016-2021	17
Comments: Current infrastructure is aging and rusting. The leaking pipes are causing secondary erosion to the substrate. This technique would reinforce pipes to keep from collapsing which would damage homes that are built on or near the top of the system.										
59.0005	Rehabilitate City-owned detention ponds which have previously breached	Sandy Springs	Public Works	Flooding	6.1	Structural Project	\$5M	HMA, Local	32016-2021	14
Comments: Some of the detention ponds are located by creeks. Should the structure fail, it will release mud and debris into the creeks.										



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
59.0006	Build retaining wall on Morgan Falls Rd where erosion is occurring where slope crosses the roadway and has lake below	Sandy Springs	Public Works	Landslide; Severe Weather	6.3	Structural Project	\$1M	HMA, Local	2016-2021	14
59.0007	Build retaining wall on Lake Forest Rd to reduce debris sliding onto the roadway	Sandy Springs	Public Works	Landslide; Severe Weather	6.3	Structural Project	\$267,000	HMA, Local	2016-2021	19
<p>Comment: This is an old settlement road that became a major road. Trees, boulders, and mud block can block the road following severe weather events blocking any access, including first responders, into the area.</p>										
59.0008	Distributing tornado shelter location information	Sandy Springs	Fire & Communications	Severe Weather Tropical Systems Tornadoes	1.5	Civilian Property Project	\$10,000	HMA, FMA, Local	2016-2021	18
59.0009	Supporting severe weather awareness week.	Sandy Springs	Fire & Communications	Severe Weather Tropical Systems Tornadoes	1.5	Civilian Property Project	\$10,000	HMA, FMA Local	2016-2021	18



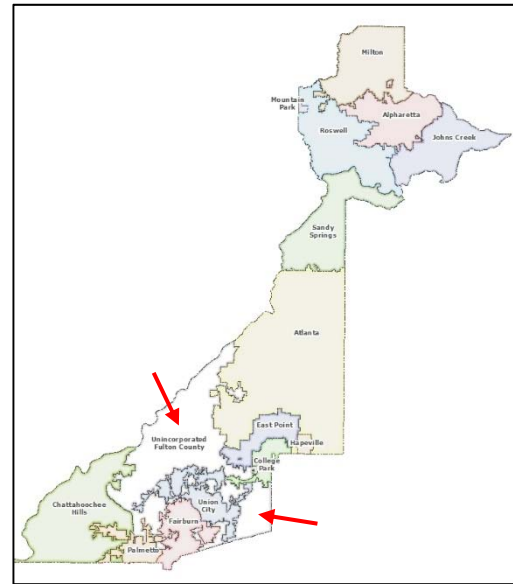
Annex 14

UNINCORPORATED FULTON COUNTY, GEORGIA MITIGATION ACTION PLAN

Geography/History

Going from north to south, the northernmost portion of Fulton County, encompassing Milton and northern Alpharetta, is located in the Etowah River sub-basin of the ACT (Coosa-Tallapoosa) River Basin. The rest of north and central Fulton is located in the Upper Chattahoochee River sub-basin of the ACR (Apalachicola-Chattahoochee-Flint) River Basin. The bulk of south Fulton County is located in the Middle Chattahoochee River-Lake Harding sub-basin of the larger ACF River Basin, with just the eastern edges of south Fulton in the Upper Flint River sub-basin of the same larger ACF River Basin.

Fulton County was created in 1853 from the western half of DeKalb County. It was named in honor of a surveyor from the Western and Atlanta Railroad named Hamilton Fulton. Settlement increased in the Piedmont section of upland Georgia, Fulton County grew rapidly after the American Civil War as Atlanta was rebuilt, becoming a center of railroad shipping, industry and business.



In the later 20th century, Atlanta and Fulton County became the location of numerous national and international headquarters for leading companies, attracting workers from around the country. As a result, the City and County became more cosmopolitan and diverse.

Significant Characteristics

Fulton County is the home to several big name company headquarters such as AFC Enterprises (Popeyes and Cinnabon), AT&T Mobility, Chick-Fil-A, Children's Healthcare of Atlanta, Church's Chicken, The Coca-Cola Company, Cox Enterprises, Delta Air Lines, Earthlink, Equifax, First Data, Georgia-Pacific, Global Payments, Inc., The Home Depot, InterContinental Hotels Group, IBM Internet Security Systems, Mirant Corp., Newell Rubbermaid, Northside Hospital, Porsche Cars North America, Saint Joseph's Hospital, Southern Company, Spectrum Brands, SunTrust Banks, United Parcel Service, and Wendy's/Arby's Group. Mellow Mushroom is headquartered in an unincorporated area in Fulton County.



Population and Demographics

The 2010 U.S. census recorded that there were 920,581 people residing in the County. There were 348,632 housing units at an average density of 660 per square mile. The racial makeup of the County was 48.1% White, 44.6% African American, 0.2% Native American, 5.6% Asian, <0.1% Pacific Islander, 2.6% from other races, and 1.5% from two or more races. 7.9% of the population was Hispanic or Latino of any race.

There were 321,242 households out of which 28.7% had children under the age of 18 living with them, 37.3% were married couples living together, 16.5% had a female householder with no husband present, and 42.2% were non-families. 32.2% of all households were made up of individuals and 6.7% had someone living alone who was 65 years of age or older. The average household size was 2.44 and the average family size was 3.15.

The age distribution was 24.4% under the age of 18, 11.0% from 18 to 24, 35.5% from 25 to 44, 20.7% from 45 to 64, and 8.5% who were 65 years of age or older. The median age was 33 years. For every 100 females there were 97.00 males. For every 100 females age 18 and over, there were 95.00 males.

**Table 1
Fulton County Population Since 1990**

Year	1990	2000	2010	2014
Population	648,951	816,006	920,581	996,319 est.

Economy

The median income for a household in the County was \$57,664. The per capita income for the County was \$37,238. The unemployment rate in Fulton County, Georgia, is 7.40%, with job growth of 1.77%. Future job growth over the next ten years is predicted to be 36.10%.

Below is a chart of Fulton County industries based on data from the United States Census Bureau, 2012.

**Table 2
Main Industries Based on Data from 2012 (Countywide)**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	1496	27,530
Retail Trade	3,368	49,050
Information	1,169	51,031
Real Estate, Rental, Leasing	2,068	11,993
Professional, Scientific and Technical Services	6,943	93,363
Administrative and Support and Waste Management and Remediation Service	1,910	81,056



Industry Description	Number of Establishments	Number of Employees
Educational Services	425	2,904
Health Care and Social Assistance	3,542	8,360
Accommodation and Food Services	2,942	70,043
Other Services	480	6766

The census data above is for all of Fulton County and not specific to Unincorporated South Fulton County. From 200 to 2010 the unincorporated portions of Fulton County shrank by 58% and the landscape changed dramatically due to annexation and incorporation. Unincorporated South Fulton developed a 2030 comprehensive plan, which was a beneficial step in managing the changing economic and demographic landscape. Specific data for Unincorporated South Fulton can be found in the tables below.

Table 3
Unincorporated South Fulton County Population Since 1990

Year	1990	2000	2010	2014
Population	46,748	52,645	87,478	Not Available

Table 4
Unincorporated South Fulton County Age Distribution 2009

Age	2009
Preschool	8,717
School Age	27,648
Family Forming	43,202
Peak Earning	26,564
Seniors	7,926

Table 5
Unincorporated South Fulton County Race & Ethnicity 2010

Age	2010
African American	56%
White	38%
Asian or Pacific Islander	2%
American Indian or Alaskan Native	0%
Other	2%



Below is a list of County-issued permits for the construction of single-family homes dating from 2001 to 2014.

Table 6
Single-Family New House Construction Building Permits

Year	Permits
2001	4,019
2002	3,909
2003	6,014
2004	8,008
2005	9,527
2006	9,491
2007	4,598
2008	2,214
2009	775
2010	782
2011	961
2012	1,668
2013	2,121
2014	410

Infrastructure

Fulton County has Sheriff's Department which is mandated by the Georgia Constitution and a jail which was renovated in 2009 marking the 29th anniversary of the original jail on Rice Street. The Fulton County Fire and Rescue Department services the unincorporated area and is supported by 10 fire station and 149 personnel. The Fulton County school system consists of the following items listed in Table 7:

Table 7
School Infrastructure within Unincorporated S. Fulton

School	Type	Enrollment
Nursery School, preschool	Public	2,773
Kindergarten to 12 th grade	Public	132,232
College, undergraduate	Not Reported	Not Reported
Graduate, professional school	Not Reported	Not Reported



Land Usage

Fulton County a total of 534 square miles with 527 square miles being land and 7.7 square miles being water (1.4% of the County is water). Fulton County is made up of 14 cities and seven unincorporated communities. The County has a mix of agricultural, residential, commercial, and industrial. The County is diverse in its land use; below are the existing South and Southwest land use maps per planning areas. (Fulton County 2025 Comprehensive Plan: <http://www.fultoncountyga.gov/fcpcsd-comprehensive-planning/2025-comp-plan-a-map/2924-future-land-use-maps> and Fulton County 2030 Comprehensive Plan: Appendix http://www.fultoncountyga.gov/images/stories/ECD/Comp_Plan/2030CompPlanAdopted.pdf)



Figure 1: Existing Land Use (Southwest & South)

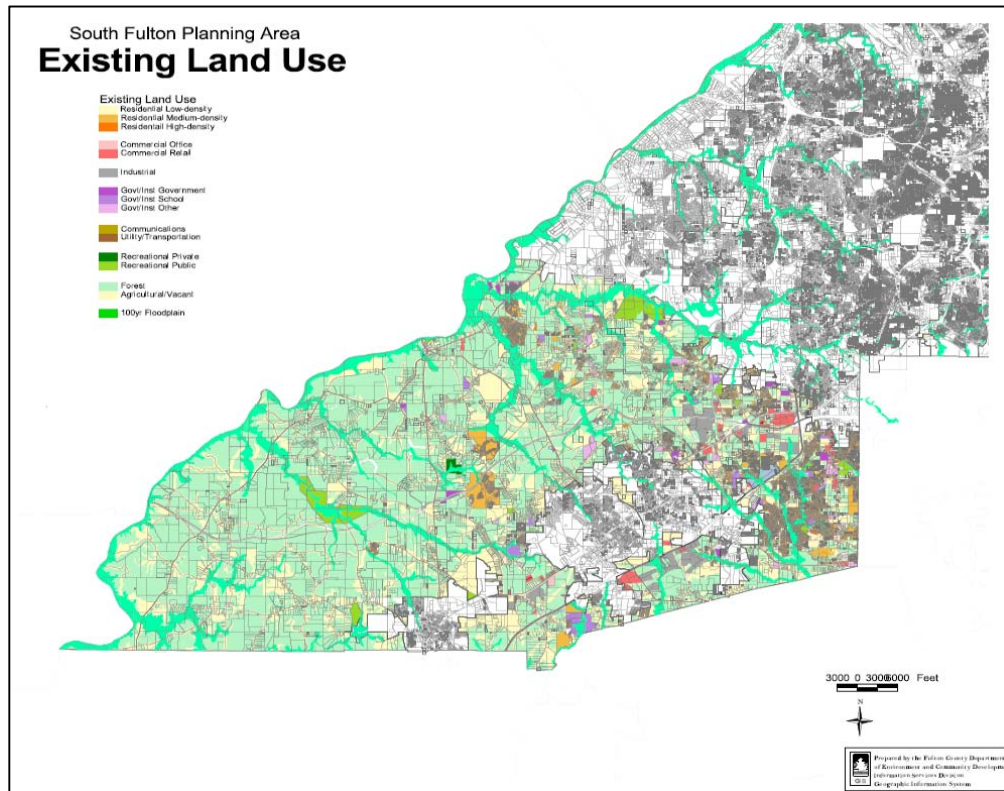
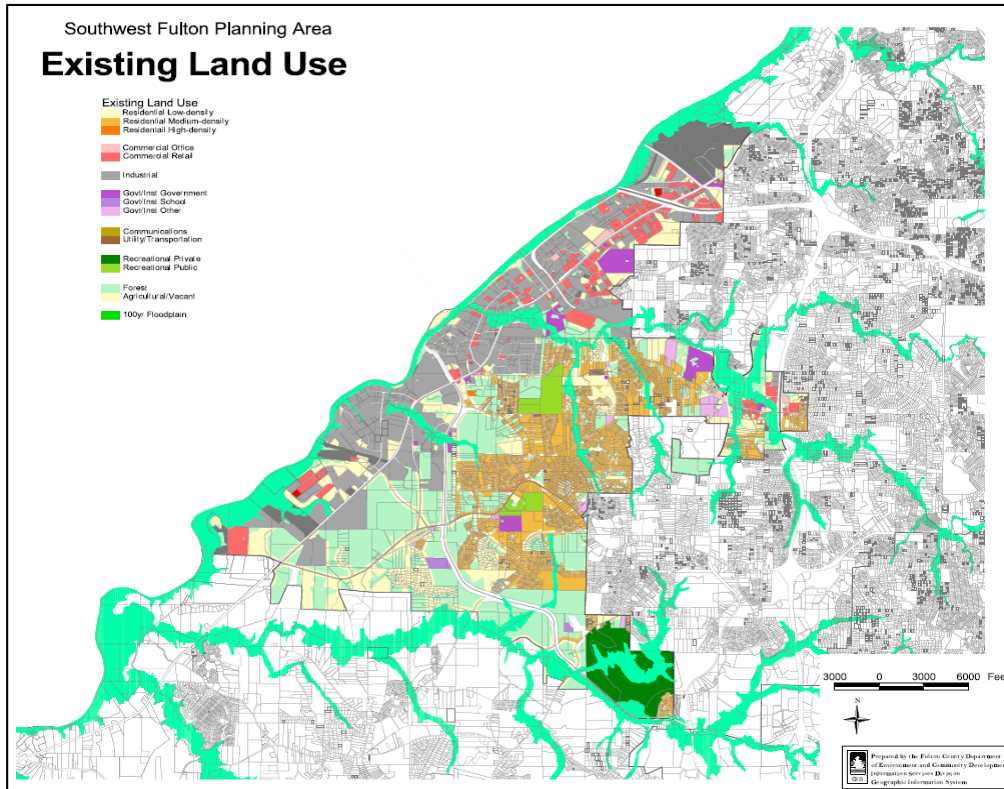
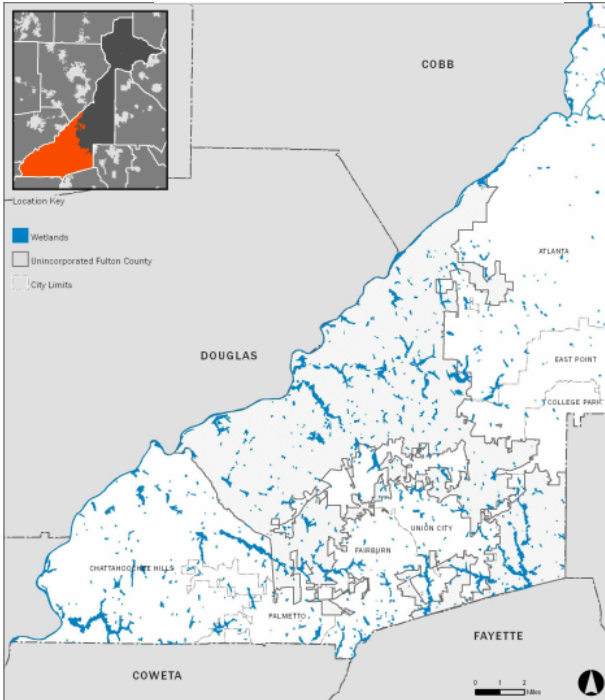


Figure 2: Wetlands



Floodplains are areas that are subject to flooding, based on the 100-year, or base flood. Floodplains are environmentally sensitive and are significant areas, which are vulnerable to impacts of development activities. In Fulton County, flood plains are primarily located along the Chattahoochee River and its tributaries (see the map below for the 100-year and 500-year floodplains). According to GIS analysis, 14,518 acres of land are in the floodplain in

Figure 3: Floodplains

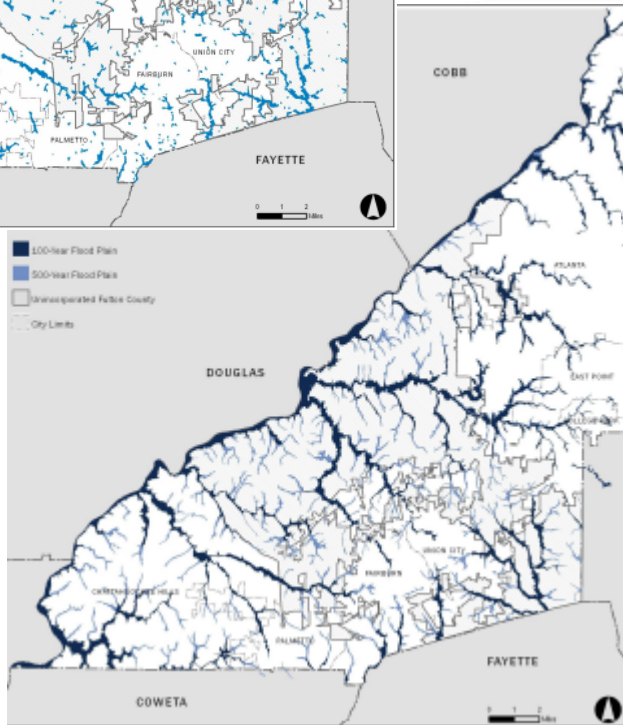
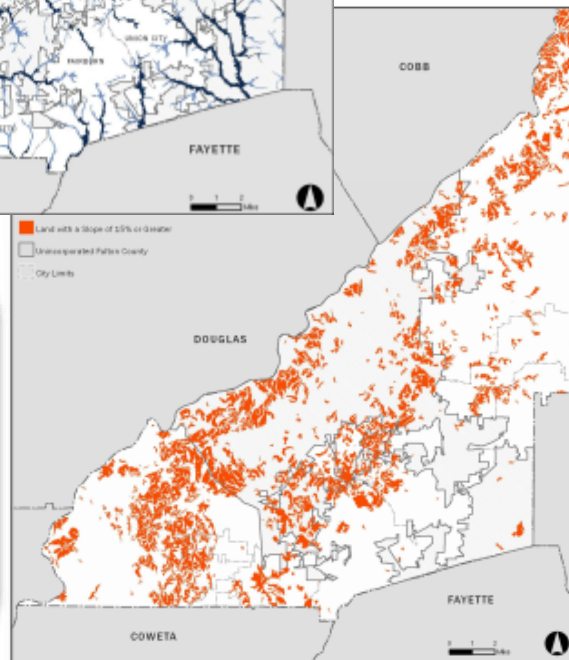


Figure 4: Steep Slopes



In 2006 Fulton County adopted a Steep Slopes Ordinance that established grading requirements to protect steep slopes during the development process. Although Fulton County identifies slopes greater than 33% as a steep slope. Steep slopes in Fulton County are scattered along the Chattahoochee River and its tributaries as shown in



Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years.

**Table 8
Future Development 2015-2020**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units/Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
Suburban Housing and Commercial/Light Industrial	92% Residential 8% Commercial Light Industrial	2966 Houses 263 Commercial Light Industrial Sites	All areas in South Fulton	N/A	Most of the area is suburban and residential with associated commercial and light industrial serving the residential area
Known or Anticipated Development in the Next Five (5) Years					
Suburban Housing and Commercial/Light Industrial	Similar patterns			Suburban Housing and Commercial/Light Industrial	Primarily residential/suburban



Figure 2: 2010 Aerials

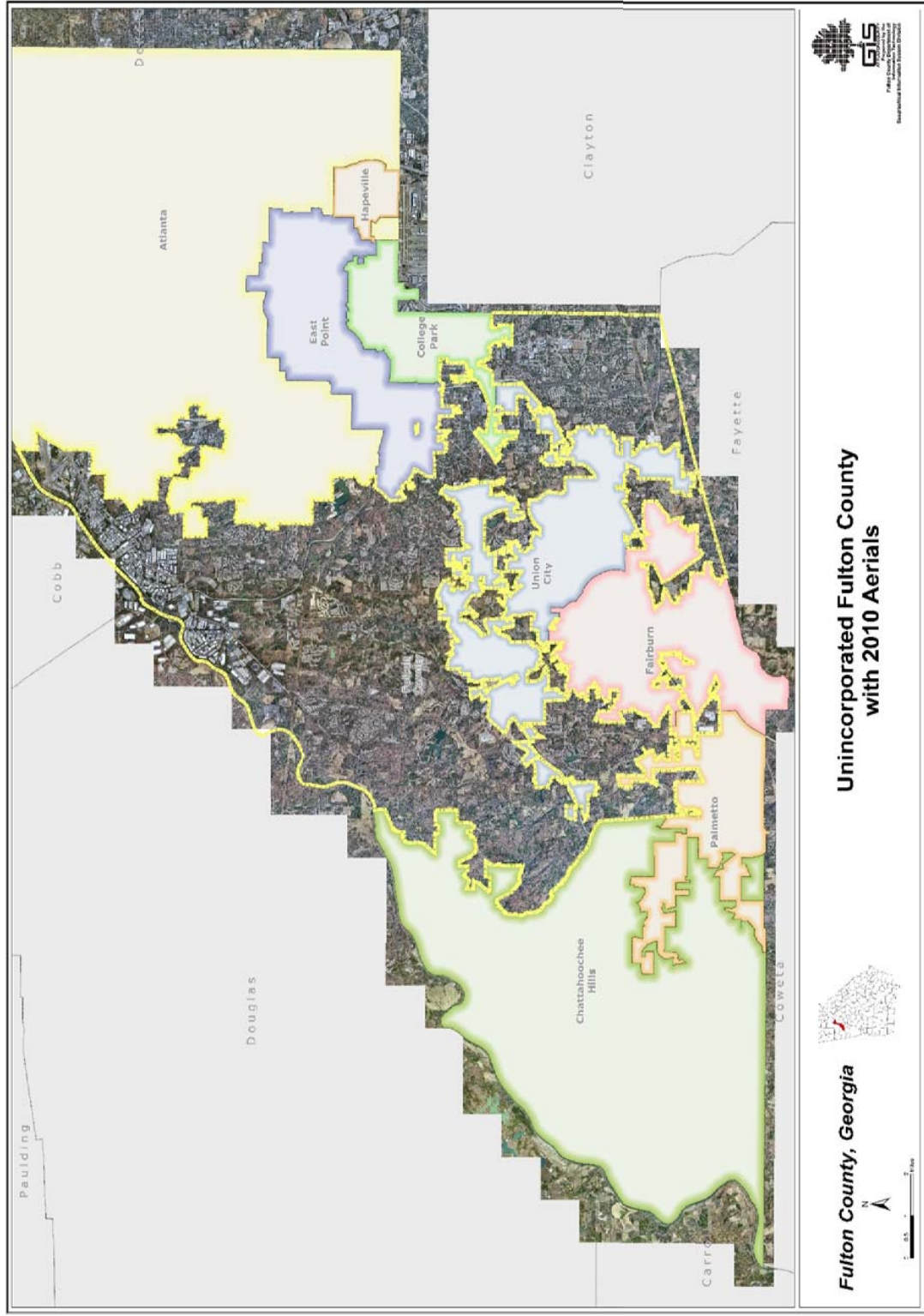
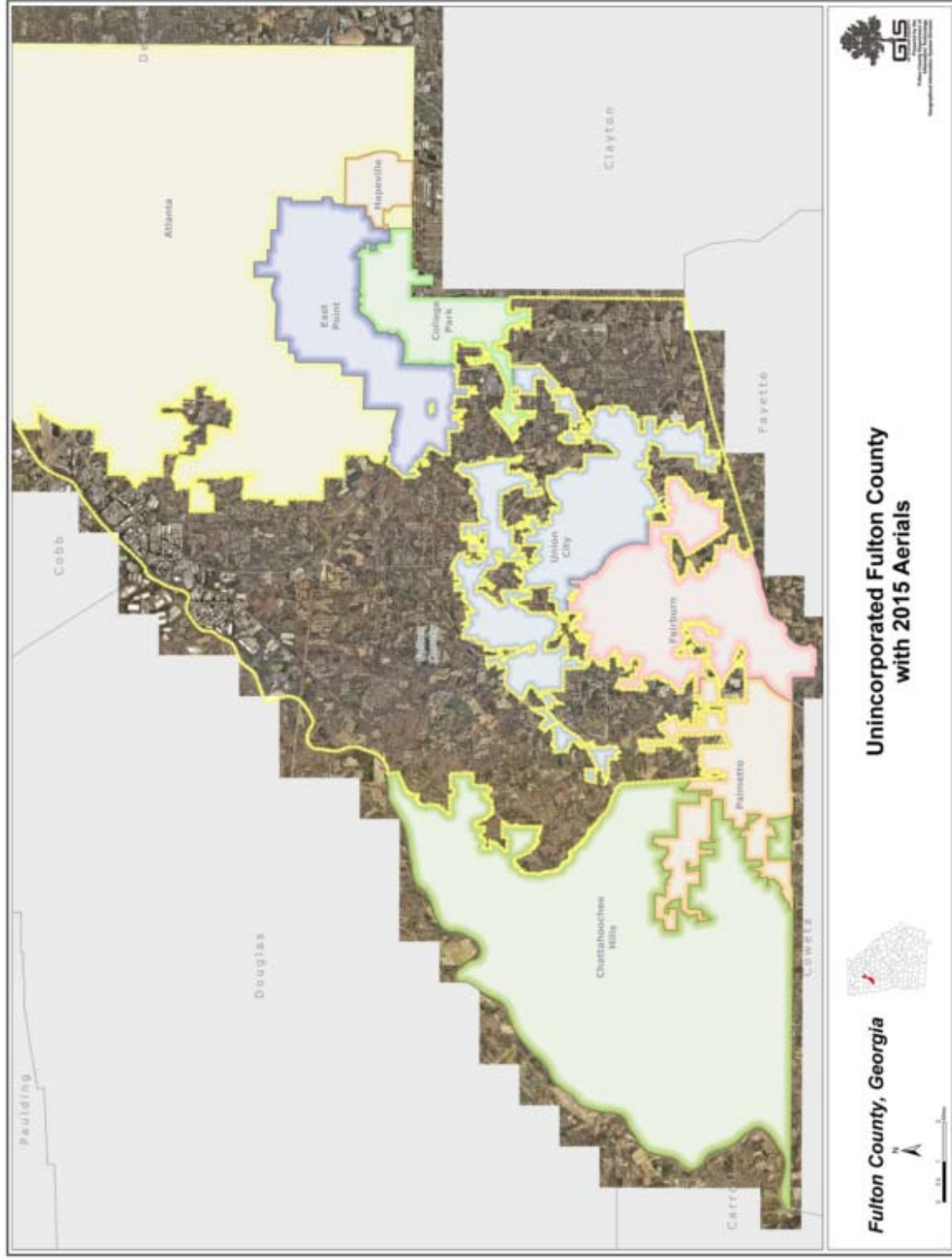




Figure 3: 2015 Aerials





**Table 9
Community Areas**

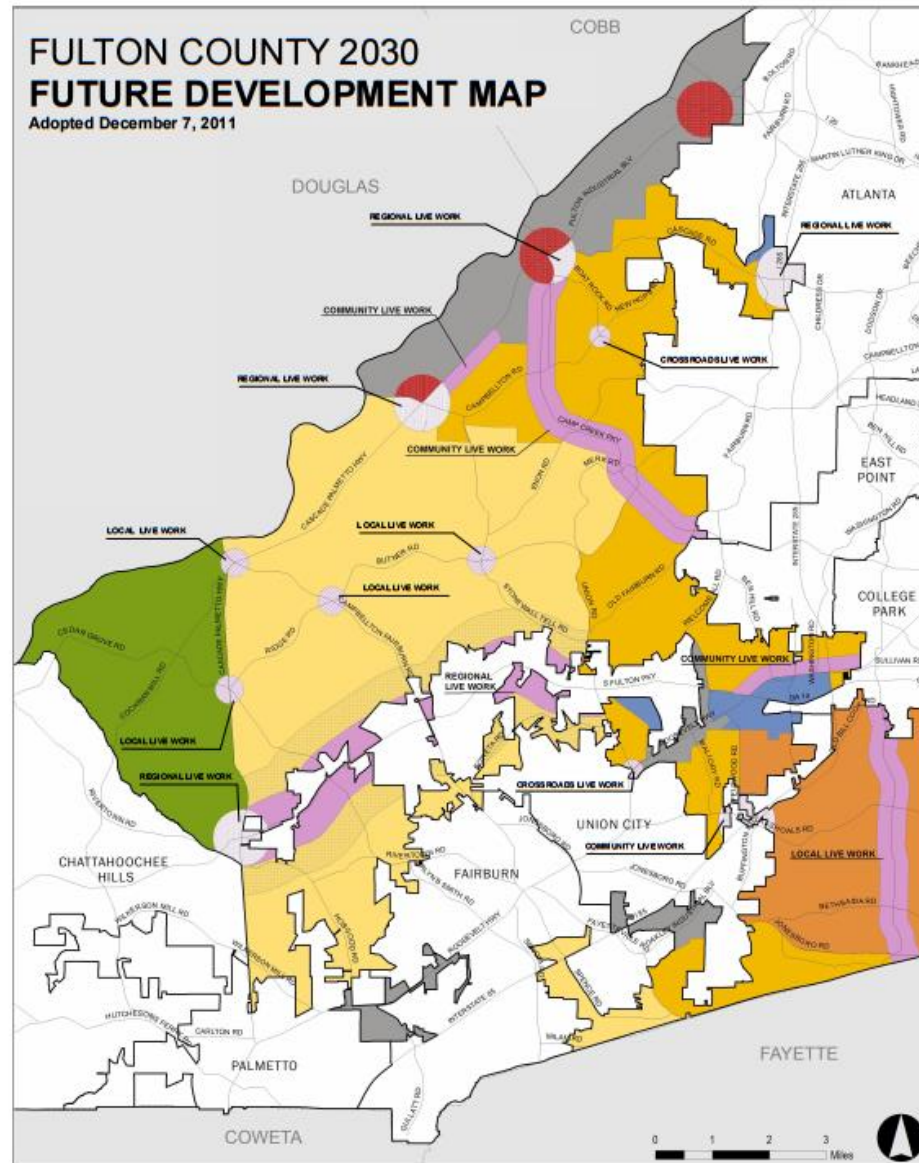
The Character Areas are grouped based on three essential development patterns that when combined define a complete community. They provide a basic framework to describe how certain areas should function and develop. These three Community Areas are as follows:

Character Area	General Characteristics	Development Types	Suggested Compatible Land Use Categories	Suggested Active Compatible Zoning Classifications
NEIGHBORHOOD				
Agricultural	Area with agricultural character and defined by agricultural uses and very low density residential; Public infrastructure is limited as the area is currently lacking sewers; Large active agricultural uses (horse, farm, timber); Single family homes on individual lots not in subdivisions.	<ul style="list-style-type: none"> - Agricultural uses such as farms, open pastures, timbering - Very low-density single family detached - Natural areas including areas preserved by conservation development 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - AG-1, R-1, R-2, CUP, SH
Rural - South Fulton Pkwy Transitional	Area characterized by low density residential, represents a transition between agricultural and suburban character areas; Public infrastructure is available but may not be extended to all properties; Low to medium density residential in subdivisions.	<ul style="list-style-type: none"> - Established single family homes on large lots - Newer traditional style subdivisions - Civic uses such as schools, places of worship, community centers & facilities - Natural areas including areas preserved by conservation subdivisions 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - R-2A, CUP, NUP, SH (All Rural) - R-3*, R-3A* - * (Transitional Zone Only)
Suburban - Suburban I - Suburban II	Area characterized by medium density residential located closest to urbanized areas; Wide diversity of housing types and affordability; Public infrastructure is available.	<ul style="list-style-type: none"> - Medium-density single family - Civic uses such as schools, place of worship, community centers & facilities - Natural areas including areas preserved by conservation subdivisions 	<ul style="list-style-type: none"> - Public, Semi-Public & Institutional - Open Space 	<ul style="list-style-type: none"> - R-3, R-3A, R-4A, CUP, NUP, SH (Suburban I & II) - R-4*, R-5*, R-5A*, TR* - * (Suburban II only)
BUSINESS DISTRICT				
Industrial	Area that accommodates intense industrial uses, including manufacturing and warehousing; Highest intensity industrial uses requiring the most stringent regulations and site control; Large buffers and separation of uses to limit the impacts of use.	<ul style="list-style-type: none"> - Industrial uses such as wholesale trade distribution centers, manufacturing, etc. - Industrial parks - Large-scale distribution activities 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - M-1, M-1A, M-2
Business Park	Area that accommodates multiple businesses of less intense industrial uses; Less intense industrial, office park and warehousing uses.	<ul style="list-style-type: none"> - Industrial parks - Industrial uses such as wholesale trade distribution centers, manufacturing, etc. 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - M-1, M-1A
Industrial Marketplace	Area that provides commercial/retail uses providing services to industrial uses; Commercial/retail services located at major transportation intersections; Residential uses are not appropriate.	<ul style="list-style-type: none"> - Shopping centers, convenience retail - Industrial uses such as wholesale trade distribution centers, manufacturing, etc. - Industrial parks 	<ul style="list-style-type: none"> - Open Space - Industrial - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - M-1, M-1A, M-2, C-1, C-2, O4
MIXED-USE DISTRICT				
Crossroads	Based on a 1000 foot distance, an area located at historic or emerging intersections providing locally serving retail and services. Residential development is not appropriate.	<ul style="list-style-type: none"> - Convenience retail - Small scale commercial/service such as banks, drug stores, etc. - Small multi-tenant shopping centers - Office in existing structure 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - C-1, C-2, O4, SH
Local	Based on 1/4 mile distance, an area at an intersection or along a corridor that provides for a balanced mix of uses to create a live work environment. Medium density residential development is appropriate.	<ul style="list-style-type: none"> - Small scale commercial/service such as banks, drug stores, etc. - Small multi-tenant shopping centers - Office in existing structure - Single family residential 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - MIX, C-1, C-2, O4, SH
Community	Based on a 1/2 mile distance for nodes and 1/4 mile distance for corridors, an area at an intersection or along a corridor that provides for a balanced mix of uses to create a live work environment. Medium to high density residential development is appropriate.	<ul style="list-style-type: none"> - Convenience retail - Commercial/service such as banks, drug stores, etc. - Office - Single family duplex, townhomes, etc. 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - MIX, C-1, C-2, O4, SH
Regional	Based on a 1/2 mile distance for nodes and corridors. An area at an intersection or along a corridor that provides for a balanced mix of uses to create a live work environment. High density residential development is appropriate.	<ul style="list-style-type: none"> - Big box retail, major grocery stores, home improvement centers - High density residential such as apartments - Office - Single family duplex, townhomes, apartments, etc. 	<ul style="list-style-type: none"> - Open Space - Public, Semi-Public & Institutional 	<ul style="list-style-type: none"> - MIX, C-1, C-2, O4, SH

Source: Fulton County 2030 Comprehensive Plan



Figure 4: Future Development Map

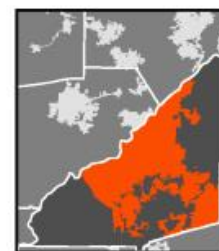


CHARACTER AREAS

- NEIGHBORHOOD DISTRICT**
- AGRICULTURAL NEIGHBORHOOD
- RURAL NEIGHBORHOOD
- SOUTH FULTON PARKWAY
- TRANSITIONAL ZONE
- SUBURBAN I NEIGHBORHOOD
- SUBURBAN II NEIGHBORHOOD

- BUSINESS DISTRICT**
- INDUSTRIAL ZONE
- INDUSTRIAL MARKETPLACE
- BUSINESS PARK

- MIXED USE DISTRICT**
- CROSSROADS CENTER
- LOCAL CENTER
- COMMUNITY CENTER
- REGIONAL CENTER
- CORRIDOR



LOCATION KEY

www.fultoncountyga.gov



Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

Table 10
Legal and Regulatory Capability

Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan	Yes	Local	PCS Planning and Community Services	Comprehensive Plan of 2030
Capital Improvements Plan	Yes	Local	FTS Facilities and Transportation	Fulton County Capital Improvement Program
Floodplain Management / Basin Plan	Yes	Local	PCS	Fulton County Zoning Resolution
Stormwater Management Plan	Yes	Local	DPW Public Works	National Pollutant Discharge Elimination System (NPDES) Permit
Open Space Plan	Yes		PCS/Parks	
Stream Corridor Management Plan	Yes		PCS	
Watershed Management or Protection Plan	Yes		PCS/DPW	
Economic Development Plan	Yes		PCS Economic Development	
Comprehensive Emergency Management Plan	Yes	Federal, State, Local	Atlanta-Fulton County Emergency Management Agency	
Emergency Operation Plan	Yes	Federal, State, Local	Atlanta-Fulton County Emergency Management Agency	



Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Post-Disaster Recovery Plan	Yes	Federal, State, Local	Atlanta-Fulton County Emergency Management Agency	
Transportation Plan	Yes	Federal, State, Local	FTS	
Strategic Recovery Planning Report				
Other Plans:				
Regulatory Capability				
Building Code	Yes	State & Local	PCS	IBC 2012
Zoning Ordinance	Yes	Local	PCS	Fulton County Zoning Resolution
Subdivision Ordinance	Yes	Local	PCS	Fulton County Subdivision Regulations
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State, Local	PCS	Fulton County Zoning Resolution
NFIP: Cumulative Substantial Damages	Yes	Federal	PCS	Community Rating System (CRS)/Federal Emergency Management Agency (FEMA)
NFIP: Freeboard	Yes	State, Local	PCS	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Yes	Regional	ARC	Comprehensive Plan
Site Plan Review Requirements	Yes	Local	PCS	Development Regulations Subdivision Regulations
Storm water Management Ordinance	Yes	Federal, State, Local	PCS	Fulton County Stormwater Management Ordinance
Municipal Separate Storm Sewer System (MS4)	Yes	State, Local	PCS/DPW	State EPD
Natural Hazard Ordinance	Yes	Federal, State, Local	Atlanta-Fulton County Emergency	



Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
			Management Agency	
Post-Disaster Recovery Ordinance	Yes	Federal, State, Local	Atlanta-Fulton County Emergency Management Agency	
Real Estate Disclosure Requirement	Yes	State		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Fulton County.

**Table 11
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Community Zoning Board
Mitigation Planning Committee	Yes	Multiple Agencies
Environmental Board/Commission	Yes	Fulton County Citizen's Commission on the Environment
Open Space Board/Committee	Yes	PCS/Parks
Economic Development Commission/Committee	Yes	Economic Development
Maintenance Programs to Reduce Risk	Yes	Public Works Transportation
Mutual Aid Agreements	Yes	Fire/Police
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Planning and Community Services
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Planning and Community Services
Planners or engineers with an understanding of natural hazards	Yes	Planning and Community Services



Resources	Is This In Place?	Department/Agency/Position
NFIP Floodplain Administrator	Yes*	Planning and Community Services
Surveyor(s)	Yes	Public Works/Facilities and Transportation
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Multiple Agencies
Scientist familiar with natural hazards	Yes	Multiple Agencies
Emergency Manager	Yes	
Grant Writer(s)	Yes	
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Fire

*If you participate in the NFIP, then you have a Floodplain Administrator.

Fiscal Capability

The table below summarizes financial resources available to Fulton County.

**Table 12
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state funding programs	Yes
Open space acquisition funding programs	Yes
Other	

Community Classifications



The table below summarizes classifications for community program available to Fulton County.

**Table 13
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
CRS	Yes		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Not at this time		
Storm Ready	Not at this time		
Firewise	Not at this time		
Disaster/Safety Programs in/for Schools	Not at this time		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Not at this time		
Public-Private Partnerships	Not at this time		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Fulton County’s current hazard mitigation capability.

**Table 14
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	



Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Michael Charlson

Unincorporated South Fulton is currently an active member of the NFIP, in good standing with no outstanding compliance issues. Fulton has completed Community Assistance Visits (CAV), with the most recent visit completed on October 1, 2015.

Loss History and Mitigation

As of August 2015, there were 4 repetitive loss properties and 3 repetitive loss areas in Unincorporated Fulton County. The 3 Repetitive Loss Areas are: 1. Village Drive SW; 2. Erin Rd/Dublin Drive SW; 3. Tahoe Drive SW. Each of these repetitive loss areas are residential and are within the SHFA (low laying area/100 year floodplain). No properties have officially indicated interest in elevation or acquisition and no properties are currently in the process of mitigation.

Planning and Regulatory Capabilities

Fulton’s NFIP Flood Damage Prevention Ordinance can be found in the Unified Development Code. Floodplain management regulations and ordinances meet and exceed the minimum requirements set forth by both FEMA and the State of Georgia. Fulton also performs site plan review and building plan review, which both include checks of floodplain designations. A preliminary staff review and recommendation occurs prior to planning board and zoning board considerations.

Administrative and Technical Capabilities

Duties and responsibilities of the NFIP Administrator include permit review, damage assessments, record keeping, inspections, GIS, education and outreach, and capital mitigation projects.

The NFIP Administrator feels he is adequately supported and trained to fulfill his responsibilities as the municipal floodplain administrator. He also would consider attending continuing education and/or certification training on floodplain management.

Public Education and Outreach

In 2015 Fulton County Education and Outreach regarding flood/hazard risk, and flood risk reduction through NFIP insurance is primarily provided to the community through the County



website. Additional outreach is provided to banks and insurance companies, annual letters to those in the Special Flood Hazard Area (SFHA), and providing flood information brochures in several public buildings.

Actions to Strengthen the Program

During the data collection process staff identified limited funding to acquire property in the SFHA as a potential barrier to running an effective floodplain program in Fulton.

Community Rating System

Unincorporated S. Fulton does currently participate in the CRS program with a class 8 rating and personnel regularly attend a local CRS Seminar.

Natural Hazard Event History

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 15
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (Disaster Declaration if applicable)	Fulton County Designated?	Notes on Damages within County
February 10-15, 2014	Severe Winter Storm	Yes	Winter Storm damages and road closures
February 25-26, 2015	Winter Storm	No	Treatment of roads, minor road closures, and minor debris removal

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the National Fire Protection Association (NFPA) 1600 methodology. This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.
 - Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
 - Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
 - Facilities: Complete shutdown of facilities and critical services for more than a month.



- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

□ Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.
- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.



- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

Table 16
Assessment of Vulnerability per the Mitigation Advisory Committee

Unincorporated Fulton County Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Severe Weather	H	H	H	H	16
Tornadoes	L	H	H	H	16
Flood	H	H	H	H	16
Tropical System	L	H	H	H	15
Heat Wave	H	H	H	H	16
Winter Storm	H	H	H	H	16
Drought	H	H	H	H	16
Wildfire/Urban Interface	P	L	L	H	12
Dam Failure	P	L	L	H	12
Sinkhole	P	L	L	L	11
Earthquake	U	U	P	L	7
Average Risk by Level	3	3.45	3.55	3.82	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 point)

Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency in order to assign



responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and Ongoing Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous Hazard Mitigation Plan (HMP):

**Table 17
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
55.0001	Acquisition of homes in the Old National area to implement a regional detention area	Public Works	No Progress	N/A	<i>Discontinue</i>	N/A – no funding sources
55.0002	Enhance pump stations at the older treatment facilities in Bear Creek	Public Works	No Progress	N/A	<i>Discontinue</i>	N/A – not required
55.0003	Retrofit Fire Station #7 on Buffington Rd to be more wind and impact resistant	Fire	No Progress	N/A	<i>Discontinue</i>	N/A not necessary. Station was re-built.
99.0002	Increase participation in the NFPA Firewise Communities program to educate communities in steps to reduce risk to fires	Fire	No Progress	N/A	<i>Discontinue</i>	N/A – Fire wise concentrates on Forest and grassland fires; not priorities
99.0003†	Increase participation in the NFIP's Community Rating System including interjurisdictional coordination to ensure maximum use of shared credit for eligible activities; may include bi-annual interjurisdictional meeting to review shared credit activities	Planning	Complete	We are certified CRS Community Level 8	<i>Discontinue</i>	Complete
99.0004†	Train local flood plain managers through programs offered through the State and FEMA's training center	Planning	In Progress	Continually seeking education enhancement of staff	<i>Include in 2016 HMP</i>	Active



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0005	Participate in the "Turn Around Don't Drown" program by acquiring signs in known flash flood locations	Planning	In Progress	Working to evaluate costs/benefits	Include in 2016 HMP	Active
99.0006†	Enact and enforce a storm water management ordinance that maintains pre-development runoff rates for major developments	Planning	Complete	100 percent complete	Discontinue	Completed
99.0007†	Conduct planning and engineering studies to determine feasibility of regional detention structures or sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding	Engineering	No Progress	N/A	Discontinue	N/A
99.0008†	Conduct multijurisdictional storm water modeling project. Develop comprehensive watershed-scale storm management plans. Multi-jurisdictional high priority areas should be identified where watershed level solutions projects could be applied	Engineering	No Progress	N/A	Discontinue	N/A
99.0009†	Evaluate the need for an ordinance to govern inspection and maintenance of private fire hydrants that are maintained within gated communities to prevent hitting non-functioning hydrants	Fire	No Progress	N/A	Discontinue	N/A
99.0010	Standardize older hydrants to the new 5" adapter specification to allow better connectivity to fire engines	Fire	No Progress	N/A	Discontinue	N/A



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0011†	Update comprehensive plans, short term work program, and capital improvements program (6-20 years) for future growth and development that integrate findings and recommendations of this hazard mitigation plan. Consider the addition of a natural hazards element, which includes risk assessment findings of this plan and carries over the goals, objectives, and mitigation measures	Planning	In Progress	Will be completed by November 2016	Include in 2016 HMP	Community meeting in process
99.0012†	Ensure that capital improvement plans include capital projects to implement the natural hazards element of the jurisdiction's comprehensive plan or projects identified in the Mitigation Strategy Section of this plan	Planning	In Progress	Will be completed by November 2016	Include in 2016 HMP	Community meeting in process
99.0013†	Consider updating zoning regulations to require various open space and landscaping standards for land development proposals	Planning	Complete	100 percent complete	Discontinue	N/A
99.0014†	Continue to enforce subdivision construction standards for drainage improvements	Planning	In Progress	Actively enforced	Include in 2016 HMP	Underway



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0015†	Evaluate building code standards for roof construction to assure protection against wind damage from wind producing events; consider incorporating green roof principles	Engineering	No Progress	N/A	Discontinue	N/A – not a priority
99.0016	Encourage the relocation of existing utility lines underground, and consider local regulations to require placement of all new utility lines underground, where feasible	Planning	Complete	100 percent complete	Include in 2016 HMP	N/A
99.0017	Encourage replacement of traffic signals at major or priority intersections with mast arm design with emergency power; coordinate with State Transportation agencies for state-owned roadways that impact local jurisdictions	Public Safety	In Progress	Part of the Fulton County DPW Transportation Plan	Include in 2016 HMP	Coordination in process
99.0018†	Develop local ordinances and enforcement mechanisms to ensure proper maintenance of privately-owned dams that are within local jurisdictions	Planning	No Progress	N/A	Discontinue	N/A
99.0019	Consider enactment of local ordinances to require community storm shelters or safe rooms with sizeable mobile homes parks, subdivisions, and RV parks	Planning	No Progress	N/A	Discontinue	N/A – lack of RV/mobile home facilities



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0020†	Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas, dam inundation areas, disaster events, and comprehensive inventory of critical facilities within all jurisdictions	Planning/GIS	In Progress	Working with GIS/IT to continually update hazard inventory, as known and applicable	Include in 2016 HMP	Underway
99.0021	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS	Planning/GIS	In Progress	Continually updating data sharing/sources	Include in 2016 HMP	Active
99.0022	Work with DNR, NCRS, and local GIS departments to maintain inundation mapping downstream of dams	Planning/GIS	In Progress	Continually updating data sharing/sources	Include in 2016 HMP	Active
99.0023	Evaluate all available notifications systems, including but not limited to, Outdoor Warning Sirens, Reverse 911, Code Red, Nixel, and all other public available systems for Atlanta-Fulton County, including consideration of the unique geographical location, technical requirements, system types, and operational procedures of each local jurisdiction with sirens. With interjurisdictional capability	All Jurisdictions	In Progress	AFCEMA plans to continue to coordination with jurisdictions.	Include in 2016 HMP	Active
99.0024	Installation of warning and notification systems	All Jurisdictions	In Progress	All jurisdictions are working to implement warning systems.	Include in 2016 HMP	Active



UNINCORPORATED SOUTH FULTON COUNTY MITIGATION ACTION PLAN

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0025	Develop a countywide multi-jurisdictionally coordinated notification plan for alert and notification of hazardous (or potentially hazardous) events	EMA	In Progress	AFCEMA plans to continue to coordination with jurisdictions.	Include in 2016 HMP	
99.0026	Install automatic icing indicators on critical bridges and overpasses	DOT/Public Works	In Progress	Coordinating with GDOT	Include in 2016 HMP	Active
99.0027†	Implement a voluntary program of flood protection and property acquisition and relocation for high-risk residences and repetitive loss properties. Survey property owners to determine interest and assess cost	All Jurisdictions	In Progress	Always actively seeking buyouts when viable	Include in 2016 HMP	Active
99.0028	Coordinate and provide educational outreach on mitigation strategies the private sector can take to reduce or eliminate the impact of hazards of their services and infrastructure. Opportunities to educate AFCEMA's private sector partners include conferences, AFCEMA website, and presentations	EMA in Coordination with All Jurisdiction	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0029	Support resiliency of the county's private sector through information sharing, partnership building, training and education on mitigation principles and the AFCEMA Hazard Mitigation Plan	EMA in Coordination with All Jurisdiction	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active



UNINCORPORATED SOUTH FULTON COUNTY MITIGATION ACTION PLAN

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0030	Establish pre-arranged MOUs for facility sharing following disaster, and other equipment sharing. Establish cooperative assistance agreements	EMA in Coordination with All Jurisdiction	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0031 [†]	Develop and implement plans to prevent flooding of water and waste water facilities	Water Service/Water Treatment (Municipality Providers of Water Treatment)	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0032	Participation in the National Weather Service's annual Flood Awareness Week	EMA in Coordination with All Jurisdictions	In Progress	In process	Include in 2016 HMP	Will participate in 2016
99.0033	Participation in the National Weather Service's annual Winter Weather Awareness week	EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0034	Continue to participate in the NOAA weather radio program to distribute weather radios to vulnerable populations and high congregate areas	EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0035	Sponsor educational programs for seniors to provide instruction for accessing government websites for preparedness information	EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0036	Continue to make presentations in the school system to educate students regarding natural hazards and preparedness	EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0037	Highlight and emphasize disaster preparedness and promote Ready.gov on local government cable channels during National Disaster Preparedness Month	EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0038	Increase jurisdictional participation in annual dissemination of flooding information and awareness to all residents as well as flood plain information to people and businesses in the flood plain	Planning/EMA in Coordination with All Jurisdictions	In Progress	Actively participating in outreach	Include in 2016 HMP	Active
99.0039	Implement outreach campaign to disseminate maps to the public as the maps are updated over the next 18 months	Planning/EMA in Coordination with All Jurisdictions	Complete	100 percent complete	Discontinue	N/A
99.0040	Increase participation by jurisdictions in the Storm Ready program to become Storm Ready Partners	Planning/ EMA in Coordination with All Jurisdictions	In Progress	Actively cross-coordinating with EMA	Include in 2016 HMP	Active
99.0041	Continue to build out development of web-based GIS mapping that allows residents to research and view their floodplain status	All Jurisdictions	Complete	Complete and available	Discontinue	Done
99.0042†	Increase participation by jurisdictions to develop conservation easement ordinances	All Jurisdictions	No Progress	N/A	Discontinue	N/A – not a priority;
99.0043	Increase participation by jurisdictions to implement water restrictions and promote public education and awareness through rebate/voucher programs for low flow	All Jurisdictions	In Progress	Actively cross-coordinating with Water and Waste Water Authorities on laws and conservation	Include in 2016 HMP	Active



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
99.0044	Continue to implement and enforce dam maintenance ordinances throughout all jurisdictions	All Jurisdictions	In Progress	In process	Include in 2016 HMP	Active
99.0045	Continue to implement ordinances and/or comprehensive planning policies prohibiting new development in the 100 year floodplain	All Jurisdictions	In Progress	In process; In efforts to revise and streamline language. 2017;	Include in 2016HMP	Active
99.0046	Enhance and/or expand presentations regarding instructions to residents for weather sirens	EMA in Coordination with All Jurisdictions	No Progress	N/A	Discontinue	N/A – not present part of our emergency system notification efforts

Proposed Hazard Mitigation Initiatives for the Plan

Fulton County identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 18 identifies the municipality's updated local mitigation strategy.



**Table 18
Proposed Mitigation Actions**

Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0004 [†]	Train local flood plain managers through programs offered through the State and FEMA's training center	Planning	Countywide [†]	Flooding	7.5	Public Education and Awareness	\$500.00	HMA, FMA, Local	2016-2021	10
99.0005	Participate in the "Turn Around Don't Drown" program by acquiring signs in known flash flood locations	Public Works	Countywide [†]	Flooding	7.9	Public Education and Awareness	\$2500.00	HMA, Local	2016-2021	8
99.0011 [†]	Update comprehensive plans, short-term work program, and capital improvements program (6-20 years) for future growth and development that integrate findings and recommendations of this Hazard Mitigation Plan. Consider the addition of a natural hazards element, which includes risk assessment findings of this plan and carries over the goals, objectives, and	Public Works	Countywide [†]	All Hazards	2.1 2.3 2.5 2.6 4.1 4.2 4.3	Prevention	1000.00	In house staff and time; costs for consultants	2016-2021	19



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	mitigation measures									
99.0012†	Ensure that capital improvement plans include capital projects to implement the natural hazards element of the jurisdiction's comprehensive plan or projects identified in the Mitigation Strategy Section of this plan	Public Works	Countywide†	All Hazards	4.2	Prevention	0	In house staff and time	2016-2021	10
99.0014†	Continue to enforce subdivision construction standards for drainage improvements	Planning	Countywide†	Flooding; Severe Weather; Tropical Systems	4.3	Prevention	0	In house staff and time	2016-2021	15
99.0016	Encourage the relocation of existing utility lines underground, and consider local regulations to require placement of all new utility lines underground, were feasible	Planning	Countywide†	Tornadoes; Severe Storms; Winter Storms; Tropical Systems	2.1	Prevention	0	Local	2016-2021	2



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0017	Encourage replacement of traffic signals at major or priority intersections with mast arm design with emergency power; coordinate with State Transportation agencies for state-owned roadways that impact local jurisdictions	Public Works	Countywide†	Tornadoes; Severe Storms; Winter Storms; Tropical Systems	6.8	Structural Projects	\$50000.00	Unk	2016-2021	3
99.0020†	Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas, dam inundation areas, disaster events, and comprehensive inventory of critical facilities within all jurisdictions	Planning	Countywide†	All Hazards	4.14	Public Education and Awareness	0	HMA	2016-2021	9
99.0021	Integrate FEMA HAZUS-MH applications for hazard	Fire	Countywide†	All Hazards	4.14	Prevention	0	HMA	2016-2021	6

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS									
99.0022	Work with DNR, NCRS, and local GIS departments to maintain inundation mapping downstream of dams	Planning	Countywide†	Flooding; Dam Failure	4.14	Prevention	0	HMA	2016-2021	12
99.0023	Evaluate all available notifications systems, including but not limited to, Outdoor Warning Sirens, Reverse 911, Code Red, Nixel, and all other public available systems for Atlanta-Fulton County, including consideration of the unique geographical location, technical requirements, system types, and operational procedures of each local jurisdiction with sirens. With	Police	Countywide†	All hazards	1.1 1.8 2.2	Emergency Services	0	HMA	2016-2021	11



UNINCORPORATED SOUTH FULTON COUNTY MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	interjurisdictional capability									
99.0024	Installation of warning and notification systems	Police/fire	Countywide†	All hazards		Emergency Services	\$5000.00	HMA	2016-2021	
99.0025	Develop a countywide multi-jurisdictionally coordinated notification plan for alert and notification of hazardous (or potentially hazardous) events	Police/Fire	Countywide†	All Hazards	1.1 1.8 2.2	Emergency Services	\$1000.00	HMA	2016-2021	10
99.0026	Install automatic icing indicators on critical bridges and overpasses	Public Works	Countywide†	Winter Storm	7.9	Emergency Services	\$50000.00	HMA	2016-2021	3
99.0027†	Implement a voluntary program of flood protection and property acquisition and relocation for high-risk residences and repetitive loss properties. Survey property owners to	Planning	Countywide†	Flooding	2.7	Prevention; Public Education and Awareness	\$5000.00	HMA, FMA, Local	2016-2021	9

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



UNINCORPORATED SOUTH FULTON COUNTY MITIGATION ACTION PLAN

Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	determine interest and assess cost									
99.0028	Coordinate and provide educational outreach on mitigation strategies the private sector can take to reduce or eliminate the impact of hazards of their services and infrastructure. Opportunities to educate Atlanta-Fulton County Emergency Management Agency's (AFCEMA) private sector partners include conferences, AFCEMA website, and presentations	Planning	Countywide†	All hazards	3.1 3.3 3.6	Public Education and Awareness	0	In house staff and time	2016-2021	12
99.0029	Support resiliency of the County's private sector through information sharing, partnership building, training and education on mitigation principles and the AFCEMA	Planning	Countywide†	All Hazards	3.1 3.2 3.4	Public Education and Awareness	0	In house staff and time	2016-2021	11

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	Hazard Mitigation Plan									
99.0030	Establish pre-arranged memoranda of understanding (MOU) for facility sharing following disaster, and other equipment sharing. Establish cooperative assistance agreements	EMA	Countywide†	Flooding; Severe Weather; Tornadoes; Tropical Systems	1.6	Emergency Services	0	In house staff and time	2016-2021	8
99.0031†	Develop and implement plans to prevent flooding of water and waste water facilities	Public Works	Countywide†	Flooding	1.5 1.8	Prevention	0	In house staff and time	2016-2021	8
99.0032	Participation in the National Weather Service's annual Flood Awareness Week	Planning	Countywide†	Flooding	7.4	Public Education and Awareness	0	In house staff and time	2016-2021	11
99.0033	Participation in the National Weather Service's annual Winter Weather	Planning	Countywide†	Winter Storms	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	11



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	Awareness week									
99.0034	Continue to participate in the National Oceanic and Atmospheric Administration (NOAA) weather radio program to distribute weather radios to vulnerable populations and high congregate areas	Police/Fire	Countywide†	Tornadoes; Severe Weather; Winter Storms; Flooding	7.8	Emergency Services	\$10000.00	HMA	2016-2021	6
99.0035	Sponsor educational programs for seniors to provide instruction for accessing government websites for preparedness information	Planning	Countywide†	All Hazards	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	11
99.0036	Continue to make presentations in the school system to educate students regarding natural hazards and	Planning	Countywide†	All Hazards	7.3	Public Education and Awareness	0	In house staff and time	2016-2021	12

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
	preparedness									
99.0037	Highlight and emphasize disaster preparedness and promote Ready.gov on local government cable channels during National Disaster Preparedness Month	Police/Fire	Countywide†	All Hazards	7.3 7.7	Public Education and Awareness	0	In house staff and time	1 – 3 years	12
99.0038	Increase jurisdictional participation in annual dissemination of flooding information and awareness to all residents as well as flood plain information to people and businesses in the flood plain	Planning	Countywide†	Flooding	7.2 7.3	Public Education and Awareness	\$5000.00	HMA, FMA, Local	2016-2021	13
99.0040	Increase participation by jurisdictions in the Storm Ready program to become Storm Ready Partners	Planning	Countywide†	Severe Weather; Tropical Systems; Flooding	7.3	Prevention	0	In house staff and time	2016-2021	10

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



Project Number	Mitigation Action and Description	Responsible Party	Jurisdiction	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe for Completion	STAPLEE Score
99.0043	Increase participation by jurisdictions to implement water restrictions and promote public education and awareness through rebate/voucher programs for low flow	Public Works	Countywide†	Drought	3.1 5.1 5.6	Prevention	0	In house staff and time; partnerships with private sector	2016-2021	12
99.0044	Continue to implement and enforce dam maintenance ordinances throughout all jurisdictions	Public Works	Countywide†	Dam Failure	6.6	Prevention	0	In house staff and time	2016-2021	15
99.0045	Continue to implement ordinances and/or comprehensive planning policies prohibiting new development in the 100 year floodplain	Planning	Countywide†	Flooding	4.5	Prevention	0	In house staff and time	2016-2021	14

† Atlanta, Chattahoochee Hills, College Park, East Point, Fairburn, Hapeville, Johns Creek, Milton, Mountain Park, Palmetto, Roswell, Sandy Springs, Union City, Unincorporated Fulton County



ANNEX 15

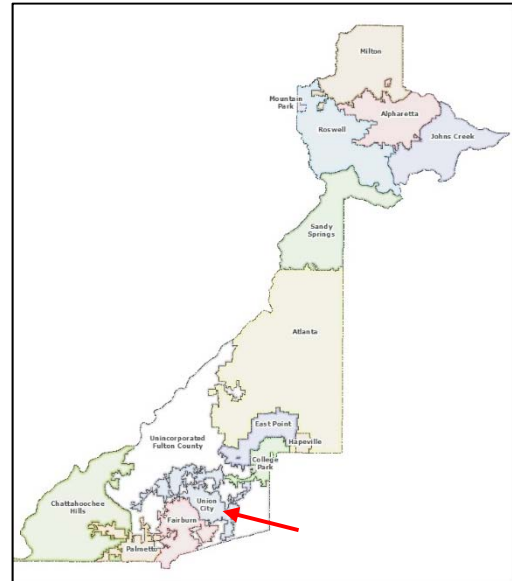
UNION CITY, GEORGIA MITIGATION ACTION PLAN

Geography/History

Union City, Georgia was established as a result of two individuals, Drewry Arthur Carmical and Charles Simon Barrett. Barrett was the newly elected president of the National Farmers Union at a time when the Union was looking for an appropriate location for its headquarters. The City was officially named as the result of the location of the headquarters.

A charter was drawn up for the new town and signed on August 17, 1908. Drewry Carmical became the first mayor of Union City. He was chairman of the town's school board and manager of the implement company.

The South Fulton Municipal Regional Jail, constructed in the late 1990s, is the first regional correctional facility in Georgia to be based on cooperation between cities (Union City and Palmetto) rather than between counties. The Regional Jail and the Union City Justice Center were built at the same time, and the jail was uniquely constructed in a way that connects the facility by tunnel to the Justice Center's police headquarters, court system, 911 Center, and related City services.



Significant Characteristics

Union City offers two great parks: Ronald Bridge's Park and Mayor's Park. Both are conveniently located in the heart of our residential community and present a wide variety of activities including, picnic areas, pavilions, playgrounds, walking tracks and basketball courts.

Population and Demographics

The 2010 U.S. Census reported that there were 19,456 people, 7,788 households, and 4,635 families residing in the City. The racial makeup of the City was 81.5% African American, 8.6% White, 0.2% Native American, 0.8% Asian, 1.0% Pacific Islander, 3% from other races, and 1.6% from two or more races. Hispanic or Latino of any race was 7.0% of the population.

There were 7,788 households out of which 35.6% had children under the age of 18 living with them, 23.9% were married couples living together, 30.0% had a female householder with no



husband present, and 40.5% were non-families. 35.5% of all households were made up of individuals and 17.4% had someone living alone who was 65 years of age or older. The average household size was 2.49 and the average family size was 3.27.

In the City, the population was spread out with 41.1% under the age of 18, 6.5% from 20 to 24, 32.5% from 25 to 44, 18.4% from 45 to 64, and 8.0% who were 65 years of age or older. The median age was 30.5 years. The total male population was 8,402 and the total female population was 11,054.

**Table 1
City of Union City Population Since 1990**

Year	1990	2000	2010	2014
Population	8,375	11,621	19,456	20,427 est.

Economy

The median income for a household in the City was \$31,883, and the median income for a family was \$31,808. Males had a median income of \$30,421 versus \$28,111 for females. The per capita income for the City was \$15,847. About 9.9% of families and 12.1% of the population were below the poverty line, including 14.0% of those under age 18 and 14.3% of those age 65 or over.

Below is a chart of main industries based on data from the United States Census Bureau:

**Table 2
Main Industries Based on Data from 2015**

Industry Description	Number of Establishments	Number of Employees
Wholesale Trade	3	800
Retail Trade	96	unknown
Information	2	unknown
Real Estate, Rental, Leasing	56	Not Available
Professional, Scientific and Technical services	2	Not Available
Administrative and Support and Waste Management and Remediation Service	12	Not Available
Educational Services	25	443
Health Care and Social Assistance	43	Not Available
Accommodation and Food Services	55	Not Available
Other Services	211	Not Available

Below is a list of City issued permits for the construction of single-family homes dating from 2001 to 2014.



Table 3
Single-Family New House Construction Building Permits

Year	Permits
2001	235
2002	443
2003	419
2004	410
2005	480
2006	311
2007	239
2008	47
2009	0
2010	40
2011	0
2012	0
2013	9
2014	40
2015	114

Infrastructure

The Police Department currently consists of 62 sworn officers and 10 civilian employees. The department is composed of two sections, the Field Operations Section and the Technical Services Section. Each respective section is composed of multiple divisions that are commanded by officers holding the rank of Captain. The Union City Fire Department is composed of three rotating 24-hour shifts providing its citizens with 24/7 fire and medical services. Our workforce consists of 49 full-time dedicated and professional individuals to include a chief, assistant chief, fire marshal, one fire safety inspector administrative assistant, and 45 members in suppressions. The school system infrastructure within the City limits consists of the following items listed in Table 4:

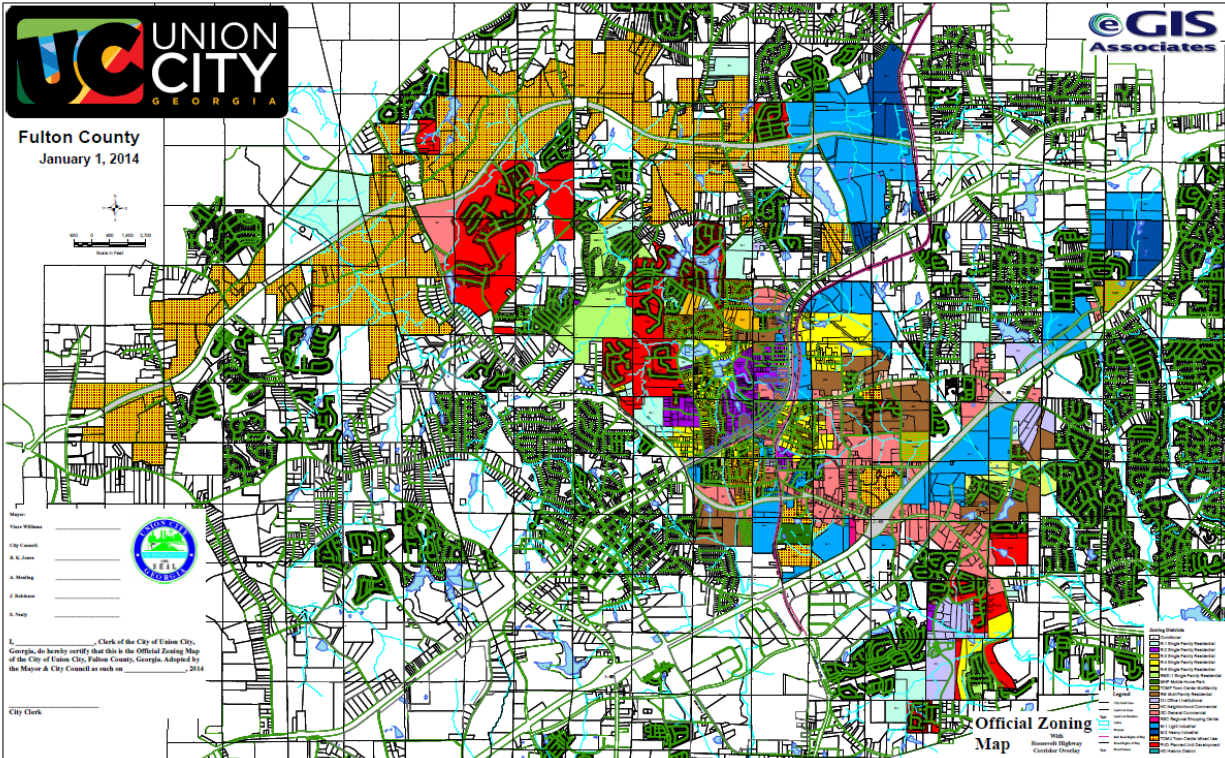
Table 4
School Infrastructure within City Limits

School	Type	Enrollment
Nursery School, preschool	Private	794
Kindergarten to 12 th grade	Public	3,456
College, undergraduate	NA	NA
Graduate, professional school	NA	NA



Land Usage

Union City is a total of 19.3 square miles with only 0.2 square miles of that being water. The City is made up of primarily residential areas with smaller zones for commercial and industrial. Below is a zoning map that was adopted in 2014.



Growth and Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years

**Table 5
Future Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2011 to Present					
Woodbridge @Parkway Village	Residential	2 structures 150 units	5151 Thompson Rd	Senior citizen apartments some made have ambulatory issues	Complete and fully occupied
WalMart	Commercial/warehouse	1	6055 South Fulton Parkway	Mixed hazardous materials	In operation
Steak & Shake	Commercial	1	6789 Shannon	None	Open for business



Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
			Parkway		
Fire Station 3	Commercial	1	6735 Oakley Industrial Blvd	Uphill from Kraft Warehouse large ammonia refrigeration system	open
South Wind Golf Course	Commercial	3	5695 Rosewood Place	Number of gas powered golf carts in storage building, expect gas in containers, as well as pesticides and fertilizers associated with golf course maintenance	Open for business
Providence @ Parkway Village	Residential	2 buildings/ 150 units	5909 Southwood Rd	Senior Citizen Apartments some made have ambulatory issues	Fully Occupied
Rooker	Commercial	1 Building	1000 Shannon Way	Warehouse/possible storage of hazardous materials	Completed
Atlanta Metro Studios	Commercial	4	1000 Shannon Parkway		Under Construction
P&G	Commercial	1	6270 Oakley Industrial Blvd	Warehouse	Open for business
MBA Waste	Commercial	1	4255 Roosevelt Hwy	Recycling facility, Delayed access due to composition of driveway materials; also be aware of puncture and penetrating injuries due to nature of business being conducted	Open
Kroger Fuel Center	Commercial	1	4540 Jonesboro Rd	Petroleum products	Open
Kraft	Commercial	1	6710 Oakley Industrial Blvd	Ammonia refrigeration system	Open



Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
Denderon	Commercial	1	6700 Oakley Industrial Blvd	Human body fluids to include blood on site in clean rooms	In operation
Banneker High School	Educational	3	5935 Feldwood Rd	Educational facility	open
Warehouse	Commercial	1	6730 Oakley Industrial Blvd	Storage facility unknown hazards; be aware of large battery charging stations and LP tanks for forklifts and pallet jacks	Complete
Known or Anticipated Development in the Next Five (5) Years					
Warehouse	Commercial	1	6725 Oakley Industrial Blvd	Storage facility unknown hazards; be aware of large battery charging stations and LP tanks for forklifts and pallet jacks	Complete
Family Dollar	Commercial	1	3985 Flat Shoals Rd	Small amounts of hazardous materials associated with cleaning products	Complete
Toyota	Commercial	1	4115 Jonesboro Rd	Common hazards associated with car dealership	Remodeling with addition added to building
Mortensen Woodwork	Commercial	4	4920 Baker Street	Common hazards associated with millwork manufacturing(Ad hesives, paints and stains)	Open for business
Larry's Beverage Shop	Commercial	1	4783 Jonesboro Rd	Hazards associated with the storage and selling of alcoholic beverages	Open
Corbett's Collision Center	Commercial	1	4715 Roosevelt Hwy	Hazards associated with auto body repair and painting	Open, was annexed into city
Circle K	Retail/ Commercial	1	Flat Shoals	Underground storage of petroleum products with some automotive items inside of	Under Construction



Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Block/Lot	Known Hazard Zone(s)	Description/Status of Development
				facility	
Dodson Woods	Residential		Dodson Rd		Subdivision in build out process
South Wind	Residential		Rosewood Pl		Subdivision in build out process

Legal and Regulatory Capabilities

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. The table below summarizes the regulatory tools that are available to the municipality.

**Table 6
Legal and Regulatory Capability**

Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Planning Capability				
Master Plan				
Capital Improvements Plan	Yes	Local	Finance Department	
Floodplain Management / Basin Plan	Yes	Local	Planning Development	
Stormwater Management Plan	Yes	Local	Public Services	
Open Space Plan	Yes	Local	Public Services	
Stream Corridor Management Plan	Yes	Local	Public Services	
Watershed Management or Protection Plan	Yes	Local/County	Atlanta Watershed	
Economic Development Plan	Yes	Local	Committee Developed	
Comprehensive Emergency Management Plan	Yes	County	AFCEMA	
Emergency Operation Plan	Yes	Local	Fire Department	



Tool/Program	Do You Have This?	Authority	Dept. /Agency Responsible	Code Citation and Comments
Post-Disaster Recovery Plan	Yes	Local	All Departments	
Transportation Plan	Yes	Local	Public Works	
Strategic Recovery Planning Report	Yes	Local	All Departments	
Other Plans:	Not at this time			
Regulatory Capability				
Building Code	Yes	State & Local		
Zoning Ordinance	Yes	Local	Community Development	
Subdivision Ordinance	No	Local	Community Development	
National Flood Insurance Program (NFIP) Flood Damage Prevention Ordinance	Yes	Federal, State and Local	Community Development	
NFIP: Cumulative Substantial Damages	No	Local	Community Development	
NFIP: Freeboard	Yes	State and Local	Community Development	
Growth Management Ordinances	Yes	Local	Community Development	
Site Plan Review Requirements	Yes	Local	Community Development	
Storm water Management Ordinance	Yes	Local	Public Services	
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Public Services	
Natural Hazard Ordinance	Not at this time	Local	Fire	
Post-Disaster Recovery Ordinance	Not at this time	Local	Fire	
Real Estate Disclosure Requirement	Yes	State	Community Development	
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				



Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Union City.

**Table 7
Administrative and Technical Capabilities**

Resources	Is This In Place?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Community Development
Mitigation Planning Committee	Yes	All Departments
Environmental Board/Commission	Not at this time	
Open Space Board/Committee	Not at this time	
Economic Development Commission/Committee	Yes	Community Development
Maintenance Programs to Reduce Risk	Yes	Public Services
Mutual Aid Agreements	Yes	Neighboring Fire Departments
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Community Development/ Moreland Altobelli Assc.
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Community Development/Safebuilt
Planners or engineers with an understanding of natural hazards	Yes	Community Development/Keck and Wood
NFIP Floodplain Administrator	Yes*	Community Development
Surveyor(s)	Yes	Moreland Altobelli Assc.
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Public Services
Scientist familiar with natural hazards	Not at this time	
Emergency Manager	Yes	Fire Chief
Grant Writer(s)	Yes	Operations
Staff with expertise or training in benefit/cost analysis	Yes	All Department Heads
Professionals trained in conducting damage assessments	Yes	Moreland Altobelli Assc.

**If you participate in the NFIP, then you have a Floodplain Administrator.*



Fiscal Capability

The table below summarizes financial resources available to Union City.

**Table 8
Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas, or electric service	Not at this time
Impact Fees for homebuyers or developers of new development/homes	Not at this time
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state funding programs	Yes
Open space acquisition funding programs	Yes
Other	

Community Classifications

The table below summarizes classifications for community program available to Union City.

**Table 9
Community Classifications**

Program	Do You Have This?	Classification	Date Classified
Community Rating System (CRS)	Not at this time		
Building Code Effectiveness Grading Schedule (BCEGS)	Not at this time		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	4/9	2011
Storm Ready	Not at this time		
Firewise	Not at		



Program	Do You Have This?	Classification	Date Classified
	this time		
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	Not at this time		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	Yes		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

Hazard Mitigation Capability

The table below summarizes a self-assessment of Union City’s current hazard mitigation capability.

**Table 10
Hazard Mitigation Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, please indicate your obstacles.)*	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability	(x) Due to recent trends in economic development tax collections are down affecting the Fiscal budget.		
Community Political Capability			X
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities			X

NFIP Participation

National Flood Insurance Program

NFIP Floodplain Administrator: Nicole C.E. Dozier, Community Development Director

Union City is currently an active member of the NFIP, in good standing with no outstanding compliance issues. It is currently undetermined when Union City completed their last Community Assistance Visits (CAV).



Loss History and Mitigation

Union City does not currently have a system in place to maintain a list of properties that have been flood damaged; however, there are none to date. The floodplain administrator does not make substantial damage estimates and no property owners have expressed an interest in the mitigation process.

Planning and Regulatory Capabilities

The City’s floodplain management regulations and ordinances meet the minimum requirements set forth by both FEMA and the State of Georgia.

Actions to Strengthen the Program

During the data collection process staff did not indicate any perceived barriers to running an effective floodplain program in Union City; however, they did state an interest in receiving more training and/or attending conferences in the future.

Community Rating System

Union City does not currently participate in the CRS program.

Natural Hazard Event History Specific to the Municipality

Fulton County has a history of natural hazard events as detailed in Chapter 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources.

**Table 11
Local Hazard Event History 2010 - 2015**

Dates of Event	Event Type (Disaster Declaration if applicable)	Atlanta-Fulton County Designated?	Notes on Damages Within County
February 10-15, 2014	Severe Winter Storm	Yes	Severe Winter Storm damages

Summary of Hazards and Community Impacts

The participating jurisdiction completed a Risk Assessment Matrix that was derived from the NFPA 1600 methodology. This methodology measured level of magnitude or severity as:

- Level I – Catastrophic
 - Personnel: Death or fatal injury.
 - Public: Death or fatality or fatalities due to direct exposure.



- Environment: A major hazardous chemical spill that is uncontained. Regional or total species/subspecies loss.
- Economic Impact: Total loss of financial base, incapacitating the City. Funding not available within one week to initiate urgent recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a month.
- Property: More than 50 percent of the property located in the proximity of the City is severely damaged.

□ Level II – Critical

- Personnel: Permanent disability, severe injury or illness.
- Public: Permanent disability, severe injury or illness.
- Environment: A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
- Economic Impact: Partial loss of financial base, temporarily incapacitating the City. Funding not available within four days to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than two weeks.
- Property: More than 25 percent of the property located in the proximity of the City is severely damaged.

□ Level III – Marginal

- Personnel: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Public: Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
- Environmental: A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
- Economic Impact: Minor loss of financial base, temporarily incapacitating the City. Funding not available within 24 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than a week.
- Property: More than 10 percent of the property located in the proximity of the City is severely damaged.

□ Level IV – Negligible

- Personnel: Treatable first aid injury.
- Public: Minor quality of life loss.
- Environment: A minor hazardous chemical spill that is contained. No measurable impact to environs.
- Economic Impact: Minor loss of financial base, which does not incapacitate the City. Funding not available within 12 hours to initiate recovery procedures.
- Facilities: Complete shutdown of facilities and critical services for more than 24 hours.
- Property: No more than 1 percent of property located in the proximity of the City is severely damaged.

In addition, the probability or likelihood of the hazard occurring at each particular magnitude above was categorized as:

- Highly Likely – A hazard whose potential impact is very probable (100%) within the next year.



- Likely – A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has a chance of occurring within the next ten years.
- Possible – A hazard whose potential impact is possible (1% - 10%) or has one chance of occurrence in a hundred years.
- Unlikely – A hazard whose potential impact is likely to occur less than once in a hundred years (<1%). This category can be compared to the 100-year flood exposures used in design.

This qualitative categorization was performed by HMPC members for each natural hazard identified as a potential threat. A meeting was conducted with the participating jurisdiction to complete the assessment exercise. The Planning Process appendix contains the online survey that was used as the assessment instrument and included descriptions for the levels of measurement. After an assessment was completed for the participating jurisdiction, the respective scores were combined to determine an overall County risk assessment. The individual jurisdiction risk assessments are on the following pages followed by the overall County Risk Assessment Matrix. This assessment also served to assist the City in determining which threats posed the highest or greatest threat. Once this was determined, this assessment was used to guide the development of hazard mitigation actions that were in the best interest of protecting the community from the most likely and/or the most severe hazards facing the jurisdiction.

**Table 12
Risk Assessment per the Mitigation Planning Committee**

Union City Risk Assessment Matrix					
Hazard Type	Level I Catastrophic	Level II Critical	Level III Marginal	Level IV Negligible	Score
Flood	U	L	H	H	12
Tornadoes	P	P	L	H	11
Severe Weather	U	P	L	H	10
Winter Storm	U	P	L	H	10
Wildfire/Urban Interface	U	P	L	L	9
Drought	U	U	U	H	7
Heat Wave	U	U	U	H	7
Tropical System	U	U	U	L	6
Sinkhole	U	U	U	P	5
Dam Failure	U	U	U	P	5
Earthquake	U	U	U	P	5
Average Risk by Level	1.08	1.5	1.92	3.08	

H = Highly Likely (4 points)

L = Likely (3 points)

P = Possible (2 points)

U = Unlikely (1 points)



Mitigation Actions

Each jurisdiction participating in this Plan is responsible for implementing specific mitigation actions as prescribed in the adopted Mitigation Action Plan. In each mitigation action plan, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process. A complete list of countywide mitigation strategies is provided in Chapter 6 of the Fulton County Hazard Mitigation Plan.



Past and On-Going Mitigation Activity

The municipality identifies the following status of mitigation projects and/or initiatives that were included in the previous HMP:

**Table 13
Status of Mitigation Actions**

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0001	Replace drainage pipe on Shannon Parkway with bridge	DPW Department of Public Works	Complete	This project was complete.	<i>Discontinue</i>	Complete
50.0002	Improve aging storm water infrastructure on Lester Rd which is circa 1950 and of insufficient capacity for storm water runoff	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics. There has been no recent flooding of Lester Rd. Will continue to monitor and make recommendations based on outcome	<i>Continue</i>	Previous flooding had been caused by blockages in creek bed restricting water flow these obstructions have been removed
50.0003	Elevate areas of Lester Rd where creeks cross the roadway	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics. There has been no recent flooding of Lester Rd. Will conduct a feasibility study to verify if this is a warranted concern	<i>Continue</i>	There are no projects or plans to elevate Lester Road at this time. Lester Rd is not currently experiencing flooding. Determine if proposal is a feasible solution
50.0004	Dredge Windham Creek that runs through the City to be wider and deeper to increase volume	DPW Department of Public Works	No Progress	This project was placed in Mitigation Plan by previous DPW Directors with no specifics.	<i>Continue</i>	Begin Planning and design



Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0005†	Remediation of Upper Dixie Lake Dam (see Appendix E – Studies, Reports, and Supplementary Documents for detailed options)	DPW Department of Public Works	In Progress	This project is slated to be undertaken via stormwater utility funds. Awaiting approval from Mayor and council.	Include in 2016 HMP	Planning and Design
50.0006	Replace early warning system	Fire Department	In Progress	At present time, we are utilizing social media as well as Nextdoor and Nixle, and our early warning siren, all which are controlled by the Police Department. The siren system is located at the Police Department, which is not always staffed.	Include in 2016 HMP	Even with the utilization of media such as Nixle, and Nextdoor, other methods need to be utilized to provide early warning to citizens and visitors to Union City. Addition of strategically located sirens would enhance the other early warning systems being used currently by Union City, this accompanied by NOAA weather radios would benefit those who are not currently able to access social media.



UNION CITY MITIGATION ACTION PLAN

Project Number	2010 Mitigation Action	Responsible Party	Status	Describe Status	Next Step	Describe Next Step
50.0007	Improve emergency responder communication interoperability by implementing an 800 MHz radio system	Union City	In Progress	This project has progressed in March of 2015 when we began using Fulton County 911 as our dispatch center. Funded through our existing 911 funds. More 800 MHz radios are needed for the fire service.	<i>Include in 2016 HMP</i>	As the current communication system is switching to digital additional radios are needed for both fire and police services, so as to provide a safer work environment by having portable radios for each individual while on duty. Equipment updating is also needed on some of the existing
50.0008	Emergency backup power for facilities with critical operations: City Hall, Public Services, and IT	Union City	No Progress	Lack of funding to complete project.	<i>Include in 2016 HMP</i>	Our ability to house citizens during power outages is hampered due to lack of buildings with backup power supplies. By equipping some of our strategically placed City facilities with backup generators this need could be met. This project will also provide for continuity of operations.



Potential Hazard Mitigation Initiatives for the Plan

Union City identified additional mitigation initiatives they would like to potentially pursue in the future. Table 13 identifies the municipality's potential hazard mitigation actions.

**Table 14
Proposed Mitigation Actions**

Mitigation Action	Lead Agency	Comments and Details
Oakley Industrial Boulevard catch basins repair	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Royal South Parkway tire cleanup around lake	Union City DPW	Project to address flooding and stormwater runoff as well as assist in controlling mosquito population by construction of pipe and drainage structures
Mall Boulevard and Londerry Way sinkhole repair	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Alexander Street and Roosevelt Highway drainage improvements	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Park Street sinkhole repair	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Lester Road drainage improvements	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Westbrook and McKinley Street drainage improvements	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures



Mitigation Action	Lead Agency	Comments and Details
Shannon Boulevard drainage improvements	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures
Dodson Road drainage improvements	Union City DPW	Project to address flooding and stormwater runoff by construction of pipe and drainage structures



Proposed Hazard Mitigation Initiatives for the Plan

Union City identified additional mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Table 15 identifies the municipality's updated local mitigation strategy.

**Table 15
Union City Mitigation Strategy**

Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
50.0001	Oakley Industrial Boulevard catch basins repair	Union City	Department of Public Works	Flooding	1.2	Structural Project	\$175,000	HMA, FMA, Local	2016-2021	8
	Comments: Project to address flooding and stormwater runoff by construction of pipe and drainage structures.									
50.0002	Royal South Parkway tire cleanup around lake.	Union City	Department of Public Works	Flooding	6.1	Engineering	\$10,000-\$15,000	HMA, FMA, Local	2016-2021	13
	Comments: Project to address flooding and stormwater runoff as well as assist in controlling mosquito population by construction of pipe and drainage structures.									
50.0003	Mall Boulevard and Londerry Way sinkhole	Union City	Department of Public Works	Flooding	6.8	Structural Projects	\$125,000	HMA, Local	2016-2021	9



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
	repair									
Comments: Project to address flooding and stormwater runoff by construction of pipe and drainage structures.										
50.0004	Improvements to drainage along roadways	Union City	Department of Public Works	Flooding	1.2	Structural Projects	\$225,000	HMA, FMA, Local	2016-2021	12
	Comments: Projects to address flooding and stormwater runoff by construction of pipe and drainage structures: Locations already identified include but are not limited to locations along the following: Alexander Street and Roosevelt Highway, Lester Road, Westbrook and McKinley Street, Shannon Boulevard, and Dodson Road.									
50.0004	Dredge Windham Creek that runs through the City to be wider and deeper to increase volume	Union City	Department of Public Works	Flooding; Severe Weather; Tropical Systems	6.2	Structural Projects	\$2M	HMA, Local	2016-2021	12
	Comments: Current creek capacity is insufficient. There is an increase volume directed towards it as a result of urbanization. The speed and volume of the flow causes erosion and exposes drainage pipes. NOTE: There are no populations downstream that would be affected by increased volume.									
50.0005†	Remediation of Upper Dixie Lake Dam (see Appendix E – Studies, Reports, and Supplementary Documents for	Union City	Department of Public Works	Flooding; Tropical Systems; Severe Weather	6.1	Structural Projects	\$250,000 to \$1.3M	HMA, FMA, Local	2016-2021	12



Project Number	Mitigation Action and Description	Jurisdiction	Responsible Party	Hazards Addressed	Objective Supported	FEMA Category	Estimated Project Cost	Possible Funding Source(s)	Timeframe For Completion	STAPLEE Score
	detailed options)									
50.0006	Replace early warning system	Union City	Fire Department	Severe Weather; Tornadoes	1.8	Emergency Services	\$75,000	HMA, Local	2016-2021	13
<p>Comments: City currently employs a siren system, which is older and only reaches a small percent of the population. Need a more targeted system such as Code Red or National Oceanic and Atmospheric Administration (NOAA) weather radios. This will be implemented in collaboration with the recommendations of the evaluation as described in this project.</p>										
50.0007	Improve emergency responder communication interoperability by implementing an 800 MHz radio system	Union City	Fire/City Administration	All Hazards	1.1, 1.8	Emergency Services	\$1M	Local	2016-2021	13
<p>Comments: Union City is the only jurisdiction in Fulton County, which does not have an 800 MHz radio system. This results in severe interoperability issues with other jurisdictions and leaves the City with no backup system should the current system become damaged or otherwise inoperable.</p>										
50.0008	Emergency backup power for facilities with critical operations: City Hall, Public Services, and IT	Union City	Fire/City Administration	Severe Weather; Winter Storm; Tornadoes; Tropical Systems	2.2, 2.11	Emergency Services	\$62,000	HMA, Local	2016-2021	12