MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

Shelby County
ALABAMA

SHELBY COUNTY ALABAMA 2009

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1.1 INTRODUCTION

Natural and manmade hazards pose a threat to every citizen and community within Shelby County on some level and frequency. Often, the reality of potential hazards to a community are not fully understood or realized until a major disaster occurs. It is then that a community experiences the extreme hardship of significant human and economic losses. The process of hazard mitigation planning is a critical part of any community's planning program. Because most hazards occur infrequently, mitigation programs for hazards are usually initiated and funded as a reaction to recover from the most recent disaster event. This form of hazard mitigation response is more costly, both in property and human losses than is pre-disaster planning and mitigation.

Shelby County and its jurisdictions prepared a countywide hazard mitigation plan in 2004 that re-shaped Shelby County and local communities into a more resilient framework, enabling it to recover more quickly and easily from disasters. In 2008 Shelby County received a Pre Disaster Mitigation Grant to update the Shelby County Hazard Mitigation 2004 Plan. This is a resulting 2009 Update to the 2004 plan

Local Mitigation Plans must be updated and resubmitted to FEMA for approval every five (5) years in order to continue eligibility for FEMA hazard mitigation assistance programs. The mitigation planning regulation at 44 CFR §201.6(d)(3) states:

"A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding. Plan updates must demonstrate that progress has been made in the past 5 years for Local Mitigation Plans to fulfill commitments outlined in the previously approved plan. This involves a comprehensive review and update of each section of the Local Mitigation Plan and a discussion of the results of evaluation and monitoring activities detailed in the Plan Maintenance section of the previously approved plan. Plan updates may validate the information in the previously approved plan, or may involve a major plan rewrite."

The process of all-hazard mitigation planning is the first step toward protecting a community from losses associated with hazards and resulting disasters. The Federal Emergency Management Agency (FEMA) with regard to hazard mitigation planning provides the following definitions:

<u>Hazard mitigation</u> - Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

<u>Planning</u> - The act or process of making or carrying out plans, specifically, the establishment of goals, policies, and procedures for a social or economic unit.

This plan update provides a framework on which to base comprehensive mitigation of hazards for all Shelby County jurisdictions. The hazard risk analysis determines which areas of the community are affected by hazards, how likely it is that a disaster may occur, and what impact a disaster might have. Then by assessing the vulnerability countywide, it can be determined which government and private facilities are at risk and to what degree they may be impacted.

1.1.1 2009 Plan Updates

This Section "Section 1 – Introduction", replaces the 2004 mitigation plan Chapter 1 Review: Background and Purposes of the Plan. This section has been updated and enhanced in the 2009 plan update to include more detailed information. The information added is related to mitigation planning legislative information (DMK2000, etc), the Flood Management Assistance Program, (FMA), the National Flood Insurance Program (NFIP) and related grant information. The grant information includes descriptions of Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL) programs that address repetitive loss properties, which are now required by the Federal Emergency Management Agency (FEMA) to be documented in Hazard Mitigation Plans. This section also includes the Plan purpose, scope, authority and outline.

1.2 EMERGENCY MANAGEMENT BACKGROUND

Over the past fifty years, the meaning and scope of emergency management has evolved in response to changes in political, military, and natural environments. Emergency management has grown from a narrow civil defense focus, to its present position of providing a wide array of services in response to natural and manmade hazards, including aspects of homeland security.

Historically, federal and state perspectives have shaped the focus, scope, and policy of emergency management. Prior to and extending through the 1930s, emergency management programs did not exist except for some "New Deal" social programs, administered by federal agencies, that provided assistance in response to specific disasters.

Emergency Management found it's beginning immediately after World War II as a response to military attack. The federal government created a nationwide shelter program under the provisions of the Civil Defense Act. The first federal assistance to state and local governments was provided under civil defense programs. At the federal level, response and recovery from natural and manmade disasters were perceived to be within the jurisdiction of state and local governments. These disasters were philosophically and legally separate from "war-related" emergencies until the late 1970's.

In 1979, the Federal Emergency Management Agency (FEMA) was established to assist in responding to war caused emergencies, nuclear events and natural and manmade disasters. In the 1980s, response and recovery efforts from other than war caused disasters became eligible for federal funding. This was the first effort to view emergency management as a comprehensive set of services encompassing four phases - mitigation, preparedness, response, and recovery.

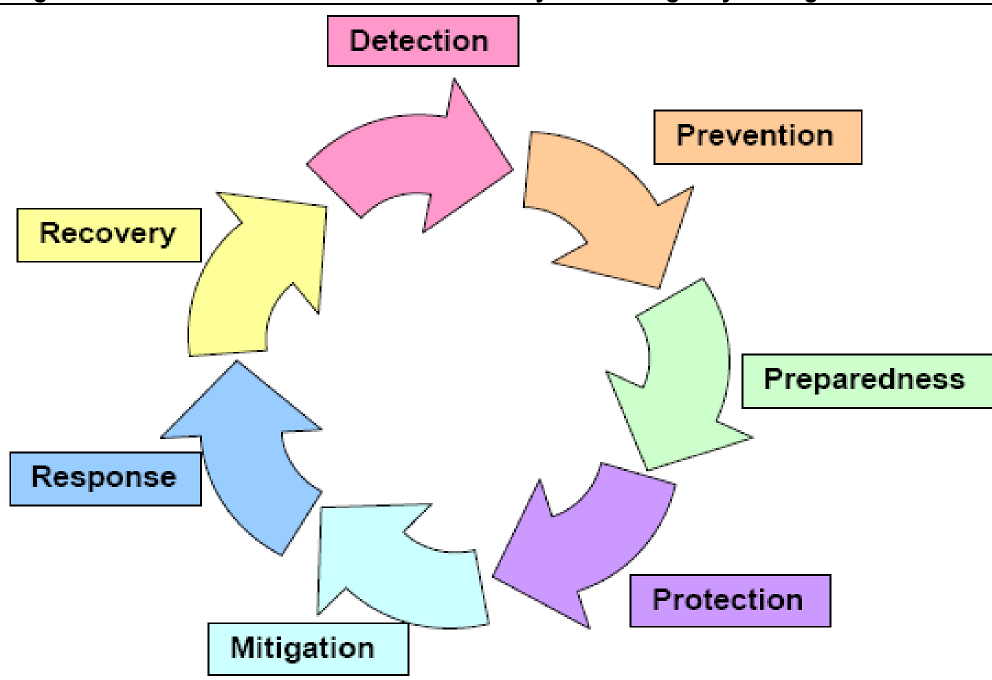
Emergency Management also experienced a key policy shift. Focus shifted from one of nuclear war preparedness to a more balanced focus on natural and manmade hazards and disasters. An "all-hazards" approach was emphasized. Federal assistance became available for preparedness, response and recovery efforts. The increasing demand on federal funds for disaster recovery assistance prompted changes in federal policy to emphasize mitigation and provide technical assistance to build state and local government capabilities to more independently deal with emergencies and disasters that occur within their jurisdictions.

This evolution has resulted in a shift from federal based initiatives to one of fostering local and state developed and delivered programs. Within this framework, local emergency management organizations work to implement local, state, and federal emergency management and homeland security policy. By working collaboratively with governmental agencies, private industry, and citizens, and by providing technical assistance and support, local emergency management organizations are expanding capabilities to contribute a broad spectrum of professional services.

In the 1990s, federal, state, and local governments recognized the increasing threat of terrorism. Domestic and foreign events, including the bombing of the New York World Trade Center in February 1993; the April 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma County; the bombing of the Khobar Towers in Saudi Arabia in June 1996; and the bombing of the U.S.S. Cole in Yemen in October 2000, demonstrated terrorists' willingness to use weapons of mass destruction. Federal agencies began to examine the causes and effects of these events, to shape U.S. policy, and fund domestic anti-terrorism preparedness activities.

The September 11, 2001 terrorist attacks on the New York World Trade Center and the Pentagon was a defining moment in the war on terrorism. The restructuring of domestic and foreign policy, and the development of nationwide initiatives to detect and prevent terrorist attacks and protect national critical infrastructure and systems witness this. At the federal level, anti-terrorism activities resulted in the creation of the Department of Homeland Security. This expanded the view of emergency management as a comprehensive set of services encompassing seven phases – detection, prevention, preparedness, protection, mitigation, response, and recovery.

Figure 1.1 Seven Phases of Homeland Security and Emergency Management



Seven Phases of Homeland Security and Emergency Management

1.3 HAZARD MITIGATION LEGISLATIVE BACKGROUND

1.3.1 Disaster Mitigation Act of 2000

To support the expanded role of emergency management, Congress passed the Disaster Mitigation Act of 2000, (DMA2K), commonly known as the Stafford Act. Section 322, an amendment to the Act deals with the development of local hazard mitigation plans. DMA2K was signed into law on October 30, 2000 (Public Law 106-390). The Interim Final Rule for planning provisions (44 CFR Part 201) was published in the Federal Register in February 2002, and again in October 2002. Local hazard mitigation planning requirements are implemented in 44 CFR Part 201.6. The purpose of DMA2K is to amend the Stafford Act to establish a national program for pre-disaster mitigation, streamline administration of disaster relief and control federal costs of disaster assistance. Congress envisioned that implementation of these new requirements would result in the following key benefits:

- Reduction of loss of life and property, human suffering, economic disruption, and disaster costs.
- Prioritization of hazard mitigation planning at the local level, with an increased emphasis placed on planning and public involvement, assessing risks, implementing loss reduction measures, and ensuring critical services/facilities survive a disaster.
- Establishment of economic incentives, awareness and education to state, tribal, and local governments that result in forming community based partnerships, implementing effective hazard mitigation measures, leveraging additional non-federal resources, and establishing commitments to long-term hazard mitigation efforts.

1.3.2 Regulation 44CFR Part 201

FEMA has implemented the various hazard mitigation-planning provisions through regulations at 44 CFR Part 201. These regulations reflect the need for States, Tribal, and local governments to closely coordinate mitigation planning and implementation efforts. A Hazard Mitigation Plan is a condition of pre- and post-disaster assistance. State, local and Tribal governments must have a FEMA-approved Local Mitigation Plan in order to receive FEMA hazard mitigation assistance and to apply for and/or receive project grants under the following assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Repetitive Flood Claims (RFC)
- Severe Repetitive Loss (SRL)
- Community Rating System (CRS)

FEMA may also require a Local Mitigation Plan under the Repetitive Flood Claims (RFC) program that applies to those governments that apply for and/or receive assistance under the RFC program. Each hazard mitigation plan must be submitted to and approved by the state and FEMA. Each plan must, at minimum, address or include the following items:

- Plan Adoption by All Jurisdictions

- Planning Process including Public Involvement
- Hazard Identification and Risk Assessment
- Mitigation Strategy
- Plan Implementation and Maintenance Procedures
- Any Specific State Requirements

The mitigation plan requirements in 44 CFR Part 201 emphasize greater interaction between State and local mitigation activities, and highlight the need for improved linkage between State and Local Mitigation Plans. Under 44 CFR §201.4(c)(4), States are required to coordinate mitigation planning with Indian Tribal and Local jurisdictions, and document the funding and technical assistance they will provide to these jurisdictions. The information contained in Local Mitigation Plans is also useful for States in developing their State Mitigation Plans. States should refer to Local Mitigation Plans to improve the level of detail and comprehensiveness of statewide risk assessments and coordinate State hazard mitigation goals and objectives with local goals and objectives. Similarly, local governments may refer to their State's mitigation plan where information may be useful for local mitigation strategy development.

1.3.3 Hazard Mitigation Grant Program

In 1988, Congress established the Hazard Mitigation Grant Program (HMGP) by enactment of Section 404 of the Stafford Act. In 2002, regulations pertaining to the HMGP to reflect the Disaster Mitigation Act of 2000 were changed by 44 CFR Part 206, Subpart N. An Interim Final Rule was issued in October 2002, wherein the final compliance date was set to November 1, 2004 for all governments to have a FEMA approved mitigation plan. The HMGP assists states and local communities to implement long-term hazard mitigation measures by providing federal funding after a major disaster declaration. Eligible applicants include state and local agencies, tribal organizations, and certain non-profit organizations. Examples of HMGP projects include:

- Property acquisition and relocation projects
- Structural retrofitting to minimize damages from high winds, earthquake, flood, wildfire, or other natural hazards
- Elevation of flood-prone structures
- Vegetative management programs

1.3.4 Pre-Disaster Mitigation Program

The Pre-Disaster Mitigation (PDM) Program was authorized by section 203 of the 2000 Stafford Act, 42 USC (Public Law 106-390). Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist state, local, and tribal governments in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program. Two types of grants are offered under the PDM Program.

<u>Planning Grants</u> - Allocated funds to be used for hazard mitigation plan development.

<u>Competitive Grants</u> - Distributed funds using a competitive application process.

The minimum eligibility requirements for jurisdictions receiving competitive PDM funds include:

- Participation in the National Flood Insurance Program (NFIP)

- Must not be suspended or on probation from the NFIP
- Must have a FEMA approved Hazard Mitigation Plan

1.3.5 National Flood Insurance Program (NFIP)

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the costs of repairing buildings and their contents caused by floods. The goals of the NFIP is to:

- Improve basic knowledge about flood hazards;
- Coordinate and plan new developments in the floodplain;
- Better indemnify individuals for flood losses through insurance;
- Reduce future flood damages through State and community floodplain management regulations;
- Reduce Federal expenditures for disaster assistance and flood control.

In 1994, Congress amended the 1968 Act and the 1973 Act with the National Flood Insurance Reform Act (NFIRA). The 1994 Act included measures, among others, to:

- Increase compliance by mortgage lenders with the mandatory purchase requirement and improve coverage;
- Increase the amount of flood insurance coverage that can be purchased;
- Provide flood insurance coverage for the cost of complying with floodplain management regulations by individual property owners (Increased Cost of Compliance coverage);
- Establish a Flood Mitigation Assistance grant program to assist States and communities to develop mitigation plans and implement measures to reduce future flood damages to structures;
- Codify the NFIP Community Rating System; and
- Require FEMA to assess its flood hazard map inventory at least once every 5 years.

1.3.5.1 The "100-year/500 year" Standard

In order to assess and manage the flood risk, a national standard the U.S. Department of Housing and Urban Development, which initially administered the NFIP before FEMA established the 1-percent-annual-chance of flooding (also referred to as the 100-year or "Base Flood") to be used as the standard for the NFIP. The 1-percent-annual-chance flood (or 100-year flood) represents a magnitude and frequency that has a statistical probability of being equaled or exceeded in any given year, or, stated alternatively, the 100-year flood has a 26 percent (or 1 in 4) chance of occurring over the life of a 30-year mortgage. The 500-year standard (0.2-percent-annual-chance) flooding was also established.

1.3.5.2 Flood Mitigation Assistance Program (FMA)

The Flood Mitigation Assistance Program (FMA) 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 NFIP. FMA funding is provided by the National Flood Insurance Fund and provides funding to assist states and communities in implementing measures to:

- Reduce the number of repetitively or substantially damaged structures and the associated claims on the National Flood Insurance Fund;
- Encourage long-term, comprehensive mitigation planning;
- Respond to the needs of communities participating in the NFIP to expand their mitigation activities beyond floodplain development review and permitting;
- Complement other federal, state and local mitigation programs with similar, long-term mitigation goals.

There are three types of grants available under FMA:

<u>FMA Planning Grants</u> are available to states and communities to prepare Flood Mitigation Plans.

<u>FMA Project Grants</u> are available to states and NFIP participating communities to implement measures to reduce flood losses. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants.

<u>Technical Assistance Grants</u> Up to 10% of the Project Grant funding is made available to the states for technical assistance. These funds may be used to help administer the program.

In order to be eligible for project funds under the Flood Mitigation Assistance (FMA) program authorized by the National Flood Insurance Act of 1968, as amended, communities are required under 44 CFR §79.6(d)(1) to be participating in the NFIP and have a mitigation plan that addresses flood hazards. Although communities are not required to have a multi-hazard mitigation plan for the FMA program, they are encouraged to consider all hazards that could impact their community. First, a multi-hazard risk assessment may reveal effects or relationships between different hazards. For example, hurricanes have a combination of flood and wind impacts. Second, addressing all hazards will allow a community to be eligible for a wider range of federal mitigation assistance programs.

On October 31, 2007 FEMA published amendments to the 44 CFR Part 201 at 72 Fed.l Reg. 61720 to incorporate mitigation planning requirements for the FMA program. The amendments impacted 44 CFR §201.6, Local Mitigation Plans, as follows:

- Combined the Local Mitigation Plan requirement for all hazard mitigation assistance programs under 44 CFR §201.6 to include the FMA as well as the HMGP, PDM and SRL programs, thus eliminating duplicative mitigation plan regulations;
- Incorporated the requirement for communities with National Flood Insurance Program (NFIP) insured properties that have been repetitively damaged from floods to address such properties in their risk assessment and mitigation strategy; and
- Incorporated the requirement for communities that participate in the NFIP to include a strategy for continued compliance with the NFIP.

1.3.5.3 NFIP Repetitive Flood Claims (RFC) Program

The Repetitive Flood Claims (RFC) grant program provides funding to reduce or eliminate the long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP) that have had one or more claim payments for flood damages. The long-term goal of RFC is to reduce or eliminate claims under the NFIP through mitigation activities that are in the best interest of the National Flood Insurance Fund (NFIF). RFC funds may only mitigate structures that are located within a State or community that cannot meet the cost share or management capacity requirements of the Flood Mitigation Assistance (FMA) program.

Applications will be accepted for any insured property that has one or more claim payments for flood damages and is located within a State or community that can not meet the requirements of the FMA program for either cost share or capacity to manage the activities stipulations. RFC awards will prioritize projects that create the greatest savings to the NFIF based on a Benefit-Cost Analysis (BCA).

1.3.5.4 NFIP Severe Repetitive Loss (SRL) Program

The SRL program was created pursuant to Section 1361A of the National Flood Insurance Act of 1968 (or" the Act"), 42 U.S.C. 4102A, as amended by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Public Law 108-264, with the goal of reducing flood damages to SRL properties. The SRL program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the NFIP. The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

a. That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
b. For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

The long-term goal of the SRL program is to reduce or eliminate NFIP claims. The SRL program will fund mitigation projects, which will result in the greatest savings to the National Flood Insurance Fund (NFIF) in the shortest period of time, based on a Benefit-Cost Ratio (BCR) using Federal Emergency Management Agency (FEMA)-approved methodology to conduct the Benefit-Cost Analysis (BCA).

Participation in this program is voluntary. The SRL program differs from other FEMA mitigation grant programs in that those property owners who decline offers of mitigation assistance will be subject to increases in their insurance premium rates.

1.3.5.5 Community Rating System (CRS)

The CRS was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. The National Flood Insurance Reform Act of 1994 codified the Community Rating System. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

The Community Rating System (CRS) provides a flood insurance premium discount in participating communities that implement floodplain management activities above and beyond the minimum criteria of the NFIP. Policyholders receive 5 - 45% discounts on premiums, depending on their flood zone and the community's CRS classification. The more communities do to prevent and reduce flood losses, the more their residents benefit with reduced premiums. The CRS recognizes 18 creditable activities, organized under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.

Table 1.1 CRS Ratings

Credit points earned, classification awarded and premium reductions for communities in the NFIP CRS rating system

Credit Points	Class	SFHA	Non-SFHA
4500+	1	45%	5%
4,000 - 4,499	2	40%	5%
3,500 – 3,999	3	35%	5%
3,000 – 3,499	4	30%	5%
2,500 – 2,999	5	25%	5%
2,000 – 2,499	6	20%	5%
1,500 – 1,999	7	15%	5%
1,000 – 1,499	8	10%	5%
500 - 999	9	5%	5%
0 - 499	10	0%	0%

SFHA = Special Flood Hazard Area

Communities can develop a CRS plan to improve their CRS rating. The CRS 10-step planning process is consistent with the multi-hazard planning regulations under 44 CFR Part 201. However, the CRS provides additional points for activities that communities take during the planning process that exceed the minimum. An approved multi-hazard mitigation plan under 44 CFR Part 201 that addresses floods could qualify for CRS credit. Communities are not required to participate in CRS in order to receive approval of a Local Mitigation Plan, however, FEMA encourages jurisdictions to integrate the CRS planning steps into their hazard mitigation plan.

Effective May 1, 2008, FEMA instituted a new CRS policy. Flood insurance policies for buildings having the lowest floor one foot or more below the base flood elevation will no longer be eligible for the community's CRS discount. Some clarifications:

- In most cases, the affected structures are non-compliant, i.e., in violation of the NFIP construction criteria. They may have received a variance from the community. If so, the variance applicant was advised that "the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance".
- This new policy only affects elevation-rated buildings. Typically, these are new construction or "post- FIRM buildings, not older buildings that qualify for the pre-FIRM "subsidized" rates.
- Only buildings in the mapped Special Flood Hazard Area are affected. Buildings in B, C, or X Zones are not rated based on the elevation of their lowest floors.
- It does not affect those V-Zone properties that have approved breakaway walls surrounding unfinished enclosures used only for building access, storage, and parking, but that were rated based on the enclosed area's being the lowest floor.

1.4 PLAN PURPOSE

The key purposes of this 2009 plan update are:

- To involve members of the county, cities, townships, public and other agencies to draft and adopt a mitigation action plan that serves as the blueprint for future development and preparedness activities across the county
- To identify the possible risks and hazards, beyond what the 2004 plan did, that may affect Shelby County through a systematic hazard identification and risk assessment process;
- To prioritize loss reduction and emergency preparedness activities for disasters;
- To determine areas within Shelby County that may be vulnerable to various hazards;
- To develop strategies and the best practices to avoid and mitigate the impact of hazards.

1.5 PLAN SCOPE

This Hazard Mitigation Plan will be updated and maintained by Shelby County Emergency Management and the assigned mitigation committee to continually address hazards determined to be of high and moderate risk through the detailed risk assessment. Other hazards that pose a low or negligible risk will continue to be evaluated for future updates to the Plan. The geographic scope for the Plan includes all incorporated and unincorporated areas of Shelby County with the exception of the cities of Hoover, Leeds and Vestavia Hills that are primarily located in Jefferson County, Alabama and are included in the Jefferson County, Alabama Mitigation plan.

Table 1.2 Participating Jurisdictions, Agencies and Departments	
Participating Jurisdictions	
Shelby County, Alabama	Town of Indian Springs Village
City of Alabaster	City of Montevallo
City of Calera	City of Pelham
City of Chelsea	Town of Vincent
City of Columbiana	Town of Westover
Town of Harpersville	Town of Wilsonville
City of Helena	Town of Wilton
Participating Agencies/Departments	
Alabama Cooperative Extension Services	Shelby County EMA
Department of Public Health	Shelby County Department of Education
Alabama Department of Agriculture	Shelby County Chamber of Commerce
Alabama Forestry Commission	Shelby County IT/GIS/Planning Department
Alabama EMA	Shelby County Sheriff's Office
American Red Cross, Shelby County	Shelby County Tax Commissioners Office
NGO, VOAD	Shelby County Volunteer Fire Departments
Shelby County 911	Shelby County Independent Water Systems
Shelby County Development Services	University of Montevallo (New)

1.6 PLAN AUTHORITY

This 2009 Plan Update was developed in accordance with Federal, state and local rules and regulations governing local hazard mitigation plans. The Plan authority will be routinely monitored and revised to maintain compliance with the below provisions, rules, and legislation:

Table 1.3 Plan Authorities		
Authority	**Authority Description**	**Authority Date**
Federal	The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968	1968
Federal	Flood Mitigation Assistance Program (FMA) was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101)	1994
Federal	Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)	10/30/2000
Federal	Pre-Disaster Mitigation (PDM) Program was authorized by section 203 of the 2000 Stafford Act, 42 USC (Public Law 106-390).	10/30/2000
Federal	FEMA's Interim Final Rule published in the Federal Register on February 26, 2002, at 44 CFR Part 201 and 206	02/26/2002
State	Alabama Executive Order No. 19 (EO 19).	02/24/2004
County	Shelby County Resolution	01/15/2008

1.7 PLAN OUTLINE

Section 1: Executive Summary provides an introduction and overview of the plan including the purpose, scope, authorities and section summaries.

Section 2 Shelby County Profile describes the jurisdictions in terms of geography, history, population, economy and significant characteristics. This section also provides descriptions of the general makeup of Shelby County and its local jurisdictions, including prevalent geographic, demographic, economic characteristics and land use patterns. Shelby County recognizes that social, environmental, and economic factors have a role in determining vulnerability to hazards.

Section 3: The Planning Process describes the process used to develop the updated Shelby County Multi-Jurisdictional All Hazards Mitigation Plan. The description provides a general overview of local hazard mitigation planning and the specific procedures used by Shelby County to prepare this Plan. It includes who was involved as members of the planning team, and documents the outcomes of meetings. It also demonstrates the opportunities for the public and other stakeholders to participate in the plan development process. Finally section 3 documents how each section of the previous plan was reviewed and identifies specifics on how each section was updated.

Section 4: Hazard Risk Assessment - Hazard Identification identifies hazards that have and may, in the future impact Shelby County and its participating jurisdictions. Specifically Hazard Identification identifies the hazard threats that have historically occurred in and across the county as well as hazards that may impact Shelby County communities in the future. Hazard Identification provides background information for these hazards. All hazards, including hazards identified in the State Plan, were initially considered for relevance as the mitigation committee advanced through the hazard mitigation planning process.

Section 5 Hazard Risk Assessment - Hazard Profiling focuses on hazards that are of significant concern to Shelby County and its communities. The profiles provide specific historical event information and identify the potential for a hazard event to occur in the future. This includes identifying location and spatial extent of the event and best available data regarding the impact on the county and participating jurisdictions.

Section 6: Risk Assessment - Assessing Hazard Vulnerability consists of Hazard Risk and Vulnerability assessments that builds on available historical data from past hazard occurrences, establishes hazard loss profiles. A Loss Estimation Methodology is used in evaluating some known hazard risks by their relative long-term cost in expected damages. The vulnerability assessment also defines any hazard risks that may uniquely or exclusively affect the individual municipal jurisdictions. Communities must determine the most appropriate mitigation actions to pursue and implement as this information enables communities to prioritize and focus their efforts on those hazards of greatest concern and those structures or areas facing the greatest risk.

This section also includes a Land Use and Development Trend Analysis that identifies and describes future land use based on growth and jurisdiction planning.

Section 7: Shelby County Mitigation Strategy consists of a capability assessment and a comprehensive mitigation strategy. The capability assessment provides a comprehensive examination of Shelby County and participating local jurisdictions' capacity to implement meaningful mitigation strategies and identifies existing opportunities to increase and enhance that capability. Capabilities addressed in this section include planning and regulatory capability, technical capability, and fiscal capability. Information was obtained through the use of detailed survey questionnaires and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts, and to identify those activities that should be built upon in establishing a successful and sustainable hazard mitigation program.

The comprehensive mitigation strategy is a list of strategic goals, objectives and mitigation actions. The strategic goals consist of broad, goal statements for each local jurisdiction participating in the planning process to strive to achieve. The comprehensive strategy provides the foundation for identifying and prioritizing mitigation actions. Mitigation actions are specific to each local jurisdiction, and link proposed mitigation strategies to locally assigned implementation mechanisms and target implementation dates. This section makes the Plan both strategic, through the identification of long-term goals, and functional, by identifying short-term and immediate actions that will guide day-to-day decision-making and project implementation.

Section 8 Plan Monitoring, Maintenance and Updating contains plan monitoring, maintenance and updating strategies that Shelby County and its participating jurisdictions will take to ensure the Plan's continuous long-term implementation. The maintenance procedures include the manner in which the Plan will be regularly evaluated and updated to remain a current and meaningful planning document.

Section 9 Appendices contains acknowledgements, Mitigation meetings information and Adoption Resolutions

Annex 1: Supporting Information Annex: Includes detailed hazard historic information and lists of critical, Tier II and Terrorist Target facilities, which is considered sensitive information. Reference Maps are also included in this section along with documents supporting the planning and adoption process.

Individual Mitigation Action Plans contains individual municipal mitigation plans that are made up of

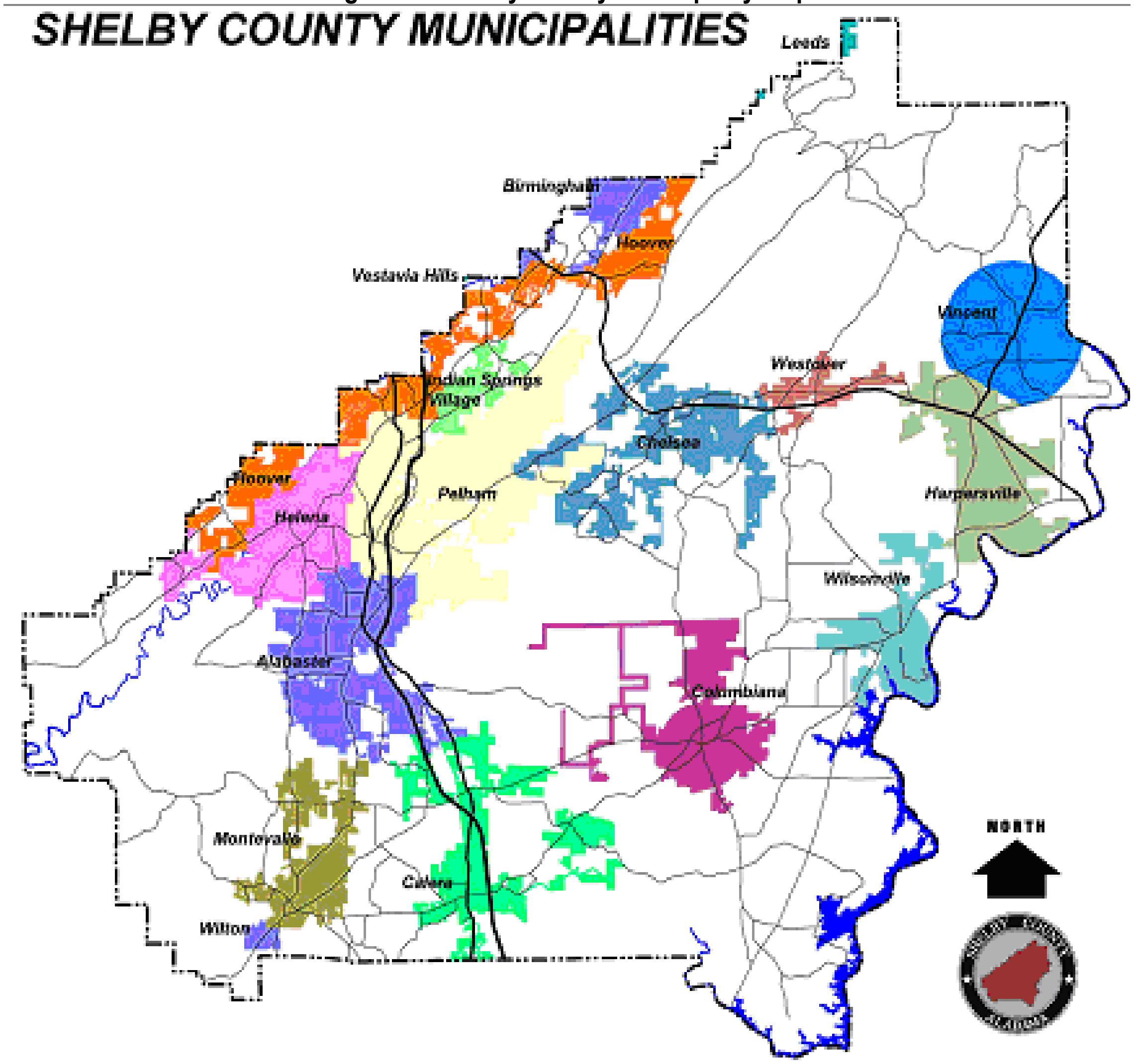
- Individual jurisdiction profiles, which describe each municipality's geography and history and provides information on its population, demographics, households, earnings and employment.
- Individual capability assessments that provides a comprehensive examination of the participating local jurisdictions' capacity to implement meaningful mitigation strategies and identifies existing opportunities to increase and enhance that capability. Capabilities addressed in this section include planning and regulatory capability, technical capability, and fiscal capability. Information was obtained through the use of detailed survey questionnaires for local officials and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts, and to identify those activities that should be built upon in establishing a successful and sustainable community hazard mitigation program.
- Individual comprehensive mitigation plans that contain a mitigation strategy for each participating jurisdiction. The mitigation strategy consists of specific goals, objectives and action items for each jurisdiction participating in the planning process. The strategy provides the foundation for identifying and prioritizing mitigation actions. Mitigation actions are specific to each local jurisdiction, and link proposed mitigation actions to locally assigned implementation mechanisms and target implementation dates. This section makes the Plan both strategic, through the identification of long-term goals, and functional, through the identification of short-term and immediate actions that will guide day-to-day decision-making and project implementation.

SECTION 2
JURISDICTION PROFILE

2.1 INTRODUCTION

In this section the Shelby County jurisdiction is profiled. Shelby County is comprised of 17 jurisdictions. The cities of Hoover, Vestavia Hills, and Leeds partially reside in Jefferson County and are included in the Jefferson County, Alabama mitigation plan and are not included in this Shelby County 2009 mitigation plan.

Figure 2.1 Shelby County Municipality Map



Source: Shelby County Comprehensive Plan

2.1.1 2009 Plan Update

This Section 2 – Jurisdiction Profile replaces the 2004 Chapter 2 "Review: County Profile". Adding more detailed historic, population, demographic, economic, geology, infrastructure, and land usage information have enhanced this 2009 plan update. Most of the information is still based on the 2000 census, however in some cases data has been extrapolated to reflect more current positions. In addition, municipal profiles have been developed for each participating jurisdiction and are included in the 2009 Individual Mitigation Action Plan Annex along with their capabilities and mitigation strategies and actions.

2.2 SHELBY COUNTY PROFILE

2.2.1 Shelby County Geography and History

Shelby County is the geographic center of the state of Alabama. It is one of seven counties comprising the Birmingham-Hoover Metropolitan Area. The others are Jefferson, Blount, St. Clair, Bibb, Chilton, and Walker. Jefferson and St. Clair counties bound Shelby County to the north, by Talladega and Coosa counties to the east, and by Chilton and Bibb counties to the south and southwest. The marker for the geographic center of the state of Alabama is on the steps of Main Hall at the University of Montevallo. The actual geographic center is said to be in the Richardson-Randall Cemetery, about 2 miles east of Montevallo.

The first settlers of Shelby County were Indians of the Creek nation, specifically the Uchies, Natchez and Alabama tribes. Creek villages were concentrated along the Coosa and Cahaba Rivers, near Wilsonville and in North Shelby County respectively. The Asi-Lanipi Village on Yellowleaf Creek near Chelsea was the longest remaining village and was not removed until 1836 during the Second Indian War. Other Creek Villages include Assuanapi on Yellowleaf Creek, Osoonee on the east side of the Cahaba River approximately two miles above the influx of Shades Creek; and Tulavahaja on the west side of the Cahaba River south of Birmingham.

Shelby County, Alabama was created February 7, 1818 by an act of the Alabama Territorial General Assembly, before Alabama became a state on December 14, 1819, from former Creek Indian territory ceded in the Treaty of Fort Jackson on August 9, 1814.

The county was formed out of the northern portion of Montgomery County. Originally, Shelby County was one of the largest counties in the state. However, the state legislature soon began carving up the area to create other counties, including St. Clair County, Jefferson, Talladega, and Chilton counties. The county was named for Isaac Shelby, a hero of the King's Mountain Battle during the Revolutionary War. Also, he was the first governor of the state of Kentucky.

Most of the first settlers came from South Carolina, Alabama, and Kentucky and returned to this region after the victorious Battle of Horseshoe Bend in 1814. The first settlements in the area were at Montevallo, then known as Wilson's Hill, Harpersville, Wilsonville, and Shelbyville.

Early settlers held their lands by virtue of what was known as Squatter Sovereignty. The government in 1821 granted titles to their holdings.

The first courthouse was located at Shelbyville, believed to have been located within the modern-day County of Pelham. Thomas Rogers, Alabama's first Secretary of State, who along with his neighbor George Phillips represented the county in the state's first Constitutional Convention in 1819, built the first courthouse. It was selected as the county seat in 1820. The

Shelbyville courthouse was used until 1826, when the decision was made to move the courthouse and the county seat to Columbia, later named Columbiana.

It was only a matter of time before the early inhabitants started exploiting the county's plentiful iron and coal resources. The first blast furnace was completed in Shelby County in 1846,

Sources: Jackson, Harvey H., III. - Rivers of History Tuscaloosa, Alabama; The University of Alabama Press, 1995. Owen, Thomas McAdory - History of Alabama and Dictionary of Alabama Biography; Chicago: S.J. Clarke Publishing Co., 1921. Seales, Bobby Joe - History of Shelby County; AlaGenWeb, 2003.

2.2.2 Shelby County Significant Characteristics

Shelby County's diverse terrain offers many opportunities for recreational activities. The County is blessed with almost 50 parks. Oak Mountain State Park in the northern part of the county is Alabama's largest state park. It encompasses almost 10,000 acres and provides visitors with such diverse activities as golfing, hiking, camping, canoeing, horseback riding, fishing, swimming, and mountain biking. The Cahaba River Wildlife Management Area located on County Road 91 west of Helena consists of 41,500 acres and offers excellent opportunities for hunting and fishing. Lay Lake, a 12,000-acre lake, has 289 miles of shoreline and has served as the host site for the Bass Masters Tournament.

One of the state's most unique tourist attractions is the American Village, near Montevallo, which is a living-history colonial village and park on 113 acres. The village contains historical replicas of Mount Vernon, George Washington's home, as well as the nation's first executive mansion in Philadelphia and the White House Oval Office. The Karl C. Harrison Museum of George Washington, in nearby Columbiana, contains one of the largest privately owned collections of George and Martha Washington memorabilia outside of Mount Vernon. Columbiana is also home to the Shelby County Museum and Archives, located in the 1854 Courthouse. This museum displays artifacts and memorabilia from the early days of Shelby County and is the repository for many of the county's old court records dating as far back as 1818. Other points of interest include the Aldrich Coal Mine Museum near Montevallo, the Heart of Dixie Railroad Museum in Calera, Old Town Helena, the Shelby Iron Works near Columbiana, and the Shelby Springs Confederate Cemetery between Columbiana and Calera.

Shelby County has some of the Southeast's best selection of golf courses. Even mixtures of public and private courses provide the tailored experience a true golfer seeks. Several courses host annual PGA events.

The Pelham Civic Complex is conveniently located next to the Verizon Wireless Music Center with easy access to I-65. The complex is perfect for conventions, sporting-events, trade shows and includes two indoor ice skating rinks

Sports Blast in Pelham is a premier multi-field indoor sports facility that is universally recognized as providing the finest year round game experience.

The Pelham Racquet Club is a public tennis facility consisting of 20 clay courts and five hard courts, all lighted with above tournament grade lighting. The entire facility is beautifully landscaped on three tiers providing function and visibility to all courts. The facility hosts approximately 15 tournaments each year including the USTA Pro-Tennis Challenger featuring participants from 27 nations

Veterans Park-Pelham features 5K/8K cross country courses and four beach volleyball courts.

Veterans Park - Hoover features a professionally developed cross-country course and is host to the Great American Cross Country Race

Veterans Park - Alabaster is a 90-acre facility with five youth baseball/softball fields, a concession stand and press box, two miles of lighted walking tracks, a regulation size skate-park, a bluebird trail, two playground areas, restrooms, nine pavilions available for rental, several play meadows, batting cages, and an arbor.

At the University of Montevallo the Robert M. McChesney Student Activity Center (SAC) is a 90,000 square foot state-of-the-art recreation and athletic center. It includes facilities for weight/cardio training, racquetball, volleyball, walking, and swimming. The cardio area has a five- television cardio theatre accessed through personal FM receivers. The Peoples Bank and Trust Company Arena is the home court for the University's intercollegiate Volleyball and Women and Men's Basketball teams. An eighteen-hole Disc Golf Course has recently been added to the area outside the facility.

The Shelby County Arts Council serves the entire community at all economic levels, ages and races and benefits the community by improving the quality of life and making the community a better place to live and work.

2.2.3 Climate

Shelby County has a mild, temperate climate. Summers are generally hot and humid with an average temperature of 76 degrees Fahrenheit. The average mid-afternoon relative humidity is 60 percent. Winters are relatively mild with an average temperature of 42 degrees Fahrenheit. Average annual rainfall precipitation is approximately 60 inches per year and snowfall averages less than an inch per year. Source: Flood Insurance Study of Shelby County, Alabama.

2.2.4 Geology

Shelby County is the most geologically diverse county in the state. Most of the county lies in the Alabama section of the Ridge province, located east and south of County Road 17, and is comprised of shale, siltstone, sandstone, dolomite, limestone and cherty limestone formations. The Cumberland Plateau section of the Appalachian Plateaus province is found west and north of County Road 17. This region contains the Pottsville formation that contains many coal deposits, sandstone, siltstone and shale. South of Highway 25, between Calera and Columbiana, lies the Ashland Plateau section of the Piedmont province which contains slate, phyllite and marble formations. The Coastal Plain, containing ancient, fossilized marine sediments, is located south of Montevallo and Calera.

Due to its location at the intersection of the Appalachian mountain range and the southern coastal plain, Shelby County has a very diverse topography. Its elevation ranges from 1,500 feet in the foothills of the Appalachians in the northeast, to 400 feet in the southern coastal plain regions.

2.2.5 Ecosystem

Shelby County has a complex natural environment composed of many specialized habitats located within two primary forest ecosystem regions, described as the Basin Region, referring to the Coal Basin area of the Cumberland Plateau and the Coosa Valley Region. The Basin Region is dominated by dry oak pine forest on most uplands and ridges, with more oak or other hardwood-dominated woodlands on lower areas. Beech and other hardwood species of the oak-hickory forest type may dominate sheltered slopes, rich coves and areas along streams.

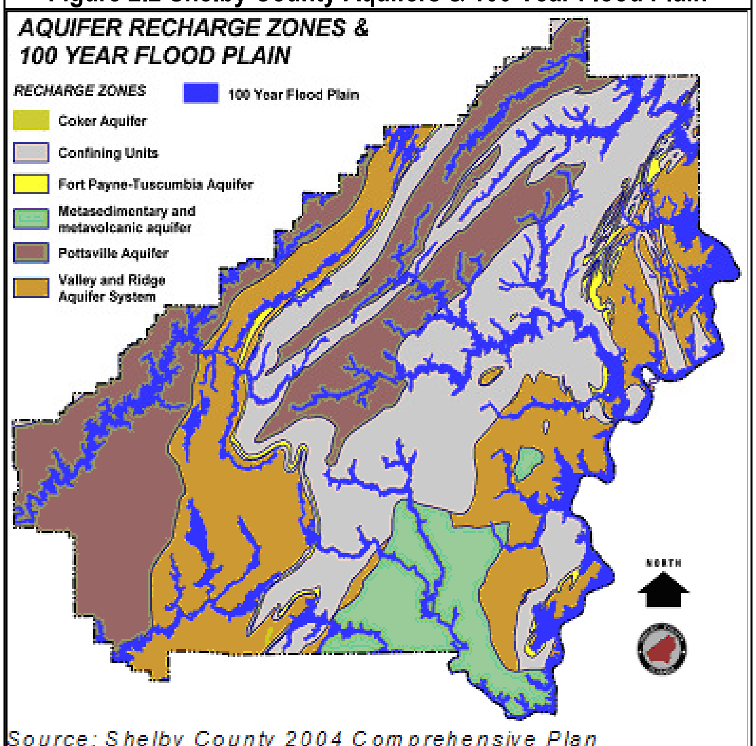
Shelby County's aquatic systems deserve additional consideration as specialized habitat. Two major systems comprise all the drainages in Shelby County: the Coosa River system and the Cahaba River system. Both rivers originate above the Fall Line, which has limited upstream migration of animal species from the Coastal Plain.

The Cahaba River heads in the southern end of the Ridge and Valley hypsographic province. This has resulted in the upper end of this drainage becoming very isolated, permitting it to develop a unique assemblage of organisms. In fact, the Cahaba River is home to several species formally listed as Endangered or Threatened under the U.S. Endangered Species Act of 1970. The Coosa River originates in the southern Blue Ridge physiographic province in northern Georgia and does not reach the Fall Line until reaching Elmore County. Its unique animal population is not only a result of isolation, but also of the influence of the southern Blue Ridge. Like the Cahaba River, the Coosa River and its tributaries are home to several listed species. *Source: Shelby County 2004 Comprehensive Plan.*

2.2.6 Hydrology and Aquifers

Shelby County is located within the Alabama River watershed but is drained by two separate major river basins. The eastern two-thirds of the county is in the Coosa River Basin. Major streams draining this part of the county include Waxahatchee Creek, Yellowleaf Creek and Kelly Creek. Important smaller tributaries include Shoal Creek (in the north end of the county), Bear Creek, Muddy Prong and Clear Prong. The western one-third of the county is in the Cahaba River Basin. Major tributaries to the Cahaba include Little Cahaba River and Buck, Piney Woods and Shoal Creeks.

Figure 2.2 Shelby County Aquifers & 100 Year Flood Plain



Source: Shelby Comprehensive Plan

Most of Shelby County is located in the Alabama Valley and Ridge groundwater province. A small area in the southern portion of the county is in the Piedmont Upland groundwater province. Five aquifer systems are present in the county. Large volumes of groundwater are available in water-bearing dolomites and limestone in the Cahaba Valley physiographic district and in the eastern portion of the Coosa Valley district. These waters are part of the Valley and Ridge aquifer system and the Fort Payne/Tuscumbia Aquifer. The remainder of the county has only small amounts of groundwater available. The Pottsville Aquifer serves these areas.

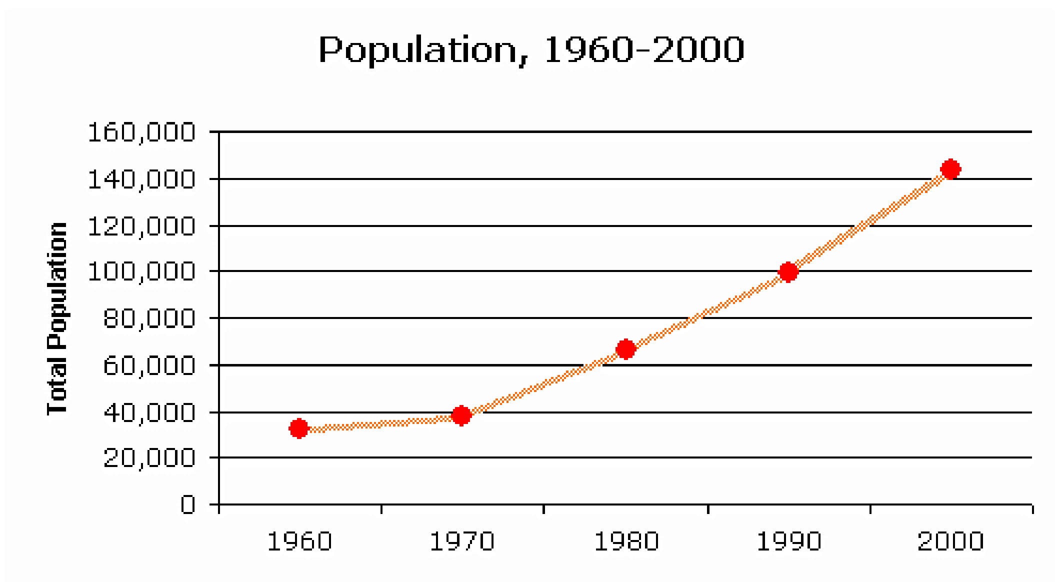
2.2.7 Population and Demographics

In the last decade Shelby County's population has increased by more than 4,000 people every year, making it Alabama's fastest growing county and one of the fastest growing in the United States. With a 2005 population estimate of 171,465, Shelby County's population has increased 73% since 1990. In population percent change Shelby County has ranked among the Top 8% fastest growing counties nationwide with a population of 100,000 or more. Shelby County is projected to increase in population by an additional 100,000 people over the next 20 years.

Table 2.1 Shelby County Population Growth

	1980	1990		2000		2006	
Population	66,298	99,358	49.87%	143,293	44.20%	178,182	24.35%

Figure 2.3 Shelby County Population Graph 1960 -2000

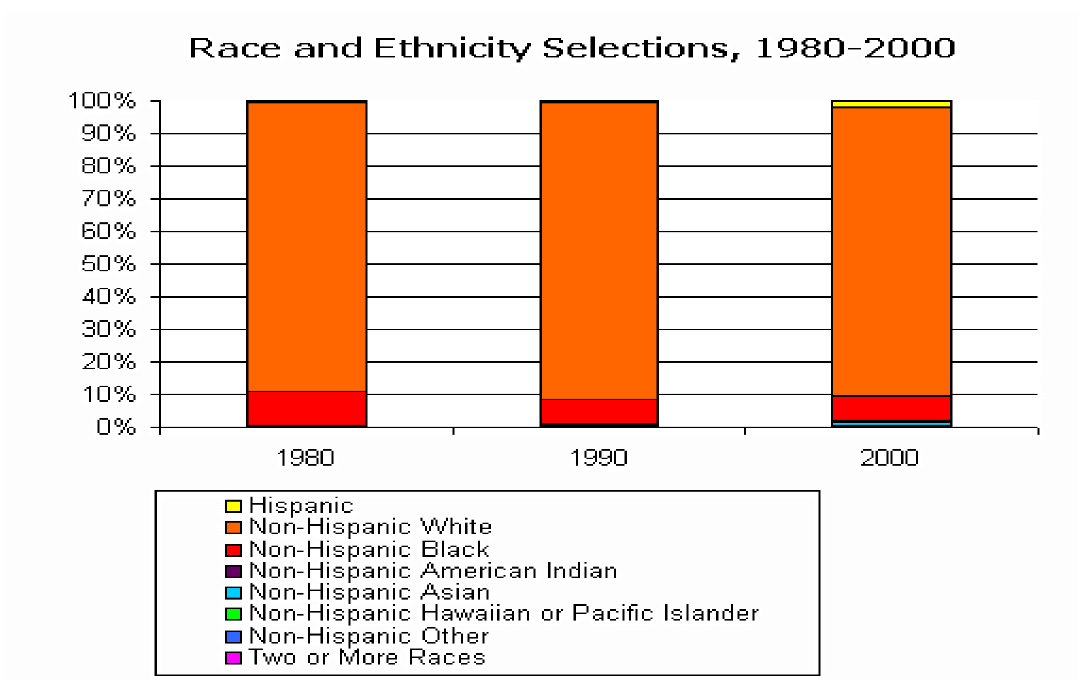


Source: Census scope

On the 2000 Census questionnaire, "race" and "Hispanic ethnicity" are listed as separate questions. A person of Hispanic ethnicity is anyone who identifies with that social group, and so can be of any race. This can make data on race and ethnicity difficult to interpret. Race data is also difficult to compare from Census to Census because categories have changed over time. For example, the 2000 Census was the first to offer the category "Native Hawaiian or Other Pacific Islander," and those people could have responded in a number of different ways in previous years. The 2000 Census also marked the first time that respondents were allowed to select more than one racial category. On earlier Censuses, multiracial individuals were asked to choose a single racial category, or respond as "Some Other Race." The Shelby County multiracial population in the 2000 census is identified in the Figure below.

Table 2.2 Selby County Multiracial Population						
	1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent
Total Population	66,298	100.00%	99,358	100.00%	143,293	100.00%
Total Hispanics	423	0.64%	525	0.53%	2,910	2.03%
White*	58,730	88.58%	90,292	90.88%	126,951	88.60%
Black*	6,804	10.26%	7,698	7.75%	10,570	7.38%
American Indian and Eskimo*	107	0.16%	263	0.26%	441	0.31%
Asian*	182	0.27%	573	0.58%	1,465	1.02%
Hawaiian and Pacific Islander*	-	-	-	-	21	0.01%
Other*	52	0.08%	7	0.01%	51	0.04%
Two or More Races*	-	-	-	-	884	0.62%

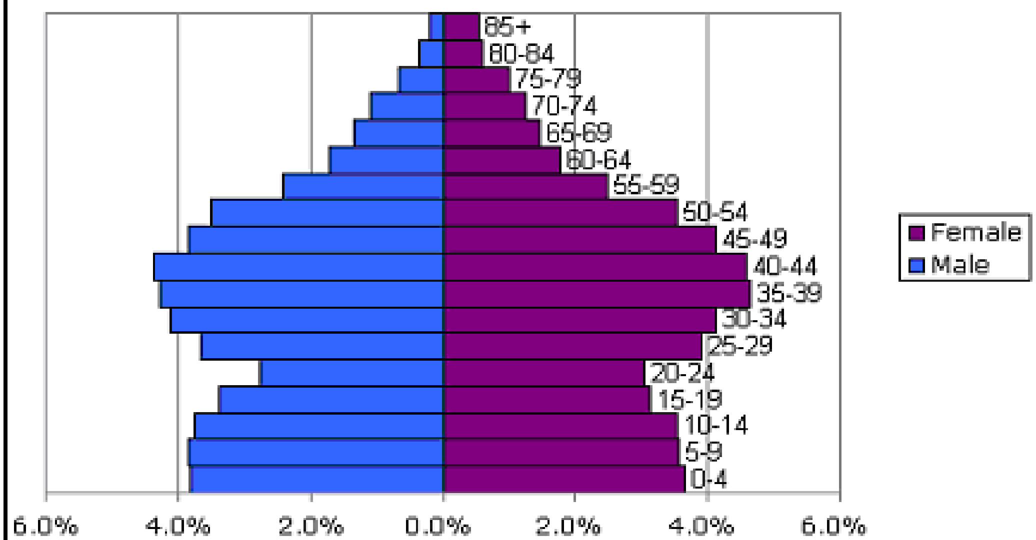
Figure 2.4 Shelby County Multiracial Population – 2000 Census



Source: Census scope

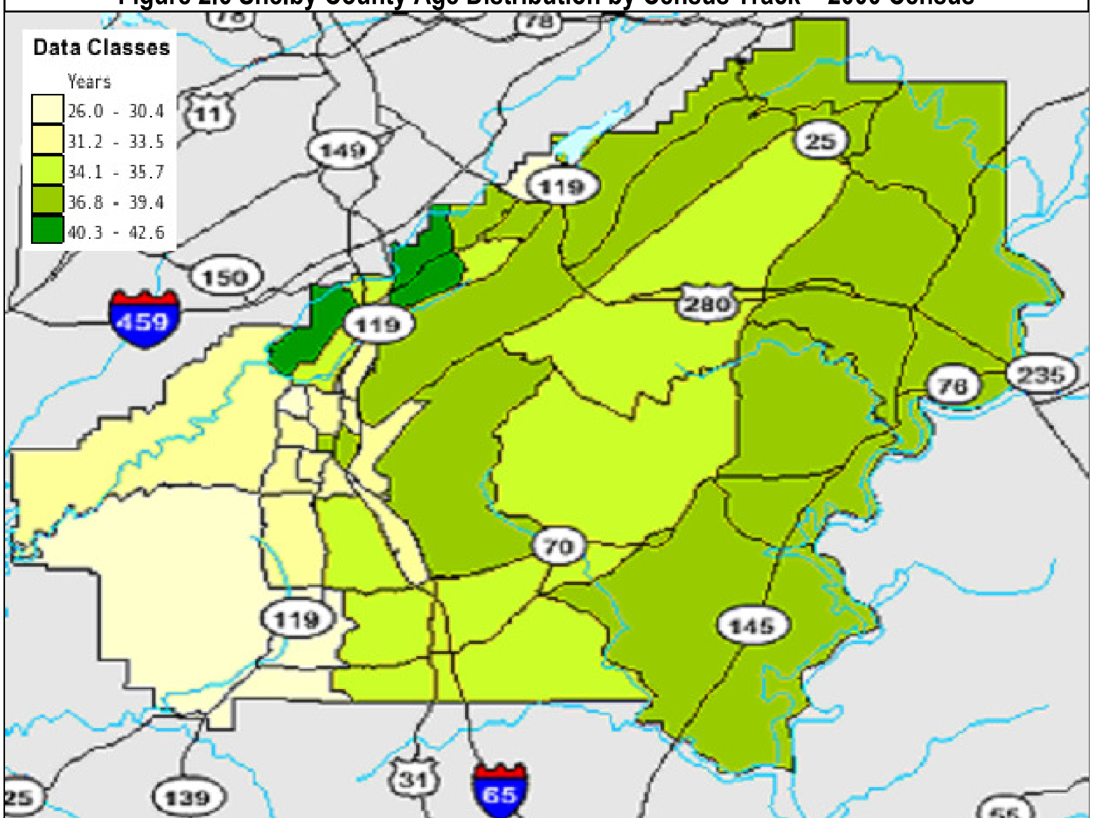
When drawn as a "population pyramid," age distribution can hint at patterns growth. A top-heavy pyramid suggests negative population growth that might be due to any number of factors, including high death rates, low birth rates, and increased emigration from the area. A bottom heavy pyramid suggests high birthrates, falling or stable death rates, and the potential for rapid population growth. But most areas fall somewhere between these extremes and have a population pyramid that resembles a square, indicating slow and sustained growth with the birth rate exceeding the death rate, though not by a great margin.

Figure 2.5 Shelby County Population Age Distribution, 2000



Source: Censes scope

Figure 2.6 Shelby County Age Distribution by Census Track – 2000 Census

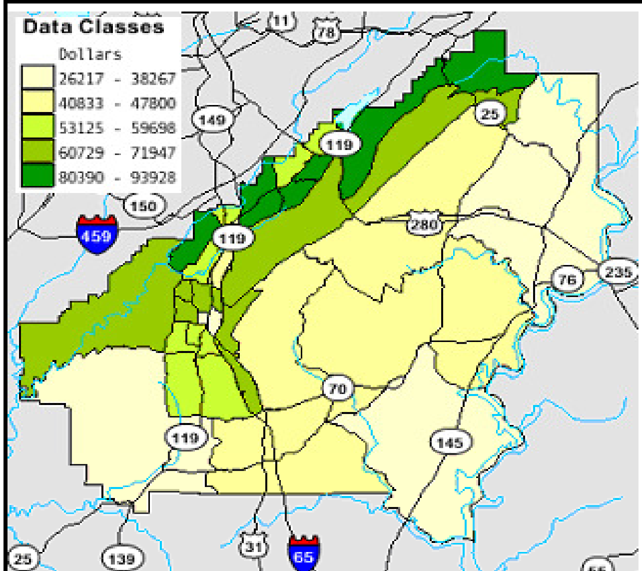


Source:: US Census Bureau

2.2.8 Economy

The 2000 Census reported that median household income was $55,440 in 1999, up nearly 50 percent from the 1990 Census. In 1999, more than 71% of the county's population earned than $35,000 annually.

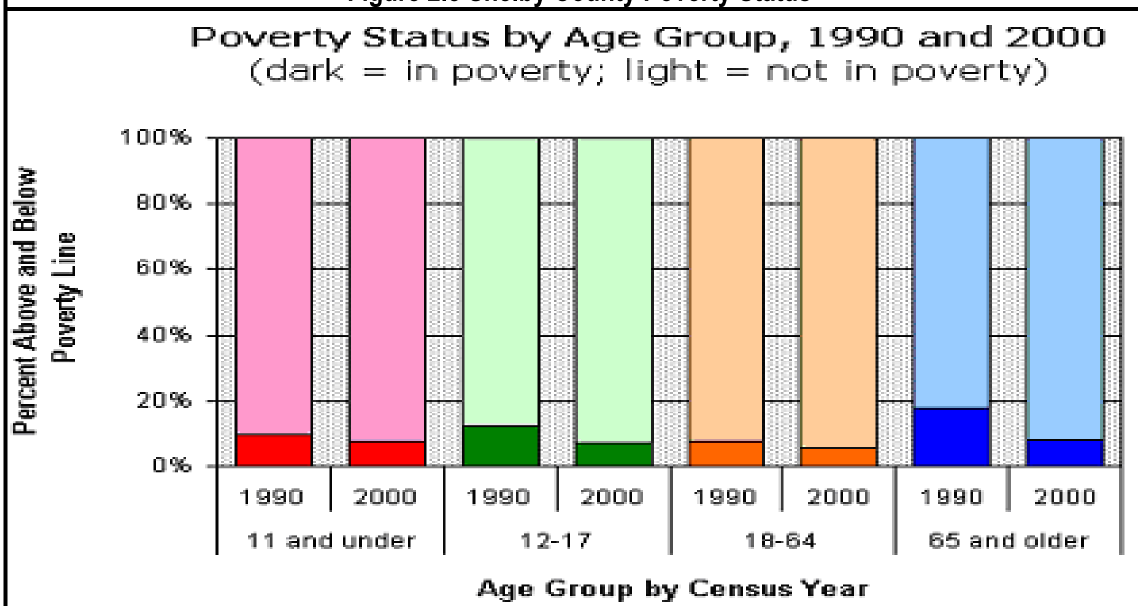
Figure 2.7 Shelby County Median Income, 2000 Census



Source: US Census Bureau

Censuses, income and poverty data provide an economic "snapshots" of an area that can in turn be compared with economic data gathered from earlier Censuses. Poverty status is determined by Poverty Thresholds, which take into account factors, including income and family size and structure. For example, the 2000 Poverty Threshold for a family of four in the continental United States with two children was 17,463. Poverty Thresholds can be misleading, as they do not provide an accurate picture of what a "poor" family's life is like. According to the National Center for Children in poverty, most families of four would have to make twice their assigned Poverty Threshold in order to provide their children with basic necessities, such as housing, food, and health care. Poverty levels in the county continued to decline through the 1990's. According to the 2000 Census, approximately 4.6 percent of county families live below the poverty level. This is significantly lower than approximately 12.5 percent of families in the state that live below poverty level.

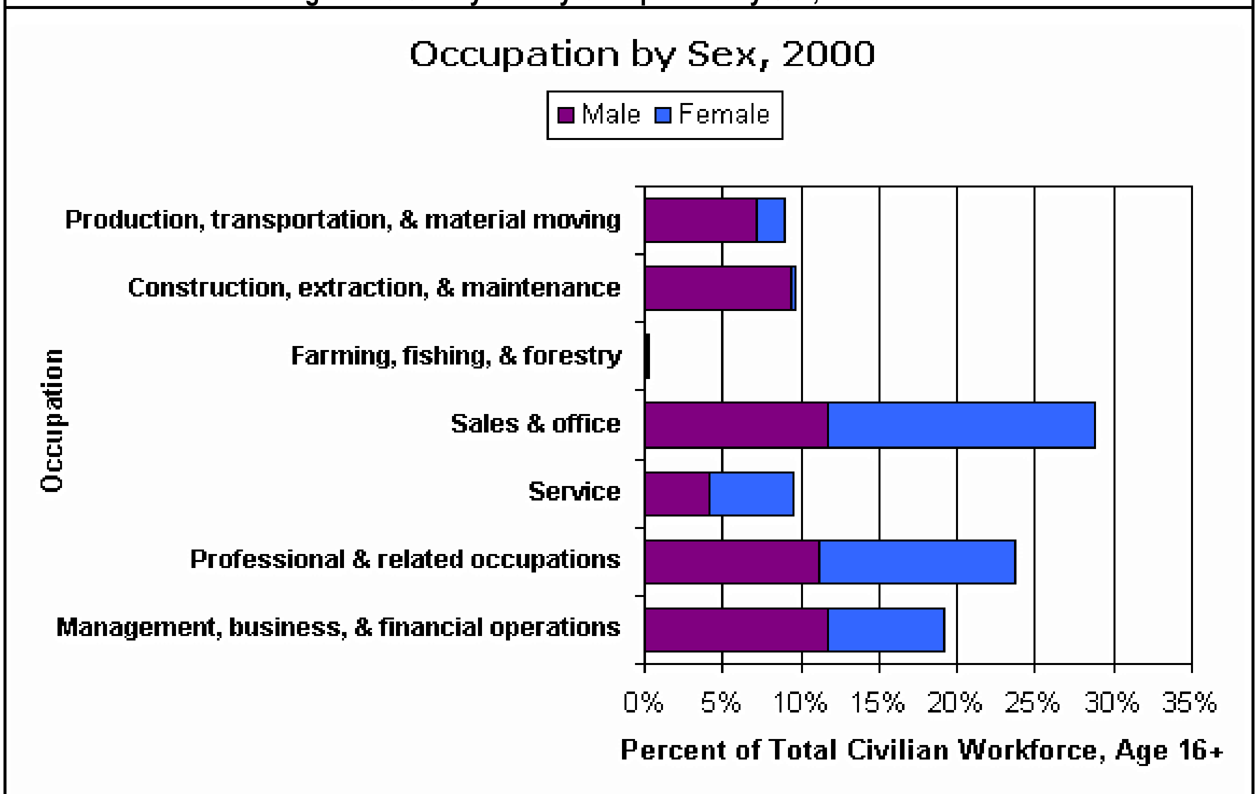
Figure 2.8 Shelby County Poverty Status



Source: US Census Bureau

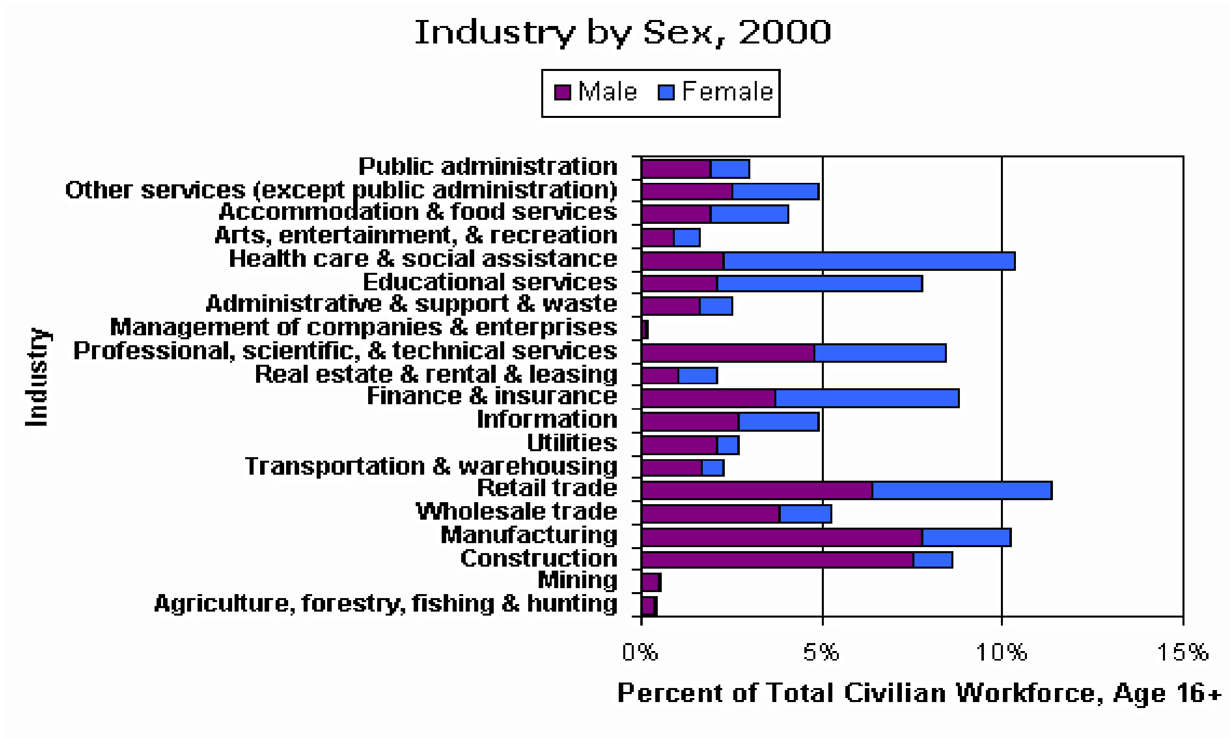
Employment by occupation refers to specific occupations regard- less of the industry in which they are employed. Some occupation groups are closely related to certain industries. Operators of transportation equipment and farm operators and workers account for major portions of their respective industries of transportation and agriculture. The industry categories, however, include per- sons in other occupations. For example, persons employed in the agriculture industry may also include truck drivers and accountants; persons employed in the transportation industry may include mechanics, freight handlers, sales persons, and secretaries. The occupational characteristics of the population are of particular interest because they serve as an indicator of the economic status of the population. Data concerning employment characteristics are generally presented in terms of employment by industry or employment by occupation. Employment by industry refers to the specific industry in which a person is employed regardless of their occupation. The following provides the per- cent distribution of jobs associated with all of the industry groups reported by the 2000 Census.

Figure 2.9 Shelby County Occupations By Sex, 2000 Census



Source: US Census Bureau

Figure 2.10 Industry Occupations By Sex, 2000 Census



Source: US Census Bureau

Table 2.3 Shelby County Occupation By Sex, 2000 Census

Occupation	Male	Workforce %	Female	Workforce%
Total Employed	41,415	55.51%	33,189	44.49%
Management/professional/related Svcs	17,088	22.90%	14,880	19.95%
Management, business, & financial operations:	8,785	11.78%	5,504	7.38%
Management, except farm managers	6,663	8.93%	3,181	4.26%
Farmers & farm managers	79	0.11%	24	0.03%
Business & financial operations:	2,043	2.74%	2,299	3.08%
Business operations specialists	871	1.17%	1,169	1.57%
Financial specialists	1,172	1.57%	1,130	1.51%
Professional & related occupations:	8,303	11.13%	9,376	12.57%
Computer & mathematical	2,271	3.04%	890	1.19%
Architecture & engineering:	2,041	2.74%	293	0.39%
Architects, surveyors, cartographers, & engineers	1,620	2.17%	190	0.25%
Drafters, engineering, & mapping technicians	421	0.56%	103	0.14%
Life, physical, & social science	302	0.40%	229	0.31%
Community & social services	560	0.75%	511	0.68%
Legal	427	0.57%	456	0.61%
Education, training, & library	882	1.18%	3,207	4.30%
Arts, design, entertainment, sports, & media	708	0.95%	661	0.89%
Healthcare practitioners & technical occupations:	1,112	1.49%	3,129	4.19%
Health diagnosing/treating practitioners operation	926	1.24%	2,364	3.17%
Health technologists & technicians	186	0.25%	765	1.03%

Table 2.3 Shelby County Occupation By Sex, 2000 Census				
Occupation	Male	Workforce %	Female	Workforce%
Service occupations:	3,134	4.20%	3,931	5.27%
Healthcare support	54	0.07%	510	0.68%
Protective services:	851	1.14%	102	0.14%
Fire fighting, prevention & law enforcement	534	0.72%	63	0.08%
Other protective service workers	317	0.42%	39	0.05%
Food preparation & serving related occupations	775	1.04%	1,404	1.88%
Building & grounds cleaning & maintenance	1,061	1.42%	487	0.65%
Personal care & service	393	0.53%	1,428	1.91%
Sales & office occupations:	8,708	11.67%	12,773	17.12%
Sales & related occupation's	6,692	8.97%	4,134	5.54%
Office & administrative support	2,016	2.70%	8,639	11.58%
Farming, fishing, & forestry occupations	151	0.20%	36	0.05%
Construction, extraction, & maintenance	6,969	9.34%	266	0.36%
Construction & extraction:	4,136	5.54%	110	0.15%
Supervisors, construction & extraction	677	0.91%	13	0.02%
Construction trades	3,381	4.53%	92	0.12%
Extraction	78	0.10%	5	0.01%
Installation, maintenance, & repair	2,833	3.80%	156	0.21%
Production, transportation/material moving	5,365	7.19%	1,303	1.75%
Production	2,961	3.97%	882	1.18%
Transportation & material moving:	2,404	3.22%	421	0.56%
Supervisors, transportation & material moving	84	0.11%	12	0.02%
Aircraft & traffic control	86	0.12%	16	0.02%
Motor vehicle operators	1,059	1.42%	232	0.31%
Rail, water & other transportation	195	0.26%	0	0.00%
Material moving	980	1.31%	161	0.22%

Table 2.4 Shelby County Industry Occupation By Sex, 2000 Census				
	Male	Workforce %	Female	Workforce%
Total Employed	41,415	55.51%	33,189	44.49%
Agriculture, forestry, fishing, hunting, & mining:	609	0.82%	123	0.16%
Agriculture, forestry, fishing & hunting	258	0.35%	75	0.10%
Mining	351	0.47%	48	0.06%
Construction	5,606	7.51%	809	1.08%
Manufacturing	5,779	7.75%	1,860	2.49%
Wholesale trade	2,842	3.81%	1,072	1.44%
Retail trade	4,776	6.40%	3,678	4.93%
Transportation, warehousing, & utilities:	2,827	3.79%	891	1.19%
Transportation & warehousing	1,253	1.68%	455	0.61%
Utilities	1,574	2.11%	436	0.58%
Information	1,984	2.66%	1,688	2.26%
Finance, insurance, real estate, rental & leasing:	3,499	4.69%	4,646	6.23%
Finance & insurance	2,748	3.68%	3,816	5.12%
Real estate & rental & leasing	751	1.01%	830	1.11%
Professional, scientific, management, administrative, & waste:	4,839	6.49%	3,442	4.61%

Table 2.4 Shelby County Industry Occupation By Sex, 2000 Census				
	Male	Workforce %	Female	Workforce%
Professional, scientific, & technical services	3,562	4.77%	2,710	3.63%
Management of companies & enterprises	69	0.09%	47	0.06%
Administrative & support & waste management Svcs	1,208	1.62%	685	0.92%
Educational, health & social services:	3,242	4.35%	10,295	13.80%
Educational services	1,554	2.08%	4,252	5.70%
Health care & social assistance	1,688	2.26%	6,043	8.10%
Arts, entertainment, recreation, accommodation/food:	2,118	2.84%	2,108	2.83%
Arts, entertainment, & recreation	678	0.91%	519	0.70%
Accommodation & food services	1,440	1.93%	1,589	2.13%
Other services (except public administration)	1,888	2.53%	1,772	2.38%
Public administration	1,406	1.88%	805	1.08%

The top 10 Employers in Shelby County are:

Table 2.5 Shelby County Top Ten Employers	
Company	Employees
Shelby County Board of Education	2,700
Regions Bank	1,717
Wal-Mart	1,585
Baptist Medical Center Shelby	1,000
EBSCO Industries	950
Shelby County Government	559
University of Montevallo	438
Alabaster Healthcare	400
SYSCO Food Services of Central Alabama	378
Moore-Handley	361

2.2.9 Housing

According to the 2000 Census, there are a total of 59,302 housing units in Shelby County. This represents an increase of 20,101 housing units since the 1990 Census. About 42,720 units or 72 percent of the housing, consists of single family, including both detached houses and attached townhouses. The number of multifamily units, apartments, and condominiums, increased to 7,531 or 12.7 percent of the housing; down as a percentage from 16.5 percent in 1990. Between 1990 and 2000, the home ownership rate remained relatively stable at 92 percent. As of 2000, 44,226 households in the County own their own home, an increase of 35,985 from 1990. The median value in 1980 was $51,000 and in 1990 was $88,300. In 2000, the median value of owner occupied units was $146,700.

2.2.10 Infrastructure

Government: Shelby County government consists of a representative nine-member commission. There are a total of 14 incorporated communities within the boundaries of the county, each having a mayoral or mayor/County council form of government. Westover has been incorporated since the 2004 mitigation plan

Public Safety: Shelby County is served by twelve law enforcement agencies. Eleven of these are city police departments and serve areas within their jurisdictional boundaries. In addition to providing police support to unincorporated Shelby County, the cities of Chelsea, Westover and Wilsonville have a contract with the County Sheriff's Office to provide law enforcement. The Town of Wilton contracts with the Montevallo Police Department

The Sheriff's Office staffs two police stations and three substations. The main station located at the county adult jail in Columbiana is fully manned and the North Shelby station at Heardmont Park operates with clerical support and a cyclical officer presence. The remaining substations are located at the Shelby County Airport, and the Chelsea Westover and Wilsonville City Halls. Each jurisdiction with a police department has a main station. In addition to the main police station, Hoover and Alabaster have substations in their jurisdictional areas.

Each of the police departments participates in the D.A.R.E. (Drug Abuse Resistance Education) and provide one or more School Resource officers. The School Resource Office provides a police presence on the school campus and provides a positive role model. The county also participates in a Drug Task Force with Montevallo, Columbiana, Pelham and Alabaster that operates separate from the main police force to create an environment free of illegal drugs within Shelby County and its communities, schools and places of work.

The county has two detention facilities, the Shelby County Jail and the County Regional Juvenile Detention Center. The Shelby County Jail is a newly built facility completed in 2004 and has a capacity of 512 inmates requiring minimum to maximum security. The Juvenile Detention center can house 34 juveniles and provides a restricted environment while legal action is pending. Both county facilities are located in Columbiana.

Fire Safety: Shelby County is served by 31 fire departments. Fourteen districts are municipal fire departments, which cover about 332 square miles with a few cities covering areas beyond their limits. Twelve departments serving 283.02 square miles are volunteer fire departments with informal response area agreements; volunteer companies are not created by law and can only request dues within their service areas. Five departments are legally created entities, whose districts cover 106.54 square miles, and are funded by mandated dues collection within their respective boundaries. The remaining 30.60 square miles of the county have no first response fire protection (response not guaranteed) with 7.73 square miles having secondary response arrangements. The Alabama Forestry Commission responds to forest fires throughout the county no matter the location but does not have the equipment to fight structure fires.

Water Service: ShelbyCounty is served by 20 public water systems. This includes twelve municipal water systems, six rural water authorities, The University of Montevallo water system, and the Shelby County water system.

The Shelby County water system was developed to provide a dependable water supply for the various public water distribution systems in the County. Shelby County provides retail water service to more than 5,000 accounts and wholesale water service to the water systems of Alabaster, Pelham, Sterrett, Vandiver, Westover Water Authority, and Vincent. A meter is in place for the City of Leeds. In addition, a mutual aid agreement is in effect between the Shelby County water system and the Birmingham Water Works Board.

With the exception of the Shelby County and Birmingham systems, all of the County's water systems are dependent upon water supplied from wells and springs. Municipal systems include: City of Alabaster; Birmingham Water & Sewer Board; City of Calera; City of Columbiana;

Town of Harpersville; City of Helena; City of Hoover City of Leeds; City of Montevallo; City of Pelham; Town of Vincent; Town of Wilsonville; and Town of Wilton.

The rural water authorities include Bethel Water Authority; Dunavant Valley Water Authority; Little Waxie Water Authority; Spring Creek Water Authority; Sterrett / Vandiver Water Authority; and Westover Water Authority.

Wastewater Service Systems: Wastewater collection systems are available in the cities on Alabaster, Calera, Columbiana, Helena, Hoover, Montevallo, Pelham, and Wilsonville. Additionally, Shelby County and the Birmingham Water Works and Sewer Board operate collection systems that serve portions of north Shelby County. There are two private systems serving the population along U.S. Highway 280; DOWR (Double Oak Water Reclamation) and Cheyenne Environmental.

The Shelby County School Board of Education is the primary educator of school age children in Shelby County. All public schools, with the exception of Hoover City Schools, are operated and maintained by the Shelby County Board of Education. Shelby County Schools are recognized statewide for excellence in academics and athletics and is one of the largest educational systems in the State. The system employs approximately 1,900 teachers and administrators who serve more than 26,000 students in 18 elementary and intermediary schools and 14 middle and high schools. The University of Montevallo, a liberal arts college founded in 1896, is the county's only four-year institution of higher learning, with an enrollment of approximately 3,300 students. Jefferson State , a two-year institution, has a campus in North Shelby County.

Table 2.6 Shelby County Education

PK - 5		K - 8		K - 12		Middle		High	
Number	Students	Number	Students	Number	Students	Number	Students	Number	Students
18	12,102	0	0	0	0	7	5,339	7	6,253
Private		**College/University**		**Vocational**		**Special Needs**		**Child Care**	
Number	Students	Number	Students	Number	Students	Number	Students	Number	Students
10	2,791	2	4,000			0	0	60	732

Table 2.7 Shelby County Healthcare

Hospitals		Clinics	Assisted Living Facilities		Doctors	Dentists
Number	Beds	Number	Number	Beds	Number	Number
1	191	25	12	716	122	75

Transportation route Interstate 65 runs southward to Mobile, Alabama and northward to Chicago Illinois runs through the western portion of Shelby County. Interstate 459, providing a bypass route around Birmingham, is located just northwest of the county line. U.S. Highways 31 and 280 are the other major highway transportation routes. Numerous county roads provide access to the unincorporated regions of the county.

Table 2.8 Shelby County Transportation				
	General Aviation	Commercial Aviation	Highways/Waterways	
Location	Calera, 10mi NW	Birmingham-25mi. N	Interstate	I65
Runway length	1524/5000	7100/12002	U.S.	31, 231, 280
Runway surface	Asphalt	Asphalt	State	70, 76, 119, 155, 261
Communications	CTAF/UNICOM 122.7	UNICOM/ATIS 122.95	Waterway	Coosa River
Lighting	Dusk to Dawn	Dusk to Dawn	Railroads	CSX, Southern, Shelby
Fuel	100LL JET-A	100LL Jet-a	Bus Service	Greyhound
Repairs	NOTAM-D	NOTAM-D	Common Carriers	20
Daily Flights	Public/Private	379		

Table 2.9 Shelby County Communications and Utilities			
Telephone	Newspaper	Radio	TV/Cable/Satellite
AT&T	The Birmingham News	WBYE, WJOX, WDJC	Charter
Sprint	Shelby County Reporter	WAPI, WLPH, WYDE	WABM (NBC)
Nextel	Montgomery Advertiser	WERC, WQCR, WLJR	WVTM (FOX)
Verizon		WGIB, WQEM, WBPT	WBRC
Charter		WBHK, WZZK-FM	WCFT (ABC)
			WIAT (CBS)
			WBIQ (Public)
Electricity	**Gas**	**Water**	**Sewage/Landfill**
Alabama Power Company	Alabama Gas Corporation	Columbiana Water Works	7 landfills
		14 local system	

2.2.11 Land Usage

Residential, commercial, and industrial uses are predominant along the I-65 / US Highway 31 and the US Highway 280 corridors from one county line to the other with a heavy residential swath existing between the two corridors north of Oak Mountain State Park, which shows as Recreational. Intense commercial concentrations occur within these corridors along their northern segments. Although rural in nature, residential uses exist along the State Highway 25 corridor that stretches from Wilton to Leeds with commercial uses centered in the downtowns along the route. Timberlands, a component of Agricultural uses, exist in the western, central, and northeastern areas, and mining of limestone and coal occurs in the southwestern area. Institutional uses include government properties, uses comprise private and public facilities involved with electric, water, and sewer networks as well as transportation facilities.

The Shelby County Economic and Industrial Development Authority (SCEIDA) is the catalyst for developing the economic base of Shelby County. Created by Shelby County in 1996, SCEIDA is governed by a fifteen-member board of directors appointed by the Shelby County Commission. SCEIDA supports programs to develop and sell industrial sites, disseminate demographic and statistical information, assist existing employers and promote tourism.

Shelby West Corporate Park is a 400-acre on Interstate 65, Exit 234. The park is less than 30 miles from downtown Birmingham, Alabama. The park is strategically located within the center of a large available workforce and situated with easy interstate access. Park attributes include:

- Frontage on Interstate 65, with easy access to Alabama's extensive interstate network
- Borders the Shelby County Airport
- Located about 50 miles from Honda Manufacturing of Alabama in Lincoln, about 45 miles from Mercedes Benz U.S. International, Inc. and about 65 miles from Hyundai Motor Manufacturing of Alabama.

Figure 2.11 Shelby West Corporate Park

SECTION 3
THE MITIGATION PLANNING PROCESS

3.1 INTRODUCTION

This section of the Plan describes the mitigation planning process undertaken by Shelby County in preparation of the Hazard Mitigation Plan. It consists of eight subsections:

- Overview Of Hazard Mitigation Planning
- Plan Adoption By Local Governing Bodies
- Multi-Jurisdictional Planning Participation
- Mitigation Planning Process
- The Mitigation Planning Team
- Mitigation Planning Community Meetings And Workshops
- Involving The Public In Mitigation Planning
- Involving Stakeholders In Mitigation Planning
- Review And Incorporation Of Existing Plans
- Planning For Natural Hazards
- Planning For Manmade hazards
- Previous Mitigation Plan Review

3.1.1 2009 Plan Update

Section 3 – Planning Process, has replaced Chapter 3 Review: Planning Process in the 2004 mitigation Plan. This section has been significantly enhanced in this 2009 plan update to meet the 2008 FEMA guidance and crosswalk requirements. The enhancements included added information in the areas of plan including the planning process overview, multi-jurisdiction participation, addition of agencies and departments to the mitigation planning team. The number of meetings were increased which enhanced both public and stakeholder participation. The number of plans reviewed and incorporated was also increased.

Also added in this section is this review of the previous plan (2004), adoption information, natural hazards planning, manmade hazards planning and this section, which identifies differences and enhancement over the 2004 plan.

3.2 PLANNING PROCESS OVERVIEW

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. Mitigation planning offers many benefits, including:

- Saving lives and property;
- Saving money;
- Facilitate recovery following disasters;
- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction;
- Expediting the receipt of pre- and post-disaster grant funding; and
- Demonstrating a commitment to improve community health and safety.

Typically, mitigation planning has the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that pre-disaster investments will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Mitigation practices will enable residents, businesses, and industries to recover in the wake of a disaster to ensure the community economy is re-established quicker and with less interruption.

The benefits of mitigation planning go beyond reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals such as preserving open space, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that any local mitigation planning process be integrated with other local planning efforts, and any proposed mitigation strategies be congruent with other existing community goals or initiatives.

Requirement §201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., County Council, County Commissioner, Tribal Council). A. Has the local governing body adopted new or updated plan? B. Is supporting documentation, such as a resolution, included? **Requirement §201.6(c)(5)**: For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted. A. Does the new or updated plan indicate the specific jurisdictions represented in the plan? B. For each jurisdiction, has the local governing body adopted the new or updated plan? C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?
CRS Step 9: Adopt the Plan: Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. The adoption must be either a resolution or ordinance**.** When a multi-jurisdictional plan is prepared, it must be adopted by the governing body of each community seeking CRS credit.
FMA Requirement §78.5(f): Documentation of formal plan adoption by the legal entity submitting the plan (e.g., Governor, Mayor, County Executive).

3.3 PLAN ADOPTION BY LOCAL GOVERNING BODIES

Adoption by the local governing bodies demonstrates the commitment of Shelby County and each participating jurisdiction to fulfill the mitigation goals, objectives and action items outlined in the Plan. Adoption legitimizes the Plan and authorizes responsible agencies to execute their responsibilities. In order for the multi-jurisdictional plan to be approved, each jurisdiction included in the Plan must have its governing body adopt the Plan. Adoption of the plan:

- Lends authority to the plan to serve as a guiding document for all local and state government officials
- Gives legal status to the plan in the event it is challenged in court
- Certifies that the plan Has been properly approved by the governing authority and considered by the jurisdictions' citizens
- Helps to ensure the continuity of mitigation programs and policies over time as elected officials, staff, and other decision makers can refer to the Plan when making decisions about the community's future

Each participating jurisdiction including the Shelby County School District will proceed with formal adoption proceedings after AEMA and FEMA provides conditional approval of this Plan. Following adoption, each participating jurisdiction will submit a copy of the resolution showing formal adoption of the Plan to AEMA. These will then be submitted to FEMA. Each participating jurisdiction understands that FEMA will transmit acknowledgement of verification of formal plan adoption and the official approval of the plan to the mitigation plan coordinator.

This Hazard Mitigation Plan has been adopted by Shelby County, its municipal jurisdictions and the Shelby County School District in accordance with the authority and powers granted to county, cities and towns as defined by the State of Alabama. The original resolutions supporting the adoption of the plan are included in the Appendices as scanned documents.

Table 3.1 Mitigation Plan Adoption Summary

Jurisdiction	Resolution Number	Adoption Date
Shelby County		
City of Alabaster		
City of Calera		
City of Chelsea		
City of Columbiana		
Town of Harpersville		
City of Helena		
Town of Indian Springs Village		
City of Montevallo		
City of Pelham		
Town of Vincent		
Town of Westover		
Town of Wilsonville		
Town of Wilton		
Shelby County School District		

3.4 MULTI-JURISDICTIONAL PLANNING PARTICIPATION

Multi-hazard Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process. Statewide plans will not be accepted as multi-jurisdictional plans.
A. Does the new or updated plan describe how each jurisdiction participated in the plan's development?
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?

CRS Step 1: Organize to Prepare the Plan: Multi-jurisdictional plans are encouraged in CRS. Credit is based on each jurisdiction's full participation in the planning process.

FMA Requirement §78.5(f): Documentation of formal plan adoption by the legal entity submitting the plan (e.g., Governor, Mayor, County Executive)

To satisfy multi-jurisdictional participation requirements, each of the local jurisdictions, agencies and departments was required to perform the following tasks:

- Designate appropriate officials to serve on the Mitigation Planning Committee;
- Participate in all mitigation planning meetings and workshops;
- Provide best available data for the risk assessment portion of the Plan;
- Complete the Capability Assessment Survey and provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan;
- Support the development of a countywide mitigation strategy, including the design and adoption of general goal statements for all jurisdictions to pursue and develop a Mitigation Action Plan with specific mitigation actions for its jurisdiction;
- Review and provide timely comments on all draft components of the Plan;
- Adopt the Shelby County Multi-Jurisdictional, All Hazards Mitigation Plan.

Through the completion of these tasks plan participant will have fully participated in the development of this Plan. All jurisdictions that participated in the 2004 plan development participated in the 2009 plan update. Plan participant additions to the 2009 plan are highlighted in green in the table below.

Table 3.2 Mitigation Plan Participating Jurisdictions, Agencies and Departments

Shelby County, Alabama	Town of Indian Springs Village
City of Alabaster	City of Montevallo
City of Calera	City of Pelham
City of Chelsea (New)	Town of Vincent
City of Columbiana	Town of Westover (New)
Town of Harpersville	Town of Wilsonville
City of Helena	Town of Wilton
Alabama Cooperative Extension Services	Shelby County EMA
Department of Public Health	Shelby County Department of Education
Alabama Department of Agriculture	Shelby County Chamber of Commerce
Alabama Forestry Commission	Shelby County IT/GIS/Planning Dept
Alabama EMA	Shelby County Sheriff's Office
American Red Cross, Shelby County	Shelby County Tax commissioners Office
NGO, VOAD	Shelby County Volunteer Fire Departments
Shelby County 911	Shelby County Independent Water Systems
Shelby County Development Services	University of Montevallo (New)

2004 plan participants that did not participate in the 2009 plan include the Alabama Department of Transportation, Shelby County Human Resources department and private entities Alagasco, Plantation Pipeline and the Shelby County Amateur Radio Club

3.5 MITIGATION PLANNING PROCESS

Multi-hazard Requirement §201.6(b): 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.
Multi-hazard Requirement §201.6(c)(1): The plan shall document 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?
A. Does the plan provide a narrative description of the process followed to prepare the new or updated plan?

Step 1: Organize to Prepare the Plan, Step 2: Involve the Public and Step 3: Coordinate with other Agencies: Credit is based on how the community organizes to prepare its floodplain management plan. Describe who is involved in the planning process and what their roll is in the development of the plan. The planning process must include an opportunity for the public, neighboring communities and local and regional agencies to comment on the plan during the drafting stage and before plan approval. The term public means residents, businesses, property owners, and tenants in the floodplain and other known hazards areas as well as other stakeholders in the community, such as business leaders, civic groups, academia, non-profit organizations and major employers. The plan must also incorporate and document a review of existing studies, reports, and technical information into the community's needs, goals and plans for the area.

FMA Requirement §78.5(a): Description of the planning process and public involvement. Public involvement may include workshops, public meetings, or public hearings.

In preparing this 2009 update to the 2004 plan, Shelby County utilized a multi-jurisdictional planning process consistent with FEMA's (Publication Series 386). These standards are based upon FEMA's Interim Final Rule as published in the Federal Register on February 26, 2002, in Part 201 of the Code of Federal Regulations. An associated Local Mitigation Plan Crosswalk provides a summary of FEMA's current minimum standards of acceptability for compliance with the Disaster Mitigation Act of 2000 and notes the location where each requirement is met within this plan update.

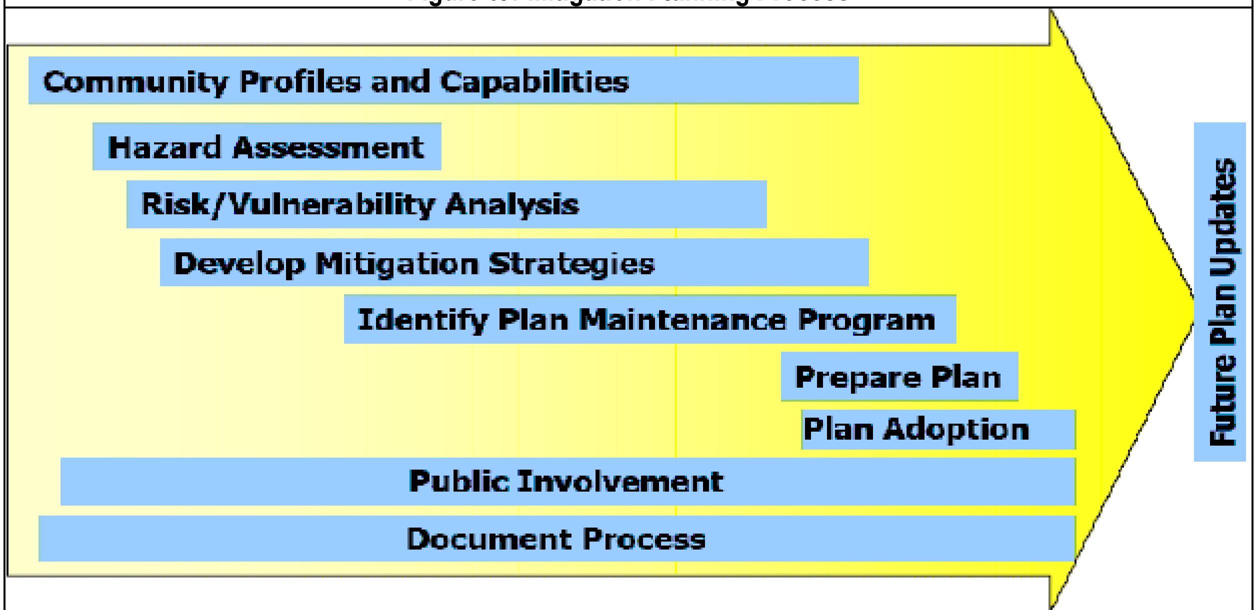
Guidance was also used from the National Flood Insurance Program. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to facilities in floodplains, the Federal Government will make flood insurance available as a financial protection against flood losses.

The Shelby County mitigation committee also used guidance from the Flood Mitigation Assistance Program (FMA) 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 NFIP.

Shelby County also applied the Community Rating System (CRS) 10-step planning process to Hazard Mitigation Plan development. CRS is consistent with the multi-hazard planning regulations; therefore FEMA also encourages jurisdictions to integrate the CRS planning steps into their multi-hazard mitigation plans. This means that an approved multi-hazard mitigation plan that addresses floods will automatically qualify for the minimum CRS credit. Shelby County performed the additional steps within each phase as outlined in the CRS criteria within each phase (Planning Process, Risk Assessment, Mitigation Strategy, and Plan Maintenance) of the multi-hazard mitigation planning regulations. This qualifies Shelby County and its participating jurisdictions to qualify for more CRS points, thus possibly lowering insurance rates.

The planning process for this 2009 update to the 2004 plan includes major steps that were completed during the development of the Plan. These steps are illustrated in the Figure below.

Figure 3.1 Mitigation Planning Process



3.6 THE MITIGATION COMMITTEE

A community-based mitigation committee developed this Plan update in cooperation with the Alabama Emergency Management Agency (AEMA) and consulting company EM Assist.

Multi-hazard Requirement §201.6(b): Multi-hazard Requirement §201.6(c)(1):
B. Does the new or updated plan indicate who was involved in the current planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)

CRS Step 1: Organize to Prepare the Plan:
Describe who is involved in the planning process and what their roll is in the development of the plan.

FMA Requirement §78.5(a): Description of the planning process and public involvement. Public involvement may include workshops, public meetings, or public hearings.

The Mitigation Committee assembled to oversee the development of the Plan consisting of representatives from Shelby County participating jurisdictions and supporting agencies and departments. The committee engaged government officials and other stakeholders in local meetings and planning workshops to discuss and complete tasks. In addition to regular meetings, this working group coordinated all aspects of the plan development process. Members routinely communicated and were kept informed through a dedicated e-mail distribution group. Additional participation and input from county residents and other identified stakeholders were solicited through the distribution of public notices and the facilitation of public meetings. The Planning Committee was charged with the following:

- Establish new goals for this 2009 Plan Update that are relevant and correspond to State goals;
- Establish a timeline for completion of the Updated Plan;
- Ensure that the Updated Plan meets the requirements of DMA 2000 and FEMA and AEMA
- Solicit and encourage the participation of regional agencies, a range of stakeholders, and citizens in the Plan development process;
- Assist in gathering information for inclusion in the updated Plan, including the use of previously developed reports and data;
- Organize and oversee the public involvement process;
- Develop, revise, adopt, and maintain the updated Plan.

The designated primary and alternate points of contact for Shelby County were the Shelby County Emergency Management Director and the Emergency Management Administrative Assistant. These points of contact provided the interface for EM Assist and Shelby County Emergency Management the Shelby County Hazard Mitigation Committee. These Shelby County points of contacts were the same for this updated plan and the 2004 plan.

Table 3.3 Shelby County Point of Contacts

	Primary	Alternate
Name	Don Greene	Mindy Nash
Title	EMA Supervisor	EMA Administrative Assistant
Department	Emergency Management Agency	Emergency Management Agency
Phone	205.669.3999	205.669.3999
Fax	205.669.3871	205.669.3871
Email	dgreene@shelbyal.com	mnash@shelbyal.com
Street Address	504 Highway 70, 1st Floor Ray Bldg.	504 Highway 70, 1st Floor Ray Bldg.
County, State, Zip	Columbiana, Al. 35051	Columbiana, Al. 35051

Table 3.4 Consultant Point of Contacts

	Primary	Alternate
Name	Les Junge	Jim Kincaid
Title	Program Manager	Project Manager
Department	Emergency Management	Emergency Management
Phone	256.892.0608	256.832.0350
Mobile	256.453.5112	205.919.8129
Fax	256.892.4520	
Email	ljunge@em-associates.org	contact@jimkincaid.biz
Street Address	174 Mohawk Court	1400 Commerce Blvd. Suite 15
County, State, Zip	Ohatchee, Al. 36271	Anniston, Al. 36207

The mitigation committee was made up of representatives of all of Shelby County's participating jurisdictions, relevant county and state agencies and departments and other stakeholders identified in the table below

Table 3.5 Shelby County Mitigation Committee				
Member Name	**Agency/Department**	**Contact Number**	**E-mail**	**Role/Focus Planning Hazards Risk Mitigation**
Ricky Colquitt	Alabama Cooperative Extension Service	205.669.6763	colqurw@aces.edu	Agriculture Hazards
Mindy Nash	EMA Administrative Assistant	205.669.3999	mnash@shelbyal.com	Steering Committee
Don Greene	EMA Director Shelby County	205.669.3999	dgreene@shelbyal.com	Planning Director
Mindy Nash	EMA Administrative Assistant	205.669.3999	mnash@shelbyal.com	Plan Administrator
Mary Kinard	American Red Cross	205.987.2792	kinardm@usa.redcross.org	Shelter Vulnerability
Greg Farrell	Alabaster Fire Department	205.621.8752	gfarrell@Countyofalabaster.com	Mitigation, Fire Hazard
Bryan Schaefers	St. Clair County EMA	205.884.6800	bryans@scema.co.saint-clair.al.us	Observer Stakeholder
Lee Helms	Chilton County EMA Representative	205.280.3027	lee@leehelmsllc.com	Observer Stakeholder
Tom Ferguson	Shelby County Schools	205.682.7013	tferguson@shelbyed.k12.al.us	Hazards Vulnerability
James Ponseti	Shelby County Development Services	205.620.6635	jponseti@shelbyal.com	Observer Stakeholder
Sherri Thompson	NGO, VOAD, Private Citizen	205.678.4591	sherri@handsonbirmingham.org	Public Representative
John Hooper	Public Health Area V	205.685.4195	jhooper@adph.state.al.us	Pandemic Hazards
Stephanie Gibson	Alabama EMA	888.390.0132	stephanie.gibson@ema.alabama.gov	Observer Stakeholder
Wayne Hayes	Bibb County EMA	205.926.3113	bcema@dbtech.net	Observer Stakeholder
Kelli B. Alexander	Alabama EMA	205.280.2269	kelli.alexander@ema.alabama.gov	Observer Stakeholder
Tony Acre	Shelby County Tax Commissioners Office	205.670.6935	tacre@shelbyal.com	Steering Committee
Brad Lang	Alabama Forestry Commission	205.669.4133	shelby.county@forestry.alabama.gov	Hazards Mitigation
Mark Bishop	Shelby County Sheriff's Office	205.670.6172	mbishop@shelbyso.com	Hazards Mitigation
Annette Davis	Jefferson County EMA	205.254.2051	davisa@jccal.org	Observer Stakeholder
Jennifer Trammel	Greater Shelby Chamber of Commerce	205-669-4542	Jennifer@shelbychamber.org	Hazards

Table 3.5 Shelby County Mitigation Committee				
Member Name	Agency/Department	Contact Number	E-mail	Role/Focus Planning Hazards Risk Mitigation
Stacy Walkup	South Shelby Chamber of Commerce	205 669-9075	Soshelby@bellsouth.net	Hazards Mitigation
David Frings	City of Alabaster	205 664-6800	Frings@Countyofalabaster.org	Hazards Mitigation
George Roy	City of Calera	205 668-3500	Mayor@calera.org	Hazards Mitigation
S. Earl Niven	City of Chelsea	205.678.7260	eniven@Countyofchelsea.com	Hazards Mitigation
Allan Lowe	City of Columbiana	205-669-5800	Lowej2@nationwide.com	Hazards Mitigation
Theoangelo Perkins	Town of Harpersville	205-672-9961	Hvillemayor@aol.com	Hazards Mitigation
Charles Penhale	City of Helena	205-663-2161	Sonny@Sonny-penhale.com	Hazards Mitigation
Steve Zerkis	Indian Springs Village	205-988-4672		Hazards Mitigation
Sharon Anderson	City of Montevallo	205-665-2555	sanderson@Countyofmontevallo.com	Hazards Mitigation
Jesse Jowers	City of Pelham	205.620.6408	jjowers@pelhamonline.com	Hazards Mitigation
Jim Hairston	Town of Vincent	205.672.7330		Hazards Mitigation
Larry Riggins	Town of Westover	205.978.7598	larryrigg1@charter.net	Mitigation hazards
Kay M. Ray	Town of Wilsonville	205.669.6180	wilsonvilleclerk@bellsouth.net	Hazards Mitigation
Joe Fancher	Town of Wilton	205-665-2021		Hazards Mitigation
Lynda Shelley Tyree	University of Montevallo	205-665-8000	tyreelm@montevallo.edu	Hazards Mitigation

3.7 MITIGATION PLANNING COMMUNITY MEETINGS AND WORKSHOPS

The preparation of this 2009 update to the 2004 plan required a series of meetings and workshops for facilitating discussion and data collection efforts with the mitigation committee and local community officials. The meetings and workshops prompted continuous input and feedback throughout the drafting stages of the Plan. Below is a summary of the key meetings and community workshops for the Shelby County Hazard Mitigation Committee. Additional meetings were held by the participating jurisdictions to accomplish planning tasks specific to their community, such as specific mitigation actions for inclusion in their Mitigation Action

Plan. Public notices and and/or minutes of mandatory meetings are scanned into this plan and can be found in the Appendices.

Table 3.6 Mitigation Plan Committee And Mandatory Public Meetings		
Meeting	**Date**	**Attendees**
Initial Mitigation Plan Planning Meeting	**03/27/2008**	**7**
The Initial Meeting was held with officials from Shelby County and representatives of EM Assist, the consulting firm chosen by Shelby County to facilitate the preparation of the Hazard Mitigation Plan. Don Greene, Emergency Management Director represented Shelby County. Executive Consultant Les Junge represented EM Assist. AEMA was represented by Cherie Cornelius. Discussions focused on the overall project approach, in which emphasis was placed on the steps necessary to meet the requirements of the DMA2K and 44 CFR Part 201 and building on work already completed at the state and local level. Discussions also focused on the specific roles and responsibilities for all parties involved in the planning process. In addition to representatives from each of the participating municipal jurisdictions, it was determined that representatives from fire and law enforcement agencies, private businesses, voluntary agencies, and the public should be invited to participate in the planning process.		
Meeting	**Date**	**Attendees**
Mitigation Planning Committee Kickoff Meeting	**05/12/2008**	**25**
The Mitigation Plan Project Planning Kickoff Committee Meeting was held at 8:30 A.M. to present the project and its benefits and requirements to all participating jurisdictions attendees and invited stakeholders. The intent of the meetings was to educate participants on the mitigation planning process and to explain DMA2K multi-jurisdictional planning requirements. A presentation of the mitigation planning process, the concept of hazard mitigation and detailed the mitigation planning process to be followed was presented. A project plan/timeline was discussed to focus on the required tasks and timeline to complete the Mitigation Plan. A participant survey and data collection job aids were distributed, including the Capability Assessment and hazard and mitigation survey. Specific issues including the need to gather, analyze and incorporate existing information that may be helpful to the planning effort such as mitigation or hazard-related plans, policies, programs, studies, reports and technical documentation were discussed. Following the presentations, Shelby County Emergency Management addressed questions raised by the attendees. These questions primarily related to the methodologies and data requirements for completing the risk and capability assessments		
Meeting	**Date**	**Attendees**
Mitigation Planning Public Kickoff Meeting	**05/12/2008**	**8**
The Mandatory Public meeting was held at 10:30 A.M. at the County Commission chambers following the monthly County Commission meeting. Notice of the meeting, inviting public comment on construction of a countywide mitigation plan was publicized in local newspapers and posted in public municipal buildings. The intent of the meetings was to educate the public on the mitigation planning process and to explain DMA2K multi-jurisdictional planning requirements. A presentation of the mitigation planning process, the concept of hazard mitigation and detailed the mitigation planning process to be followed was presented. A participant survey was distributed. Specific issues including the need to gather, analyze and incorporate existing information helpful to the planning effort such as mitigation or hazard-related plans, policies, programs, studies, reports and technical documentation were discussed. Following the presentations, Shelby County Emergency Management addressed questions raised by the attendees.		
Meeting	**Date**	**Attendees**
Mitigation Plan County Clerks Meeting	**05/28/08**	**11**
The EMA Director met with the Shelby County municipality clerks at their monthly meeting. An information packet containing a letter to Mayors, the jurisdiction MOU, the point of contact for each municipality, a list of the mitigation committee and a sample adoption resolution. Both municipal and citizen surveys were discussed and distributed along with a “in kind contribution’ worksheet. Binders containing the FEMA “how to” manuals were distributed and discussed.		
Meeting	**Date**	**Attendees**
Mitigation Plan Data Collection Workshop	**06/30/2008**	**45**

The purpose of this workshop was to review the status of the return of the surveys documenting hazards, critical facilities and capabilities. Additional surveys were distributed to new participants and a discussion of data requirements was conducted. Along with a review of data requirements. Municipalities were advised that individual interviews would be scheduled and they would be provided via email the required documentation needed for the interviews.		
Meetings	**Date**	**Attendees**
Mitigation Plan Individual Jurisdictions Data Collection Meetings	**Nov, Jan 09**	**54**
Meetings with the 13 jurisdictions at their County administration facility were conducted to gather any missing hazard, critical facilities and capabilities data. The attendees generally included the Mayor, County Clerk and Law Enforcement, Fire Service and public works representatives. In addition to mitigation related data jurisdiction plans, ordnances and reports were reviewed.		
Meeting	**Date**	**Attendees**
Mitigation Plan Jurisdictions Public Draft Plan Review Meeting	**Aug 21 2009**	**13**
A Public meeting was held to review the draft mitigation plan. The draft plan was earlier provided on the county website and copies were distributed via email to the municipal point of contact. A copy of the plan was also provided at the county courthouse and the public library. The public was advised of the meeting through the local media newspaper and notices at the courthouse and library. All comments were discussed and collected. The comments were reviewed by the steering committee and the plan was updated accordingly.		
Meeting	**Date**	**Attendees**
Mitigation Plan Jurisdictions Public Adoption Meetings		**Varies**
After AEMA and FEMA gave conditional approval to the updated mitigation plan Shelby County and the 13 participating municipalities adopted the Shelby County 2009 Multi-jurisdictional All Hazards Mitigation Plan at formally scheduled and conducted county commission and County/town council meetings. The final plan had been published on the county website and copies were provided to each municipality. Public comments were noted and the resolutions were captured for inclusion in the final plan before submission to AEMA and FEMA for final approval.		

3.8 INVOLVING THE PUBLIC IN MITIGATION PLANNING

3.8.1 Public Participation During Plan Update Construction

Multi-hazard Requirement §201.6(b): Multi-hazard Requirement §201.6(c)(1):
C. Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)

CRS Step 2: Involve The Public: The planning process must include an opportunity for the public, neighboring communities and local and regional agencies to comment on the plan during the drafting stage and before plan approval.

FMA Requirement §78.5(a): Description of the planning process and public involvement. Public involvement may include workshops, public meetings, or public hearings.

A fundamental component of Shelby County's community-based mitigation planning process involves public participation. Citizen involvement provided the Mitigation Committee with a greater understanding of local concerns and ensures a higher degree of mitigation success by developing community "buy-in" from those directly affected by the planning decisions of public officials. As citizens become more involved in decisions that affect their life and safety, they are more likely to gain a greater appreciation of the hazards present in their community and take personal steps to reduce the potential impact. Public awareness is a key component of an overall mitigation strategy aimed at making a home, neighborhood, school, business, or County safer from the potential effects of natural or man made hazards. Public input was sought using three methods: (1) surveys; (2) open public meetings; and (3) publicizing the availability of the draft hazard mitigation plan at government offices and an Internet site.

A Public Participation Survey was designed to capture information from Shelby County citizens. Surveys were provided at public meetings and County and municipal officials distributed additional copies of the survey. A County-level public "Kickoff" meeting was held to present the findings of the risk and capability assessments and to garner public input as to unique hazard concerns and mitigation actions that could be included in the Hazard Mitigation Plan. Attendees were provided informational handouts on mitigation planning. Current mitigation process and progress was discussed and the Public Participation Survey was distributed and explained. It was requested that citizens complete and return the surveys for committee review. A second Public meeting was held to review the draft mitigation plan. The draft plan was earlier provided on the county website and copies were distributed via email to the municipal point of contact. A copy of the plan was also provided at the county courthouse and the public library. The public was advised of the meeting through the local media newspaper and notices at the courthouse and library. All comments were discussed and collected. The comments were reviewed by the mitigation committee and the plan was updated accordingly.

3.8.2 Public Participation During Mitigation Plan Update Final Approval

Following conditional Plan approval by FEMA, municipality councils and county board public meetings are held. The completed plan was available for public review and comments both prior and during the regularly scheduled meetings.

During the formal adoption meetings an overview of the Plan, including purpose and content, was presented to the attendees, followed by a question and answer session. All comments were documented in the meeting minutes and provided to the Mitigation Planning Committee.

3.9 INVOLVING STAKEHOLDERS IN MITIGATION PLANNING

Multi-hazard Requirement §201.6(b): Multi-hazard Requirement §201.6(c)(1):
D. Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?

CRS Step 3: Coordinate with other Agencies: The planning process must include an opportunity for the public, neighboring communities and local and regional agencies to comment on the plan during the drafting stage and before plan approval.

FMA Requirement §78.5(a): Description of the planning process and public involvement. Public involvement may include workshops, public meetings, or public hearings

A range of stakeholders were invited and encouraged to participate in the development of the Hazard Mitigation Plan. Stakeholder involvement was encouraged through notifications and invitations to agencies and individuals to participate. These included representatives from Shelby County and each participating jurisdiction, LEPC, private sector businesses, voluntary agencies, citizens and surrounding counties. In addition to the Mitigation Committee meetings, Shelby County encouraged open and widespread participation in the mitigation planning process through the publication of newspaper notices promoting open public meetings. These media advertisements and survey instruments provided local officials, residents, businesses, academia, and other private interests in Shelby County the opportunity to be involved and offer input throughout the local mitigation planning process.

Shelby County encouraged continued stakeholder involvement by reminding all participating jurisdictions to make announcements and notifications consistent with their existing local plan adoption procedures. Many departments, agencies, and individuals became mini-stakeholders when contacted to provide information as the committee gathered data for capability and vulnerability assessments, these "external participants" played a vital role in plan completion.

3.10 REVIEW AND INCORPORATION OF EXISTING PLANS

Multi-hazard Requirement §201.6(b): Multi-hazard Requirement §201.6(c)(1): E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
CRS Step 3: Coordinate with other Agencies: The plan must also incorporate and document a review of existing studies, reports, and technical information into the community's needs, goals and plans for the area.

An important aspect of the planning process involved the review of existing federal, state, and local plans, studies, reports, and technical information, as well as the ordinances, regulations, and resolutions of each participating jurisdiction for incorporation into the Shelby County Hazard Mitigation Plan 2009 Update.

In some cases, these documents identified areas for needed mitigation actions; for example, review of the Shelby County Emergency Operations Plan made clear the need for updating and expanding this plan, and goals/actions were written to mitigate this weakness. After review of the ordinances, regulations, and resolutions of each jurisdiction, the Legal and Regulatory Capabilities Summary Table was prepared. This summary identified that some jurisdictions lacked ordinances and regulations to control hazards and reduce risk. By incorporating data from existing programs into this mitigation plan, the County was able to identify the relevance of mitigation planning to these existing programs.

3.10.1 Local Data

The Planning Committee reviewed and incorporated existing data and plans to support the mitigation plan. A number of electronic and hard copy documents were made available to support the planning process. These documents are listed below:

Table 3.7 Local Plan Incorporation
Jurisdictional ordinances, regulations, and resolutions
Municipal Comprehensive Plans
Shelby County Emergency Operations Plan
Shelby County Mass Clinic Plan
Shelby County Emergency Evacuation Plan
Shelby County Schools Emergency Response/Crisis Management Plan
Electric Risk Management Plan
Water and Reclamation Risk Management Plan
Water Utility Emergency Plan
SARA Title II facilities reporting documents and site emergency plans
Alabama One Call System Emergency Responder Handbook for Pipeline Emergencies
The Pipeline Group Emergency Response Manual
Local Community Emergency Action Plan for Hazardous Material Incidents
Shelby County Comprehensive Plan
Harpersville Comprehensive Plan
Pelham Comprehensive Plan
Alabaster Comprehensive Plan
Montevallo Comprehensive Plan

Table 3.7 Local Plan Incorporation
Chelsea Comprehensive Plan
Shelby County Flood Insurance Study
Shelby County 2004 Hazard Mitigation Plan
Jurisdictions Flood Ordinance Resolutions

3.10.2 Federal and State Data

State and federal response and homeland security documents were referenced to ensure Shelby County's goals supported these plans and promoted compliance with requirements. The State of Alabama Hazard Mitigation Plan formed the basis for identifying and analyzing the natural hazards and man-made hazards that could affect Shelby County and participating jurisdictions. The Shelby County Emergency Operations Plan provided insight into the jurisdictional response to disasters and was used to develop and validate mitigation goals, objectives, and actions Federal and State data was collected and used throughout the mitigation process including:

Table 3.8 State and Federal Plan Incorporation
State of Alabama Hazard Mitigation Plan
Governor's Office of Homeland Security "A Strategy for Alabama"
A NATION PREPARED: FEMA Strategic Plan Fiscal Years 2003-2008
National Incident Management System
U.S. Department of Homeland Security National Response Plan (Base Plan and Appendices)
FEMA National Flood Insurance: Program Description
National Weather Service: Operations Present and Future
FEMA State and Local Mitigation Planning How-to Guides (386-1 to 386-4, and 386-7)
US Census data
FEMA and local disasters reports
Long range transportation plans/growth projections from the Regional Planning Commission
Flood Insurance Studies and Flood Insurance Rate Maps
Dam Inundation Studies
Data from the National Weather Service (NWS)
Data from the National Oceanic and Atmospheric Administration (NOAA)
2002 Natural Hazard Mitigation Plan for Shelby County
Department of Natural Resources
Alabama Data Center demographic and economic reports
Public laws and other programs such as the NFIP were examined to complete this Plan.

These documents, on file at Shelby County Emergency Management Agency in electronic or hard copy format, provided valuable guidance in the planning process.

3.11 PLANNING FOR NATURAL HAZARDS

3.11.1 Alabama State Mitigation Plan

During the 2007 State of Alabama plan update process, it was determined that instead of identifying hurricanes as a single hazard, it would be divided into two separate hazards that are associated with hurricanes: flooding (both by rainfall and by storm surge) and high winds. Tornados and windstorms are also included in the high wind profile section and risk assessment.

All information from the hurricane profile section of the 2004 Plan is now included as part of the profiles for flooding and high winds. At the request of both AEMA and the National Weather Service, tsunamis were added to the list of hazards to be profiled. In addition, it was determined that hazardous materials and manmade hazards would not be considered a part of the scope of this update and they were removed from the plan. This was done with SHMT and FEMA concurrence in April 2004.

3.11.2 Shelby County Mitigation Plan

The Shelby County Mitigation Committee decided to follow the State of Alabama Plan in the identification and profiling of Natural Hazards. The State divided Tropical Storms into two hazard categories of flooding and high winds. Shelby County decided to follow this process also with thunderstorms and divided that weather event into flooding and high wind.

3.12 PLANNING FOR MANMADE HAZARDS

The Pre Disaster Mitigation Program (PDM) is subject to the availability of appropriation funding, as well as any directive or restriction made with respect to such funds. The PDM program was authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). PDM is designed to assist States and communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures, while also reducing reliance on Federal funding from actual disaster declarations. PDM funds must be used primarily to support mitigation activities that address natural hazards, although hazard mitigation projects and plans may also address hazards caused by manmade events. PDM guidance also identifies as ineligible projects for PDM funding as projects that "solely address a manmade hazard".

It has been interpreted that PDM funds cannot be used to include manmade hazards in a mitigation plan because that may be a violation of the HMA Program Guidance Section 2.1.3.4.2 "Duplication of Funds". As a result, in order avoid any conflict, Shelby County has employed the following methodology to include manmade hazards in this Multi-jurisdictional, All Hazards Mitigation Plan 2009 update.

- Manmade Hazard information has been gathered by the plan participants separate and apart from the Natural Hazard information
- The associated time, materials and equipment time to gather Manmade Hazard information by the participants is not included in the "In Kind Contribution" time associated with Natural Hazard mitigation effort
- Manmade Hazard information was complied by the Shelby County Emergency Management staff for inclusion in the plan and the associated time, materials and equipment time was not included with the "In Kind Contribution" time allocated to the Natural Hazard mitigation effort
- The contracted consultant agreed to include manmade hazards into this plan at no additional charge to the county, the state or FEMA

Based on the above methodology Shelby County is including a Pandemic event and manmade hazards hazardous materials, terrorist events and urban fires in the Shelby County Multi-jurisdictional, All Hazards Mitigation Plan Update

3.13 PREVIOUS PLAN REVIEW (2004)

Multi-hazard Requirement §201.6(b): Multi-hazard Requirement §201.6(c)(1):
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?

CRS Step 3: Coordinate with other Agencies: The plan must also incorporate and document a review of existing studies, reports, and technical information into the community's needs, goals and plans for the area.

The Shelby County Hazard Mitigation Committee extensively reviewed each Chapter of the 2004 Shelby County Hazard Mitigation Plan. Following are the synopsis of each section review and the revisions incorporated in this 2009 Plan update.

3.13.1 2004 Chapter 1 Review: Background and Purposes of the Plan

This Section "Section 1 – Introduction", replaces this Chapter 1. This section has been updated and enhanced in the 2009 plan update to include more detailed information. The information added is related to mitigation planning legislative information (DMK2000, etc), the Flood Management Assistance Program, (FMA), the National Flood Insurance Program (NFIP) and related grant information. The grant information includes descriptions of Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL) programs that address repetitive loss properties, which are now required by the Federal Emergency Management Agency (FEMA) to be documented in Hazard Mitigation Plans. This section also includes the Plan purpose, scope, authority and outline.

3.13.2 2004 Chapter 2 Review: County Profile

This Section 2 – Jurisdiction Profile replaces the 2004 Chapter 2 "Review: County Profile". This 2009 plan update has been enhanced by adding more detailed historic, population, demographic, economic, geology, infrastructure, and land usage information. Most of the information is still based on the 2000 census, however in some cases data has been extrapolated to reflect more current positions. In addition, municipal profiles have been developed for each participating jurisdiction and are included in the 2009 Individual Mitigation Action Plan Annex along with their capabilities and mitigation strategies and actions.

3.13.3 2004 Chapter 3 Review: Planning Process

Section 3 – Planning Process, has replaced Chapter 3 Review: Planning Process in the 2004 mitigation Plan. This section has been significantly enhanced in this 2009 plan update to meet the 2008 FEMA guidance and crosswalk requirements. The enhancements included added information in the areas of plan including the planning process overview, multi-jurisdiction participation, addition of agencies and departments to the mitigation planning team. The number of meetings were increased which enhanced both public and stakeholder participation. The number of plans reviewed and incorporated was also increased.

Also added in this section is this review of the previous plan (2004), adoption information, natural hazards planning, manmade hazards planning and this section, which identifies differences and enhancement over the 2004 plan.

3.13.4 2004 Chapter 4 Review: Risk Assessment

This is now Section 4 – Risk Assessment - Hazard Identification, Section 5 Risk Assessment – Hazard Profiles and Section 6 Risk Assessment – Assessing Vulnerability.

Section 4 – Risk Assessment Hazard Identification has been significantly enhanced to include all natural hazards identified in the State plan and manmade hazards hazardous materials incident, Illegal Methamphetamine laboratories, Terrorism and Urban Fires Also included is the Pandemic hazard. The below table documents the hazards included in the 2004 plan and their disposition in Section 4, Section 5 and Section 6 of the 2009 mitigation plan update.

Table 3.9 2004 Mitigation Plan Hazards/2009 Updated Plan Hazard Status				
2009 Hazard	**Exp**	**Risk/Threat**	**2004 Plan Status**	**2009 Updated Plan Status**
Drought	Yes	Moderate Slight	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Earthquake	Yes	Low Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Extreme Temperature	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Flooding	Yes	Moderate High	Identified as flooding by thunderstorms, Hurricanes Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Dam/Levee Failure, profiled and detailed vulnerability assessment
Hail	Yes	Moderate Minimal	Identified under Thunderstorms	Identified/profiled some vulnerability assessment
High Winds	Yes	High High	Identified/Profiled as Tornadoes Thunderstorms, Hurricanes, Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Tornadoes, profiled and detailed vulnerability assessment
Ice/Snow Storms	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Land Subsidence	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Landslides Mudslides	Yes	Low Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Lightning	Yes	Moderate Low	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Wildfires	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Hazardous Materials	Yes	Moderate High	Not Included	Identified/profiled detailed vulnerability assessment
Illegal Meth Labs	Yes	Moderate Slight	Not Included	Identified/profiled some vulnerability assessment
Terrorism	Yes	Slight Moderate	Not Included	Identified/profiled some vulnerability assessment
Urban Fires	Yes	Moderate Moderate	Not Included	Identified/profiled some vulnerability assessment
Pandemic	Yes	Low High	Not Included	Identified/profiled some vulnerability assessment
Exp = Exposure, Risk = Probability of Occurrence, Threat = Impact on loss of life and property damage				

Section 5 "Hazard profiles", is an additional section that replaces the profiling of hazards in Chapter 4 Review: Risk Assessment 2004 plan. All hazards identified in the state plan are profiled except for tsunami. This significant enhancement over the 2004 plan, documents, in detail, possible event location, extent, future probability, historic occurrences and historic occurrence discussions. In addition a detailed listing of all occurrences is included in the Supporting Annex.

Section 6 Risk Assessment-Assessing Vulnerability is an additional section that replaces the profiling of hazards in Chapter 4 Review: Risk Assessment 2004 plan. This significant enhancement documents critical facilities by jurisdiction, identifies an inventory of current and future "in hazard facilities and populations" by jurisdiction, contains detailed vulnerability and loss estimates for primary hazards flooding, high winds and hazardous materials by jurisdiction. Also included in this section are impact/damage assessments for secondary hazards that may have a countywide impact. The last item in this section is a discussion of future land use in Shelby County. In addition to the data in this section detailed critical facilities information is included in the Supporting Annex including jurisdiction maps.

3.13.5 2004 Chapter 5 Review: Mitigation Strategies

Chapter 5 is now Section 7 and now contains a comprehensive capabilities assessment of Shelby County. Capabilities of individual participating jurisdictions are also included in an Individual Mitigation Action Plan for each jurisdiction. The mitigation strategy for the 2009 plan update has been significantly enhanced. Countywide Mitigation goals and objectives and action items were adopted by each participating jurisdiction. In addition each participating municipality developed it's own Mitigation Action Plan that can be found in the Individual Mitigation Plan Annex.

The 2009 plan update also now contains added components, which include identifying NFIP status, repetitive loss properties and prioritizing mitigation actions using the "STAPLEE" methodology. There are now new actions addressing NFIP, protection of existing and new structures.

The mitigation actions identified in the 2004 plan have been extensively reviewed. The effectiveness of the actions implemented is documented in this section. The actions not implemented are either carried forward to the updated plan or have been eliminated as not feasible or no longer an effective action. The table below identifies the mitigation items in the 2004 plan and their current disposition and mitigation effectiveness

Table 3.10 Mitigation Action Review

Action and Description	Status	Mitigation Effectiveness
1.1.1 Maintain up-to-date comprehensive plans for all municipalities.	In Progress	Medium
1.1.2 Integrate the findings and recommendations of this plan into the comprehensive plan updates for Shelby County, Alabaster, Calera, Chelsea, Columbiana, Harpersville, Helena, Indian Springs, Montevallo, and Pelham.	In Progress, as plans are updated	Medium
1.1.3 Review and amend existing planning documents to be certain the vulnerability and environmental suitability of lands for future development are clearly addressed; local plans should address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	In Progress	Medium

Table 3.10 Mitigation Action Review		
Action and Description	Status	Mitigation Effectiveness
1.2.1 Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas, disaster events, and a comprehensive inventory of critical facilities within all jurisdictions.	In Progress	High
1.2.2 Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	In Progress	
1.3.1 Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.	In Progress	High
1.3.2 Perform a detailed feasibility study of the Stratford Place and Saddle Run subdivisions in Pelham to determine flooding causes and feasible solutions and funding alternatives.	Completed	
1.4.1 Consider large lot size restrictions on flood-prone areas designated on Flood Insurance Rate Maps.	Completed	Medium
1.4.2 Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Completed	Medium
1.5.1 Train local flood plain managers through programs offered through the State Flood Plain Manager and FEMA's training center in Emmitsburg, Maryland.	In Progress	Medium
1.5.2 Maintain a library of technical assistance and guidance materials to support the local flood plain manager.	Complete	Medium
1.5.3 Obtain membership for local flood plain managers in the Association of State Flood Plain Managers.	In Progress	Medium
1.5.4 Evaluate the effectiveness of higher regulatory standards, such as additional building elevation and limitation of fill within flood plains, to be included in local flood plain management regulations.	In Progress	Medium
1.5.5 Enact flood hazard prevention ordinances and establish Chelsea, Columbiana, Harpersville, and Wilton as regular members of the NFIP.	In Progress	High
1.6.1 Evaluate building code standards for roof construction to assure protection against wind damage from hurricanes, tornadoes, and windstorms; require installation of hurricane clips.	In progress	High
1.6.2 Consider technical codes to require assessments in areas of quarries or where water systems have high-capacity wells.	In progress	Medium
1.7.1 Enact local ordinances to require community storm shelters within sizeable mobile home parks and subdivisions.	Delayed	
1.7.2 Require the construction of safe rooms within new public buildings, such as schools, libraries, community centers, and other public buildings where feasible.	Delayed	
1.7.3 Continue program to subsidize safe room construction in existing homes.	In Progress	High
1.7.4 Construct freestanding public safe rooms in vulnerable locations.	In Progress	
1.8.1 Apply for and maintain membership in the CRS Program.		Medium
2.1.1 Provide technical assistance to owners of pre-FIRM buildings to advise on available retrofits to protect against flood damage.	In Progress	Medium
2.1.2 Seek funding sources, such as Community Development Block Grant funds, to assist low income home owners with building retrofits to protect against flooding	Delayed	
2.2.1 Promote the purchase of insurance coverage for flooding and sinkhole damages in high-risk areas by property owners and renters.	In Progress	Low

Table 3.10 Mitigation Action Review		
Action and Description	**Status**	**Mitigation Effectiveness**
3.1.1 Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through trade publications and media announcements.	In Progress	Medium
3.2.1 Establish an annual Severe Weather Awareness Day	In Progress	
3.4.1 Obtain free publications from FEMA, NWS, USGS, and other federal and state agencies and deposit these materials with local libraries.	In Progress	Medium
3.4.2 Maintain local library repositories with the latest available publications.	In Progress	Medium
3.5.1 Distribute hazard mitigation brochures to area schools for student distribution.	In Progress	Medium
4.1.1 Investigate the feasibility of a land trust to acquire open space, purchase easements, and accept donations of lands within environmentally significant and vulnerable locations.	Completed Unworkable at this time	
4.2.1 Enact and enforce dumping regulations.	In Progress	Low
4.2.2 Enact and enforce erosion and sedimentation control regulations.	In Progress	
4.3.1 Seek technical assistance through the Alabama Cooperative Extension System with Best Management Practices (BMP) for channel/drainage system maintenance.	In Progress	
5.1.1 Install new outdoor warning systems.	In Progress	High
5.1.2 Install a rapid notification telephone system.	Delayed	
5.2.1 Support the Alabama Skywarn Foundation efforts to distribute weather radios to low income households, especially in rural areas outside of siren coverage areas.	In Progress	High
5.2.2 Promote the use of weather radios in households and businesses.	In Progress	High
6.1.1 Prepare/implement operating procedures for drainage system maintenance.	In Progress	High

3.13.6 2004 Chapter 6: Community Mitigation Action Programs

This chapter has been included in Section 6 of the updated plan

3.13.7 2004 Chapter 7: Plan Maintenance

This chapter is now Section 8 in the 2009 plan update. This section has been enhanced in the 2009-updated plan to expand documenting and describing of monitoring, maintenance and updating. This includes aggressive methodologies to include public participation in plan maintenance and updating. The current mitigation committee extensively reviewed the 2004 plan maintenance and updating methodologies and processes. Documented in this section are the status of the 2004 methodologies and their effectiveness.

Table 3.11 Plan Maintenance Effectiveness Review		
Plan Maintenance Component	**Status**	**Effectiveness**
Annually Evaluate the effectiveness of previously-implemented mitigation actions;	Review annually	Medium
Annually Explain why any actions are not completed or behind schedule;	Annually	Medium
Annually Address changing land use patterns and new developments; and,	As required	
Annually Identify any changes in risk assessment and/or risk vulnerability.	Risk Assessment/vulnerability study made each year	Medium

Table 3.11 Plan Maintenance Effectiveness Review		
Plan Maintenance Component	**Status**	**Effectiveness**
For continued public involvement a hard copy of the plan will be available for viewing at all appropriate agencies throughout the county; including, at a minimum, the Shelby County EMA Office, the office of the Shelby County Commission, the offices of the mayors, and the main public library. After adoption, a notice in the newspaper will inform the public that the plan may be viewed at these locations.	Posted to County Web site; each municipality provide hard copy for files	Medium
Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the HMPC.	Public meeting held as necessary	
If any of the jurisdictions develop future plans that pertain to items that may have an affect on natural hazard planning, the findings of this plan would likewise need to be incorporated into that community' s plan.	Updated with 5-year plan	Medium
At the end of the five-year cycle of the Action Program, the committee will oversee a major update to the plan that follows the Federal planning criteria in effect at the time of the update.	Plan updated every 5 years	High

SECTION 4
RISK ASSESSMENT – HAZARD IDENTIFICATION

4.1 INTRODUCTION

According to the Federal Emergency Management Agency (FEMA) Guidance 386-2, "risk assessment is the process of measuring the potential loss of life, personal injury, economic injury and property damage resulting from natural hazards by assessing the vulnerability of people, buildings and infrastructure to natural and manmade hazards**.** The risk assessment process used for this Updated Plan is consistent with the process and steps presented in the Federal Emergency Management Agency (FEMA) 386-2, State and Local Mitigation Planning How-to-Guide, Understanding Your Risks – Identifying Hazards and Estimating Losses (FEMA, 2001).

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.

The primary source for identifying manmade hazards was the Department of Homeland Security (DHS) website and the FEMA guide "Integrating Manmade Hazards into Mitigation Planning**".**

4.1.1 2009 Plan Update

Section 4 – Risk Assessment Hazard Identification has been significantly enhanced to include all natural hazards identified in the State plan and manmade hazards hazardous materials incident, Illegal Methamphetamine laboratories, Terrorism and Urban Fires Also included is the Pandemic hazard. This section contains a comprehensive description of the hazards including in many cases pictures or figures that assist in identifying the hazard.

The below table documents the hazards included in the 2004 plan and their disposition in Section 4, Section 5 and Section 6 of the 2009 mitigation plan update.

Table 4.1 2004 Mitigation Plan Hazards/2009 Updated Plan Hazard Status

2009 Hazard	Exp	Risk/Threat	2004 Plan Status	2009 Updated Plan Status
Drought	Yes	Moderate Slight	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Earthquake	Yes	Low Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Extreme Temperature	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Flooding	Yes	Moderate High	Identified as flooding by thunderstorms, Hurricanes Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Dam/Levee Failure, profiled and detailed vulnerability assessment
Hail	Yes	Moderate Minimal	Identified under Thunderstorms	Identified/profiled some vulnerability assessment

High Winds	Yes	High High	Identified/Profiled as Tornadoes Thunderstorms, Hurricanes, Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Tornadoes, profiled and detailed vulnerability assessment
Ice/Snow Storms	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Land Subsidence	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Landslides Mudslides	Yes	Low Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Lightning	Yes	Moderate Low	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Wildfires	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Hazardous Materials	Yes	Moderate High	Not Included	Identified/profiled detailed vulnerability assessment
Illegal Meth Labs	Yes	Moderate Slight	Not Included	Identified/profiled some vulnerability assessment
Terrorism	Yes	Slight Moderate	Not Included	Identified/profiled some vulnerability assessment
Urban Fires	Yes	Moderate Moderate	Not Included	Identified/profiled some vulnerability assessment
Pandemic	Yes	Low High	Not Included	Identified/profiled some vulnerability assessment
Exp = Exposure, Risk = Probability of Occurrence, Threat = Impact on loss of life and property damage				

4.2 HAZARD IDENTIFICATION METHODOLOGY

Multi-hazard Requirement §201.6(c)(2)(i): The risk assessment shall include a description of the type of all natural hazards that can affect the jurisdiction.
A. Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?

CRS Step 4: Assess the Hazard: CRS requires at the minimum that the flood hazard be identified including addressing the repetitive loss areas. However, additional credit can be earned for including discussion of all other natural hazards.

FMA Requirement §78.5(b): Description of the existing flood hazard and identification of the flood risk, including estimates of the number and type of structures at risk, repetitive loss properties, and the extent of flood depth and damage potential

FEMA's current regulations only require identification, profiling and evaluation of natural hazards that threaten lives, property, and other assets. However, FEMA strongly suggests including manmade hazards in jurisdiction hazard mitigation plans.

Shelby County is vulnerable to a wide array of hazards that threaten life and property. The Hazard Identification section provides background information for these hazards. It is important that all natural hazards be initially considered for relevance in advancing through the hazard mitigation planning process. Subsequent sections of the updated Plan—the Hazard Profiles and the Vulnerability Assessment—address the hazards of specific concern to the County. The Shelby County Hazard Mitigation Committee considered and evaluated all natural hazards in terms of their potential risk to Shelby County and its citizens.

4.3 SHELBY COUNTY HAZARD SUMMARY

Shelby County has been included in a total of 11 federal disaster declarations from 1974 through 2003. These declarations are listed in Table 4-2, from FEMA, Region IV. All of these events did not necessarily occur within the boundaries of Shelby County. When major damage from a natural disaster occurs, FEMA, as a matter of practice, includes a "buffer" area of adjoining counties in the event it later determines the damage was more widespread. Specific instances of this practice are discussed as they are encountered in the following hazard profiles.

Table 4.2 Shelby County Disaster Declarations

Disaster Number	Disaster Type	Date	Comments
388	Flood	06/01/73	
3007	Tornado	01/20/75	
458	Flood	03/14/75	
3045	Drought	07/20/77	
578	Flood	04/18/79	
695	Severe Storm	12/13/83	
856	Sever Storm	02/17/1990	
3096	Ice/Snow	03/15/93	
1019	Severe Storm	03/30/94	
2278	Fire	09/18/99	
1442	Severe Storm	11/14/02	

In addition to the federally declared disasters for Shelby County, a listing of disasters the county has experienced since 1950 are listed in The Table below.

Table 4.3 Shelby County Other Major Disaster Events

Type	Year	Description
Flooding	1964	Flooding occurred along Buck Creek in Alabaster and in Green Park South Trailer Park in Pelham
Flooding	1993	Flooded Green Park South Trailer Park and other communities in North Shelby County
Flooding	1993	Chandalar South bridge closed and damaged
Flooding	2002	Flooding along Hwy 261
Hurricane	10/4/1995	Opal caused flooding
Severe Wind	1995	Scattered homes throughout the county were damaged
Subsidence	12/1972	Large sinkhole developed in Calera 300’ in diameter, 100 ft in depth
Tornado	4/27/1973	A F4 tornado path up highway 25, 1 fatality, 63 injuries, 25 million in property damage
Tornado	2/10/90	Damage at Plantation Pipe tanks in Pelham
Tornado	3/27/1994	A F2 tornado in North Selby County 53 injuries, 5M in damage to several homes
Tornado	1999	A tornado hit Pelham along 119 with extensive damage
Wildfires	1988	On Shades Crest Road
Winter Storm	1986	3î-4î of snow cause power outages
Winter Storm	1981	Ice storm damage trees and power lines lost power for 5-7 days

Table 4.3 Shelby County Other Major Disaster Events

Type	Year	Description
Winter Storm	3/5/1993	Snow up to 18”

4.4 NATURAL HAZARDS IDENTIFICATION

4.4.1 Drought Identification

The National Weather Service (NWS) Climate Prediction Center (CPC) defines drought as a deficiency of moisture that results in adverse impact on people, animals, or vegetation over a sizeable area. Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In general, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.

Figure 4.1: Depiction of Drought

Source: NWS

Other climatic factors, such as high temperatures, prolonged high winds and low relative humidity, can aggravate the severity of a drought. These conditions are caused by anomalous weather patterns when shifts in the jet stream block storm systems from reaching an area. As a result, large high-pressure cells may dominate a region for a prolonged period, thus reducing precipitation. According to Institute for Catastrophic Loss Reduction (ICLR), this natural hazard differs from others in several ways. First, there is no universally accepted definition of drought. Second, drought onset and recovery are usually slow. Third, droughts also can cover a much larger area and last many times longer than most other natural hazards. Fourth, they are part of the natural climate variability. Due to these differences many communities have neglected to include this hazard in their disaster management plans (ICLR, 2005). Unlike hurricanes and flooding, a drought crisis is usually not an "instantaneous" catastrophe; therefore, some communities neglect to include drought in their disaster management plans (Shallcross, 2008).

According to the Federal Emergency Management Agency (FEMA), the National Drought Mitigation Center (NDMC) and the NWS, there are four ways that drought can be defined:

<u>Meteorological</u> drought is a measure of departure of precipitation from normal. It is defined solely on the degree of dryness. Due to climatic differences, what might be considered as a drought in one location of the country may not be considered as a drought in another location.

<u>Agricultural</u> drought links various characteristics of meteorological drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced ground water or reservoir levels, etc. 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.

<u>Hydrological</u> drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply and 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 some 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 (e.g., 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.

4.4.2 Earthquake Identification

An earthquake is sudden motion or trembling caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth's crust." These rigid plates, known as tectonic plates, are some 50 to 60 miles in thickness and move slowly and continuously over the earth's interior. The plates meet along their edges, where they move away, past or under each other at rates varying from less than a fraction of an inch up to five inches per year. While this sounds small, at a rate of two inches per year, a distance of 30 miles would be covered in approximately one million years (FEMA, 1997). The tectonic plates continually bump, slide, catch, and hold as they move past each other which causes stress to accumulate along faults. When this stress exceeds the elastic limit of the rock, an earthquake occurs, immediately causing sudden ground motion and seismic activity.

Figure 4.2: Earthquake Example

Source: University of Colorado

The vibration or shaking of the ground during an earthquake is described by ground motion. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. The following are the two kinds of seismic waves:

P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion), with particle motion in the same direction as wave travel. They move through the earth at approximately 15,000 mph.

S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side-to-side (horizontal motion) due to motion at right angles to the direction of wave travel. Un-reinforced buildings are more easily damaged by S waves.

There are also two kinds of surface waves, Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

The location of an earthquake is commonly described by its focal depth and the geographic position of its epicenter. The focal depth of an earthquake is the depth from the Earth's surface to the region where an earthquake's energy originates (the focus or hypocenter). The epicenter of an earthquake is the point on the Earth's surface directly above the hypocenter (Shedlock and

Pakiser, 1997). Earthquakes usually occur without warning and their effects can impact areas a great distance from the epicenter (FEMA, 2001).

4.4.3 Extreme Temperatures Identification

Extreme temperatures include both cold and hot events, which can have a significant impact to human health, commercial/agricultural businesses and primary and secondary effects on infrastructure (e.g., burst pipes and power failure). Based on what the population is accustomed to, what constitutes "extreme cold" or "extreme heat" varies across different areas of the country**.**

4.4.3.1 Extreme Heat

Temperatures that hover 10 degrees or more above the average high temperature for a region and last for several weeks are defined as extreme heat by the CDC. A heat wave is a prolonged period of excessively hot weather, which may be accompanied by high humidity. There is no universal definition of a heat wave because the term is relative to the usual weather in the area. Temperatures that people from a hotter climate consider normal can be termed a heat wave in a cooler area if they are outside the normal climate pattern for that area. Also, the term is applied both to routine weather variations and to extraordinary spells of heat, which may occur only once a century.

Figure 4.3: Depiction of Extreme Heat

Source: State of Alabama Mitigation Plan

4.4.3.2 Extreme Cold

What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered extreme cold. Extreme cold events are when temperatures drop well below normal in an area. Extremely cold temperatures often accompany a winter storm, so individuals may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car crashes and falls on the ice, individuals may also face indoor hazards. Many homes will be too cold—either due to a power failure or because the heating system is not adequate for the weather. As people use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases. Exposure to cold temperatures can lead to serious or life-threatening health problems such as hypothermia, cold stress, frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes.

4.4.4 Flooding Identification

Flooding is an overflowing of water onto normally dry land and is one of the most significant and costly of natural disasters. The principle types of floods are dam or levee failure, flash floods, riverine floods and storm surge flooding.

Dam/Levee Failure floods usually result from intense rainfall or snow melt that produces water quantities that breach dams or levees because of faulty design, construction, or operational inadequacies. Levee failures also are a result of storm surge in coastal areas.

Flash floods result from quickly rising streams after heavy rain or rapid snowmelt, ice jams (ice that accumulates at a natural or human-made obstruction and slows the flow of water) or the absence or overflow of storm sewers in a relatively small drainage area and produce localized floods of great volume and short duration. Flash floods usually result from tropical storm/hurricane or thunderstorm weather events.

Riverine floods result from precipitation or snowmelt over large areas and occur in river systems and tributaries that may drain large geographic areas. The precipitation usually results from tropical storm/hurricane or thunderstorm weather events.

Figure 4.4: Depiction of a Flood

Source: NOAA

Storm Surge Flooding resulting from tropical storm/ hurricane weather events.

Other flood related Definitions:

Floodplain - Any land area susceptible to inundation by floodwaters from any source.

100/500 -Year Floodplain is defined as the area adjoining a river, stream, or watercourse covered by water in the event of a 100/500-year flood.

"The term "100-year flood" is misleading. It is not a flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1 percent 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. The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. A structure located within a special flood hazard area shown on a map has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. One hundred year floodplains have been identified, mapped and used for further analysis using the county's Geographic Information System (GIS).

The 500-year standard (0.2-percent-annual-chance) follows the same logic as the 100- year flood definition."

Floodway - The channel of a river or watercourse and the adjacent areas that must be reserved in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than one foot.

Flood Fringe - That portion of the floodplain outside the floodway that is inundated by floodwaters in which encroachment is permissible.

Encroachment - Any man-made obstruction in the floodplain that displaces the natural passage of floodwaters.

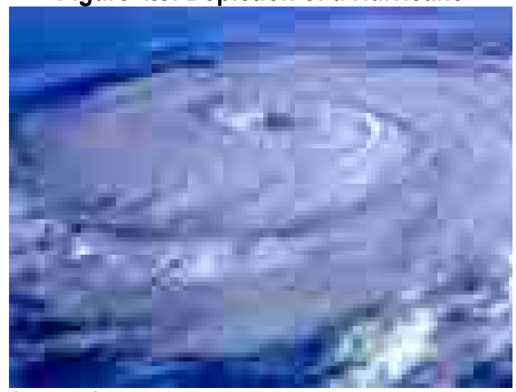
Surcharge - An increase in flood elevation due to destruction of the floodplain that reduces conveyance capacity.

Described below are the major causes of natural hazard flooding: tropical storms/hurricanes, thunderstorms and storm surge.

4.4.4.1 Flooding Tropical Storm/Hurricane Identification

As a tropical storm/hurricane nears land, it usually brings torrential rains that can last for days. These torrential rains cause dam/levee failure, riverine and flash flooding**.**

Figure 4.5: Depiction of a Hurricane



Source: NOAA

A Tropical Storm is an organized system of strong thunderstorms with maximum sustained winds between 34 to 63 knots (39 to 73 mph) (FEMA, 2007). In time, the storm becomes more organized and begins to become more circular in shape, resembling a hurricane.

A Hurricane is an intense tropical cyclone with wind speeds reaching a minimum constant speed of 74 mph (FEMA, 2004). It is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. They are caused by the atmospheric instability created by the collision of warm air with cooler air. They form in the warm waters of tropical and sub-tropical oceans, seas, or Gulf of Mexico (NWS, 2000). Hurricanes begin when areas of low atmospheric pressure move off the western coast of Africa and into the Atlantic, where they grow and intensify in the moisture-laden air above the warm tropical ocean. Air moves toward these atmospheric lows from all directions and circulates clock-wise under the influence of the Coriolis effect, thereby initiating rotation in the converging wind fields. When these hot, moist air masses meet, they rise up into the atmosphere above the low-pressure area, potentially establishing a self-reinforcing feedback system.

4.4.4.2 Flooding Thunderstorm Identification

Figure 4.6: Depiction of a Thunderstorm

Source NOAA

Thunderstorms are associated with heavy rains that can lead to riverine, dam/levee failure and flash flooding. Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air (such as a sea breeze, a warm and cold front, or a mountain). Thunderstorms may occur singly, in clusters, or in lines. The most severe weather occurs when a single thunderstorm affects one location for an extended time.

Thunderstorms affect relatively small-localized areas. Thunderstorms can strike in all regions of the U.S.; however, they are most common in the central and southern states. The atmospheric conditions in these regions of the country are most ideal for generating these powerful storms (NVRC, 2006). More than 100,000 thunderstorms occur each year in the U.S., however, only about 10% are classified as severe.

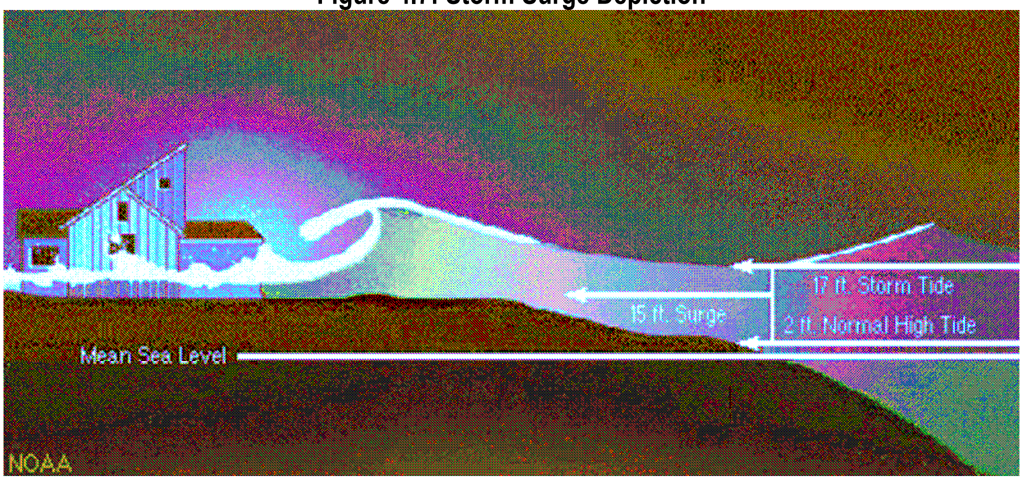
4.4.4.3 Flooding Storm Surge Identification

Storm Surge is water that is pushed toward the shore by the force of the winds swirling around a tropical storm or hurricane. This advancing surge combines with the normal tides to raise the water level. Wind driven waves are superimposed on the storm surge. A rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides. The storm surge creates a large dome of water, often 50 to 100 miles wide that sweeps across the coastline near where the hurricane makes landfall.

The stronger the hurricane and the shallower the offshore water, the higher the storm surge will be (NWS, 2000). Storm surges are particularly damaging when they occur during a high tide, combining the effects of the surge and the tide. As the water slams into shoreline structures, even well built structures quickly can be demolished. As the waters move inland, carrying debris, it can cause further damage.

Because storm surge is produced by the high winds circulating a tropical/storm or hurricane the resulting storm surge can occur from any direction where the hurricane is over the ocean or large bodies of waters such as bays.

Figure 4.7: Storm Surge Depiction

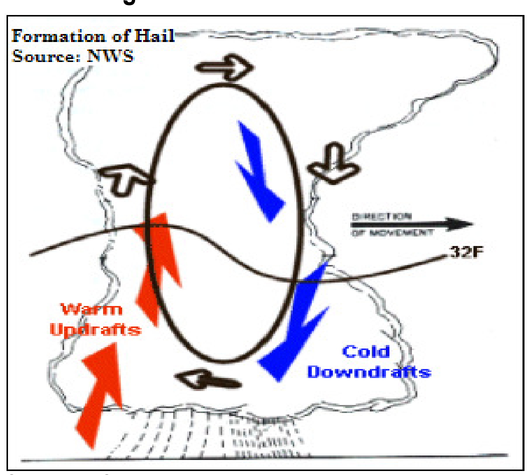


Source: NOAA

4.4.5 Hail Identification

Hailstones are products of thunderstorms and are developed by downdrafts and updrafts that develop inside cumulonimbus clouds of a thunderstorm, where super cooled water droplets exist. The transformation of droplets to ice requires a temperature below 32 degrees and a catalyst in the form of tiny particles of solid matter, or freezing nuclei. Continued deposits of super cooled water cause the ice crystals to grow into hailstones.

Figure 4.8: Formation of Hail



Source: NWS

The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the Earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving the hailstones more time to increase in size. Hailstones vary widely in size. Penny size or larger hail is considered severe**.**

Hailstorms occur most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation**.**

4.4.6 High Winds Identification

Wind is defined as the motion of air relative to the earth's surface. In the mainland United States the mean annual wind speed is reported to be eight to 12 mph, with frequent speeds of 50 mph and occasional wind speeds greater than 70 mph. High Winds are generally the result of thunderstorms, tornadoes and tropical storms/hurricanes.

4.4.6.1 High Winds Tropical Storm/Hurricane Identification

Tropical Storm/Hurricane Wind Damage is the force of wind that can quickly decimate the tree population, down power lines and utility poles, knock over signs, and damage/destroy homes and buildings. Flying debris can also cause damage to both structures and the general population. When hurricanes first make landfall, it is common for tornadoes to form.

A Tropical Storm is an organized system of strong thunderstorms with maximum sustained winds between 34 to 63 knots (39 to 73 mph) (FEMA, 2007). In time, the storm becomes more organized and begins to become more circular in shape, resembling a hurricane.

A Hurricane is an intense tropical cyclone with wind speeds reaching a minimum constant speed of 74 mph (FEMA, 2004). It is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. They are caused by the atmospheric instability created by the collision of warm air with cooler air. They form in the warm waters of tropical and sub-tropical oceans, seas, or Gulf of Mexico (NWS, 2000). Hurricanes begin when areas of low atmospheric pressure move off the western coast of Africa and into the Atlantic, where they grow and intensify in the moisture-laden air above the warm tropical ocean. Air moves toward these atmospheric lows from all directions and circulates clock-wise under the influence of the Coriolis Effect, thereby initiating rotation in the converging wind fields. When these hot, moist air masses meet, they rise up into the atmosphere above the low-pressure area, potentially establishing a self-reinforcing feedback system.

4.4.6.2 High Winds Thunderstorm Identification

High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds from high or low-pressure systems. Thunderstorms produce downdraft winds, which are defined as a small-scale column of air that rapidly sinks toward the ground, usually accompanied by precipitation as in a shower or thunderstorm. A downburst is the result of a strong downdraft. The downburst can cause damage equivalent to a tornado. The outflow of cool or colder air can also create damaging winds at or near the surface. As these downburst winds spread out they are often referred to as straight-line winds, which exceed 130 miles per hour.

Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air (such as a sea breeze, a warm and cold front, or a mountain). Thunderstorms usually occur singly and affect relatively small-localized areas; however, they may in clusters, or in lines. The most severe weather occurs when a single thunderstorm affects one location for an extended time.

4.4.6.3 High Winds Tornado Identification

Tornadoes are violent windstorms characterized by a twisting, funnel-shaped cloud. A tornado is spawned by a thunderstorm or hurricane and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. A funnel does not need to reach to the ground for a tornado to be present. Tornados occur at any time of the year; however, the season is generally March through August.

Figure 4.9 Tornado

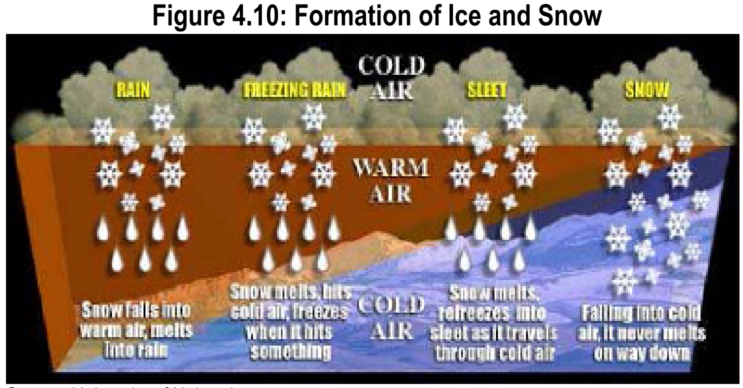
Source NOAA

The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of 1 mile wide and 50 miles long. Even with advances in meteorology, adequate warning time for tornadoes is short or sometimes not possible. A debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado. The damage from a tornado is a result of the high wind velocity and wind-blown debris.

4.4.7 Ice/Snow Storm Identification

Winter storms produce an array of hazardous weather conditions including heavy snow, blizzards, freezing rain, ice pellets, and extreme cold. The extreme cold associated with winter storms is a deceptive killer as it indirectly causes injury and death resulting from exhaustion and overexertion, asphyxiation, hypothermia, and frostbite from wind chill. Severe winter storms are extra-tropical cyclones (storms that form outside of the warm tropics) fueled by strong temperature gradients and an active upper-level jet stream. The definitions of winter weather include:

Figure 4.10: Formation of Ice and Snow



Source: University of Nebraska

Blizzards: The occurrence of the following conditions lasting for three hours or longer: 1) wind speeds of 35 miles per hour (mph) or more; 2) considerable falling and/or blowing snow (reducing visibility frequently to less than ¼ mile); and 3) generally temperatures of 20 degrees Fahrenheit (F) or lower. A severe blizzard has: 1) wind speeds of 45 mph or more; 2) a great density of falling and/or blowing snow (reducing visibility to near zero); and 3) temperatures of 10 degrees F or lower.

Ice and Sleet Storms: A storm that generates sufficient quantities of ice or sleet to result in hazardous conditions and/or property damage. Ice Storm (freezing rain), probably the most serious of the ice storms, occurs during a precipitation event when warm air aloft exceeds 32o while the surface remains below the freezing point. When precipitation originating as rain or drizzle contacts physical structures on the surface, ice forms on all surfaces creating issues for traffic, utility lines and tree limbs. Sleet forms when precipitation originating as rain falls through a large layer of the atmosphere that has below freezing temperatures allowing raindrops to freeze before reaching the ground. Sleet is also referred to as ice pellets. Sleet storms are usually of shorter duration than freezing rain and generally create fewer problems.

4.4.8 Landslides/Mudslides Identification

Landslides (rockslides, mudslides, etc.) are among the most common natural hazards. Unlike most natural hazards, however, most damage is not caused by extreme events, but by uncounted (and often unreported) minor events.

Figure 4.11 Landslide Depiction

Source: NOAA

Slumps usually damage utilities within or below the slide mass, but seldom cause a threat to life.

Flows, around well-built structures causing damage from water and mud.

Translational slides can be the most catastrophic. In addition to presenting a hazard to structures and utilities, they can cause damage and death both far from and slightly below the source.

The hazards associated with landslides are as diverse as the types of failure. Falls may damage roads or buildings at the base of a steep slope, injure climbers, or remain on a road as a hazard to transportation.

In addition to the direct hazards of a landslide moving out from under or onto structures or utilities, there is a major indirect hazard. Large slides generally do not stop moving until they reach the bottom of a valley where they block streams, usually resulting in flooding and damage to the ecology.

4.4.9 Land Subsidence Identification

Figure 4.12: Depiction of Land Subsidence

Source: FEMA

Subsidence is a phenomenon that combines soil compaction and geological/tectonic forces. Subsidence is the formation of depressions, cracks, and sinkholes in the earth's surface, which normally occurs over many days to a few years usually a result of Karst topography. Karst topography develops when beds of relatively soft limestone and dolomite are present. The diluted organic acids present in water percolates downward and dissolves these formations. In such places, rock is honeycombed with cracks, fissures and potentially large caverns that can collapse. Subsidence results from a number of factors including: compaction/consolidation of shallow strata caused by the weight of river delta deposits, soil oxidation, and aquifer draw-down (shallow component);

consolidation of deeper strata (intermediate components); and tectonic effects (deep component). This last element was only recently quantified, and research indicates that it accounts for 50% or more of subsidence.

In some areas natural drainage occurs below ground rather than surface streams. These underground passages are commonly connected to the surface by funnel-shaped depressions called sinkholes. The formation of these sinkholes often leads to ground subsidence or collapse. This results from the settlement or collapse of overlying materials into openings beneath the surface, such as caves or enlarged joints. Sinkhole development is usually a slow process; however, they may occur suddenly. In addition to sinkholes Land Subsidence also occurs when abandoned mines, mine shafts, and tunnels give way.

4.4.10 Lightning Identification

Lightning is generally associated with thunderstorms and is an electrical discharge that results from the buildup of positive and negative charges. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees in a split second.

Figure 4.13: Depiction of Lightning

Source: NWS

Lightning casualties can happen at the beginning of an approaching storm; however, more than half of lightning deaths occur after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear. Lightning has been known to strike more than 10 miles from the storm in an area with clear sky above.

According to the National Oceanic and Atmospheric Administration (NOAA), an average of 20 million cloud-to-ground flashes has been detected every year in the continental United States. About half of all flashes have more than one ground strike point, so at least 30 million points on the ground are struck on the average each year. In addition, there are roughly 5 to 10 times as many cloud-to-cloud flashes as there are to cloud-to-ground flashes (NOAA, July 7, 2003).

4.4.11 Tsunami Identification

A tsunami is the generation of an extreme ocean wave breaking on-shore generally as a result of extremely high winds or a seismic event occurring in adjacent oceans.

Along the West Coast, the Cascadia Subduction Zone threatens California, Oregon, and Washington with devastating local tsunamis. Earthquakes of Richter scale magnitude of 8 or more have happened in the zone, and there is a 35 percent chance that an earthquake of this magnitude could occur before 2045. The Alaska and Aleutian Seismic Zone that threatens Alaska has a predicted occurrence (84 percent probability between 1988 to 2008) of an earthquake with magnitude greater than 7.4 in Alaska. If an earthquake of this magnitude occurs, Alaska's coastlines can be expected to flood within 15 minutes.

Characteristics of Tsunamis

Debris: As the tsunami wave comes ashore, it brings with it debris from the ocean, including man-made debris like boats, and as it strikes the shore, creates more on-shore debris. Debris can damage or destroy structures on land.

Distance from shore: Tsunamis can be both local and distant. Local tsunamis give residents only a few minutes to seek safety and cause more devastation. Distant tsunamis originating in places like Chile, Japan, Russia, or Alaska can also cause local damage.

High tide: If a tsunami occurs during high tide, the water height will be greater and cause greater inland inundation, especially along flood control and other channels.

Outflow: Outflow following inundation creates strong currents, which rip at structures and pound them with debris, and erode beaches and coastal structures.

Water displacement: When a large mass of earth on the ocean bottom sinks or uplifts, the column of water directly above it is displaced, forming the tsunami wave. The rate of displacement, motion of the ocean floor at the earthquake epicenter, the amount of displacement of the rupture zone, and the depth of water above the rupture zone all contribute to tsunami intensity.

Wave run-up: is the height that the wave extends upon steep shorelines, measured above a reference level (the normal height of the sea, corrected to the tide at the time of wave arrival).

Wave strength: Even small wave heights can cause strong, deadly surges. Waist-high surges can cause strong currents that float cars, structures, and other debris.

The following factors will affect the severity of a tsunami:

Coastline configuration: Tsunamis impact long, low-lying stretches of linear coastlines, usually extending inland for relatively short distances. Concave shorelines, bays, sounds, inlets, rivers, streams, offshore canyons and flood control channels may create effects that result in greater damage. Offshore canyons can focus tsunami wave energy, and islands can filter the energy. The orientation of the coastline determines whether the waves strike head-on or are refracted.

Coral reefs: Reefs surrounding islands in the western North Pacific and the South Pacific generally cause waves to break, providing some protection to the islands.

Earthquake characteristics: Several characteristics of the earthquake that generates the tsunami contribute to the intensity of the tsunami, including the area and shape of the rupture zone

Fault movement: Vertical movements along a fault on the seafloor displace water and create a tsunami hazard. Earthquakes with greater magnitude cause more intense tsunamis. Shallow-focus earthquakes also have greater capacity to cause tsunamis.

Human activity: With increased development, property damage increases, multiplying the amount of debris available to damage or destroy other structures.

4.4.12 Wildfires Identification

A wildfire is any instance of uncontrolled burning in grasslands, forests, and brush land. A Wildfire is further defined as an uncontrolled fire spreading through vegetative fuels, possibly consuming structures (FEMA, 2001). Wildfires often begin unnoticed and spread quickly. The Federal Emergency Management Agency's (FEMA) Fire Management Assistance Grant Program (FMAGP) indicates that a wildfire is also known as a forest fire, vegetation fire, grass fire, or brush fire, is an uncontrolled fire requiring suppression action.

Common causes of wildfires include lightning, negligent human behavior and arson. Many sources indicate that arson, defined as an intentional and willful "crime of setting a fire for an unlawful or improper purpose", is one of the leading causes of wild-land fires in most states.

FEMA indicates that there are four categories of wildfires that are experienced throughout the U.S. These categories are defined as follows:

Interface or intermix fires – Urban wild-land interface fires are wildfires in a geographical area where structures and other human development meet or intermingle with wild-land or vegetative fuels. Vegetation and the built-environment provide fuel to Urban/wild-land fires.

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).

Wild-land fires are wildfires in an area where development is essentially nonexistent except for roads, railroads, power-lines, and similar facilities. Wild-land fires are fueled almost exclusively by natural vegetation. Wild-land fires can be classified as surface fires, ground fires, and/or crown fires. Surface fires are the most common type and burn along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires are spread rapidly by wind and move quickly by jumping along the tops of trees.

Figure 4.14: Depiction of a Wildfire

Source: FEMA

The potential for wildfire depends upon fuel characteristics, climate conditions, meteorological conditions, and fire behavior. Hot, dry summers and dry vegetation increase susceptibility to fire. The potential for wildfire, and its subsequent development and severity, is determined by the area's topography, the presence of fuel, and weather.

Topography can have a powerful influence on wildfire behavior. The movement of air over the terrain tends to direct a fire's course. Gulches and canyons can funnel air and act as a chimney, intensifying fire behavior and inducing faster spread rates. Saddles on ridge tops tend to offer lower resistance to the passage of air and will draw fires. Solar heating of drier, south-facing slopes produces upslope thermal winds that can complicate behavior.

Slope is an important factor. If the uphill slope doubles, the rate at which the wildfire spreads will most likely double. On steep slopes, fuels on the uphill side of the fire are closer physically to the source of heat. Radiation preheats and dries the fuel, thus intensifying fire behavior. Terrain can inhibit wildfires: fire travels down slope much more slowly than it does upslope, and ridge tops often mark the end of wildfire's rapid spread (FEMA, 1997).

Fuels are classified by weight or volume (fuel loading) and by type. Fuel loading can be used to describe the amount of vegetative material available. If this doubles, the energy released can also double. Each fuel type has a burn index, which is an estimate of the amount of potential energy that may be released. Different fuels have different burn qualities. Grass releases relatively little energy but can sustain very high rates of spread (FEMA, 1997). According to the U.S. Forest Service, a forest stand may consist of several layers of live and dead vegetation in the understory (surface fuels), midstory (ladder fuels), and overstory (crown fuels). Fire behavior is strongly influenced by these fuels.

Surface fuels consist of grasses, shrubs, litter, and woody material lying on the ground. Surface fires burn low vegetation, woody debris, and litter. Under the right conditions, surface fires reduce the likelihood that future wildfires will grow into crown fires.

Ladder fuels consists of live and dead small trees and shrubs, live and dead lower branches from larger trees, needles, vines, lichens, mosses, and any other combustible biomass located between the top of the surface fuels and the bottom of the overstory tree crowns.

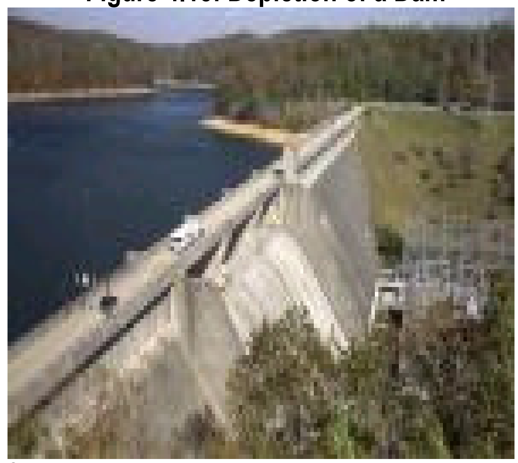
Crown fuels are suspended above the ground in treetops or other vegetation and consist mostly of live and dead fine material. When historically low-density forests become overcrowded, tree crowns may merge and form a closed canopy. Tree canopies are the primary fuel layer in a forest crown fire (U.S. Forest Service, 2003).

4.5 MANMADE HAZARDS IDENTIFICATION

4.5.1 Flooding Dam/Levee Failure Identification

A dam is a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. A levee is a barrier constructed along the side of a watercourse or along a coastal or bay shoreline for the purpose of preventing water-flow to extend beyond the watercourse or an ocean or bay. Dams and levees generally fall into the following categories**:**

Figure 4.15: Depiction of a Dam



Source: TVA

Earth Dams/Levees make up the vast majority of dams and levees and are safe if properly constructed and maintained.

Concrete Gravity Dams/Levees are designed to resist sliding and overturning.

Buttress Concrete Dams/Levees have a strong foundation and are resistant to sliding, overturning and overflowing.

Arch Concrete Dams are used to narrow sites and have strong abutments.

Gravity Arch Concrete Dams are a conservative design of the Arch.

Stone Masonry Dams are constructed of stone or block with masonry joints.

Dam/levee failure floods are usually associated with intense rainfall or rapid snowmelt. Coastal levees also fail as a result of storm surge. Dam/levee failure may be caused by faulty design, construction and operational inadequacies, or a flood event larger than the dam/levee design.

Figure 4.16: Picture of a Slidell Al. Levee

Source: St. Tammany

The degree and extent of damage from a dam failure depends on the size of the dam or levee. The greatest threat to people and property is in the area immediately below a dam since the volume of water decreases as the flood wave moves downstream.

The degree and extent of damage from a levee failure depends on the height and length of the levee preventing water from inundating the area protected by the levee and the elevation of the land or structures at risk. The greatest threat to people and property is in the area immediately adjacent to the waterway, ocean or bay. A levee failure resulting from storm surge would have a similar effect as a dam break were-as a levee failure along a watercourse generally affects an area over with a lower volume of water over a longer time.

4.5.2 Hazardous Materials Incident Identification

Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments and gardening supply stores. Hazardous materials are transported by highway, railway, waterway, and pipeline daily, so any area is vulnerable to event.

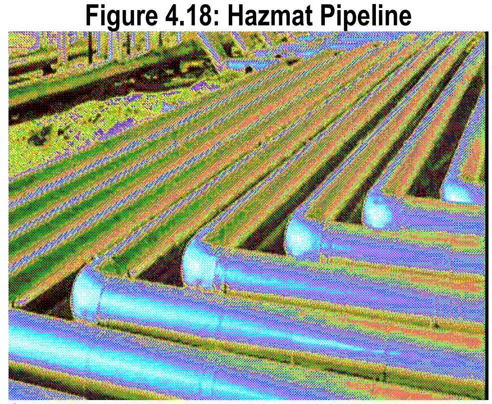
Figure 4.17: Hazmat Train Accident

Source: TVA

Hazardous materials incidents typically take three forms: transportation, pipeline incidents and fixed facility chemical and radiological incidents. It is reasonably possible to identify and prepare for a fixed site incident, as laws require those facilities to notify state and local authorities as to what is being used or produced. Transportation and pipeline incidents are much harder to prepare for, as the material involved and the incident location are not known until the accident actually occurs.

<u>Transportation Incident</u> is any hazardous material release during transport that poses a risk to health, safety, and property, as defined by Department of Transportation materials transport regulations. Hazardous materials transportation incidents can occur at any time and place, although the majority occurs on interstate highways, major federal or state highways, or on the major rail lines.

Figure 4.18: Hazmat Pipeline



Source: Petroleum Institute

<u>Pipeline Incident</u> is a release of HAZMAT materials that are transported by a pipeline. The potential risk of pipeline accidents is a significant national and county concern. United States are the principal mode for transporting oil and petroleum products such as gasoline, and virtually all natural gas in the U.S. is moved via pipeline as well. Much of this oil pipeline infrastructure is old, requiring regular safety and environmental reviews to ensure its safety and reliability. Virtually all natural gas in the United States is moved via pipeline. Energy pipelines are also extremely vulnerable to sabotage and disruption, and the resulting spills can generate large-scale environmental damage and require extensive clean-up and remediation. Recently, the U.S. Department of Homeland Security identified the energy sector as one of the 14 primary Critical Infrastructures and pipelines in particular must be evaluated to determine the impact of loss or damage. In 2004, the Hazardous Materials Pipeline Act required all pipeline owners to conduct an analysis of pipeline exposures**.**

<u>Fixed Facility Incident</u> is any occurrence of uncontrolled release of materials from a fixed site that poses a risk to health, safety, and property as determined in the EPA's Resource Conservation and Recovery Act. These materials are classed identically to those specified in the section on transportation accidents.

Radiological Incident is defined as the unintentional exposure to materials that emit ionizing radiation. Nuclear power plants are a significant potential source of ionizing radiation. The health and environment impacts from the Three-Mile Island and Chernobyl, Russia disasters illustrate the potential hazards from nuclear power plants. Other sources of ionizing radiation include medical and diagnostic X-ray machines, certain surveying instruments, some imaging systems used to check pipelines, radioactive sources used to calibrate radiation detection instruments, and even some household fire detectors.

Figure 4.19: Nuclear Facility

Source: TVA

Nuclear power plants are a significant potential source of ionizing radiation. The health and environment impacts from the Three-Mile Island and Chernobyl, Russia disasters illustrate the potential hazards from nuclear power plants.

4.5.3 Illegal Methamphetamine Labs Identification

Typically "meth" is a white powder that easily dissolves in water. Another form of meth is clear, chunky crystals called crystal meth, or ice. Meth can also be in the form of small, brightly colored tablets. The pills are often called by their Thai name, yabba. Street terms for Methamphetamine are meth, poor man's cocaine, crystal meth, ice, glass, and speed.

Figure 4.20 Methamphetamine

Source: DEA

Amphetamine, dextroamphetamine, Methamphetamine, and their various salts are collectively referred to as amphetamines. In fact, their chemical properties and actions are so similar that even experienced users have difficulty knowing which drug they have taken. Methamphetamine is the most commonly abused.

Illegal domestic labs that produce Methamphetamine (meth) are dependent on supplies of the precursor ephedrine or pseudoephadrine. Sometimes it is smuggled in quantity from Canada and Mexico, but may be readily purchased over-the-counter in the form of the decongestant Sudafed and other pseudoephadrine-containing cold tablets. Depending on the method used, meth is "cooked" using the cold medicine and other easily obtained items such as coffee filters, lye, battery acid, matchbook striker plates, iodine, lithium batteries, and Coleman fuel.

The process of cooking meth leaves behind a hazardous coating on walls, floors, and in ventilation systems. State law requires meth-contaminated property be quarantined until clean up operations have been completed and the property tested by a certified contractor as safe for habitation. Cost for cleaning and certifying a 1,200 square foot house is about $9,000. In hotels, rooms adjacent, above, and below must also be certified as safe.

Drug Enforcement Agency officials estimate that for each pound of meth produced, a lab operator winds up with 6 pounds of toxic waste, including leftover chemicals such as anhydrous ammonia, lye and solid meth residue.

Effects of usage include addiction, psychotic behavior, and brain damage. Chronic use can cause violent behavior, anxiety, confusion, insomnia, weight loss, auditory hallucinations, mood disturbances, delusions, and paranoia. Damage to the brain caused by meth usage is similar to Alzheimer's disease, stroke, and epilepsy.

4.5.4 Pandemics/Epidemics/Vectors Identification

Pandemics occur when disease affects large numbers of the population worldwide. Epidemics occur when large numbers are affected in a more localized area such as a city, region, state, or nation. Vector-based threats - bacteria, insects, and animals are threats that pose a direct or indirect hazard to humans, their food supply, or the economy**.**

Pandemics have occurred three times in the last 100 years in the world's human population.

The 1918-1919 Spanish Flu caused the highest number of deaths. India had 16 million deaths. The U.S. had 675,000 deaths. In England 230,000 died. In Germany 225,000 and in France 166,000 perished. World wide, the estimated fatalities were 20 million to 50 million. During the Spanish Flu pandemic, Spain closed its government. New York City closed its port and trains did not run. The British Navy did not sail for three weeks.

The 1957-58 Asian Flu was identified in February 1957 in China. By June, it had crossed the Pacific and entered the U.S. Globally, it caused a million deaths. In the U.S., 70,000 persons died. It was a Type A virus.

The 1968-69 Hong Kong Flu caused four million deaths worldwide and 34,000 deaths in the U.S. It was a Type A virus.

4.5.4.1 Human Pandemic/Epidemic Hazards

Influenza occurs every year and nations attempt to prepare for the "flu season" which brings one to two weeks of symptoms, even pneumonia and death. The cost in the U.S. is $71 to $167 billion annually. Some 36,000 in the U.S. and 250,000 to 500,000 worldwide die annually.

Three types of influenza viruses exist: A, B, and C. Type A viruses are of most concern for humans, pigs, marine mammals and birds. Type B virus has been identified in the seal population and is fatal. Influenza C virus is associated with ticks.

Influenza viruses are constantly evolving. The viruses undergo minor and major modifications through antigentic drift and antigentic shift. Antigentic drift is the mechanism responsible for creating small changes in the genetic composition of the virus. Antigentic drift occurs in Type A and B influenza. Antigentic shift describes significant changes in the genetic structure of the virus. It occurs only in type "A" when two different virus strains are simultaneously present in a host or after transmission of viruses from different hosts. The two viruses swap genetic material creating a "new" virus. The ability to jump species, the constant changes in the generic makeup of the influenza virus, the potential for vaccine loss, and the rapid spread of Flu viruses are some of the reasons influenza is always a threat to the world's population.

Avian flu was first discovered in Canada. It is estimated that 50% of wild ducks in Canada carry forms of the flu. Highly infectious forms are destructive to domestic poultry. Three strains of avian influenza viruses are known to jump the species barrier from birds to non-human animals to humans: A(H9n2), A(H7N7) and A(H5N1). A(H5N1) is the most lethal, causing death in 68% of humans infected. Coughing or sneezing, victims spew infectious droplets at a rate of 150 feet per second. Shaking hands or contact with contaminated public washrooms and doorknobs can spread the disease very quickly.

Scientists expect that an Avian H5 Flu virus, which has swept through chickens and other poultry in Asia, will transform into a flu that can be transmitted to humans. It has emerged as a highly pathogenic strain of influenza virus that is affecting the entire western component of Asia. The CDC is preparing for a possible pandemic. Humans have no immunity to this new avian flu.

Confirmed cases of human infection from several subtypes of avian influenza infection have been reported since 1997. Most cases of avian influenza infection in humans have resulted from contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces contaminated with secretion/excretions from infected birds. The spread of avian influenza viruses from one ill person to another has been reported very rarely.

Small Pox (variola major) was last seen in the US in 1949. The last naturally occurring case was in Somalia in 1977. Smallpox vaccination in the US ended in 1972 except for military personnel.

When smallpox was considered eradicated worldwide, only two laboratories were designated to keep the virus. One lab was the CDC in Atlanta, Georgia, and the other lab was in Russia. When the USSR break-up occurred, the location of Russia's smallpox virus became unknown. It was widely thought that at least four other countries received part of the virus.

Variola is classified as a biological weapon, included on the "A" list by the CDC. The virus can be transmitted from person to person, may result in high mortality rate (30%), and cause panic and social disruption. Variola has a moderate to high potential for large-scale dissemination and requires special action for public health preparedness and response.

Hepatitis A Virus results from eating food or drinking water contaminated with human excrement. Outbreaks are associated with consumption of produce. Hepatitis A virus attacks the liver, is highly infectious, and can lead to varying degrees of illness, hospitalization and death.

Emerging Pathogens: Severe Acute Respiratory Syndrome (SARS) started in China in late 2002. The World Health Organization reported 29 countries were affected by the end of July 2003. There were 8,500 cumulative cases and 774 deaths. In the United States, 29 cases were confirmed. SARS is closely associated with influenza.

Emerging Pathogens: Monkey Pox Virus is an orthopoxvirus, which also includes cowpox and smallpox. It is a viral disease occurring in the rain forests of central and West Africa. Monkey pox is milder than smallpox. It was seen in the US June 14, 2003. It was introduced to this country by prairie dogs infected by Gambian rats imported by a distributor of exotic pets. By June 18, 2003, 87 persons in six states were confirmed with the virus.

4.5.4.2 Animal and Vector-Based Agriculture Hazards

An "emerging" series of threats to communities is vector-based threats - bacteria, insects, and animals that pose a direct or indirect hazard to humans, their food supply, or the economy.

Foot and Mouth Disease (FMD) is a highly infectious and difficult to control disease of cloven-hoofed mammals including cattle, swine, wild sheep, goats, deer, and pigs. Although many people don't consider Foot and Mouth Disease to be a "threat," an outbreak of the disease in Europe caused widespread concern over the safety of the meat supply, as well as the possibility of resulting infection of humans. Federal, state and local officials, including the emergency services community, have plans and procedures for handling incidents involving these threats. Should an outbreak occur anywhere in the United States, routine livestock movements could rapidly spread the disease making early detection, combined with immediate eradication of affected animals, crucial for controlling the disease. Left unchecked, the economic impact of FMD could reach billions of dollars in the first year. Deer and other wildlife would likely become infected and be a source for re-infection of livestock. FMD is not known to cause illness in humans.

In recent years, FMD has been found in Africa, South America, Asia, and parts of Europe. Currently, North America, Central America, Australia, New Zealand and some countries in Europe are considered free of FMD. The United States has eradicated nine outbreaks of FMD, most recently in 1929.

Figure 4.21 Foot and Mouth Disease Animals

Source: Dept. of Agriculture

Avian influenza in birds (AI) is a viral disease characterized by respiratory signs, depression and reduced feed and water intake. In egg laying birds there is a decline in egg production and quality. There are two pathotypes of AI virus: the most common is low pathogenic AI (LPAI) and the other is highly pathogenic AI (HPAI).

The most virulent form (HPAI) was once called fowl plague. At the 1981 International Symposium on Avian Influenza, the term fowl plague was replaced with the term "highly virulent" influenza virus infection. The AI epidemic of 1983-1984 required yet new terms to describe relative pathogenicity of different isolates of the same stereotypes (nonpathogenic, low-pathogenic, highly pathogenic).

Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated secretions or excretions or with surfaces that are contaminated with secretions or excretions from infected birds. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus.

Infection with avian influenza viruses in domestic poultry causes two main forms of disease that are distinguished by low and high extremes of virulence. The "low pathogenic" form may go undetected and usually causes only mild symptoms (such as ruffled feathers and a drop in egg production). However, the highly pathogenic form spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can reach 90-100% often within 48 hours.

4.5.5 Terrorism Identification

The Federal Bureau of Investigation (FBI) defines terrorism as "the unlawful use of force against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in the furtherance of political or social objectives." Events typically would be expected in urban areas near public gatherings, government facilities, or highly visible areas. Terrorism is generally categorized as one of two types.

Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.

International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside the U. S., or whose activities transcend national boundaries.

A terrorist attack can take several forms including involving the use of "Weapons of Mass Destruction" (WMD). The term "Weapons of Mass Destruction" has various definitions. Common to all of them is the assumption that WMD's comprise incendiary, explosive, chemical, biological, radioactive, and/or nuclear agents. 50 U.S.C., § 2302 defines WMD as "any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of a toxic or poisonous chemicals or their precursors, a disease organism; or radiation or radioactivity."

4.5.5.1 Bombings

Figure 4.22 9/11 Terrorist Attack

Source: Dept. of Agriculture

Bombings are the most frequently used method terrorist event in the U. S. This includes the 1993 bombing of the World Trade Center in New York, the U. S. Capitol, Mobil Oil's corporate headquarters in New York City, and the bombing of the Alfred P. Murrah federal building in Oklahoma City. More recently, the World Trade Center Buildings and the Pentagon were the targets of a well-planned terrorist attack involving the use of commercial aircraft as flying bombs.

4.5.5.2 Chemical/Biological Agents

Chemical/Biological agents have been developed by several nations for use in warfare. Such agents are selected or adapted from bacteria, fungi, viruses, or toxins that cause various diseases in humans, animals, or food crops. Currently, the development of biological agents as weapons has kept pace with our ever-evolving day-to-day technology. Despite the widespread ban, international diplomatic efforts have not been entirely effective in preventing the enhancement and proliferation of offensive biological warfare programs. There are four major categories under which the chemical agents may be classified:

Blister agents are intended to incapacitate, rather than kill. These agents were used extensively during World War I. Their use by a terrorist group largely depends on the group's objectives and moral views. If the intent of an attack were to injure numerous people and overload the area's medical facilities without causing many deaths, then a blister agent would be the best choice.

Choking agents were the agents most used during WW I. With the advent of nerve agents, they have lost much of their usefulness. These substances are intended to cause death and are convenient and readily available to terrorists.

Blood agents are cyanide-based compounds. Unsuited for use on multitudes of people, the primary use would be the assassination of targeted individuals.

Nerve agents are the most recently developed chemical weapons. Originally developed by German scientists 1930's as insecticides, nerve agents were used as chemical weapons by the Nazi military. Hundreds of times more lethal than blister, choking, or blood agents, nerve agents have been stockpiled as the primary chemical weapon. These chemicals are the most useful to terrorists due to the small quantity needed to inflict a substantial amount of damage.

4.5.5.3 Radiation Devices

Radiation Devices including a nuclear bomb produce five primary potential effects:

- Overpressure: is when a nuclear weapon explodes in the atmosphere, a blast or shock wave is created that initially moves at speeds higher than the speed of sound.
- INR/EMP: Initial nuclear radiation (INR) is radiation in the first minute after detonation and is hazardous to unprotected people within about 1.5 miles. Electromagnetic radiation pulse (EMP) is the conversion of nuclear energy into electromagnetic frequency and occurs when a nuclear weapon is detonated outside of earth's atmosphere. EMP disrupts electrical and electronic equipment across entire continents. The equipment is unusable until repaired.
- Fire Risk: The combined effects of blast overpressure damage and the thermal pulse or fireball can ignite combustible materials, causing sustained fires. Primary fires are those ignited directly by the thermal pulse. Secondary fires are generated by damage and destruction from blast overpressures and result from the disruption of furnaces and gas and electric lines.
- Fallout risk: A nuclear explosion near the ground makes a big crater. Earth from the crater is changed from solids into hot gas and fine dust. This hot gas and dust, together with vaporized materials, form a giant fireball that rises rapidly and becomes the top part of the nuclear mushroom cloud. The heavier particles of earth become the stem of the mushroom cloud. The earth in the stem and in the mushroom cloud becomes radioactive. The top of the mushroom is a cloud of fine particles. The heavier, larger particles settle close to the point of explosion, the small particles float several hundred miles in the wind. The first 24 hours is the most dangerous period as the initial fallout is highly radioactive. The delayed fallout particles lose much of their radioactivity and reaches earth in rain or snow over periods ranging from days to years. The three kinds of dangerous radiation in fallout are alpha, beta and gamma. Gamma radiation penetrates the body, causing damage to organs, blood and bones. Large doses of gamma radiation can cause sickness or death. Small doses incurred over a long period of time may not have an immediate effect, but may cause various forms of illness later in life. Genetic damage in subsequent generations may also result. Alpha radiation is stopped by the outer skin layers and does not usually present an external hazard. However, if contaminated air, food, or water enters the body in sufficient quantity, considerable internal damage can occur. Beta radiation is more penetrating and may cause burns where fallout particles have deposited on the skin.

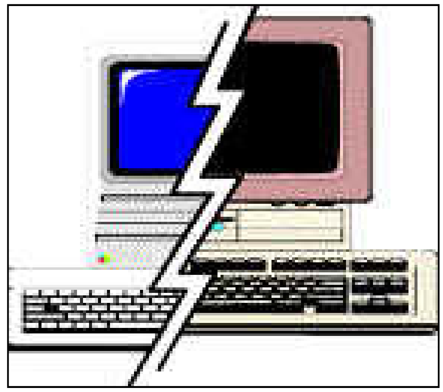
The effects of a nuclear/radiation attack have varying effects on populations. Those people located near the explosion would be killed or seriously injured by the blast, heat or initial nuclear radiation. People a few miles away would be subject to blast, heat, and fires. A high percentage of the population residing in the lighter damaged areas would probably survive, but might subsequently be endangered by radioactive fallout.

4.5.5.4 Cyber-Terrorism:

The U.S. interest in promoting cyber-security extends well beyond its borders. Critical domestic information infrastructures are directly linked with Canada, Mexico, Europe, Asia, and South America. The nation's economy and security depend on far-flung U.S. corporations, military forces and foreign trading partners that require secure and reliable global information networks to function. The vast majority of cyber attacks originates or passes through systems abroad, crosses several borders, and requires international cooperation to stop.

In 1998, the United States received a wake-up call to the national security dimensions of the threat. Eventually dubbed "Solar Sunrise," this incident found U.S. military systems under electronic assault, with computer systems in the United Arab Emirates the apparent source. Unclassified logistics, administrative, and accounting systems essential to the management and deployment of military forces were penetrated at a time that military action was being considered against Iraq. The timing of the attacks raised U.S. suspicion that this was the first wave of a major cyber attack by a hostile nation. It was eventually learned that two California teenagers under the guidance and direction of a sophisticated Israeli hacker orchestrated the attacks.

Figure 4.23 Cyber Attack



Source: DHS

Another event in February 2000, computer servers hosting several of the largest commercial web sites on the Internet were flooded with connection requests, which clogged systems and consumed server capacity. Ultimately, these denial-of-service attacks paralyzed large parts of the Internet. Close cooperation between U.S. and Canadian law enforcement investigators discovered that a Canadian teenager had been breaking into legions of computers around the world for many months. By retaining control over these compromised servers, he created a "zombie army" which on command would flood the servers of his next corporate victim. The cost of slowdowns and outages that occurred was an estimated billion dollars in economic losses.

On May 4, 2000, the "I love you" virus began infecting computers around the globe. First detected in Asia, this virus quickly swept around the world in a wave of indiscriminate attacks on government and private sector networks. The destructive virus infected nearly 60 million computers and caused billions of dollars in damage. Cooperation among law enforcement authorities around the world led to the identification of the perpetrator, a computer science dropout in the Philippines. He was neither charged nor punished for his deeds because, at the time, the Philippine criminal code did not explicitly outlaw such actions.

The possibilities of a terrorist incident include attacks on critical facilities and soft targets involving explosives, chemical/biological, disease, radiation or cyber agents. It is clear that U.S. domestic efforts alone cannot deter or prevent attacks. Local, state and federal law enforcement officials monitor suspected terrorist groups and try to prevent potential attacks. Additionally, the U. S. Government works with other countries to limit support for terrorism.

4.5.6 Transportation Accident Identification

Figure 4.24 Transportation Accident

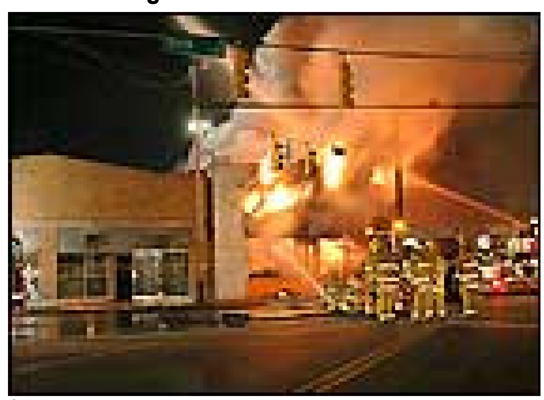
Source: FEMA

A transportation accident is an incident related to a mode of transportation (highway, air, rail, waterway, port, harbor) where an emergency response is necessary to protect life and property.

Transportation accidents are very frequent occurrences and the most significant incidents (those that result in injuries or fatalities) occur on the highways that traverse the county. Less frequent events that threaten public safety include train derailments and aircraft crashes. These incidents require the routine response of local EMS units from across the county and are a significant cost burden to local fire districts. Incidents involving air or rail passenger travel can result in mass casualties or mass fatalities, and the release, or potential release, of hazardous materials.

4.5.7 Urban Fire Identification

Figure 4.25: Structure Fire



Source: NFPA

Fire is a rapid, persistent chemical reaction that releases heat and light, especially the exothermic combination of a combustible substance with oxygen. A fire is categorized as both a natural hazard and a manmade hazard. The types of fires include:

Residential: single family dwellings, apartments, mobile homes, hotels, and motels.

Public and Mercantile: stores, restaurants, grocery stores, institutions, churches, public facilities, education.

Industrial, Manufacturing: Other Buildings: basic industry, manufacturing, storage, residential garages and vacant buildings.

Vehicle Fires: aircraft, automobiles, trucks, trains, buses, boats.

There are many causes of fire as a technological hazard including careless smoking, cooking, or campfires, arson, improper building wiring, industrial mishaps, and instances such as train derailments or transportation collisions.

4.5.8 Utility Power Failure Identification

A major electrical power failure is defined as a failure of the electrical distribution system that will exceed twenty-four hours in duration and effect greater than 33% of a given geographical area. Electrical distribution systems can be interrupted for a number of reasons, but those that have historically been the main cause are high winds, severe thunderstorms and winter storms.

The electric system in the U.S. is an interconnected, multi-modal distribution system that consists of three major parts: generation, transmission and distribution, along with control and communications. Generation assets include fossil fuel plants, hydroelectric dams, and nuclear power plants. Transmission systems link areas of the grid. Distribution systems manage and control the distribution of electricity into homes and businesses. Control and communications systems operate and monitor critical infrastructure components.

The nation's power and utility infrastructure has grown increasingly complex and interdependent; consequently, any disruption could have far-reaching effects. Large-scale power and utility failures may result from a variety of natural causes such as geomagnetic storms, severe weather and earthquakes. They may also result from a variety of manmade causes such as technological accidents, equipment failures or deliberate interference.

Almost every form of productive activity – whether in businesses, manufacturing plants, schools, hospitals, or homes – requires electricity. Utility Power systems are critical components to the overall health and safety of citizens. Our society uses utilities, including HVAC systems, daily and in some cases at certain times of the year these systems are for survival. A prolonged major electrical system failure during extreme temperatures, can have dramatic effects on a population**.**

4.5.9 Water Contamination Identification

The water sector consists of two basic and vital components: fresh water supply and wastewater collection and treatment. Water sector infrastructures are diverse, complex and distributed ranging from rural to urban systems. The primary focus of critical infrastructure protection efforts are the public water systems that depend on reservoirs, dams, wells and aquifers, as well as treatment facilities, pumping stations, aqueducts and transmission pipelines.

Drinking water comes from surface water and from ground water. Large-scale water supply systems tend to rely on surface water resources such as rivers, lakes, and reservoirs. Smaller water systems tend to use ground water pumped from wells that are drilled into aquifers, geologic formations that contain water.

The primary concern with regard to water infrastructure is adequate water supply and the damage or disruption of service that could be caused by natural or manmade hazards that could potentially include the following:

- The introduction of pollutants into public groundwater and/or surface water supplies**;**
- Chemicals from leaking underground storage tanks, feedlots and waste disposal sites.
- Human wastes and pesticides that may be carried to lakes and streams.
- Physical damage or destruction of water assets, including intentional releases of toxic chemicals;
- Actual or threatened contamination of the water supply;
- Cyber attack on water management systems or other electronic systems**;**
- Interruption of services from other infrastructure.

The Safe Drinking Water Act of 1974, sets uniform nationwide minimum standards for drinking water. State public health and environmental agencies have the primary responsibility for ensuring that federal and state drinking water standards are met by each public water supplier. The EPA requires an ongoing water quality monitoring program to ensure water systems are working properly and require suppliers to inform the public if a supply becomes contaminated.

SECTION 5
RISK ASSESSMENT – HAZARD PROFILES

5.1 INTRODUCTION

The second step of risk assessment is to profile for each hazard that is of particular concern and relevance to Shelby County. The Hazard profile selection for mitigation planning is primarily based on the historic occurrence of a disaster in a jurisdiction unless a particular hazard has been eliminated or mitigated. However, as new developments occur and the environment changes, new hazards may become evident and must be considered for inclusion in a mitigation plan. Examples include a new industry that introduces a hazardous material, a political climate i.e. 9/11, (which introduced terrorism) and human, animal and plant diseases/infestations events.

5.1.1 2009 Plan Update

Section 5 “Hazard profiles”, is an additional section that replaces the profiling of hazards in Chapter 4 Review: Risk Assessment of the 2004 plan. This significant enhancement over the 2004 plan, documents, in detail, possible event location, extent, future probability, historic occurrences and historic occurrence discussions. In addition a detailed listing of all occurrences is included in the Supporting Annex. The below table documents the hazards included in the 2004 plan and their disposition in Section 5 of the 2009 mitigation plan update.

Table 5.1 2004 Mitigation Plan Hazards/2009 Updated Plan Hazard Status

2009 Hazard	Exp	Risk/Threat	2004 Plan Status	2009 Updated Plan Status
Drought	Yes	Moderate Slight	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Earthquake	Yes	Low Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Extreme Temperature	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Flooding	Yes	Moderate High	Identified as flooding by thunderstorms, Hurricanes Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Dam/Levee Failure, profiled and detailed vulnerability assessment
Hail	Yes	Moderate Minimal	Identified under Thunderstorms	Identified/profiled some vulnerability assessment
High Winds	Yes	High High	Identified/Profiled as Tornadoes Thunderstorms, Hurricanes, Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Tornadoes, profiled and detailed vulnerability assessment
Ice/Snow Storms	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Land Subsidence	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Landslides Mudslides	Yes	Low Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment

Table 5.1 2004 Mitigation Plan Hazards/2009 Updated Plan Hazard Status				
2009 Hazard	Exp	Risk/Threat	2004 Plan Status	2009 Updated Plan Status
Lightning	Yes	Moderate Low	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Wildfires	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Hazardous Materials	Yes	Moderate High	Not Included	Identified/profiled detailed vulnerability assessment
Illegal Meth Labs	Yes	Moderate Slight	Not Included	Identified/profiled some vulnerability assessment
Terrorism	Yes	Slight Moderate	Not Included	Identified/profiled some vulnerability assessment
Urban Fires	Yes	Moderate Moderate	Not Included	Identified/profiled some vulnerability assessment
Pandemic	Yes	Low High	Not Included	Identified/profiled some vulnerability assessment
Exp = Exposure, Risk = Probability of Occurrence, Threat = Impact on loss of life and property damage				

5.2 HAZARD PROFILES METHODOLOGY

The hazard profile identifies the areas of the jurisdiction that are most severely affected by each hazard and describes the analysis or sources used to determine the probability, likelihood, or frequency of occurrence as well as the severity or magnitude of future hazard events. All data limitations are identified.

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.

The Individual Hazard Profiles included in this section includes the descriptions of those hazards and summarizes the information from the detailed events found in the Supporting Annex. The supporting annex provides a detailed list of historic hazard events that includes:

Multi-hazard Requirement §201.6(c)(2)(i): The risk assessment shall include a] description of the 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.
A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the plan?
B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the plan?
C. Does the plan provide information on previous occurrences of each hazard addressed in the plan?
D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan?

CRS Step 4: Assess the Hazard: Credit is based on what the community includes in its assessment of the hazard. The minimum requirement is for the flood hazard only. However, additional credit can be earned by identifying and including a description of all other natural hazards

FMA Requirement §78.5(b): Description of the existing flood hazard and identification of the flood risk, and the extent of flood depth and damage potential

- Sources of information used or consulted for assembling a history of past occurrences
- Date and Duration of occurrence
- Location of event
- Description and severity (i.e., flood depth, wind speeds, earthquake intensity, etc.);
- Damages that occurred (e.g., costs of recovery, property damage, and lives lost) to the extent available;

Included in this section are discussions of:

The location or geographical areas in the community that would be affected by the incident.

The extent (magnitude/severity) of a potential hazard is identified using technical measures specific to a hazard. Through the use of scientific scales, such as the Fujita Scale, Richter Scale, Beaufort Wind Scale, Saffir-Simpson Scale, and the Palmer Index or by using quantitative measurements such as: miles per hour, flood depth, inches of rain, fire danger rating, and acres burned, a magnitude or severity that could be experienced is identified for specific hazards.

The probability of the likelihood that the hazard event would occur in an area is identified through the use of an identified scale that is identified and discussed for specific hazards. In some cases the extent and/or probability of hazard events are classified using the terms high, medium, or low or a 1-3 or 1-5 measure where 1 is low.

A discussion of past occurrences of hazard events in or near the community

The profile section also provides a discussion of conditions, such as topography, soil characteristics, meteorological conditions, etc., in the area that may exacerbate or mitigate the potential effects of hazards. Where possible, the hazard profile also identifies on a map the areas affected by each identified hazard.

The hazards profiled include those that have occurred in Shelby County in the past and may occur in the future. A variety of sources were used including national, regional and local sources, including Web sites, published documents, newspapers, databases, maps, a review of the citizen survey and a discussion with the Steering Committee. The selected hazards are profiled below.

5.3 NATURAL HAZARDS PROFILED

5.3.1 Drought Profile

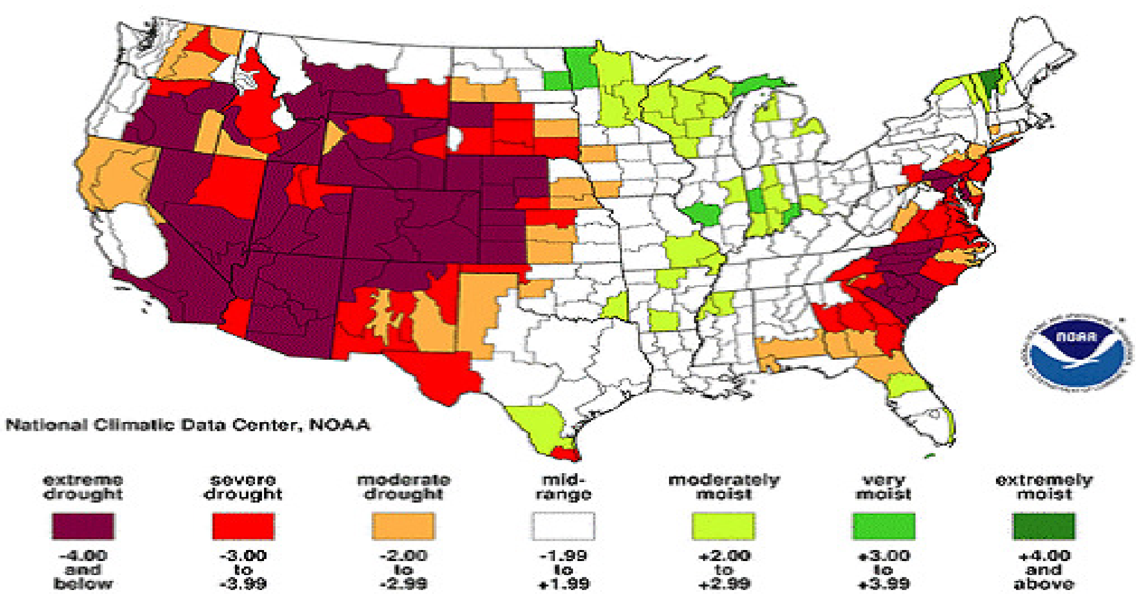
A drought is an extended dry climate condition when there is not enough water to support urban, agricultural, human, or environmental water needs. It usually refers to a period of below-normal rainfall, but can also be caused by drying bores or lakes, or anything that reduces the amount of water available. Droughts are a cumulative result of numerous meteorological factors. Most droughts in Alabama begin with decreased precipitation during the winter and spring, when soil moisture is being recharged. Adequate soil moisture is important during early summer because mid- to late summer is the time of least precipitation and greatest evapo-transpiration.

If a subtropical high-pressure cell, called the Bermuda High, and a weak jet stream persist over the State, then the stable, subsiding air inhibits the normal development of thunderstorms. Wave troughs positioned west of the Bermuda High divert storm tracks either north or south of the region. The combination of decreased precipitation and cloudiness, increased solar radiation, and extreme heat dries and hardens the soil.

Location

Drought is possible throughout the planning area. The Palmer Hydrological Drought Index indicates that Shelby County is in a “mid-range” area in being susceptible to drought conditions.

Figure 5.1 Palmer Drought Index



Source: NOAA

Extent

A drought’s severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water demands by humans and vegetation. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity

(FEMA, 1997). Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments. Drought can cause extensive damage to the foundations of commercial and residential structures, and the framing and walls, as well as agricultural crops, roads, bridges, pipelines, utilities and railroads.

Before 1986, drought conditions during 1954-55 that occurred during the sustained drought of 1950-63 were the most severe of record. The drought of 1984-88 was characterized by severe rainfall deficiencies. During those years, cumulative rainfall deficits in some areas were more than 50 inches, or the equivalent of 1 year's rainfall.

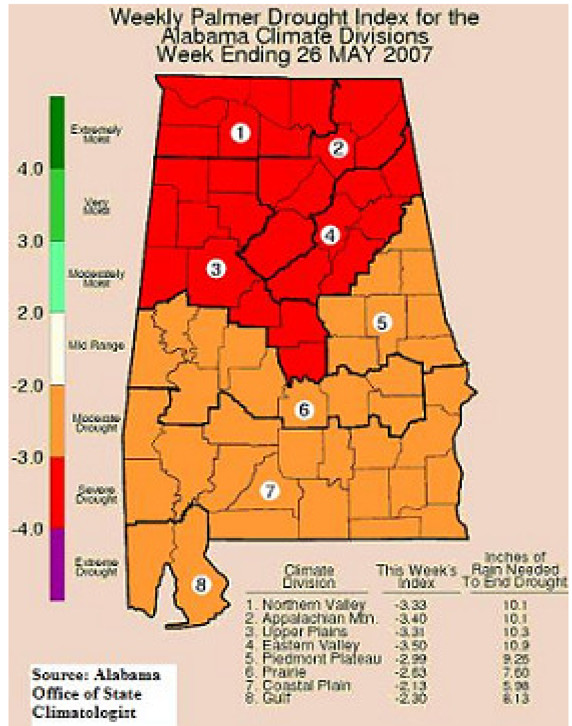
There were 16 drought events from 1950 through 2008. No deaths, or injuries were reported and damages were approximately $874,000.

Future Probability

Shelby County experiences short to medium length droughts. Historically 16 droughts have occurred in the last 58 years and average of one every 3.5 years. This frequency is expected to continue and may increase due to global warming. Severe droughts have only occurred 3 times. The risk of an extreme drought condition is low and the vulnerability is medium

Historic Occurrences

Figure 5.2 2007/2008 Drought in Alabama



The NOAA NCDC database identified 16 droughts (2 severe) impacting Shelby County and its participating jurisdictions since 1950. In three cases the drought lasted two years or longer

Table 5.2 Jurisdiction Historic Drought Events

Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc.	Fatalities	Injuries	# of Assets Damaged	Structure Loss	Other Loss or Cost: Loss Amount	Other Loss or Cost: Type
1950-63	Countywide	Less than normal rainfall for 2-3 consecutive years	0	0	0	0	0	
1964-70	Countywide	Statewide Drought	0	0	0	0	0	
06/01/77	Countywide	Drought	0	0	0	0	128205	A
01/01/86	Countywide	Drought	0	0		0	746269	A
07/18/06	Countywide	Drought A period of low rainfall caused severe drought, Hydrologic/agricultural impacts lasted through the month.	0	0	0	0	0	
08/01/06	Countywide	Drought Severe to extreme drought crops were adversely impacted, and many cities put water restriction rules into effect	0	0	0	0	0	

Table 5.2 Jurisdiction Historic Drought Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc.	Fatalities	Injuries	# of Assets Damaged	Structure Loss	Other Loss or Cost	
							Loss Amount	Type
09/01/06	Countywide	Drought severe to extreme drought from the summer through September	0	0	0	0	0	
03/27/07	Countywide	Drought A period of low rainfall caused severe drought and hydrologic/agricultural impact for a month.	0	0	0	0	0	
04/01/07	Countywide	Drought N/A	0	0	0	0	0	
05/01/07	Countywide	Drought N/A	0	0	0	0	0	
06/01/07	Countywide	Drought N/A	0	0	0	0	0	
02/01/08	Countywide	Drought N/A	0	0	0	0	0	
03/01/08	Countywide	Drought	0	0	0	0	0	
04/01/08	Countywide	Drought	0	0	0	0	0	
05/01/08	Countywide	Drought	0	0	0	0	0	
06/01/08	Countywide	Drought	0	0	0	0	0	
07/01/08	Countywide	Drought	0	0	0	0	0	
08/01/08	Countywide	Drought	0	0	0	0	0	
		TOTALS	0	0	0	0	874474	
Data Sources		**USGA, Al Dept of Geology**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

A federal disaster resulting from drought was declared on July 20, 1977. Alabama farmers suffering from this summer's drought and low prices should receive some financial assistance through the $8.7 billion agriculture disaster package that recently passed the Senate.

Dry Conditions in Central and South Alabama in March 2004. Most of the Southeastern United States experienced record dryness. The affected areas included the southern two-thirds of Georgia, the southern half of Alabama, all of the Florida panhandle, and extreme southern Mississippi and extreme southeast Louisiana. These areas received less than 20% of their normal monthly rainfall for the month of March. Within the Birmingham National Weather Service office's area of responsibility, which includes parts of Central and South Alabama, the most impacted counties were south of Interstate 85 and east of Interstate 65, where less than a ½ inch of rain fell. Shelby County had the third driest March since 1887.

From the summer of 2006 through the summer of 2008 Shelby County experienced a drought. An extended period of low rainfall led to the development of a severe drought condition. Agricultural and hydrologic impacts were felt. 78 percent of Alabama's pastures are in poor or very poor condition, along with 48 percent of peanuts and 68 percent of the cotton crop. Water restriction regulations were put into effect in many cities.

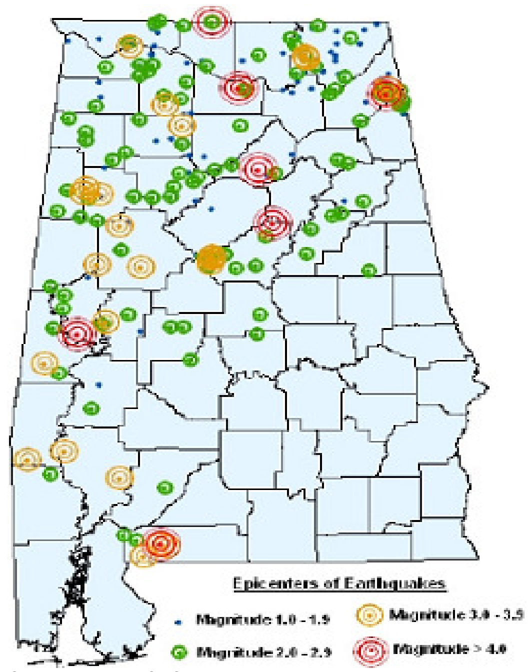
5.3.2 Earthquake Profile

An earthquake is a sudden release of energy from the earth's crust that creates seismic waves. Tectonic plates become stuck, putting a strain on the ground. When the strain becomes so great that rocks give way, fault lines occur. At the Earth's surface, earthquakes may manifest themselves by a shaking or displacement of the ground.

Location

The location of an earthquake is described by its focal depth and the geographic position of its epicenter. The focal depth of an earthquake is the depth from the Earth's surface to where an earthquake's energy originates (the focus or hypocenter). The epicenter of an earthquake is the point on the Earth's surface directly above the hypocenter (Shedlock and Pakiser, 1997). Earthquakes usually occur without warning and can impact areas a great distance from the epicenter.

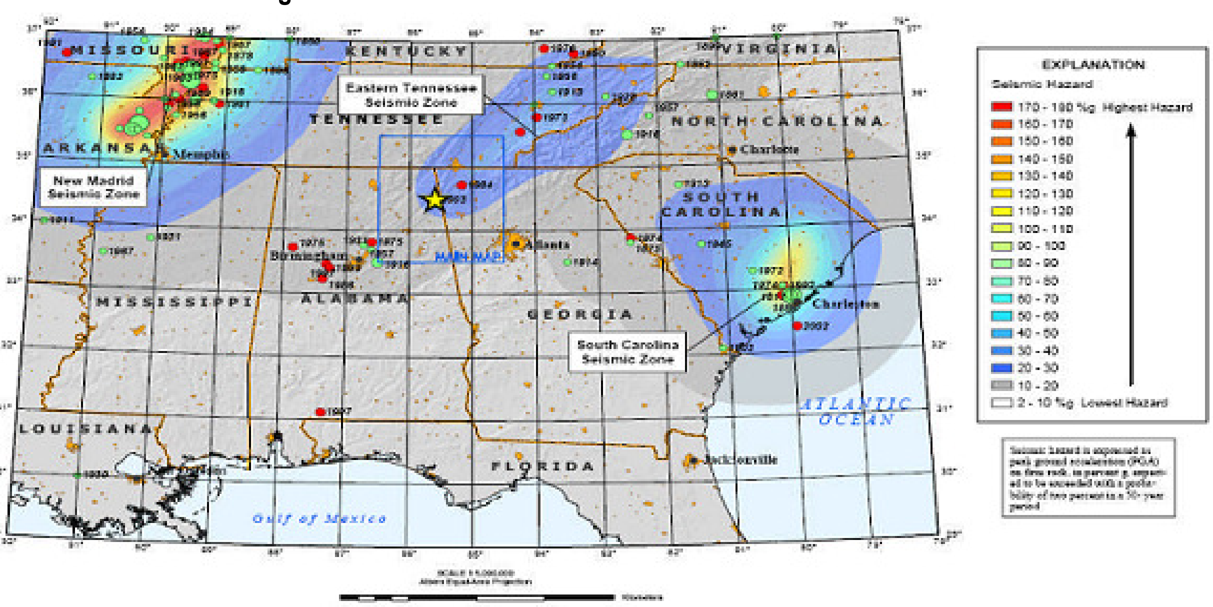
Figure 5.3 Earthquake Epicenters in Alabama



Source Alabama GRS

Earthquakes epicenters in Alabama have been recorded throughout most of the state. Recent seismograph records indicate that earthquakes are more frequent than past records indicate, but are often not strong enough to be felt by people. Although an earthquake can occur anywhere at anytime in Alabama, most are likely to do little or no damage Three zones of frequent earthquake activity affecting Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ) (also called the Eastern Tennessee Seismic Zone), and the South Carolina Seismic Zone (SCSZ)

Figure 5.4 Seismic Hazard of The Southeastern United States

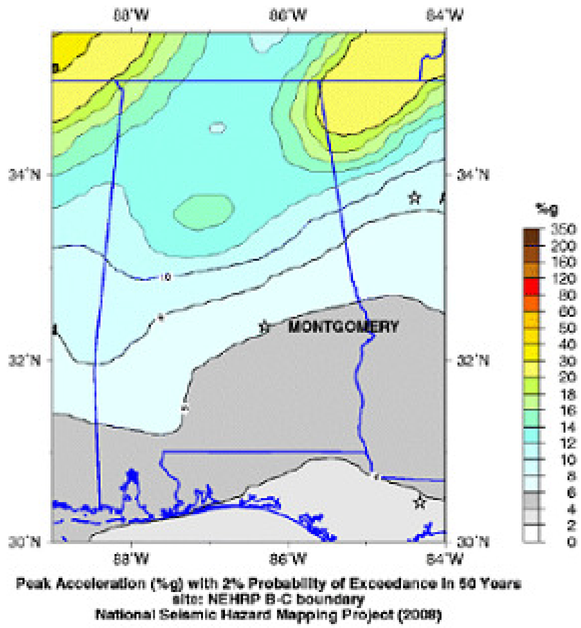


Source: NOAA

Extent

The U.S. Geological Survey shaking-hazard map for the United States is a based rate at which earthquakes occur in different areas and on how far shaking extends from earthquake sources. Colors on this map show the levels of horizontal shaking that have a 1-in-50 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (g is the acceleration of a falling object due to gravity). The map below indicates that Shelby County is in a low to medium earthquake susceptible area.

Figure 5.5 U. S. Geological Survey Shaking Hazard Map



The severity of earthquakes is influenced by several factors, including the depth of the quake, the geology in the area, and the soils. Damaging effects include surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches.

Surface faulting: Displacement that reaches the earth's surface during slip along a fault. Commonly occurs with shallow earthquakes, those with an epicenter less than 20 km.

Ground shaking: The movement of the earth's surface from earthquakes or explosions is produced by waves that are generated by 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 material down a slope.

Liquefaction: A process by which water-saturated sediment temporarily loses strength and acts as a fluid.

Tectonic Deformation: A change in the shape of a material due to stress and strain.

Tsunami: A sea wave of local or distant origin resulting from large-scale seafloor displacements associated with earthquakes, major submarine slides, or volcanic action.

Seiche: The waves in a lake or reservoir that are induced due to ground shaking.

Most property damage and earthquake-related deaths are caused by the collapse of structures. The level of damage depends upon the amplitude and duration of the ground shaking, which is directly related to the earthquake size, distance from the fault, site, and regional geology.. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. The impact to Shelby County of a large regional earthquake could be significant. The largest quake to strike Shelby County occurred in 1916, with a 5.2 magnitude. The quake caused damage to adjacent Jefferson County.

The Mercalli scale is the method most commonly used in the United States for measuring earthquake intensity. This twelve tier scale ranks observed effects from I, felt only under especially favorable circumstances, to XII, total destruction. The magnitude of an earthquake is measured through the use of the Richter scale. Earthquake magnitudes describe the subject on an absolute scale. An earthquake of magnitude 8, for example, is ten times stronger than a magnitude 7 earthquake, and 100 times stronger than a magnitude 6 earthquake, etc.

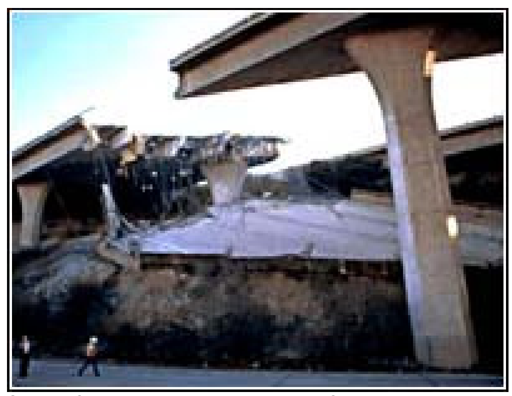
Table 5.3 Mercalli Scale of Earthquake Intensity And The Corresponding Richter Scale

Scale	Mercalli (Intensity)	Description of Effects	Maximum Acceleration	Richter Scale (Magnitude)
I	Instrumental	Detected only on seismographs	<10	
II	Feeble	Some people feel it	<25	<4.2
III	Slight	Felt by people resting	<50	
IV	Moderate	Felt by people walking	<100	
V	Slightly Strong	Sleepers awake; church bells ring	<250	<4.8
VI	Strong	Trees sway/objects fall off shelves	<500	<5.4
VII	Very Strong	Walls crack; plaster falls	<1000	<6.1
VIII	Destructive	Cars uncontrollable; poorly constructed buildings damaged	<2500	
IX	Ruinous	Houses damaged/ground cracks/pipes break	<5000	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides	<7500	<7.3
XI	Very Disastrous	Most buildings collapse; pipes/roads, bridges, railways destroyed; triggers other hazards	<9800	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>9800	>8.1

Future Probability

According to the Center for Earthquake Research and Information at the University of Memphis, there is a 40 to 60 percent probability of a "damaging" NMSZ earthquake in the magnitude 6.0 to 6.3 range in the next 15 years and an 86 to 97 percent probability of a similar size quake in the next 50 years. In addition, there is a 19 to 29 percent probability of a "great earthquake" in the magnitude 7.6 range. Shelby County is susceptible to a New Madrid earthquake. Most of the risk in this area would be to non-structural items (light fixtures and bookshelves falling, etc.), but structural damages to weaker buildings and utilities (pipelines) could also occur. Damage in Shelby County could also result from a large earthquake in the SASZ. Most of the earthquakes in the SASZ have had magnitudes ranging between 2 and 3, but one of magnitude 5.8 has been recorded in Virginia. The potential exists for widespread damage and disruption in Shelby County from another earthquake in the SCSZ. The future probability of an earthquake of sufficient intensity occurring in Shelby County is low. The risk of significant damage caused by an earthquake is the county is moderate. A large earthquake could cause serious damage to populated areas and may trigger more devastating events like landslides. The probability of a significant earthquake event in Shelby County is low however, should an 6.0 earthquake event or greater occur the vulnerability would be rated as high.

Figure 5.6 Earthquake Damage



Source: Colorado University Earthquake Center

Historic Occurrences

Historically, 17 earthquakes have occurred in Shelby County since 1916, 15 since 2004.

Table 5.4 Jurisdiction Historic Earthquake Events								
Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc.	Fatalities	Injuries	# of Assets Damaged	Structure Loss	Other Loss or Cost: Loss Amount	Other Loss or Cost: Type
10/18/16	Lat 33.5 Long 86.5 Shelby Co.	Magnitude not determined: Felt in five surrounding states	0	0	0	0	0	
09/14/81	Lat 33.35, Long 86.56 Chelsea	Magnitude 1.6, not felt	0	0	0	0	0	
02/06/04	Lat 33.10, Long 86.81 Montevallo	Magnitude 2.2, not felt	0	0	0	0	0	
03/19/04	Lat 33.23, Long 87 Alabaster	Magnitude 1.6, not felt	0	0	0	0	0	
03/20/04	Lat 33.25, Long 86.98 Helena	Magnitude 2.3, not felt	0	0	0	0	0	
03/20/04	Lat 33.21, Long 87 Alabaster	Magnitude 1.7, not felt	0	0	0	0	0	
03/20/04	Lat 33.25, Long 86.96 Alabaster	Magnitude 3, slightly felt	0	0	0	0	0	
03/22/04	Lat 33.23, Long 87 Helena	Magnitude 1.6, not felt	0	0	0	0	0	
03/26/04	Lat 33.24, Long 86.98 Helena	Magnitude 1.6 not felt	0	0	0	0	0	
04/01/04	Lat 33.25, Long 86.97 Helena	Magnitude 1.9, not felt	0	0	0	0	0	
05/09/04	Lat 33.23, Long 86.96 Helena	Magnitude 3.3 not felt	0	0	0	0	0	
05/26/04	Lat 33.24, Long 86.88 Chestnut	Magnitude 2.5, not felt	0	0	0	0	0	
05/27/04	Lat 33.22, Long 86.90 Alabaster	Magnitude 2.6, not felt	0	0	0	0	0	
07/03/04	Lat 33.27, Long 86.87 Alabaster	Magnitude 2.5, not felt	0	0	0	0	0	
08/19/04	Lat 33.20, Long 86.96 Gurnee	Magnitude 3.5, slightly felt	0	0	0	0	0	
08/28/04	Lat 33.22, Long 86.92 Lndsey CR	Magnitude 2.8, not felt	0	0	0	0	0	
08/28/04	Lat 33.18, Long 86.62 Columbiana	Magnitude 2.5, not felt	0	0	0	0	0	
		TOTALS	0	0	0	0	0	
Data Sources		USGA, Al Dept of Geology						
Loss Type		A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup						

Major Historic Occurrences Discussion

The largest known earthquake in Alabama happened October 1916 at 4 PM in northern Shelby County. Intensity was VII on the Modified Mercalli Scale, indicating a strong earthquake. The epicenter was at 33.5 degrees Latitude and 86.5 degrees Longitude. Near the epicenter, chimneys were knocked down, windows broken, and frame buildings "badly shaken."

The earthquake caused buildings to sway in downtown Birmingham and tied up all phone lines in the city with 25,000 calls recorded at the main exchange in the hour following the quake. Two additional weaker tremors were reported that evening. It was noted by residents in seven States and covered 100,000 square miles. The epicenter is in an area that was rural at the time of the earthquake. Today this area is highly populated and many structures are situated on steep hillsides susceptible to landslides. Another earthquake of the same magnitude in this area would cause considerable damage today.

5.3.3 Extreme Temperatures Profile

Temperatures that hover ten degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions occur when a dome of high atmospheric pressure traps hazy, damp air near the ground. What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold. Extreme cold events are when temperatures drop well below normal in an area.

Location

Summers in Alabama and Shelby County are among the hottest in the United States, with high temperatures averaging over 90 °F throughout the summer in the entire state making extreme heat fairly common during the summer months. Winters are generally mild in Shelby County, with average low temperatures around 32° F.

Extent

The combination of high temperatures and humid conditions increase the level of discomfort and the potential for danger to humans. The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps:

Heatstroke is considered a medical emergency and is often fatal. It exists when rectal temperature rises above 105F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death to-care ratio in reported cases averages about 15%.

Heat Exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.

Heat Syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability as a result of heat. The condition typically causes little or no harm to the individual. Heat Cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion, it is thought to be the result of a mild imbalance of fluids and electrolytes.

Figure 5.7 Heat Index Chart

Relative Humidity (%)	Temperature (°F) 80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	95	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Heat Index	Notes
80-90	Caution - fatigue is possible with prolonged exposure and activity
90-105	Extreme caution - sunstroke, heat cramps, and heat exhaustion are possible
105-130	Danger - sunstroke, heat cramps, and heat exhaustion are likely; heat stroke is possible
over 130	Extreme danger - heat stroke or sunstroke are likely with continued exposure

Source NWS

Extremely cold temperatures often accompany a winter storm, so individuals may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car accidents and falls on the ice, individuals may also face indoor hazards. Many homes will be too cold either due to a power failure or because the heating system is not adequate. As people use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases. Exposure to cold temperatures can lead to serious or life-threatening health problems such as hypothermia, cold stress, frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes. Wind chills can present significant risk, particularly if people are not properly clothed or protected. A 15 o F below air temperature with wind speeds of 10 mile per hour creates a wind chill of 35 below zero.

Figure 5.8 National Weather Service Wind-chill Chart

NWS Windchill Chart

Temperature (°F)

Wind (mph) / Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes; 10 minutes; 5 minutes

$$\text{Wind Chill } (^\circ F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Source: NWS

Hypothermia occurs when the core body temperature is <95ºF (<35ºC). If persons exposed to excessive cold are unable to generate enough heat (e.g., through shivering) to maintain a normal core body temperature of 98.6ºF (37ºC), their organs (e.g., brain, heart, or kidneys) can malfunction. When brain function deteriorates, persons with hypothermia are less likely to perceive the need to seek shelter. Signs and symptoms of hypothermia (e.g., lethargy, weakness, loss of coordination, confusion, or uncontrollable shivering) can increase in severity as the body's core temperature drops. Infants and elderly are most susceptible to such conditions.

Extreme cold also can cause emergencies in susceptible populations, such as those without shelter or who are stranded, or those who live in a home that is poorly insulated or without heat. Infants and the elderly are particularly at risk, but anyone can be affected [Centers of Disease Control and Prevention (CDC), 2005].

Heat index values, for the summers of 1980 and 2007, were calculated for every hour, at five observation sites across Alabama. A comparison indicates the maximum daily heat index values during the summer of 1980 were significantly higher than those in 2007. The city of Birmingham (adjacent to Shelby County) recorded 49 days with a heat index greater than or equal to 100 degrees during the summer of 1980. There were only 18 such days in 2007. The heat index at Birmingham reached or exceeded 110 degrees eight times in July 1980, while the maximum heat index in August 2007 was 107. There were 123 heat-related deaths in Alabama during the summer of 1980, with 115 of them associated with the 23-day heat wave of late June/early July. That became the modern benchmark for heat waves in Alabama. Fortunately, no summer since 1980 has come close to equaling that number of heat-related deaths. The Alabama heat wave of August 2007 resulted in 13 heat-related fatalities. In 2007, heat-related datasets were collected at Alabama hospitals for the first time, and reported to the Alabama Department of Public Health. Close to 700 people were treated for heat stress, with 164 admitted to hospitals.

The common factors related to those who perished during the heat waves of 1980 and 2007 are the individuals were generally elderly, lived alone (shut-ins), and did not have air conditioning in their homes. With air conditioning being more available today than it was in 1980, we speculate a future heat wave comparable to the summer of 1980 would not result in one hundred plus deaths in Alabama. The majority of the people treated at hospitals for heat stress in August 2007 was of working age (25-60) and were working outside when they developed heat-related problems. Therefore, future heat stress related educational efforts should focus more on people who work outside during heat waves, since they are the ones most at risk.

Extreme temperatures have accounted for 2 fatalities, 2 injuries and over 12 million dollars in damages in the last 46 years.

Future Probability

There have been 14 occurrences of extreme temperature events since 1962. This equates to and event approximately every 3 years. The annual probability of extreme temperatures occurring is medium. However, because the impacts are so localized and relatively moderate when compared to other hazards, the site- specific incidence of extreme temperatures is considered to be low.

Historic Occurrences

According to the NCDC/Sheldus hazard databases there have been 14 extreme temperature events in Shelby County since 1980.

Table 5.5 Jurisdiction Historic Extreme Temperature (Hot/Cold) Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets Damaged, Evacuation, Etc	Fatalities	Injuries	# of Assets Damaged	Structure Loss	Other Loss or Cost: Amount	Other Loss or Cost: Type
12/11/62	Countywide	Extreme Temp- Cold	0	0	0	7463	7463	A
01/23/63	Countywide	Extreme Temp- Cold	0	0	0	7463	7463	A
01/29/66	Countywide	Extreme Temp- Cold	0	0	0	7463	7463	A
07/05/80	Countywide	Extreme Temp: Heat	0	1	0	0	74626	A
06/02/85	Countywide	Extreme Temp: Heat	1	1	0	7462	0	A
04/01/87	Countywide	Extreme Temp- Cold	0	0	0	1667	0	A
08/01/95	Countywide	Extreme Temp: Heat	0	0	0	0	5970149	A
12/10/95	Countywide	Extreme Temp-A blast of cold Arctic air established new record lows were set	0	0	0	0	0	
02/03/96	Countywide	Extreme Temp-An Arctic cold front set cold. New record lows t.	0	0	0	0	0	
02/23/96	Countywide	Extreme Temp-High temperature records were set and set the stage for damage to agriculture especially the peach crop.	0	0	0	0	0	
03/07/96	Countywide	Extreme Temp-Extreme cold weather set new record lows across much of Alabama	0	0	0	0	5200000	A
01/24/03	Countywide	Extreme Temp-The coldest temperatures ranged from 2 to 10 degrees. Water pipes, lawn sprinkler systems froze and broke. Strawberry crops were lost	1	0	0	0	1000000	A
04/07/07	Countywide	Extreme Temp- Cold	0	0	0	0	0	
04/08/07	Countywide	Extreme Temp- Cold	0	0	0	0	0	
		TOTALS	2	2	0	31518	12267164	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

A severe heat wave during the summer of 1995 was responsible for six deaths and $59 million dollars worth of crop damage in Shelby County.

On March 7, 1996 a cold front moved through Shelby County and set record low temperatures in nearly all of the northern two thirds of the State. Crop damages occurred.

In January of 2003 a severe cold snap resulted in one fatality and severe damage to the strawberry crop.

Mid July to Mid September 1980 the hottest day of the summer was July 17th, when over 80 percent of the state reached 100 degrees, and nearly one quarter of the state reached 105. The highest reading on that day in Shelby County was 106 degrees. In the month of July alone, there was an estimated 120 heat-related deaths statewide, along with the loss of more than 200,000 chickens and half the state's corn crop.

5.3.4 Flooding Profile

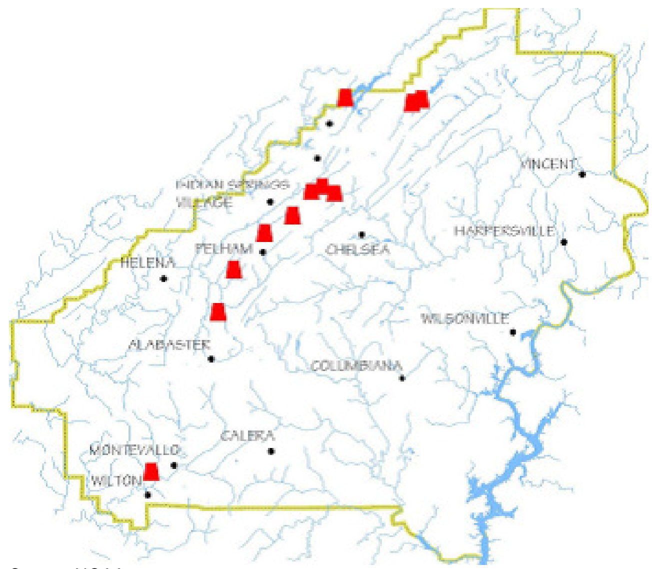
Flooding occurs when abnormally high stream flow overtops the natural or artificial banks of a watercourse. The three-principle types of floods, which may affect Shelby County, are: dam failure floods flash floods, riverine floods.

5.3.4.1 Flooding Dam/Levee Failure

Dam/levee failure floods are usually associated with intense rainfall or flood conditions. Dam/levee failure may be caused by faulty design, construction and operational inadequacies, or a flood event larger than the dam/levee design.

Dam safety has been an ongoing hazard mitigation issue in the State of Alabama especially with regard to small dams that are privately owned and poorly maintained. Currently a state or federal law to regulate private dams or the construction of new private dams does not exist. Numerous attempts have been made to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. The opposition of agricultural interest groups and insurance companies has hampered enactment.

Figure 5.9 Dam Hazards in Shelby County



Source: NOAA

Location

There are an estimated 2,000 dams of sufficient size that they could pose a threat to property in Alabama. Of these 2,000 dams, approximately 32 hydroelectric, navigation, and flood control project dams are federally regulated and fall under the jurisdiction of the Tennessee Valley Authority, the U. S. Army Corps of Engineers, Alabama Power Company, and Alabama Electric Cooperative, Inc. A number of existing dams have inadequate spillways and embankments and many are poorly maintained. Approximately 186 dams were classified by the Corps of Engineers as high-hazard dams, posing a significant safety hazard.

Extent

According to the Corps of Engineers there are forty-one identified dams in Shelby County, eleven have been categorized in the "high hazard" classification. This classification is assigned to a dam depending upon the urban development directly downstream of the dam.

Table 5.6 High Hazard Dams in Shelby County

Dam	Name	Dam Stream
Belcher Lumber Company Dam	W. A. Belcher	Tributary of Cahaba Valley Creek
Lake Melaken Dam	Ken Peeler	Tributary of Hogpen Creek
Lake Purdy Dam	Bham Municipal Water Service Corp	Little Cahaba River
Oak Mountain Lake Dam Number One	Oak Mt St Park St Of Ala	Tributary of Cahaba Valley Creek
Oak Mountain Lake Dam Number Two	Oak Mt St Park St Of Ala	Tributary of Cahaba Valley Creek

Table 5.6 High Hazard Dams in Shelby County		
Dam	**Name**	**Dam Stream**
Oak Mountain New Lake Dam	Oak Mt St Park St Of Ala	Tributary of Cahaba Valley Creek
Oak Mountain Old Lake Dam	Oak Mt St Park St Of Ala	Tributary of Dry Brook
Rutherford Dam	Mrs. Willie Rutherford	Tributary of Pea vine Creek
Smyer Lake Dam Number Two	Shelby Lake Corporation	Shoal Creek
Smyers Lake Dam Number One	Hollybrook Lake Corp	Shoal Creek
University Of Montevallo Lake Dam	University Of Montevallo	Tributary of Shoal Creek
Logan Martin Dam	Logan Martin dam	Coosa River

Alabama Power controls two major power producing dams on the Coosa River that back up significant impoundments of water that could impact Shelby County. Of the dams in Alabama, none has caused more long-term concern, non-stop maintenance and ongoing expense than Logan Martin Dam. Alabama Power is pouring money, in the form of concrete, down a seemingly never-ending hole in efforts to plug leaks under the dam. The dam, which backs up the Coosa River to form Lake Logan Martin, sits on the St. Clair/ Talladega county border. It was knowingly built on a porous limestone base, and problems began almost as soon as the dam was put in. The maximum water storage is 650000 acre-feet with normal storage: 273000 acre-feet. The drainage area is 7700 square miles. The hazard potential is rated high. A failure of the Logan Martin Dam could inundate much of the Town of Vincent in Shelby County.

Figure 5.10 Logan Martin Dam

Source: 2004 Mitigation Plan

The areas impacted by a dam failure are analyzed on the basis of "sunny day" failures and failures under flood condition. Typically, the dam-break floodplain is more extensive than the floodplain used for land use development purposes, and few communities consider upstream dams when permitting development. The potential severity of a full or partial dam failure is influenced by two factors: the amount of water impounded, and the density, type, and value of development and infrastructure downstream.

The greatest threat to people and property is in the area immediately below the dam since flood discharges decrease as the flood wave moves downstream. A small dam retaining water in a stock pond may result in little damage, but could result in the loss of irrigation water, causing financial hardship to farmers. Failure of a larger dam failure might bring about considerable loss of property, destruction of cropland, roads, and utilities, and loss of life. Far-reaching consequences can include loss of income, disruption of services, and environmental devastation

Future Probability

The probability of future occurrences of dam/levee failure is difficult to characterize because of the lack of available information. The probability of a dam failure in Shelby County is rated low and the vulnerability is rated medium.

Historic Occurrences

Two reports of dam failure in Shelby County were found. However, statewide there have been numerous dam failures. There were reports of 160 dam breakages during the July 1994 floods; however, because there is no state law or regulation concerning dam safety that requires reporting of breaks or other problems, not all breaks are reported.

Major Historic Occurrences Discussion

In 1990 from February 3rd to 17th the Holly Brooke Lake Dam was saturated to the point where the front of the dam experienced slumping. A release of pressure on the dam prevented it from a total failure. The Holly Brooke Lake Dam is not considered to be a high-risk dam. Six families were evacuated during this event.

November 24, 2004 a dam failed near the Friendship Community in St Clair County resulting in significant damage, decreased property values, causing environmental damages. Driveways and lawns were covered with mud. It also caused 20% damage to a downstream dam.

5.3.4.2 Flash and Riverine Flooding

Flash Flooding affects Shelby County in residential or business/industrial areas. Riverine flooding affects Shelby County along rivers, various small streams and lakes. The major causes of these floods in Shelby County are (1) intense precipitation associated with hurricanes, tropical storms, and tropical depressions; (2) thunderstorms; and (3) slow-moving or stationary frontal systems. Alabama receives more annual rainfall than any other state, creating a high potential for riverine and flash flooding Annual precipitation in Shelby County averages about 50 inches. Seasonal rainfall results in more than 50% of the average rainfall between December and May.

The principal sources for the State's moisture are the Gulf of Mexico and the subtropical Atlantic Ocean with occasionally, tropical storms and hurricanes development in the Gulf and summer precipitation from thunderstorms and winter precipitation from frontal systems. Severe weather and large quantities of precipitation can be produced when warm, moist air from the gulf converges with cold, arctic air from the north.

A Tropical Storm is an organized system of strong thunderstorms with maximum sustained winds between 34 to 63 knots (39 to 73 mph) (FEMA, 2007). Tropical Storms occur in Shelby County usually as a result of a hurricane losing wind speed and intensity as it moves inland from the Caribbean or Atlantic oceans. Tropical storms, which generally occur between July and November, commonly produce torrential rains. These torrential rains can last for days and cause dam/levee failure, flash and riverine flooding.

Thunderstorm and frontal flooding tends to occur in Shelby County during anomalous years of prolonged, regional rainfall (such as an El-Nino year) and is typified by increased humidity and high spring/summer temperatures. Thunderstorms produce flash flooding, often far from the actual storm, and water may rise at night when natural warnings may not be noticed. Rains associated with broad cyclonic storms embedded in frontal systems have produced major flooding in Shelby County.

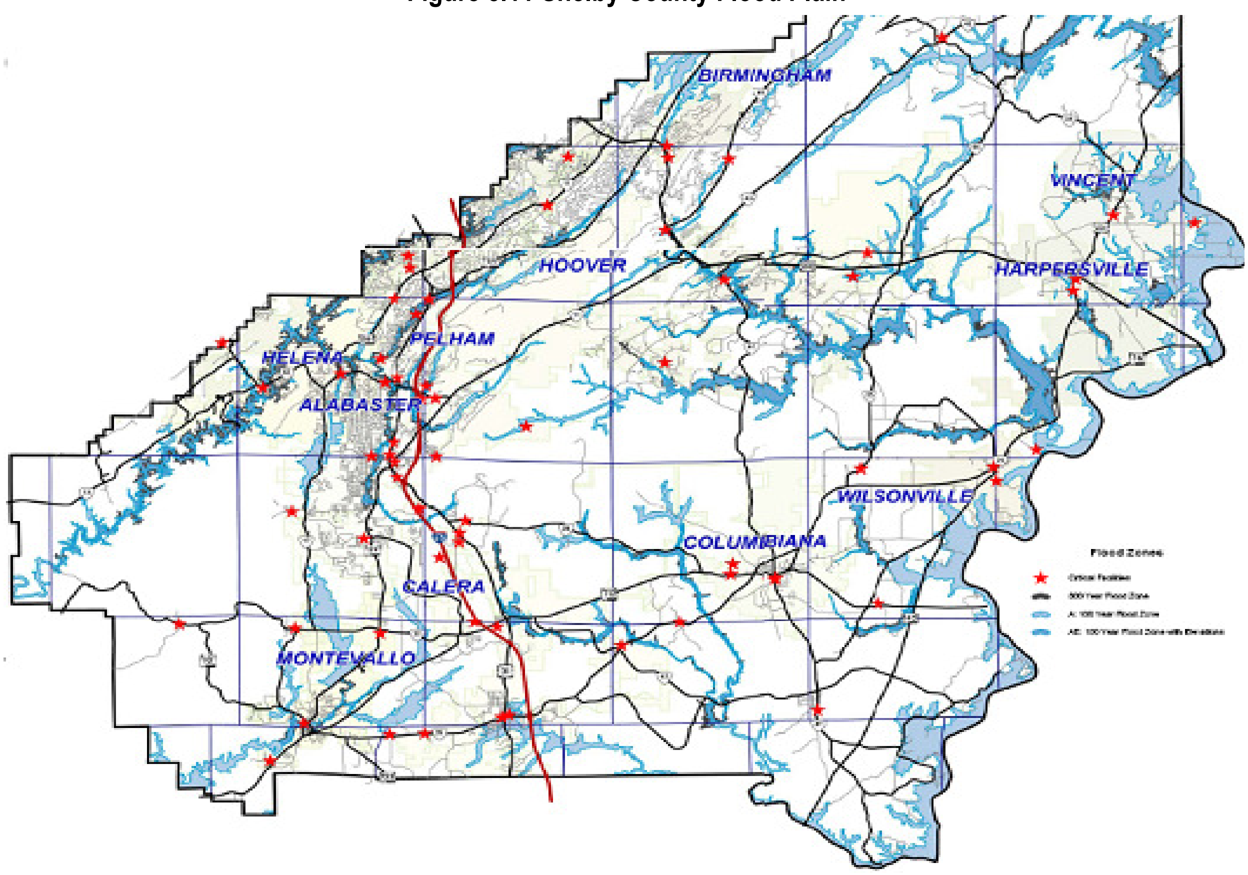
Location of Riverine/Flash Flooding

Flooding caused by rainfall occurs to some extent in almost every part of Shelby County. Flood producing storms over the Cahaba River basin are usually of the frontal type. They usually occur in the winter and spring and last from 2 to 4 days. Normally 5 to 6 inches of intense or general rainfall will cause widespread flooding, but on many smaller streams, 3 to 4 inches of rainfall are sufficient to produce significant flooding. Flooding potential from surface storm-water runoff is widespread throughout the county but is most prevalent along lower Yellowleaf Creek and tributaries of the Cahaba River. The Coosa River also has been a source for past floods. The waterways contributing to Shelby County flooding are identified in the table below:

Table 5.7 Shelby County Waterways Prone to Flooding

Little Cahaba River	Yellowleaf Creek
Shades Creek	Spring Creek
Cahaba River	Locust Creek
Buck Creek	Walthall Branch
Beaverdam Creek	Coosa River
Pineywoods Creek	Beeswax and Little Beeswax Creeks
Savage Creek	Mill Creek
Shoal Creek	Waxahatchee Creek
Kelly Creek	Buxahatchee Creek

Figure 5.11 Shelby County Flood Plain



Source: Shelby County GIS

Extent of Riverine/Flash Flooding

Shelby County has been significantly affected by flooding caused by tropical storms and hurricanes that have caused disastrous floods in Shelby County.

Figure 5.12 Tropical Storm/Hurricane Tracks Through Shelby County

Source: NOAA

The Cities of Pelham and Alabaster have the most risk of flooding from the Cahaba River tributaries. The major areas prone to flooding in Pelham are along Bishop Creek, Buck Creek and Peavine Creek. These floodplains generally follow a northeastern to southwestern direction through the valleys; however, the flood prone areas are not static, and can expand as land uses change over time. Developments increase the amount of impervious surfaces, which serve to increase the rate and velocity of surface water runoff into the streams and creeks of Pelham. The Flooding impact of Yellowleaf Creek is a familiar feature of the Chelsea area

Floods in Alabama have been associated with a variety of weather disturbances. Torrential rains during a 48-hour period produced the flood of 1973. The most destructive flood resulting from a frontal system was March-April in 1979; estimated damage was about $75 million. During the 12-month period from February 1990 to January 1991, Shelby County was included in Presidential Disaster.

Tropical storm/hurricane flooding events resulted in 2 fatalities, 0 injuries and $2,808,000 in property losses. Thunderstorm/frontal flooding events have resulted in 1 fatality, 1 injury and $17,005,501 in property losses.

Figure 5.13 Flooding in Alabaster From Hurricane Fay

Source: NOAA

Future Probability of Riverine/Flash Flooding

There have been 10 occurrences of major flooding resulting from Tropical Storms/Hurricanes since 1979 a period of 29 years. Historical events show that flooding from tropical storms/hurricanes will cause significant damage in Shelby County approximately once every 3 years resulting in a probability rating of medium with vulnerability rating of high.

There have been 27 flooding events caused by thunderstorms or strong fronts since 1961 a period of 47 years or a major flooding event approximately every 1.74 years. It is expected that the frequency and severity of these events will continue into the future resulting in a risk assessment of high and a vulnerability assessment of high.

Historic Occurrences of Riverine/Flash Flooding

According to the NCDC data base and local information there have been 10 occurrences of tropical storm/hurricanes causing significant damage to structures in Shelby County.

Table 5.8 Historic Riverine/Flash Flooding Tropical Storm/Hurricane

Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Other Loss or Cost Type
09/01/79	Countywide	Hurricane Frederic	0	0	0	1000000		
10/04/95	Countywide	Hurricane Opal Heavy rain caused creeks and streams to swell out of banks, many structures flooded	2	0	0	1000000	100000	C
09/21/98	Countywide and Wilton Wilmont Subdivision	Tropical Storm Hermine dumped over 6" of rain, Roads were closed, cars were swamped and motorists were stranded, apartments were damaged in Montevallo. 1 House was damaged in Wilton	0	0	1	12000	0	
08/06/01	Countywide Calera	Hurricane Tropical storm Barry caused heavy rain up to 3" 6th/17th Ave and RR tracks flooded	0	0	6	10000	0	
09/27/02	Countywide	Tropical Storm Isidore caused total rainfall amounts of 2-6 inches in Shelby County.	0	0	0	0	0	
07/01/03	Countywide	Tropical Storm Bill dropped up to 8" of rain, Roadways were closed. Numerous creeks and streams were out of banks.	0	0	0	12000	0	
09/16/04	Countywide Calera Pelham	Tropical Ivan dropped up to 8" of rain, Roads flooded and many homes flooded. An Alabama Power worker was killed	0	0	0	70000	0	
06/11/05	Countywide	Hurricane Tropical storm Arlene with rain amounts from 3 to 8"	0	0	0	104000	0	
07/10/05	Countywide Vincent	Hurricane Dennis dropped up to 10" of rain causing flash flooding, Pinehills subdivision in Vincent 4 houses damaged	0	0	0	500000	0	
08/25/08	Countywide	High Wind Tropical Storm Fay The storm downed trees and power lines.	0	0	0	0	0	
		TOTALS	2	0	0	2708000	100000	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

The NCDC/Sheldus databases and the Birmingham National Weather Services have documented 27 flooding events resulting from thunderstorms or strong weather fronts.

Table 5.9 Historic Riverine/Flash Flooding Thunderstorm/Frontal System								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
02/03/61	Countywide	Flood a low-pressure system from the Gulf of Mexico produced intense storms and rainfall totals of 16-18 inches	0	0	0	5000000	75000	C
03/01/70	Countywide	Flood	0	0	0	0	0	
03/30/73	Countywide	Flood	0	0	0	0	0	
3/15/76	Countywide	Flood	0	0	0	83333	833	C
3/30/79	Countywide	Flood was severe. Some peak discharges were twice that of 100-year recurrence interval.	0	0	0	750000	100000	C
3/16/80	Countywide	Flood	0	0	0	746	0	
3/20/80	Countywide	Flood	0	0	0	746	7	C
3/28/80	Countywide	Flood	0	0	0	746	0	
4/19/82	Countywide	Flood Green Park Trailer court flooded	0	0	0	500000	250000	
2/15/90	Countywide	Flood	0	1	0	151515	0	
3/15/90	Countywide	Flood	0	0	0	757575	0	
05/03/93	Helena Pelham	Flood-Flash Heavy rains flooded roads in Helena and Pelham with up to 3' of water. GreenPark Trailer park flooded	0	0	0	0	0	
03/06/96	Pelham Alabaster Columbiana	Flood-Flash Heavy rains caused flooding along Buck Creek in Alabaster and Pelham, flooding in Columbiana closed roads along Cahaba River	0	0	0	200000	25000	C
01/07/96	Countywide	Flood-Flash a low-pressure system brought heavy rain, rivers/creeks were out of banks, streets were closed, bridges washed out. A girl was killed, Many traffic accidents occurred	1	0	30	35000	5000	C
09/22/02	Pelham	Flood-Flash rainfall up to 7" fell in Pelham. Many high water rescues were made, a jr. high school had major damage, 1 home was destroyed, 100 homes, 20 businesses and 22 apartments were damaged, bridges/culverts were washed out, roads closed 200 vehicles were damaged	0	0	544	100000	0	
06/17/03	Pelham Saddlerun Stratford Place	Flood-Flash rain fell at a rate up to 3" per hour in Pelham. Up to 6" fell, roads flooded, the Pelham Fire Department performed swift water rescues. 75 homes and 6 businesses had flood damage	0	0	81	400000	6500000	
06/17/03	Calera Pelham Saddlerun	Flood-Flash Up to 6" fell, 6th Ave and 17th Ave and RR tracks Flooded. 30 houses damaged, 8 people evacuated in Stratford Place	0	0	4	750000	1250000	

Table 5.9 Historic Riverine/Flash Flooding Thunderstorm/Frontal System								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
02/06/04	Columbiana	Flood-Flash streams and creeks were out of banks. Several roadways were closed	0	0	7	8000	0	
11/24/04	Countywide	Flood-Flash Many roads were under water	0	0	0	50000	0	
4/1/05	Countywide	Flood Most of the flooding was overflowing farms and woodlands along these mainstreams	0	0	0	0	0	
4/1/05	Countywide	Flood-Flash several inches of rain fell in a short period of time Roads were closed	0	0	0	2000	0	
7/10/05	Countywide	Flood-Flash A few road sections and bridges were washed away.	0	0	6	6000	0	
7/20/05	Chelsea	Flood-Flash on Hiway 280 roads were closed	0	0	0	2000	0	
7/21/05	Montevallo	Flood-Flash Main Street in Montevallo was closed due to high water.	0	0	0	2000	0	
5/10/06	Alabaster	Flood-Flash on Highway 17	0	0	0	0	0	
8/21/06	Alabaster	Flood-Flash CR-17 was flooded	0	0	0	0	0	
8/21/06	Helena	Flood-Flash many roads were flooded	0	0	0	0	0	
27		Totals	1	1	668	8799661	8205840	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion of Riverine/Flash Flooding

Hurricane Frederic in September 1979 affected a relatively small area but, caused by far the greatest historical property damage-in Shelby County estimated at about $1 million.

During February-March 1961, a succession of low-pressure systems from the Gulf of Mexico moved northward and produced several intense storms. This series of storms caused rainfall totals of 16-18 inches in central Alabama including Shelby County. The Alabama River at Selma had a record peak discharge of greater than a 100-year recurrence interval, and the river remained above flood stage for 17 days (Bames and Somers, 1961).

The flood of March and April 1979 was the most extensive in Shelby County. Central Alabama and Shelby County was the most severely affected. The flooding was caused by a series of early spring storms that produced extremely moist soil conditions.

On June 17, 2003, the north side of Pelham was under water after 3 to 4 inches of rain fell. The Pelham Civic Complex opened as a night shelter to serve families displaced by the flooding.

Hurricane Ivan made landfall on September 16, 2004 in Gulf Shores, on the coast of Baldwin County Alabama as a strong Category 3 hurricane with 130 mph winds and a storm surge estimated to be between 10 and 13 feet high. Ivan caused flash flooding in Shelby County.

Tropical Storm Isidore in September 25-27, 2002 moved onshore along the Louisiana Coast during the early morning hours of Thursday, September 26, 2002. Ahead of and east of the center of the storm heavy rain bands and gusty winds moved inland from the coastal regions of

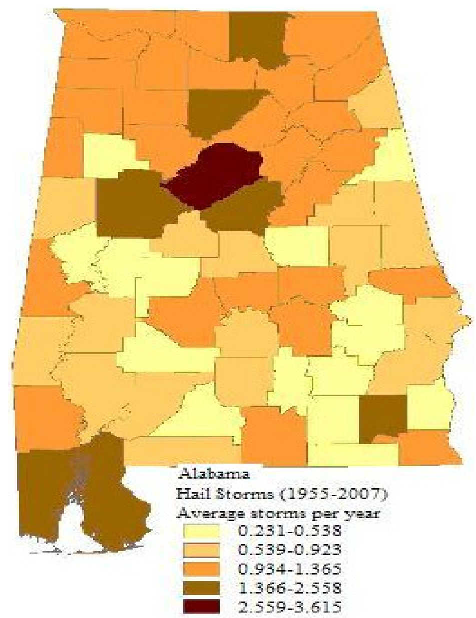
Alabama and eventually rotated through Alabama. Storm Total rainfall amounts ranged from nearly 12 inches along the Alabama Gulf Coast...to 2 to 6 inches in Shelby County.

On July 26, 2005, Tropical Storm Fay caused heavy rains to fall in Shelby County causing water up to 4 feet deep across several roadways. Many vehicles were stalled in high water and damaged. Many streets and creeks flooded in Pelham. Many were without power during the storms. Fire departments performed 11 swift water rescues.

5.3.5 Hail Profile

The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the Earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended give hailstones more time to increase in size.

Figure 5.14 Hail Storms in Alabama



Source:

Location

Hailstorms occur throughout Shelby County, most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

Extent

Hailstorms occur in some form or fashion on a regular basis in Shelby County. As can be seen on the adjacent chart according to he National Weather Service the county experiences approximately 2 to 3 damaging hail events each year. Hail can occur at any time, day or night. Between 1961 and 2000, less than 30 reports of hail occurred during each hour between 1 and 9 am. The number of reports of hail increased throughout the late morning, peaking around 3 pm in the afternoon with just over 250 reports of hail. The number of hail reports received at the Birmingham NWS has increased in recent years. In the 1960s, less than 10 reports of hail were received each year, but since 1995 more than 100 yearly reports of hail were received with 340 reports received in 1998. Hailstorms rarely result in the loss of life but they cause nearly $1 billion in property, livestock and crop damage each year. Once a hailstone reaches the size of about 1.5 inches in diameter, damage to cars, windows and siding occurs. Hail events in Shelby County have resulted in no fatalities, 4 injuries and $814,133 in property losses

Future Probability

The annual probability of hail occurring somewhere in the Shelby County is clearly quite high. However, the site-specific incidence of hail is considered low because of the localized nature of the hazard. The probability rating for Hail is high, however the vulnerability is low.

Historic Occurrences

The NCDC and Sheldus databases have recorded 125 hail events in Shelby County. Included in the table below are the 33 events resulting in fatalities, injuries or property loss. The detailed historic events are in the supporting annex.

Table 5.10 Historic Hail Events

Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
04/01/70	Shelby County	Hail 1.50 In. Begin Lat/Lon: 33°17'n / 86°47'w	0	0	2	12500	1250	E
03/22/71	Shelby County	Hail 1.00 In. Begin Lat/Lon: 33°12'n / 86°35'w	0	0	2	1136	455	E
05/24/96	Calera	Hail 1.00 In. Quarter Size Hail Was Reported	0	0	2	10000	2000	E
07/07/96	Alabaster	Hail 1.00 In. At Thompson High School	0	0	9	18000	0	
08/24/96	Montevallo	Hail 1.75 In. Golf Ball Size Hail At Hwy 26/ 31	0	0	8	15000	2000	E
12/12/96	Montevallo	Hail 0.75 In.	0	0	4	5000	1000	E
12/12/96	Indian Springs	Hail 0.75 In. Dime-Sized Hail Was Reported	0	0	5	5000	1000	E
01/24/97	Alabaster	Hail 0.75 In. Reported In Greystone	0	0	5	5000	0	
01/24/97	Indian Springs	Hail 0.75 In. Reported South Of The Airport	0	0	4	5000	0	
01/24/97	Alabaster	Hail 1.00 In. Reported In Meadowbrook	0	0	7	7000	0	
07/28/97	Alabaster	Hail 1.00 In. At Thompson High School	0	0	1	2000	0	
04/14/98	Chelsea	Hail 1.00 In. Reported Along US 280	0	0	4	4000	0	
04/14/98	Chelsea	Hail 1.75 In. Golf Ball Size Hail Reported	0	0	5	5000	0	
05/06/98	Chelsea	Hail 0.75 In.	0	0	2	2000	0	
05/06/98	Columbiana	Hail 1.00 In. Hail Was Reported	0	0	2	2000	0	
04/02/00	Helena	Hail 1.75 in.	0	0	4	4000	0	
04/02/00	Pelham	Hail 1.75 in. Golf ball size hail	0	0	4	4000	0	
04/03/00	Alabaster	Hail 1.75 in. Golf ball size hail	0	0	3	3000	0	
05/24/01	Montevallo	Hail 1,50 in.	0	0	3	3000	0	
05/24/01	Helena	Hail 1.50 in. Ping pong ball size hail	0	0	3	3000	0	
03/30/02	Vandiver	Hail 2.75 in. Golf ball to baseball size caused damage to vehicles, roofs, and businesses	0	0	9	400000	0	
07/02/02	Vandiver	Hail 1.00 in.	0	0	1	1000	0	
07/02/02	Harpersville	Hail 1.00 in. Quarter size hail	0	0	1	1000	0	
05/02/03	Pelham	Hail 4.50 in.	0	0	1	250	0	
05/02/03	Montevallo	Hail 4.50 in. golf ball size hail	0	0	11	250000	0	
05/06/03	Westover	Hail 1.75 in.	0	0	4	5000	0	
05/06/03	Countywide	Hail 1.75 in. Golf ball size hail	0	0	5	5000	0	
05/16/03	Alabaster	Hail 1.75 in. To golf ball size.	0	0	21	10000	0	
03/22/05	Wilsonville	Hail 1.50 in.	0	0	1	8000	0	
03/22/05	Alabaster	Hail 1.50 in. Hail the size of ping pong balls	0	0	1	8000	0	
04/22/05	Alabaster	Hail 0.88 in.	0	0	1	1000	0	

04/30/05	Pelham	Hail 0.88 in. Pea to nickel size hail also fell	0	0	1	1000	0	
12/04/05	Wilsonville	Hail 0.88 in. Hailstorm contributed to an auto accident where 4 people were injured.	0	4	1	0	0	
33		TOTALS	0	4	142	806428	7705	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

There have not been any major occurrences or significant losses from hail events in Shelby County that warrant discussion.

5.3.6 High Winds Profile

Wind is defined as the motion of air relative to the earth's surface. In the United States the mean annual wind speed is reported to be eight to 12 mph, with frequent speeds of 50 mph and occasional wind speeds greater than 70 mph. High Winds are generally the result of thunderstorms, tornadoes and tropical storms/hurricanes.

5.3.6.1 High Winds Tropical Storm/Hurricane

Tropical storms and hurricanes are large-scale systems of severe thunderstorms that develop over tropical or subtropical waters and have a defined, organized circulation. Tropical storms have wind speeds of 39 mph to 74 mph. Hurricanes and tropical storms get energy from warm waters.

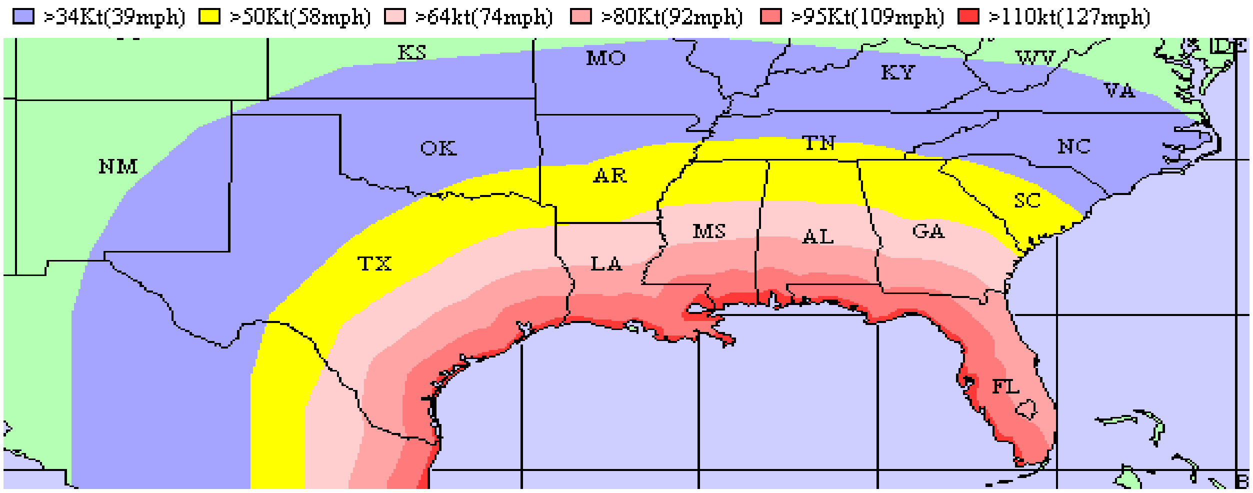
Location

The central Gulf of Mexico coastline is among the most hurricane-prone locations in the U.S. While the Atlantic Basin hurricane season officially extends from June 1 to November 30. The peak hurricane activity in the Alabama and Shelby County occurs in September. Hurricanes and tropical storms bring severe winds, extreme amounts of rainfall, thunderstorms, lightning and tornadoes. The entire area of Shelby County and its participating jurisdictions received significant impact from the high winds associated with Tropical Storms/Hurricanes.

Extent

The inland extent of Tropical Storm/Hurricane winds as well as wind strength increases with the strength of the hurricane at landfall and the actual forward motion of the storm. Shelby County is capable of receiving winds in excess of 58 mph for a Tropical Storm/Hurricane category 4 storm as demonstrated in the below figure even a typical Category 2 hurricane is capable of spreading tropical storm force winds (>39 mph) over Shelby County.

Figure 5.15 Extent of Inland Winds for a Category 4 Hurricane Moving Forward at 25 mph



Source: National Hurricane Center

The typical damage to structures from the different storm categories is shown in the table below. The Beaufort scale applies to high winds. The Saffir-Simpson Scale is for hurricane winds.

Table 5.11 Beaufort and Saffir-Simpson Scales of Wind Damage

Name	Wind speed	Expected Property Damage
Strong gale	47-54 mph	Chimneys blown down, slate tiles torn from roofs
Whole gale	55-63 mph	Trees broken or uprooted
Storm	64-75 mph	Trees Uprooted, cars overturned
Category 1 Hurricane	74-95 mph	Minimal: Damage is done primarily to shrubbery and trees, unanchored mobile homes are damaged, some signs are damaged, little structure damage
Category 2 Hurricane	96-110 mph	Moderate: Some trees are toppled, some roof coverings are damaged, and mobile homes suffer major damage
Category 3 Hurricane	111-130 mph	Extensive: Large trees are toppled, roof structural damage, mobile homes are destroyed, some structural damage to small homes/utility buildings.
Category 4 Hurricane	131-155 mph	Extreme: Extensive damage is done to roofs, windows, and doors; roof systems on small buildings completely fail; some curtain walls fail.
Category 5 Hurricane	>155 mph	Catastrophic: Roof damage is considerable and widespread, window and door damage is severe, extensive glass failures, and entire buildings could fail.

High winds impact facilities, utilities and transportation and can result in loss of life. Tropical Storm/ Hurricane high winds can impose large lateral (horizontal) and uplift (vertical) forces on buildings. Residential buildings can suffer extensive wind damage when they are improperly designed and constructed.. High winds can cause damage to rooftops and exterior windows and doors allowing wind-driven rain to penetrate into the interior of both residential and commercial structures. Ten Tropical Storm/Hurricane events in Shelby County have resulted in 1 fatality, 1 injury and $21,427,001 in property losses

Future Probability

There have been 10 occurrences of significant High Wind events caused by tropical storms/hurricanes recorded in the NCDC/Sheldus databases since 1979 a period of 29 years. This results in an event occurring approximately every 3 years. The probability of future events is expected to remain the same and is rated medium. The vulnerability is high.

Historic Occurrences

Although there have been additional tropical storms/hurricane events only 10 are recorded in the NCDC/Sheldus databases as having significant impact on Shelby County.

Table 5.12 Historic High Wind Tropical Storm/Hurricane Events

Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
9/12/79	Countywide	Hurricane/Tropical Storm Fredric	0	0	0	7462686	7462686	C
10/4/95	Countywide Alabaster	Hurricane Opal 90 mph winds caused falling trees and damaged roofs.	2	0	0	3000000	1000000	
09/27/02	Countywide	Tropical Storm Isidore wind peaked at 50 mph. The winds downed trees and power lines	0	0	0	0	0	
09/16/04	Countywide Pelham	Hurricane Ivan wind damage	0	0	0	0	90758	R
6/11/05	Countywide	Hurricane Tropical storm Arlene had winds of 45 mph. Trees/power lines were downed. Roofs were damaged Thousands lost power for hours.	0	0	0	104000	0	C
7/10/05	Countywide	Hurricane Tropical Storm Dennis Numerous trees and power lines were blown down	0	0	0	200000	0	C
07/01/03	Countywide	High Wind-Tropical Storm Bill with winds of 35 mph fell many trees and power lines causing 19000 to lose power. 1 vehicle was destroyed and roofs were damaged.	0	0	0	12000	0	
09/16/04	Countywide Montevallo	High Wind-Tropical Storm Ivan with winds up to 70 mph blew down hundreds of trees and power lines. 20-30 homes were damaged. Power was not completely restored for 4 days.	0	0	0	1200000	0	C
8/29/05	Countywide	High Wind Tropical Storm Katrina downed many trees. Many structures and vehicles were damaged. Power outages lasted up to a week	0	8		894871	0	
08/25/08	Countywide	High Wind Tropical Storm Fay The storm downed trees and power lines.	0	0	0	0	0	
		TOTALS	1	1	668	12873557	8553444	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

In October 1995 Hurricane Opal rushed across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for 38 counties including Shelby County.

Tropical storm Isidore moved onshore Thursday, September 26, 2002. Ahead of and east of the center of the storm, heavy rain bands and gusty winds moved inland and eventually rotated through Shelby County. Wind gusts peaked at 50 mph. Downing trees and power lines. The most concentrated area of damage occurred in Jefferson and Shelby Counties.

07/10/05 Hurricane Dennis made landfall as a Category 3 hurricane. Most of the damage was a result of strong winds associated with Dennis' passing rain bands. Trees were knocked down, debris was scattered on roads and power outages were common throughout Shelby County. All but the 20 counties were declared a disaster.

30 August 2005 Hurricane Katrina produced local effects that were widespread across Shelby County. Numerous trees and power lines were downed; minor to major structural damage occurred and power outages were widespread. Many locations remained without power for a week or more. Storm damage effects across parts of West Central Alabama were worse than what was sustained during Hurricane Ivan in 2004 with winds in excess of 45 mph.

25 August 2008 Tropical Storm Fay impacted Shelby County. The storm's passage left six people dead in Alabama and thousands without power. The storm downed trees and power lines across the county. More than half of the Alabama's counties were declared disaster areas.

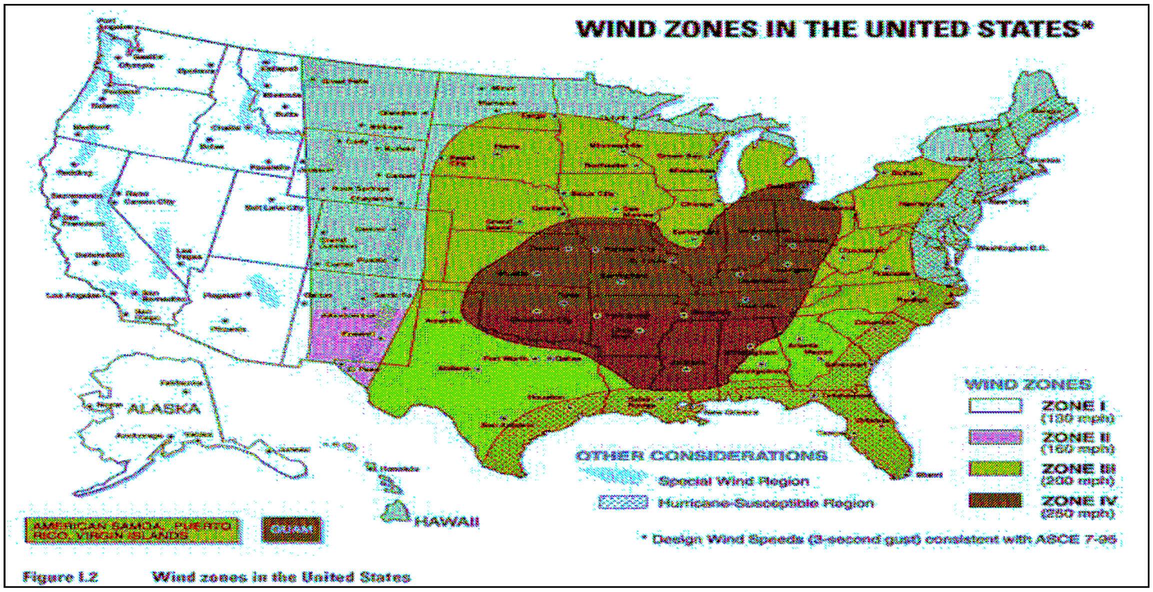
5.3.6.2 High Wind Thunderstorm

The NWS classifies a thunderstorm as severe if its winds reach or exceed 58 mph, produces a tornado, or drops surface hail at least 0.75 inches in diameter. High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds from high or low-pressure systems. Thunderstorms produce downdraft winds, which are defined as a small-scale column of air that rapidly sinks toward the ground. A downburst is the result of a strong downdraft. The downburst can cause damage equivalent to a tornado. The outflow of cool or colder air can also create damaging winds at or near the surface. As these downburst winds spread out they are often referred to as straight-line winds, which exceed 130 miles per hour

Location

Thunderstorms can strike in all regions of the U.S.; however, they are most common in the central and southern states. The atmospheric conditions in these regions of the country are most ideal for generating these powerful storms. More than 100,000 thunderstorms occur each year in the U.S., however, only about 10% are classified as "severe". The most favorable conditions for thunderstorm development occur between June and August. July is the peak month for thunderstorms in Shelby County. All jurisdictions in Shelby County have experienced severe thunderstorms accompanied by high winds. As depicted in the Wind Zone image below Shelby County resides in Zone III, which can experience wind speeds up to 200 miles per hour.

Figure 5.16 Wind Zones in The United States



Source: NWS

A typical thunderstorm is 15 miles in diameter and usually lasts 30 minutes. Thunderstorms affect relatively small-localized areas, rather then large regions much like winter storms and hurricane events (NWS, 2005).

Extent

Thunderstorm wind reached damaging force in Alabama at least 267 times during 1998 and caused millions of dollars worth of damage. There were three deaths in 1998 along with 18 injuries caused by thunderstorm wind. Damaging thunderstorm wind events remain much more common than tornadoes in Alabama. In a typical year, Alabama is likely to experience 10 to 20 times as many wind events as tornado events. Not only can severe thunderstorms produce injury and damage from violent straight-line winds and hail, but also tornadoes can develop very quickly from these storms.

Severe thunderstorm winds are most likely to occur during the spring and summer months, with reports falling off during the early fall months. During the spring, squall lines often move across the area, producing widespread wind damage. Although widespread convection is less likely during the summer months, summertime pulse thunderstorms will often produce wet microburst, which can cause localized damage paths.

Thunderstorm wind damage occurs most often in the late afternoon and early evening. Although thunderstorm wind reports peak around 5 pm, they do not decline until late in the evening when daytime heating is lost. Severe thunderstorm winds are most likely to occur during the afternoon and evening during the spring and summer months, which correlates to diurnal-type convection. Severe thunderstorm winds during the fall and winter months do not indicate a particular pattern, likely due to the variable nature of frontal passage. Severe thunderstorms will continue to take their toll on lives and property.

Thunderstorm wind damage is reported on an average of 27 days each year. The most days in a single year in which thunderstorm wind damage was recorded is 52 in 1998, the least 7 in 1966. NASA scientists suggest that the U.S. will face more severe thunderstorms in the future in the event of climate change. A recent study conducted by NASA predicts that smaller storm events like thunderstorms will be more dangerous due to climate change.

Figure 5.17 Thunderstorm Microburst Calera AL

Source: Birmingham NWS

Major health hazards from Thunderstorms are from flying debris or being in a collapsed building or mobile home. Although Thunderstorms strike at random, major structural damage is most likely in mobile homes, homes on crawlspaces, and buildings with large spans, such as airplane hangers, gymnasiums and factories. High Winds accompanying thunderstorms can create hazardous driving conditions, lead to bodily injury or death as well as cause substantial property and crop damages. The major economic impact on the local economy is damage to business and infrastructure. In Shelby County high wind thunderstorm events have resulted in 2 fatalities, 34 injuries and $7,535,220 in losses.

Future Probability

There have been 154 High Wind thunderstorm events since 1961, a period of 47 years. This results in an average of 3 events per year. Overall the frequency of future occurrences of thunderstorms in Shelby County will continue and the risk is considered high. The vulnerability impact of these severe storms is moderate.

Historic Occurrences

The NCDC and Sheldus databases have recorded 169 thunderstorm events. Included in the table below are the 85 incidents that resulted in fatalities, injuries or property loss. All detailed historic thunderstorm high wind historic events can be found in the supporting annex.

Table 5.13 Historic High Wind Thunderstorm Events

Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
02/17/61	Shelby County	High Wind-Tstm	0	0	0	7463	7463	C
12/17/61	Shelby County	High Wind-Tstm	0	0	0	1316	1316	C
04/10/62	Shelby County	High Wind-Tstm	0	0	0	746	746	C
03/04/64	Shelby County	High Wind-Tstm	0	0	0	1724	0	
06/16/66	Shelby County	High Wind-Tstm	0	0	0	2381	0	
03/06/67	Shelby County	High Wind-Tstm	0	0	0	820	0	
05/06/67	Shelby County	High Wind-Tstm 0 Kts. Begin Lat/Lon: 33°23'n / 86°24'w	1	0	0	25000	2500	C
12/27/68	Shelby County	High Wind-Tstm	0	0	0	2941	0	
06/20/69	Shelby County	High Wind-Tstm	0	0	0	8333	0	
03/19/70	Shelby County	High Wind-Tstm	1	0	0	357143	3571	C
04/23/71	Shelby County	High Wind-Tstm Trees/Power Lines Down	0	0	0	7463	746	C

Table 5.13 Historic High Wind Thunderstorm Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Other Loss or Cost Type
03/02/72	Shelby County	High Wind-Tstm	0	0	0	12821	1282	C
05/23/73	Shelby County	High Wind-Tstm	0	0.18	0	29412	0	
11/27/73	Shelby County	High Wind-Tstm	0	0	0	2941	0	
02/21/74	Shelby County	High Wind-Tstm 0 Kts. Begin Lat/Lon: 33°23'n / 86°25'w	0	0	0	2273	0	
03/19/74	Shelby County	High Wind-Tstm	0	1	0	16667	0	
03/29/74	Shelby County	High Wind-Tstm 0 Kts. Begin Lat/Lon: 33°14'n / 86°29'w	0	0	0	5000	0	
02/10/90	Shelby County	High Wind-Tstm 0 Kts. Begin Lat/Lon: 33°15'n / 86°41'w	0	22	0	5000000	0	
04/11/95	Shelby	HIGH WIND-TSTM 3 Mobile Homes Were Damaged	0	0	0	22000	0	
05/15/95	Chelsea	HIGH WIND-TSTM Approximately 150 Trees Were Down At The Greystone Country Club	0	0	0	200	0	
07/04/95	Indian Springs	High Wind-Tstm Trees Were Down	0	0	0	2000	0	
08/08/95	Vincent	High Wind-Tstm Trees/Power Lines Downed.	0	0	0	3000	0	
03/18/96	Columbiana	High Wind-Tstm 50 Kts. Trees Down	0	0	0	15000	0	
07/07/96	Alabaster	High Wind-Tstm 0 Kts. A Telephone Pole Was Blown Down By The Wind.	0	0	0	10000	0	
07/24/96	Indian Springs	High Wind-Tstm 50 Kts. Trees Uprooted	0	0	0	12000	0	
08/24/96	Alabaster	High Wind-Tstm 50 Kts. Trees Down	0	0	0	5000	2000	C
01/28/97	Pelham	High Wind-Tstm 50 Kts. Several Trees Down In Oak Mountain State Park	0	0	0	0	4000	C
04/22/97	Helena	High Wind-Tstm/Hail 50 Kts. Trees Down	0	0	0	7000	0	
07/15/97	Vincent	High Wind-Tstm/Hail 0 Kts. Trees And Several Power Lines Down	0	0	0	5000	0	
07/28/97	Alabaster	High Wind-Tstm 0 Kts. A Large Tree Was Down Near Buck Creek Park	0	0	0	2000	0	
08/18/97	Alabaster	High Wind-Tstm 50 Kts. Trees/Power Lines Were Down	0	0	0	8000	0	
01/07/98	Pelham	High Wind-Tstm 50 Kts. Several Trees And Power Lines Down	0	0	0	5000	0	
02/22/98	Countywide	High Wind-Tstm 44 Kts. Trees Fell On Homes And Across Roads	0	0	0	54000	0	
02/26/98	Montevallo	High Wind-Tstm 50 Kts. Trees Were Knocked Down Across An Intersection	0	0	0	1000	0	
03/19/98	Chelsea	High Wind-Tstm 65 Kts. A Downburst Destroyed A Racetrac Gas Station. Windows Blown Out And Trucks Were Overturned	0	0	0	380000	0	
05/09/98	Montevallo	High Wind-Tstm 50 Kts. Trees Down	0	0	0	5000	2000	C

Table 5.13 Historic High Wind Thunderstorm Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
06/05/98	Pelham	High Wind-Tstm 50 Kts. Trees/Power Lines Down	0	0	0	5000	0	
06/05/98	Vandiver	High Wind-Tstm 50 Kts. Trees And Power Lines Down	0	0	0	5000	0	
06/05/98	Alabaster	High Wind-Tstm 50 Kts. Trees And Power Lines Were Down	0	0	0	5000	0	
02/13/00	Alabaster	High Wind-Tstm 55 Kts. Trees Down	0	0	0	2000	0	
07/20/00	Countywide	High Wind-Tstm 60 Kts. Trees And Power Lines Down. Several Gas Stations Reported Roof Damage And Gas Pumps Disabled. Homes And Vehicles Were Damaged	0	0	0	70000	0	
08/10/00	Alabaster	High Wind-Tstm 50 Kts. Several Trees And Power Lines Down	0	0	0	5000	0	
08/10/00	Wilsonville	High Wind-Tstm 60 Kts. Trees And Power Lines Were Down One Mobile Home Was Overturned And Trees Fell Onto Homes.	0	0	0	50000	0	
08/10/00	Harpersville	HIGH WIND-TSTM 60 Kts. Trees Down. One Mobile Home Was Blown Off Its Foundation And One Rolled Over. Many Outbuildings Were Destroyed. Trees Fell Onto Homes.	0	0	0	45000	0	
11/09/00	Saginaw	High Wind-Tstm 50 Kts. Trees Down	0	0	0	1000	0	
11/09/00	Dunavant	High Wind-Tstm 50 Kts. Several Trees Down	0	0	0	1000	0	
11/24/00	Shelby County	High Wind-Tstm 50 Kts. Trees And Downed Power Lines	0	0	0	26000	0	
02/16/01	Countywide	High Wind-Tstm 55 Kts. Trees And Power Lines Down. Wind Gusts Were 60-105 Mph. An Estimated 2500 Homes Were Damaged And Destroyed. Major Electrical Transmission Lines Were Down. 400,000 Homes And Businesses Were Initially Without Power.	0	0	0	3000	0	
05/27/01	Alabaster	High Wind-Tstm 50 Kts. Trees Were Blown Down And Landed On Two Vehicles	0	0	0	20000	0	
05/27/01	Helena	High Wind-Tstm 50 Kts. Trees Fell Causing Damage.	0	0	0	5000	0	
05/27/01	Vincent	High Wind-Tstm 60 Kts. A Path Of Scattered Damage About 6 Miles Long	0	0	0	8000	0	
07/05/01	Countywide	High Wind-Tstm 55 Kts. Trees And Power Lines Were Down	0	0	0	3000	0	
08/05/01	Pelham	High Wind-Tstm/Hail 0 Kts.	0	0	0	1000	0	
08/18/01	Calera	High Wind-Tstm 50 Kts. Trees Blown Down	0	0	0	1000	0	
03/30/02	Shelby County	High Wind-Tstm Trees And Power Lines Downed.	0	0	0	400000	0	

Table 5.13 Historic High Wind Thunderstorm Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
05/17/02	Vandiver	High Wind-Tstm 50 Kts. Trees And Power Lines Down	0	0	0	2000	0	
06/27/02	Chelsea	High Wind-Tstm 60 Kts. Large Trees And Power Lines Were Down	0	0	0	3000	0	
07/04/02	Pelham	High Wind-Tstm 50 Kts. Several Trees Down	0	0	0	2000	0	
08/20/02	Calera	High Wind-Tstm 50 Kts. The Steeple Of The Baptist Church In Calera Was Destroyed.	0	0	0	12000	0	
03/06/03	Westover	High Wind-Tstm 50 Kts. Trees And Power Lines Down	0	0	0	2000	0	
03/06/03	Calera	High Wind-Tstm 50 Kts. Trees Down	0	0	0	1000	0	
05/02/03	Montevallo	High Wind-Tstm Trees Were Blown Down	0	0	0	250000	0	
05/03/03	Alabaster	High Wind-Tstm 50 Kts. Trees Down And A Service Station Had Roof Damage	0	0	0	10000	0	
05/03/03	Calera	High Wind-Tstm 50 Kts. Trees Down	0	0	0	2000	0	
05/06/03	Pelham	High Wind-Tstm 60 Kts. A Business Had Roof Damage And Several Trees Were Down	0	0	0	12000	0	
06/11/03	Countywide	High Wind-Tstm 50 Kts. Trees Blown Down	0	0	0	13000	0	
06/12/03	Helena	High Wind-Tstm 50 Kts. Roof Damage, A Nearby Metal Awning At The Winn Dixie, Trees/Power/Telephone Lines Down.	0	0	0	5000	0	
06/16/03	Shelby County	High Wind-Tstm 55 Kts. Trees Uprooted	0	0	0	8000	0	
06/17/03	Pelham	High Wind-Tstm 55 Kts. Trees Were Down. A Tree Fell On A Sailboat Producing Damage	0	0	0	16000	0	
07/21/03	Countywide	High Wind-Tstm 50 Kts. Trees And Power Lines Down	0	0	0	7000	0	
05/31/04	Calera	High Wind-Tstm 50 Kts. Power Lines Down Near The Shelby Academy. Trees Down	0	0	0	14000	0	
05/31/04	Pelham	High Wind-Tstm 60 Kts. Homes, Automobiles, And Outbuildings Were Damaged Or Destroyed By Fallen Trees.	0	0	0	100000	0	
06/22/04	Alabaster	High Wind-Tstm 55 Kts. Trees And Street Signs Were Blown Down.	0	0	0	13000	0	
07/25/04	Chelsea	High Wind-Tstm 52 Kts. Trees Blown Down	0	0	0	2000	0	
08/20/04	Chelsea	High Wind-Tstm 55 Kts. Trees And Power Lines Were Down	0	0	0	8000	0	
04/02/05	Countywide	High Wind-Tstm Trees Were Blown Down	0	0	0	5000	0	
04/11/05	Countywide	High Wind-Tstm Trees/Power Lines	0	0	0	5000	0	
04/30/05	Countywide	HIGH WIND-TSTM 55 Kts. Trees Were Down On Homes Producing Damage. One Recreational Vehicle Was Totally Destroyed And Several Outbuildings Were Damaged.	0	0	0	100000	0	

Table 5.13 Historic High Wind Thunderstorm Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
05/20/05	Pelham	High Wind-Tstm 53 Kts. Trees Down	0	0	0	8000	0	
06/11/05	Shelby County	High Wind-Tstm 53 Kts. Trees Were Down	0	0	0	4952	0	
07/29/05	Calera	High Wind-Tstm 52 Kts. Trees And Power Lines Were Down, 4 homes damaged	0	0	4	120000	0	
08/05/05	Pelham	High Wind-Tstm 52 Kts. The Greystone Country Club Was Damaged By Fallen Trees.	0	0	0	120000	0	
08/13/05	Shelby County	High Wind-Tstm Several Tent Booths Were Blown Down At Heardmont Park	0	0	0	7000	0	
08/21/05	Shelby County	High Wind-Tstm A Tin Roof Was Blown Off And A Back Door Was Blown In	0	0	0	5000	0	
04/08/06	Vincent	High Wind-Tstm 50 Kts. Trees Down, Roof Damage To Several Homes	0	0	0	20000	0	
07/22/06	Chelsea	High Wind-Tstm 50 Kts. Trees Down	0	0	0	3000	0	
07/24/06	Wilsonville	High Wind-Tstm 50 Kts. Tree Limbs Down, Blocking The Road	0	0	0	1000	0	
08/08/06	Columbiana	High Wind-Tstm 50 Kts. Trees And Power Lines Down, Damage To Several Residences	0	0	0	5000	0	
06/24/07	Sterrett	High Wind-Tstm N/A	0	0	0	2000	0	
08/18/07	Columbiana	High Wind-Tstm N/A	0	0	0	5000	0	
10/23/07	Columbiana	High Wind-Tstm N/A	0	0	0	3000	0	
01/10/08	Alabaster	High Wind-Tstm N/A	0	0	0	1000	0	
01/29/08	Countywide	High Wind-Tstm N/A	0	0	0	20000	0	
02/17/08	Alabaster	High Wind-Tstm N/A	0	0	0	5000	0	
02/26/08	Columbiana	High Wind-Tstm N/A	0	0	0	20000	0	
85		Totals	2	34	0	7509596	25624	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

On March 28, 1994 A Thunderstorm that impacted Shelby County was a ""super cell" - an intense, rotating thunderstorm, capable of 100 mph winds. Thirty-nine people were injured in Pelham. Most of the injuries and damage were in the Chandalar subdivision and several mobile home parks. Seventy-five percent of the Southgate mobile home park sustained damage.

The Bibb/Shelby County storm occurred on February 21, 1997. This storm damaged many mobile homes, and uprooted many trees. The thunderstorm that produced this damage was part of a long, broad band of convection that moved east through Alabama, ahead of a slow-moving cold front. The storm knocked down or snapped several dozen trees, a few of which were blown onto the roofs of nearby homes. Shingles were also ripped off some of these dwellings.

On the morning of 22 February 1998, much of Shelby County and North Alabama was unexpectedly rocked by a period of intense sustained wind, estimated in excess of 60 knots. Moving rapidly northward across the state in a wide band, the strong winds produced squall-like conditions at individual locations. Shingles were ripped off of dozens of roofs, and large trees were toppled onto houses, cars and roads. Structural damage and power outages were widespread across the remainder of central and northern Alabama

A Shelby county microburst occurred late in the afternoon of July 29, 2005. At approximately 500 pm a thunderstorm microburst occurred in the vicinity of the Calera fire department. From that location the microburst spread southward and outward in a fan-like pattern for about a mile. At the widest point...the damage area was about 1.1 miles wide. Throughout this area many trees including mature oak and pecan trees of 3 to 4 feet in diameter were uprooted. The greatest damage in Calera was centered along 16th street...from 20th avenue to 22nd avenue. The winds were estimated at up to 70 mph. At least 4 homes, several fences, sheds and out buildings were damaged. No injuries or fatalities wee reported.

January 29th & 30th, 2008 A strong cold front entered northwest sections of Central Alabama during the evening hours on January 29th and exited in southeast Alabama. As the front moved across the area, the pressure increased some 7 to 10 MB in a 3-hour period. This pressure change created gradient winds of 35 to 45 mph, with a few gusts over 50 mph. Trees and power lines were blown down in numerous locations. The strongest winds occurred behind the front.

A long-lived windstorm produced by severe thunderstorms, known as a derecho, caused a widespread swath of damage across Shelby County and Central Alabama during the early morning hours of February 26, 2008. Although there were some sporadic reports of light tree damage and small hail west of Interstate 65, a more intense and widespread swath of damage started in southern Jefferson and northern Shelby Counties between 3:30 am and 4:00 am. Thunderstorm wind gusts estimated at 60 to 70 mph were widespread in this damage swath, with occasional hurricane force peak wind gusts, estimated just over 100 mph in some areas.

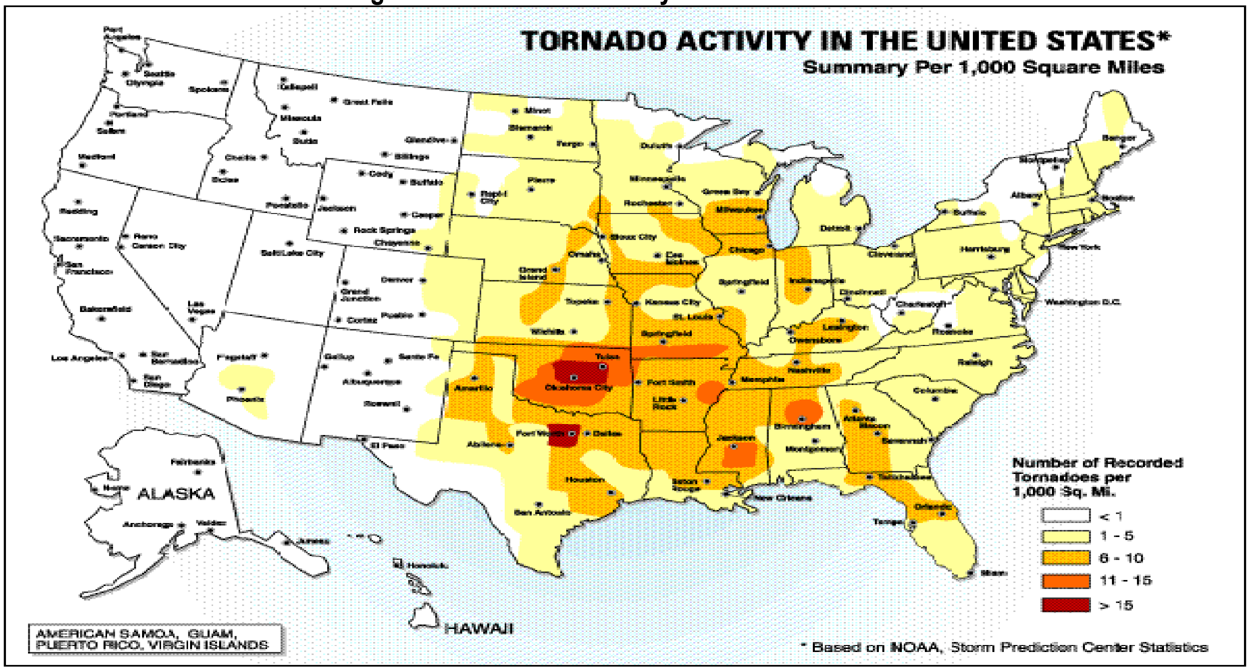
5.3.6.3 High Winds Tornado

A tornado is a rapidly rotating vortex, or funnel, of air extending to the ground from a cumulonimbus cloud. In the United States, approximately 1,000 tornadoes each year are spawned by severe thunderstorms. Although most tornadoes remain aloft, those that touch ground are forces of destruction. Tornadoes are viewed as the most damaging summer storm.

Location

Unlike floods, tornadoes are not confined to any particular local geographic. Among the most unpredictable of weather phenomena, tornadoes can occur at any time of day, in any State, in any season. No community is without risk; any place in the county is considered to have an equal chance of experiencing a tornado or any other of these severe weather elements. The figure below shows tornado activity in the United States. The map indicates that NOAA has recorded 11-15 tornadoes per 1000 square miles in Shelby County.

Figure 5.18 Tornado Activity in the United States



Source: http://www.fema.gov/hazards/tornadoes

The entire county is vulnerable to high winds caused by tornados. The most likely time for tornados is during the months of March through May, with a secondary peak of activity in November. The midsection of the U.S., including Shelby County, experiences a higher rate of tornadoes than other parts of the country because of the recurrent collision of moist, warm air moving north from the Gulf of Mexico with cold fronts moving east from the Rocky Mountains.

Extent

The path length of a tornado can range from a few hundred yards to miles. A tornado typically moves at speeds between 30 and 125 mph and can generate internal winds exceeding 300 mph. The life span of a tornado rarely is longer than 30 minutes. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes generate a large amount of debris that becomes airborne shrapnel causing additional damage.

Tornado damage severity is measured by the Fujita Tornado Scale. The Fujita Scale assigns numerical values based on wind speeds and categorizes tornadoes from zero to five. Tornadoes classified as F0-F1 are considered weak, those classified as F2-F3 are considered strong, while those classified as F4-F5 are considered violent.

Table 5.14 Fujita–Pearson Tornado Scale Description Table

F-Scale	Damage	Winds (mph)	Description
F-0	Light	40-72	Chimney damage, tree branches broken
F-1	Moderate	73-112	Mobile homes overturned
F-2	Considerable	113-157	Considerable damage, trees downed, mobile homes demolished
F-3	Severe	158-206	Roofs/walls torn down, trains and cars overturned
F-4	Devastating	207-260	Well-constructed walls leveled
F-5	Incredible	261-318	Homes lifted off foundation and carried considerable distances

Tornadoes are related to larger vortex formations, and therefore often form in convective cells such as thunderstorms or in the right forward quadrant of a hurricane, far from the hurricane eye. A tornado watch is issued for a specific location when thunderstorms capable of producing tornadoes are recognized and arrival is expected in hours. A tornado warning is issued when tornadoes are spotted or when Doppler radar identifies a distinctive "hook-shaped" area in a thunderstorm that is likely to form a tornado.

Figure 5.19 Pelham Alabama 1973 Tornado Shopping Center Damage

Source: Birmingham NWS

Damage due to tornadoes can range from minor to major depending on the strength of the tornado and where it strikes. A tornado that occurs in a rural area could cause crop damage and might damage some farm buildings and injure livestock but the damage would typically be less than in populated areas.

Tornadoes have caused 113 fatalities, 1,192 injuries and $10,733,000 in property damage.

Future Probability

Twenty-five tornadoes have impacted Shelby County since 1953, a period of 55 years. This results in a tornado event every 2 years resulting in a high risk and high vulnerability. The entire county is at equal risk of future occurrences. While higher population and housing densities in the municipalities set the stage for increased impact, the potential for property damage and loss of live is equally high for the unincorporated areas of the county due to the large number of mobile homes throughout the rural areas.

Historic Occurrences

The NCDC and Sheldus databases have 25 tornadoes reported since 1952.

Table 5.15 Historic High Wind-Tornado Events

Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
1874-1952	Shelby and Adjacent Counties	Shelby County was impacted by 15 tornadoes that resulted in millions of dollars in damages and caused 95 fatalities and 617 injuries. The worst of these events were in 1932 and 1933.	95	617	0	0	0	
04/18/53	Silura Alabaster	Tornado F3 path length 1 mile	8	495	0	3000000	725000	C
11/08/57	Columbiana, Wilsonville	Tornado F1 Begin 33°12'N / 86°34'W End Lat/LON: 33°14'N / 86°31'W Length: 9 Miles, Width: 50 Yds	0	0	0	25000	0	
04/20/63	Mountain View Lake	Tornado F1 Begin LAT/LON: 33°18'N / 86°48'W End: Not Known Trees were blown down	0	0	0	0	0	
04/29/63	Pelham	Tornado F2 Begin LAT/LON: 33°17'N / 86°50'W End: Not Known, a service station and 8 homes were demolished, trees and power lines down	0	0	0	25000	0	C

Table 5.15 Historic High Wind-Tornado Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
01/24/64	Harpersville	Tornado F4 Begin LAT/LON: 33°19'N / 86°26'W End LAT/LON: 33°20'N / 86°23'W Length: 3 Mi. Width: 100 Yrds, 3 homes demolished, 25 structures and vehicles were damaged	10	6	0	250000	0	
12/27/68	Calera	Tornado F2 Begin Lat/Lon: 33°06'N / 86°51'w End: Lat/Lon: 33°08'N / 86°46'W Length: 6 Miles Width: 33 Yards, 2 trailers, a commercial and industrial structure was destroyed, many trailers, homes, barns and trees were damaged	0	2	0	250000	50000	
04/26/70	Vincent Chelsea	Tornado F1 Begin LAT/LON: 33°24'N / 86°24'W End LAT/LON: 33°25'N / 86°21'W Length: 3 Miles Width: 300 Yds, several homes, trailers and barns were damaged	0	0	0	25000	0	
03/16/73	Pelham Helena	Tornado F2 Begin LAT/LON: 33°17'N / 86°49'W End LAT/LON: 33°18'N / 86°45'W Length: 4 Miles Width: 33 Yards, mobile home sales lot and 6 shops were heavily damaged	0	5	0	250000	0	
04/24/73	Wilsonville Camp Brownie	Tornado F1 Begin LAT/LON: 33°14'N / 86°26'W End LAT/LON: 33°16'N / 86°22'W Length: 5 Miles Width: 800 Yds, 3 buildings and 11 other structures were damaged	0	0	0	250000	0	
01/10/75	Shelby County	Tornado F1 Begin LAT/LON: 33°17'N / 86°49'W End: Not Known Length: 0 Mile Width: 50 Yds	0	14	0	250000	0	
12/03/83	Shelby County	Tornado F1 Begin LAT/LON: 33°10'N / 87°03'W End LAT/LON: 33°13'N / 86°58'W Length: 2 Mi. Width: 60 Yds, Timber destroyed	0	0	0	25000	0	
05/03/84	Shelby County	Tornado F1 Begin LAT/LON: 33°23'N / 86°25'W End Location: Not Known Length: 1 Mile Width: 60 Yds, several structures, trees	0	0	0	3000	0	
05/03/84	Shelby County	Tornado F2 Begin LAT/LON: 33°15'N / 86°23'W End LAT/LON: 33°16'N / 86°22'W Length: 1 Mi. Width: 200 Yds	0	0	0	250000	0	
01/19/88	Montevallo	Tornado F1 Begin LAT/LON: 33°03'N / 86°55'W End LAT/LON: 33°06'N / 86°52'W Length: 4 Mi. Width: 440 Yds, many homes and businesses were damaged or destroyed	0	0	0	250000	0	
02/10/90	Helena Pelham	Tornado F1 Begin Lat/Lon: 33°18'N / 86°51'W End: Unknown Length: 1 Mile Width: 30 Yards, 10 homes destroyed many others damaged	0	0	0	0	0	

Table 5.15 Historic High Wind-Tornado Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost: Amount	Other Loss or Cost: Type
03/27/94	Pelham Helena Indian Springs	Tornado F2 Begin Lat/Lon: 33°18'N / 86°51'W End LAT/LON: 33°23'N / 86°38'W Length 12 Mi. Width 300 Yds tornado damaged Pelham High School, mobile home parks, residences and businesses. Then damaged residences in Indian Springs and downed trees and power lines	0	53	0	5000000	0	
04/14/96	Pelham	Tornado C161Funnel Cloud A funnel cloud was reported along Highway 119 east of Interstate 65 in the Cahaba Valley	0	0	0	0	0	
02/21/97	Maylene	Tornado F0 Begin LAT/LON: 33°13'N / 86°53'W End LAT/LON: 33°13'N / 86°53'W Length: 1 Mi. Width: 50 Yards a number of trees downed and damage to several frame houses	0	0	0	15000	0	
06/16/97	Harpersville	Tornado Funnel Cloud	0	0	0	0	0	
05/07/03	Wilsonville	Tornado F1 Begin LAT/LON: 33°12'N / 86°28'W End: LAT/LON: 33°12'N / 86°28'W Length: 1 Mi. Width: 50 Yards The tornado downed trees and damaged several residential structures	0	0	0	150000	0	
04/30/05	Columbiana	Tornado F1 Begin LAT/LON: 33°13'N / 86°34'W End LAT/LON: 33°14'N / 86°33'W Length: 2 Miles Width: 150 Yards touched down near downtown Columbiana and snapped off and uprooted numerous trees and knocked over several power poles. Fallen trees significantly damaged one home, produced minor damage to a few other homes, destroyed 4 vehicles and several outbuildings.	0	0	0	200000	0	
04/30/05	Helena	Tornado F1 Begin LAT/LON: 33°16'N / 86°53'W End LAT/LON: 33°23'N / 86°45'W, Length: 12 Mi. Width:100 Yrds. Initial damage was trees uprooted or snapped off in Helena. Most significant damage was to subdivisions. Many homes suffered shingle and roof damage along with broken windows. Many trees and power lines were either blown down or snapped off. Power was unavailable for several hours. A few homes suffered damage from trees. Several vehicles and outbuildings were destroyed. A municipal park in Helena had damage. Near Wal-Mart large trees and signs were blown down	0	0	0	400000	0	
03/01/07	Montevallo Alabaster	Tornado F1, .65 miles path length 2 structures and several trees were downed	0	0	0	40000	0	

Table 5.15 Historic High Wind-Tornado Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
02/26/08	Highland Lakes	Tornado F1, .49 miles path length, several homes damaged, trees down	0	0	0	0	0	
25		Totals	113	1192	0	10658000	75000	
Data Sources		NOAA/NWS, Sheldus, Local Sources						
Loss Type		A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup						

Major Historic Occurrences Discussion

March 21, 1932: Over 250 Alabamians died in tornadoes that sweep the state. More than 1,500 others were injured and damage was estimated at $5 million. The western and north-central parts of the state, especially the towns of Northport, Cullman, and Columbiana, were hardest hit. In Columbiana 40 homes were destroyed and 200 damaged. 20 of the homes were totally leveled.

May 5, 1933 4 people were killed and 150 were injured in Helena. Many structures were demolished.

April 18, 1953 a tornado resulted in 2 fatalities and $3,000,000 worth of damage to the Buck Creek Cotton Mill at Siluria. The storm damage to the mill is expected to throw between 600 and 800 workers out of jobs for four to six months. Several homes and other structures were damaged in Siluria, Alabaster, and near Columbiana.

May 27, 1973 in Greensboro,-Brent,-Centreville,-Montevallo-and Mt Cheha 72 people were injured and one person was killed. 216 buildings were destroyed, 570 buildings were damaged, 97 mobile homes were destroyed, and 45 businesses were damaged or destroyed. Over 12,000 acres of timber was destroyed.

On January 24, 1964"Around 7 pm CST, a tornado roared into Harpersville. It left ten dead and six injured. The path of this one was very narrow, ranging from 50 yards to about 125 yards in width, but damage was heavy. This tornado struck without warning. Birmingham radar was monitoring the area, but the line of thunderstorms approaching Harpersville appeared only moderate proof that radar is not foolproof. Harpersville residents reported that no unusual and brilliant display of lightning was seen, and most thought it was just an ordinary thundershower.

3/27/94 thirty-nine people were injured in Pelham. Officials estimate roughly $25 million in storm-damage occurred in Pelham. Most of the injuries and damage were in the Chandalar subdivision and many mobile home parks. 75% of the Southgate mobile home park sustained damage. The storm was a ""super cell" - an intense, rotating thunderstorm. More than 1,000 homes were damaged or destroyed in north Shelby County and 53 people received injuries.

April 4, 2005 Columbiana: The tornado rated an F1 on the Fujita Damage Scale with winds estimated around 75 mph touched down approximately 3 miles northeast of Columbiana, The tornado snapped off and uprooted many trees and knocked over several power poles. Some of the trees were several feet in diameter. Fallen trees significantly damaged one home and minor damage to a other homes, destroyed at least 4 vehicles, and destroyed several outbuildings. The tornado damage path was approximately 2.2 miles long and 150 yards wide at its widest point.

04/30/05 a tornado began at 522 AM and ended at 523 AM. Its track was from 3.3 SW of Helena to 7.7 NE of Helena. Its length was 12 miles and was100yds wide. The F1 tornado had winds estimated at 75 mph. The tornado first touched down just west of County Road 93 near the Cahaba Wildlife Management Area. The tornado moved eastward and crossed County Road 17, County Road 58, US 31, Interstate 65 and County Road 11 before ending near County Road 39. Initial damage was minor with only a few trees uprooted or snapped off west of County Road 17. As the tornado crossed County Road 17, it intensified and caused its most significant damage near Scurlock Road and County Road 17 then eastward along County Road 58 to just past County Road 95. Several subdivisions were affected including Braelinn Village, Amberley Woods, Navajo Hills, and Port South. Many homes suffered roof and window damage. Many trees and power lines were either blown down or snapped off. Power was unavailable for several hours. A few homes suffered major damage due to fallen trees. Many vehicles and outbuildings were destroyed. A municipal park in Helena sustained minor damage. Near Wal-Mart, many trees and signs were blown down or snapped off. Trees damaged homes just east of US 31.

5.3.7 Ice/Snow Storm Profile

Ice and Sleet Storms are storms that generate sufficient quantities of ice or sleet to result in hazardous conditions and/or property damage. An ice Storm (freezing rain), probably the most serious of these type storms, occurs during a precipitation event when warm air aloft exceeds 32 degrees while the surface remains below the freezing point. When precipitation originating as rain or drizzle contacts physical structures on the surface, ice forms on all surfaces creating problems for traffic, utility lines and tree limbs. Sleet forms when precipitation originating as rain falls through a rather large layer of the atmosphere that has below freezing temperatures allowing the rain to freeze before reaching the ground. Sleet is also referred to as ice pellets. Sleet storms are usually of shorter duration than freezing rain and create fewer problems.

Location

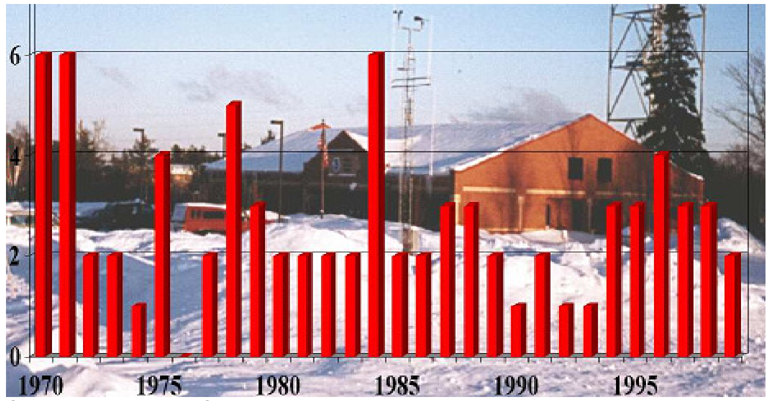
Ice and Snow affect the entire county equally. The adjacent figure identifies snowfall for the years 1970 through 1995. The results from this local snowfall study indicates 6 snowfalls of 4” or more in 25 years. The data was compiled from Alabama Climatological Data, produced monthly by the National Climate Data Center. There were a total of 84 cases, or approximately 2.8 events per year. An "event" was defined as a report of at least one half inch of snow.

Extent

Ice/Snow storms in Alabama are not as severe or common as winter storms in the northern states. Typically, an ice/snow storm in Shelby County consists of freezing rain or a few inches of snow that may or may not be accompanied by frozen roadways. However, because the County and it citizens are unaccustomed to these storms, they tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers.

Ice on roads and power lines can pose economic difficulties and life threatening conditions on Shelby County's population, which is often without power during these events. Ice and snow posses the ability to immobilize large segments of the County's population and economy for significant periods of time. Ice and snow removal efforts tax utility resources and can drain local government budgets. Ice/Snow events in Shelby County have resulted in 0 fatalities, 5 injuries and $1,690,940 in property losses.

Figure 5.20 Snowfalls in Birmingham Area (Shelby County)



Source: Birmingham NWS

Future Probability

Sixteen ice/snow storm events have occurred in Shelby County since 1962 a period of 46 years. This results in the probability of an Ice/Snow event occurring every 3 years. The probability of future winter storm events is moderate to high, with the vulnerability of loss being low. The entire county is at equal risk.

Historic Occurrences

The NOAA/Sheldus databases have recorded 16 Ice/Snow events in Shelby County since 1962

Table 5.16 Historic Ice and Snow Events

Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Other Loss or Cost Type
01/09/62	Countywide	Ice Snow Storm, Sleet, Severe Cold	0	0	0	7353	7353	A
12/31/63	Countywide	Ice Snow Storm	0	0	0	7463	746	A
06/07/71	Countywide	Ice Snow Storm, Sleet	0	0	0	8333	0	
03/01/80	Countywide	Ice Snow Storm	0	0	0	746	0	
12/21/81	Countywide	Ice Snow Storm, Freezing Rain	0	1	0	1667	0	
01/10/82	Countywide	Ice Snow Storm, Cold	0	4	0	74627	74627	A
01/20/83	Countywide	Ice Snow Storm	0	0	0	7463	0	
04/03/87	Countywide	Ice Snow Storm	0	0	0	1667	0	
01/06/88	Countywide	Ice Snow Storm	0	0	0	131579	1316	A
02/11/95	Countywide	Ice Snow storm with 1-2 inches of snow caused icing on bridges and many vehicle accidents	0	0	0	0	0	
01/06/96	Countywide	Ice Snow Storm with a mixture of freezing rain coated roads and caused serious travel problems that lasted 2 days.	0	0	0	380000	38000	A

Table 5.16 Historic Ice and Snow Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
02/01/96	Countywide	Ice Snow Storm brought freezing and frozen precipitation that lasted for 3 days. Ice downed trees and broke off tree limbs causing widespread. Power outages. Many chicken houses collapsed and snow and schools closed.	0	0	0	595000	0	
12/14/97	Countywide	Ice Snow Storm with heavy snow and accumulations up to five inches. Many roads became icy causing many accidents	0	0	0	0	0	
12/23/98	Countywide	Ice Snow Storm brought a mixture of freezing rain, sleet, and rain, precipitation measured 1-3 inches. Ice accumulated up to 1/4 inch.	0	0	0	126000	0	
01/28/00	Countywide	Ice Snow Storm brought up to 3 inches of freezing rain or sleet. Most schools were closed and icy roads resulted in many auto accidents.	0	0	0	227000	0	
03/20/01	Countywide	Ice Snow storm with heavy wet snow accumulated to depths up to 10 inches knocking trees and power lines	0	0	0	0	0	
16		Totals	0	5	0	1568898	122042	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

A winter storm described as the worst in Alabama history struck on March 12, 1993 and lasted through mid-day March 13, 1993. Snow began falling over north Alabama, then spread southward to Shelby County overnight, reaching all the way to the Gulf Coast. By mid-day Saturday snow had accumulated to 6 to 12 inches in Shelby County. It was estimated that 400,000 homes were without electricity, and many remained so for several days. Compounding the snow and power problems, temperatures fell well into the single digits and teens across much of the state Saturday night. There were at least 14 deaths associated with the exposure or stress due from the storm. Damage estimates ranged from $50 and $100 million. The entire state was declared a Federal Disaster Area.

The 1994 disaster declaration for severe winter storms resulted from storms occurring from January 16 through the 18 and again on February 9, 1994. Cold, dry Arctic air over Shelby County and central/North Alabama cold dry, Arctic air once again moved in with freezing temperatures, causing the wet mud to freeze. On February 9, a stationary cold front retreated northward, bringing moist warmer air behind it. Weak low-pressure cells moving along the boundary between cold and warm air masses pushed the warm, moist air up and over the cold surface air creating a shallow layer of near-freezing air at the ground surface. Precipitation, falling from the warm air layer froze on contact with cold surface objects creating a thick coating of ice. Flooding also occurred when debris- blocked channels could not drain off the water from melting ice and thawing soil. Ten counties were declared a Federal Disaster Area.

11/26/2000 - Friday's storms knocked out electricity to as many as 17,000 Alabama Power Co. customers in Jefferson and Shelby counties.

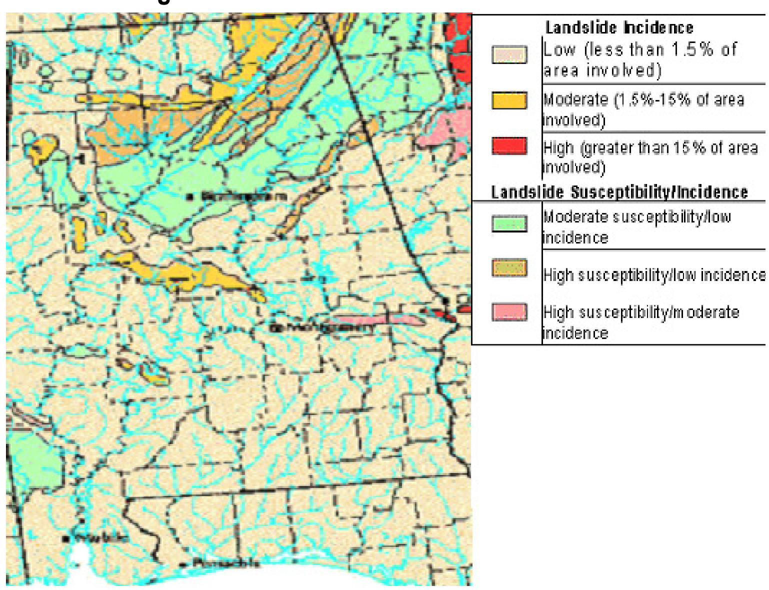
12/18/2000 - Arctic blast brings deep freeze. Stinging cold slapped Shelby County with ice, snow and freezing weather, creating traffic problems and accidents.

January 28, 2005 - A 2 day ice/snow storm cause at least 15 vehicles to slide off the roadways under the icy conditions. Exposed surfaces had ice accumulation of one half of an inch with a few locations reporting ice accumulations of one inch. Numerous trees, tree limbs, and power lines were knocked down and many of the fallen trees temporarily blocked roadways. The fallen trees damaged several homes and vehicles. Many bridges were iced over and were hazardous for travel. Power outages were widespread with up to 30,000 homes and businesses without power. The rain became freezing rain. Estimated damages form this storm were $500,000.

5.3.8 Landslide/Mudslide Profile

Landslides and mudslides often occur together with other major natural disasters, such as floods, which involve precipitation, runoff, and ground saturation that may be the result of severe thunderstorms or tropical storms. Earthquakes may cause landslides ranging from rock falls and topples, to massive slides and flows. Landslides into a reservoir may compromise dam safety or a landslide may affect the dam itself.

Figure 5.21 Landslide Incidence In Alabama



Source: Alabama GRS

Location

The topography and geology of Shelby County is susceptible to the effects of landslides, according to the Geological Survey of Alabama.

On the adjacent landslide map susceptibility is not indicated where it is same or lower than incidence. Susceptibility to land sliding is defined as the probable degree of response of [the area] rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. High, moderate, and low susceptibility are delimited by the same percentages used in classifying the incidence of land sliding. Some generalization is necessary at this scale, and several small areas of high incidence and susceptibility were slightly exaggerated. The northern and western part of the county has a moderate risk of landslides.

Extent

Figure 5.22 A Land Slide in Alabama

Source: Alabama GRS

Mudslides/land slides have not been a significant risk in Shelby County. The effects of landslides are often misrepresented as being the result of the landslide trigger event, such as a flood, earthquake, volcanic eruption, hurricane, or coastal storm. The impact from a landslide can include loss of life, damage to buildings, lost productivity, disruption in utilities and transportation systems, and reduced property values. It is imperative that any major construction project in the county implement prevention and/or mitigation measures to protect against landslides occurring.

Future Probability

The probability of future occurrences of landslides in Shelby County is moderate and the vulnerability is low.

Historic Occurrences

According to the Geological Survey of Alabama, only six landslide events have occurred in the county. All of these events have been minor.

Major Historic Occurrences Discussion

As there have been no occurrences in the county that have any significant impact on population or property there is no historical discussion.

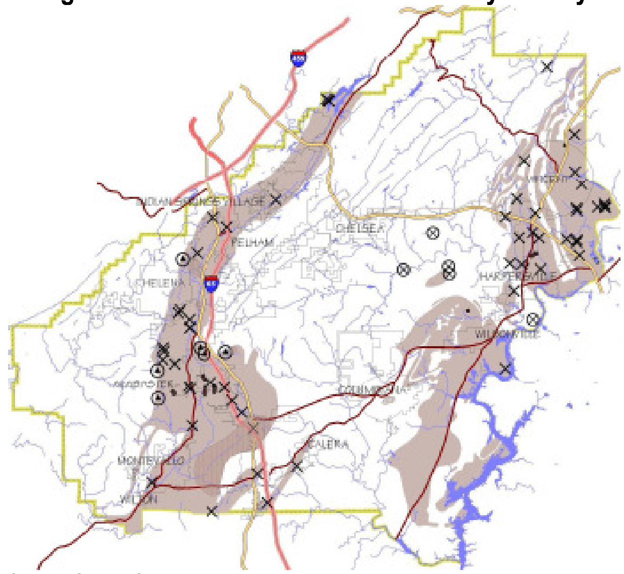
5.3.9 Land Subsidence Profile

Movement of ground water along joints and fractures in these soluble rocks results in solution of the rocks and the development of cavities or openings in the rock. A prerequisite for subsidence is the presence of underground openings in rocks or unconsolidated materials. Cavities may form naturally or they may be manmade. The most significant cavities in terms of subsidence in Shelby County are solution cavities in carbonate rock terrains, although there are known instances of sinkholes forming over abandoned mines. Areas in Shelby County underlain by carbonate rocks and characterized by the presence of subsurface cavities, sinkholes, and underground drainage are called "karst terrains." It is these karst areas that are most susceptible to sinkhole development and subsidence.

Location

In Shelby County, the most common causes of land subsidence are the development of sinkholes in areas underlain by soluble carbonate rocks or ground collapse above abandoned mines. Abandoned coalmines create a hazard in terms of foundation safety because of their widespread occurrence in parts of the state underlain by coal beds of the Pottsville Formation, their often-shallow depth, and the progressive deterioration of remaining supports and overburden. Many areas of the state areas of the state, particularly north Alabama, are underlain by carbonate rocks that are susceptible to solution and the development of subsurface cavities in bedrock. Periods of drought, excessive rainfall, well pumpage, and construction activities increase the potential for sinkhole formation in these areas.

Figure 5.23 Sinkhole locations in Shelby County



Source: Shelby County Mitigation Plan

In Shelby County, most sinkholes are caused by a loss of support, roof collapse, and/or raveling.

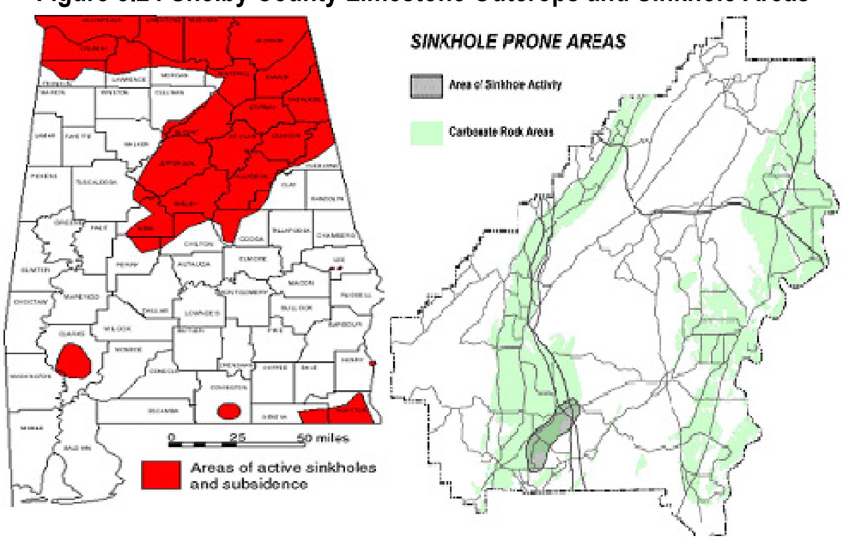
<u>Loss Of Support</u> Ground water provides buoyant support to the roofs of subsurface cavities. Lowering the water table removes this support and may result in the collapse of the roof of the subsurface cavity

<u>Collapse of unsupported openings</u> - The collapse of an unsupported opening result from the enlargement of the opening beyond the ability of the materials above to bridge it.

<u>Raveling</u> or piping is the slow erosion of unconsolidated sediments into an underground opening.

Extent

Figure 5.24 Shelby County Limestone Outcrops and Sinkhole Areas



Source: 2004 Shelby County Comprehensive Plan

As can be seen in the adjacent figure the all of Shelby County and its jurisdictions have underlying Karst geology, which makes the entire county subject to sinkhole activity. In addition in the northwestern 1/3 of the county significant limestone and coal mining activities have resulted in areas where overlying ground can collapse into abandon mines.

A change in the local environment affecting the soil mass initiate's sinkhole collapse and land 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:

1. Water level decline,
2. Changes in ground-water flow
3. Increased loading
4. Deterioration (relates to abandoned coal mines).

Shelby County has 2 active and 12 abandon underground coal and limestone mines that have the possibility of collapse. However the majority of these mine hazards are in unpopulated areas and do not have significant risk to population or structures.

The largest sinkhole, Golly Hole is shown in the adjacent figure. This large sinkhole developed near Calera in Shelby County in a matter of seconds in December 1972.The sink is about 300 feet in diameter and 100 feet deep. This sinkhole occurred during a drought when the water table was much lower than normal. Numerous sinkholes have developed in the western and northeastern portions of the county. The towns that are more affected by sinkholes include Alabaster and areas in and around Harpersville and Alabaster. Other large sinkholes have occurred along local highways near Harpersville and near I-65 in Alabaster.

Figure 5.25 Sinkhole in Shelby County Near Calera, Al

Source: Alabama GRS, Photo by Tom Slone

Sinkholes in Shelby County have impacted roads and to a lesser extent structures. Drilling and mining assets have been lost while mining for coal and limestone and drilling for natural gas. Shelby County has suffered 0 fatalities, 0 Injuries and $182,000 in damages from Land Subsidence

Future Probability

All of Shelby County is susceptible to land subsidence in the form of sinkholes especially in the northern and western areas of the county. The western areas of the county are also susceptible to collapsing abandon coal and limestone mines. Shelby County has recorded 12 instances of sinkholes in 47 years an average of an event every 4 years. The future probability of an event is moderate and the vulnerability is low. As population and structure density increases the vulnerability will increase

Historic Occurrences

The following historic Land Subsidence events were recorded by local entities

Table 5.17 Historic Land Subsidence Events

Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Other Loss or Cost Type
12/12/72	Calera	Sinkhole 300 feet in diameter/100 feet deep	0	0	0	0		
11/13/87	Yellowhammer Dr Alabaster	Sinkhole formed and destroyed a Lot	0	0	0		25000	
11/30/95	Alabaster	Sinkhole 24 feet in diameter and 15 feet deep	0	0	1	0	25,000	R
04/18/03	Indian Hills Hiway 280	Sinkhole 5 feet in diameter and 15 feet deep	0	0	1	0	6000	
12/07/03	Montevallo	Sinkhole 15 feet in diameter and 20 feet deep	0	0	1	0	9000	R
02/01/04	Calera	Sinkhole in Daventry Subdivision	0	0	1	15,000	3000	R

Table 5.17 Historic Land Subsidence Events									
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
04/15/06	Kingwood Alabaster	Sinkhole formed in drainage area	0	0	0	0	5000	
04/01/07	Calera	Sinkhole in Montella Acres	0	0	0	0	0	
05/01/07	Alabaster	Sinkhole formed near Buck Creek	0	0	0	0	0	
06/15/07	10th St SW Alabaster	Sinkhole formed near water well, well shut down	0	0	1	0	10000	
11/13/07	Buck Creek park Alabaster	Sinkhole formed and destroyed a park structure	0	0	0	59,000	25,000	
06/11/08	Montevallo	Sinkhole 12 feet in diameter and 15 feet deep	0	0	0	0	0	
		TOTALS	0	0	5	74,000	108,000	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

November 30, 1995 it took several truckloads of concrete and of crushed limestone and several large boulders to fill a sinkhole Friday that opened up along Shelby County 26 in Alabaster. The road didn't collapse, but the sinkhole created a cavern big enough for a two-car garage

April 18, 2003 a gaping hole in the U.S. 280 roadbed caused major traffic delays when both westbound lanes were closed between Shelby County 41 and Highland Lakes subdivision for a 15-foot-deep, 5-foot wide sinkhole.

December 7, 2003, a sinkhole shut down a stretch of Shelby County 16 bordering the Lafarge cement plant. The area has had a number of sinkholes over the years. The latest one opened up on the side of the highway close to the railroad, but did not present any danger to trains.

June 11, 2008, a sinkhole along Dry Creek sent muddy red clay through the LaFarge limestone quarry and into Shoal Creek in Montevallo.

5.3.10 Lightning Profile

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000 degrees F. The rapid heating and cooling of the air near the channel causes a shock wave, which produces thunder.

Location

Lightning events can occur anywhere in the planning area. Lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture

Extent

The lightning hazard component of thunderstorms is measured as the mean annual ground flash density (flashes per square kilometer). Review of NWS data shows that the central Florida region has over 18-flashes/ km^2, the highest density in the U.S. mainland. Alabama including Shelby County averages from 8 to 12 flashes/ km^2.

Lightning is the most dangerous and frequently encountered weather hazard that most people in the United States experience. Lightning is the second most frequent killer in the U.S., behind floods, with nearly 100 deaths and 500 injuries annually. These numbers are likely to underestimate of the actual number of casualties because of the under reporting of suspected lightning deaths and injuries. Cloud-to-ground lightning can kill or injure people by either direct or indirect means. The lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture.

Lightning also causes fires. The period 2000-2006 showed 12,000 wild land fires started by lightning per year. This amounts to an average loss of 5.2 million acres annually. (Source: National Interagency Fire Center, 2007). 18% of all lumberyard fires and 30% of all church fires are lightning-related. Source: (Ohio Insurance Institute, Columbus OH. During 2002-2004 U.S. fire departments responded annually to about 31,000 fires caused by lightning with $213,000,000 in direct property damages. (Source: NFPA Report, January 2008).

Looking specifically at storage and processing activities, lightning accounts for 61% of the accidents initiated by natural events; in North America, 16 out of 20 accidents involving petroleum products storage tanks were due to lightning strikes. Plant loss in Louisiana was estimated at $10,000,000. Some 30% of all power outages annually are lightning-related, on average, with total costs approaching $1 billion dollars. The lightning Institute database shows 145 lightning events to privately owned nuclear power plants in the period 1985-2000. (Source: U.S. Nuclear Regulatory Commission, Report March 2001).

Lightning was responsible for only one death and three injuries in Alabama in 1998, about the same as the previous year. Since 1990, lightning has killed 14 people and injured 175 in the state.

In Shelby County only eleven lightning events are reported in the NCDC and Sheldus databases. It is the opinion of the Shelby County Mitigation Committee that lightning events are significantly under reported. Lightning events have resulted in 0 fatalities, 5 injuries and $228,312 in property damage.

Future Probability

Based on reports in the NCDC and Sheldus databases there have been eleven occurrences of lightning events that have resulted in population or property damage since 1961 a period of 47 years. This indicates that a severe lightning event occurs in Shelby County approximately every 4.5 years resulting in a risk rating of medium and a vulnerability rating of low.

Historic Occurrences

There are eleven lightning events reported in the NCDC and Sheldus databases.

Table 5.18 Jurisdiction Historic Lightning Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
05/08/61	Shelby County	Lightning	0	0	0	1316	0	
06/29/80	Shelby County	Lightning	0	0	0	1000	100	C
07/06/80	Shelby County	Lightning	0	0	0	1724	172	C
06/04/98	Helena	Lightning A man was struck by lightning	0	1	0	0	0	
08/18/01	Indian Springs	Lightning caused a house fire	0	0	0	0	0	
08/16/03	Pelham	Lightning damaged cable, television and computer equipment at several houses	0	0	0	3000	0	
07/21/05	Calera	Lightning stuck several power lines and transformers causing power outages	0	0	0	11000	0	
08/22/05	Alabaster	Lightning A home was struck by lightning caught fire and suffered significant fire and water damage. Two firefighters were injured	0	2	0	90000	0	
05/10/06	Pelham	Lightning One house caught on fire	0	0	0	20000	0	
06/12/06	Helena	Lightning three houses caught fire	0	0	0	100000	0	
08/24/07	Quito	Lightning	0	2	0	0	0	
		TOTALS	0	5	0	228040	272	
Data Sources		**NOAA/NWS, Sheldus, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

August 24, 2007, Lightning slightly injured two children in Shelby County Friday afternoon as storms rolled through the Birmingham metro area.

August 18, 2001, Lightning sparks Shelby house fire. A lightening bolt struck a Shelby County house early Saturday afternoon, igniting a fire in the Meadowbrook subdivision

5.3.11 Tsunami Profile

A tsunami is the generation of an extreme ocean wave that breaks on-shore. A tsunami generally results from extremely high winds, a seismic event or the impact of an asteroid or meteor in an adjacent ocean. Tsunamis impact long, low-lying stretches of linear coastlines, usually extending inland for relatively short distances

Location

There are some scenarios that could generate a tsunami impacting coastal Alabama. Earthquakes have occurred in both the Gulf of Mexico and the Caribbean Sea. If a high magnitude earthquake occurred in these areas, it could generate a tsunami that may impact the Gulf Coast. The area is also at risk from a tsunami that could be generated elsewhere in the Atlantic Basin. The potentially catastrophic collapse of the Canary Island volcanoes or the impact of an asteroid or meteor could generate a tsunami.

Extent

Conditions That May exacerbate or Mitigate The Effects of Tsunamis are identified below:

Coastline configuration: Concave shorelines, bays, sounds, inlets, rivers, streams, offshore canyons, and flood control channels may create effects that result in greater damage. Offshore canyons can focus tsunami wave energy, and islands can filter the energy. The orientation of the coastline determines whether the waves strike head-on or are refracted from coastlines.

Coral reefs: Reefs surrounding islands in the western North Pacific and the South Pacific generally cause waves to break, providing some protection to the islands.

Fault movement: Several characteristics of the earthquake that generates the tsunami contribute to the intensity of the tsunami, including the area and shape of the rupture zone. Vertical movements along a fault on the seafloor displace water and create a tsunami hazard. Earthquakes with greater magnitude cause intense tsunamis. Shallow-focus earthquakes also have greater capacity to cause tsunamis.

Distance from shore: Tsunamis can be both local and distant. Local tsunamis give residents only a few minutes to seek safety and cause more devastation. Distant tsunamis originating in places like Chile, Japan, Russia, or Alaska can also cause damage.

High tide: If a tsunami occurs during high tide, the water height will be greater and cause greater inland inundation, especially along flood control and other channels.

Debris: As the tsunami wave comes ashore, it brings with it debris from the ocean, including man-made debris like boats, and as it strikes the shore, creates more on-shore debris. Debris can damage or destroy structures on land.

Human activity: With increased development, property damage increases, multiplying the amount of debris available to damage or destroy other structures.

Future Probability

The probability of any Tsunami reaching Shelby County is extremely remote so both the risk and vulnerability is low to non-existent.

Historic Occurrences

There are no records of tsunamis impacting Alabama the closest Alabama has come to experiencing a tsunami in recent history occurred on September 10, 2006. An earthquake of magnitude 5.8 struck. The earthquake was centered in the Gulf of Mexico approximately 500 miles south of Mobile. Mild shaking was felt in Florida, Alabama, and Georgia, but no damage was recorded. According to the USGS, the quake was not strong enough to produce a tsunami

Major Historic Occurrences Discussion

Since there is no evidence of tsunamis impacting Alabama, a summary of tsunami events that have occurred elsewhere in the Atlantic Basin is included below.

On November 1, 1755, an earthquake struck Lisbon, Portugal and caused a tsunami that engulfed the harbor and rushed up the Tags River. Between the earthquake and the tsunami, an estimated 90,000 people died. Tsunamis up to 66 feet in height swept the coast of North Africa, and struck Martinique and Barbados across the Atlantic. A 10-foot tsunami hit the English coast and Galway, on the west coast of Ireland.

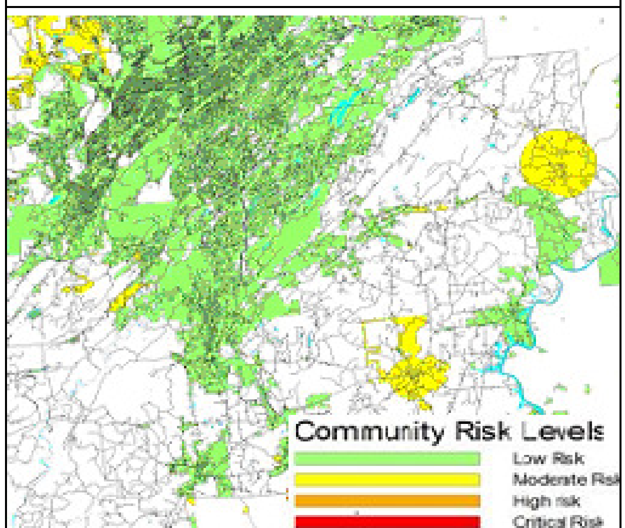
On November 18, 1929, a 7.2 earthquake beneath the Laurent Ian Slope on the Grand Banks The quake was felt throughout the Atlantic Provinces of Canada and as far west as Ottawa and as far south as Claymont, Delaware. The resulting tsunami measured over 21 feet in height and took about 2.5 hours to reach the Burin Peninsula on the south coast of Newfoundland, where 29 people lost their lives. It also snapped telegraph lines laid under the Atlantic.

In 1991, a 7.6 magnitude earthquake in Costa Rica produced a six-foot high tsunami that flooded nearly 1,000 feet inland in the Chamita-Puerto Viejo area on the Caribbean side of the country. Tsunamis were also reported on Battements, Carencro and Colon Islands and at Portobello, Panama. The maximum amplitude of the tsunami in Panama was about two feet.

5.3.12 Wildfire Profile

A wildfire is any instance of uncontrolled burning in grasslands, forests, and brush land. Wildfire is further defined as an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures (FEMA, 2001). Wildfires often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. The Federal Emergency Management Agency's (FEMA) Fire Management Assistance Grant Program (FMAGP) indicates that a wildfire is also known as a forest fire, vegetation fire, grass fire, or brush fire, is an uncontrolled fire requiring suppression action.

Figure 5.26 Shelby County Communities at Risk From Wildfires



Source: Alabama Department of Forestry

Location

Approximately 94 percent of Alabama's forestlands are privately owned; therefore the vast majority of Wildland fires occur on privately owned lands. Additionally, the majority of the fires occur in areas where homes or structures are endangered. These areas are known as the Wildland urban interface and are defined as areas where development meets Wildland vegetation, both of which provide fuel for fires. The Wildland urban interface areas have increased significantly throughout the U.S. and Alabama, and now face the risk of major losses from wildfires.

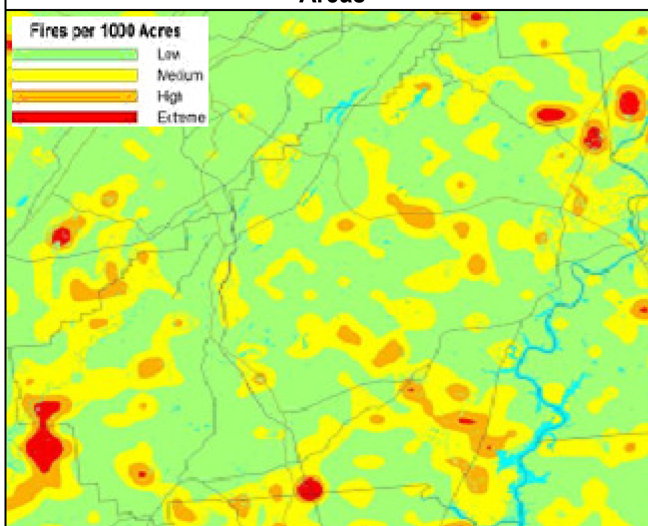
In Shelby County, most Wildland urban interface areas are considered "intermixed". Instead of having large forest areas surrounding an isolated town, Shelby County contains many scattered homes and farms spread across the forest areas. Based on an initial analysis by the Alabama Forestry Commission, there are 13 potential Wildland urban interface communities at risk of wildfire damage within the County. Wildfires occur throughout the unincorporated areas of Shelby County. Significant events most often occur in the remote areas of the northwestern section. Lesser events can occur at any location in the county.

Extent

Wildfires pose a great threat to life and property, particularly when they move from forest or rangeland into developed areas. More than 140,000 wildfires occur on average each year in the United States (U.S.), causing millions of dollars in damage. Since 1990, more than 900 homes have been destroyed each year as a result of wildfire and even relatively small fires have caused substantial losses (Institute for Business and Home Safety, 2001).

Due to the abundance of vegetation throughout the county, wildfires are a moderate threat in all rural areas. Significant events occur during periods of inadequate rainfall. Lesser events occur annually, usually as a result of escaped controlled burning or arson. The frequency and severity of wildfires is dependent on weather and on human activity. Nearly all wildfires in Alabama are human caused (only 3 percent are caused by lightning), with arson and careless debris burning being the major causes of wildfires. If not promptly controlled, wildfires may grow into an emergency or disaster. During a severe fire situation in 1999-2000, eight wildfires in Alabama were declared Fire Disaster Emergencies by FEMA. Even small fires can threaten lives, damage forest resources and destroy structures.

Figure 5.27 Shelby County Wildfire Historic Occurrence Areas



Source:

Each year in addition to affecting people, wildfires may severely impact livestock. Since 2000, wildfires destroyed 6,564 large hay bales, inflicting a severe economic impact on farmers. The forest resources of Alabama feed one of the main industries of the state. Timber loss to fire creates an economic loss to both the private landowner and the State's economy.

The county's municipal and volunteer fire departments respond to a combined average of 100 wild-land fires annually. Many of these fires occur in mixed interface areas and pose threats to occupied structures. Several municipalities have extensive areas of greenbelt and parkland, and brush fires in these cities create a significant urban interface danger. Wildland fires in Shelby County have resulted in 0 fatalities, 0 injuries and $14,318,000 losses in agriculture assets.

Future Probability

The probability of future wildfire events is high with the vulnerability low however, as population expands the vulnerability could raise to medium.

Historic Occurrences

Shelby County fire departments have responded to and suppressed an average of 75 Wildland fires per year over the last 10 years. These are fires that have required assistance by the Forestry Commission to control the blaze.

Table 5.19 Historic Wildland Fire Events

Event Date	Location or Map Reference	Extent Description Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost: Amount	Other Loss or Cost: Type
1995	Countywide	161 Wildland fires burned 1,699 acres	0	0	0	0	1699000	A

Table 5.19 Historic Wildland Fire Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Area Impacted, Assets, Utilities, Roads, Bridges Damaged, Evacuation, Etc,	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
1996	Countywide	99 Wildland fires burned 2,340 acres	0	0	0	0	2340000	A
1997	Countywide	60 Wildland fires burned 531 acres	0	0	0	0	531,000	A
1998	Countywide	74 Wildland fires burned 947 acres	0	0	0	0	947000	A
1999	Countywide	91 Wildland fires burned 1,386 acres	0	0	0	0	1386000	A
2000	Countywide	90 Wildland fires burned 2,271 acres	0	0	0	0	2271000	A
2001	Countywide	74 Wildland fires burned 480 acres	0	0	0	0	480000	A
2002	Countywide	79 Wildland fires burned 736 acres	0	0	0	0	736000	A
2003	Countywide	34 Wildland fires burned 149 acres	0	0	0	0	149000	A
2004	Countywide	71 Wildland fires burned 1,072 acres	0	0	0	0	1072000	A
2005	Countywide	49 Wildland fires burned 713 acres	0	0	0	0	713000	A
2006	Countywide	92 Wildland fires burned 835 acres	0	0	0	0	835000	A
2007	Countywide	97 Wildland fires burned 1,159 acres	0	0	0	0	1159000	A
3/23/06	Hampton Lake	6 acres	0	0	0	0	0	
3/29/06	Normandy	10 acres	0	0	0	0	0	
4/7/06	Pelham	15 acres	0	0	0	0	0	
12/10/07	Co. 35	1 acre	0	0	0	0	0	
1983	Alabaster	25-30 acres burned	0	0	0	0	0	
		TOTALS	0	0	0	0	14,318,000	
Data Sources		**Department of Forestry, Local Sources**						
Loss Type		**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**						

Major Historic Occurrences Discussion

1983 Southeast Alabaster fire burned for two days, no evacuation was necessary; Forestry dept. was called in for assistance. Total acres burned 25-30 acres. Location of fire was in the southeast area of Alabaster. The only impact was to the out of service of personnel on and off duty to contain fire. The future occurrence has been reduced by the some development of the area; there has been some reoccurrences in the area but not to the level before.

August 14-17, 1995, for the hottest four days of the year, the Pelham Fire Department, Alabama Forestry Service and the Alabama National Guard have fought one of the area's most frustrating fires of the year. A brush fire on Double Oak Mountain had consumed at least 120 acres before it was under control.

February 19, 2007, A CSX train causes series of brush fires Firefighters contained a series of small brush fires that stretched across a five-mile area in Pelham apparently caused by sparks from a passing CSX train. The fires started just after 10 a.m., south of Dickerson Road on Shelby County 11. They spread all the way to Kendrick Road, near the Chelsea line, Sides said. There were no evacuations or injuries.

November 19, 2008, a controlled burn of 100 or more acres will take place Thursday in Oak Mountain State Park. From time to time, undergrowth in state parks is burned to help prevent forest fires, said Forrest Bailey, chief of the Natural Resources Section for the State Parks Division of the Department of Conservation and Natural Resources.

July 15-19, 2000, Firefighters in Shelby County continued to fight blazes that have burned 1,200 acres of forests and started to threaten some homes. The fires stretched from Oak Mountain to Harpersville, including blazes in the Chelsea Game Preserve. The Shelby County fires finally contained Forest fires in Shelby County were contained after1, 800 acres had been burned in Chelsea near U.S. 280.

April 3, 2007, Arson appears to be the cause of 10 brush fires near the Chelsea Park subdivision in the past six months, according to the Alabama Forestry Commission. Chelsea has become "one of our biggest problem areas" for forest fires, said Brad Lang, the Shelby County manager for the commission. There have been 12 forest fires there in the past six months, and 10 appear to have been intentionally set, Lang said. Nearly 100 acres have been burned.

5.4 MANMADE HAZARDS PROFILE

Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores. Hazardous materials are transported by highway, railway, waterway, and pipeline daily, so any area is considered vulnerable to an accident. The Shelby County Mitigation Committee has identified a Pandemic and 4 manmade hazards that are of concern to the county and its participating jurisdictions and agencies and are profiled below:

Table 5.20 Manmade Hazards Profiled	
Hazardous Materials Spills/Releases	Terrorism
Illegal Drug Laboratories	Urban Fires

5.4.1 Hazardous Materials Profile

Hazardous materials are chemical substances, when, released, pose a threat to the environment or Public health. Hazardous materials (hazmat) incidents are likely to affect many communities.

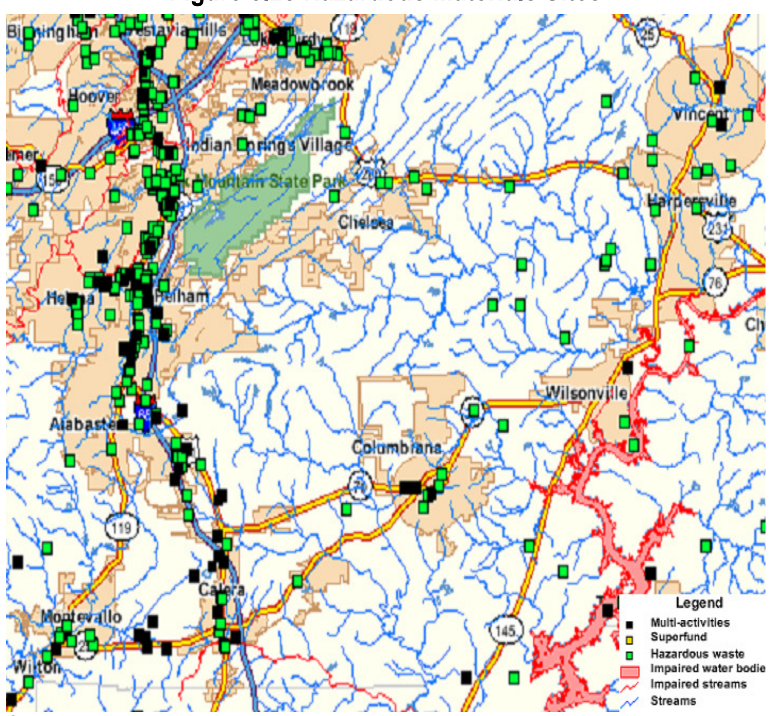
Location

Every city has multiple facilities that produce, store, or use some form of hazardous materials.

Every water treatment plant has chlorine on site to treat water. Almost every county has a farmer's Co-Op, which stores significant quantities of pesticides and fertilizers. Every home has some hazardous materials present in the form of cleaners, batteries, bleach, paint, and gasoline.

A variety of hazardous materials exist in fixed facilities throughout Shelby County. They range from flammable liquids stored or used to fuel vehicles through exotic biological agents. Some materials are particularly lethal even in small amounts, while others require strong concentrations with prolonged exposure. The facilities within Shelby County that manufacture, store, or utilize quantities of hazardous materials in some capacity are indicated in the adjacent maps.

Figure 5.28 Hazardous Materials Sites

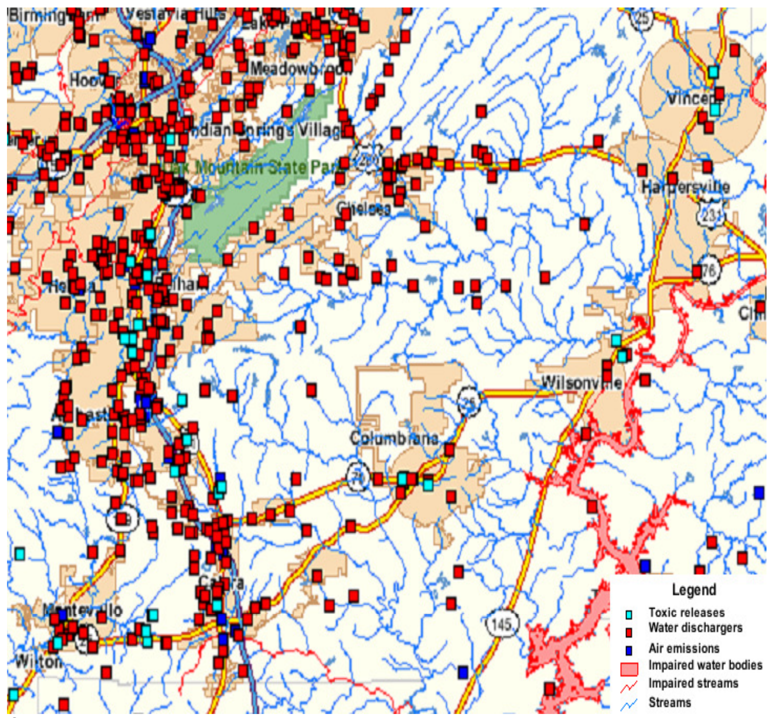


Source: EPA

Extent

Hazardous Materials transportation is a major concern in Shelby County, as there is little information regarding what is traveling on the county road system on a daily basis. Hazardous materials transportation incidents can occur at any place, although the majority occurs on interstate highways, major federal or state highways, or on major rail lines. The Highway system in Shelby County provides a network to transport both hazardous materials throughout the county. Hazardous materials are transported down many Shelby County roads every day. Propane trucks serve the rural populations, and natural gas, used by both rural and urban citizens, must be treated as a dangerous hazard. According to the most recent findings at the Alabama Department of Transportation, more than half of all accidents involving hazardous materials have occurred on the state roadways.

Figure 5.29 Hazardous Materials Dischargers



Source: EPA

Rail transportation risks from hazardous materials affect Shelby County. Valve leakage and releases are sources of spills on pressurized and general service tank cars. Other hazardous materials containers such as covered hoppers, inter-modal trailers/containers, or portable tanks are additional sources. These leaks manifest themselves as odors or vaporous clouds from tanker top valves, spraying or splashing from tanker top valves, wetness on the side of the car, or drainage from the bottom outlet valve. Depending on the type of rail car involved a leak or spill could result in hundreds to thousands of gallons/pounds of a substance being released.

There are a significant number of interstate natural gas and petroleum pipelines running through Alabama. The pipelines are used to provide natural gas to the utilities in Alabama and transport materials to the northeastern U.S.

Currently there are no radioactively contaminated Superfund National Priority List sites identified in the County. However, It is recognized that emergency situations could develop in which County residents could be exposed to radiological incidents or threats. The nature and extent of damage caused by ionizing radiation depend on a number of factors including the amount of exposure (energy strength), the frequency and/or duration of exposure, and the penetrating power of the radiation to which an individual is exposed. Acute exposure to very high doses of ionizing radiation is rare but can cause death within a few days or months. The sensitivity of the exposed cells also influences the extent of damage. For example, rapidly growing tissues, such as developing embryos, are particularly vulnerable radiation.

Envirofacts information about Shelby County, AL

AIR: Facilities that produce and release air pollutants: 48

TOXICS: Facilities that have reported toxic releases: 29

WASTE: Facilities that have reported hazardous waste activities: 285

Number of Large Quantity Generators: 5

Number of Small Quantity Generators: 56

Number of Transporters: 4

Number of Treatment, Storage, or Disposal Facilities: 2

Potential hazardous waste sites that are part of Superfund that exist: 8

Sites Not on the NPL: 8

Sites Proposed for NPL: 1

Facilities that generate hazardous waste from large quantity generators: 0

WATER: Facilities issued permits to discharge to waters of the United States: 419

The table below identifies the facilities that have recorded and submitted to the EPA hazardous materials releases in Shelby County.

Table 5.21 Facilities With Recorded Hazardous Materials Releases			
Name	**Address**	**Submissions**	**Chemical**
Agc Automotive	101 Total Solutions Way Alabaster	6	Diisocyanates, Lead
Alabama Plating Co Inc	Highway 231 North Vincent	6	Sulfuric Acid
Alabama Power Company Plant Gaston	31972 Highway 25 Wilsonville	4	Polycyclic Aromatic Compounds, Benzo(G,H,I)Perylene
Avanti Polar Lipids Inc.	700 Industrial Park Dr. Alabaster	33	Methanol, Chloroform
Chemical Lime Co Of Alabama Inc	2885 Hwy. 31 N. Calera	23	Lead Compounds, Mercury Compounds, Dioxin And Dioxin-Like Compounds
Chemical Lime Co Of Alabama Inc.	404 First Avenue North Alabaster	23	Nickel Compounds, Lead Compounds, Vanadium Compounds, Mercury Compounds
Chemical Lime Co Of Alabama	7444 State Highway 25 S Calera	34	Hydrochloric Acid (1995 And After "Acid Aerosols" Only), Vanadium Compounds, Lead Compounds, Mercury Compounds, Nickel Compounds
Citation - Columbiana	130 Industrial Pkwy Columbiana	20	1,2,4-Trimethylbenzene, Lead, Copper
Clark Substations Llc	3309 Highway 31 Calera	3	Manganese
Clean Coal Research Center Southern Company Services Inc.	Highway 25 N Wilsonville	12	Sulfuric Acid (1994 And After "Acid Aerosols" Only)
Dravo Lime Inc.	599 Highway 31 N Saginaw	30	Lead, Hydrochloric Acid (1995 And After "Acid Aerosols" Only), Mercury, Vanadium
Electrical Specialty Products Company	Highway 25 S Montevallo	12	Zinc Compounds, Copper, Copper Compounds, Lead Compounds
Guardian-Ipco Inc	6606 Cahaba Valley Road Birmingham	3	Sulfuric Acid (1994 And After "Acid Aerosols" Only)
Hanson Pipe & Products Southeast	400 Industrial Park Dr Pelham	10	Lead
John H Harland Co Plant Number 17	380 Riverchase Pkwy. E. Birmingham	6	1,1,1-Trichloroethane

Table 5.21 Facilities With Recorded Hazardous Materials Releases			
Name	**Address**	**Submissions**	**Chemical**
Lafarge Alabaster R/M	1235 Fulton Springs Rd Alabaster	1	Lead
Lafarge Building Materials	8039 Highway 25 Calera	42	Chromium, Lead Compounds, Nickel, Manganese, Mercury Compounds
Magnum Products	166 Longview Circle Alabaster	2	Vinyl Acetate, Methanol
Meridian Rail Co.	14th Street And Woodbine Ave. Calera	59	Manganese, Chromium
Metrock Steel & Wire Co.	6869 Hwy. 25 Montevallo	27	Zinc Compounds
Morin Actuator	110 Commerce Dr. Pelham	21	Nickel, Chromium
National Standard Columbiana Plant	104 Industrial Pkwy Columbiana	65	Cyanide Compounds, Zinc Compounds, Hydrochloric Acid (1995 And After "Acid Aerosols" Only), Lead, Copper Compounds
Research Solvents & Chemicals Inc.	402 Industrial Park Dr. Pelham, Al 35124	118	Certain Glycol Ethers, Naphthalene, Tetrachloroethylene, 1,2,4-Trimethylbenzene, Methanol N-Hexane, Dichloromethane, Methyl Isobutyl Ketone, Toluene, Ethylene Glycol, Trichloroethylene, N-Butyl Alcohol, Xylene (Mixed Isomers
Seaman Timber Co	1051 Highway 25 S Montevallo	46	Creosote, Benzo(G,H,I)Perylene Lead, Polycyclic Aromatic Compounds
Shelby Steel	Highway 85 And Thompson Dr. Vincent	12	Manganese
Sillavan Lumber Co.	Highway 87 Saginaw	5	Chromium Compounds
Specification Rubber Products Inc	1568 1st Street N. Alabaster	17	Zinc Compounds
Unimin Corp (Dba Southern Lime Co)	8039 B Alabama Hwy 25 Calera	18	Lead, Mercury Compounds, Mercury, Lead Compounds
Vulcan Threaded Products	10 Cross Creek Trail Pelham	28	Manganese, Lead, Chromium, Nickel

On October 17, 1986, in response to a growing concern for safety around chemical facilities, Congress enacted the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA). The Act has a far-reaching influence on hazardous materials issues. EPCRA contains five sections covering issues associated with the manufacture, use, exposure, transportation, and public education of hazardous materials. Alabama Homeland Security and Emergency Management is the lead agency responsible for implementing EPCRA and provide administrative functions and support.

Shelby County has a strong, pro-active Local Emergency Planning Committee. Working in conjunction with emergency management, this organization actively solicits membership and tracks TIER II reporting requirements. Each facility that stores or uses hazardous materials above a threshold amount must develop and file a Risk Management Plan. Each plan identifies the significant hazards for the facility, the likely release scenario for the hazards, the estimated properties impacted by the release, and the specific steps to take in the event of a release to protect that property from harm.

For security purposes the detailed Tier II facilities are only documented in the Annex. A risk and vulnerability assessment on identified Tier II facilities was conducted using the criteria below.

Table 5.22 Shelby County Hazardous Materials Assessment						
Criteria	0	1	2	3	4	5
Material Visibility	X	Existence not well known	X	Existence known locally	X	Existence well known
Material Volatility	None	Very Low	Low	Medium	High	Very High
Material Access	Secure area 24/7 armed guards & access controlled	Fenced guards access controlled	Access & parking restricted	Access Strictly controlled	Entry controlled	Open access
Material Mobility	X	Moved frequently	X	Moved some	X	Fixed in place
Hazard Materials present	No materials	Limited quantity secured	Moderate quantity strict control	Large quantity some control	Large quantity little control	Large quantity no control
SARA Reporting	X	Always Reports	X	Usually Reports	X	No Reporting
Site Population	0	1-250	251-500	501-1000	1001-5000	>5000

The risk of a major event is most severe in the more populated areas of the county, along state highways, railways, pipelines and adjacent to fixed facilities that store or manufacture hazardous materials. Many municipalities are in close proximity to highways and/or rail lines. There have been 0 fatalities, 1 injury and $87,200 in reported cleanup costs.

Future Probability

From 1990 through 2007, a period of 17 years 200 hazardous minor materials spills have occurred in Shelby County, approximately of 12 per year. Railroad incidents occur about 3 times each year, traffic accidents involving trucks occur approximately 3 times a year and pipeline incidents occur about every 1.5 years. The probability for a major event occurring in the future is moderate and vulnerability is medium for all areas of the county.

Historic Occurrences

A detailed list of Hazardous Materials spills or releases can be found in the Supporting Annex.

Table 5.23 Historic Hazardous Materials Land/Water/Air Release Events								
Event Date	Location or Map Reference	Extent Description Severity, Cause, Area Impacted, Assets/Utilities Roads/Bridges Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
1990 2007	Countywide	218 Total Hazardous material releases or spills	0	1		0	87,200	R
1992 2007	Countywide	46 of 218 hazardous materials events involved Railroads	0	0	46	0	0	
1997 2007	Countywide	45 of 218 hazardous materials events involved vehicle accidents	0	0	37	0	0	
1990 2007	Countywide	14 of 218 hazardous materials events involved pipelines	0	0	0	0	0	
		Totals	0	0	83	0	87,200	
Data Sources		Environmental Protection Agency, 911, Local/State Fire Service/Hazmat						
Loss Type		A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup						

Major Historic Occurrences Discussion

A 2000 HAZMAT incident occurred on I-65 north & south bound lanes @ mm 238. The incident involved 3 tractor-trailers & 2 passenger vehicles. The accident caused two deaths. The incident caused the burning and release of tar & diesel fuel. This release entered into water run off storm drains & a nearby creek. The runoff was contained and no evacuation was needed. The incident caused the shut down off all lanes of I-65 for 5-6 hours. A private company conducted the cleanup resulting in removing soil at the site and cleanup of creek. The impact to the community was the shutting down of a major interstate for hours. The potential for this to happen again is likely. The impact to the community can have an economic impact due to the growth of the area.

A 1997 incident was the result off underground fuel tanks leaking resulting in the product entering into a creek. This resulted in the evacuation of 15-18 families being evacuated for precaution. The amount of gasoline was 200-300 gallons being released. The potential for this to happen again is possible with the same result if not worse due to the growth of the area.

01/01/99 Gas leaked from a station's underground tank in Alabaster behind Cannon Oil on U.S. 31. The tank was leaking 300 gallons of gas every 30 minutes into a drainage ditch behind the station. Several Alabaster families returned to their homes after the gasoline leak was contained.

On April 7, 2002, a train derailed in Shelby County derailed Sunday in the Shelby County Turner Community with toxic chemicals in many railroad cars. No one was injured when eight of 116 cars on the train, headed to Birmingham from Mobile, went off the tracks near Shelby County 13. Six cars turned on their sides and two remained upright after the derailment.

01/27/99: The U.S. Environmental Protection Agency will begin cleaning up contaminants at a former metal-finishing business in Shelby County next month. Workers from the federal agency have arrived at the defunct Alabama Plating Co. off U.S. 231 near downtown Vincent to prepare for a short-term cleanup. Alabama Plating Inc. operated a metal-finishing business in Vincent beginning in the 1950s. The company operated a cadmium, copper and zinc plating facility.

On September 17, 2004 Thirty-five Norfolk Southern Railway cars, including several tankers that were hauling chemicals derailed just outside Montevallo. No one was injured. The 1 a.m. derailment caused the brief evacuation of two families who were allowed back in their homes after authorities determined the accident posed no hazards. The rail cars left the track at Shelby County 10 and Tomlyn Road in the Aldrich community.

On December 7, 2004, a $1.25 million cleanup of a site near Chelsea that once was used to test explosives and dispose of laboratory waste has been delayed. Southern SRI officials say the migration of the chemical (perchloroethylene) hasn't reached dangerous levels, they want to clean it up before that happens. Research Institute detected the chemical perchloroethylene in surface water at the 200-acre site on Shelby County 11 near Brynleigh Estates subdivision.

On October 9, 2006 Land scanned with radar equipment Southern Research Institute has started the first phase of a cleanup on a site once used to test explosives and dispose of laboratory waste. The company announced two years ago that the cleanup would begin on land along Shelby County 11 near Chelsea. Last week, it set up tents and brought in equipment to start the project, which a company spokeswoman said should be complete by the first of the year.

On January 8, 2009, 2 metro coal plants in U.S. were among the top 3 for arsenic. Two coal-fired power plants, the Gaston Steam Plant in Shelby County and the Gorgas Steam Plant in Walker County rank No. 2 and No. 3 in the country in the amount of arsenic deposited in on-site ash ponds and landfills from 2000 to 2006, according to a report released today by the Environmental Integrity Project.

On January 2, 1995 a $7 million project to incinerate 28,000 tons of TNT-contaminated dirt at the abandoned Alabama Army Ammunition Plant in Childersburg has been completed. Ken Gray, area engineer for the U.S. Army Corps of Engineers, said it took three months for a mobile incinerator to burn the contaminants out of the soil so that it can be placed in a landfill.

On August 30, 2007 the city of Alabaster shut down Veterans Park off Alabama 119 on Thursday following a diesel fuel leak that came from an adjacent construction site in the Wynlake subdivision. The fuel leak affected a pond and open areas in the 80-acre park.

On December 4, 1993, Sixteen Shelby County homes were evacuated after a car hit and broke a natural gas pipeline, causing a high-pressure leak. The leak occurred about 8 p.m. on Shelby County Road 47, about one half mile north of the Shelby County Road 69 intersection.

On February 6, 1998, a flatbed tractor-trailer slammed into a wooded ravine in the median of Interstate 65 in Alabaster Friday afternoon, spilling oil and diesel fuel into a creek.

On November 25, 1998, Environmental workers finished cleaning up the tarry mess left from the massive wreck and tanker explosion that killed two people on Interstate 65 in Alabaster.

On 12/07/04 a tractor/trailer was turning around at the business located at 475 Cahaba Valley Rd. and the driver ran into a culvert resulting in a rupture of the side fuel tank of the tractor. Approximately 100 gallons of fuel spilled and entered into a drainage ditch and flowed into a creek. Fuel followed the contour of the creek and flowed underneath the roadway and entered a lake and wetland area across the street. The spill resulted in an environmental impact to aquatic environment of the lake. For the next 3 months environmental crews cleaned and monitored the wetlands until the natural ecosystem was restored.

On: 07/01/2004 6700 gallons of gasoline leaked out of an underground storage tank and spilled into the storm drain. The product spread underneath Hwy 31 and south along the side of the highway. Results of the incident included having to evacuate two businesses and shut down Highway 31. The service station was shut down for several days resulting in the loss of income.

5.4.2 Illegal Methamphetamine Labs Profile

The meth threat in Alabama is a two-pronged problem. First, large quantities of meth produced by Mexican organizations based in California are transported into and distributed throughout the state. Second, meth increasingly is being produced in small laboratories, capable of producing only a few ounces at a time. Mexican groups, who receive their product from the West Coast, control distribution of the drug. These traffickers typically send meth from California through the U.S. mail, via Federal Express, and by courier.

Location

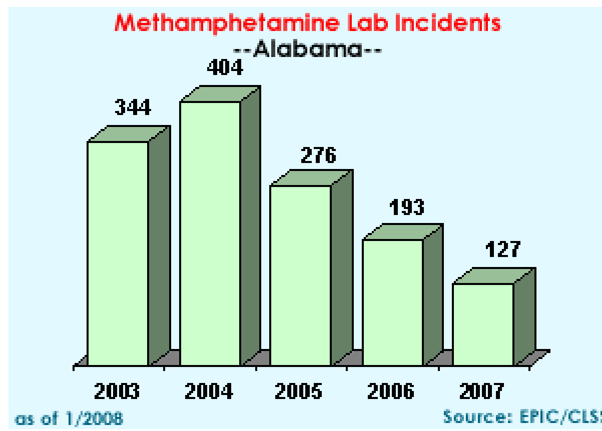
The county and most municipalities have experienced meth lab seizures. The Shelby County Sheriff's Office has found meth labs in apartments, motel rooms, vacant buildings in rural areas, vehicles, campsites, and private homes. Ongoing investigations have identified several Mexican restaurants in Alabama utilized to launder illegal drug proceeds. Although meth lab operators may more easily establish labs in the urban and more remote unincorporated areas, all jurisdictions in the county are at risk from this hazard. Meth is a highly addictive drug. The potential for future hazard is high, and all areas will be equally impacted.

The drug threat in Alabama is the widespread availability and abuse of illegal drugs arriving from outside the state, along with its homegrown marijuana and the increasing danger of local manufacture of Methamphetamine and designer drugs. Conventional drugs such as cocaine, Methamphetamine, and marijuana comprise the bulk of drugs arriving in and shipped through Alabama. Colombian, Mexican, and Caribbean Drug Trafficking Organizations (DTOs), regional DTOs, as well as local DTOs and casual or one-time traffickers are responsible for the transportation of these drugs. Additionally, Mexican, Caribbean and regional DTOs have extensive distribution networks within the State of Alabama. Outlaw Motorcycle Gangs are also supplying Methamphetamine on a very limited basis through their own distribution network within the state. Local production of Methamphetamine is on the rise.

Extent

For the second year, Methamphetamine has been identified by law enforcement as the number one drug threat in Alabama. Methamphetamine production in the state has seen a substantial decrease as a direct result of the restricting of pseudoephadrine sales; however, it remains the most significant threat in Alabama as Mexican DTOs increased the total quantity available. The number of Methamphetamine labs seized in 2007 was approximately 33% fewer than in 2006. A more pure form of the drug known as "ice" has replaced the Methamphetamine previously produced in the "mom and pop" labs in Alabama. Virtually all of the Methamphetamine coming into the state is brought in by Mexican DTOs from Mexico and Texas and distribution points in Atlanta, Georgia. There are independent dealers who obtain lesser amounts for personal use with a small amount for distribution.

Figure 5.30 Methamphetamine Activity in Alabama



Source: DEA

Money laundering continues to pose a threat in Alabama, especially in Birmingham and Montgomery. The most obvious businesses utilized are used car lots and Mexican restaurants. These businesses tend to be cash-intensive and lend well to the laundering of illegal proceeds from illicit drug trafficking.

The cooking process itself and the waste that results from the manufacture of meth pose significant public health and safety risks. Methamphetamine recipes rely on the use of volatile organic compounds, explosives, acids, bases, metals, solvents, and salts. These ingredients have the potential for explosions. There have been 0 fatalities, 0 injures and $126,000 cleanup costs for illegal Meth labs in Shelby County.

Future Probability

There have been 20 illegal Methamphetamine laboratories found in Shelby County since 2002, a period of 6 years. This result in approximately 3.25 illegal manufacturing laboratories and their associated hazardous materials located every year. The future probability of these labs is expected to increase and a have high probability rating. The social impact of the labs contributes to the medium vulnerability rating. $126,000 in cleanup costs

Historic Occurrences

There have been 20 locally reported Illegal Methamphetamine Laboratories

Table 5.24 Historic Illegal Meth laboratories								
Event Date	Location or Map Reference	Extent Description Lab Type, Area Impacted, Assets Damaged Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
02/20/96	Harpersville	Residential crack cocaine lab, 22 arrests	0	0	1	0	6000	R
01/18/02	Alabaster	Residential meth lab 1 arrest	0	0	1	0	6000	R
01/19/02	Pelham	Residential meth lab 1 arrest	0	0	1	0	6000	R
06/13/03	Shelby County Montevallo	5 Meth labs were discovered and 14 arrested in a 3 day operation	0	0	5	0	30000	R
11/08/03	Columbiana	Residential meth lab 2 arrests	0	0	1	0	6000	R
11/08/03	Columbiana	Residential meth labs discovered with 3 arrests	0	0	1	0	6000	R
01/01/05	County Rd 335, Chelsea	Residential Meth Lab	0	0	1	0	6000	R
01/01/05	Cherokee Ln, Wilsonville	Residential Meth Lab	0	0	1	0	6000	R
01/01/05	Harpersville	Residential Meth Lab	0	0	1	0	6000	R
04/30/05	Hickory Hills Ln., Shelby	Residential Meth Lab with 2 arrests	0	0	1	0	6000	R
04/30/05	Shelby	Residential meth labs and 1 arrests	0	0	1	0	6000	R
01/01/06	Helena	Residential Meth Lab	0	0	1	0	6000	R
02/01/06	Helena	Residential Meth Lab	0	0	1	0	6000	R
06/09/07	Highland Ave, Vincent	Residential Meth lab	0	0	1	0	6000	R
01/01/08	Calera	Residential Meth Lab	0	0	1	0	6000	R
02/01/08	Calera	Residential Meth Lab	0	0	1	0	6000	R
03/01/08	Calera	Residential Meth Lab	0	0	1	0	6000	R
04/01/08	Calera	Residential Meth Lab	0	0	1	0	6000	R
		TOTALS	0	0	21	0	126000	
Data Sources	DEA, Law Enforcement, Public Health Departments							
Loss Type	A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup							

Major Historic Occurrences Discussion

ON June 13, 2003, Montevallo police started what led to an all-day, three-county drug bust Thursday. Montevallo Police Chief Steve Southerland said 14 people were taken into custody and five meth labs were destroyed during Thursday's operation in northern Chilton, eastern Bibb and southwestern Shelby counties

On November 8, 2003, The Shelby County Sheriff's Department seized 300 grams of Methamphetamine, 16 firearms and $11,000 and arrested five people after finding a Methamphetamine lab just outside Columbiana.

On April 30, 2005, three people were arrested in early morning raids Friday on two Methamphetamine labs in south Shelby County. The arrests were made after officials with the Shelby County Drug Enforcement Task Force received tips that there was meth-making equipment at two residences.

On January 18, 2002, The Alabama Alcoholic Beverage Control Board raided an Alabaster house Wednesday night and found a laboratory where Meth was being manufactured,

On January 19, 2002, Federal authorities charged a Pelham man Friday in connection with a home Methamphetamine lab discovered this week in a Shelby County neighborhood

On February 20, 1996, Law enforcement officials arrested 22 adults and one juvenile in a 5-hour undercover drug operation Friday night in east Shelby County. The sting operation took place in the Creswell community just east of Harpersville. Authorities set up shop in a well-known crack house and had undercover officers buy and sell crack cocaine.

5.4.3 Pandemic/Epidemic/Vector Profile

Pandemics and epidemics in Alabama including Shelby County were major killers in the 1700s and 1800s. The worst culprits were smallpox, polio, influenza, measles, and cholera, and yellow fever. In 1918, the Spanish flu pandemic struck Alabama including Shelby County. The cost in the U.S. is $71 to $167 billion annually. Some 36,000 in the U.S. and 250,000 to 500,000 worldwide die annually from the flu.

One of the "emerging" threats to Alabama and Shelby County are vector-based threats - bacteria, insects and other animals that pose a direct or indirect hazard to humans, their food supply, or the state's economy. Vector-borne diseases diagnosed in Alabama include: Western equine encephalitis, St. Louis encephalitis, Colorado tick fever, Rocky Mountain spotted fever, Lyme Disease, tularemia, rabies, plague, and Hanta-Virus. Alabama has been planning for an outbreak of bird flu since 1999. State officials are modifying those plans now because of a highly aggressive form of avian flu circulating among domestic and wild birds in Asia and Europe.

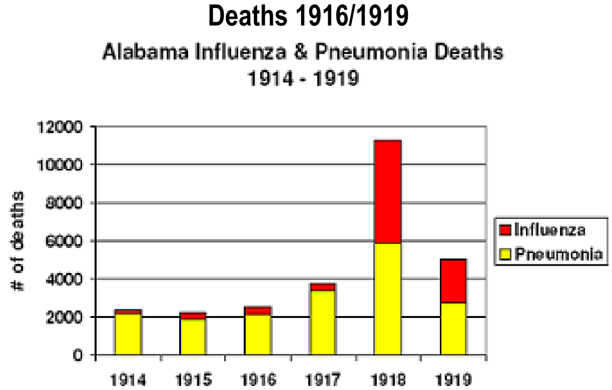
Location

Shelby County and its communities have experienced illness and fatalities from historic pandemic/epidemic events. In addition Shelby County has experienced cases of infectious diseases over the last 50 years that have been isolated occurrences or minor exposures.

Extent

In contrast to typical natural disasters, in which critical components of the physical infrastructure may be threatened or destroyed, an infectious disease outbreak may also pose significant threats to the human infrastructure responsible for critical community services due to wide spread absenteeism in the workforce. Examples of such services and personnel in the non-health sector might include highly specialized workers in the public safety, utility, transportation and food service industries, and will likely vary from jurisdiction to jurisdiction. State and local officials should carefully

Figure 5.31 Alabama Influenza and Pneumonia Deaths 1916/1919

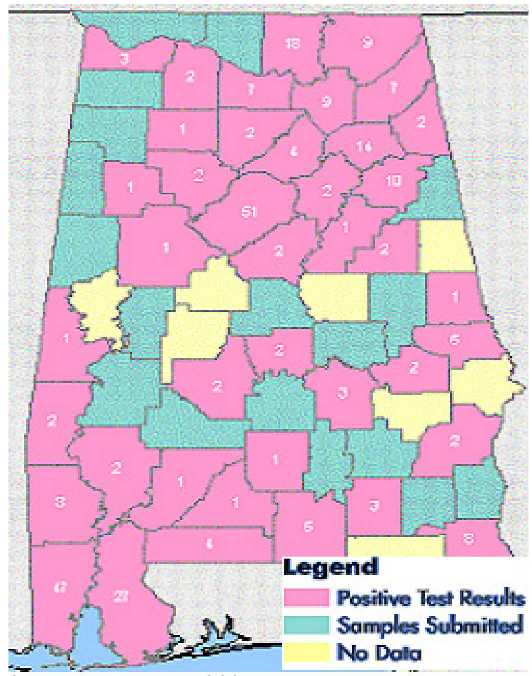


Source: Alabama State Board of Health

consider which important to identify were absenteeism would pose a serious threat to public safety or would significantly interfere with the ongoing response to the outbreak.

Fire ant colonies can quickly become a human health hazard. Fire ants inject a dose of venom that causes a burning sensation. These stings can cause blisters and infections, and can even cause anaphylactic shock or death in the most sensitive victims. It is also not uncommon for colonies of fire ants to attack and sometimes kill domestic animals, pets, and wildlife. Fire ant colonies can destroy entire fields of corn and soybeans.

Figure 5.32 West Nile Virus Events-2003



Source: Disease Maps USGS

West Nile Virus (WNV) is one of several mosquito-borne viruses in the United States. Mosquitoes become infected with WNV when they feed on infected birds. Less than 1% of humans infected develop meningitis or encephalitis, the most severe forms of the disease, which occur primarily in persons over 50 years of age. Symptoms of encephalitis or meningitis may include severe headache, high fever, neck stiffness, stupor, disorientation, tremors, convulsions, paralysis, coma and sometimes, death. Tests performed in 2004 on a dead bird confirmed the presence of WNV in Shelby County. No human cases have been reported.

Some vectors can be transferred between species, such as the swine flu, and cause problems for the receiving population. As long as vectors are present in the state, the potential for recurring disease exists.

Lyme disease is a potentially serious bacterial infection caused by the bite of an infected deer tick. The disease affects both humans and animals. The county should be considered vulnerable to future incidence of tick fever. The likelihood of Western equine encephalitis and St. Louis encephalitis, Colorado tick fever and Rocky Mountain spotted fever have been small problems in the county.

An infectious disease outbreak could be perceived as a terrorist attack and cause widespread panic and civil disturbance. This would tax public safety resources. A pandemic would result in critical workers not being able to perform their jobs. Possibilities include medical personnel, public safety personnel, and utility staff. A pandemic would not directly destroy property; however it could be damaged by lack of maintenance because of inadequate staff. A negative impact on the economy would also occur if a widespread outbreak happened and businesses were forced to shut down for an extended period of time.

The County's entire population is susceptible to exposure from an infectious disease because of the random nature of diseases. Infection rates and exposure risk will vary based on the disease, sanitation habits of individuals and personal choices. Large population concentrations and sites with large numbers of people are especially at risk in the event of an outbreak. There have been 262 fatalities, 2358 injuries and $44,000 in losses attributed to Pandemics epidemics and vectors.

Future Probability

The probability of a Pandemic-affecting Shelby County is low, however should a pandemic occur vulnerability would be considered high and the entire county would be equally impacted by human pandemic/epidemic events.

The probability for future vector or agriculture infestation incidents is medium and vulnerability would be medium. West Nile Virus events exists, this hazard presents a low risk to Shelby County and its municipalities Shelby County has not experienced (Foot and Mouth Disease) FMD. Livestock in the rural areas of the county would be at greatest risk for FMD. Fire ants have invaded Shelby County.

Historic Occurrences

Many of the below historical events have been reported in adjacent Jefferson County or Statewide the impact expressed in the below table in these cases has been extrapolated based on population.

Table 5.25 Historic Pandemic, Epidemic, Infection, Infestation Events

Event Date	Location or Map Reference	Extent Description Severity, Type, Area Impacted, Assets Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost	
							Amount	Type
1873	Countywide	Cholera: Approximately 400 fatalities occurred in Jefferson County	80	400	0	0	5000	
1906	Countywide	Pellagra: 100 cases 66 Fatalities	66	100			4000	
1919	Countywide	Spanish Flu 12,649 cases, 467 fatalities in Jefferson County	95	1388	0	0	25000	
1935	Countywide	Typhoid	Unk	Unk	0	0	0	
1951	Countywide	Polio	Unk	Unk	0	0	0	
1958	Countywide	Asian Flu	Unk	Unk	0	0	0	
1969	Countywide	Hong Cong Flu 500 fatalities Statewide	20	4000	0	0	10000	
1998	Columbiana	Salmonella	1	170		0	0	
1999	Statewide	Agriculture Pest –Pine Beatle	0	0	0	0	0	
2002	Statewide	West Nile Virus	0	1		0	0	
2006	Statewide	Mad Cow Disease	0	0	0	0	0	
		E-Coli	Unk	Unk		0	0	
		TOTALS	262	2358	0	0	44000	
Data Sources	**CDC/Public Health Departments/Local Medical Servers/Agriculture**							
Loss Type	**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**							

Major Historic Occurrences Discussion

In 1873 a cholera epidemic that threatened to annihilate Birmingham and the surrounding area including Shelby County. When word of the cholera epidemic spread, many fearful people locked themselves in their homes, leaving the city's sick to struggle alone. More than 400 unmarked graves of cholera victims are in historic Oak Hill Cemetery.

In 1906, a horrible affliction called pellagra hit patients at the Mount Vernon Hospital for the Colored Insane in Alabama. The disease started with a scaly red rash, progressed to diarrhea and then madness before death. A total of 88 patients were affected, and two-thirds died. Soon, reports of the disease exploded throughout the Alabama including Shelby County and other places where people ate a corn-based diet. But nobody knew what caused pellagra, and so-called "pellagrins" were shunned and treated like lepers, a phenomenon known as "pellagraphobia. Early in 1918, the Spanish flu occurred. The flu got its name because of the high toll it exacted in Spain. World War I was waning, and the disease was cutting through military camps. On Sept. 23, Camp Sevier in Greenville was quarantined because of an outbreak.

On Oct. 6, 1918, several unusual deaths were reported in Birmingham and the surrounding area including Shelby County. The county health officer said that the deaths "might be attributed to influenza." Two days later a record crowd of 35,000 people packed the Alabama State Fair in Birmingham, a booming city of 175,000, on it's opening, Monday, Oct. 8, 1918. The fair was scheduled to last five days, but as deaths mounted, the City Commission met in emergency session to act on recommendations from health officials to ban crowds and prevent person-to-person transmission of the disease. The commission closed the fair the next day, along with churches and theaters. The Board of Education closed schools. People were allowed to shop, but stores were banned from advertising big sales that would attract crowds.

By Oct. 10, hundreds of new cases of the flu occurred daily in the city. Fatalities reached 60, and hospitals were overwhelmed. Officials converted schools into temporary hospitals. The death toll kept rising and hit its one-day peak Oct. 15 with 29 deaths reported. At the end of October the deaths began to subside, and the City Commission lifted the ban on public gatherings. Jefferson County Health Department records at UAB's Lister Hill Library of Health Sciences show there were 12,649 cases of the flu in the county during October 1918 and 467 deaths, for a death rate of 3.7 percent. The newspaper calculated the economic impact in Birmingham at $500,000. Adjusted for inflation, that translates into more than $7 million today. The losses at the Alabama State Fair were calculated at $125,000, or about $1.8 million when adjusted for inflation.

A resurgence of the Spanish Flu occurred. On Nov. 11, 1918, World War I ended with the signing of an armistice. A massive peace parade through Birmingham attracted 25,000 participants and 100,000 spectators. By the end of the month, hundreds of new cases of Spanish flu were reported in and around Birmingham. The scourge simmered for another year. Statewide, 5,446 deaths were caused by Spanish flu in 1918, and 2,332 in 1919, according to Alabama State Board of Health records. By comparison, the 1968 Hong Kong flu outbreak killed about 500 people in Alabama.

On August 4, 1998, Salmonella sent more than 100 people to the emergency room at Shelby Baptist Medical Center with food poisoning. People began arriving at the hospital with severe vomiting, diarrhea, cramps, fever and chills. Numerous residents of Shelby County, Alabama, were infected with Salmonella when a restaurant unknowingly served food tainted with the bacterium. Because of the similarity in symptoms caused by other gastrointestinal pathogens and the variability in time of presentation, an outbreak such as this could be confused with one of another pathogenic origin. The pathogen identified, Salmonella bredeney, is a particularly rare cause of food poisoning. It makes up only 0.1% of the Salmonella isolates identified by the Centers for Disease Control and Prevention (CDC) each year. The total number of patients affected in this incident exceeded 170, making it the largest epidemic of its kind in the recent history of Alabama.

On August 17, 1999, Bugs the size of rice grains have devoured thousands of acres of pine timber in Alabama including Shelby County, causing an estimated $5 million worth of damage this year. Infestations of the Southern pine beetle have been detected in 54 of the state's 67 counties, according to the Alabama Forestry Commission. Thirty-two of those counties have infestations of epidemic proportions, said Jim Hyland, the commission's chief of forest health.

On February 1, 2001, The Shelby County Health Department recorded 14 cases of hepatitis A from the beginning of December to Jan. 11 - an unusually high occurrence of the viral infection.

On August 31, 2002, Alabama has five new confirmed cases of West Nile virus, including the first this year in Jefferson County. Friday's announcement by the state Department of Public Health brings the total in the state for the year to 13 cases, none of them fatal.

On March 15, 2006, the first confirmed case of mad cow disease in Alabama is cause for concern, but not alarm. Some Alabamians are concerned by the first known case of mad cow disease in the state, and they should be. Not because their nice, juicy hamburger is suddenly more sinister than it used to be. The chance of those hamburgers giving us heart attacks is still far greater than the odds they'll give us the human equivalent of mad-cow disease.

5.4.4 Terrorism Profile

The Domestic Preparedness Program is a partnership of federal, state, and local agencies with the goal of ensuring that, as a nation state and county, we are prepared to respond to a terrorist attack involving nuclear, biological, or chemical weapons - weapons of mass destruction (WMD). Today, the term "Homeland Security" is used to denote the concept of preparing for these kinds of events. Terrorism involves incidents committed by both international and domestic agents.

Location

The county contains potential target sites for terrorist attack. The presence of these facilities places Shelby County at a high threat level for forms of terrorist attack. A terrorist event at these facilities would affect the entire county. The most dangerous variants of terrorism - nuclear, biological, or chemical attacks could affect Shelby County. At present, the most likely form of nuclear, biological, or chemical terrorism may be a threat or hoax of a chemical device or sabotage. The county and its municipalities are at equal risk of Terrorism events. Shelby County has experienced domestic terrorist events in the form of:

<u>Bomb Threats:</u> Though none have been found credible, bomb threats by telephone are becoming an increasing problem for schools and government throughout Shelby County.

<u>Cyber-terrorism:</u> Several facilities in Shelby County have been affected by computer viruses and attempted system entry by "hackers." Improved virus detection capability and system security safeguards have reduced the threat of cyber-terrorism for Shelby County’s larger industrial and government facilities.

Extent

The possibility of a terrorist attack could occur in Shelby County. Although extremist groups exist within the state, it is unlikely that any terrorist act perpetrated by these groups would be disastrous countywide. Authorities on terrorism generally agree that terrorism cannot be wiped out entirely. For the present, it is a problem to be managed, not solved. Efforts to manage political terrorism in Shelby County should include:

- Gathering intelligence on terrorist operations, members and their ideology.

- Pooling intelligence and information with knowledgeable sources.
- Physically protecting suspected targets.
- Promoting public awareness.
- Controlling arms and explosives.
- Improving screening of applicants for jobs requiring use of arms and explosives.
- Preparing contingency plans for different kinds of terrorist acts.

The County prepared a Department of Homeland Security sponsored terrorism assessment in 2002 to identify potentially at-risk critical facilities, since intentional human-caused disasters cannot be quantified with as great a degree of accuracy as many natural hazards. The assessment drew on the county's Emergency Operations Plan. The assessment considered terrorism as a primary mode of a possible disaster: contamination (chemical, biological, radiological or nuclear), energy (explosive, arson) or failure/denial of services (sabotage, infrastructure breakdown and disruption). It considered eight critical infrastructure categories: telecommunications, electrical power systems, gas and oil facilities, financial institutions, transportation networks, water supply systems, government services and emergency services. Finally, it considered the vulnerability of the county's assets, both with respect to its "attractiveness," for example, is it highly visible or it draws large crowds and its current level of protection from an attack.

A terrorism vulnerability assessment of each identified target was conducted using the below table builds on the Office of Domestic Preparedness Terrorist Vulnerability Assessment of 2002. For security purposes the detailed information on identified targets is documented in the Annex.

Table 5.26 Shelby County Terrorism Assessment

Criteria	0	1	2	3	4	5
Asset Visibility	X	Existence not well known	X	Existence known locally	X	Existence well known
Target Utility	None	Very Low	Low	Medium	High	Very High
Asset Access	Secure area 24/7 armed guards & access controlled	Fenced guards access controlled	Access & parking restricted	Access Strictly controlled	Entry controlled	Open access
Asset Mobility	X	Moved frequently	X	Moved some	X	Fixed in place
Hazard Materials present	No materials	Limited quantity secured	Moderate quantity strict control	Large quantity some control	Large quantity little control	Large quantity no control
Potential Collateral Damage	No Risk	Low risk; immediate area only	Medium risk; local area only	Moderate risk within 1mi. radius	High risk within 1 mi. radius	High risk beyond 1mi. radius
Site Population	0	1-250	251-500	501-1000	1001-5000	>5000

Within the county, the Fire Service and Law Enforcement departments have the primary responsibility for responding to WMD/Terrorist incidents. A WMD/Terrorist incident is a potential crime scene and the responsibility of law enforcement is primary in these types of incidents. At a minimum each county fire department is trained to hazardous materials Awareness Level, as defined in 29 CFR 1910.120. The Fire Departments would also utilize the County Hazardous Materials Team to assist in the mitigation of a WMD/Terrorist incident. These group members are trained at Hazardous Materials Operational Level, Hazardous Material Technical Level, and Hazardous Material Specialist Level. In the event of hazardous materials, weapons of mass destruction / terrorism incident that are beyond the capabilities of the county, assistance from State and Federal agencies can be requested.

The specific hazards created by a terrorist event are dependent on the type of threat, the amount population affected and involved, and the location where the event occurs. The hazards to life presented by a terrorist event is dependant on the type of event the physical attributes (topography, bodies of water), weather conditions, buildings/structures/people exposed) and the area where the detonation occurs. People on or immediately adjacent to high-risk facilities are at highest risk. It is fair to assume that a event would most likely occur in a suburban/urban area; where the impact would be greater. Domestic terrorism events in Shelby County have resulted in 3 fatalities, 1 injury and $12,000 in recovery costs.

Future Probability

There have been 42 reports of domestic terrorism reported in Shelby County since 1994, a period of 14 years. This results in the probability of 3 terrorism events a year. The expectation is that the future occurrence of a major terrorist's incident in the county will continue to be high and the vulnerability to be low, however a significant event would increase the vulnerability to high.

Historic Occurrences

A detailed list of reported terrorist events is provided in the table below.

Table 5.27 Historic Terrorist (Domestic/International CBRNE, Cyber) Threats/Events

Event Date	Location or Map Reference	Extent Description Severity, Type, Area Impacted, Assets/Utilities Roads/Bridges Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Other Loss or Cost Type
10/04/94	Riverchase	Bomb made by a teenager exploded and injured a 2nd boy	0	1	0	0	0	
10/10/95	Comfort Inn Southgate Dr	Bomb Threat Evacuation	0	0	0	0	0	
01/21/96	Wal-Mart 3500 Pelham Pkwy	Bomb Threat Evacuation	0	0	0	0	0	
02/08/96	Delchamps Hwy 31 South	Bomb Threat	0	0	0	0	0	
07/30/96	Pelham High School.	Bomb Threat	0	0	0	0	0	
12/26/96	Aqua Irrigation 3110 Cummings ST	Bomb Threat	0	0	0	0	0	
01/29/98	107 David Green Rd	Bomb Threat	0	0	0	0	0	
06/01/98	600 block of Navajo Trail, Alabaster	Pipe Bomb exploded	0	0	0	0	0	
06/12/98	Hardee's Pelham Pkwy	Bomb Threat	0	0	0	0	0	
08/13/98	Profess. Pool Builders	Bomb Threat	0	0	0	0	0	
04/22/99	Thompson Middle School in Alabaster	Bomb Threat	0	0	0	0	0	

04/22/99	Columbiana Middle School, Columbiana	Bomb Threat	0	0	0	0	0	
08/05/99	Ferguson Enterprises 141 Cahaba Valley Pkwy	Workplace Shooting	2	0	0	0	5,000	R
08/05/99	Post Air Gas 3440 Pelham Pkwy	Workplace Shooting	1	0	0	0	5,000	R
11/20/99	Express Oil 2874 Pelham Pkwy	Bomb Found on a vehicle being serviced, Evacuation	0	0	0	0	2,000	R
12/14/99	Pelham Police Dept.	Bomb Threat	0	0	0	0	0	
01/26/00	Pelham High School	Bomb Threat	0	0	0	0	0	
04/23/00	3545 Pelham Pkwy	Bomb Threat	0	0	0	0	0	
05/15/00	2569 Pelham Pkwy	Bomb Threat	0	0	0	0	0	
09/02/00	741 Cahaba Manor Trail Pelham	Explosives were found at a city doctor's office	0	0	0	0	0	
11/09/00	2764 Pelham Pkwy	Bomb Threat	0	0	0	0	0	
08/27/01	Bradford Youth Services 2280 Hwy 35	Bomb Threat	0	0	0	0	0	
02/08/03	Cracker Barrel 655 Cahaba Valley Rd.	Bomb Threat	0	0	0	0	0	
02/11/03	Racetrac 3314 Pelham Pkwy	Bomb Threat	0	0	0	0	0	
10/06/03	Home Depot 3191 Pelham Pkwy	Bomb Threat	0	0	0	0	0	
03/08/04	B'ham South Campgrounds	Bomb Threat	0	0	0	0	0	
06/12/04	1020 State Park Rd.	Bomb Threat	0	0	0	0	0	
07/08/04	Jumpin Jax 161 Commerce Pkwy	Bomb Threat	0	0	0	0	0	
04/06/05	Pelham Post Office	Bomb Threat	0	0	0	0	0	
04/19/05	Riverchase Middle School	Bomb Threat	0	0	0	0	0	
04/20/05	Riverchase Middle School	Bomb Threat	0	0	0	0	0	
01/25/07	40800 Hiway 25 Vincent	Bomb Threat	0	0	0	0	0	
01/30/07	42505 Hiway 25 Vincent	Bomb Threat	0	0	0	0	0	
02/14/07	42505Hiway Vincent	Bomb Threat	0	0	0	0	0	
07/27/07	Westwood Church Alabaster	Bomb Threat	0	0	0	0	300	R
11/06/07	42505Hiway Vincent	Bomb Threat	0	0	0	0	0	
09/21/07	Pelham High School	Bomb Threat, Evacuation	0	0	0	0	0	
10/25/07	Thompson High School	Bomb Threat	0	0	0	0	1600	R
11/30/07	Thompson High School	Shooting Threat	0	0	0	0	4800	R
03/03/08	Thompson High School	Shooting Threat	0	0	0	0	3200	R
03/21/08	193 Brook Hollow Dr.	Bomb Threat	0	0	0	0	0	
09/30/08	Alabaster shopping center	A Fake bomb was discovered in a briefcase causing evacuation	0	0	0	0	0	
42		Totals	3	1	0	0	12000	
Data Sources	**911/Fire Departments/Law Enforcement/Education/DHS/Private Sector**							
Loss Type	**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**							

Major Historic Occurrences Discussion

11-8-99. An employee went into to his then present employer (Ferguson Enterprises) and shot to death two coworkers. He then left and traveled to a former employer (Post Airgas) and killed a third person..

2: 11-20-99: Pelham PD was contacted by mechanics at this location about a suspected bomb found on a vehicle. A bomb that was attached to his lawnmower near Jasper had killed the driver's husband. All business in the vicinity was evacuated and Hoover Bomb Squad removed the device. It was found to be an explosive device.

October 4, 1994, a 15-year-old Riverchase youth charged with first-degree assault in connection with a bomb that exploded in a young friend's hand.

June 1, 1998, Alabaster fire officials are investigating a pipe bomb explosion that gave residents in the quiet Navajo Hills subdivision a scare Monday afternoon. Residents in the subdivision off Shelby County 95 reported hearing a loud explosion about 2:30 p.m.

April 23, 1999, a threat of violence scrawled on a bathroom wall at Thompson Middle School in Alabaster Thursday kept scores of students away from campus. At Columbiana Middle School in Shelby County and at Rudd Junior High in Pinson, bomb threats forced the evacuation of school buildings. No bombs were found.

October 26, 2007, Alabaster Police Department responded to a bomb threat at Thompson High School. A threatening letter was found that led to the school being placed under lockdown for two hours.

On November 30, 2007 police responded to Thompson High School. Official there had located a written statement that said there would be a school shooting at a particular time that day. The school was put in lock down while police tried to locate the author of the letter. It was determined that there had been two letter left. Two students were taken into custody and charged. This kind of activity will more than likely continue in the future.

On March 3, 2008 police responded to Thompson High School. The asst. principle told police a student had made the statements that he was going to kill 300 students and his father. The student was taken into custody by detective. His belongings were search. Student admitted to making the statements and was arrested.

October 7, 2008, two teenagers made a terrorist threat in connection with a fake bomb at an Alabaster shopping center. Bomb technicians were called to inspect a suspicious briefcase found in a shopping center restroom.

5.4.5 Urban Structure Fire Profile

An urban fire is any instance of uncontrolled burning which results in major structural damage to large residential, commercial, industrial, institutional, or other properties in developed areas. Generally a large structure is defined as any structure exceeding 25,000 square feet. Large structural fires therefore would include fully involved structures of this size or greater. Multiple stories may be involved as well and constitute square footage.

Location

Almost every jurisdiction has at least one downtown area, industrial park, hospital, government center, churches, manufacturing facilities, warehouses, and multiple-story buildings. Each of these locations is a prime target for urban fire events.

The Alabama State Fire Marshall reports on rural fire in Alabama. Fires occur in similar proportions in both rural and urban areas. Structures fires are the most prevalent (33%) type of fire and are responsible for the most deaths and injuries. In structures, the two leading causes are 1) heating and 2) other equipment. Rural residential structure fires are twice as likely to be caused by heating, as fires in urban areas; fireplaces and chimneys are the most likely type of equipment involved in the fire. Of the structure fires, 48% occurred in structures without an operational smoke alarm. Flame damages were more extensive in rural structure fires, contained to the building, than urban structure fires that were contained to an object or room.

Extent

Fires have affected individual structures throughout the rural unincorporated areas of Shelby County and its municipalities, occurring in homes, businesses, and government buildings. The potential for future events exists. The entire county is at equal risk of fires in individual structures. In terms of large, urban fires within Shelby County, the downtown areas of Municipality's comprised of adjoining old wood structures, are at greatest risk.

Damages from fire can range from human and livestock deaths to significant property damage and infrastructure problems. All areas of Shelby County are vulnerable to fire conditions. However, the urban areas have the greatest potential for significant loss. The potential for loss for human life in fires is a significant concern. Fires can have a dramatic and sometimes permanent impact on individuals, property and the environment in the area of the fire. In the past 15 years 955 Alabama civilians have died in fires, but fires in Greater Alabama have outpaced those in the Metro Ares by a rate of two to one. The predominant danger from fire is the destruction of timber and property to the people living in the affected area or who use the area for recreational facilities. Incendiary and Arson continues to be the leading cause of structure fires. Arson destroyed the auditorium at Montevallo High School.

The major fires reported in the below table are not all major fires that have occurred, however the 35 fires reported resulted in 18 fatalities, 31 injuries and $22,126,000 in property losses.

Future Probability

Multiple major fires occur in Shelby County every year and will continue to occur. 35 major incidents are documented in the last 11 years, approximately 3 incidents each year. The probability of a major fire is high and the vulnerability is also high

Historic Occurrences

In the table below 35 major fires are documented

Table 5.28 Historic Urban Fire (Large/Multiple Structure, Fatality/Injury) Events

Event Date	Location or Map Reference	Extent Description Severity, Cause, Area Impacted, Assets/Utilities Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
01/25/98	Alabaster	3 fatalities and a home was destroyed	3	0	1	65000	20000	C
01/2308	9th St Alabaster	Laurelton Rehabilitation and Nursing Center	0	1	1	50000	10000	C
01/12/95	Hiway 64 Pelham	A fire destroyed a condemned wooden bridge	0	0	0	100000	0	

Table 5.28 Historic Urban Fire (Large/Multiple Structure, Fatality/Injury) Events								
Event Date	Location or Map Reference	Extent Description Severity, Cause, Area Impacted, Assets/Utilities Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
01/10/99	Wilsonville	A house fire burned down with 2 fatalities. possible arson	2	0	1	76000	30000	C
07/23/96	619 Montevallo Road, Alabaster	A fire destroyed much of the Alabaster First United Methodist Church at	0	2	1	800000	200000	C
09/2603	Dogwood community, Montevallo	Faulty wiring caused a fire destroying a home, 3 fatalities	3	0	1	200000	60000	C
07/18/94	Shelby	A firefighter fatality at a Shelby house fire	1	0	1	60000	10000	C
11/2205	Big Oak Dr. Alabaster	3 injuries from a pile of burning leaves	0	3	0	0	0	C
11/22/97	Columbiana	a mobile home exploded with one fatality.	1	0	1	78000	20000	C
07/12/94	Harpersville	a fire that heavily damaged Coosa Valley Academy 220 students were evacuated	0	12	1	500000	20000	C
05/0705	Calera	A house fire one child fatality and another injured	1	1	1	145000	60000	C
8/10/84	SEPCO Pelham	Commercial/Industrial Structure	0	2	1	2,500,000	3000000	C
09/06/94	Harpersville	A fire destroyed the Mount Olive Baptist Church at Harpersville	0	0	1	700000	200000	C
07/30/06	Alabaster	A fire kills 21 pets at pet business a total loss.	0	0	1	100000	40000	C
05/22/04	Furniture manufacturing Columbiana	A fire destroyed much of the facility and evacuation of many downtown businesses	0	10	1	900000	900000	C
5/12/07	Old Fields Rd Pelham	Apartment Structure	1	0	2	85,000	15,000	C
07/16/07	Buck Creek Mill Alabaster	A fire at old Buck Creek mills	0	0	1	500000	10000	C
07/23/04	Old Hiway 280 Westover	A house fire with one fatality destroyed a mobile home	1	0	0	47000	10000	C
05/31/02	U.S. 31 Pelham	A fire that seriously damaged a popular Pelham lounge	0	0	1	600000	400000	C
12/31/02	Montevallo	A mobile home fire destroyed a home and caused 2 fatalities	2	0	1	160000	50000	C
01/01/05	Hiway 31 S	Shelby Mental Health Clinic damaged, Patients evacuated	0	0	1	800000	300000	C
7/16/02	Valleydale Tr Pelham	Apartment Structure	0	0	3	150,000	150,000	C
07/16/02	Valleydale Terrace Pelham	A fire caused significant damage to a Pelham warehouse	0	0	1	900000	500000	C
06/19/01	Montevallo	A house fire in Montevallo destroyed the home and caused 2 fatalities	2	0	1	220000	60000	C
01/02/01	Alabaster	A fire destroyed a 2 story home with one fatality	1	0	1	150000	50000	C

Table 5.28 Historic Urban Fire (Large/Multiple Structure, Fatality/Injury) Events								
Event Date	Location or Map Reference	**Extent Description** Severity, Cause, Area Impacted, Assets/Utilities Damaged, Evacuation, Etc	Fatalities	Injuries	# Of Assets Damaged	Structure Loss	Other Loss or Cost Amount	Type
1968	Western Auto Vincent	Significant damage	0	0	1	275,000	300,000	C
1972	Hwy 31 & Industrial road	Commercial Building total lost	0	0	0	900,000	500000	C
1979	Carver Kelly Pelham	Commercials Structure	0	0	1	1,000,000	250,000	C
1980	Montevallo Food Center	Significant Damage	0	0	1	100,000	50,000	C
1981	Cloth Barn Pelham	Commercial Structure	0	0	1	150,000	200,000	C
1990	Gas Station Montevallo	Totally Destr0oyed	0	0	1	200,000	50,000	C
1996	Montevallo High School	Significant Damage to auditorium, Total evacuation, classes relocated	0	0	1	250,000	50,000	C
1997	Woodbrook Cr.	Apartments	0	0	8	500,000	200000	C
2000	Woodbrook Trail	Apartments	0	0	8	850,000	300000	C
		TOTALS	18	31	47	14,111,000	8015000	
Data Sources	**911/Fire Departments/Law Enforcement/Education/DHS/Private Sector**							
Loss Type	**A=Agriculture, C=Content, E=Equipment, R=Response/Recovery/Cleanup**							

Major Historic Occurrences Discussion

08/10/84 a fire destroyed the SEPCO manufacturing plant. 100 Employees affected, Plant did reopen after several months of rebuilding. Phone service interrupted by fire burning through main phone cable. 2 firefighters treated for minor injuries. Company is now out of business.

1979 a fire destroyed the Carver Kelly Furniture Store. All inventory lost, building heavily damaged, store out of business for several months. Fire involved all resources of our department as well as several surrounding departments. Located on major highway, traffic flow disrupted for several hours.

05/22/04 a blaze destroyed much of a Columbiana furniture manufacturing plant and led to the evacuation of several downtown businesses. Steel beams inside the company that manufactures both patio furniture and fireplace tools were melted by the intense heat. Nearly a dozen Shelby County fire departments battled the blaze that took five hours to bring under control. Several firefighters were taken to hospitals to be treated for smoke

07/23/96 a fire destroyed much of the proud history of the Alabaster First United Methodist Church at 619 Montevallo Road. The blaze started around 4:40 p.m. in the two-story frame classroom section at the rear of the church lot. The fire destroyed the frame section, as well as an old brick former sanctuary on the northern tip of the church property in downtown Alabaster

07/16/07 a fire at old Buck Creek mills drew firefighters from Alabaster and Montevallo. Firefighters fought the blaze under extreme heat and dry conditions. Crews were working with a cutting torch in a building 80 to 100 years old with wooden frames.

01/23/08 one man suffered burns at a nursing home fire in Alabaster. The fire started in a single room at the Laurelton Rehabilitation and Nursing Center on Ninth Street

07/16/02 a fire caused significant damage to a Pelham warehouse. No one was injured in the fire, which happened about 4:25 p.m. in the 2000 block of Valleydale Terrace. It took firefighters about 30 minutes to get the blaze under control, Powell said. An auto repair shop occupied one side of the warehouse, and an import business was on the other side.

07/12/94 a fire that heavily damaged Coosa Valley Academy in Harpersville. More than 50 firefighters from at least nine fire departments in Shelby and Talladega counties were called in about 6 a.m. to battle the blaze at the 220-student private school. Firefighters still were working late this morning to fully extinguish the fire in the one-story brick building.

09/23/98 three fires in Shelby County are being investigated as arson. Volunteer firefighters battled blazes between 1 a.m. and 2 a.m. at a vacant house in Vandiver, a trailer used as a realty office off U.S. 280, and a vacant house in Chelsea.

SECTION 6
RISK ASSESSMENT – ASSESSING VULNERABILITY

6.1 INTRODUCTION

This Vulnerability Assessment Section provides a vulnerability summary and builds upon the information provided in the hazard profile section. This section summarizes the historic hazards and identifies community assets and development trends in Shelby County, then assessing the potential impact and amount of damage that could be caused by each hazard event.

6.1.1 2009 Plan Update

Section 6 Risk Assessment-Assessing Vulnerability is an additional section that replaces the profiling of hazards in Chapter 4 Review: Risk Assessment 2004 plan. This significant enhancement documents critical facilities by jurisdiction, identifies an inventory of current and future "in hazard facilities and populations" by jurisdiction, contains detailed vulnerability and loss estimates for primary hazards flooding, high winds and hazardous materials by jurisdiction. Also included in this section are impact/damage assessments for secondary hazards that may have a countywide impact.

The last item in this section is a discussion of future land use in Shelby County. In addition to the data in this section detailed critical facilities information is included in the Supporting Annex including jurisdiction maps.

The below table documents the hazards included in the 2004 plan and their disposition in Section 6 of the 2009 mitigation plan update.

Table 6.1 2004 Mitigation Plan Hazards/2009 Updated Plan Hazard Status				
2009 Hazard	Exp	Risk/Threat	2004 Plan Status	2009 Updated Plan Status
Drought	Yes	Moderate Slight	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Earthquake	Yes	Low Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Extreme Temperature	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Flooding	Yes	Moderate High	Identified as flooding by thunderstorms, Hurricanes Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Dam/Levee Failure, profiled and detailed vulnerability assessment
Hail	Yes	Moderate Minimal	Identified under Thunderstorms	Identified/profiled some vulnerability assessment
High Winds	Yes	High High	Identified/Profiled as Tornadoes Thunderstorms, Hurricanes, Some vulnerability assessment	Identified as tropical Storms/Hurricanes, Thunderstorms, Tornadoes, profiled and detailed vulnerability assessment
Ice/Snow Storms	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Land Subsidence	Yes	Moderate Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment

Landslides Mudslides	Yes	Low Minimal	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Lightning	Yes	Moderate Low	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Wildfires	Yes	Moderate Moderate	Identified/profiled some vulnerability assessment	Identified/profiled some vulnerability assessment
Hazardous Materials	Yes	Moderate High	Not Included	Identified/profiled detailed vulnerability assessment
Illegal Meth Labs	Yes	Moderate Slight	Not Included	Identified/profiled some vulnerability assessment
Terrorism	Yes	Slight Moderate	Not Included	Identified/profiled some vulnerability assessment
Urban Fires	Yes	Moderate Moderate	Not Included	Identified/profiled some vulnerability assessment
Pandemic	Yes	Low High	Not Included	Identified/profiled some vulnerability assessment
Exp = Exposure, Risk = Probability of Occurrence, Threat = Impact on loss of life and property damage				

6.2 ASSESSING VULNERABILITY METHODOLOGY

Multi-hazard Requirement §201.6(c)(2)(ii): [The risk assessment shall include 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.
A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?

CRS Step 5: Assess the Problem Credit is based on what is included in the assessment of vulnerability to the hazards identified. At a minimum the plan must include an overall summary of each hazard and its impact on the community

FMA Requirement §78.5(b): Description of the existing flood hazard and identification of the flood risk and the extent of flood depth and damage potential.

The vulnerability findings in this section result in an approximation of vulnerability. These estimates should be used to understand relative vulnerability from hazards and the potential losses that may be incurred, however, uncertainties are inherent in loss estimation methodology, arising from incomplete scientific knowledge concerning specific hazards and their effects on the environment, incomplete data, and from approximations and simplifications that are necessary to provide a meaningful analysis. Further, most data used in this assessment covers relatively short periods of records which increases the uncertainty of any statistically based analysis.

To complete the assessment, each participating entity provided the best available local data. Shelby County Emergency Management then collected data from a variety of sources, including state and federal agencies. Additional work will be done on an ongoing basis to enhance, and further improve the accuracy of the baseline established here. It is expected that this vulnerability assessment will continue to be refined through future plan updates as new data and loss estimation methods or tools become available.

Two distinct methodologies were applied to assess the risk for Shelby County. The first includes qualitative analysis that relies more on local knowledge and rational decision-making. This qualitative methodology was described in the hazards profile section. The second methodology, a quantitative analysis utilizes data from a detailed GIS-based approach using best available local data from Shelby County. When combined with qualitative methodology the results are an assessment of potential hazard losses (in dollars). Future updates to the plan will fully utilize HAZUS-MH. Both methodologies rely upon best available data and technology. The methodologies are combined to create a "hybrid" approach for assessing hazard vulnerability for Shelby County that allows for some degree of quality control and assurance.

6.2.1 Hazard Event Disaster Declarations

When major damage from a natural disaster occurs, FEMA, as a matter of practice, includes a "buffer" area of adjoining counties in the event it later determines the damage was more widespread. Shelby County has been included in a total of 11 federal disaster declarations from 1974 through 2008. All of these events did not necessarily occur within the boundaries of Shelby County. The table below identifies those declarations and the economic relief provided.

Table 6.2 Shelby County Disaster Declaration Economic Relief

Date	Declaration Number	Hazard Incident	Economic Relief Amount	Economic Relief Source
06/01/73	388	Flood		FEMA
04/04/74	422	Tornado/Flood		FEMA
01/20/75	3007	Tornado		FEMA
03/14/75	458	Flood		FEMA
07/20/77	3045	Drought		FEMA
04/18/79	578	Flood		FEMA
12/13/83	695	Severe Storms		FEMA
02/17/90	856	Severe Storms		FEMA
03/15/93	3096	Ice/Snow	500,000.00	FEMA
03/30/94	1019	Severe Storms	1,500,000.00	FEMA
09/18/99	2278	Wildfire		FEMA
11/14/02	1442	Severe Storms		FEMA
05/12/03	1466	Tornadoes/Flooding		FEMA
09/15/04	1549	Hurricane Ivan	600,000.00	FEMA
10/07/05	1593	Hurricane Dennis	60,000.00	FEMA
09/10/05	3237	Hurricane Katrina	450,000.00	FEMA

In addition to the federally declared disasters for Shelby County, the HMPC also created a listing of disasters the county has experienced since 1950. These disasters are listed in the table below.

Table 6.3 Shelby County Disasters w/o A Declaration

Disaster	Date	Comments
Flooding	1964	Flooding in Alabaster along Buck Creek and Green Park South Trailer Park in Pelham
Flooding	1993	Flooded Green Park South Trailer Park and other communities in North Shelby County
Flooding	1993	Chandalar South bridge closed and damaged
Flooding	2002	Flooding along Hwy 261
Hurricane	10/4/95	Opal caused flooding
Severe Storm wind	1995	Scattered homes throughout the county were damaged
Subsidence	12/72	Large sinkhole developed in Calera 300' in diameter, 100 ft in depth
Tornado	04/27/73	A F4 tornado path up highway 25, 1 fatality, 63 injuries, 25 million in property damage

Table 6.3 Shelby County Disasters w/o A Declaration		
Disaster	**Date**	**Comments**
Tornado	02/10/90	Damage at Plantation Pipe tanks in Pelham
Tornado	03/27/94	A F2 tornado in North Selby County 53 injuries, 5M in damage to several homes
Tornado	1999	A tornado hit Pelham along 119 with extensive damage
Wildfires	1988	On Shades Crest Road
Winter Storm	1986	3î-4î of snow cause power outages
Winter Storm	1981	Ice storm damage trees and power lines lost power for 5-7 days
Winter Storm	03/05/93	Snow up to 18"

6.2.2 Hazard Vulnerability Summary

The below table summarizes the historic hazards that have occurred in Shelby County. It should be noted that the data is not completely accurate in the area of assets damaged and the economic loss. The economic loss data was not accurately captured especially in the early years.

Table 6.4 Shelby County Hazard Profile Summary							
Hazard	**Incidents**	**Years**	**Avg./yr**	**Fatalities**	**Injuries**	**Assets**	**Asset Loss**
Drought	16	58	.27	0	0	0	874,000
Earthquake	17	103	.16	0	0	0	0
Extreme Temperature	14	46	.30	2	2	0	12,267,164
Flooding-/Trop/Tstm	37	76	.49	3	1	0	19,813,501
Hail	125	38	3.3	0	4	0	814,133
High Wind-Trop//Tstm/Tor	189	131	1.6	116	1227	0	$39,695,221
Ice/Snow Storm	16	46	.35	0	5	0	1,690,940
Landslides/Mudslides	6	30	.2	0	0	0	0
Land Subsidence	12	36	.33	0	0	0	182,000
Lightning	11	47	.23	0	5	0	228,312
Tsunami	0	0	0	0	0	0	0
Wildfires	1071	13	82	0	0	0	14,318,000
Hazardous Materials	200	17	11.75	0	1	0	87,000
Illegal Meth Labs	20	6	3.33	0	0	0	126,000
Pandemics/Vectors	4	138	.02	262	2358	0	44,000
Terrorism	42	14	3	3	1	0	12,000
Urban Fires	35	10	3.5	18	31	50	22,126,000
Totals	1815	809		404	3635	50	$112,278,271

The Shelby County Hazard Mitigation Committee designed a Qualitative Methodology hazard rating that relies on historical and anecdotal data, community input, and professional judgment regarding historic and projected future hazard event. The qualitative assessment is built around varying degrees and weights of risk values as assigned by the consensus of Shelby County's Hazard Mitigation Steering Committee. The hazard assessment for Shelby County uses a scoring system based on the below table.

Table 6.5 Hazard Qualitative Rating Table						
Category	**0**	**1**	**2**	**3**	**4**	**5**
Fatalities and Injuries	0 fatalities or Injuries	<3 fatalities or injuries	4 to 14 fatalities and injuries	15 to 49 fatalities or Injuries	50 to 99 fatalities or Injuries	>100 fatalities or Injuries
Economic Loss	No Loss	Less than 500K cost	From 500K to 2.9Mil cost	From 3 Mil to 7.9 Mil cost	From 8Mil to 19.9Mil cost	More than $20Mil cost
Area Impacted	Local no evacuation	Local minimal evacuation	Local some evacuation	1 mile some evacuation	1 mile high evacuation	>3 mile and evacuation
Probability of Occurrence	Once every 100+ years	Once every 36 to 99 years	Once every 10 to 35 years	Once every 4 to 9 years	Once every 1 to 3 years	More than once a year
Repetitive Loss	<3	3 to 10	11 to 24	25 to 49	50 to 99	>100

The Hazard Mitigation Committee developed the historic and future hazard profile vulnerability assessment tables using the risk table above by assigning a value (1 through 5). In addition fatalities and injuries were assigned a weighting factor of 3 and economic loss was assigned a weighting factor of 2.

Table 6.6 Shelby County Historic Hazard Profile Vulnerability Assessment							
Hazard Event	**Fatality and Injury**	**Economic Loss**	**Extent or Impact**	**Probability of Occurrence**	**Repetitive Loss**	**Vulnerability Score**	**Priority**
High Wind	15	10	2	5	5	37	**1**
Urban Fires	12	10	1	5	3	31	**2**
Flooding	6	8	2	4	3	23	**3**
Wildfires	0	8	2	5	5	20	**5**
Pandemics/Vectors	15	2	0	2	1	20	**4**
Extreme Temperature	6	8	0	3	2	19	**6**
Hazardous Materials	3	2	2	5	5	17	**7**
Hail	6	4	0	5	1	16	**10**
Ice/Snow Storm	6	4	1	4	1	16	**9**
Terrorism	6	2	2	5	1	16	**8**
Lightning	6	2	0	3	2	13	**11**
Illegal Meth Labs	0	2	1	5	2	10	**12**
Drought	0	4	0	3	2	9	**13**
Land Subsidence	0	2	0	4	1	5	**14**
Landslides/Mudslides	0	0	0	3	0	3	**15**
Earthquake	0	0	0	1	0	1	**16**
Tsunami	0	0	0	0	0	0	**17**

The future vulnerability table assumes a single worst-case event and future increases in population and structures

Table 6.7 Shelby County Future Hazard Profile Vulnerability Assessment							
Hazard Event	Fatality and Injury	Economic Loss	Extent or Impact	Probability of Occurrence	Repetitive Loss	Vulnerability Score	Priority
High Wind	15	10	2	5	5	37	**1**
Hazardous Materials	9	8	4	5	5	31	**2**
Flooding	9	8	3	4	5	29	**3**
Urban Fires	9	8	2	5	4	28	**4**
Terrorism	9	8	4	5	1	27	**5**
Pandemics/Vectors	15	4	5	1	1	26	**6**
Earthquake	9	10	5	1	0	25	**7**
Wildfires	6	6	3	5	4	24	**8**
Ice/Snow Storm	6	4	1	4	2	17	**9**
Lightning	6	4	0	3	2	15	**10**
Extreme Temperature	6	2	1	3	2	14	**11**
Hail	3	4	0	5	1	13	**12**
Illegal Meth Labs	3	2	1	5	1	12	**13**
Drought	0	4	0	3	3	10	**14**
Land Subsidence	0	2	1	4	1	8	**15**
Landslides/Mudslides	0	2	1	3	1	7	**16**
Tsunami	0	0	0	0	0	0	**17**

6.3 VULNERABILITY: REPETITIVE LOSS PROPERTIES

Multi-hazard Requirement §201.6(c)(2)(ii): [The risk assessment shall include 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. **A.** Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?
CRS Step 5: Assess the Problem The risk assessment must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively flooded. The community must also address all properties identified in the repetitive loss areas as defined by the community.
FMA Requirement §78.5(b): Description of the existing flood hazard and identification of the flood risk, including estimates of the number and type of structures at risk, repetitive loss properties.

The NFIP program tracks properties that file several claims of a certain value over a specific period of time, termed Repetitive Loss Properties (RLP) and Severe Repetitive Loss Properties (SRL.

A RLP as defined by FEMA is an NFIP-insured property that, since 1978 and regardless of any changes in ownership during that period, has experienced any of the following:

- Four or more paid losses in excess of $1,000
- Two paid losses in excess of $1,000 within any rolling 10-year period
- Three or more paid losses that equal or exceed the current value of the insured property (FEMA, 2006).

Repetitive loss properties make up only about 2% of the flood insurance policies currently in force nationally, yet they account for 40 percent of the country's flood insurance claim payments.

The NFIP is concerned with RLPs because structures that flood frequently strain the National Flood Insurance Fund. In fact, the RLPs are the biggest draw on the Fund by not only increasing the NFIP's annual losses and the need for borrowing; but they drain funds needed to prepare for catastrophic flood events. Community leaders and residents are also concerned with the RLP problem because residents' lives are disrupted and may be threatened by the continual flooding.

Insurance market analysts insist that by reducing the number of RLPs, actual flood insurance claims will be reduced, and this will both diminish the upward pressure to raise flood insurance rates and stabilize, in the long run, the financial condition of the NFIP. Since 1978, RLPs across the U.S. have cost the NFIP about $2.7 billion. Although RLPs exist in all 50 states, five states (Louisiana, Texas, Florida, North Carolina, and New Jersey) accounted for 63% of all repetitive loss payments from 1978 through 2004. The majority of existing flood-prone structures are residences (not vacation or income-producing homes) "grand fathered" into the NFIP when the program was created. These properties have been repaired multiple times with subsidized flood insurance claim dollars. FEMA estimates that 90% of RLPs were built prior to December 31, 1974, before the preparation of flood insurance rate maps (FIRM) and building codes that adequately reflected the probability of flooding in special flood hazard areas (SFHA). These older, generally less-safe pre-FIRM buildings were built before flood hazard risks were fully known and not constructed to resist flood waters. Moreover, most of the owners of RLPs pay subsidized rates for flood insurance. FEMA has sought over the years to prioritize RLPs and pursue a variety of insurance and mitigation strategies to stem the disproportionate costs to the NFIP associated with these properties.

The SRL program was created pursuant to Section 1361A of the National Flood Insurance Act of 1968 (or" the Act"), 42 U.S.C. 4102A, as amended by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Public Law 108-264, with the goal of reducing flood damages to SRL properties. The SRL program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the NFIP. The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

c. That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

d. For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

The long-term goal of the SRL program is to reduce or eliminate NFIP claims. The SRL program will fund mitigation projects, which will result in the greatest savings to the National Flood Insurance Fund (NFIF) in the shortest period of time, based on a Benefit-Cost Ratio (BCR) using Federal Emergency Management Agency (FEMA)-approved methodology to conduct the Benefit-Cost Analysis (BCA).

Participation in this program is voluntary. The SRL program differs from other FEMA mitigation grant programs in that those property owners who decline offers of mitigation assistance will be subject to increases in their insurance premium rates.

In order for local jurisdictions to qualify for hazard mitigation assistance through the Flood Mitigation Assistance Program (FMA), local hazard mitigation plans must include documentation in its mitigation strategy that continued enforcement of applicable flood plain management standards is parts of its strategy to reduce flood losses. In addition, a local mitigation plan must include a section in its risk assessment that describes the source of repetitive flooding problems and identifies the number and type (residential, commercial or governmental) of repetitive loss properties in the jurisdiction. This should include the extent of flood depth and damage potential. The tables below identify Repetitive Loss and Severe Repetitive Loss Properties in Shelby County.

Table 6.8 Total NFIP Losses by Jurisdiction

Community Name Flood Location	Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
Alabaster, City	34	27	0	7	281,077.29
Calera, Town	3	2	0	1	3,969.73
Helena, Town Of	3	3	0	0	44,929.18
Pelham, City Of	365	343	0	22	4,421,963.41
Shelby County	27	22	0	5	310,753.18
Total	432	397	0	35	5,062,692.79

Table 6.9 NFIP RLP/SRL Properties							
Flood Location	Type	Total Losses	Insured	Flood Depth	Potential Risk	Flood Type Out of Banks Storm Water Maintenance Low Lying	Total Payments
530 1st Ave W Alabaster, Al	Religious	4	SDF	Unk	H	Out of Banks	96,266.69
705 3rd Ave SW Alabaster, Al	Single Fmly	2	YES	Unk	H	Out of Banks	27,707.86
715 3rd Ave SW Alabaster, Al	Single Fmly	2	NO	Unk	H	Out of Banks	17,435.82
136 6th St SW Alabaster, Al	Single Fmly	2	YES	Unk	H	Out of Banks	7,756.29
160 6th St SW Alabaster, Al	Single Fmly	3	YES	Unk	H	Out of Banks	46,347.10
6250 Cahaba Valley Rd Birmingham, Al	Single Fmly	2	YES	Unk	H	Out of Banks	16,393.53
5051 Lee St Dr Birmingham, Al	Single Fmly	3	NO	Unk	H	Out of Banks	15,381.38
5468 Woodford Dr Birmingham, Al	Single Fmly	2	NO	Unk	H	Out of Banks	21,017.04
Po Box 236 Helena	Single Fmly	2	NO	Unk	H	Out of Banks	19,408.41
Wehapa Lake RT 1 Box 877 Leeds, Al	Single Fmly	2	NO	Unk	M	Low Lying	7,934.89
134 Braxton Way Pelham, Al	Single Fmly	2	NO	Unk	H	Out of Banks	27,604.16
1913 Chandaway Ct Pelham, Al	Single Fmly	4	SDF	Unk	H	Out of Banks	48,556.57
1925 Chandaway Dr Pelham, Al	Single Fmly	2	YES	Unk	H	Out of Banks	78,971.95
1953 Chandaway Dr Pelham, Al	Single Fmly	3	NO	Unk	H	Out of Banks	52,221.34
1892 Chandalar Ct Pelham, Al	2-4 Family	5	SDF	Unk	H	Out of Banks	44,697.68
1894 Chandalar Ct Pelham, Al	2-4 Family	5	YES	Unk	H	Out of Banks	51,756.54
1896 Chandalar Ct Pelham, Al	Single Fmly	5	YES	Unk	H	Out of Banks	92,687.47
1898 Chandalar Ct Pelham, Al	2-4 Family	3	NO	Unk	H	Out of Banks	31,769.21
1900 Chandalar Ct Pelham, Al	2-4 Family	5	NO	Unk	H	Out of Banks	55,082.47
1901 Chandalar Ct Pelham, Al	Single Fmly	3	YES	Unk	H	Out of Banks	57,039.09
1902 Chandalar Ct Pelham, Al	2-4 Family	4	NO	Unk	H	Out of Banks	61,516.18
1903 Chandalar Ct Pelham, Al	Single Fmly	4	NO	Unk	H	Out of Banks	51,563.18
1904 Chandalar Ct Pelham, Al	Single Fmly	3	YES	Unk	H	Out of Banks	47,388.48
1905 Chandalar Ct Pelham, Al	Single Fmly	5	SDF	Unk	H	Out of Banks	59,761.14
1906 Chandalar Ct Pelham, Al	2-4 Family	5	NO	Unk	H	Out of Banks	43,325.33
1907 Chandalar Ct Pelham, Al	Single Fmly	5	SDF	Unk	H	Out of Banks	43,177.42
1911 Chandalar Ct Pelham, Al	Other Resid	3	YES	Unk	H	Out of Banks	28,978.16
1915 Chandalar Ct Pelham, Al	Single Fmly	4	YES	Unk	H	Out of Banks	46,828.09
1916 Chandalar Ct Pelham, Al	Other Resid	2	NO	Unk	H	Out of Banks	27,876.92
1917 Chandalar Ct Pelham, Al	Single Fmly	9	SDF	Unk	H	Out of Banks	286,488.52
1918 Chandalar Ct Pelham, Al	Single Fmly	3	YES	Unk	H	Out of Banks	39,719.58
1919 Chandalar Ct Pelham, Al	Other Resid	3	NO	Unk	H	Out of Banks	49,997.69
1920 Chandalar Ct Pelham, Al	Single Fmly	2	YES	Unk	H	Out of Banks	15,251.46
1922 Chandalar Ct Pelham, Al	Single Fmly	3	NO	Unk	H	Out of Banks	38,728.09
1924 Chandalar Ct Pelham, Al	Single Fmly	3	NO	Unk	H	Out of Banks	32,536.97
1925 Chandalar Ct Pelham, Al	Single Fmly	5	NO	Unk	H	Out of Banks	66,325.97
1927 Chandalar Ct Pelham, Al	2-4 Family	5	SDF	Unk	H	Out of Banks	54,329.65
1929 Chandalar Ct Pelham, Al	Single Fmly	2	YES	Unk	H	Out of Banks	18,401.22
1931 Chandalar Ct Pelham, Al	Single Fmly	5	SDF	Unk	H	Out of Banks	46,672.17
1957 Chandalar Ct Pelham, Al	Single Fmly	3	YES	Unk	H	Out of Banks	34,088.30
1959 Chandalar Ct Pelham, Al	Single Fmly	5	SDF	Unk	H	Out of Banks	62,065.76
1961 Chandalar Ct Pelham, Al	Single Fmly	5	SDF	Unk	H	Out of Banks	43,711.10

Table 6.9 NFIP RLP/SRL Properties							
Flood Location	Type	Total Losses	Insured	Flood Depth	Potential Risk	Flood Type Out of Banks Storm Water Maintenance Low Lying	Total Payments
1963 Chandalar Ct Pelham, Al	Single Fmly	5	Sdf	Unk	H	Out Of Banks	89,980.35
1982 Chandalar Ct Pelham, Al	2-4 Family	6	No	Unk	H	Out Of Banks	128,591.14
1984 Chandalar Ct Pelham, Al	Single Fmly	4	Yes	Unk	H	Out Of Banks	52,267.54
1986 Chandalar Ct Pelham, Al	Single Fmly	6	Yes	Unk	H	Out Of Banks	57,095.07
1988 Chandalar Ct Pelham, Al	Single Fmly	5	Sdf	Unk	H	Out Of Banks	105,147.58
1990 Chandalar Ct Pelham, Al	2-4 Family	5	Sdf	Unk	H	Out Of Banks	64,205.76
1992 Chandalar Ct Pelham, Al	2-4 Family	7	Sdf	Unk	H	Out Of Banks	94,109.66
1994 Chandalar Ct Pelham, Al	Single Fmly	5	Sdf	Unk	H	Out Of Banks	93,302.85
1996 Chandalar Ct Pelham, Al	Single Fmly	6	Sdf	Unk	H	Out Of Banks	74,994.69
553 Creekview Dr Pelham, Al	Single Fmly	5	Sdf	Unk	H	Out Of Banks	90,393.02
557 Creekview Dr Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	47,073.61
600 Creekview Dr Pelham, Al	Single Fmly	2	Yes	Unk	H	Out Of Banks	40,536.23
608 Creekview Dr Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	31,110.46
625 Creekview Dr Pelham, Al	Single Fmly	2	Yes	Unk	H	Out Of Banks	68,481.15
500 Creekview Te Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	47,690.73
505 Creekview Te Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	26,031.66
400 Cross Creek Cir Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	37,236.90
416 Crosscreek Cir Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	27,534.73
404 Cross Creek Tr Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	3,025.70
420 Cross Creek Tr Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	17,112.00
424 Cross Creek Tr Pelham, Al	Single Fmly	3	No	Unk	H	Out Of Banks	27,115.33
932 Frontier Ave Pelham, Al	Single Fmly	5	Sdf	Unk	H	Out Of Banks	40,063.62
801 Frontier Dr Pelham, Al	Single Fmly	2	Yes	Unk	H	Out Of Banks	12,473.01
805 Frontier Dr Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	25,073.97
809 Frontier Dr Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	7,887.82
917 Frontier Dr Pelham, Al	Single Fmly	4	Yes	Unk	H	Out Of Banks	23,679.80
921 Frontier Dr Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	33,969.74
925 Frontier Dr Pelham, Al	Single Fmly	3	Yes	Unk	H	Out Of Banks	29,383.93
109 Green Park Pelham, Al	Single Fmly	3	No	Unk	H	Out Of Banks	9,762.73
3186 Lee St Pelham, Al	Commercial	6	No	Unk	H	Out Of Banks	31,903.91
2700 Montgomery Hwy Pelham, Al	2-4 Family	2	No	Unk	H	Out Of Banks	66,852.46
122 Norridge Pl Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	29,692.36
123 Norridge Pl Pelham, Al	Single Fmly	4	Sdf	Unk	H	Out Of Banks	236,250.23
127 Norridge Pl Pelham, Al	Single Fmly	2	Yes	Unk	H	Out Of Banks	88,121.73
4035 Saddle Run Cir Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	81,196.32
4037 Saddle Run Cir Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	51,730.03
4056 Saddle Run Cir Pelham, Al	Single Fmly	2	No	Unk	H	Out Of Banks	32,660.52
201 Yeager Pky Pelham, Al	Commercial	3	Yes	Unk	H	Out Of Banks	133,345.31
201 Yeager Pky Ste A Pelham, Al	Commercial	2	Yes	Unk	H	Out Of Banks	12,250.49
201 Yeager Pkwy Ste C Pelham, Al	Commercial	2	No	Unk	H	Out Of Banks	28,766.21
201 Yeager Pkwy Ste F Pelham, Al	Commercial	2	Yes	Unk	H	Out Of Banks	7,419.26
Pob 240315 Pelham, Al	2-4 Family	3	Yes	Unk	H	Out Of Banks	16,407.27

Table 6.9 NFIP RLP/SRL Properties							
Flood Location	Type	Total Losses	Insured	Flood Depth	Potential Risk	Flood Type Out of Banks Storm Water Maintenance Low Lying	Total Payments
154 Rockford Rd Pelham, Al/Indian Springs	Single Fmly	2	No	Unk	H	Out Of Banks	42,300.00
1307 Hiway 60 Vincent, Al	Commercial	1	Yes	Unk	L	Low Lying	0
1401 Bates Rd Vincent, Al.	Single Fmly	2	Yes	Unk	M	Low Lying	10,618
Total		297					4,289,611.75

6.3.1 Future Structure Vulnerability

The hazard narratives in the hazard analysis section describe the vulnerability of current structures in existing flood hazards in terms of impact, extent and future occurrences of flooding.

All the above structures will be considered for elevation above the flood elevation or have the structure area removed from floodplain. Any time development occurs near a floodplain, the cities ensure that the structures are at least two feet above the 100-year flood elevation. Structures proposed to be built in floodplain areas must go through the LOMR process with FEMA, so that they can be removed from floodplain status. The cities will not allow a structure to be built in a floodplain below the Base Flood Elevation where it could be flooded.

6.4 VULNERABILITY: IDENTIFYING STRUCTURES

According to FEMA, critical facilities and infrastructure are those systems "whose incapacity or destruction would have a debilitating impact on the defense or economic security of that community." These systems include the following eight general categories: telecommunications infrastructure; electrical power systems; gas and oil facilities; banking and finance institutions; transportation networks; water supply systems; government services; and emergency services.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
B. Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

CRS Step 4: Step 4: Assess the Hazard& Step 5: Assess the Problem: For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Shelby County does not maintain an active database for critical facilities and infrastructure, although it has begun to build one through its development of GIS capabilities.

All participating municipalities provided the critical facilities and or assets within their communities. Shelby County Emergency management then combined the local jurisdiction information with the county information to identify all critical assets and structures.

The County's Information Technology Department generated the structure value information from tax records and other sources. The content value was estimated using the structure value as a basis and the following average percentages

- Residential=30%

- Government=40%
- Commercial/Industrial=50%

For security purposes the detailed tables are located in the Annex and contain the asset name or description, the type of facility/asset, facility address, time open, capacity, square footage, structure and content value. In addition the following information is provided.

In Hazard defines whether the facility is within a hazard such as a Flood Plain, within a 3-mile radius of a major chemical facility, in the path of Dam Waters, within a 5-mile radius of a nuclear facility, etc.

Economic Asset defines whether the asset or facility produces significant revenue for the jurisdiction or the loss of the facility would have a negative economic impact on the jurisdiction.

Historic Asset defines whether or not the asset or its contents is of significant historic value.

Construction defines the material the facility is constructed of: B=Block or Brick, C=Concrete, M=Metal and W=Wood. Only the predominant material is listed.

Emergency Generator identifies if the facility has alternate stand-a-lone power capability.

The table below is a summary table that is extracted from the detailed tables in the supporting Annex and specifically lists the potentially at-risk buildings or facilities based on the GIS analysis of Shelby County's critical facilities database in combination with the databases of hazardous material facilities and Federal and State-owned facilities.

Table 6.10 Participating Jurisdictions Critical Facility Summary					
Jurisdiction	Total Facilities	Total Sq. Footage	Total Structure Value	Total Content Value	Total Value
Shelby County	91	41,164,474	$574,724,308	$66,445,521	$641,169,829.00
City of Alabaster	55	1,693,670	$220,850,000	$104,650,000	$325,500,000.00
City of Calera	33	2,203,164	$45,553,321	$66,429,722	$111,983,043.00
City of Chelsea	13	917,000	$11,580,859	$4,769,001	$16,349,860.00
City of Columbiana	20	10,172,199	$17,955,500	$62,685,000	$80,640,500.00
Town of Harpersville	13	1,168,299	$7,680,000	$2,575,001	$10,255,001.00
City of Helena	24	118,678	$39,900,202	$31,175,000	$71,075,202.00
Town of Indian Springs	7	49,150	$16,109,860	$23,210,000	$39,319,860.00
City of Montevallo	24	1,360,699	$306,973,600	$91,150,000	$398,123,600.00
City of Pelham	28	17,288,818	$37,762,053	$11,810,368	$49,572,421.00
Town of Vincent	24	1,142,335	$10,750,002	5,744,000	$16,494,002.00
Town of Westover	7	1,018,099	$3,460,000	$2,815,000	$6,275,000.00
Town of Wilsonville	9	27,600	$10,235,600	$1,975,000	$12,210,600.00
Town of Wilton	6	23,000	$3,319,000	1,125,000	$4,444,000.00
Totals	354	78,347,185	$1,306,854,305.00	$476,558,613.00	$1,783,412,918.00

6.4.1 Total Flood Hazard Asset Inventory

Incident population and structure/asset information is collected using a GIS system and information from the county property tax assessor.

For flooding which has an identified geographic location (500 year flood plan maps), Current and future population and structures are identified within the defined flood area.

Table 6.11 Shelby Total Asset Inventory Summary						
Flood Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	7,621	149,774	5.09%	9145	172240	5.31%
Commercial/Ind	278	17891	1.55%	334	20575	1.62%
Government/NP	34	1995	1.70%	41	2294	1.78%
Residences	1167	51739	2.26%	1400	59500	2.35%
Total	1479	71625	2.06%	1774.8	82369	2.15%
Structure Value						
Commercial/Ind	$151,596,780	$3,289,815,790	4.61%	$181,916,136	$3,783,288,159	4.81%
Government/NP	$24,928,410	$807,676,550	3.09%	$29,914,092	$928,828,033	3.22%
Residences	$187,750,640	$10,526,618,521	1.78%	$225,300,768	$12,105,611,299	1.86%
Total	$364,275,830	$14,624,110,861	2.49%	$437,130,996	$16,817,727,490	2.60%

6.4.2 Individual Jurisdiction Asset Inventory By Primary Hazard

The Shelby County Mitigation Committee for the purpose of vulnerability analysis divided the profiled hazards into Primary and Secondary classes. Three of the hazards are considered high impact based on historical and projected future events. Those hazards are Flooding, High Wind and a significant Hazardous Materials event. The secondary hazards are the remaining profiled hazards that for the most part may affect any area of the entire county

The Tables and maps below identify current and estimated future population and currant and estimated future structures, associated with the primary hazards, in individual jurisdictions including a populated area and a Tier II facility in rural Shelby County. They are also used in the vulnerability loss calculations.

For High Wind and Hazardous Materials events where a specific geographical location cannot be identified hypothetical locations are identified. For a High Wind event, an F4 tornado 300 yards wide and 1 mile long was predicted with the center point being the courthouse/administration facility of a jurisdiction. For a Hazardous Material event either a Tier II facility or a transportation point on a highway or railroad was selected as a hypothetical center point of the incident. Detailed estimated populations and structures for the three primary profiled hazards are included in the individual jurisdiction tables below.

For flooding which has an identified geographic location (500 year flood plan maps), Current and future population and structures are identified within the defined flood area.

The flood map below identifies the 100-year and 500 year floodplains in Shelby County In the supporting Annex are Individual Jurisdiction Floodplain Maps *(source: Shelby County GIS)*.

Figure 6.1 Shelby County Floodplain Map

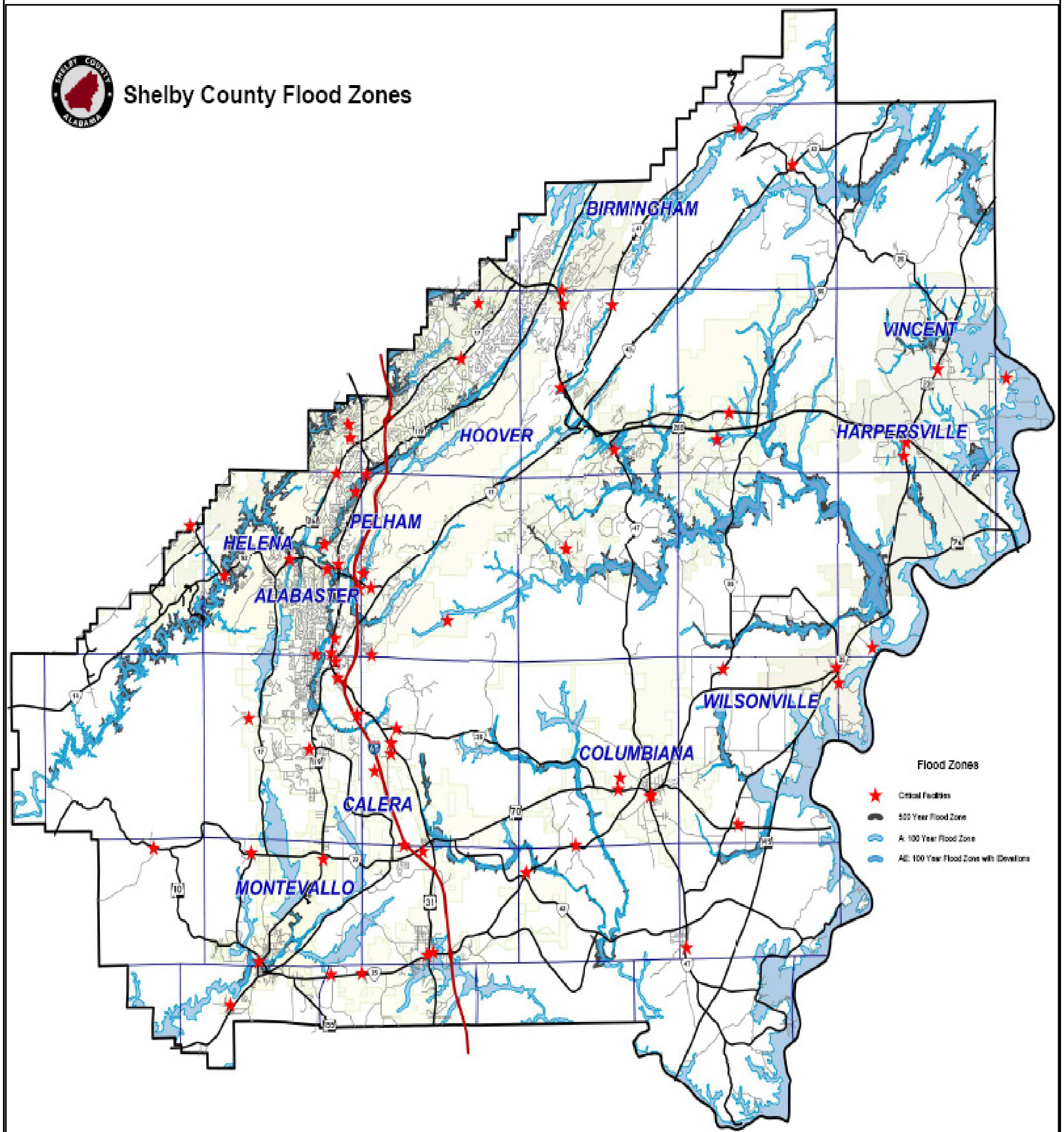


Figure 6.2 Alabaster Wind/Hazmat Map

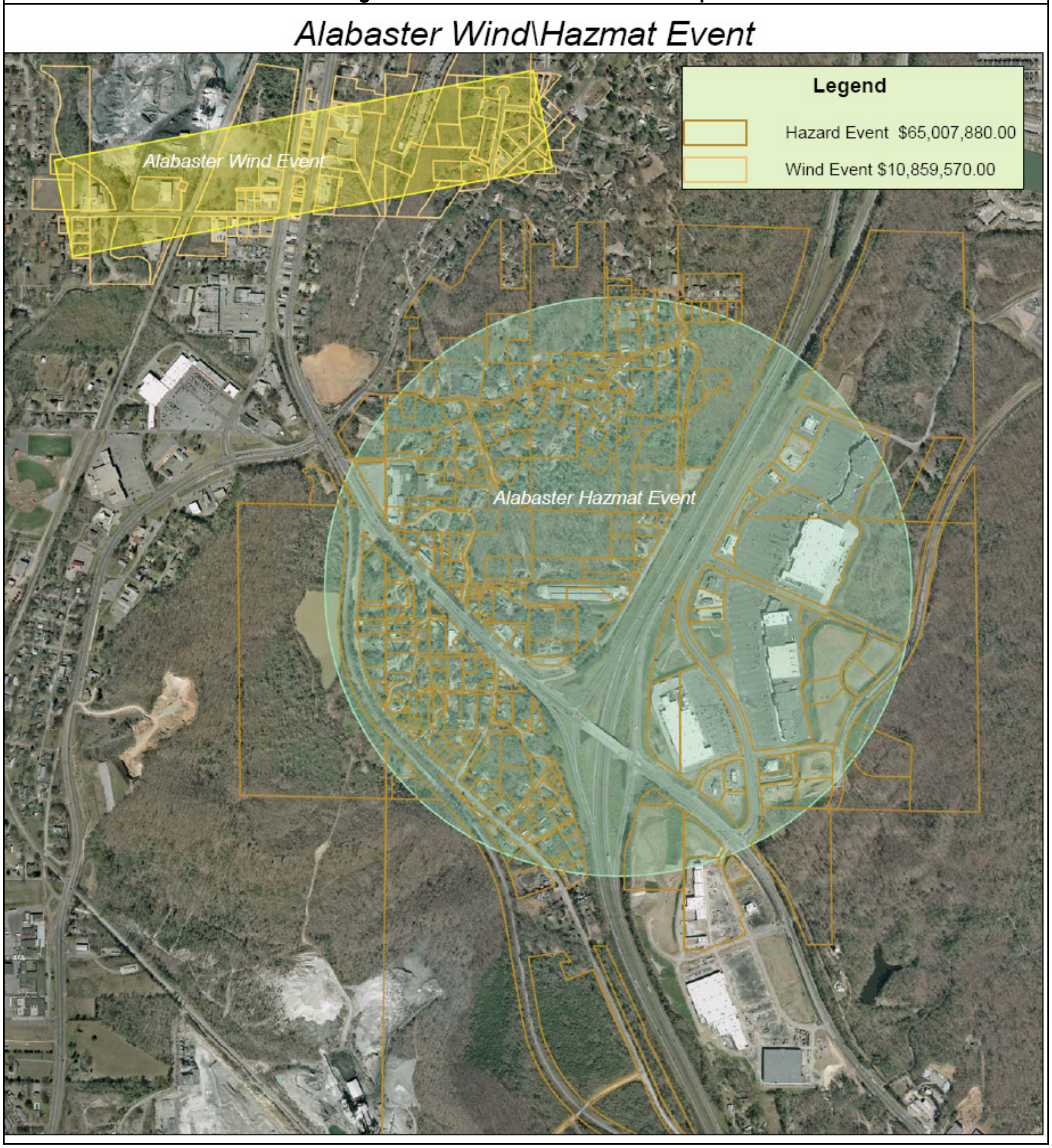
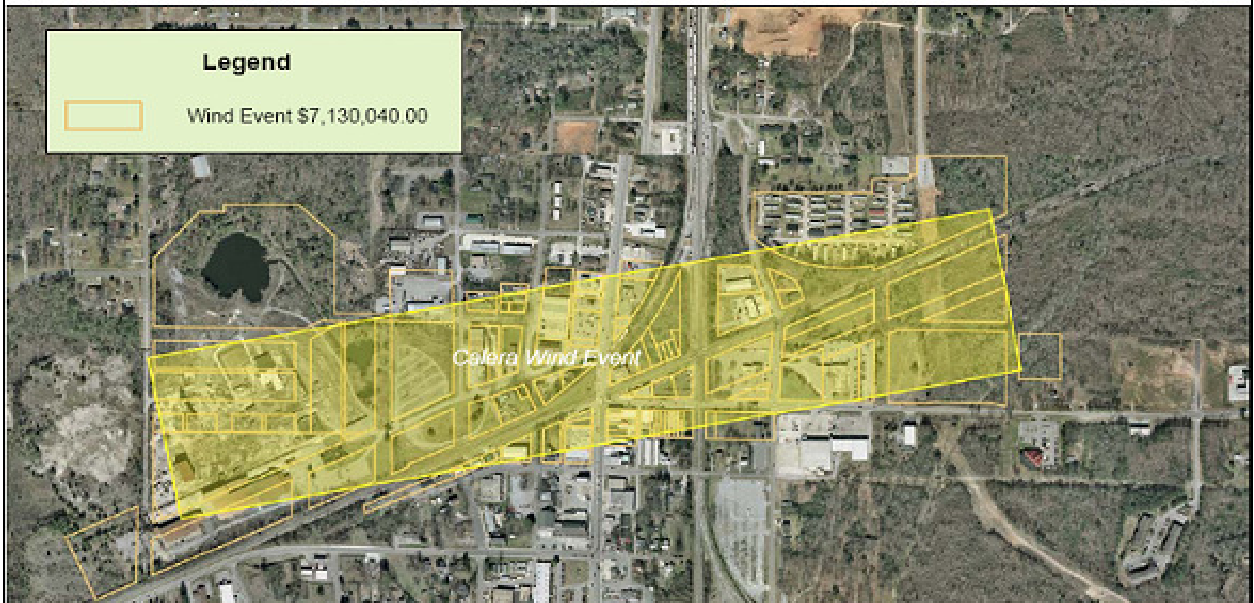


Table 6.12 Alabaster Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	605	22,619	2.67%	726	26012	2.79%
Commercial/Ind	35	2734	1.28%	42	3144	1.34%
Government/NP	6	340	1.76%	7	391	1.84%
Residences	15	4016	0.37%	18	4618	0.39%
Total	56	7090	0.79%	67.2	8153.5	0.82%
Structure Value						
Commercial/Ind	$9,028,600	$422,790,390	2.14%	$10,834,320	$486,208,949	2.23%
Government/NP	$1,085,490	$61,833,440	1.76%	$1,302,588	$71,108,456	1.83%
Residences	$745,480	$634,942,530	0.12%	$894,576	$730,183,910	0.12%
Total	$10,859,570	$1,119,566,360	0.97%	$13,031,484	$1,287,501,314	1.01%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1415	22,619	6.26%	1698	26012	6.53%
Commercial/Ind	38	2,734	1.39%	46	3144	1.45%
Government/NP	9	340	2.65%	11	391	2.76%
Residences	153	4,016	3.81%	184	4618	3.98%
Total	200	7090	2.82%	240	8154	2.94%
Structure Value						
Commercial/Ind	$25,391,810	$422,790,390	6.01%	$30,470,172	$486,208,949	6.27%
Government/NP	$1,242,010	$61,833,440	2.01%	$1,490,412	$71,108,456	2.10%
Residences	$16,479,940	$634,942,530	2.60%	$19,775,928	$730,183,910	2.71%
Total	$43,113,760	$1,119,566,360	3.85%	$51,736,512	$1,287,501,314	4.02%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population		22,619	0.00%	0	26012	0.00%
Commercial/Ind	88	2,734	3.22%	106	3144	3.36%
Government/NP	6	340	1.76%	7	391	1.84%
Residences	101	4,016	2.51%	121	4618	2.62%
Total	195	7090	2.75%	234	8154	2.87%
Structure Value						
Commercial/Ind	$61,184,310	$422,790,390	14.47%	$73,421,172	$486,208,949	15.10%
Government/NP	$597,600	$61,833,440	0.97%	$717,120	$71,108,456	1.01%
Residences	$3,225,870	$634,942,530	0.51%	$3,871,044	$730,183,910	0.53%
Total	$65,007,780	$1,119,566,360	5.81%	$78,009,336	$1,287,501,314	6.06%

Figure 6.3 Calera Wind/Hazmat Map

Calera Wind Event



Calera Hazmat Event

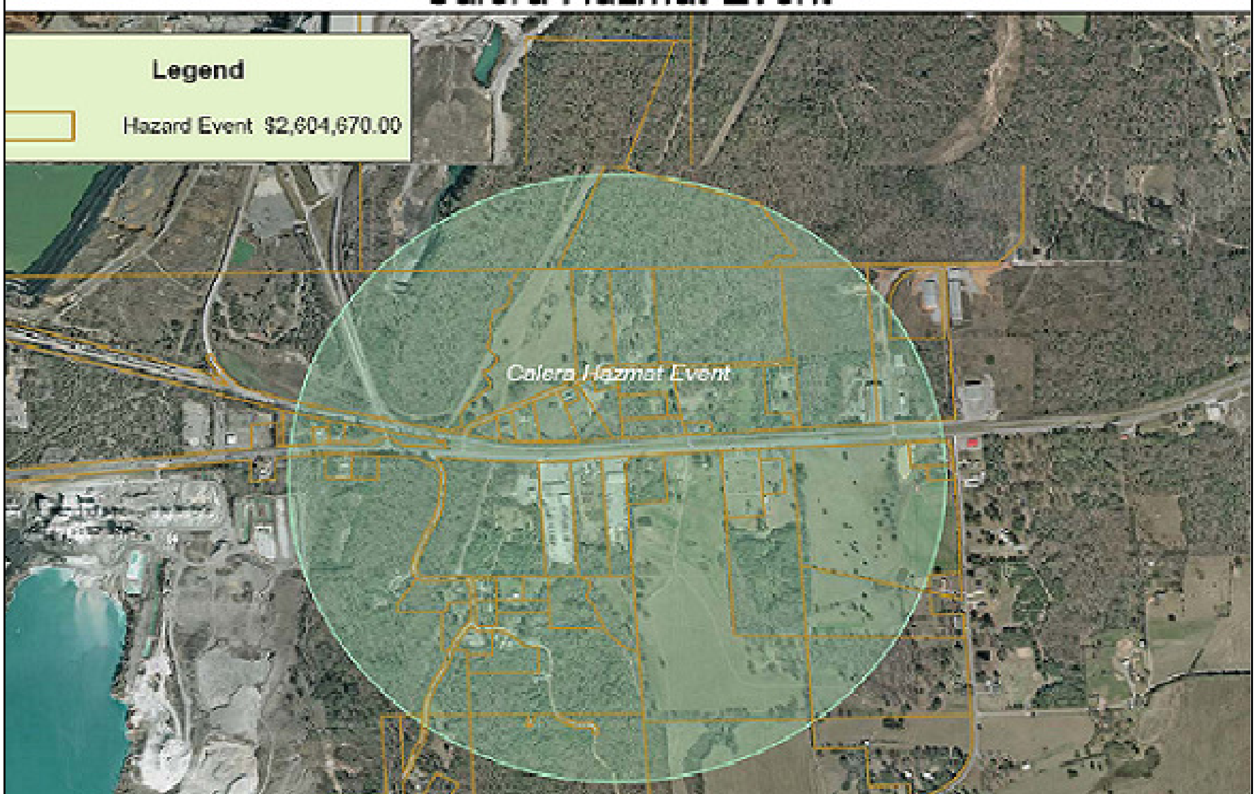


Table 6.13 Calera Asset Inventory Summary						
Hugh Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	600	3,158	19.00%	630	3790	16.62%
Commercial/Ind	39	153	25.49%	41	184	22.30%
Government/NP	6	19	31.58%	6	23	27.63%
Residences	6	1248	0.48%	6	1498	0.42%
Total	51	1,420	3.59%	54	1,704	3.14%
Structure Value						
Commercial/Ind	$5,859,380	$25,123,090	23.32%	$6,445,318	$28,891,554	22.31%
Government/NP	$1,112,970	$5,980,000	18.61%	$1,224,267	$6,877,000	17.80%
Residences	$157,690	$203,287,281	0.08%	$173,459	$233,780,373	0.07%
Total	$7,130,040	$234,390,371	3.04%	$7,843,044	$269,548,927	2.91%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	60	3,158	1.90%	72	3632	1.98%
Commercial/Ind	5	153	3.27%	6	176	3.41%
Government/NP	0	19	0.00%	0	22	0.00%
Residences	2	1,248	0.16%	2	1435	0.17%
Total	7	1,420	0.49%	8	1,633	0.51%
Structure Value						
Commercial/Ind	$2,747,820	$25,123,090	10.94%	$3,297,384	$28,891,554	11.41%
Government/NP	$0	$5,980,000	0.00%	$0	$6,877,000	0.00%
Residences	$103,880	$203,287,281	0.05%	$124,656	$233,780,373	0.05%
Total	$2,851,700	$234,390,371	1.22%	$3,422,040	$269,548,927	1.27%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population		3,158	0.00%	0	3632	0.00%
Commercial/Ind	4	153	2.61%	5	176	2.73%
Government/NP	0	19	0.00%	0	22	0.00%
Residences	4	1,248	0.32%	5	1435	0.33%
Total	8	1420	0.56%	10	1,633	0.59%
Structure Value						
Commercial/Ind	$2,360,870	$25,123,090	9.40%	$2,833,044	$28,891,554	9.81%
Government/NP	$0	$5,980,000	0.00%	$0	$6,877,000	0.00%
Residences	$243,800	$203,287,281	0.12%	$292,560	$233,780,373	0.13%
Total	$2,604,670	$234,390,371	1.11%	$3,125,604	$269,548,927	1.16%

Figure 6.4 Chelsea Wind/Hazmat Map

Chelsea Wind\Hazmat Event

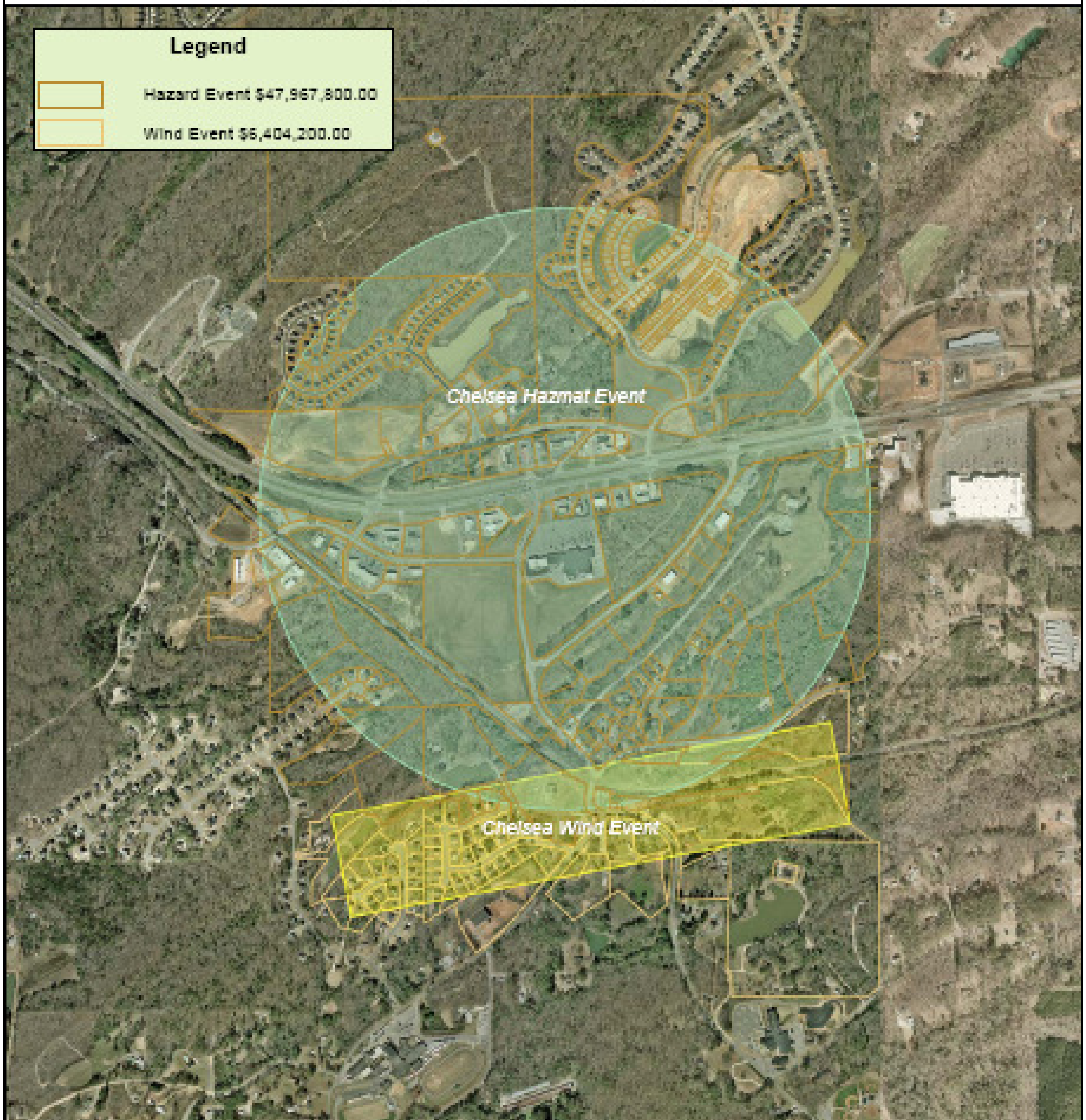


Table 6.14 Chelsea Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	260	2,949	8.82%	273	3391	8.05%
Commercial/Ind	9	1727	0.52%	9	1986	0.48%
Government/NP	6	59	10.17%	6	68	9.29%
Residences	52	3408	1.53%	55	3919	1.39%
Total	67	5194	1.29%	70	5973	1.18%
Structure Value						
Commercial/Ind	$1,252,550	233,922,120	0.54%	$1,503,060	$269,010,438	0.56%
Government/NP	$851,390	13,616,250	6.25%	$1,021,668	$15,658,688	6.52%
Residences	$7,615,590	768,612,670	0.99%	$9,138,708	$883,904,571	1.03%
Total	$9,719,530	1,016,151,040	0.96%	$11,663,436	$1,168,573,696	1.00%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	225	2,949	7.63%	270	3391	7.96%
Commercial/Ind	5	1,727	0.29%	6	1986	0.30%
Government/NP	1	59	1.69%	1	68	1.77%
Residences	39	3,408	1.14%	47	3919	1.19%
Total	45	5194	0.87%	54	5973	0.90%
Structure Value						
Commercial/Ind	$1,856,640	$233,922,120	0.79%	$2,227,968	$269,010,438	0.83%
Government/NP	$1,717,100	$13,616,250	12.61%	$2,060,520	$15,658,688	13.16%
Residences	$8,472,690	$768,612,670	1.10%	$10,167,228	$883,904,571	1.15%
Total	$12,046,430	$1,016,151,040	1.19%	$14,455,716	$1,168,573,696	1.24%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1045	2,949	35.44%	1254	3391	36.98%
Commercial/Ind	68	1,727	3.94%	82	1986	4.11%
Government/NP	4	59	6.78%	5	68	7.07%
Residences	137	3,408	4.02%	164	3919	4.19%
Total	209	3408	6.13%	251	5973	4.20%
Structure Value						
Commercial/Ind	$25,264,420	$233,922,120	10.80%	$30,317,304	$269,010,438	11.27%
Government/NP	$170,460	$13,616,250	1.25%	$204,552	$15,658,688	1.31%
Residences	$22,532,920	$768,612,670	2.93%	$27,039,504	$883,904,571	3.06%
Total	$47,967,800	$1,016,151,040	4.72%	$57,561,360	$1,168,573,696	4.93%

Figure 6.5 Columbiana Wind/Hazmat Map

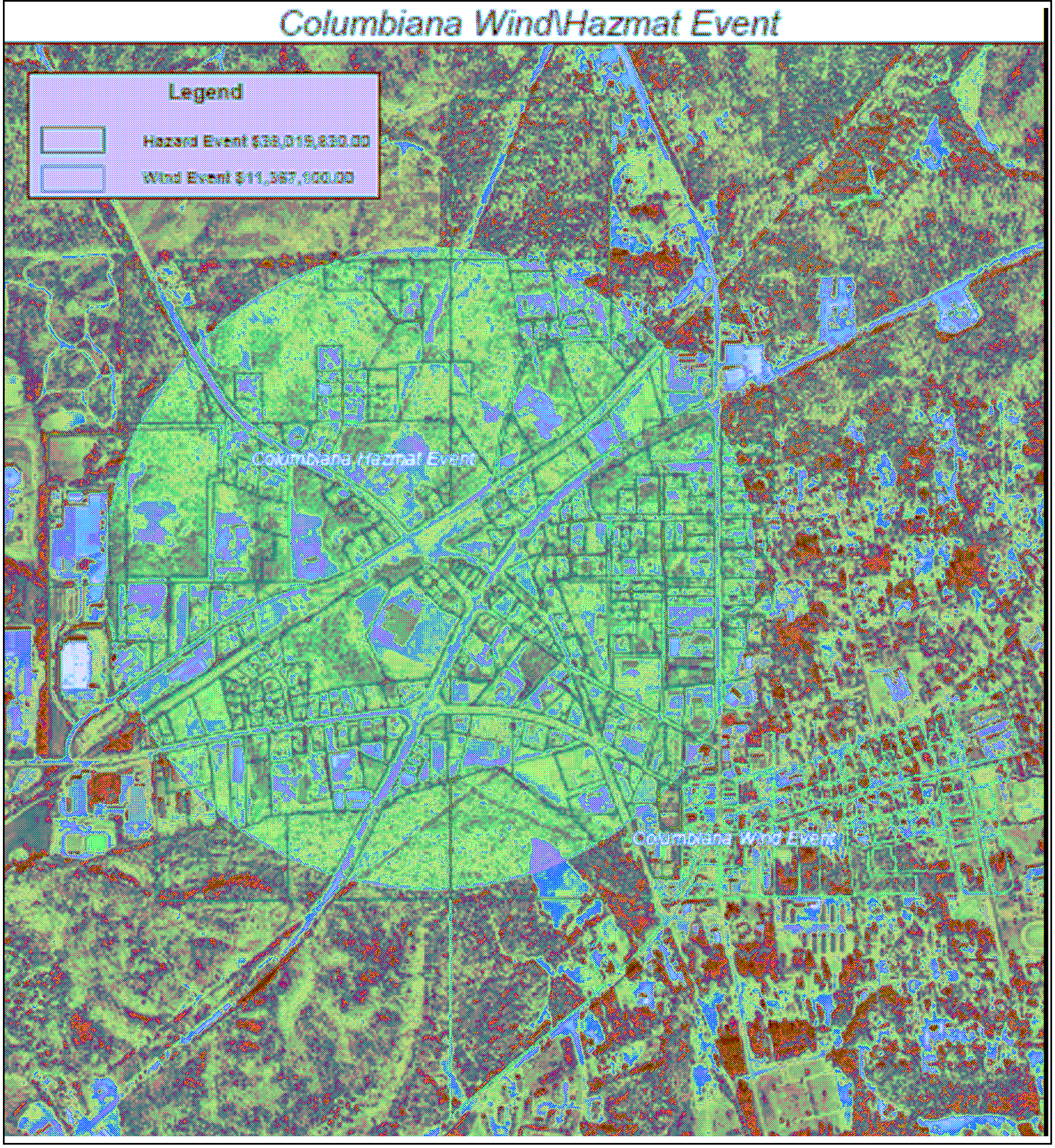


Table 6.15 Columbiana Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	990	3,316	29.86%	1188	3813	31.15%
Commercial/Ind	41	505	8.12%	49	581	8.47%
Government/NP	13	146	8.90%	16	168	9.29%
Residences	38	1027	3.70%	46	1181	3.86%
Total	92	1678	5.48%	110	1930	5.72%
Structure Value						
Commercial/Ind	$5,695,400	$78,365,820	7.27%	$6,834,480	$90,120,693	7.58%
Government/NP	$2,398,750	$38,148,860	6.29%	$2,878,500	$43,871,189	6.56%
Residences	$3,272,950	$123,819,190	2.64%	$3,927,540	$142,392,069	2.76%
Total	$11,367,100	$240,333,870	4.73%	$13,640,520	$276,383,951	4.94%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	5	3,316	0.15%	6	3813	0.16%
Commercial/Ind	0	505	0.00%	0	581	0.00%
Government/NP	0	146	0.00%	0	168	0.00%
Residences	1	1,027	0.10%	1	1181	0.10%
Total	1	1678	0.06%	1	1930	0.06%
Structure Value						
Commercial/Ind	$0	$78,365,820	0.00%	$0	$90,120,693	0.00%
Government/NP	$0	$38,148,860	0.00%	$0	$43,871,189	0.00%
Residences	$326,300	$123,819,190	0.26%	$391,560	$142,392,069	0.27%
Total	$326,300	$240,333,870	0.14%	$391,560	$276,383,951	0.14%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1980	3,316	59.71%	2376	3813	62.31%
Commercial/Ind	93	505	18.42%	112	581	19.22%
Government/NP	18	146	12.33%	22	168	12.86%
Residences	102	1,027	9.93%	122	1181	10.36%
Total	213	1678	12.69%	256	1930	13.25%
Structure Value						
Commercial/Ind	$20,742,390	$78,365,820	26.47%	$24,890,868	$90,120,693	27.62%
Government/NP	$11,575,380	$38,148,860	30.34%	$13,890,456	$43,871,189	31.66%
Residences	$5,702,060	$123,819,190	4.61%	$6,842,472	$142,392,069	4.81%
Total	$38,019,830	$240,333,870	15.82%	$45,623,796	$276,383,951	16.51%

Figure 6.6 Harpersville Wind/Hazmat Map

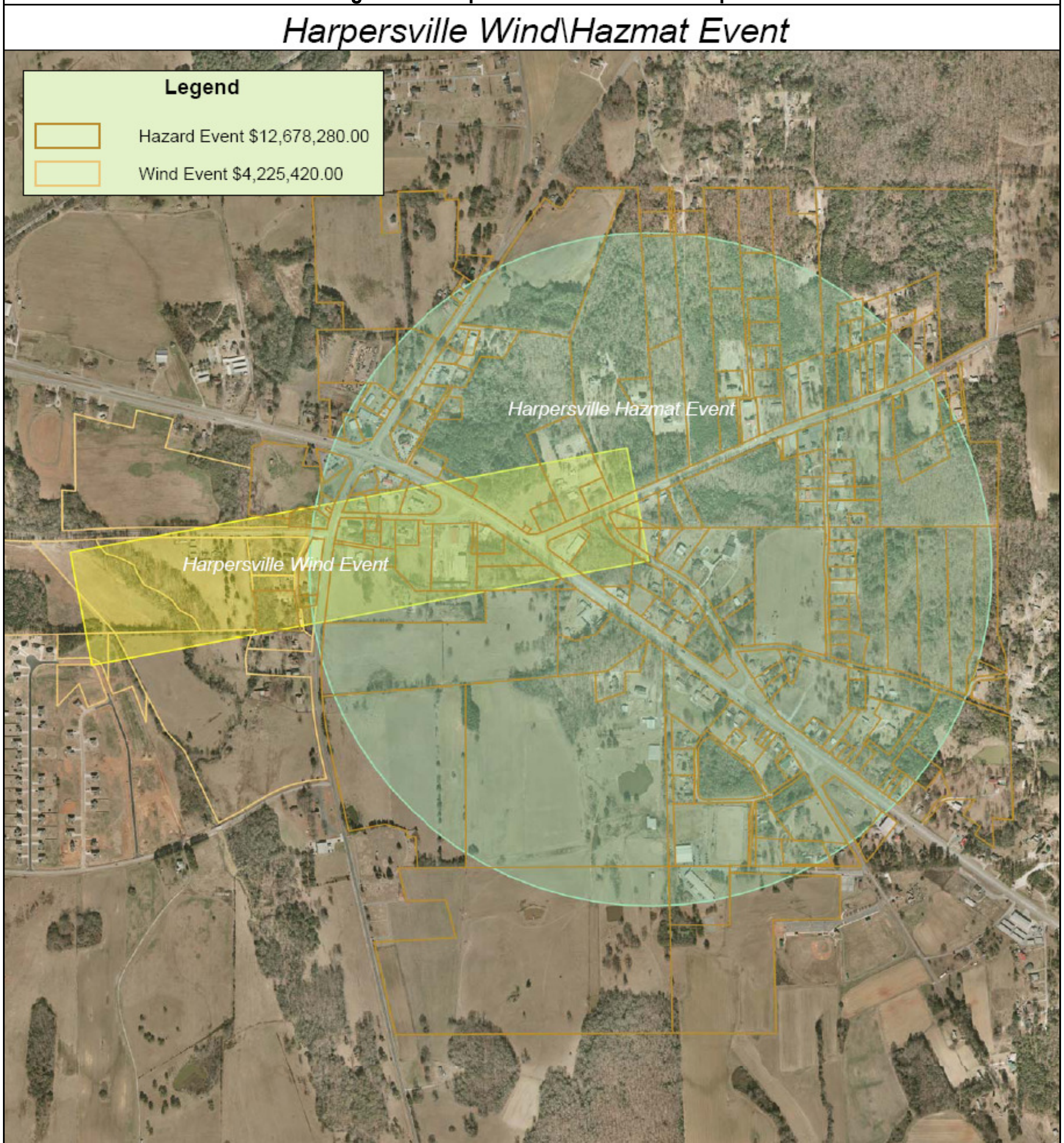


Table 6.16 Harpersville Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	320	1,620	19.75%	384	1863	20.61%
Commercial/Ind	11	368	2.99%	13	423	3.12%
Government/NP	5	51	9.80%	6	59	10.23%
Residences	12	738	1.63%	14	849	1.70%
Total	28	1157	2.42%	34	1331	2.53%
Structure Value						
Commercial/Ind	$2,549,920	$31,306,630	8.14%	$3,059,904	$36,002,625	8.50%
Government/NP	$664,490	$5,915,350	11.23%	$797,388	$6,802,653	11.72%
Residences	$1,011,010	$95,455,880	1.06%	$1,213,212	$109,774,262	1.11%
Total	$4,225,420	$132,677,860	3.18%	$5,070,504	$152,579,539	3.32%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	55	1,620	3.40%	66	1863	3.54%
Commercial/Ind	2	368	0.54%	2	423	0.57%
Government/NP	0	51	0.00%	0	59	0.00%
Residences	7	738	0.95%	8	849	0.99%
Total	9	1157	0.78%	11	1331	0.81%
Structure Value						
Commercial/Ind	$515,590	$31,306,630	1.65%	$618,708	$36,002,625	1.72%
Government/NP	$0	$5,915,350	0.00%	$0	$6,802,653	0.00%
Residences	$708,990	$95,455,880	0.74%	$850,788	$109,774,262	0.78%
Total	$1,224,580	$132,677,860	0.92%	$1,469,496	$152,579,539	0.96%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1205	1,620	74.38%	1446	1863	77.62%
Commercial/Ind	50	368	13.59%	60	423	14.18%
Government/NP	13	51	25.49%	16	59	26.60%
Residences	63	738	8.54%	76	849	8.91%
Total	126	1157	10.89%	151	1331	11.36%
Structure Value						
Commercial/Ind	$5,444,780	$31,306,630	17.39%	$6,533,736	$36,002,625	18.15%
Government/NP	$2,121,090	$5,915,350	35.86%	$2,545,308	$6,802,653	37.42%
Residences	$5,112,410	$95,455,880	5.36%	$6,134,892	$109,774,262	5.59%
Total	$12,678,280	$132,677,860	9.56%	$15,213,936	$152,579,539	9.97%

Figure 6.7 Helena Wind/Hazmat Map

Table 6.17 Helena Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	645	10,296	6.26%	774	11840.4	6.54%
Commercial/Ind	20	1439	1.39%	24	1654.85	1.45%
Government/NP	5	128	3.91%	6	147.2	4.08%
Residences	59	5196	1.14%	71	5975.4	1.18%
Total	84	6763	1.24%	101	7777	1.30%
Structure Value						
Commercial/Ind	$2,646,700	$179,712,230	1.47%	$3,176,040	$206,669,065	1.54%
Government/NP	$2,917,670	$21,722,240	13.43%	$3,501,204	$24,980,576	14.02%
Residences	$5,083,650	$919,525,440	0.55%	$6,100,380	$1,057,454,256	0.58%
Total	$10,648,020	$1,120,959,910	0.95%	$12,777,624	$1,289,103,897	0.99%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1710	10,296	16.61%	2052	11840.4	17.33%
Commercial/Ind	50	1,439	3.47%	60	1654.85	3.63%
Government/NP	4	128	3.13%	5	147.2	3.26%
Residences	218	5,196	4.20%	262	5975.4	4.38%
Total	272	6763	4.02%	326	7777	4.20%
Structure Value						
Commercial/Ind	$18,287,710	$179,712,230	10.18%	$21,945,252	$206,669,065	10.62%
Government/NP	$2,278,800	$21,722,240	10.49%	$2,734,560	$24,980,576	10.95%
Residences	$42,260,820	$919,525,440	4.60%	$50,712,984	$1,057,454,256	4.80%
Total	$62,827,330	$1,120,959,910	5.60%	$75,392,796	$1,289,103,897	5.85%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1760	10,296	17.09%	2112	11840.4	17.84%
Commercial/Ind	42	1,439	2.92%	50	1654.85	3.05%
Government/NP	5	128	3.91%	6	147.2	4.08%
Residences	238	5,196	4.58%	286	5975.4	4.78%
Total	285	6763	4.21%	342	7777	4.40%
Structure Value						
Commercial/Ind	$16,328,730	$179,712,230	9.09%	$19,594,476	$206,669,065	9.48%
Government/NP	$3,017,080	$21,722,240	13.89%	$3,620,496	$24,980,576	14.49%
Residences	$27,982,190	$919,525,440	3.04%	$33,578,628	$1,057,454,256	3.18%
Total	$47,328,000	$1,120,959,910	4.22%	$56,793,600	$1,289,103,897	4.41%

Figure 6.8 Indian Springs Village Wind/Hazmat Map

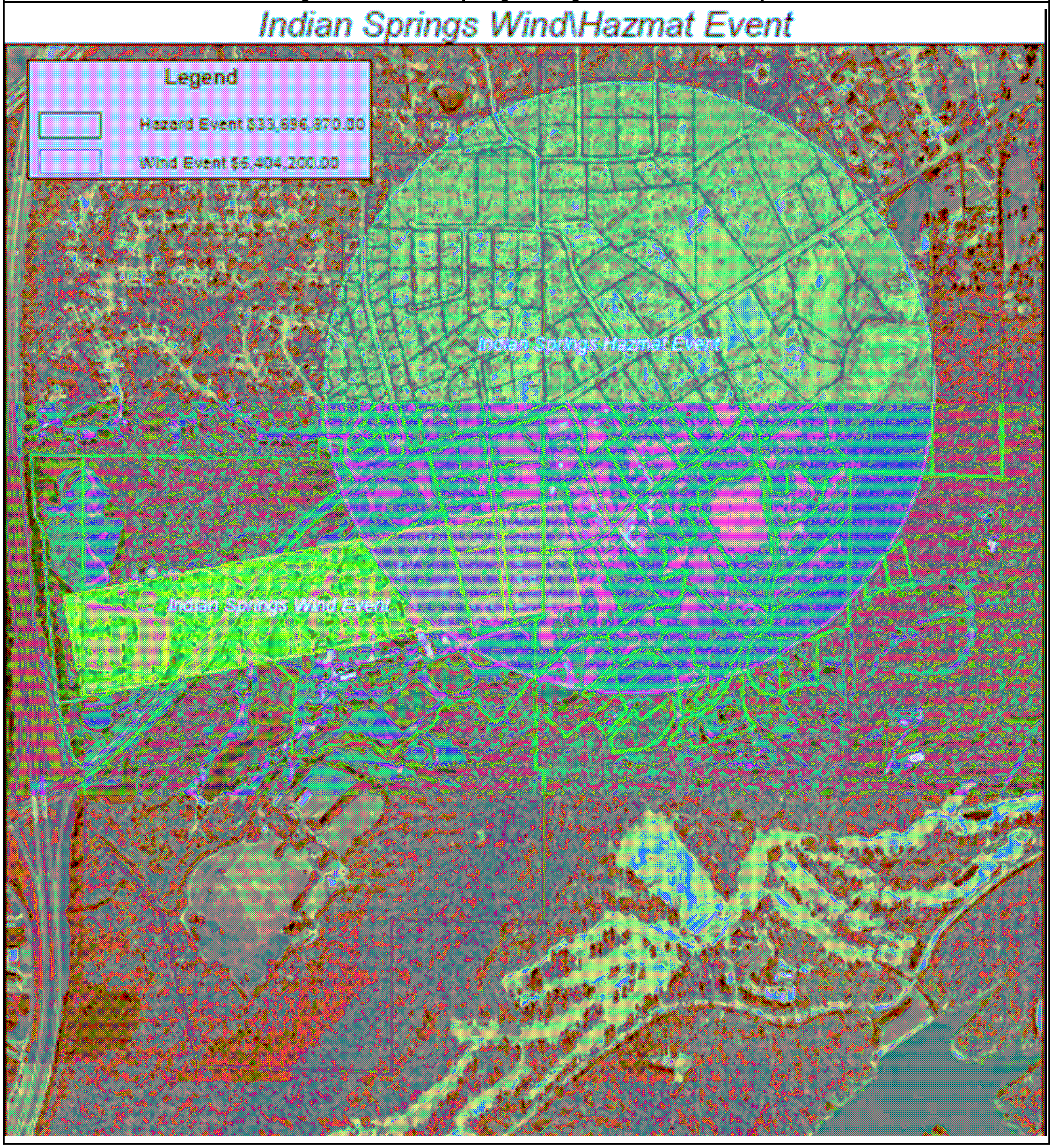
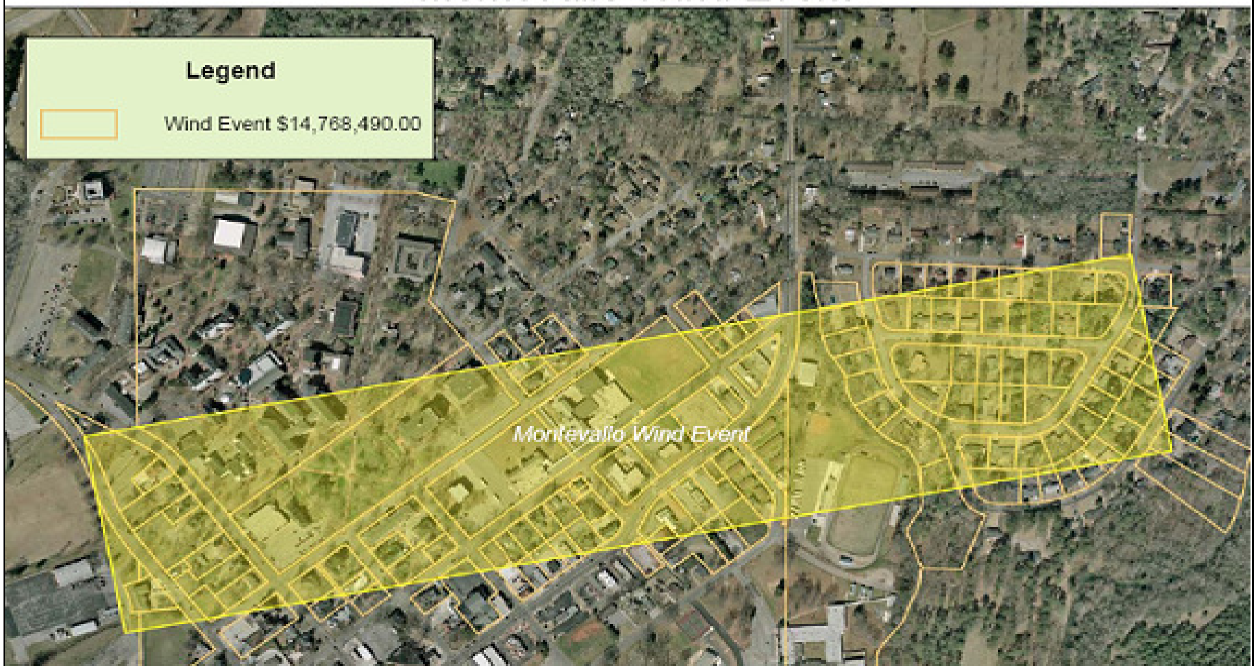


Table 6.18 Indian Springs Village Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	85	2,225	3.82%	94	2559	3.65%
Commercial/Ind	0	141	0.00%	0	162	0.00%
Government/NP	1	25	4.00%	1	29	3.83%
Residences	11	844	1.30%	12	971	1.25%
Total	12	1010	1.19%	13	1162	1.14%
Structure Value						
Commercial/Ind	$0	$49,104,070	0.00%	$0	$56,469,681	0.00%
Government/NP	$3,582,900	$18,175,220	19.71%	$4,299,480	$20,901,503	20.57%
Residences	$2,821,300	$279,579,660	1.01%	$3,385,560	$321,516,609	1.05%
Total	$6,404,200	$346,858,950	0.0185	$7,044,620	$381,544,845	1.85%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	450	2,225	20.22%	540	2559	21.10%
Commercial/Ind	4	141	2.84%	5	162	2.96%
Government/NP	7	25	28.00%	8	29	29.22%
Residences	40	844	4.74%	48	971	4.95%
Total	51	1010	5.05%	61	1162	5.27%
Structure Value						
Commercial/Ind	$703,370	$49,104,070	1.43%	$844,044	$56,469,681	1.49%
Government/NP	$6,489,730	$18,175,220	35.71%	$7,787,676	$20,901,503	37.26%
Residences	$13,046,090	$279,579,660	4.67%	$15,655,308	$321,516,609	4.87%
Total	$0	$346,858,950	0	$0	$381,544,845	0.00%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	645	2,225	28.99%	774	2558.75	30.25%
Commercial/Ind	7	141	4.96%	8	162.15	5.18%
Government/NP	1	25	4.00%	1	28.75	4.17%
Residences	109	844	12.91%	131	970.60	13.48%
Total	117	1010	11.58%	140	1161.50	12.09%
Structure Value						
Commercial/Ind	$1,913,110	$49,104,070	3.90%	$2,295,732	$56,469,681	4.07%
Government/NP	$3,582,900	$18,175,220	19.71%	$4,299,480	$20,901,503	20.57%
Residences	$28,200,860	$279,579,660	10.09%	$33,841,032	$321,516,609	10.53%
Total	$33,696,870	$346,858,950	9.71%	$37,066,557	$381,544,845	9.71%

Figure 6.9 Montevallo Wind/Hazmat Map

Montevallo Wind Event



Montevallo Hazmat Event

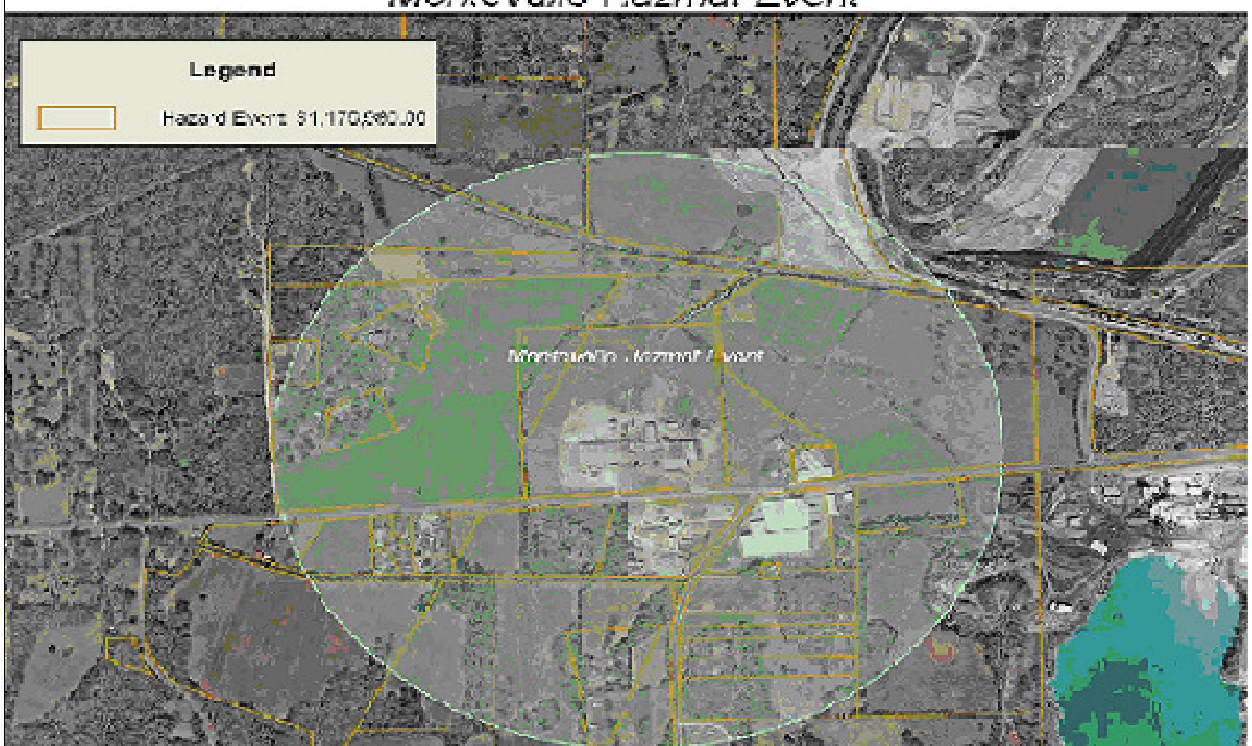


Table 6.19 Montevallo Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	1230	4,825	25.49%	1476	5549	26.60%
Commercial/Ind	29	1063	2.73%	35	1222	2.85%
Government/NP	20	194	10.31%	24	223	10.76%
Residences	68	1381	4.92%	82	1588	5.14%
Total	117	2638	4.44%	140	3034	4.63%
Structure Value						
Commercial/Ind	$5,449,670	$26,388,960	20.65%	$6,539,604	$30,347,304	21.55%
Government/NP	$3,563,880	$140,900,880	2.53%	$4,276,656	$162,036,012	2.64%
Residences	$5,754,940	$198,338,310	2.90%	$6,905,928	$228,089,057	3.03%
Total	$14,768,490	$365,628,150	4.04%	$17,722,188	$420,472,373	4.21%
%00 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	255	4,825	5.28%	306	5549	5.51%
Commercial/Ind	7	1,063	0.66%	8	1222	0.69%
Government/NP	2	194	1.03%	2	223	1.08%
Residences	25	1,381	1.81%	30	1588	1.89%
Total	34	2638	1.29%	41	3034	1.34%
Structure Value						
Commercial/Ind	$3,167,050	$26,388,960	12.00%	$3,800,460	$30,347,304	12.52%
Government/NP	$324,400	$140,900,880	0.23%	$389,280	$162,036,012	0.24%
Residences	$3,925,370	$198,338,310	1.98%	$4,710,444	$228,089,057	2.07%
Total	$7,416,820	$365,628,150	2.03%	$8,900,184	$420,472,373	2.12%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	55	4,825	1.14%	66	5549	1.19%
Commercial/Ind	2	1,063	0.19%	2	1222	0.20%
Government/NP	1	194	0.52%	1	223	0.54%
Residences	1	1,381	0.07%	1	1588	0.08%
Total	4	2638	0.15%	5	3034	0.16%
Structure Value						
Commercial/Ind	$821,750	$26,388,960	3.11%	$986,100	$30,347,304	3.25%
Government/NP	$0	$140,900,880	0.00%	$0	$162,036,012	0.00%
Residences	$355,230	$198,338,310	0.18%	$426,276	$228,089,057	0.19%
Total	$1,176,980	$365,628,150	0.32%	$1,412,376	$420,472,373	0.34%

Figure 6.10 Pelham Wind/Hazmat Map

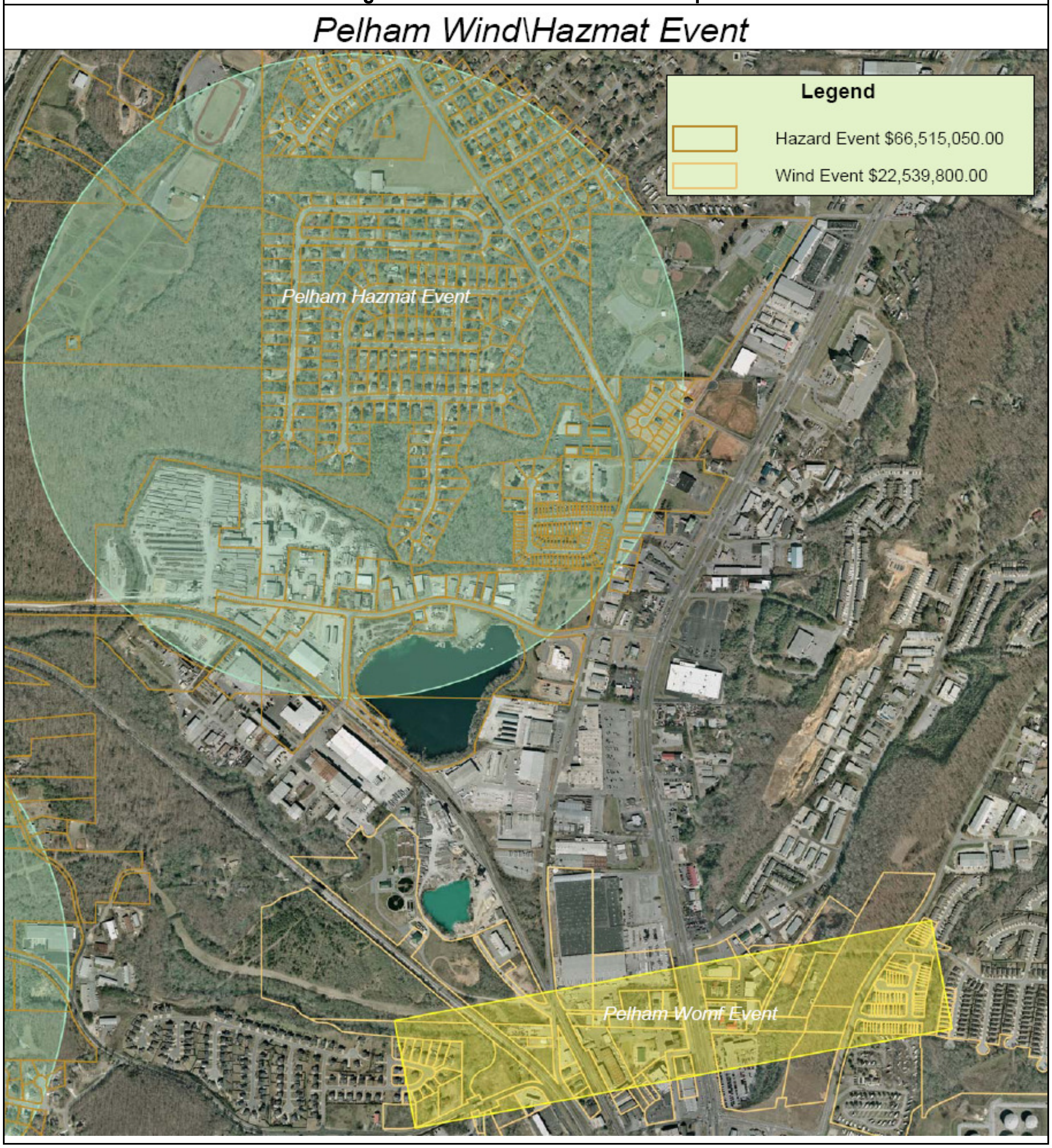


Table 6.20 Pelham Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	895	20,120	4.45%	1074	23138	4.64%
Commercial/Ind	30	2517	1.19%	36	2895	1.24%
Government/NP	4	213	1.88%	5	245	1.96%
Residences	95	7162	1.33%	114	8236	1.38%
Total	129	9892	1.30%	155	11376	1.36%
Structure Value						
Commercial/Ind	$11,771,690	$920,740,600	1.28%	$14,126,028	$1,058,851,690	1.33%
Government/NP	$2,376,190	$220,772,040	1.08%	$2,851,428	$253,887,846	1.12%
Residences	$8,391,920	$1,380,301,980	0.61%	$10,070,304	$1,587,347,277	0.63%
Total	$22,539,800	$2,521,814,620	0.89%	$27,047,760	$2,900,086,813	0.93%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	2695	20,120	13.39%	3234	23138	13.98%
Commercial/Ind	125	2,517	4.97%	150	2894.55	5.18%
Government/NP	5	213	2.35%	6	244.95	2.45%
Residences	259	7,162	3.62%	311	8236.3	3.77%
Total	389	9892	3.93%	467	11376	4.10%
Structure Value						
Commercial/Ind	$80,624,130	$920,740,600	8.76%	$96,748,956	$1,058,851,690	9.14%
Government/NP	$10,824,450	$220,772,040	4.90%	$12,989,340	$253,887,846	5.12%
Residences	$30,026,170	$1,380,301,980	2.18%	$36,031,404	$1,587,347,277	2.27%
Total	$121,474,750	$2,521,814,620	4.82%	$145,769,700	$2,900,086,813	5.03%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	2690	20,120	13.37%	3228	23138	13.95%
Commercial/Ind	63	2,517	2.50%	76	2894.55	2.61%
Government/NP	2	213	0.94%	2	244.95	0.98%
Residences	400	7,162	5.59%	480	8236.3	5.83%
Total	465	9892	4.70%	558	11376	4.91%
Structure Value						
Commercial/Ind	$17,357,130	$920,740,600	1.89%	$20,828,556	$1,058,851,690	1.97%
Government/NP	$1,778,620	$220,772,040	0.81%	$2,134,344	$253,887,846	0.84%
Residences	$47,379,300	$1,380,301,980	3.43%	$56,855,160	$1,587,347,277	3.58%
Total	$66,515,050	$2,521,814,620	2.64%	$79,818,060	$2,900,086,813	2.75%

Figure 6.11 Vincent Wind/Hazmat Map

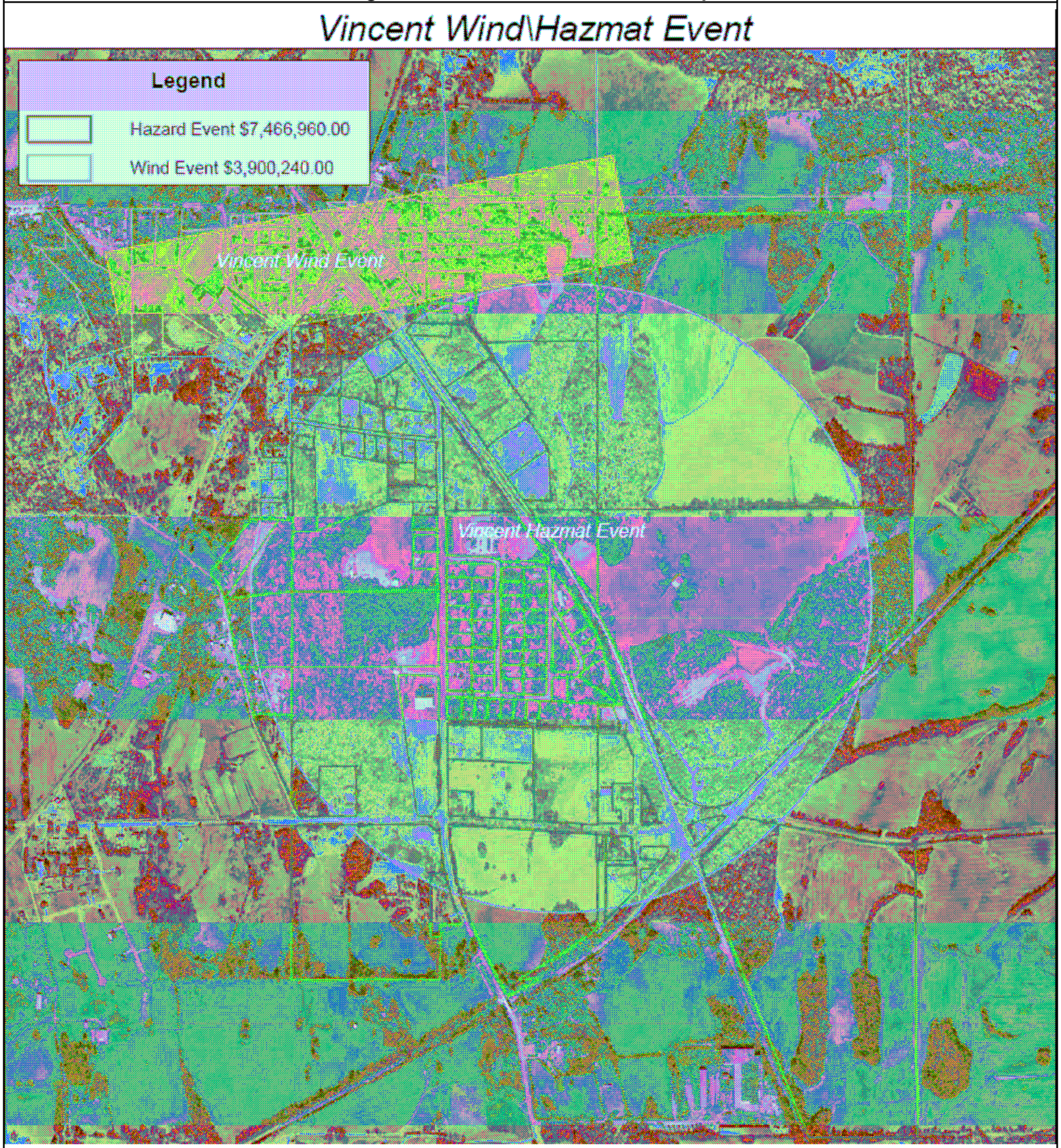


Table 6.21 Vincent Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	605	1,853	32.65%	635	2131	29.81%
Commercial/Ind	18	359	5.01%	19	413	4.58%
Government/NP	10	71	14.08%	11	82	12.86%
Residences	25	924	2.71%	26	1063	2.47%
Total	53	1354	3.91%	56	1557	3.57%
Structure Value						
Commercial/Ind	$724,280	$14,417,540	5.02%	$869,136	$16,580,171	5.24%
Government/NP	$1,528,400	$16,374,660	9.33%	$1,834,080	$18,830,859	9.74%
Residences	$1,647,460	$91,593,770	1.80%	$1,976,952	$105,332,836	1.88%
Total	$3,900,140	$122,385,970	3.19%	$4,680,168	$140,743,866	3.33%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	175	1,853	9.44%	210	2131	9.85%
Commercial/Ind	6	359	1.67%	7	413	1.74%
Government/NP	0	71	0.00%	0	82	0.00%
Residences	23	924	2.49%	28	1063	2.60%
Total	29	1354	2.14%	35	1557	2.23%
Structure Value						
Commercial/Ind	$203,870	$14,417,540	1.41%	$244,644	$16,580,171	1.48%
Government/NP	$0	$16,374,660	0.00%	$0	$18,830,859	0.00%
Residences	$2,130,030	$91,593,770	2.33%	$2,556,036	$105,332,836	2.43%
Total	$0	$122,385,970	0.00%	$2,800,680	$140,743,866	1.99%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	570	1,853	30.76%	684	2131	32.10%
Commercial/Ind	11	359	3.06%	13	413	3.20%
Government/NP	2	71	2.82%	2	82	2.94%
Residences	80	924	8.66%	96	1063	9.03%
Total	93	1354	6.87%	112	1557	7.17%
Structure Value						
Commercial/Ind	$420,090	$14,417,540	2.91%	$504,108	$16,580,171	3.04%
Government/NP	$2,046,800	$16,374,660	12.50%	$2,456,160	$18,830,859	13.04%
Residences	$5,000,070	$91,593,770	5.46%	$6,000,084	$105,332,836	5.70%
Total	$7,466,960	$122,385,970	6.10%	$8,960,352	$140,743,866	6.37%

Figure 6.12 Westover Wind/Hazmat Map

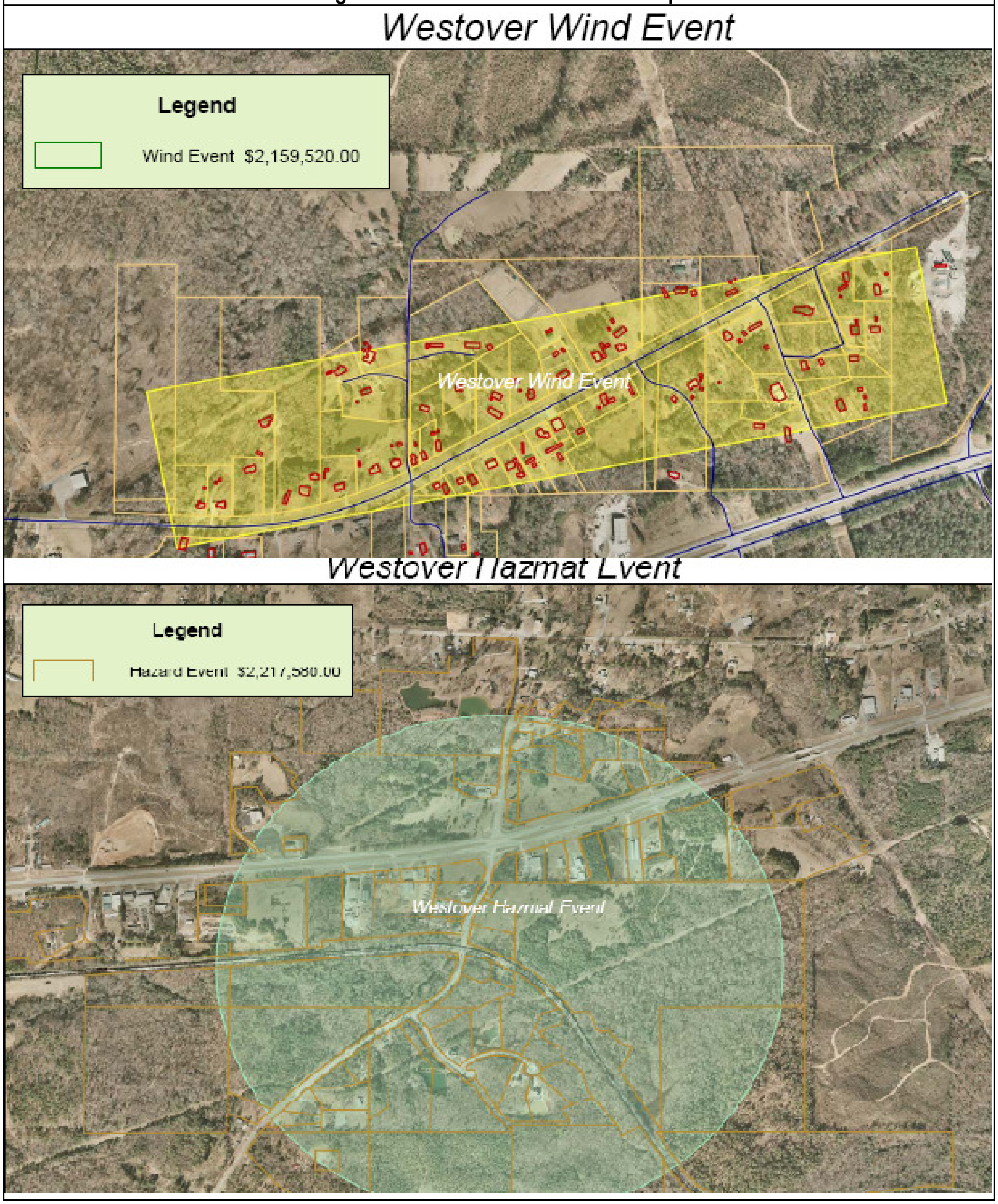


Table 6.22 Westover Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	370	1,816	20.37%	444	2088	21.26%
Commercial/Ind	6	377	1.59%	7	434	1.66%
Government/NP	4	37	10.81%	5	43	11.28%
Residences	38	454	8.37%	46	522	8.73%
Total	48	868	5.53%	53	955	5.53%
Structure Value						
Commercial/Ind	$305,040	$28,559,280	1.07%	$366,048	$32,843,172	1.11%
Government/NP	$138,600	$2,530,340	5.48%	$166,320	$2,909,891	5.72%
Residences	$1,715,880	$87,249,010	1.97%	$2,059,056	$100,336,362	2.05%
Total	$2,159,520	$118,338,630	1.82%	$2,591,424	$136,089,425	1.90%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	45	1,816	2.48%	54	2088.4	2.59%
Commercial/Ind	0	377	0.00%	0	433.55	0.00%
Government/NP	0	37	0.00%	0	42.55	0.00%
Residences	9	454	1.98%	11	522.1	2.07%
Total	9	868	1.04%	11	998	1.08%
Structure Value						
Commercial/Ind	$0	$28,559,280	0.00%	$0	$32,843,172	0.00%
Government/NP	$0	$2,530,340	0.00%	$0	$2,909,891	0.00%
Residences	$1,913,440	$87,249,010	2.19%	$2,296,128	$100,336,362	2.29%
Total	$1,913,440	$118,338,630	1.62%	$2,296,128	$136,089,425	1.69%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	150	1,816	8.26%	180	2088.4	8.62%
Commercial/Ind	6	377	1.59%	7	433.55	1.66%
Government/NP	2	37	5.41%	2	42.55	5.64%
Residences	6	454	1.32%	7	522.1	1.38%
Total	14	868	1.61%	17	998	1.68%
Structure Value						
Commercial/Ind	$1,419,480	$28,559,280	4.97%	$1,703,376	$32,843,172	5.19%
Government/NP	$179,770	$2,530,340	7.10%	$215,724	$2,909,891	7.41%
Residences	$618,330	$87,249,010	0.71%	$741,996	$100,336,362	0.74%
Total	$2,217,580	$118,338,630	1.87%	$2,661,096	$136,089,425	1.96%

Figure 6.13 Wilsonville Wind/Hazmat Map

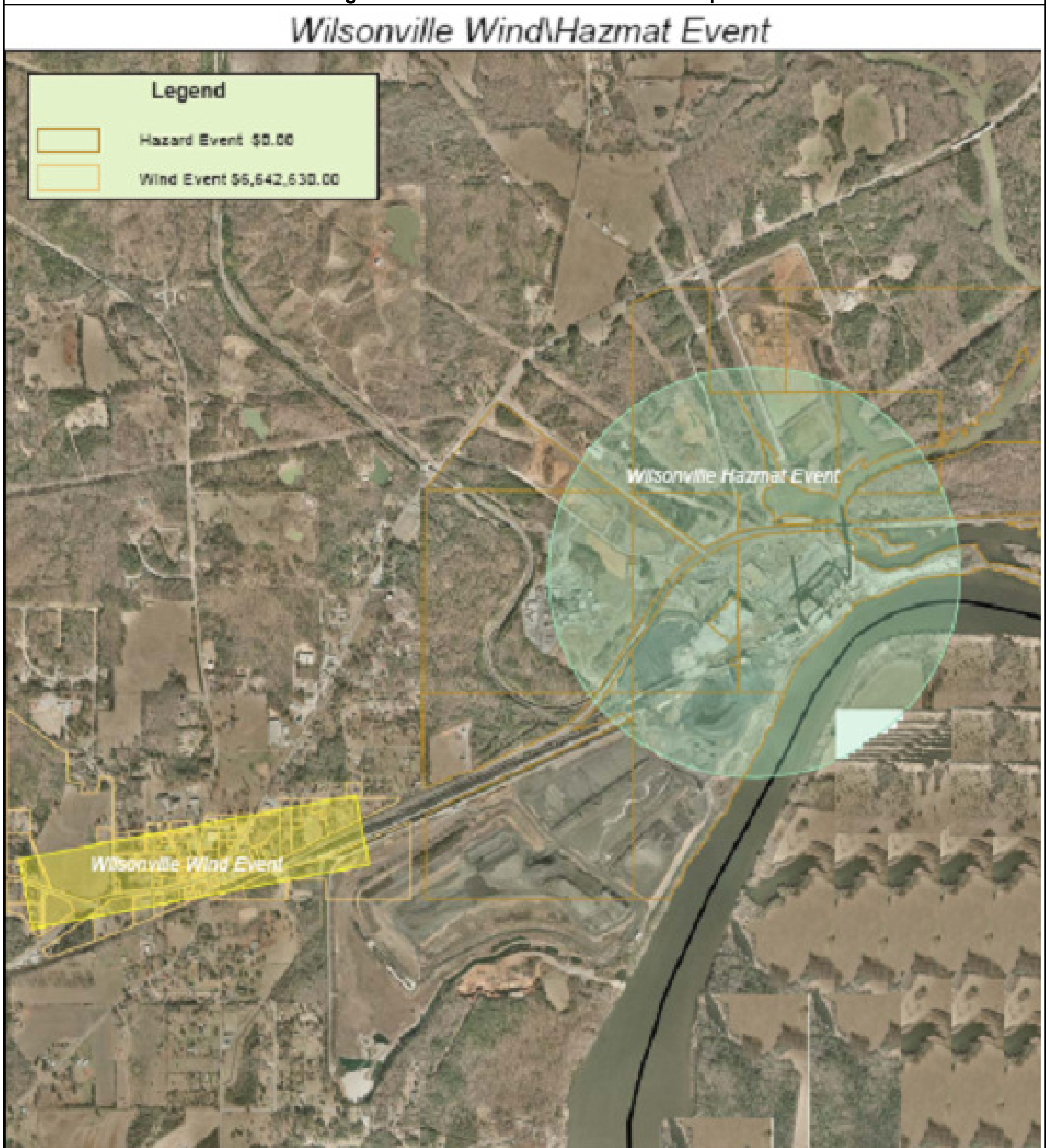


Table 6.23 Wilsonville Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	690	1,551	44.49%	828	1784	46.42%
Commercial/Ind	24	418	5.74%	29	481	5.99%
Government/NP	11	41	26.83%	13	47	28.00%
Residences	24	837	2.87%	29	963	2.99%
Total	59	1296	4.55%	71	1490	4.75%
Structure Value						
Commercial/Ind	$1,672,210	$29,003,820	5.77%	$2,006,652	$33,354,393	6.02%
Government/NP	$3,467,950	$6,325,120	54.83%	$4,161,540	$7,273,888	57.21%
Residences	$1,502,470	$98,834,010	1.52%	$1,802,964	$113,659,112	1.59%
Total	$6,642,630	$134,162,950	4.95%	$7,971,156	$154,287,393	5.17%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	60	1,551	3.87%	72	1784	4.04%
Commercial/Ind	1	418	0.24%	1	481	0.25%
Government/NP	0	41	0.00%	0	47	0.00%
Residences	10	837	1.19%	12	963	1.25%
Total	11	1296	0.85%	13	1490	0.89%
Structure Value						
Commercial/Ind	$59,700	$29,003,820	0.21%	$71,640	$33,354,393	0.21%
Government/NP	$0	$6,325,120	0.00%	$0	$7,273,888	0.00%
Residences	$1,062,310	$98,834,010	1.07%	$1,274,772	$113,659,112	1.12%
Total	$1,122,010	$134,162,950	0.84%	$1,346,412	$154,287,393	0.87%
Hazardous Material Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	100	1,551	6.45%	120.00	1784	6.73%
Commercial/Ind	5	418	1.20%	6.00	481	1.25%
Government/NP	0	41	0.00%	0.00	47	0.00%
Residences	10	837	1.19%	12.00	963	1.25%
Total	15	1296	1.16%	18.00	1490	1.21%
Structure Value						
Commercial/Ind	$20,000,000	$29,003,820	68.96%	$24,000,000	$33,354,393	71.95%
Government/NP	$179,770	$6,325,120	2.84%	$215,724	$7,273,888	2.97%
Residences	$618,330	$98,834,010	0.63%	$741,996	$113,659,112	0.65%
Total	$20,798,100	$134,162,950	15.50%	$24,957,720	$154,287,393	16.18%

Figure 6.14 Wilton Wind/Hazmat Map

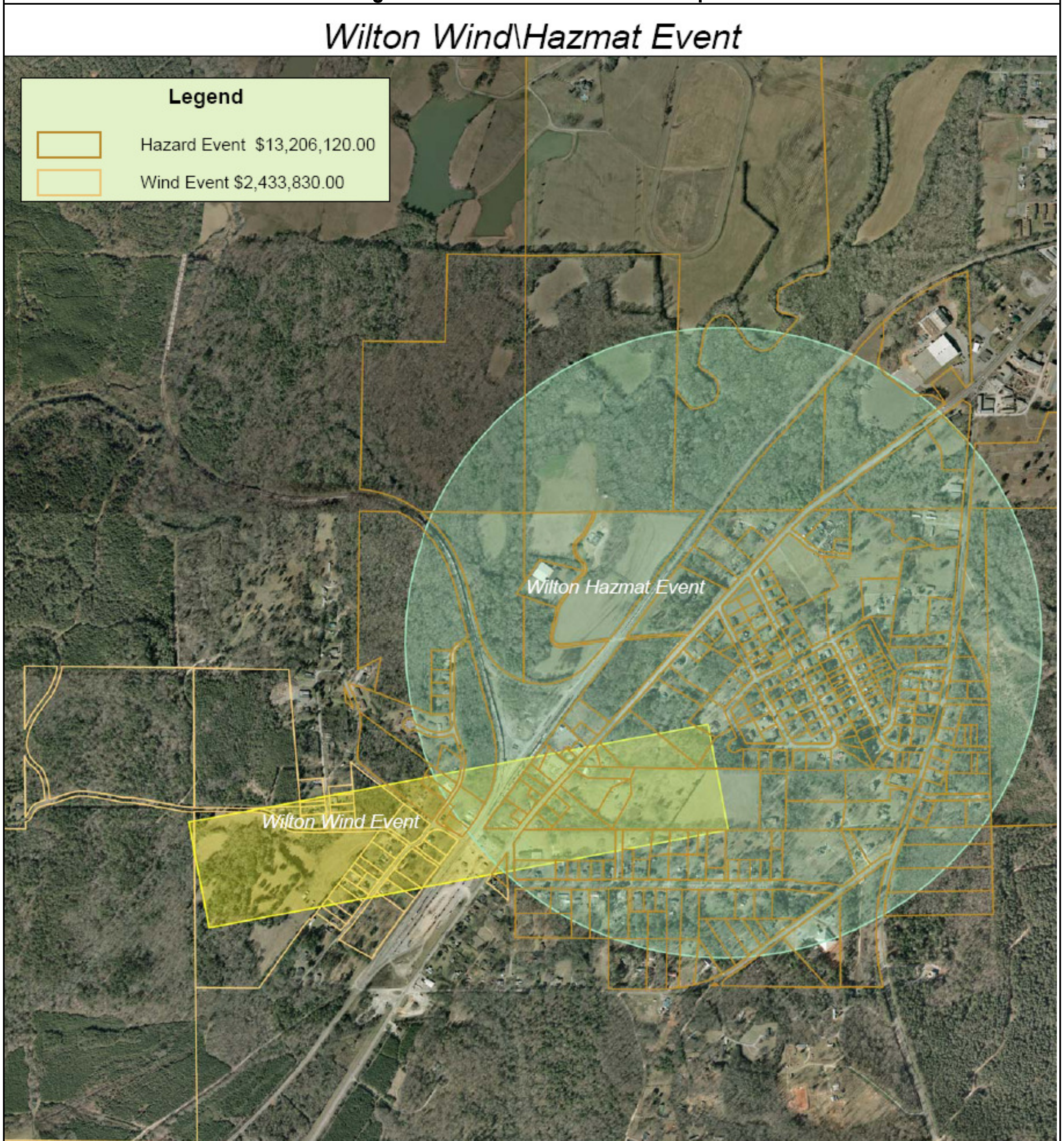


Table 6.24 Wilton Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	216	580	37.24%	259	667	38.86%
Commercial/Ind	16	102	15.69%	19	117.3	16.37%
Government/NP	4	25	16.00%	5	28.75	16.70%
Residences	34	222	15.32%	41	255.3	15.98%
Total	54	349	15.47%	64.8	401	16.15%
Structure Value						
Commercial/Ind	$637,450	$4,558,110	13.98%	$764,940	$5,241,827	14.59%
Government/NP	$320,100	$2,692,330	11.89%	$384,120	$3,096,180	12.41%
Residences	$1,476,280	$18,649,450	7.92%	$1,771,536	$21,446,868	8.26%
Total	$2,433,830	$25,899,890	9.40%	$2,920,596	$29,784,874	9.81%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	0	580	0.00%	0	667	0.00%
Commercial/Ind	0	102	0.00%	0	117.3	0.00%
Government/NP	0	25	0.00%	0	28.75	0.00%
Residences	0	222	0.00%	0	255.3	0.00%
Total	0	349	0.00%	0	401	0.00%
Structure Value						
Commercial/Ind	$0	$4,558,110	0.00%	$0	$5,241,827	0.00%
Government/NP	$0	$2,692,330	0.00%	$0	$3,096,180	0.00%
Residences	$0	$18,649,450	0.00%	$0	$21,446,868	0.00%
Total	$0	$25,899,890	0.00%	$0	$29,784,874	0.00%
Hazardous Materials Event)						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	504	580	86.90%	605	667	90.67%
Commercial/Ind	30	40	75.00%	36	46	78.26%
Government/NP	6	25	24.00%	7	28.75	25.04%
Residences	144	222	64.86%	173	255.3	67.69%
Total	180	287	62.72%	216	330	65.44%
Structure Value						
Commercial/Ind	$1,591,100	$4,558,110	34.91%	$1,909,320	$5,241,827	36.42%
Government/NP	$1,825,260	$2,692,330	67.79%	$2,190,312	$3,096,180	70.74%
Residences	$9,789,760	$18,649,450	52.49%	$11,747,712	$21,446,868	54.78%
Total	$13,206,120	$25,899,890	51%	$15,847,344	$29,784,874	53.21%

Figure 6.15 Shelby County Unincorporated Wind/Hazmat Map

Shelby County Wind Event

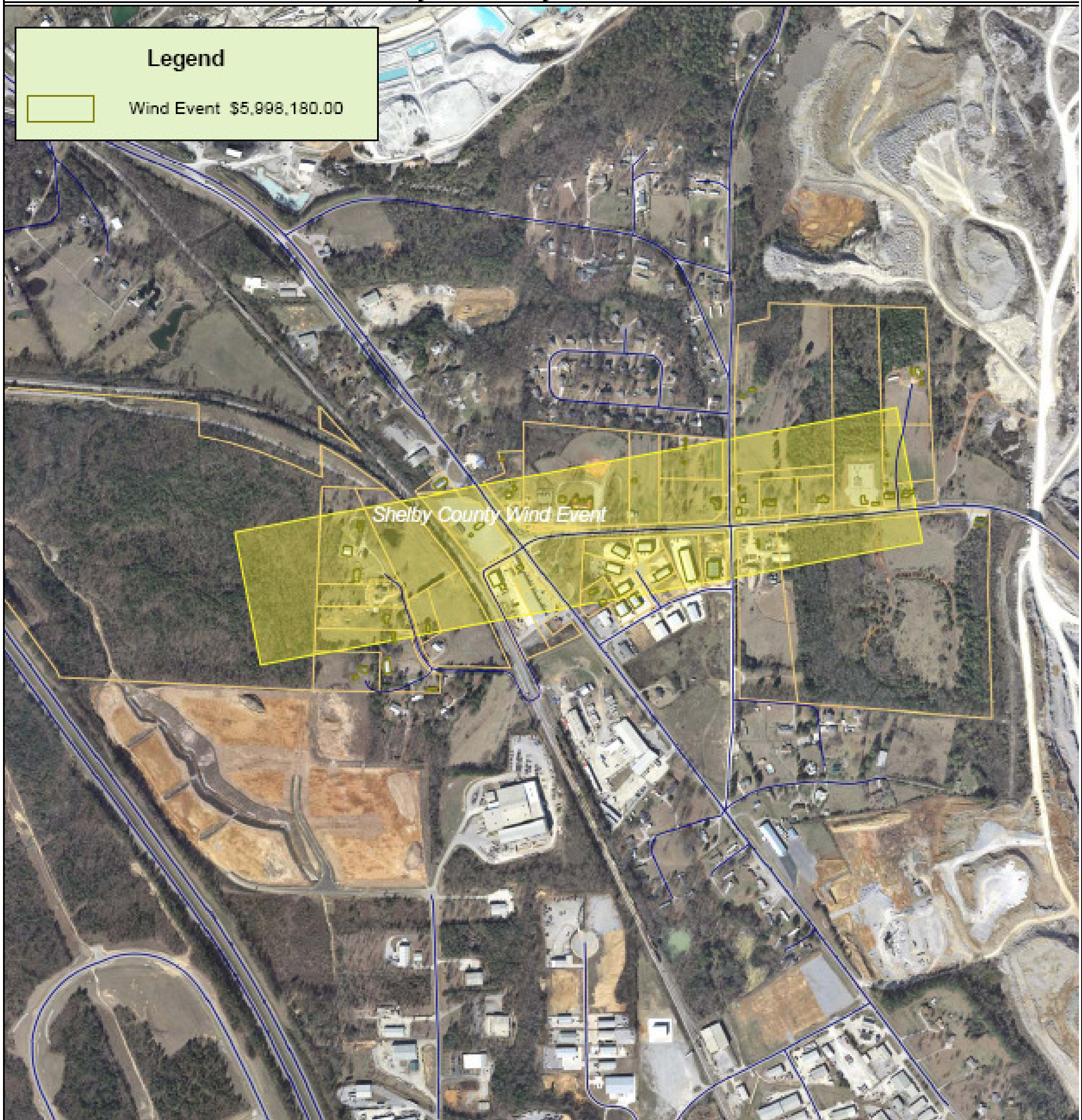


Table 6.25 Shelby Unincorporated Asset Inventory Summary						
High Wind Event						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	110	72,846	0.15%	132	83772.9	0.16%
Commercial/Ind	7	5988	0.12%	8	6886.2	0.12%
Government/NP	1	646	0.15%	1	742.9	0.16%
Residences	10	24282	0.04%	12	27924.3	0.04%
Total	18	30916	0.06%	21.6	35553	0.06%
Structure Value						
Commercial/Ind	$637,560	$1,245,823,130	0.05%	$765,072	$1,432,696,600	0.05%
Government/NP	$245,900	$252,689,820	0.10%	$295,080	$290,593,293	0.10%
Residences	$846,240	$5,626,429,340	0.02%	$1,015,488	$6,470,393,741	0.02%
Total	$1,729,700	$7,124,942,290	0.02%	$2,075,640	$8,193,683,634	0.03%
500 Year Flood						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	2435	72,846	3.34%	2922	83772.9	3.49%
Commercial/Ind	35	5,988	0.58%	42	6886.2	0.61%
Government/NP	6	646	0.93%	7	742.9	0.97%
Residences	381	24,282	1.57%	457	27924.3	1.64%
Total	422	30916	1.36%	506.4	35553	1.42%
Structure Value						
Commercial/Ind	$18,039,090	$1,245,823,130	1.45%	$21,646,908	$1,432,696,600	1.51%
Government/NP	$2,051,920	$252,689,820	0.81%	$2,462,304	$290,593,293	0.85%
Residences	$67,294,610	$5,626,429,340	1.20%	$80,753,532	$6,470,393,741	1.25%
Total	$87,385,620	$7,124,942,290	1.23%	$104,862,744	$8,193,683,634	1.28%
Hazardous Materials Event)						
Population Structure Count	**In Hazard Current**	**In Jurisdiction Current**	**Percent**	**In Hazard (10yr Projection**	**In Jurisdiction Projected**	**Percent Projected**
Population	504	72,846	0.69%	605	83772.9	0.72%
Commercial/Ind	30	5,988	0.50%	36	6886.2	0.52%
Government/NP	6	646	0.93%	7	742.9	0.97%
Residences	144	24,282	0.59%	173	27924.3	0.62%
Total	180	30916	0.58%	216	35553	0.61%
Structure Value						
Commercial/Ind	$1,591,100	$1,245,823,130	0.13%	$1,909,320	$1,432,696,600	0.13%
Government/NP	$1,825,260	$252,689,820	0.72%	$2,190,312	$290,593,293	0.75%
Residences	$9,789,760	$5,626,429,340	0.17%	$11,747,712	$6,470,393,741	0.18%
Total	$13,206,120	$7,124,942,290	0%	$15,847,344	$8,193,683,634	0.19%

6.4.3 Asset Inventory For Secondary Hazards

This section of the plan update describes the Shelby County current and future assets that may be impacted by hazards that may impact the entire planning area equally. These hazards are Drought, Earthquake, Extreme Temperatures, Hail, Ice/Snow, Landslides/Mudslides, Land Subsidence Lightning, Wildfires, Hazmat, Pandemic, Terrorism and Urban Fire.

The table below identifies the current countywide assets and an estimate of future value (10 years) of those assets.

Table 6.26 Shelby Total Asset Inventory Summary						
Secondary Hazards						
Population Structure Count	In Hazard Current	In Jurisdiction Current	Percent	In Hazard (10yr Projection	In Jurisdiction Projected	Percent Projected
Population	149,774	149,774	100.00%	179729	172240	104.35%
Commercial/Ind	17891	17891	100.00%	21469	20575	104.35%
Government/NP	1995	1995	100.00%	2394	2294	104.35%
Residences	51739	51739	100.00%	62087	59500	104.35%
Total	71625	71625	100.00%	85950	82369	104.35%
Structure Value						
Commercial/Ind	$3,289,815,790	$3,289,815,790	100.00%	$3,947,778,948	$3,783,288,159	104.35%
Government/NP	$807,676,550	$807,676,550	100.00%	$969,211,860	$928,828,033	104.35%
Residences	$10,526,618,521	$10,526,618,521	100.00%	$12,631,942,225	$12,105,611,299	104.35%
Total	$14,624,110,861	$14,624,110,861	100.00%	$17,548,933,033	$16,817,727,490	104.35%

6.5 VULNERABILITY: ESTIMATING POTENTIAL LOSSES

Requirement §201.6(c)(2)(ii)(B): The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate
A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?
B. Does the new or updated plan describe the methodology used to prepare the estimate?

CRS Step 5: Assess the Problem: CRS credit is given for an assessment that includes a review of all properties that received flood insurance claims (in addition to repetitive (loss properties) or an estimate of the potential dollar losses to vulnerable structures. This is optional.

To complete the loss estimation, the level of damage must be assessed, both as a percentage of the asset structural and content replacement value, function and usage loss.

To illustrate, a library in a flood hazard could suffer 40% damage. The potential loss is calculated by multiplying the value of the structure, the contents, and the use by 40%.

To determine the loss to the structure in a particular hazard event, multiply the structure replacement value by the expected percent damage.

For example, if the library's structure replacement value equals $100,000 and the expected damage from a 100-year flood is 40 percent of the structure, then the loss to this structure from a flood is $40,000.

To determine the losses to the contents from a particular hazard event, multiply the replacement value of the contents by the expected percent damage.

For example, if the library's content replacement value equals $225,000 and the expected damage from a 100-year flood is 10 percent of the contents, then the losses to these contents from a flood is $22,500.

To determine the cost of the loss of function for the period that the business or service was unable to operate due to the hazard event.

Estimate the losses to structure use and function by determining functional downtime, or the time (in days) that the function would be disrupted from a hazard event. Then estimate the daily cost of the functional downtime.

Divide the average annual budget or sales by 365 to determine the average daily operating budget or sales.

Multiply the average daily operating budget or sales by the functional downtime to determine the cost of the loss of function for the period that the business or service was unable to operate due to the hazard event.

For example, if an ice cream shop had daily sales of $2,500 during the summertime and was forced to close for two weeks because of damages from a hazard event, the function loss would be $35,000 ($2,500 x 14 days).

For a public facility, such as a library with an annual budget of $600,000 and an average daily budget of $1,644 ($600,000 / 365), the loss estimate for a seven-day closure would be $11,508.

To determine the cost of the displacement from the regular place of business, determine the time (in days) that a function may need to operate from a temporary location due to a hazard event and multiply by the temporary location cost per day.

For example, if the library was closed for 7 days (loss of function) and then resumed operations from an empty trailer rented for $10 per day for the next 90 days, the displacement cost would be $900 (90 days x $10 per day).

For residences the cost of displacement would be the cost of alternate facilities and the average time of residential construction in Shelby County.

If content value is unknown the following uplift factors can be applied to the structure value:

- Residences – 30%
- Government – 40%
- Commercial – 50%

Cubic yards calculations are based on the structures square feet and the estimated damage. Then use appropriate factors to estimate soil building demolition debris. Disposal costs per cubic yard are provided by local sanitation officials.

If square footage is unknown an approximate square footage can be calculated from the structure cost. For example use the typical governmental and commercial construction cost in the county and divide that into the structure cost. If construction cost is $200 per square foot and the structure value is $1,000,000 the approximate square footage is 10,000 square feet.

For Residential square footage use the median cost of housing in the county and divide that by the dollar per square foot building cost across the county.

Response, evacuation, recovery and other costs are calculated using a factor times the total structure value. The premise is that structure loss is directly related to the impact and extent of the hazard and therefore can be used as a basis for costs estimates.

Wages lost are a direct calculation of displaced days, structure capacity or workforce and the average daily wage for the jurisdiction.

When data on specific facilities Function and use is unavailable a general methodology is used. The general methodology used in this plan is based on the categories of structures. Calculations for function and use loss are based on averages identified in past disaster events both locally and those documented by FEMA

6.5.1 Estimating Potential Loss Summary

For flooding which has an identified geographic location (500 year flood plan maps), structure, content, function, usage and wage loss is identified. In addition debris and response cost is estimated resulting in a total loss value for the hazard event. The table below estimates the potential total losses for all of Shelby County that may occur from a 500-year flood event.

<table>
<tr><th colspan="11">Table 6.27 Shelby County Total Potential Flood Hazard Loss</th></tr>
<tr><th colspan="11">Flood</th></tr>
<tr><th>Qty</th><th>Structure Type</th><th colspan="3">Structure Value</th><th>Loss %</th><th colspan="3">Content Value</th><th>Loss%</th><th>Struc/Cont Loss</th></tr>
<tr><td>277</td><td>Commercial/Ind</td><td colspan="3">$151,537,080</td><td>25.0%</td><td colspan="3">$75,768,540</td><td>12.5%</td><td>$47,355,338</td></tr>
<tr><td>34</td><td>Government/NP</td><td colspan="3">$24,928,410</td><td>20.0%</td><td colspan="3">$9,971,364</td><td>10.0%</td><td>$5,982,818</td></tr>
<tr><td>1,157</td><td>Residential</td><td colspan="3">$186,688,330</td><td>40.0%</td><td colspan="3">$56,006,499</td><td>20.0%</td><td>$85,876,632</td></tr>
<tr><th>Qty</th><th>Structure Type</th><th>Days Down</th><th>Daily Budget</th><th colspan="2">Function Loss</th><th>Days Disp</th><th>Daily Cost</th><th colspan="2">Usage Loss</th><th>Func/Use Loss</th></tr>
<tr><td>277</td><td>Commercial/Ind</td><td>30</td><td>$7,000</td><td colspan="2">$58,170,000</td><td>15</td><td>$500</td><td colspan="2">$2,077,500</td><td>$60,247,500</td></tr>
<tr><td>34</td><td>Government/NP</td><td>10</td><td>$5,000</td><td colspan="2">$1,700,000</td><td>5</td><td>$1,000</td><td colspan="2">$170,000</td><td>$1,870,000</td></tr>
<tr><td>1,157</td><td>Residential</td><td>1</td><td>$50</td><td colspan="2">$97,900</td><td>90</td><td>$200</td><td colspan="2">$20,826,000</td><td>$20,923,900</td></tr>
<tr><th>Soil Cu Yards</th><th>Demolition Cu Yards</th><th colspan="2">Debris Cost</th><th>Daily Wage</th><th>Days Lost</th><th colspan="2">Wages Lost</th><th colspan="2">Response Costs</th><th>Related Costs</th></tr>
<tr><td>79,563</td><td>975,430</td><td colspan="2">$21,099,860</td><td>$112</td><td>201,990</td><td colspan="2">$22,622,902</td><td colspan="2">$12,529,331</td><td>$56,252,093</td></tr>
<tr><th colspan="10">Total Disaster Costs</th><th>$278,508,281</th></tr>
</table>

6.5.2 Estimating Potential Loss Detail

Following are detail tables that estimate losses, for each jurisdiction, for the three major hazards high wind, flooding and a Hazardous Materials event. For High Wind and Hazardous Materials events where a specific geographical location cannot be identified hypothetical locations and losses are identified.

For a High Wind event, an F4 tornado 300 yards wide and 1 mile long was predicted with the center point being the courthouse/administration facility of a jurisdiction.

For a Hazardous Material event either a Tier II facility or a transportation point on a highway or railroad was selected as a hypothetical center point of the incident.

Table 6.28 Alabaster High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
35	Commercial/Ind	$9,028,600	35.0%	$4,514,300	29.2%	$4,476,681
6	Government/NP	$1,085,490	30.0%	$434,196	20.0%	$412,486
15	Residential	$745,480	40.0%	$223,644	30.8%	$367,006

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
35	Commercial/Ind	42	$7,000	$10,290,000	30	$500	$525,000	$10,815,000
6	Government/NP	5	$5,000	$150,000	5	$1,000	$30,000	$180,000
15	Residential	1	$50	$750	90	$200	$270,000	$270,750

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
5,355	53,550	$1,178,100	$112	3,180	$356,160	$420,494	$1,954,754
						Total Disaster Costs	**$18,476,676**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
38	Commercial/Ind	$25,391,810	25.0%	$12,695,905	12.5%	$7,934,941
9	Government/NP	$1,242,010	20.0%	$496,804	10.0%	$298,082
153	Residential	$16,479,940	40.0%	$4,943,982	20.0%	$7,580,772

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
38	Commercial/Ind	30	$7,000	$7,980,000	15	$500	$285,000	$8,265,000
9	Government/NP	10	$5,000	$450,000	5	$1,000	$45,000	$495,000
153	Residential	1	$50	$7,650	90	$200	$2,754,000	$2,761,650

SoilCu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
13,362	133,620	$2,939,640	$112	18,366	$2,056,992	$1,423,242	$6,419,874
						Total Disaster Costs	**$33,755,319**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
88	Commercial/Ind	$61,184,310	20.0%	$30,592,155	20.0%	$18,355,293
6	Government/NP	$597,600	20.0%	$239,040	20.0%	$167,328
101	Residential	$3,225,870	20.0%	$967,761	20.0%	$838,726

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
88	Commercial/Ind	14	$7,000	$8,624,000	0	$500	$0	$8,624,000
6	Government/NP	14	$5,000	$420,000	0	$1,000	$0	$420,000
101	Residential	1	$50	$5,050	14	$200	$282,800	$287,850

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
8,992	89,920	$1,978,240	$112	12,628	$1,414,336	$1,742,521	$5,135,097
						Total Disaster Costs	**$33,828,294**

Table 6.29 Calera High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
39	Commercial/Ind	$5,859,380	35.0%	$2,929,690	29.2%	$2,905,276
6	Government/NP	$1,112,970	30.0%	$445,188	20.0%	$422,929
6	Residential	$157,690	40.0%	$47,307	30.8%	$77,632

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
39	Commercial/Ind	42	$7,000	$11,466,000	30	$500	$585,000	$12,051,000
6	Government/NP	30	$5,000	$900,000	10	$1,000	$60,000	$960,000
6	Residential	1	$50	$300	90	$200	$108,000	$108,300

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
5,199	51,990	$1,143,780	$112	2,490	$278,880	$272,467	$1,695,127
						Total Disaster Costs	**$18,220,263**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
5	Commercial/Ind	$2,747,820	25.0%	$1,373,910	12.5%	$858,694
0	Government/NP	$0	20.0%	$0	10.0%	$0
2	Residential	$103,880	40.0%	$31,164	20.0%	$47,785

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
5	Commercial/Ind	30	$7,000	$1,050,000	15	$500	$37,500	$1,087,500
0	Government/NP	5	$5,000	$0	5	$1,000	$0	$0
2	Residential	1	$50	$100	90	$200	$36,000	$36,100

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
503	5,030	$110,660	$112	374	$41,888	$81,583	$234,131
						Total Disaster Costs	**$2,264,210**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
4	Commercial/Ind	$2,360,870	20.0%	$1,180,435	20.0%	$708,261
0	Government/NP	$0	20.0%	$0	20.0%	$0
4	Residential	$243,800	20.0%	$73,140	20.0%	$63,388

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
4	Commercial/Ind	14	$5,000	$280,000	14	$500	$28,000	$308,000
0	Government/NP	14	$7,000	$0	14	$1,000	$0	$0
4	Residential	1	$50	$200	14	$200	$11,200	$11,400

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
368	3,680	$80,960	$112	504	$56,448	$69,448	$206,856
						Total Disaster Costs	**$1,297,905**

Table 6.30 Chelsea High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
9	Commercial/Ind	$1,252,550	35.0%	$626,275	29.2%	$621,056
6	Government/NP	$851,390	30.0%	$340,556	20.0%	$323,528
52	Residential	$7,615,590	40.0%	$2,284,677	30.8%	$3,749,214

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
9	Commercial/Ind	42	$7,000	$2,646,000	30	$500	$135,000	$2,781,000
6	Government/NP	10	$5,000	$300,000	5	$1,000	$30,000	$330,000
52	Residential	1	$50	$2,600	90	$200	$936,000	$938,600

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
4,993	49,930	$1,098,460	$112	6,262	$701,344	$375,504	$2,175,308
						Total Disaster Costs	**$10,918,706**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
5	Commercial/Ind	$1,856,640	25.0%	$928,320	12.5%	$580,200
1	Government/NP	$1,717,100	20.0%	$686,840	10.0%	$412,104
39	Residential	$8,472,690	40.0%	$2,541,807	20.0%	$3,897,437

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
5	Commercial/Ind	30	$7,000	$1,050,000	15	$500	$37,500	$1,087,500
1	Government/NP	10	$5,000	$50,000	5	$1,000	$5,000	$55,000
39	Residential	1	$50	$1,950	90	$200	$702,000	$703,950

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
2,951	29,510	$649,220	$112	4,528	$507,136	$440,077	$1,596,433
						Total Disaster Costs	**$8,332,624**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
68	Commercial/Ind	$25,264,420	20.0%	$12,632,210	20.0%	$7,579,326
4	Government/NP	$170,460	20.0%	$68,184	20.0%	$47,729
137	Residential	$22,532,920	20.0%	$6,759,876	20.0%	$5,858,559

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
68	Commercial/Ind	14	$7,000	$6,664,000	14	$500	$476,000	$7,140,000
4	Government/NP	14	$5,000	$280,000	14	$1,000	$56,000	$336,000
137	Residential	1	$50	$6,850	14	$200	$383,600	$390,450

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
8,784	87,840	$1,932,480	$112	16,352	$1,831,424	$1,213,705	$4,977,609
						Total Disaster Costs	**$26,329,673**

Table 6.31 Columbiana High Wind, Flood, Hazmat Hazard Loss								
High Wind Hazard								
Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss		
41	Commercial/Ind	$5,695,400	35.0%	$2,847,700	29.2%	$2,823,969		
13	Government/NP	$2,398,750	30.0%	$959,500	20.0%	$911,525		
38	Residential	$3,272,950	40.0%	$981,885	30.8%	$1,611,298		
Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
41	Commercial/Ind	42	$7,000	$12,054,000	30	$500	$615,000	$12,669,000
13	Government/NP	10	$5,000	$650,000	5	$1,000	$65,000	$715,000
38	Residential	1	$50	$1,900	90	$200	$684,000	$685,900
Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs	
8,297	82,970	$1,825,340	$112	6,108	$684,096	$427,743	$2,937,179	
						Total Disaster Costs	$22,353,872	
Flood								
Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss		
0	Commercial/Ind	$0	25.0%	$0	12.5%	$0		
0	Government/NP	$0	20.0%	$0	10.0%	$0		
1	Residential	$326,300	40.0%	$97,890	20.0%	$150,098		
Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
0	Commercial/Ind	30	$7,000	$0	15	$500	$0	$0
0	Government/NP	10	$5,000	$0	5	$1,000	$0	$0
1	Residential	1	$50	$50	90	$200	$18,000	$18,050
Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs	
64	640	$14,080	$112	112	$12,544	$13,509	$40,133	
						Total Disaster Costs	$208,281	
HAZMAT								
Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss		
93	Commercial/Ind	$20,742,390	20.0%	$10,371,195	20.0%	$6,222,717		
18	Government/NP	$11,575,380	20.0%	$4,630,152	20.0%	$3,241,106		
102	Residential	$5,702,060	20.0%	$1,710,618	20.0%	$1,482,536		
Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
93	Commercial/Ind	14	$7,000	$9,114,000	14	$500	$651,000	$9,765,000
18	Government/NP	14	$5,000	$1,260,000	14	$1,000	$252,000	$1,512,000
102	Residential	1	$50	$5,100	14	$200	$285,600	$290,700
Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs	
10,284	102,840	$2,262,480	$112	12,978	$1,453,536	$985,172	$4,701,188	
						Total Disaster Costs	$27,215,247	

Table 6.32 Harpersville High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
11	Commercial/Ind	$2,549,920	35.0%	$1,274,960	29.2%	$1,264,335
5	Government/NP	$664,490	30.0%	$265,796	20.0%	$252,506
12	Residential	$1,011,010	40.0%	$303,303	30.8%	$497,728

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
11	Commercial/Ind	42	$7,000	$3,234,000	30	$500	$165,000	$3,399,000
5	Government/NP	10	$5,000	$250,000	5	$1,000	$25,000	$275,000
12	Residential	1	$50	$600	90	$200	$216,000	$216,600

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
2,523	25,230	$555,060	$112	1,856	$207,872	$161,166	$924,098
						Total Disaster Costs	**$6,829,267**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
2	Commercial/Ind	$515,590	25.0%	$257,795	12.5%	$161,122
0	Government/NP	$0	20.0%	$0	10.0%	$0
7	Residential	$708,990	40.0%	$212,697	20.0%	$326,135

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
2	Commercial/Ind	30	$7,000	$420,000	15	$500	$15,000	$435,000
0	Government/NP	10	$5,000	$0	5	$1,000	$0	$0
7	Residential	1	$50	$350	90	$200	$126,000	$126,350

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
598	5,980	$131,560	$112	844	$94,528	$43,853	$269,941
						Total Disaster Costs	**$1,318,548**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
50	Commercial/Ind	$5,444,780	20.0%	$2,722,390	20.0%	$1,633,434
13	Government/NP	$2,121,090	20.0%	$848,436	20.0%	$593,905
63	Residential	$5,112,410	20.0%	$1,533,723	20.0%	$1,329,227

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
50	Commercial/Ind	14	$7,000	$4,900,000	14	$500	$350,000	$5,250,000
13	Government/NP	14	$5,000	$910,000	14	$1,000	$182,000	$1,092,000
63	Residential	1	$50	$3,150	14	$200	$176,400	$179,550

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
6,056	60,560	$1,332,320	$112	7,938	$889,056	$320,091	$2,541,467
						Total Disaster Costs	**$12,619,583**

<table>
<tr><th colspan="11">Table 6.33 Helena High Wind, Flood, Hazmat Hazard Loss</th></tr>
<tr><th colspan="11">High Wind Hazard</th></tr>
<tr><th>Qty</th><th>Structure Type</th><th colspan="3">Structure Value</th><th>Loss %</th><th colspan="3">Content Value</th><th>Loss%</th><th>Struc/Cont Loss</th></tr>
<tr><td>20</td><td>Commercial/Ind</td><td colspan="3">$2,646,700</td><td>35.0%</td><td colspan="3">$1,323,350</td><td>29.2%</td><td>$1,312,322</td></tr>
<tr><td>5</td><td>Government/NP</td><td colspan="3">$2,917,670</td><td>30.0%</td><td colspan="3">$1,167,068</td><td>20.0%</td><td>$1,108,715</td></tr>
<tr><td>59</td><td>Residential</td><td colspan="3">$5,083,650</td><td>40.0%</td><td colspan="3">$1,525,095</td><td>30.8%</td><td>$2,502,720</td></tr>
<tr><th>Qty</th><th>Structure Type</th><th>Days Down</th><th>Daily Budget</th><th colspan="2">Function Loss</th><th>Days Disp</th><th>Daily Cost</th><th colspan="2">Usage Loss</th><th>Func/Use Loss</th></tr>
<tr><td>20</td><td>Commercial/Ind</td><td>42</td><td>$7,000</td><td colspan="2">$5,880,000</td><td>30</td><td>$500</td><td colspan="2">$300,000</td><td>$6,180,000</td></tr>
<tr><td>5</td><td>Government/NP</td><td>10</td><td>$5,000</td><td colspan="2">$250,000</td><td>5</td><td>$1,000</td><td colspan="2">$25,000</td><td>$275,000</td></tr>
<tr><td>59</td><td>Residential</td><td>1</td><td>$5,000</td><td colspan="2">$295,000</td><td>90</td><td>$200</td><td colspan="2">$1,062,000</td><td>$1,357,000</td></tr>
<tr><th>Soil Cu Yards</th><th>Demolition Cu Yards</th><th colspan="2">Debris Cost</th><th>Daily Wage</th><th>Wage Days Lost</th><th colspan="2">Wages Lost</th><th colspan="2">Response Costs</th><th>Related Costs</th></tr>
<tr><td>6,476</td><td>64,760</td><td colspan="2">$1,424,720</td><td>$112</td><td>7,498</td><td colspan="2">$839,776</td><td colspan="2">$393,901</td><td>$2,658,397</td></tr>
<tr><th colspan="10">Total Disaster Costs</th><th>$15,394,153</th></tr>
<tr><th colspan="11">Flood</th></tr>
<tr><th>Qty</th><th>Structure Type</th><th colspan="3">Structure Value</th><th>Loss %</th><th colspan="3">Content Value</th><th>Loss%</th><th>Struc/Cont Loss</th></tr>
<tr><td>50</td><td>Commercial/Ind</td><td colspan="3">$18,287,710</td><td>25.0%</td><td colspan="3">$9,143,855</td><td>12.5%</td><td>$5,714,909</td></tr>
<tr><td>4</td><td>Government/NP</td><td colspan="3">$2,278,800</td><td>20.0%</td><td colspan="3">$911,520</td><td>10.0%</td><td>$546,912</td></tr>
<tr><td>218</td><td>Residential</td><td colspan="3">$42,260,820</td><td>40.0%</td><td colspan="3">$12,678,246</td><td>20.0%</td><td>$19,439,977</td></tr>
<tr><th>Qty</th><th>Structure Type</th><th>Days Down</th><th>Daily Budget</th><th colspan="2">Function Loss</th><th>Days Disp</th><th>Daily Cost</th><th colspan="2">Usage Loss</th><th>Func/Use Loss</th></tr>
<tr><td>50</td><td>Commercial/Ind</td><td>30</td><td>$7,000</td><td colspan="2">$10,500,000</td><td>15</td><td>$500</td><td colspan="2">$375,000</td><td>$10,875,000</td></tr>
<tr><td>4</td><td>Government/NP</td><td>10</td><td>$5,000</td><td colspan="2">$200,000</td><td>5</td><td>$1,000</td><td colspan="2">$20,000</td><td>$220,000</td></tr>
<tr><td>218</td><td>Residential</td><td>1</td><td>$50</td><td colspan="2">$10,900</td><td>90</td><td>$200</td><td colspan="2">$3,924,000</td><td>$3,934,900</td></tr>
<tr><th>Soil Cu Yards</th><th>Demolition Cu Yards</th><th colspan="2">Debris Cost</th><th>Daily Wage</th><th>Wage Days Lost</th><th colspan="2">Wages Lost</th><th colspan="2">Response Costs</th><th>Related Costs</th></tr>
<tr><td>18,022</td><td>180,220</td><td colspan="2">$3,964,840</td><td>$112</td><td>25,956</td><td colspan="2">$2,907,072</td><td colspan="2">$2,313,162</td><td>$9,185,074</td></tr>
<tr><th colspan="10">Total Disaster Costs</th><th>$49,916,772</th></tr>
<tr><th colspan="11">HAZMAT</th></tr>
<tr><th>Qty</th><th>Structure Type</th><th colspan="3">Structure Value</th><th>Loss %</th><th colspan="3">Content Value</th><th>Loss%</th><th>Struc/Cont Loss</th></tr>
<tr><td>42</td><td>Commercial/Ind</td><td colspan="3">$16,328,730</td><td>20.0%</td><td colspan="3">$8,164,365</td><td>20.0%</td><td>$4,898,619</td></tr>
<tr><td>5</td><td>Government/NP</td><td colspan="3">$3,017,080</td><td>20.0%</td><td colspan="3">$1,206,832</td><td>20.0%</td><td>$844,782</td></tr>
<tr><td>238</td><td>Residential</td><td colspan="3">$27,982,190</td><td>20.0%</td><td colspan="3">$8,394,657</td><td>20.0%</td><td>$7,275,369</td></tr>
<tr><th>Qty</th><th>Structure Type</th><th>Days Down</th><th>Daily Budget</th><th colspan="2">Function Loss</th><th>Days Disp</th><th>Daily Cost</th><th colspan="2">Usage Loss</th><th>Func/Use Loss</th></tr>
<tr><td>42</td><td>Commercial/Ind</td><td>14</td><td>$7,000</td><td colspan="2">$4,116,000</td><td>14</td><td>$500</td><td colspan="2">$294,000</td><td>$4,410,000</td></tr>
<tr><td>5</td><td>Government/NP</td><td>14</td><td>$5,000</td><td colspan="2">$350,000</td><td>14</td><td>$1,000</td><td colspan="2">$70,000</td><td>$420,000</td></tr>
<tr><td>238</td><td>Residential</td><td>1</td><td>$50</td><td colspan="2">$11,900</td><td>14</td><td>$200</td><td colspan="2">$666,400</td><td>$678,300</td></tr>
<tr><th>Soil Cu Yards</th><th>Demolition Cu Yards</th><th colspan="2">Debris Cost</th><th>Daily Wage</th><th>Wage Days Lost</th><th colspan="2">Wages Lost</th><th colspan="2">Response Costs</th><th>Related Costs</th></tr>
<tr><td>10,536</td><td>105,360</td><td colspan="2">$2,317,920</td><td>$112</td><td>27,314</td><td colspan="2">$3,059,168</td><td colspan="2">$1,171,689</td><td>$6,548,777</td></tr>
<tr><th colspan="10">Total Disaster Costs</th><th>$25,075,848</th></tr>
</table>

Table 6.34 Indian Springs Village High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
0	Commercial/Ind	$0	35.0%	$0	29.2%	$0
1	Government/NP	$3,582,900	30.0%	$1,433,160	20.0%	$1,361,502
11	Residential	$2,821,300	40.0%	$846,390	30.8%	$1,388,948

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
0	Commercial/Ind	42	$7,000	$0	30	$500	$0	$0
1	Government/NP	10	$5,000	$50,000	5	$1,000	$5,000	$55,000
11	Residential	1	$50	$550	90	$200	$198,000	$198,550

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
824	8,240	$181,280	$112	1,242	$139,104	$220,036	$540,420
						Total Disaster Costs	**$3,544,420**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
4	Commercial/Ind	$703,370	25.0%	$351,685	12.5%	$219,803
7	Government/NP	$6,489,730	20.0%	$2,595,892	10.0%	$1,557,535
40	Residential	$13,046,090	40.0%	$3,913,827	20.0%	$6,001,201

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
4	Commercial/Ind	30	$7,000	$840,000	15	$500	$30,000	$870,000
7	Government/NP	10	$5,000	$350,000	5	$1,000	$35,000	$385,000
40	Residential	1	$50	$2,000	90	$200	$720,000	$722,000

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
3,420	34,200	$752,400	$112	4,670	$523,040	$700,069	$1,975,509
						Total Disaster Costs	**$11,731,048**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
7	Commercial/Ind	$1,913,110	20.0%	$956,555	20.0%	$573,933
1	Government/NP	$3,582,900	20.0%	$1,433,160	20.0%	$1,003,212
109	Residential	$28,200,860	20.0%	$8,460,258	20.0%	$7,332,224

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
7	Commercial/Ind	14	$7,000	$686,000	14	$500	$49,000	$735,000
1	Government/NP	14	$5,000	$70,000	14	$1,000	$14,000	$84,000
109	Residential	1	$50	$5,450	14	$200	$305,200	$310,650

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
3,988	39,880	$877,360	$112	12,320	$1,379,840	$801,843	$3,059,043
						Total Disaster Costs	**$13,098,062**

Table 6.35 Montevallo High Wind, Flood, Hazmat Hazard Loss								
High Wind Hazard								
Qty	**Structure Type**	**Structure Value**	**Loss %**	**Content Value**	**Loss%**	**Struc/Cont Loss**		
29	Commercial/Ind	$5,449,670	35.0%	$2,724,835	29.2%	$2,702,128		
20	Government/NP	$3,563,880	30.0%	$1,425,552	20.0%	$1,354,274		
68	Residential	$5,754,940	40.0%	$1,726,482	30.8%	$2,833,201		
Qty	**Structure Type**	**Days Down**	**Daily Budget**	**Function Loss**	**Days Disp**	**Daily Cost**	**Usage Loss**	**Func/Use Loss**
29	Commercial/Ind	42	$7,000	$8,526,000	30	$500	$435,000	$8,961,000
20	Government/NP	10	$5,000	$1,000,000	5	$1,000	$100,000	$1,100,000
68	Residential	1	$50	$3,400	90	$200	$1,224,000	$1,227,400
Soil Cu Yards	**Demolition Cu Yards**	**Debris Cost**	**Daily Wage**	**Wage Days Lost**	**Wages Lost**	**Response Costs**	**Related Costs**	
9,797	97,970	$2,155,340	$112	9,034	$1,011,808	$551,168	$3,718,316	
							Total Disaster Costs	**$21,896,320**
Flood								
Qty	**Structure Type**	**Structure Value**	**Loss %**	**Content Value**	**Loss%**	**Struc/Cont Loss**		
7	Commercial/Ind	$3,167,050	25.0%	$1,583,525	12.5%	$989,703		
2	Government/NP	$324,400	20.0%	$129,760	10.0%	$77,856		
25	Residential	$3,925,370	40.0%	$1,177,611	20.0%	$1,805,670		
Qty	**Structure Type**	**Days Down**	**Daily Budget**	**Function Loss**	**Days Disp**	**Daily Cost**	**Usage Loss**	**Func/Use Loss**
7	Commercial/Ind	30	$7,000	$1,470,000	15	$500	$52,500	$1,522,500
2	Government/NP	10	$5,000	$100,000	5	$1,000	$10,000	$110,000
25	Residential	1	$50	$1,250	90	$200	$450,000	$451,250
Soil Cu Yards	**Demolition Cu Yards**	**Debris Cost**	**Daily Wage**	**Wage Days Lost**	**Wages Lost**	**Response Costs**	**Related Costs**	
2,285	22,850	$502,700	$112	3,030	$339,360	$258,591	$1,100,651	
							Total Disaster Costs	**$6,057,630**
HAZMAT								
Qty	**Structure Type**	**Structure Value**	**Loss %**	**Content Value**	**Loss%**	**Struc/Cont Loss**		
2	Commercial/Ind	$821,750	20.0%	$410,875	20.0%	$246,525		
1	Government/NP	$0	20.0%	$0	20.0%	$0		
1	Residential	$355,230	20.0%	$106,569	20.0%	$92,360		
Qty	**Structure Type**	**Days Down**	**Daily Budget**	**Function Loss**	**Days Disp**	**Daily Cost**	**Usage Loss**	**Func/Use Loss**
2	Commercial/Ind	14	$7,000	$196,000	14	$500	$14,000	$210,000
1	Government/NP	14	$5,000	$70,000	14	$1,000	$14,000	$84,000
1	Residential	1	$50	$50	14	$200	$2,800	$2,850
Soil Cu Yards	**Demolition Cu Yards**	**Debris Cost**	**Daily Wage**	**Wage Days Lost**	**Wages Lost**	**Response Costs**	**Related Costs**	
232	2,320	$51,040	$112	154	$17,248	$30,500	$98,788	
							Total Disaster Costs	**$734,522**

Table 6.36 Pelham High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
30	Commercial/Ind	$11,771,690	35.0%	$5,885,845	29.2%	$5,836,796
4	Government/NP	$2,376,190	30.0%	$950,476	20.0%	$902,952
95	Residential	$8,391,920	40.0%	$2,517,576	30.8%	$4,131,407

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
30	Commercial/Ind	42	$7,000	$8,820,000	30	$500	$450,000	$9,270,000
4	Government/NP	10	$5,000	$200,000	5	$1,000	$20,000	$220,000
95	Residential	1	$50	$4,750	90	$200	$1,710,000	$1,714,750

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
9,710	97,100	$2,136,200	$112	11,940	$1,337,280	$869,692	$4,343,172
						Total Disaster Costs	**$26,419,078**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
125	Commercial/Ind	$80,624,130	25.0%	$40,312,065	12.5%	$25,195,041
5	Government/NP	$10,824,450	20.0%	$4,329,780	10.0%	$2,597,868
259	Residential	$30,026,170	40.0%	$9,007,851	20.0%	$13,812,038

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
125	Commercial/Ind	30	$7,000	$26,250,000	15	$500	$937,500	$27,187,500
5	Government/NP	10	$5,000	$250,000	5	$1,000	$25,000	$275,000
259	Residential	1	$50	$12,950	90	$200	$4,662,000	$4,674,950

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
26,351	263,510	$5,797,220	$112	32,808	$3,674,496	$3,744,445	$13,216,161
						Total Disaster Costs	**$86,958,558**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
63	Commercial/Ind	$17,357,130	20.0%	$8,678,565	20.0%	$5,207,139
2	Government/NP	$1,778,620	20.0%	$711,448	20.0%	$498,014
400	Residential	$47,379,300	20.0%	$14,213,790	20.0%	$12,318,618

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
63	Commercial/Ind	14	$50	$44,100	14	$500	$441,000	$485,100
2	Government/NP	14	$7,000	$196,000	14	$1,000	$28,000	$224,000
400	Residential	1	$5,000	$2,000,000	14	$200	$1,120,000	$3,120,000

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
16,740	167,400	$3,682,800	$112	45,710	$5,119,520	$1,622,139	$10,424,459
						Total Disaster Costs	**$32,277,330**

Table 6.37 Vincent High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
18	Commercial/Ind	$724,280	35.0%	$362,140	29.2%	$359,122
10	Government/NP	$1,528,400	30.0%	$611,360	20.0%	$580,792
25	Residential	$1,647,460	40.0%	$494,238	30.8%	$811,057

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
18	Commercial/Ind	42	$50	$37,800	30	$500	$270,000	$307,800
10	Government/NP	10	$7,000	$700,000	5	$1,000	$50,000	$750,000
25	Residential	1	$5,000	$125,000	90	$200	$450,000	$575,000

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
4,690	46,900	$1,031,800	$112	3,656	$409,472	$140,078	$1,581,350
						Total Disaster Costs	**$4,965,121**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
6	Commercial/Ind	$203,870	25.0%	$101,935	12.5%	$63,709
0	Government/NP	$0	20.0%	$0	10.0%	$0
23	Residential	$2,130,030	40.0%	$639,009	20.0%	$979,814

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
6	Commercial/Ind	30	$7,000	$1,260,000	15	$500	$45,000	$1,305,000
0	Government/NP	10	$5,000	$0	5	$1,000	$0	$0
23	Residential	1	$50	$1,150	90	$200	$414,000	$415,150

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
1,922	19,220	$422,840	$112	2,756	$308,672	$93,917	$825,429
						Total Disaster Costs	**$3,589,102**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
11	Commercial/Ind	$420,090	20.0%	$210,045	20.0%	$126,027
2	Government/NP	$2,046,800	20.0%	$818,720	20.0%	$573,104
80	Residential	$5,000,070	20.0%	$1,500,021	20.0%	$1,300,018

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
11	Commercial/Ind	14	$7,000	$1,078,000	14	$500	$77,000	$1,155,000
2	Government/NP	14	$5,000	$140,000	14	$1,000	$28,000	$168,000
80	Residential	1	$50	$4,000	14	$200	$224,000	$228,000

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
3,380	33,800	$743,600	$112	9,142	$1,023,904	$179,923	$1,947,427
						Total Disaster Costs	**$5,497,577**

Table 6.38 Westover High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
6	Commercial/Ind	$305,040	35.0%	$152,520	29.2%	$151,249
4	Government/NP	$138,600	30.0%	$55,440	20.0%	$52,668
38	Residential	$1,715,880	40.0%	$514,764	30.8%	$844,741

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
6	Commercial/Ind	42	$7,000	$1,764,000	30	$500	$90,000	$1,854,000
4	Government/NP	10	$5,000	$200,000	5	$1,000	$20,000	$220,000
38	Residential	1	$50	$1,900	90	$200	$684,000	$685,900

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
3,542	35,420	$779,240	$112	4,548	$509,376	$83,893	$1,372,509
						Total Disaster Costs	**$5,181,067**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
0	Commercial/Ind	$0	25.0%	$0	12.5%	$0
0	Government/NP	$0	20.0%	$0	10.0%	$0
9	Residential	$1,913,440	40.0%	$574,032	20.0%	$880,182

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
0	Commercial/Ind	30	$7,000	$0	15	$500	$0	$0
0	Government/NP	10	$5,000	$0	5	$1,000	$0	$0
9	Residential	90	$50	$40,500	90	$200	$162,000	$202,500

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
576	5,760	$126,720	$112	90,720	$10,160,640	$79,216	$10,366,576
						Total Disaster Costs	**$11,449,259**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
6	Commercial/Ind	$1,419,480	20.0%	$709,740	20.0%	$425,844
2	Government/NP	$179,770	20.0%	$71,908	20.0%	$50,336
6	Residential	$618,330	20.0%	$185,499	20.0%	$160,766

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
6	Commercial/Ind	14	$7,000	$588,000	14	$500	$42,000	$630,000
2	Government/NP	14	$5,000	$140,000	14	$1,000	$28,000	$168,000
6	Residential	1	$50	$300	14	$200	$16,800	$17,100

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
712	7,120	$156,640	$112	784	$87,808	$57,325	$301,773
						Total Disaster Costs	**$1,753,818**

Table 6.39 Wilton High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
16	Commercial/Ind	$637,450	35.0%	$318,725	29.2%	$316,069
4	Government/NP	$320,100	30.0%	$128,040	20.0%	$121,638
34	Residential	$1,476,280	40.0%	$442,884	30.8%	$726,784

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
16	Commercial/Ind	42	$7,000	$4,704,000	30	$500	$240,000	$4,944,000
4	Government/NP	10	$5,000	$200,000	5	$1,000	$20,000	$220,000
34	Residential	1	$50	$1,700	90	$200	$612,000	$613,700

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
4,336	43,360	$953,920	$112	4,520	$506,240	$93,159	$1,553,319
						Total Disaster Costs	**$8,495,510**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
0	Commercial/Ind	$0	25.0%	$0	12.5%	$0
0	Government/NP	$0	20.0%	$0	10.0%	$0
0	Residential	$0	40.0%	$0	20.0%	$0

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
0	Commercial/Ind	30	$7,000	$0	15	$500	$0	$0
0	Government/NP	10	$5,000	$0	5	$1,000	$0	$0
0	Residential	1	$50	$0	90	$200	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
0	0	$0	$112	0	$0	$0	$0
						Total Disaster Costs	**$0**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
30	Commercial/Ind	$1,591,100	20.0%	$795,550	20.0%	$477,330
6	Government/NP	$1,825,260	20.0%	$730,104	20.0%	$511,073
144	Residential	$9,789,760	20.0%	$2,936,928	20.0%	$2,545,338

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
30	Commercial/Ind	14	$50	$21,000	14	$500	$210,000	$231,000
6	Government/NP	14	$7,000	$588,000	14	$1,000	$84,000	$672,000
144	Residential	1	$5,000	$720,000	14	$200	$403,200	$1,123,200

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
6,888	68,880	$1,515,360	$112	16,632	$1,862,784	$318,037	$3,696,181
						Total Disaster Costs	**$9,256,121**

Table 6.40 Shelby Unincorporated High Wind, Flood, Hazmat Hazard Loss

High Wind Hazard

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
7	Commercial/Ind	$637,560	35.0%	$318,780	29.2%	$316,124
1	Government/NP	$245,900	30.0%	$98,360	20.0%	$93,442
10	Residential	$846,240	40.0%	$253,872	30.8%	$416,610

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
7	Commercial/Ind	42	$7,000	$2,058,000	30	$500	$105,000	$2,163,000
1	Government/NP	10	$5,000	$50,000	5	$1,000	$5,000	$55,000
10	Residential	1	$50	$500	90	$200	$180,000	$180,500

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
1,495	14,950	$328,900	$112	1,424	$159,488	$66,094	$554,482
						Total Disaster Costs	**$3,779,158**

Flood

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
35	Commercial/Ind	$18,039,090	25.0%	$9,019,545	12.5%	$5,637,216
6	Government/NP	$2,051,920	20.0%	$820,768	10.0%	$492,461
381	Residential	$67,294,610	40.0%	$20,188,383	20.0%	$30,955,521

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
35	Commercial/Ind	30	$7,000	$7,350,000	15	$500	$262,500	$7,612,500
6	Government/NP	10	$5,000	$300,000	5	$1,000	$30,000	$330,000
381	Residential	1	$50	$19,050	90	$200	$6,858,000	$6,877,050

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
27,489	274,890	$6,047,580	$112	43,782	$4,903,584	$3,337,668	$14,288,832
						Total Disaster Costs	**$66,193,579**

HAZMAT

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
30	Commercial/Ind	$1,591,100	20.0%	$795,550	20.0%	$477,330
6	Government/NP	$1,825,260	20.0%	$730,104	20.0%	$511,073
144	Residential	$9,789,760	20.0%	$2,936,928	20.0%	$2,545,338

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
30	Commercial/Ind	14	$7,000	$2,940,000	14	$200	$84,000	$3,024,000
6	Government/NP	14	$5,000	$420,000	14	$1,000	$84,000	$504,000
144	Residential	1	$50	$7,200	14	$500	$1,008,000	$1,015,200

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
6,888	68,880	$1,515,360	$112	16,632	$1,862,784	$318,037	$3,696,181
						Total Disaster Costs	**$11,773,121**

6.5.3 Vulnerability Loss Estimates For Secondary Hazards

This section of the plan update describes the Shelby County estimated vulnerability loss that may be incurred by hazards that may impact the entire planning area equally. These hazards are Drought, Earthquake, Extreme Temperatures, Hail, Lightning and Ice/Snow. The manmade hazards identified in this plan (hazardous material, pandemic, terrorism and urban fire) would also impact the entire planning area equally. The loss percentage for each of these hazards were derived by the 2009 Hazard Mitigation committee based on both historic losses and local knowledge. Function and Use loss was calculated using a factor that was developed from historic events, local knowledge, and other sources. The factor was multiplied against the total estimated loss.

Drought can affect structures primarily through land subsidence (sinkholes) that may impact buildings as well as infrastructure anywhere within the county. Drought can cause extensive damage to the foundations of commercial and residential structures, and the framing and walls, as well as agricultural crops, roads, bridges, pipelines, utilities and railroads. Drought may also impact population through the lack of potable water or locally produced food items. However, the larger impact of drought within the county can be the lack of water for public and private landscaping resulting in replacement costs for landscape products. Function and use loss would be negligible, as buildings would remain operational. Loss of life and injuries do occur but are minimal. The table below estimates the losses from a severe drought event

Table 6.41 Shelby County Drought Hazard Loss										
Qty	Structure Type	Structure Value			Loss %	Content Value			Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790			0.20%	$1,644,907,895			0.0%	$6,579,632
1,995	Government/NP	$807,676,550			0.05%	$323,070,620			0.0%	$403,838
51,739	Residential	$10,526,618,521			0.05%	$3,157,985,556			0.0%	$5,263,309
Qty	Structure Type	Days Down	Daily Budget	Function Loss		Days Disp	Daily Cost	Usage Loss		Func/Use Loss
17,891	Commercial/Ind	0.01	$7,000	$1,252,370		0	$500	$0		$1,252,370
1,995	Government/NP	0	$5,000	$0		0	$1,000	$0		$0
51,739	Residential	0	$50	$0		0	$200	$0		$0
Soil Cu Yards	Demolition Cu Yards	Debris Cost		Daily Wage	Wage Days Lost	Wages Lost		Response Costs		Related Costs
153	1,527	$33,600		$64	179	$11,450		$979,742		$1,024,793
									Total Disaster Costs	**$14,523,942**

Earthquake occurrences of the magnitude predicted in the county would impact the entire county Most property damage and earthquake-related deaths are caused by the collapse of structures. The level of damage depends upon the amplitude and duration of the ground shaking, which is directly related to the earthquake size, distance from the fault, site, and regional geology.. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. The impact to Shelby County of a large regional earthquake could be significant. The county loss could result in some cracking of concrete structures and some movement of wood structures off foundations. Brick from buildings could crack and fall. The shaking could result in electrical and water infrastructure to suffer damage. Function and use loss could be moderate as structures could be damaged to the extent that some repairs are needed making them unusable for short period of time. Because of the lack of warning it can be expected that there may be a few injuries from an earthquake event. The table below estimates the loss from a 6.5 magnitude earthquake.

Table 6.42 Shelby County Earthquake Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.50%	$1,644,907,895	0.0%	$16,449,079
1,995	Government/NP	$807,676,550	0.50%	$323,070,620	0.0%	$4,038,383
51,739	Residential	$10,526,618,521	1.00%	$3,157,985,556	0.0%	$105,266,185

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	1	$7,000	$125,237,000	1	$500	$8,945,500	$134,182,500
1,995	Government/NP	1	$5,000	$9,975,000	1	$1,000	$1,995,000	$11,970,000
51,739	Residential	0	$50	$0	1	$200	$10,347,800	$10,347,800

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
11,361	113,609	$2,499,396	$96	19,886	$1,909,056	$10,060,292	$14,468,744
						Total Disaster Costs	**$296,722,690**

Extreme Temperatures both high and low can cause cracking and buckling of concrete structures and roadways and failure of electrical and mechanical components and equipment. The impact on agriculture could be significant especially freezing temperatures. Failure of air-conditioning/heating systems and/or direct outdoor exposure of populations can result in severe illness. The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps. Exposure to cold temperatures can lead to serious or life-threatening health problems such as hypothermia, cold stress, frostbite or freezing of the exposed extremities The Table below estimates the cost of an Extreme Temperatures event.

Table 6.43 Shelby County Extreme Temperatures Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.10%	$1,644,907,895	0.0%	$3,289,816
1,995	Government/NP	$807,676,550	0.01%	$323,070,620	0.0%	$80,768
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.0%	$1,052,662

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0.01	$7,000	$1,252,370	0	$500	$0	$1,252,370
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$200	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
63	627	$13,805	$80	179	$14,313	$353,860	$381,977
						Total Disaster Costs	**$6,057,593**

Hail has the capability to impact primarily mobile homes and structures with siding material such as aluminum and vinyl. Hail can impact housing roofing material and break windows in almost any structure or automobiles. Hail can also destroy many landscaping agricultural crops. Function and use loss would be negligible, as buildings would remain operational. Loss of life and injuries do occur but are minimal. Loss of life and injuries do occur but are minimal.

Table 6.44 Shelby County Hail Hazard Loss								
Qty	**Structure Type**	**Structure Value**		**Loss %**	**Content Value**		**Loss%**	**Struc/Cont Loss**
17,891	Commercial/Ind	$3,289,815,790		0.01%	$1,644,907,895		0.0%	$328,982
1,995	Government/NP	$807,676,550		0.01%	$323,070,620		0.0%	$80,768
51,739	Residential	$10,526,618,521		0.02%	$3,157,985,556		0.0%	$2,105,324
Qty	**Structure Type**	**Days Down**	**Daily Budget**	**Function Loss**	**Days Disp**	**Daily Cost**	**Usage Loss**	**Func/Use Loss**
17,891	Commercial/Ind	0	$7,000	$0	0	$500	$0	$0
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$200	$0	$0
Soil Cu Yards	**Demolition Cu Yards**	**Debris Cost**		**Daily Wage**	**Wage Days Lost**	**Wages Lost**	**Response Costs**	**Related Costs**
227	2,272	$49,988		$96	0	$0	$201,206	$251,194
							Total Disaster Costs	**$2,766,267**

Ice/Snow is most destructive against wood built homes and any structure with a roof that is not designed for an ice or snow load. Ice has the capability to fall large tree limbs, which can damage any type of structure, especially those built of wood. Ice is especially damaging to electrical lines forcing power outages, which can result in secondary damage to structures. There may be some function and use loss as repairs may make the structures unusable for a few days on the average. There may be some loss of life and injuries due to primarily secondary effects (i.e. accidents, exposure, fires from heaters).

Table 6.45 Shelby County Ice/Snow Hazard Loss								
Qty	**Structure Type**	**Structure Value**		**Loss %**	**Content Value**		**Loss%**	**Struc/Cont Loss**
17,891	Commercial/Ind	$3,289,815,790		0.05%	$1,644,907,895		0.0%	$1,644,908
1,995	Government/NP	$807,676,550		0.05%	$323,070,620		0.0%	$403,838
51,739	Residential	$10,526,618,521		0.05%	$3,157,985,556		0.0%	$5,263,309
Qty	**Structure Type**	**Days Down**	**Daily Budget**	**Function Loss**	**Days Disp**	**Daily Cost**	**Usage Loss**	**Func/Use Loss**
17,891	Commercial/Ind	0.1	$7,000	$12,523,700	0	$500	$0	$12,523,700
1,995	Government/NP	0.1	$5,000	$997,500	0	$1,000	$0	$997,500
51,739	Residential	0	$50	$0	0	$200	$0	$0
Soil Cu Yards	**Demolition Cu Yards**	**Debris Cost**		**Daily Wage**	**Wage Days Lost**	**Wages Lost**	**Response Costs**	**Related Costs**
722	7,222	$158,879		$96	1,989	$190,906	$584,964	$934,749
							Total Disaster Costs	**$21,768,004**

The topography and geology of Shelby County is susceptible to the effects of landslides and mudslides. The northern and western part of the county has a moderate risk of landslides. Mudslides/land slides have not been a significant risk in Shelby County. The impact from a landslide or Mudslide can include loss of life, damage to buildings, lost productivity, disruption in utilities and transportation systems, and reduced property values. Some structures in Shelby County are built close to riverbanks and are susceptible to mudslides. The Table below estimates the loss resulting from a mudslide or landslide involving riverbank structures.

Table 6.46 Shelby County Landslide/Mudslide Hazard Loss								
Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss		
17,891	Commercial/Ind	$3,289,815,790	0.01%	$1,644,907,895	0.0%	$328,982		
1,995	Government/NP	$807,676,550	0.01%	$323,070,620	0.0%	$80,768		
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.0%	$1,052,662		
Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0	$7,000	$0	0	$500	$0	$0
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$200	$0	$0
Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs	
144	1,444	$31,776	$96	0	$0	$116,993	$148,769	
						Total Disaster Costs	$1,611,180	

Shelby County is susceptible to land subsidence in the form of sinkholes. Numerous sinkholes have developed in the western and northeastern portions of the county. The towns that are more affected by sinkholes include Alabaster and areas in and around Harpersville and Alabaster. Other large sinkholes have occurred along local highways. Sinkholes in Shelby County have impacted roads and to a lesser extent structures. Drilling and mining assets have been lost while mining for coal and limestone and drilling for natural.

Table 6.47 Shelby County Land Subsidence Hazard Loss								
Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss		
17,891	Commercial/Ind	$3,289,815,790	0.01%	$1,644,907,895	0.0%	$328,982		
1,995	Government/NP	$807,676,550	0.01%	$323,070,620	0.0%	$80,768		
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.0%	$1,052,662		
Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0	$7,000	$0	0	$500	$0	$0
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$200	$0	$0
Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs	
144	1,444	$31,776	$96	0	$0	$116,993	$148,769	
						Total Disaster Costs	$1,611,180	

Lightning can damage a structure of any type but is most damaging when a fire is started in a wooden structure or to, a lesser extent, commercial or public structures. Electrical infrastructure is also subject to significant damage from a lightning strike. There could also be some amount of function and use loss as some structures would be un-useable due to repairs. Loss of life may occur directly as a result of a lightning strike or from a secondary effect such as fires.

Table 6.48 Shelby County Lightning Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.01%	$1,644,907,895	0.0%	$493,472
1,995	Government/NP	$807,676,550	0.01%	$323,070,620	0.0%	$113,075
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.0%	$1,368,460

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0.001	$7,000	$125,237	0	$500	$8,946	$134,183
1,995	Government/NP	0.001	$5,000	$9,975	0	$1,000	$1,995	$11,970
51,739	Residential	0	$50	$0	0	$200	$10,348	$10,348

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
144	1,444	$31,776	$96	20	$1,909	$158,001	$191,685
						Total Disaster Costs	**$2,323,193**

Wildland Fires are most destructive against agriculture assets especially timber, wooden structures or brick structures with wood cores. However concrete structures can be severely damaged should the fire burn the roof or the heat breaks windows allowing the flames to enter a normally “fire resistant” structure. Wildland fires can also damage electrical infrastructure by causing tress to fall across power lines. There may be some function and use loss as a wild fire would probably damage or destroy some structures making them unusable during repairs or rebuilding. Loss of life and injuries could also occur among citizens and firefighters.

Table 6.49 Shelby County Wildfire Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.10%	$1,644,907,895	0.1%	$4,934,724
1,995	Government/NP	$807,676,550	0.01%	$323,070,620	0.1%	$403,838
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.1%	$4,210,647

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0.01	$7,000	$1,252,370	0	$500	$8,946	$1,261,316
1,995	Government/NP	0.01	$5,000	$99,750	0	$1,000	$1,995	$101,745
51,739	Residential	0	$50	$0	0	$200	$10,348	$10,348

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
627	6,275	$138,048	$96	199	$19,091	$763,937	$921,076
						Total Disaster Costs	**$11,843,693**

Illegal Meth Labs has been identified by law enforcement as the number one drug threat in Alabama The cooking process itself and the waste that results from the manufacture of meth pose significant public health and safety risks. Methamphetamine recipes rely on the use of volatile organic compounds, explosives, acids, bases, metals, solvents, and salts. These ingredients have the potential for explosions.

Table 6.50 Shelby County Illegal Meth Lab Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.00%	$1,644,907,895	0.0%	$0
1,995	Government/NP	$807,676,550	0.00%	$323,070,620	0.0%	$0
51,739	Residential	$10,526,618,521	0.01%	$3,157,985,556	0.0%	$1,052,662

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0	$7,000	$0	0	$500	$0	$0
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$500	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
83	828	$18,212	$96	0	$0	$84,213	$102,425
						Total Disaster Costs	**$1,155,087**

Pandemic events can result in the loss of thousands of lives and have a long lasting economic impact to all communities in the planning area. Components of the physical infrastructure may be threatened or destroyed, an infectious disease outbreak may also pose significant threats to the human infrastructure responsible for critical community services due to wide spread absenteeism in the workforce. There could also be extensive function loss for the same reasons. Agriculture vectors could also have a significant impact on the county.

Table 6.51 Shelby County Pandemic Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.00%	$1,644,907,895	0.0%	$0
1,995	Government/NP	$807,676,550	0.00%	$323,070,620	0.0%	$0
51,739	Residential	$10,526,618,521	0.02%	$3,157,985,556	0.0%	$2,105,324

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	2	$7,000	$250,474,000	0	$500	$0	$250,474,000
1,995	Government/NP	1	$5,000	$9,975,000	0	$1,000	$0	$9,975,000
51,739	Residential	0	$50	$0	0	$200	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
166	1,656	$36,424	$96	37,777	$3,626,592	$168,426	$3,831,442
						Total Disaster Costs	**$266,385,766**

Terrorism events can result in significant loss of life and damage to structures in any community in the planning area. Major or complete damage of a single structure could result from a terrorist bomb (domestic or International) with some collateral damage to structures nearby. Structure usability could result from chemical or radiological contamination.

Table 6.52 Shelby County Terrorism Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.00%	$1,644,907,895	0.0%	$0
1,995	Government/NP	$807,676,550	1.00%	$323,070,620	1.0%	$11,307,472
51,739	Residential	$10,526,618,521	0.00%	$3,157,985,556	0.0%	$0

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0	$7,000	$0	0	$500	$0	$0
1,995	Government/NP	1	$5,000	$9,975,000	0	$1,000	$0	$9,975,000
51,739	Residential	0	$50	$0	0	$200	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
798	7,980	$175,560	$96	1,995	$191,520	$904,598	$1,271,678
						Total Disaster Costs	**$22,554,149**

Urban Fire events damages from fire can range from human and livestock deaths to significant property damage and infrastructure problems. All areas of Shelby County are vulnerable to fire conditions. However, the urban areas have the greatest potential for significant loss. The potential for loss for human life in fires is a significant concern. Fires can have a dramatic and sometimes permanent impact on individuals, property and the environment in the area of the fire may cause some loss of life and significant or complete damage to a structure or a group of structures in close proximity. The table below estimates the loss of a large business in a community

Table 6.53 Shelby County Urban Fire Hazard Loss

Qty	Structure Type	Structure Value	Loss %	Content Value	Loss%	Struc/Cont Loss
17,891	Commercial/Ind	$3,289,815,790	0.50%	$1,644,907,895	0.5%	$24,673,618
1,995	Government/NP	$807,676,550	0.00%	$323,070,620	0.0%	$0
51,739	Residential	$10,526,618,521	0.00%	$3,157,985,556	0.0%	$0

Qty	Structure Type	Days Down	Daily Budget	Function Loss	Days Disp	Daily Cost	Usage Loss	Func/Use Loss
17,891	Commercial/Ind	0.1	$7,000	$12,523,700	0	$500	$0	$12,523,700
1,995	Government/NP	0	$5,000	$0	0	$1,000	$0	$0
51,739	Residential	0	$50	$0	0	$200	$0	$0

Soil Cu Yards	Demolition Cu Yards	Debris Cost	Daily Wage	Wage Days Lost	Wages Lost	Response Costs	Related Costs
2,684	26,837	$590,403	$96	1,789	$171,754	$1,973,889	$2,736,046
						Total Disaster Costs	**$39,933,364**

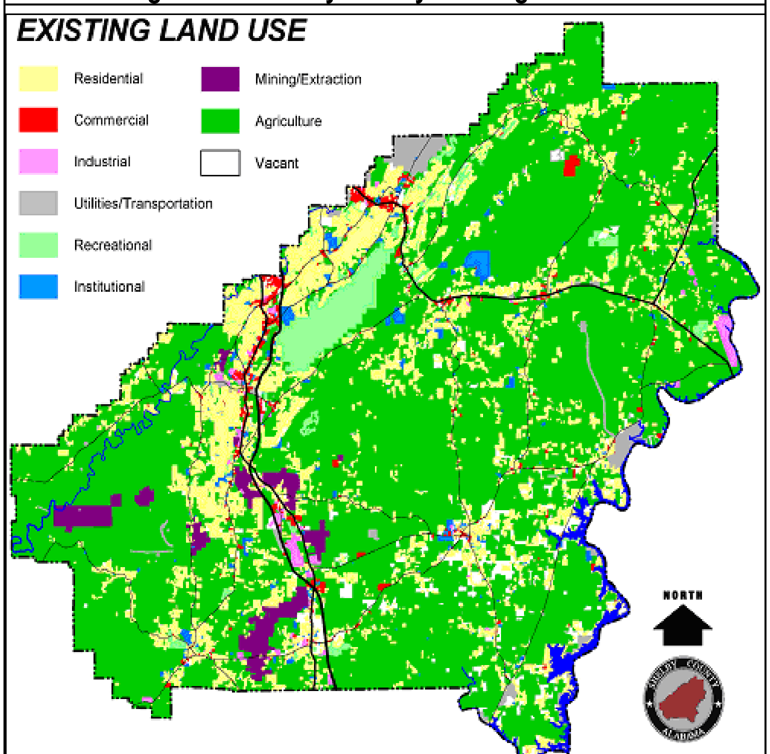
6.6 ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

Requirement §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of] 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.
A. Does the new or updated plan describe land uses and development trends?

CRS Step 5: Assess the Problem: The CRS gives credit for a description of the development, redevelopment, and population trends as well as a discussion of what the future brings for development in the community. This is optional..

Residential, commercial, and industrial uses are predominant along the I-65 / US Highway 31 and the US Highway 280 corridors from one county line to the other with a heavy residential existing between the two corridors north of Oak Mountain State Park. Intense commercial concentrations occur within these corridors along their northern segments. Although rural in nature, residential uses exist along the State Highway 25 corridor that stretches from Wilton to Leeds with commercial uses centered in the downtowns.

Figure 6.16 Shelby County Existing Land Use



Source: Shelby County 2004 Comprehensive Plan

Institutional uses include government properties, religious facilities, and schools. Utilities uses comprise private and public facilities involved with electric, water, and sewer networks as well as transportation facilities such as airports.

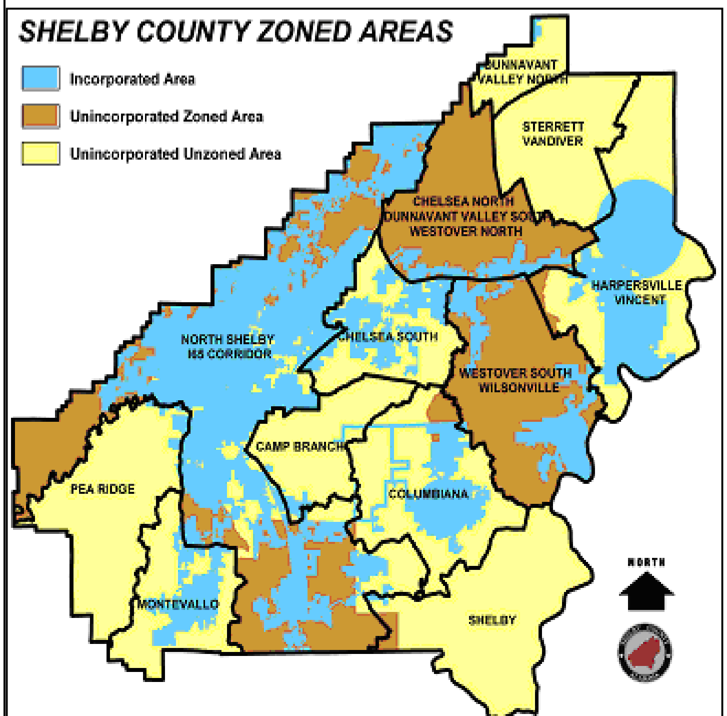
Timberlands, a component of Agricultural uses, exist in the western, central, and northeastern areas, and mining of limestone and coal occurs in the southwestern area.

A variety of parks, open space, and recreational opportunities are offered through county, municipal and state facilities including Alabama's largest State park, Oak Mountain State Park.

Beginning with the1996 General Development Plan, Shelby County has committed to approximately $12 million for capital recreation projects at 18 county facilities. For some, of these projects, the County has partnered with local municipalities to provide more opportunities for local residents. These parks range in size from large parks as Veterans Park, Heard Mont Park, and Beeswax Park to smaller venues such as Almont Park. Additionally, by partnering with local area organizations through Shelby County's Park & Recreation Grant Program, the county has used its $1.6 million investment to leverage more than $8 Million dollars in 89 park and recreational projects throughout the county. *Source: Shelby County 2004 Comprehensive Plan*

Zoning

Figure 6.17 Shelby County Zoned Areas



Source: Shelby County 2004 Comprehensive Plan

Twelve zoning beats exist within Shelby County. There are approximately 800 square miles in Shelby County, more than 47% of this area is un-zoned, unincorporated as compared to 24% zoned unincorporated. Shelby County's Enabling Legislation and its subsequent amendments authorize the Planning Commission to develop a comprehensive plan and regulations for guiding and accomplishing coordinated, adjusted, and harmonious land development.

In those areas where land use and zoning is available as a tool for growth management, the County lack's the authority to impose fines or penalties of a magnitude sufficient to prevent or reduce violations of development regulations. A general lack of coordination among the County's 17 municipalities is exacerbated by a tax system that forces municipalities to rely on sales taxes for the bulk of their revenues, resulting in municipalities competing with each other for commercial development.

Municipalities covet commercial development and have liberally interpreted bad annexation statutes in order to "cherry pick" commercial uses while bypassing logically connected low-density residential development. Low-density residential development demands services in excess of the revenues generated, while adding additional voters into the community. The "spider like" pattern of municipal boundaries resulting from such annexation can result in service provision problems, particularly in the area of public safety, and hinders the community's ability to develop a sense of place.

Additionally, growth and development patterns frequently result in the loss of natural landscapes, impose undue burdens upon natural systems & resources beyond sustainable levels, and directly degrade and destroys natural habitat. Such changes also are often accompanied by the creation of previously non-existent problems (e.g., increased flooding, land slides, subsidence, natural wildfires in residential areas).

The incorporated communities not only contain the majority of the county's population but also significant natural resources. Direct involvement in resource management processes by each municipality is strongly encouraged. Resource management is best approached from a countywide or regional perspective. While much of the focus of the ecosystem analysis is related to land and water resources, the area's air quality and inclusion in the Birmingham ozone non-attainment region merit attention. It is a much more difficult task to influence this ecosystem competent factors such as weather and temperature that are not controllable. However, by creating traditional, compact, sustain- able communities through intergovernmental cooperation Shelby County will remain competitive in the global marketplace.

Municipalities and private corporations can provide key infrastructure such as water and sewer, with little or no input from the County and cannot be coordinated and managed under an area wide plan, any efforts to control and redirect the County's development pattern is difficult.

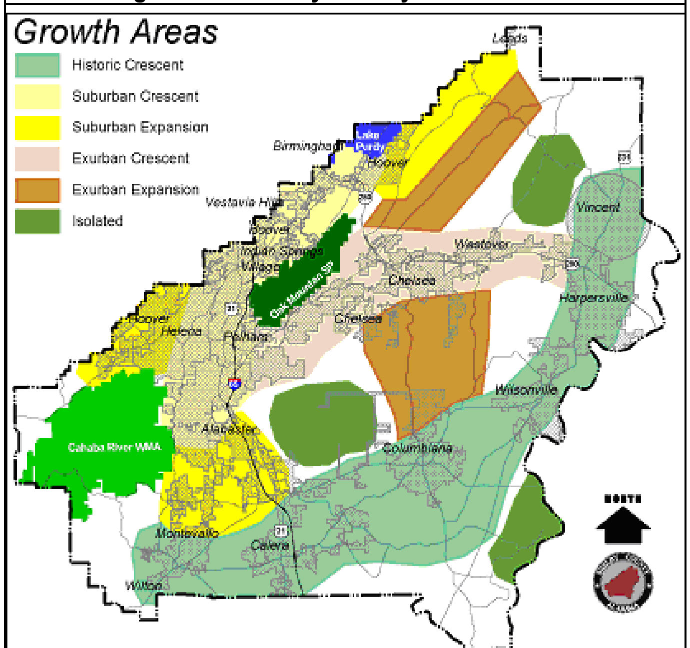
Source: Shelby County 2004 Comprehensive Plan

Strategic Land Development

The fundamental idea that underpins the Strategic Development Concept is that the continued development and redevelopment of Shelby County should be organized around a strong, clearly defined framework of identifiable places. This means Shelby County intends to build upon the strength and interrelationship between critical environmental resources and the presence and vitality of the communities within the County. The Strategic Development Concept of this Comprehensive Plan is based on two fundamental principles: 1. New growth should be targeted to designated development areas following the Community Elements Design Principles so that growth takes place in a controlled manner without spreading into a dispersed, sprawling pattern. 2. Maintaining the Rural Landscape and ensuring the protection of current and future agricultural and forestall land are essential to preserving the heritage and unique character of Shelby County. These principles are achieved through identifying designated development areas and by describing the development appropriate for these areas.

Source: Shelby County 2004 Comprehensive Plan

Figure 6.18 Shelby County Growth Areas



Source: Shelby County 2004 Comprehensive Plan

Development Patterns

Development in Shelby County has generally followed major highway corridors. Historical growth followed the State Highway 25 corridor, which forms a southern growth crescent. A northern growth crescent containing the newer suburban development follows the Cahaba Valley southwest and down the U.S. Highway 31/Interstate 65 corridors to the Maylene area. The Town of Chelsea and the City of Columbiana occupy the center of two crosses of emerging development. The fingers of each cross extend outward from the center down the major transportation corridors of County Road 47, County Road 43, U.S. Highway 280, State Highway 70 and shares part of the State Highway 25 corridor.

Development in the Historical Crescent extending from the Town of Vincent southwest to the City of Montevallo contains some of the oldest development in the county. Development in these areas is mostly on acreage in conjunction with agricultural uses. Support services are located in town centers located along State Highway 25. Development in these areas doesn't appear to have a unifying character other than being located off state or county roads.

The Suburban Crescent contains a mix of older, well-established neighborhoods and development commonly associated with the explosive growth in unincorporated north Shelby County, southern part of the City of Alabaster, western part of the Town of Helena and parts of the City of Pelham. The range of age of these developments is almost 30 years with some embedded pockets of older dwellings. They are characterized by mostly ranch type or split level houses with low to moderately steep roof pitches on narrower, non-curbed streets to developments characterized by homes which are larger, and are more vertical with steeper roof pitches with more attention to architectural style. The newer developments (post-1980) are constructed following more rigorous standards for streets and access as required by newly adopted subdivision regulations.

An Exurban Crescent is beginning to emerge along the County Road 11/U.S. Highway 280 corridor with expansion areas north and south along County Roads 43 and 47. These areas contain some of the newest developments (within the last five years) in the county and are often designed to maximize the use of land rather than architectural style. These developments typically follow market trends of smaller more affordable houses on smaller lots although larger, more vertical houses are still common. An unfortunate side effect of this trend toward smaller houses on small lots is the tendency to mass grade large areas.

Several areas of Isolated Development are located near the river or along other secondary County Roads. These areas are still largely undeveloped. *Source: Shelby County 2004 Comprehensive Plan*

6.7 Multi-Jurisdictional Risk Assessment

This multi-jurisdictional plan presents information for the general planning area as a whole. However, some hazards and associated losses occur in only part of the planning area, this information is attributed to the particular jurisdiction in which they occur.

In some instances individual municipalities in Shelby County have specific vulnerabilities to hazards that differ from the countywide vulnerabilities. This differentiation exists due to factors such as geographic location, topography, geologic differences, and proximity to hazards.

In addition to this summary section, within the discussion of each hazard in the profiles section, there is narrative identifying the specific municipalities or areas of the county that have been affected by hazards, the extent of impact and the probability of future occurrence in Shelby County. The table below summarizes each jurisdiction's specific vulnerability to each identified hazard.

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area. **A.** Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?
CRS Step 4. Assess the Hazard & **Step 5: Assess the Problem:** For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area
FMA FEMA 299 Guidance: The Plan should be coordinated with, and ideally developed in cooperation with, all of the local jurisdictions within the geographical area.

Table 6.54 Likelihood Of Potential Hazard Incident Occurring											
	Flooding	High Wind	Ice/Snow	Pandemic	Wildfires	Hazmat	Meth Lab	Terrorism	Urban Fire	Total	Likelihood
Shelby County	3	3	1	1	2	3	3	1	3	20	H
City of Alabaster	3	3	1	1	1	3	3	1	3	19	M
City of Calera	2	3	1	1	1	3	3	1	3	18	M
City of Chelsea	1	3	1	1	2	2	2	1	2	15	M
City of Columbiana	1	3	1	1	1	2	2	1	3	15	M
Town of Harpersville	1	3	1	1	2	2	3	1	3	17	M
City of Helena	3	3	1	1	1	2	2	1	3	17	M
Town of Indian Springs	2	3	1	1	1	2	1	1	3	15	M
City of Montevallo	2	3	1	1	1	2	2	1	3	16	M
City of Pelham	3	3	1	1	1	3	2	1	3	18	M
Town of Vincent	2	3	1	1	2	2	3	1	2	17	M
Town of Westover	1	3	1	1	2	2	2	1	2	15	M
Town of Wilsonville	1	3	1	1	2	2	2	1	2	15	M
Town of Wilton	1	3	1	1	1	2	2	1	1	13	M
Total	26	42	14	14	20	32	32	14	36		
Likelihood of occurrence in any single year. Very Likely=3, Likely=2, Possible=1 20-27 total likelihood of hazard occurrence is high, 11-20 total likelihood of hazard occurrence is medium, 0-10 total likelihood of hazard occurrence is low.											

In addition to differing levels of vulnerability to identified hazards; individual municipalities can also suffer significant differences in losses resulting from the impact and extent of a disaster. Generally these losses are a direct result of population density, commercial development, or housing density and/or value.

Within the discussion of each hazard profile, the narrative identifies those municipalities and specific areas of the county that have increased vulnerability and impact to that hazard and notes the factors contributing to an increased impact or vulnerability. The table below depicts the differing aspects of estimated losses by jurisdiction.

Table 6.55 Impact Of Potential Hazard Incident											
Jurisdiction	Flooding	High Wind	Ice/Snow	Pandemic	Wildfires	Hazmat	Meth Lab	Terrorism	Urban Fire	Total	Impact
Shelby County	2	3	1	2	2	2	1	3	2	18	M
City of Alabaster	3	3	1	3	1	2	1	3	2	19	M
City of Calera	2	3	1	2	1	2	1	3	2	17	M
City of Chelsea	1	3	1	2	2	2	1	2	2	16	M
City of Columbiana	1	3	1	2	1	2	1	3	2	16	M
Town of Harpersville	1	3	1	2	2	2	1	2	2	16	M
City of Helena	3	3	1	3	1	2	1	2	2	18	M
Town of Indian Springs	1	3	1	3	1	2	1	2	2	16	M
City of Montevallo	2	3	1	3	1	2	1	3	2	18	M

Table 6.55 Impact Of Potential Hazard Incident

Jurisdiction	Flooding	High Wind	Ice/Snow	Pandemic	Wildfires	Hazmat	Meth Lab	Terrorism	Urban Fire	Total	Impact
City of Pelham	3	3	1	3	1	2	1	3	2	19	**M**
Town of Vincent	2	3	1	2	2	2	1	2	2	17	**M**
Town of Westover	1	3	1	2	1	2	1	1	1	13	**M**
Town of Wilsonville	1	3	1	2	2	2	1	2	2	16	**M**
Town of Wilton	1	3	1	2	1	2	1	1	1	13	**M**
Totals	24	42	14	33	19	28	14	32	26		

3 = High – Significant and lasting destructive effect on lives or property
2 = Medium – Moderate destructive effect on lives or property; recovery is takes time and is moderately expensive
1 = Low -Lower magnitude of destructive effect on lives or property; recovery is accomplished in a reasonable period of time and is low cost
20-27-Impact of all hazards is high, 11-19-impact of all hazards is medium, 0-10-Impact of all hazards is low

SECTION 7
CAPABILITIES AND HAZARD MITIGATION STRATEGY

7.1 INTRODUCTION

This section of the Plan discusses the capability of Shelby County and the participating local jurisdictions to implement hazard mitigation actions.

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects. It is important to establish goals, objectives and actions that are feasible, based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps determine which mitigation actions are practical and likely to be implemented given a local government's regulatory framework, level of administrative and technical support, and fiscal resources

The intent of the Mitigation Strategy is to provide Shelby County and its municipal jurisdictions with goals that will guide future mitigation policy and project administration, along with a list of proposed actions deemed necessary to meet those goals and reduce the impact of natural and manmade hazards. It is designed to be comprehensive and strategic in nature.

7.1.1 2009 Plan Update

Chapter 5 is now Section 7 and now contains a comprehensive capabilities assessment of Shelby County. Capabilities of individual participating jurisdictions are also included in an Individual Mitigation Action Plan for each jurisdiction. The mitigation strategy for the 2009 plan update has been significantly enhanced. Countywide Mitigation goals and objectives and action items were adopted by each participating jurisdiction. In addition each participating municipality developed it's own Mitigation Action Plan that can be found in the Individual Mitigation Plan Annex.

The 2009 plan update also now contains added components, which include identifying NFIP status, repetitive loss properties and prioritizing mitigation actions using the "STAPLEE" methodology. There are now new actions addressing NFIP, protection of existing and new structures.

The mitigation actions identified in the 2004 plan have been extensively reviewed. The effectiveness of the actions implemented is documented in this section. The actions not implemented are either carried forward to the updated plan or have been eliminated as not feasible or no longer an effective action.

7.2 JURISDICTION CAPABILITIES

7.2.1 Capability Assessment Overview

A capability assessment has two primary components: an inventory of a local jurisdiction's relevant plans, ordinances, or programs already in place, and an analysis of its capacity to carry them out. A capability assessment also highlights the positive mitigation measures already in place or being implemented at the local level, which should continue to be supported and enhanced through future mitigation efforts. The capability assessment completed for Shelby County and its jurisdictions serves as a critical planning step and is an integral part of the foundation for designing an effective multi-jurisdictional hazard mitigation strategy. Coupled with the Risk Assessment, the Capability Assessment helps identify and target meaningful mitigation actions for incorporation in the Mitigation Strategy section of the Hazard Mitigation Plan. It not only helps establish the goals and objectives for Shelby County, but also ensures that those goals and objectives are realistically achievable under given local conditions.

7.2.2 Conducting the Capability Assessment

In order to facilitate the inventory and analysis of local government capabilities throughout Shelby County, a Capability Assessment Survey was distributed to Shelby County and its municipalities. The survey was completed by appropriate local government officials and requested information on a variety of "capability indicators" such as existing local plans, policies, programs, or ordinances that contribute to the community's ability to implement hazard mitigation actions. Other indicators requested included information related to each jurisdiction's fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes. At a minimum, survey results provide an extensive inventory of existing local plans, ordinances, programs, and resources in place or under development. The survey instrument not only helps to accurately assess each jurisdiction's degree of local capability, but also serves as a good source of introspection for those jurisdictions wishing to improve their capability as identified gaps, weaknesses, or conflicts can be viewed as opportunities for specific actions to be proposed as part of the community's mitigation strategy.

On the following pages are three worksheets that each participating jurisdiction hazard mitigation-planning representative completed. This information is necessary in order to evaluate proposed mitigation actions versus what is feasible in terms of jurisdictional legal, administrative, fiscal, and technical capabilities. The worksheet for Shelby County is included in this section. The worksheets for each municipality are included in the individual Mitigation Action Plans for each municipality.

Worksheet 1: Legal and Regulatory Capability

This worksheet 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 following planning and land management tools are typically used by states and local and tribal jurisdictions to implement hazard mitigation activities. If the jurisdiction does not have this capability or authority, does another entity/jurisdiction have this authority at a higher level of government (county, parish, or regional political entity), or does the state prohibit the local jurisdictions from having this authority?

Building codes regulate construction standards. In many communities, permits and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspections all affect the level of hazard risk faced by a community.

Capital Improvements Plans (CIP) guides the scheduling of spending on public improvements. A CIP can serve as an important mechanism to guide future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments.

Comprehensive Plans incorporates all aspects of the various tactical plans and programs into a strategic county plan that guides the county and its jurisdictions to successfully improve and enhance the quality of life for all citizens.

COOP/COG Plans Are Continuity of Operations Plans/ Continuity of Government Plans that define jurisdiction succession and recovery from disasters. The plan identifies alternate sites, critical processes, records, personnel, tools etc. that are required to re-establish critical services to the community within 12 hours and be sustained for a minimum of 30 days

Economic Development Plans provides for development of existing business in the county and a strategy to attract new business to locate in the county. A successful Economic Development Plan provides long-term, attractive employment opportunity to communities and increases the tax base.

EMAP Certification is certification by the Emergency Management Accreditation Program that certifies that the jurisdiction meets all the NIMS and NFPA-1600 requirements.

Emergency Response Plans are part of an Emergency Operations Plan (EOP) that outlines responsibilities and the means by which resources are deployed following an emergency incident or disaster.

Flood Management Plans (or a flood mitigation plan) provides a framework for action regarding the corrective and preventative measures in place to reduce flood-related impacts. Typical flood control activities include: structural flood control works (such as bank stabilization, levees, and drainage channels), acquisition of flood-prone land, flood insurance programs and studies, river and basin management plans, public education programs, and flood warning and emergency preparedness activities.

National Flood Insurance Program (NFIP) contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments. The program is promoted by FEMA as a basic first step for implementing and sustaining an effective hazard mitigation program. It is used as a key indicator for measuring local capability as part of this assessment. In order for a county or municipality to join the NFIP, it must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain.

Community Rating System (CRS) is an incentive-based program that encourages counties and municipalities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP, by adding extra measures to provide protection from flooding. All of the 18 creditable CRS mitigation activities are assigned a range of point values. This rating can reduce the cost of flood insurance for the community.

Growth Control Ordinances are primarily used by local governments to encourage growth in an orderly manner in the areas covered by the ordinance. The purpose of most growth control ordinances is to preserve residential housing values, protect historic areas, and insure that local governments can provide appropriate services to citizens.

Hazard Setback and Hillside Ordinances or Regulations are usually part of a comprehensive land use plan. Typically a comprehensive plan is comprised of demographics, land use, transportation elements, and community facilities. Given the nature of the plan and its regulatory standing, the integration of hazard mitigation measures into the comprehensive plan enhances the likelihood of achieving risk reduction goals, objectives, and actions.

Historic Ordinances Identify and protect historic assets, structures or areas through the use of zoning and building regulations

Post Disaster Ordinances provides for the protection of lives and property and enhances the recovery from disasters. The ordinance is used to control price gouging, and allows local governments to facilitate the purchase and deployment of equipment and resources to speed disaster recovery.

A Post Disaster Recovery Plan provides the framework to establish assistance to victims of disaster, assess the long-term economic effects of disaster on the community, facilitate post-disaster recovery, and assist the community with redevelopment plans.

Real Estate Disclosure facilitates real estate transactions and ensures that both buyers and sellers fully understand any mitigating circumstances associated with properties.

Site Plans/Subdivision Ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including public infrastructure, as land is subdivided into lots for future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development.

Wildfire Ordinances are a means to control the potential of wildfire occurrence by requiring burn permits and the reduction of fuel for wildfires in both urban interfaces and forests in general.

Zoning Ordinances are the means to control land use by local governments. As part of a community's police power, zoning ordinances are used to protect the public health, safety and welfare of its citizens. Since zoning regulations enable local jurisdictions to limit the type and density of development, it can serve as a powerful tool when applied in identified hazard areas.

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. If the jurisdiction does not have this capability or authority, another entity/jurisdiction may have this authority at a higher level of government (county, parish, or regional political entity), or the state may prohibit the local jurisdictions from having this authority?

Table 7.1 Shelby County Legal And Regulatory Capability

Regulatory Tools/Plans	Regulatory Type: Ordinance Resolution Codes Plans Etc.	Year Adopted or Updated	Local Authority	State Prohibited	Higher Authority	Electronic copy Available
Building Codes	International Building Codes	1988	Y	N	Y	Y
Capital Improvements Plan	Annual Budget	2009	Y	N	N	N
Comprehensive Plan	Resolution	2004	Y	N	N	Y
Continuity of Operations Plan	Pandemic Only	2008	Y	N	N	N
Community Rating System				N	Y	N
Economic Development Plan	Comprehensive Plan Resolution	2004	Y	N	N	Y
EMAP Certified				N	Y	N
Emergency Response Plan	County Emergency Operations Plan	2005	Y	N	Y	Y
Flood Management, Plan	Resolution	2006	Y	N	Y	Y
Growth Control Ordinance				N	N	N
Hazard Setback Regulations				N	N	N
Hillside Ordinance				N	N	N
Historic Ordinance				N	N	N
NFIP Participant	Resolution	2004	Y	N	Y	Y
Post-disaster Ordinance				N	N	N
Post-disaster Recovery Plan	County Emergency Operations Plan	2005	Y	N	Y	Y
Real Estate Disclosure	AL Real Estate Commission	1960	Y	N	Y	N
Site Plan Requirements	Zoning Ordinance	2006	Y	N	N	Y
Subdivision Regulations	Zoning Ordinance	2006	Y	N	N	Y
Wildfire Ordinance				N	N	N
Zoning Ordinances	Ordinance	2006	Y	N	N	N

The Administrative and Technical Capacity survey documents personnel employed the jurisdiction and the public and private sector resources that may be accessed to mitigate hazards in the community. For smaller jurisdictions with limited capacities, no local staff resources may be available for many of the categories. If so identify public resources at the next higher level of government that may be able to provide technical assistance to the community.

For some hazard mitigation actions, consider federal agencies that provide technical assistance, such as the U.S. Department of Agriculture (USDA) Cooperative Extension Service, which has offices in most counties. The planning team in rural communities must be creative in identifying outside resources to augment limited local capabilities. This information will be used when evaluating alternative mitigation actions and when preparing your mitigation.

Table 7.2 Shelby County Administrative And Technical Capabilities

Position	Staff/Personnel Resources	C=County Provides, S=State Provides, F=Federal Provides Department/Agency	Number Fully Trained	Number Fully Equipped	Total Personnel
Agriculture Resource	Agent	County Extension Svc.	S1	S1	S1
Building Inspector	Professional	Zoning and Inspections	12	12	12
Emergency Manager	Certified Professional	Emergency Management	1	1	1
Emergency Staff	Professional(s)	Emergency Management	5	5	5
EMT First Responder	Professional(s)	Fire/Rescue	112	112	112
Fire Personnel	Professional(s)	Fire Dept.	323	323	323
Floodplain Manager	Engineer(s)	Engineering/Public Works	C1	C1	C1
GIS Specialist	Professional(s)	Property Assessor/IT	30	30	30
Government Elected	Elected Officials	Mayor/Commission	12	12	12
Government Administration	Employees	Jurisdiction	602	602	602
Grant writer	Professional(s)	Emergency Management	1	1	1
Hazards Analysis Mgr.	Professional(s)	Emergency Management	C1	C1	C1
Hazmat Team	Professional(s)	Fire/Sheriff Dept	6	6	6
Information Systems	Certified Professional	IT department	20	20	20
Land Use/Management	Engineer(s)/Planners	State/Local Planning	8	8	8
Law Enforcement	Sheriff, Police, Trooper	Sheriff/Police Department	119	119	119
Medical Practioners	Professional(s)	Medical Facilities	140	140	140
Public Works	Directors/Engineers	Public Works	90	90	90
Public Communication	911 specialists	E-911	15	15	15
Public Utilities	Professionals	Public Utilities	50	50	50
Surveyor	Professional	Contracted	1	1	1

The Fiscal Capability survey identifies whether the jurisdiction has access to or is eligible to use certain financial resources for hazard mitigation.

Table 7.3 Shelby County Fiscal Capabilities					
		Eligible			
Financial Resources	Description	Yes	No	TBD	Used
Community Grants	Community Development Block Grants (CDBG)	X			X
	Hazard Mitigation Planning Grants (HMPG)	X			X
	PDM for disaster resistant universities		X		
	PDM Grants for communities	X			X
	Department of Health Grants	X			X
	Department of Justice Grants	X			X
	Department of Agriculture Grants	X			X
	Department of Energy Grants	X			X
	Department of Education Grants	X			X
	Fire department grants	X			X
	Flood Management Grants (FMA)	X			X
	Homeland Security Grant Program (HSGP)	X			X
	Repetitive Flood Claims Grants (RFC)	X			
	Severe Repetitive Loss Grants (SRL)	X			
	Private foundation grants	X			X
	Private business/industry grants	X			X
Debt Procurement	Incur debt through special tax/revenue bonds	X			X
Dept Procurement	Incur debt through private activity bonds		X		
Impact Fees	Developer fees for new developments	X			X
Jurisdiction Bonds	Incur debt through general obligation bonds	X			X
Project Funding	Capital improvement	X			X
Spending Restrictions	Withhold spending in hazard-prone areas	X	X		
Special Taxes	Authority to levy taxes for specific purposes	X			X
Utility Fees	Fees for water, sewer, gas, or electric service	X			X

7.2.3 Participating Jurisdictions Capability Assessment Findings

The findings of the capability assessment are summarized in this Plan to provide insight into relevant capacity of Shelby County's jurisdictions to implement hazard mitigation activities. All information is based upon the responses provided by local government officials to the Capability Assessment Survey and during meetings throughout the planning process.

The information provided by participating jurisdictions was scored using a simple scoring methodology to rank each jurisdiction's overall capability. A total score and general capability rating of "High," "Medium" or "Low" was then determined for each jurisdiction according to the total number of points. The classifications are designed to provide an assessment of each jurisdiction's local capability. The result of this multi-jurisdictional capability assessment provides critical information for developing an effective and meaningful mitigation strategy.

7.2.3.1 Planning and Regulatory Capability

Planning and regulatory capability is based on the implementation of existing plans, ordinances, and programs by a local government. These measures can help demonstrate a local jurisdiction's commitment to guiding and managing growth, development, and redevelopment in a responsible manner while maintaining the general welfare of the community. Such measures include emergency response and mitigation planning, comprehensive land use planning, and transportation planning, in addition to the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed and structures are built. Although some conflicts can arise, these planning initiatives present significant opportunities to integrate hazard mitigation principles and practices into the local decision-making process.

This information will help identify opportunities to address existing gaps, weaknesses, or conflicts with other initiatives, in addition to integrating this Plan with existing planning mechanisms, where appropriate.

Table 7.4 Planning and Regulatory Capability Summary

Regulatory Control in place **Yes=1** **No=0** **0-7=Low** **8-14=Medium** **15-21=High** **Jurisdiction**	Building Codes	Capital Improvement Plan	Comprehensive Plan	COOP/COG Plan	Community Rating System	Economic Development Plan	EMAP Certified	Emergency Response Plan	Flood Management Plan	Growth Control Ordinance	Hazard Setback Ordinance	Hillside Ordinance	Historic Ordinance	Post Disaster Ordinance	Post Disaster Recovery Plan	Real Estate Disclosure	Shoreline Ordinance	Site Plan Requirements	Subdivision Regulations	Wildfire Ordinance	Zoning Regulations	Score	CAPABILITY
Shelby County	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	0	0	1	10	**M**
City of Alabaster	1	1	1	0	1	1	0	1	1	0	0	0	0	0	1	1	0	1	1	1	1	13	**M**
City of Calera	1	1	1	0	1	1	0	1	1	0	0	0	1	0	1	1	0	1	1	1	1	14	**M**
City of Chelsea	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	1	1	1	12	**M**
City of Columbiana	1	1	1	0	1	1	0	1	1	0	0	0	1	0	1	1	0	1	1	1	1	14	**M**
Town of Harpersville	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	0	0	1	10	**M**
City of Helena	1	1	1	0	1	1	0	1	1	0	0	0	1	0	1	1	0	1	1	1	1	14	**M**
Indian Springs Village	1	1	1	0	1	1	0	1	1	0	0	0	0	0	1	1	0	1	1	1	1	13	**M**
City of Montevallo	1	1	1	0	1	1	0	1	1	0	0	0	1	0	1	1	0	1	1	1	1	14	**M**
City of Pelham	1	1	1	0	1	1	0	1	1	0	0	0	0	0	1	1	0	1	1	1	1	13	**M**
Town of Vincent	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	1	0	1	11	**M**
Town of Westover	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	0	0	1	10	**M**
Town of Wilsonville	1	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	1	0	1	11	**M**
Town of Wilton	1	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	1	7	**L**

7.2.3.2 Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability is evaluated by determining how mitigation activities are assigned to local departments and the personnel resources available to implement the activities. Key Resources to respond to and mitigate disaster include the following:

Table 7.5 Administrative and Technical Capability Summary

Resources in place Yes=2 Other Authority=1 No=0 30-42=High 17-29=Medium 0-17=Low Jurisdiction	Agriculture Risk Assessor	Building Inspector	Emergency Manager	Emergency Staff	Emt's Certified	Fire Service	Flood Plain Manager	GIS	Government Administrative	Government Elected	Grant Writer	Hazard Risk Assessor	HAZMAT Team	Information Systems	Land Use Management	Law Enforcement	Medical Personnel	Public Works	Public Communications	Public Utilities	Surveyor	Score	CAPABILITY
Shelby County	1	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	1	38	**H**
City of Alabaster	1	2	1	1	2	2	2	2	2	2	0	2	1	2	2	2	2	2	1	2	1	34	**H**
City of Calera	1	1	1	1	2	2	1	2	2	2	0	2	1	2	2	2	2	2	2	2	1	33	**H**
City of Chelsea	1	1	1	1	2	1	1	1	2	2	0	1	1	2	1	1	2	2	1	1	1	26	**M**
City of Columbiana	1	1	1	1	2	2	1	1	2	2	0	1	1	2	1	2	2	2	2	2	1	30	**H**
Town of Harpersville	1	1	1	1	2	1	1	1	2	2	0	1	1	2	1	2	1	2	1	2	1	27	**M**
City of Helena	1	2	1	1	2	2	1	1	2	2	0	1	1	2	2	2	2	2	1	2	1	31	**H**
Indian Springs Village	1	1	1	1	2	1	1	1	2	2	0	1	1	2	2	1	2	1	1	1	1	26	**M**
City of Montevallo	1	2	1	1	2	2	1	1	2	2	0	1	1	2	2	2	2	2	1	2	1	31	**H**
City of Pelham	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	38	**H**
Town of Vincent	1	1	1	1	2	2	1	1	2	2	0	1	1	2	1	2	1	2	1	2	1	28	**M**
Town of Westover	1	1	1	1	2	2	1	1	2	2	0	1	1	2	1	1	0	1	1	1	1	24	**M**
Town of Wilsonville	1	1	1	1	2	2	1	1	2	2	0	1	1	2	1	1	0	2	1	2	1	26	**M**
Town of Wilton	1	1	1	1	1	1	1	1	2	2	0	1	1	2	1	1	0	2	1	1	1	23	**M**

7.2.3.3 Fiscal Capability

The ability of a local government to take action is closely associated with the amount of money available to implement policies and projects. This may take the form of outside grants or local-based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff or administrative costs. In other cases, direct expenses are linked to an actual project such as the acquisition of flood prone homes, which can require a substantial commitment from local, state, and federal funding sources. The Capability Assessment Survey was used to capture information on each jurisdiction's fiscal capability through the identification of locally available financial resources.

The survey identifies whether the jurisdiction does or does not have the capability and scores overall fiscal capability.

Table 7.6 Fiscal Capability Summary

Fiscal Capability in Place Yes=1 No=0 7-9=High 5-7=Medium 0-4=Low Jurisdiction	Community Grants	Public Debt Procurement	Private Debt Procurement	Impact Fees	Jurisdiction Bonds	Project Funding	Special Taxes	Hazard Spending Restrictions	Utility Fees	Score	CAPABILITY
Shelby County	1	1	0	0	1	1	1	0	1	6	**M**
City of Alabaster	1	1	0	1	1	1	1	0	1	7	**H**
City of Calera	1	1	0	1	1	1	1	0	1	7	**H**
City of Chelsea	1	1	0	0	1	1	1	0	1	6	**M**
City of Columbiana	1	1	0	1	1	1	1	0	1	7	**H**
Town of Harpersville	1	1	0	0	1	1	1	0	1	6	**M**
City of Helena	1	1	0	1	1	1	1	0	1	7	**H**
Indian Springs Village	1	1	0	1	1	1	1	0	1	7	**H**
City of Montevallo	1	1	0	1	1	1	1	0	1	7	**H**
City of Pelham	1	1	0	1	1	1	1	0	1	7	**H**
Town of Vincent	1	1	0	0	1	1	1	0	1	6	**M**
Town of Westover	1	0	0	0	0	0	1	0	1	3	**L**
Town of Wilsonville	1	1	0	0	0	1	1	0	1	5	**L**
Town of Wilton	1	0	0	0	0	0	1	0	1	3	**L**

7.2.3.4 External Resources Capabilities

The tables below list the primary Local, State and Federal resources available to Shelby County and its municipalities for mitigation planning and implementation.

Table 7.7 Shelby County Mitigation Capability Assessment					
Agency/Department Name and Function	Contact Name and email	Contact Telephone	Effect on Loss Reduction		
			Support	Facilitate	Hinder
Shelby County Emergency Management	Don Greene dgreene@shelbyal.com	205 669-3999	X	X	
Shelby County Central 911 Communications	John Ellison john@shelby911.org	205 439-6912	X	X	
Shelby County Fire Protection Council	Michael Bartlett rockyridgefire@bellsouth.net	205 822-6000	X	X	
Shelby County Tax Assessor and GIS	Don Armstrong darmstrong@shelbyal.com	205 670-6920	X	X	
Shelby County Highway Department	Larry Hicks lhicks@shelbyal.com	205 669-3880	X	X	
Shelby County Parks Department	Reed Prince rprince@shelbyal.com	205 670-6460	X	X	
Shelby County Emergency Medical Service Providers	Kyle McDonnell kyle@rpsems.com	205 664-1036	X	X	
American Red Cross County Chapter	Mary Kinard kinardm@usa.redcross.org	205-987-2792	X	X	
Shelby County Joint Law Enforcement Council	Chris Curry ccurry@shelbyso.com	205 669-4181	X	X	
Shelby County Community Health and Environmental Svcs	Mary Gomillian mary.gomillion@adph.state.al.us	205 620-1650	X	X	
Federal Emergency Management Agency	W. Craig Fugate	202 646-2500	X	X	
U .S. Department of Homeland Security	Janet Napolitano	202-282-8000	X	X	
National Flood Insurance Program	Norbert Schwartz	312-408-5500	X	X	
Assistance to Firefighters Grant Program	Steve Dumovich Steve.dumovich@dhs.gov	312-408-5588	X	X	
Alabama Department of Homeland Security	Jim Walker director@**dhs.alabama**.gov	334 353-0242	X	X	
Alabama Emergency Management Agency	Brock Long brock.long@ema.alabama.gov	205 280-2200	X	X	
Alabama Department of Public Safety	Colonel J. Christopher Murphy chris.murphy@dps.alabama.gov	334 242-4371	X	X	
National Weather Service-Birmingham	Jim Stefkovich jim.stefkovich@noaa.gov	205-664-3010	X	X	
Alabama Department of Human Services	Nancy T. Buckner nancy.buckner@dhr.alabama.gov	334 242-1160	X	X	

Table 7.7 Shelby County Mitigation Capability Assessment					
Agency/Department Name and Function	Contact Name and email	Contact Telephone	Effect on Loss Reduction		
			Support	Facilitate	Hinder
Alabama Department of Health	Donald E Williamson sho@alapubhealth.org	334-206-5200	X	X	
Alabama State Fire Marshal/Office	Edward S. Paulk epaulk@alabamafirecollege.org	334 241-4166	X	X	
Alabama Department of Conservation and Natural Resources	Barnett Lawley dcnr_commissioner@dcnr.alabama.gov	334 242-3486	X	X	
Alabama Department of Transportation	Duncan Joseph (Joe) McInnes mcinnesj@dot.state.al.us	334-242-6311	X	X	
Alabama Department of Environmental Management	Onis “Trey” Glenn III, Director	334-271-7710	X	X	
Alabama Department of Agriculture and Industries	Ron Sparks ron.sparks@agi.alabama.gov	334 240-7100	X	X	

7.2.3.5 Shelter Capability

Shelby County and its participating jurisdictions have several shelters. There are designated Red Cross shelters and other facilities that are designated as shelters by municipalities and Shelby County. Below is a table that identifies the shelters and their characteristics.

Table 7.8 Shelby County Shelters									
Location	Capacity	Sleeping Capacity	Kitchen Facilities	Commodities On site	Emergency Generator	Heat/AC	Communications	Safety Rating	Comments
107 Mildred Street Columbiana, AL	150	NA	No	No	No	No	No	250 MPH	Located Behind City Hall
5384 Hwy 62, Vincent, AL	150	NA	No	No	No	No	No	250 MPH	Intersection of Hwy 62 & Gorman Park Rd
4175 Hwy 22, Montevallo, AL	150	NA	No	No	No	No	No	250 MPH	Located Behind West Shelby VFD
3312 Westover Rd, Westover, AL	160	NA	No	No	No	No	No	250 MPH	Located by Westover Town Hall

7.3 REPETITIVE FLOODING MITIGATION

This section describes the source of repetitive flooding problems and identifies the number and type (residential, commercial or governmental) of repetitive loss properties in the jurisdiction.

A repetitive loss structure, as defined by the National Flood Insurance Program (NFIP), is a structure that is covered by flood insurance by NFIP that has suffered flood damage twice over a 10-year period in which the average cost of repair is over 25% of the market value of the structure at the time of the event.

The table below identifies the repetitive flooding sources structures and mitigation measures taken to reduce future incidents.

Table 7.9 Repetitive Flooding Mitigation

Number of Structures	Structure Type Residential Commercial Government Critical Facility Etc.	Flood Type Storm Water Out Of Banks Low Lying Maintenance	Location	Number of events	Mitigation Action Structure Buy Out Levee Built Drainage Improvement Etc.
5	Residential	Out of banks	Alabaster	13	Drainage Improvement
3	Residential	Out of banks	Birmingham	7	Drainage Improvement
1	Residential	Out of banks	Helena	2	Drainage Improvement
1	Residential	Out of banks	Leeds	2	Drainage Improvement
76	Residential	Out of banks	Pelham	266	Apply for grants to assist in drainage and additional culverts
2	Residential	Low lying	Vincent	3	Drainage Improvement

7.4 MITIGATION STRATEGY

Mitigation Strategy §201.6(c)(3): The plan shall include 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.

Development of the comprehensive strategy included a thorough review of all natural and selected manmade hazards, and identification of policies and projects to reduce the future impacts of hazards and assist the county and municipalities to achieve compatible economic, environmental, and social goals. The strategy ensures that all policies and projects are linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target implementation deadlines. When applicable, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes a review of existing mitigation measures and the identification of countywide Mitigation Goals. Mitigation Goals represent broad statements that are achieved through the implementation of more specific, action-oriented objectives listed in the county's Mitigation Action Plan. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas through a local ordinance), and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the mitigation of an area prone to repetitive flooding).

The second step involves the identification and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be considered as future mitigation opportunities become identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained.

The third and last step in designing the Mitigation Strategy is the creation of the local Mitigation Action Plans (MAPs); The MAPs represent unambiguous plans for action, and are considered to be the most essential outcome of the mitigation planning process. They include a prioritized listing of proposed hazard mitigation actions (policies and projects) for each of Shelby County's jurisdictions, along with accompanying information regarding those agencies or individuals assigned responsibility for their implementation, potential funding sources and an estimated target date for implementation. The MAPs provide those individuals or agencies responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring progress over time.

7.4.1 Mitigation Goals and Objectives

Requirement §201.6(c)(3)(i): The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. **A:** Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?
CRS Step 6: Set Goals: Credit is based on a statement of goals to reduce or avoid long-term vulnerability to the identified hazards.
FMA Requirement §78.5(c): The applicant's floodplain management goals for the area covered by the plan.

The hazard mitigation planning process has brought together a group of dedicated representatives from the jurisdictions comprising Shelby County. An early suggestion from several members of the planning committee that the group continue to meet on a regular schedule after Plan approval speaks for the cooperation and sense of community each jurisdiction brings to the planning effort, and instills confidence that the jurisdictions will unite in mitigation and other efforts.

It is the vision of Shelby County and its municipalities to promote citizen and governmental responsibility for hazard awareness and preparedness, and to foster cooperative planning among the jurisdictions to reduce the impact of natural and manmade hazards on public and private assets, and on the safety and welfare of all citizens.

The goals and objectives of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan were crafted early in the planning process through a facilitated discussion and brainstorming session with the Mitigation Steering Committee. Both State and local risk assessment findings were used as the bases of goal and objective setting. At each step of the planning process the goals and objectives were reviewed and modified, if necessary, based on any new information that was gathered and assimilated into the Plan. Many of the profiled hazards are addressed by specific goals and objectives while the "All Hazard" goal and objectives address all hazards. The Mitigation Committee believes that all of the following goals and objectives are necessary to begin to address hazard issues in Shelby County. The following goal and objective statements represent a broad target for Shelby County and its municipalities to achieve through the implementation of their own specific Mitigation Action Plans before the next Plan update.

Table 7.10 Mitigation Goals and Objectives

GOALS	OBJECTIVES
All Hazards Goal: Mitigate the impact of all hazards on the city of Shelby County	Objective AH.1: Improve the city of Shelby County's information distribution and warning capabilities for all hazards to citizens Objective AH.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to all hazards Objective AH.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from all hazards
Flooding Hazard Goal: Mitigate the impact of flooding on the city of Shelby County	Objective FL.1: Improve the city of Shelby County's flood warning and information distribution to citizens Objective FL.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to flood events. Objective FL.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from flood events
High Wind Hazard Goal: Mitigate the impact of High Winds on the city of Shelby County	Objective HW.1: Improve the city of Shelby County's High Winds warning and information distribution to citizens Objective HW.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to High Winds events. Objective HW.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from High Winds events
Ice/Snow Hazard Goal: Mitigate the impact of Ice/Snow on the city of Shelby County	Objective IS.1: Improve the city of Shelby County's Ice/Snow warning and information distribution to citizens Objective IS.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Ice/Snow events. Objective IS.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Ice/Snow events
Pandemic Hazard Goal: Mitigate the impact of a Pandemic on the city of Shelby County	Objective PD.1: Improve the city of Shelby County's Pandemic/Vector warning and information distribution to citizens Objective PD.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Pandemic/Vector events. Objective PD.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Pandemic/Vector events
Wildfire Hazard Goal: Mitigate the impact of Wildfires on the city of Shelby County	Objective WF7.1: Improve the city of Shelby County's Wild-land Fire warning and information distribution to citizens Objective WF.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Wild-land Fire events Objective WF.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Wild-land Fire events
HAZMAT Hazard Goal: Mitigate the impact of HAZMAT events on the city of Shelby County	Objective HM.1: Improve the city of Shelby County's Hazardous Materials spill or release warning and information distribution to citizens Objective HM.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Hazardous Materials spill/release events Objective HM.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Hazardous Materials spill/release events

Table 7.10 Mitigation Goals and Objectives	
GOALS	**OBJECTIVES**
Illegal Drug Lab Hazard Goal: Mitigate the impact of Illegal Drug Laboratories the city of Shelby County	Objective ID.1: Improve the city of Shelby County's Illegal Drug Laboratories warning and information distribution to citizens Objective ID.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Illegal Drug Laboratories Objective ID.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Illegal Drug Laboratories existence
Terror Hazard Goal: Mitigate the impact of terrorist events on the city of Shelby County	Objective TR.1: Improve the city of Shelby County's Domestic/International Terrorism warning and information distribution to citizens Objective TR.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Domestic/International Terrorism events Objective TR.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Domestic/International Terrorism events
Urban Fire Hazard Goal: Mitigate the impact of Urban Fires on the city of Shelby County	Objective UF.1: Improve the city of Shelby County's Urban Fire warning and information distribution to citizens Objective UF.2: Improve the city of Shelby County's 1st responder capabilities to prepare for and respond to Urban Fire events Objective UF.3: Improve the city of Shelby County's capability to prepare for, respond to and recover from Urban Fire events

7.4.2 Local and State Goal Continuity

The State of Alabama Hazard Mitigation Plan establishes four goals:

- GOAL 1. Maintain and enhance the Alabama Division of Homeland Security and Emergency Management's capacity to continuously make Alabama less vulnerable to all hazards
- GOAL 2. Build and support local capacity and commitment to continuously become less vulnerable to natural hazards.
- GOAL 3. Improve coordination and communication with other relevant entities.
- GOAL 4. Increase public understanding, support, and demand for hazard mitigation.

The mitigation goals, objectives and actions of the Shelby County Multi-jurisdictional, All Hazards Mitigation Plan is completely congruent with the State goals.

7.4.3 Identification of Mitigation Actions

In formulating Shelby County's Mitigation Strategy, a wide range of actions were considered in order to help achieve countywide and jurisdiction goals and objectives. All actions considered by the Mitigation Steering Committee can be classified under one of the following six broad categories of mitigation techniques:

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include 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.
A. Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?

CRS Step 7. Review Possible Activities: Credit is based on a comprehensive evaluation of hazard mitigation measures reviewed in the plan. The review must include a description of why certain activities were recommended and why others were not.

FMA Requirement §78.5(d): Identification and evaluation of cost-effective and technically feasible mitigation actions considered.

Prevention activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are constructed. They are particularly effective in reducing a community's vulnerability, in areas where development is limited or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Hazard mapping
- Open space preservation
- Floodplain regulations
- Storm water management regulations
- Drainage system maintenance
- Capital improvements programming
- Shoreline/riverine/fault zone setbacks
- Site planning and landscape design

Property Protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., wind proofing, flood proofing, seismic design techniques, etc.)
- Safe rooms, shutters, shatter-resistant glass
- Insurance

Natural Resource Protection reduces the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation organizations often implement these protective measures. Examples include:

- Floodplain protection

- Watershed management
- Riparian buffers
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

Structural Mitigation Projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams/levees/dikes/floodwalls
- Diversions/detention/retention
- Channel modification
- Storm sewers

Emergency Services emergency service measures minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection

Public Education and Awareness are used to alert residents, elected officials, business owners, property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series/demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- Education programs for school children

7.4.4 Selection of Mitigation Actions

In order to determine the most appropriate mitigation techniques for Shelby County and its municipal jurisdictions, local government officials reviewed and considered the findings of the Capability Assessment and Risk Assessment. Other considerations included each mitigation action's effect on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary). The following table of alternative mitigation actions was the basis for developing the mitigation actions to insure that all profiled hazards have mitigation actins.

Table 7.11 Alternative Mitigation Actions

HAZARDS> Alternative Mitigation Actions that can affect the adjacent hazards	Drought	Earthquake	Extreme Temp	Flooding	Hail	High Winds	Ice/Snow	Landslides etc	Land Subsidence	Lightning	Wildfire	Hazmat	Illegal Meth Labs	Pandemic	Terrorism	Urban Fire
Building codes		X		X	X	X	X	X	X	X	X	X			X	X
Density regulations			X	X		X			X	X	X	X		X		X
Hazard Setback regulations				X				X	X		X	X			X	X
Development regulations	X	X		X		X	X	X	X	X	X	X				X
Wildfire fuel reduction	X										X					X
Hillside regulations		X					X	X								
Post Disaster ordinance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Setback regulations		X		X				X	X		X	X				
Special use permits	X	X	X	X			X	X	X		X	X	X	X	X	X
Storm water controls	X			X												
Comprehensive Plan	X	X		X		X	X	X	X	X	X	X	X	X	X	X
Zoning		X		X				X			X	X				X
Acquire in-hazard assets				X								X				
Facility hazard barriers				X											X	
Structure elevation				X												
Relocation of structures				X				X	X							
Structure retrofits		X		X		X	X	X	X	X	X	X			X	X
Dams monitoring		X		X			X	X	X						X	
Levee/seawall mgt		X		X		X	X	X	X							
Real estate disclosure				X		X		X	X		X	X				
Forest management	X			X		X				X	X			X		
Erosion controls				X												
Waterway management	X			X			X	X								
Landscape management	X		X	X	X	X	X	X	X		X				X	X
Wetlands regulations				X			X									
Vital facilities protection		X		X	X	X	X	X	X	X	X	X			X	X
COOP/COG Plan		X		X		X	X				X	X		X	X	X
National Incident Management Trng		X		X		X	X				X	X		X	X	X
Emergency Ops. Plan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hazard/threat recognition	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hazard warning systems	X	X	X	X	X	X	X		X	X	X	X		X	X	X
Health/safety information		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pre-disaster mitigation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Post disaster mitigation	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Safe rooms and shelters				X	X	X	X			X	X	X				X
Public education and Preparedness	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

7.4.5 Reducing Hazard Impact on New Buildings and Infrastructure

Some of the mitigation actions and projects included in this plan include:

- Adopting and/or enforcing comprehensive building codes
- Requiring emergency generator pigtails on new government and special needs structures
- Providing builders information on hazard areas and associated restrictions
- Restrictions on building structures in hazard areas
- Require new government critical facilities that may be identified terrorist targets to have built-in anti-terrorist systems.
- Developing and or enforcing a comprehensive land use plan.
- Encouraging new power lines to be buried to reduce power outages.
- Encouraging "right of way" maintenance programs for power lines and pipelines to remove burnable debris and trees that could create natural gas, oils and gas or power outages.
- Extend water lines and hydrants to combat fires.

7.4.6 Reducing Hazards Impact on Existing Buildings and Infrastructure

Some of the mitigation actions in this plan that reduce impact on existing buildings and infrastructure include:

- Potential buyout of structures in hazard areas.
- Elevating structures to reduce flood loss
- Retrofitting structures to reduce high wind loss
- Burying existing power lines to reduce outages
- Improving drainage capacity of canals and ditches
- Installing emergency generators on critical government and special needs structures
- Clearing "right of ways" of pubic utility power lines
- Installing anti-terrorist systems in identified terrorist targets

7.4.7 National Flood Insurance Program (NFIP) Compliance

Participation in the NFIP is based on an agreement between communities and FEMA. The NFIP has three basic aspects:

- Floodplain identification and mapping
- Floodplain management
- Flood insurance

Requirement: §201.6(c)(3)(ii): The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.
A. Does the new or updated plan describe each jurisdiction's participation in the NFIP?
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

CRS Step 8: Action Plan: CRS credits regulations that go above and beyond the minimum of the NFIP**.**

FMA Requirement §78.5(e): Presentation of the strategy for reducing flood risks and continued compliance with the NFIP, and procedures for ensuring implementation, reviewing progress, and recommending revisions to the plan.

First, NFIP participation requires community adoption of flood maps. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed to administer floodplain management programs and to actuarially rate new construction for flood insurance. Second, to be a participant, the NFIP requires communities to adopt and enforce minimum floodplain management regulations that help mitigate the effects of flooding on new and improved structures. Third, community participation in the NFIP enables property owners to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

7.4.8 Analyzing and Prioritizing NFIP Compliance Actions

All Local Mitigation Plans approved by FEMA after October 1, 2008 must describe each jurisdiction's participation in the NFIP. All participating jurisdictions participate in the NFIP, have adopted a flood management plan and completed mapping of Flood Plaines

Basic compliance NFIP actions could include, but are not limited to:

1 - Adoption and enforcement of floodplain management requirements, including regulating all and substantially improved construction in Special Flood Hazard Areas (SFHAs)

2 - Floodplain identification and mapping, including any local requests for map updates, if needed

3 - Description of community assistance and monitoring activities.

The following prioritized actions are included in the jurisdictions Mitigation Action Plans

- Obtain and maintain NFIP FIRMS to identify jurisdiction flood prone areas.
- Use HAZUS-MH to develop a database of NFIP and other structures in 100/500-year flood plains.
- Adopt/enforce an NFIP flood plain management plan.
- Join/continue to participate in the National Flood Insurance Program (NFIP).
- Achieve/maintain participation in the NFIP Community Rating System.
- Educate builders, developers and the public on the National Flood Insurance Program (NFIP).

- Educate developers, builders and the public on the location of NFIP designated flood prone areas.
- Adopt/enforce floodplain legislation to require structures built to be elevated above the NFIP BSE.
- Obtain funding to relocate NFIP repetitive flooding structures in flood prone areas.
- Obtain funding to retrofit NFIP repetitive flooding structures in flood prone areas.
- Participate in FEMA's Cooperating Technical Partners Program (CTP) that supports NFIP.

7.4.9 Analyzing and Prioritizing Mitigation Actions

Requirement: §201.6(c)(3)(iii): The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) 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.
Does the new or updated mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?
Does the new or updated mitigation strategy address how the actions will be implemented and administered? (For example, does the action plan identify the responsible department, existing and potential resources, and timeframe?
Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?
D. Does the updated plan identify the completed, deleted or deferred actions from the previously approved mitigation plan?

CRS Step 8: Action Plan: Credit is based on an action plan that identifies who does what, when it will be done, and how it will be financed. The actions must benefits of the proposed projects and their associated costs.

FMA Requirement §78.5(d): Identification and evaluation of cost-effective and technically feasible mitigation actions considered

FEMA guidance for meeting planning requirements of the DMAK2 specifies that governments prioritize their mitigation actions based on the level of risk a hazard poses to the lives and property of a given jurisdiction. In response to this requirement, the Shelby County Mitigation Steering Committee completed a Mitigation Technique Matrix to make certain they addressed, at a minimum, those hazards posing the greatest threat. The matrix provides the committee with the opportunity to cross-reference each of the priority hazards with the comprehensive range of available mitigation techniques, including prevention; property protection; natural resource protection; structural projects; emergency services; and public education and awareness.

Despite the diligence of the Mitigation Committee in completing the STAPLEE Criteria form, scores for many goal actions were identical, and provided little help in assigning priority. This process did allow the committee a thorough dissection of each action.

Regardless of numerical priority ranking, early implementation dates are assigned to those actions needed to serve as a foundation upon which to build other actions. Also assigned early implementation dates are those actions leading to maintaining eligibility for current grant funding, as well as those which will promote acquisition of new funding sources.

Table 7.12 Shelby County Mitigation Technique Matrix					
	Mitigation Technique	Flooding	High Winds	Urban Fires	Hazardous Materials
1	Prevention	Y	Y	Y	Y
2	Property Protection	Y	Y	Y	Y
3	Natural Resource Protection	Y	Y	Y	Y
4	Structural Mitigation Projects	Y	Y	Y	Y
5	Emergency Services	Y	Y	Y	Y
6	Public Education/Awareness	Y	Y	Y	Y

Each participating jurisdiction prioritized its selected mitigation items individually. The "STAPLEE" evaluation and prioritization is included in each individual MAP in the appendices. A weighting factor of 3 is used for loss of life and a weighting factor of 1 through nine is used for Economic impact of the hazard event. A weighting factor of 2 is used for cost/benefit items.

Table 7.13 STAPLEE Mitigation Action Priority Process			
Issue	1	2	3
Social Community Acceptance	Potential objection from public and/or very expensive	Unknown if objectionable, or costs may be significant	Not objectionable and low/no costs
Effect on saving lives	Life saving impact is negligible	Life saving impact is moderate	Life saving impact is significant
Effect on reducing property loss	Effect on reducing property loss is negligible	Effect on reducing property loss is moderate	Effect on reducing property loss is significant
Effect on reducing economic loss	Effect on reducing economic loss is negligible	Effect on reducing economic loss is moderate	Effect on reducing economic loss is significant
Technical Technical Feasibility	Technology not currently existing	Emerging or untested technology or unknown	Technology readily available
Long-Term Solution	No, is not effective in helping reduce losses in the long term	Potentially or unknown	Yes, is effective in helping reduce losses in the long term
Secondary Impacts	Yes, likely to create secondary problems	Potentially or unknown	No, unlikely to create secondary problems
Administrative Staffing	Need to hire a permanent employee(s)	Potentially need to hire a temporary employee(s) or unknown.	Do not have to hire
Funding Potential	No obvious source of funding available and action has significant cost impact	Limited or unknown funding available	Little or no funding required or funding can be readily obtained
Maintenance/Operations	The action is likely to require high level of ongoing maintenance	Unknown or action has the potential for moderate ongoing maintenance	Action requires limited or no ongoing maintenance
Political Political Support	Local Elected Official likely to be contentious	Local Elected Official may be controversial	Local Elected Official likely to be supportive
Local Champion	Unlikely there is a Local Elected Official to support	Uncertain if there is a Local Elected Official to champion	A Local Elected Official is likely to support and champion
Public Support	Public Political support is unlikely	Public Political support is uncertain	Public Political support is likely

Table 7.13 STAPLEE Mitigation Action Priority Process			
Issue	**1**	**2**	**3**
Legal State Authority Exists	No legal state authority exists	Legal state authority is unclear, uncertain or adoption is in progress	Legal state authority exists
Local Authority Exists	No legal authority exists	Legal authority is unclear, uncertain or adoption is in progress	Legal authority exists
Potential Legal Challenge	High likelihood of legal challenge by stakeholders	Moderate likelihood of legal challenge by stakeholders	Low likelihood of legal challenge by stakeholders
Economic Action Benefit	Low benefit to the jurisdiction from the action	Moderate benefit to the jurisdiction from the action	High benefit to the jurisdiction from the action
Action Cost	High cost to implement action	Moderate cost to implement action	Low cost to implement action
Economic Contribution	Low contribution to other community economic goals	Moderate contribution to other community economic goals	High contribution to other community economic goals
Outside Funding Required	Likely for action to be delayed pending outside sources of funding	Possible for action to be delayed pending outside sources of funding	Unlikely for action to be delayed pending outside sources of funding
Environmental Land/Water Effect	High likelihood of negative consequences to land/water	Moderate likelihood of negative consequences to land/water	Low likelihood of negative consequences to land/water
Endangered Species Effect	High likelihood of potential negative consequences to endangered species	Moderate likelihood of negative consequences to endangered species	Low likelihood of negative consequences to endangered species
Hazmat Waste Site affect	High likelihood of potential affect on hazardous materials and waste sites	Moderate likelihood of affect on hazardous materials and waste sites	Low likelihood of affect on hazardous materials and waste sites
Environmental Effect	No, project is not consistent with jurisdiction environmental goals	Possible, project is consistent with jurisdiction environmental goals	Yes, project is consistent with jurisdiction environmental goals
Federal Law Compliant	No	Uncertain	Yes
Prioritizing mitigation actions for each jurisdiction was based on the "STAPLEE" process. "STAPLEE" uses multiple factors under the categories of Social, Technical, Administration, Legal, Economic and Environment			

The Table prioritizing Shelby County mitigation actions is at the end of this section and the prioritization of Individual jurisdictions mitigation actions is included in the Individual Mitigation Action Plans in the IMAP Annex.

7.4.10 Mitigation Actions Implementation

The success of this Plan hinges on two major action items;

1. Emergency Management staff must pursue all grant opportunities to assist with funding of mitigation actions. Staff must receive necessary grant writing training and evaluation of grant criteria. Without grant funding, Shelby County cannot afford to begin many of the more expensive mitigation actions described in this plan.
2. Shelby County Emergency Management is tasked with Plan oversight, to include project tracking, progress reports, and reconvening the Steering Committee as needed for Plan review and revision

It was the intent of the committee to establish realistic, attainable actions that can be implemented within the present fiscal capabilities of the participating jurisdictions and accepted by the citizens of the county. All members of the Planning Committee agreed that starting with small steps, accomplishing the stated goals, and publicizing the success of the county's mitigation efforts will open the community to accept larger, more costly, projects in the future. Specific mitigation actions were identified to prevent future losses; however, current funding is not identified for all of these actions at present. The County has limited resources to take on new responsibilities or projects. The implementation of these mitigation actions is dependent on the approval of the local elected governing body and the ability of the community to obtain funding from local or outside sources. Where such actions are high priorities, the community will work with AEMA, FEMA and other Federal, State and County agencies to secure funds.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date has been assigned in order to assess whether actions are being implemented in a timely fashion.

Many of the actions are interrelated (e.g. providing various categories of preparedness and awareness information to citizens at community events); these will be accomplished under a single, ongoing project. Many of the actions can be accomplished within existing department budgets, costing only the time of employees already on staff. While "time is money" and hours have been estimated in dollars for each action item, there will be no requirement for additional funds to be budgeted to accomplish many of the action items. In general, mitigation actions ranked as high priorities will be addressed first. However, medium or even low priority mitigation actions will be considered for concurrent implementation. Therefore, the ranking levels should be considered as a first-cut, preliminary ranking and will evolve based on input from the County departments and representatives, the public, AEMA, and FEMA as the Plan is implemented.

7.4.11 Mitigation Action Benefit/Cost Review

Section 201.6.c.3iii of 44CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost/benefit review of the proposed projects and their associated costs. The County utilized the economic criteria in the following "STAPLEE" evaluation. This benefit/cost review is qualitative; that is, it does not include the level of detail required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. This qualitative approach was used because projects may not be implemented for up to 10 years, and the associated costs and benefits could change dramatically in that time. Each project was assessed by assigning the subjective ratings (high, medium, and low) to its costs as described in the Economic "STAPLEE" section.

7.4.12 Previously Implemented Mitigation Measures

The success of future mitigation efforts in a community can be gauged to some extent by its ongoing or past efforts. Previously implemented mitigation measures indicate that there is, or has been, a desire to reduce the effects of natural hazards, and the success of these projects can be influential in building local government support for new mitigation efforts. Shelby County's previous mitigation efforts and programs include the following:

- Each jurisdiction in Shelby County supports a public works department and many provide water and wastewater treatment facilities.

- All Fire Departments provide EMT's emergency medical service throughout the county.
- Law enforcement is provided for each municipality, either by the municipal law enforcement agencies, or by the Shelby County Sheriffs Office.
- Fire Protection and fire medical / rescue services are provided for each municipality by fire departments, with either all paid, a combination of paid and volunteer, or all volunteer firefighters.
- Shelby County and the municipalities within, participate in the National Flood Insurance Program.
- Alabama health officials helped to develop a mass clinic plan. Shelby County Health Department's plan was tested during an August 2004 Strategic National Stockpile drill and subsequently was revised to address problems found during that exercise.
- Shelby County is responsible for planning a mass vaccination process should this be necessary due to contagious disease outbreak. Locations for mass dispensing sites have been identified, and a process for administering medicines is being refined and tested.
- Practice exercises are conducted between AEMA, NWS, FBI, Shelby County Emergency Medical Services, city first responders and Shelby County Emergency Management to assure preparedness.
- All facilities involved with hazardous materials provide annual TIER II reports.
- Cities throughout Shelby County continue to add outdoor warning sirens to improve warning effectiveness, and to maintain existing sirens to insure proper operation.
- The American Red Cross has multiple designated emergency shelters.
- Shelby County is part of the North Metro Drug Task Force, which is active in Methamphetamine and other drug enforcement, effectively reducing the number of clandestine labs in the county.
- Multiple Shelby County communities have been active in the Firewise program, which works with the state Department of Natural Resources to remove potential fuel sources that may be involved in wild land fires. This mitigation effort limits the spread of wild land fires, and helps to protect homes.
- Shelby County participates in the Joint Terrorism Task Force.

The mitigation actions identified in the previous plan have been extensively reviewed. The effectiveness of the actions implemented is documented in this section. The actions not implemented are either carried forward to the updated plan or have been eliminated as not feasible or no longer an effective action.

Table 7.14 Previous Mitigation Action Review		
Action and Description	**Status**	**Mitigation Effectiveness**
1.1.1 Maintain up-to-date comprehensive plans for all municipalities.	In Progress	Medium
1.1.2 Integrate the findings and recommendations of this plan into the comprehensive plan updates for Shelby County, Alabaster, Calera, Chelsea, Columbiana, Harpersville, Helena, Indian Springs, Montevallo, and Pelham.	In Progress, as plans are updated	Medium
1.1.3 Review and amend existing planning documents to be certain the vulnerability and environmental suitability of lands for future development are clearly addressed; local plans should address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.	In Progress	Medium
1.2.1 Maintain risk assessment data in GIS, including flood zones, tornado tracks, sinkhole threat areas, disaster events, and a comprehensive inventory of critical facilities within all jurisdictions.	In Progress	High
1.2.2 Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	In Progress	
1.3.1 Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.	In Progress	High
1.3.2 Perform a detailed feasibility study of the Stratford Place and Saddle Run subdivisions in Pelham to determine flooding causes and feasible solutions and funding alternatives.	Completed	
1.4.1 Consider large lot size restrictions on flood-prone areas designated on Flood Insurance Rate Maps.	Completed	Medium
1.4.2 Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.	Completed	Medium
1.5.1 Train local flood plain managers through programs offered through the State Flood Plain Manager and FEMA's training center in Emmitsburg, Maryland.	In Progress	Medium
1.5.2 Maintain a library of technical assistance and guidance materials to support the local flood plain manager.	Complete	Medium
1.5.3 Obtain membership for local flood plain managers in the Association of State Flood Plain Managers.	In Progress	Medium
1.5.4 Evaluate the effectiveness of higher regulatory standards, such as additional building elevation and limitation of fill within flood plains, to be included in local flood plain management regulations.	In Progress	Medium
1.5.5 Enact flood hazard prevention ordinances and establish Chelsea, Columbiana, Harpersville, and Wilton as regular members of the NFIP.	In Progress	High
1.6.1 Evaluate building code standards for roof construction to assure protection against wind damage from hurricanes, tornadoes, and windstorms; require installation of hurricane clips.	In progress	High
1.6.2 Consider technical codes to require assessments in areas of quarries or where water systems have high-capacity wells.	In progress	Medium
1.7.1 Enact local ordinances to require community storm shelters within sizeable mobile home parks and subdivisions.	Delayed	

Table 7.14 Previous Mitigation Action Review		
Action and Description	**Status**	**Mitigation Effectiveness**
1.7.2 Require the construction of safe rooms within new public buildings, such as schools, libraries, community centers, and other public buildings where feasible.	Delayed	
1.7.3 Continue program to subsidize safe room construction in existing homes.	In Progress	High
1.7.4 Construct freestanding public safe rooms in vulnerable locations.	In Progress	
1.8.1 Apply for and maintain membership in the CRS Program.		Medium
2.1.1 Provide technical assistance to owners of pre-FIRM buildings to advise on available retrofits to protect against flood damage.	In Progress	Medium
2.1.2 Seek funding sources, such as Community Development Block Grant funds, to assist low income home owners with building retrofits to protect against flooding	Delayed	
2.2.1 Promote the purchase of insurance coverage for flooding and sinkhole damages in high-risk areas by property owners and renters.	In Progress	Low
3.1.1 Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through trade publications and media announcements.	In Progress	Medium
3.2.1 Establish an annual Severe Weather Awareness Day	In Progress	
3.4.1 Obtain free publications from FEMA, NWS, USGS, and other federal and state agencies and deposit these materials with local libraries.	In Progress	Medium
3.4.2 Maintain local library repositories with the latest available publications.	In Progress	Medium
3.5.1 Distribute hazard mitigation brochures to area schools for student distribution.	In Progress	Medium
4.1.1 Investigate the feasibility of a land trust to acquire open space, purchase easements, and accept donations of lands within environmentally significant and vulnerable locations.	Completed Unworkable at this time	
4.2.1 Enact and enforce dumping regulations.	In Progress	Low
4.2.2 Enact and enforce erosion and sedimentation control regulations.	In Progress	
4.3.1 Seek technical assistance through the Alabama Cooperative Extension System with Best Management Practices (BMP) for channel/drainage system maintenance.	In Progress	
5.1.1 Install new outdoor warning systems.	In Progress	High
5.1.2 Install a rapid notification telephone system.	Delayed	
5.2.1 Support the Alabama Skywarn Foundation efforts to distribute weather radios to low income households, especially in rural areas outside of siren coverage areas.	In Progress	High
5.2.2 Promote the use of weather radios in households and businesses.	In Progress	High
6.1.1 Prepare/implement operating procedures for drainage system maintenance.	In Progress	High

State mitigation efforts and programs that are significant to Shelby County include the following:

State of Alabama Pipeline Safety Plan: The state of Alabama, along with gas and oil pipeline providers, maintains a pipeline safety plan. Pipeline providers are required to schedule meetings with local officials to facilitate discussions about mitigation and response to pipeline disasters.

The State Emergency Response Commission is responsible for implementing federal Emergency Planning and Community Right-to-Know Act (EPCRA) provisions in Alabama and serving as a technical advisor and information clearinghouse for state and federal hazardous materials programs. The Alabama Homeland Security and Emergency Management Agency is the lead agency responsible for implementing EPCRA.

Alabama Emergency Operations Plan (EOP): The Alabama Emergency Operations Plan is the document that provides the foundation for all disaster and emergency response operations conducted within the state of Alabama. Alabama state law requires AEMA to develop this plan and update it on a periodic basis.

AEMA Regional Offices: The regional office serves as the primary day-to-day point of contact with local governments and the citizens of the state. A Regional Program Coordinator heads each office. The Area Coordinators travel to local Emergency Management offices to help coordinate planning and preparedness activities, ensure that federally assisted counties are complying with grant requirements, and provide training to emergency responders. The RPC also serves as the agency's conduit to state assistance to major emergencies. An RPC responds to any major emergency, emergencies involving multiple state agencies, hazardous materials, multiple fatalities, and other events upon the request of local officials.

Each county in Alabama has its own Local Emergency Management Director that serve at the direction of the respective County Boards. Because disasters occur at the local government level, the Local Director is the key to comprehensive community emergency management. Some local Emergency Management programs receive federal funding assistance through AEMA. Such programs must meet minimum mutually agreed upon criteria.

The Domestic Preparedness Program is a partnership of federal, state and local agencies with the goal of insuring that, as a nation, we are prepared to respond to a terrorist attack involving nuclear, biological or chemical weapons - weapons of mass destruction (WMD). Today, the term "Homeland Security" is used to denote the concept of preparing for these kinds of events.

7.4.13 Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
A. Does the **new or updated** plan include identifiable **action items** for each jurisdiction requesting FEMA approval of the plan?

CRS Step 8: Draft an Action Plan: For CRS credit, when a multi-jurisdictional plan is prepared, it must have action items from at least two of the six categories that directly benefit each community seeking CRS credit.

FMA FEMA 299 Guidance: The Plan should be coordinated with, and ideally developed in cooperation with, all of the local jurisdictions within the geographical area.

The Mitigation Actions proposed by each of Shelby County's local governing bodies participating under this Plan are in the Individual Mitigation Action Plans (MAP's) Annex. Each MAP has been designed to address the jurisdiction description, capabilities and the multi-jurisdictional goals, objectives and actions of the overall Hazard Mitigation Plan. Some Action items in the below table and the Individual Mitigation Action Plans address specific hazards, others are general action items that address multiple hazards. In any event within the action items detailed in the mitigation actions tables are;

1. Actions that address both current and future buildings (i.e. building codes)
2. Action that address current and future infrastructure
3. Actions that address each profiled hazard (minimum of 2)
4. Actions for each participating jurisdiction (minimum of 2)

The cohesive collection of actions listed in each jurisdiction's Mitigation Action Plan also can serve as an easily understood menu of mitigation policies and projects for local decision-makers who want to quickly review their jurisdiction's respective element of the countywide Plan. In preparing the individual MAP's, each jurisdiction considered their overall hazard risk and capability to mitigate identified hazards as recorded through the risk and capability assessment process and to meet the countywide mitigation goals and the unique needs of their community.

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.

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
HW2a	Hurricane watch and warning procedures are in place to alert 1st responders and the public	NWS EMA	Existing	5,000 100,000	On Going	90
AH1f	Assist schools and special needs facilities to develop disaster preparedness/response plans.	EMA Local Govt	Existing	5,000 100,000	On going	88
HW1b	Educate the public on High Wind weather preparedness, response and recovery	EMA	Existing	5,000 100,000	On Going	87
HW1c	Educate and distribute High Wind preparedness information	EMA	Grant Local Funds	1,000 50,000	On Going	87
HW1e	Insure NWS Hurricane watches and warnings are monitored by Emergency Management	EMA	Existing	5,000 100,000	On Going	87
HW1c	Educate the special needs and education populations on High Wind preparedness and response	EMA	Existing	5,000 100,000	On Going	86
HW3d	Insure county EMA participates in High Wind planning as a potential reception area for evacuees.	EMA ARC DHR	Existing	5,000 100,000	On Going	86
AH1e	Distribute safe room/shelter in place information to schools, special needs and the public	BOE EMA DHR ARC	Existing	5,000 100,000	On going	84
AH1i	Develop/maintain a public information web site on hazard preparedness and response	IT Services EMA	Existing	5,000 100,000	On Going	83
AH3x	Develop a community shelter program for mobile home parks	Local Govt County Govt. EMA	Grant Local Funds	10,000 100,000	2010 2011	83
FL3e	Develop a program to inspect and maintain natural drainage channels to clear beaver dams and debris; Co Rd 26,81, 61, 24, 86, 43 & 77)	County Engineer Devel Services	Grant Local Funds	75,000 300,000	On Going	83
UF1a	Educate school, special needs and the community populations on fire safety and response	BOE Fire Service EMA	Existing	5,000 100,000	On Going	83
UF1b	Educate school, special needs and the community population on fire extinguisher use	BOE Fire Service	Existing	5,000 100,000	On Going	83
UF1c	Assist fire departments in obtaining fire prevention program materials	EMA	Existing	5,000 100,000	On Going	83
AH1h	Develop a media warning program to warn the public of hazard event	EMA	Existing	5,000 100,000	On going	82

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
AH3v	Require critical sites to develop and provide to EMA an emergency plan	LEPC EMA	Existing	5,000 100,000	On Going	82
FL1a	Distribute flood awareness and preparedness literature at events	EMA ARC LEPC	Existing	5,000 100,000	On Going	82
FL2a	Obtain PPE for all personnel responding to flood events	EMA	Grant Local Funds	100,000 300,000	2011 2012	82
FL3k	Obtain/install/maintain/monitor rainfall and stream gauges to predict local flooding	County Engineer USDA	Grant Local Funds	100,000 300,000	2011 2012	82
TR1b	Educate schools, special needs and government officials on procedures for handling suspicious mail	EMA BOE, Law Enforcement	Existing	5,000 100,000	On Going	82
UF3d	Develop fire plans for all major businesses and critical facilities	Local Govt	Existing	5,000 100,000	On Going	82
AH3r	Participate in NFIP's Cooperating Technical Partners Program (CTP)	County Govt Local Govt	Existing	5,000 100,000	On Going	81
HM1b	Educate the public on common hazardous materials in home	Fire Services EMA	Existing	5,000 100,000	On Going	81
HM1d	Educate schools, special needs and local population on hazmat evacuation	BOE EMA	Existing	5,000 100,000	On Going	81
HW3a	Adopt/enforce comprehensive Building Code legislation	County Govt Local Govt	Existing	5,000 100,000	On Going	81
AH3i2	Coordinate a shelter program for the Red Cross and volunteers	ARC EMA DHR	Existing	5,000 100,000	On Going	80
AH3l	Assist schools in implementing an emergency phone line	BOE EMA	Grant Local Funds	100,000 300,000	2010 2011	80
HM1c	Educate schools special needs, and community populations on chemical hazards in the area.	BOE EMA	Existing	5,000 100,000	On Going	80
PD2e	Exercise response to a pandemic event in conjunction with the medical community	ADPH EMA	Grant Health Grants	25,000 150,000	2010 2011	80
PD3a	Participate in the national Pandemic surveillance program	ADPH EMA	Existing	5,000 100,000	On Going	80
UF3g	Enforce legislation that fire extinguishers are clearly marked, available and regularly tested	County Govt Local Govt	Existing	5,000,000 9,000,000	On Going	80
AH3a	Adopt the National Incident Management System (NIMS)	County Govt Local Govt	Existing	5,000 100,000	2009 2010	79
AH3b	Obtain and continually update 911 technology and capabilities	911, EMA	Grant Local Funds	50,000 200,000	On Going	79
AH3j	Maintain a supplier list of food, medicines, water and fuel vendors	ARC EMA	Existing	5,000 100,000	On Going	79
AH3n	Ensure that utility restoration plans and mitigation efforts are in place with the various electric utilities.	EMA	Local funds	5,000 100,000	2009 2010	79
AH3u	Ensure that all mutual aid shelter, response, mass casualty and recovery agreements are current	DHR ADPH ARC EMA Coroner	Existing	5,000 100,000	On Going	79
AH3y	Insure building code compliance Inspections are conducted on construction projects	Local Govt Co Govt. EMA	Existing	5,000 100,000	On Going	79

Table 7.15 Shelby County Mitigation Actions						
Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
FL3a	Participate in the National Flood Insurance Program (NFIP)	County Govt Local Govt	Existing	5,000 100,000	On Going	79
FL3h	Request a study of the feasibility of flood control measures along the Cahaba and Coosa Rivers.	Corp of Engineer County Govt Develop Services	Grant Local Funds	5,000 100,000	2010 2011	79
IL1a	Educate school and local populations on Meth Lab awareness	BOE Law Enforcement	Grant Local Funds	5,000 100,000	On Going	79
TR1a	Educate schools, special needs and the community population on recognizing potential terrorist events	EMA BOE, aw Enforcement	Existing	5,000 100,000	On Going	79
TR1c	Distribute terrorism awareness information to the public	EMA, Law Enforcement	Existing	5,000 100,000	On Going	79
TR1d	Educate school, special needs, officials and the local population on terrorism preparedness info.	BOE EMA, Law Enforcement	Existing	5,000 100,000	On Going	79
TR1e	Post terrorism and bomb identification information in buildings and schools	BOE EMA, Law Enforcement	Existing	5,000 100,000	On Going	79
TR1f	Identify/distribute to appropriate officials potential terrorism targets information	Law Enforcement EMA	Existing	5,000 100,000	On Going	79
TR2a	Train terror response agencies on terrorist potential and county potential terrorism targets.	Law Enforcement EMA	Grant Local Funds	20,000 100,000	2010 2011	79
UF2c	Obtain/maintain fire fighting supplies at all fire departments	Local Govt EMA	Grant Local Funds	500,000 1,000,000	On Going	79
AH1b	Schedule regular maintenance and testing of hazard warning units (Monthly Testing)	EMA 911	Existing	5,000 100,000	On Going	78
AH3w	Obtain/maintain a grant writing position for the county jurisdictions	County Govt Local Govt. EMA	Grant Local Funds	50,000 150,000	2010 2011	78
FL3h	Educate developers on Watershed, Floodplain and wetland development restrictions	County Govt Local Govt	Existing	5,000 100,000	On Going	78
HM1g	Establish school hazard materials environmental impact programs	BOE EMA	Existing	5,000 100,000	On Going	78
HM2c	Develop/maintain hazmat Response Plan and SOG's for 1st responders	LEPC EMA Fire Svcs, Police Depts	Grant Local Funds	25,000 100,000	On Going	78
IL3a	Join/participate in local state and federal drug task forces	Law Enforcement	Grant Local Funds	500,000 1,000,000	On Going	78
PD1c	Develop/distribute Pandemic preparedness information to limited English speaking residents	ADPH EMA	Existing	5,000 100,000	On Going	78
PD3k	Assist in developing procedures to prevent an outbreak of agriculture related hazards	USDA Co Exten Svc ADPH EMA	Existing	5,000 100,000	On Going	78
TR3e	Support State Homeland Security strategies to counter terrorism	County Govt Local Govt	Existing	5,000 100,000	On Going	78
TR3e1	Join and/or continue to participate in the Joint Terrorism Task Force.	1st Responders EMA	Existing	5,000 100,000	On Going	78
TR3k	Work with schools to develop terrorism preparedness and response plans	BOE EMA	Existing	5,000 100,000	On Going	78

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
TR3l	Assist Medical Health entities in developing CBRNE response plans	EMA ADPH	Existing	5,000 100,000	On Going	78
TR3m	Assist special needs facilities to implement a security system	ADPH DHR EMA	Existing	5,000 100,000	On Going	78
TR3o	Develop evacuation plans for identified terrorism targets (Government facilities, critical facilities, etc)	EMA 1st Responders	Existing	5,000 100,000	On Going	78
AH1g	Obtain/install an automated wide area rapid notification system.	County Govt Local Govt	Grant Local Funds	200,000 500,000	2012 2013	77
HM3b	Maintain and annually update an inventory of hazmat sites.	EMA LEPC	Grant Local Funds	5,000 100,000	On Going	77
HM3i	Enforce S.A.R.A. Title III and Tier II company reporting of hazardous chemicals.	EMA LEPC Local Govt	Existing	5,000 100,000	On Going	77
HW3g	Adopt/enforce mobile home tie down and skirting legislation	County Govt Local Govt	Existing	5,000 100,000	On Going	77
PD1e	Assist schools in developing an infectious disease surveillance program	ADPH BOE EMA	Existing	5,000 100,000	On Going	77
UF3c	Assist fire inspections to be regularly conducted at businesses and industry	Local Govt	Existing	5,000 100,000	On Going	77
WF1b	Educate businesses and the public on the causes of wild land fires	AFC EMA	Existing	5,000 100,000	On Going	77
WF1f	Publish outdoor burn ban info in area newspapers during Wild-land fire seasons.	AFC EMA	Existing	5,000 100,000	On Going	77
AH2c	Train 1st responders in search and rescue techniques	Local Entity SCSO EMA	Grant Local Funds	20,000 200,000	On Going	76
AH3o	Assist all businesses, schools, special needs and government facilities to post evacuation routes	BOE EMA County Govt Local Govt	Existing	5,000 100,000	On Going	76
AH3p	Develop/implement/maintain the jurisdictions Mitigation Action Plan	EMA Local Entities	Grant Local Funds	40,000 100,000	On Going	76
AH3s2	Assist jurisdictions to develop strategies to prevent loss of public records	County Govt Local Govt EMA	Existing	5,000 100,000	On Going	76
AH3t	Annually review and update hazard related legislation	LEPC EMA	Existing	5,000 100,000	On Going	76
HM3h	Maintain a current list of Hazardous Materials spill clean up companies available to the county	EMA LEPC	Existing	5,000 100,000	On Going	76
HW2c	Train 1st responders to respond to High Wind events	EMA	Existing	15,000 100,000	On Going	76
IL3b	Maintain/publicize a hotline to report suspected meth labs	IT Law Enforcement	Existing	5,000 100,000	On Going	76
PD1a	Educate the public on preparedness and self care for a Pandemic event	Public Health EMA BOE	Cnty Budget BOE Budget	5,000 100,000	On Going	76
PD3i	Maintain contact with state and federal agencies regarding biological and disease threats.	ADPH EMA	Existing	5,000 100,000	On Going	76
UF3b	Ensure that fire codes are rigidly enforced with citations issued for violations.	Local Govt	Existing	5,000 100,000	On Going	76

Table 7.15 Shelby County Mitigation Actions						
Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
FL3d	Participate in the NFIP Community Rating System	County Govt Local Govt Co Engineer	Existing	5,000 100,000	On Going	75
HM3h	Enforce pre-planning requirements for Extremely Hazardous Substances (EHS)	County Govt Local Govt EMA LEPC	Existing	5,000 100,000	On Going	75
PD2c	Develop a list of 1st responders for early infectious disease vaccination	ADPH EMA	Existing	5,000 100,000	On Going	75
PD3l	Develop a pandemic response plan and EOP annex's	EMA ADPH	Grant Local Funds	10,000 100,000	On Going	75
AH2b	Evaluate/maintain 1st responders emergency kits annually	Local Entity EMA	Local Funds	5,000 100,000	2009 2010	74
AH2g	Train 1st responders and officials on the National Incident Management System (NIMS)	Local Entity EMA	Grant Local Funds	10,000 100,000	On going	74
AH2h	Train 1st responders and officials in Emergency Operations Center Ops and the EOP	EMA	Grant Local Funds	10,000 100,000	On Going	74
AH2i	Train 1st responders/officials in performing damage assessments.	EMA	Existing	15,000 100,000	On Going	74
AH3h	Develop EOP ESF's/annexes for all hazards that may impact the jurisdiction	EMA LEPC	Grant Local Funds	25,000 100,000	On Going	74
AH3h1	Review/revise the county Emergency Operations Plan annually and after each disaster	EMA LEPC	Local Funds	5,000 50,000	On Going	74
AH3k	Obtain disaster supply kits for schools/special needs facilities	EMA BOE	Grant Local Funds	50,000 200,000	On Going	74
FL3l	Identify alternative access points for single access neighborhoods	County Engineer	Grant Local Funds	25,000 100,000	On Going	74
FL3m	Acquire signage to indicate water depth at flooding points	County Engineer	Grant Local Funds	50,000 150,000	2011 2012	74
HW1a	Obtain NOAA weather radios for schools, government and special needs facilities	County Govt Local Govt EMA	Grant Local Funds	30,000 150,000	2011 2013	74
HW2b	Obtain 1st responder PPE and supplies for High Wind response	EMA	Grant Local Funds	50,000 200,000	2010 2011	74
HW3d	Develop a debris clearance program that can be utilized countywide Update plan annually	County Govt Local Govt EMA	Grant Local Funds	20,000 100,000	2010 2011	74
HW3h	Adopt/enforce legislation to control construction standards of mobile homes moved into the county.	County Govt Local Govt	Existing	5,000 100,000	On Going	74
HW3h	Adopt/enforce legislation for mobile home parks to install ground anchors	County Govt Local Govt	Existing	5,000 100,000	On Going	74
PD1b	Educate schools, special needs and local population on preparing for a pandemic	ADPH EMA	Existing	5,000 100,000	On Going	74
UF2a	Obtain fire PPE for all personnel responding to fire incidents	EMA Local Govt	Grant Local Funds	500,000 1,000,000	On Going	74
UF2d	Train all fire responders in fire combat techniques annually	Local Govt	Grant Local Funds	50,000 150,000	On Going	74
UF3a	Ensure that NFPA standards and codes are followed.	Local Govt	Existing	5,000 100,000	On Going	74

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
UF3j	Adopt/enforce legislation to restrict the disposal of flammable liquids and other hazardous materials	County Govt Local Govt	Existing	5,000 100,000	On Going	74
WF1c	Educate school populations on causes of, preparedness for and response to a wild-land fire	AFC EMA	Existing	5,000 100,000	On Going	74
WF1d	Develop a plan to distribute wildfire awareness and prevention information	AFC EMA	Grant Local Funds	5,000 100,000	2010 2011	74
WF1e	Work with the DNR to distribute USFS fuels reduction information (Firewise.)	DNR, EMA, Fire Dept's	Local funds	5,000 100,000	Ongoing	74
WF3g	Maintain contact with the Forestry office that issues daily "fire potential" reports	EMA	Existing	5,000 100,000	On Going	74
AH1d	Obtain backup power systems for audible warning devices	EMA Local Govt VFD	Grant Local Funds	250,000 780,000	2010 2012	73
AH2a	Obtain/distribute interoperable radios for all 1st responders	EMA Fire Svc Law Enforcement	Grant Local Funds	100,000 300,000	2009 2010	73
AH2e	Train 1st responders on responding to mass casualty events	EMA ADPH	Grant Local Funds	20,000 200,000	On Going	73
FL3a5	Obtain and maintain NFIP FIRMS to identify jurisdiction flood prone areas	County Govt Local Govt Devel Svcs	Existing	5,000 100,000	On Going	73
HM2d	Fund hazmat response training for all 1st responders	EMA Local Govt FD's PD's SCSO	Grant Local Funds	25,000 100,000	2010 2011	73
HW2d	Exercise a High Wind event with 1st responders at least annually (Tornado)	EMA	Grant Local Funds	10,000 100,000	On Going	73
IL3c	Require businesses to refuse large quantity sales of precursors	County Govt Local Govt	Existing	5,000 100,000	On Going	73
IS3d	Assist jurisdictions to establish snow and ice removal methods	County Govt Local Govt	Existing	5,000 100,000	On Going	73
PD2f	Train 1st responders on agriculture and vector disease and infection response	USDA County Extension Svcs ADPH	Federal Grants	50,000 200,000	2009 2010	73
PD3h	Adopt/enforce Pandemic Flu legislation to cancel large public and private events	County Govt Local Govt	Existing	5,000 100,000	On Going	73
WF2g	Identify Private 1st responders and contractors to assist in wild-land fire response	AFC EMA	Existing	5,000 100,000	On Going	73
AH1c	Obtain and/or expand warning sirens to all uncovered areas (20 Systems)	EMA Local Govt VFD	Grant Local Funds	300,000 1,000,000	2011 2012	72
AH3c	Ensure the Emergency Action System (EAS) can be activated by officials at the local level	AEMA EMA	Existing	5,000 100,000	On Going	72
AH3e1	Assist non-governmental critical facilities to obtain emergency generators/pigtails	EMA	Local NGO Funds	150,000 300,000	2009 2013	72
AH3o1	Obtain signage to direct the public evacuation during hazard events	EMA	Grant Local Funds	10,000 100,000	2010 2011	72
FL3c3	Adopt/enforce mobile home legislation to restrict development of lots within flood plains.	County Govt Local Govt Devel Svcs	Existing	5,000 100,000	On Going	72
FL3f	Identify roadways, culverts and bridges damaged by flooding (Hiawatha Road, Crenshaw Road, Dead Hollow Road South)	County Engineer	Grants Local Funds	50,000 250,000	On Going	72

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
FL3g	Update County Land Use Plan to identify areas where development should be restrictive	County Govt Develop Services	Existing	5,000 100,000	On Going	72
FL3j	Use HAZUS-MH to develop a database of structures in 100/500-year flood plains	IT Services EMA Develop Services	Existing	10,000 100,000	2010 2011	72
HM2a	Obtain PPE for all personnel responding to hazmat incidents (Level C)	EMA, Fire Svcs, Police Depts	Grant Local Funds	100,000 300,000	2010 2011	72
HW1g	Train citizens in weather observation in conjunction with the National Weather Service (NWS) Conduct Storm Spotter's Courses	NWS EMA	Existing	5,000 100,000	On Going	72
PD3g	Assist hospitals to develop procedures to respond to infectious diseases	ADPH, EMA	Existing	5,000 100,000	On Going	72
UF2e	Obtain fire equipment to combat fires in high rise buildings	Local Govt	Grant Local Funds	1,000,000 5,000,000	On Going	72
UF2h	Train fire 1st responders to at least the "Awareness and Operations level" under OSHA 1910.120	Local Govt	Grant Local Funds	100,000 400,000	2009 2014	72
WF1a	Educate homeowners and businesses on wildfire fuels reduction	AFC EMA	Existing	5,000 100,000	On Going	72
AH3a1	Develop/maintain a countywide NIMS resource inventory software	EMA Local Entity	Local	20,000 100,000	On Going	71
AH3b1	Develop redundancy capabilities for 911 services and equipment	911, EMA	Existing	50,000 100,000	On Going	71
AH3d	Obtain additional Emergency Operations Center equipment and crisis management software	EMA	Grant Local Funds	25,000 250,000	2010 2011	71
AH3d1	Obtain equipment and train staff to implement NOAA and Emergency Management Software	EMA	Grant Local Funds	25,000 100,000	2010 2011	71
FL2b	Train all 1st responders on repetitive flooding areas and structures	EMA	Grant Local Funds	50,000 200,000	2011 2012	71
FL3a4	Educate developers, builders and the public on the location of NFIP designated flood prone areas	County Govt Local Govt Devel Svcs	Existing	5,000 100,000	On Going	71
FL3f3	Obtain/Install barriers to block flooding roadways and bridges	County Engineer	Grant Local Funds	30,000 200,000	2010 2011	71
HM1a	Educate school populations on hazardous materials preparedness and response	BOE EMA	Grant Local Funds	5,000 50,000	2009 2010	71
HW1g	Develop a plan to provide weather radios to low income residents Distribute radios	EMA	Grant Local Funds	50,000 150,000	2009 2010	71
HW3h	Assist the use of shatter-proof windows in schools	BOE EMA	Grant Local Funds	500,000 1,000,000	2010 2012	71
IL2b	Train 1st responders in Methamphetamine Lab chemicals	CDP DHLS Law Enforcement	Grant Local Funds	50,000 150,000	2010 2011	71
IL2c	Provide Meth Lab training to all personnel responding to Meth Labs	CDP DHLS Law Enforcement	Grant Local Funds	50,000 200,000	2010 2011	71
UF2b	Train firefighters to obtain for state and national certifications	Local Govt	Grant Local Funds	100,000 300,000	On Going	71
UF3e	Adopt/enforce sprinkler and smoke alarm legislation	County Govt Local Govt	Existing	5,000 100,000	On Going	71

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
UF3f	Adopt/enforce commercial and special needs facilities sprinkler legislation	County Govt Local Govt	Existing	5,000 100,000	On Going	71
AH2d	Exercise 1st responder and hospital Mass Casualty plans regularly.	Local Entity EMA ADPH	Grant Local Funds	20,000 200,000	2009 2014	70
AH3i1	Evaluate shelter requirements annually & develop a program to add necessary shelters	EMA ARC DHR	Local Funds	5,000 100,000	On Going	70
HM3b	Develop evacuation perimeters and routes for high risk hazmat sites	Fire Services EMA	Existing	5,000 100,000	On Going	70
HM3j	Adopt/enforce hazardous materials site building setbac,000 legislation	County Govt Local Govt	Existing	5,000 100,000	On Going	70
PD3b	Identify storage location, inventory management, security for Pandemic supplies/materials	ADPH EMA	Existing	5,000 100,000	On Going	70
UF3i	Adopt/enforce housing code legislation to limit number of citizens in sub-standard housing	County Govt Local Govt	Existing	5,000 100,000	On Going	70
UF3k	Obtain smoke detectors and provide free to residents in need.	Local Govt EMA	Grant Local Funds	50,000 400,000	2009 2010	70
WF3i	Adopt/enforce wildfire legislation that includes burning bans	Co Govt Local Govt	Existing	5,000 100,000	On Going	70
AH3m	Assist medical services to develop a Mass Casualty Plan	Co Coroner EMA ADPH	Grant Local Funds	10,000 100,000	On Going	69
FL3a1	Adopt/enforce an NFIP flood plain management plan	County Govt Local Govt	Existing	5,000 100,000	On Going	69
FL3a2	Adopt/enforce floodplain legislation to require structures built to be elevated above the NFIP BSE	County Govt Local Govt Co Engineer	Existing	5,000 100,000	On Going	69
FL3c	Obtain funding to retrofit, elevate or relocate NFIP repetitive flooding structures in flood prone areas	County Govt Local Govt	Grants Local Funds	2,000,000 5,000,000	2010 2013	69
IL2a	Obtain PPE for all personnel that respond to Meth Labs	EMA Law Enforcement	Grant Local Funds	100,000 300,000	2010 2011	69
PD3e	Identify population density data and mass medical dispensing sites	ADPH EMA	Existing	5,000 100,000	On Going	69
AH3s	Obtain funds for critical government departments to develop Continuity of Operations Plans	County Govt Local Govt EMA	Grant Local Funds	30,000 200,000	2010 2011	68
Hm3e	Obtain hazmat containment equipment for water, roads/railroads	EMA	Grant Fund Local Fund	50,000 150,000	2010 2011	68
TR2e	Obtain terrorism PPE for personnel responding to terrorism incidents	EMA Fire Svc. Law Enforcement	Grant Local Funds	100,000 400,000	2011 2012	68
TR2f	Obtain terrorism response and control equipment and supplies	EMA\Local Govt	Grant Local Funds	200,000 500,000	2011 2012	68
TR2i	Obtain CBRNE detection devices and train 1st responders on use	EMA Local Govt	Grant Local Funds	100,000 300,000	2011 212	68
HM2e	Maintain an inventory of Mark I packs to respond to chemical agents	EMA, FD's	Grant Local Funds	50,000 150,000	2011 2012	67
HM2f	Exercise an annual hazardous materials event with appropriate agencies and 1st responders	EMA LEPC, All 1st responders	Grant Local Funds	25,000 100,000	2009 2014	67

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
HM3d	Obtain monitoring equipment for high risk hazmat sites	EMA	Grant Local Funds	100,000 300,000	2012 2013	67
HW3e	Obtain funding to build mobile home community storm shelters	Local Govt County Govt EMA	Grant Local Funds	200,000 1,000,000	2010 2014	67
PD1d	Develop Public Health Emergency Preparedness Web-page for Pandemic Events	ADPH EMA	Grant Local Funds	10,000 100,000	2009 2010	67
PD2a	Obtain infectious disease PPE for all personnel responding to a pandemic	ADPH EMA	Grant Local Funds	100,000 300,000	2010 2011	67
PD2a	Obtain appropriate Pandemic personal protected equipment (PPE) and fit for 1st responders	ADPH EMA	Grant Local Funds	200,000 500,000	2010 2011	67
PD3c	Develop a traffic flow and security plan for medical dispensing sites	ADPH EMA	Existing	5,000 100,000	On Going	67
PD3j	Develop a pandemic plan for housing high risk populations	ADPH DRH EMA NGO Agencies	Existing	5,000 100,000	On Going	67
TR2b	Train all terrorism 1st responders in terrorism attac,000 techniques	Law Enforcement EMA	Grant Local Funds	50,000 200,000	2010 2011	67
TR2c	Train 1st responders and agencies on CBRNE response	Law Enforcement Fire Service EMA	Grant Local Funds	50,000 200,000	2010 2011	67
TR2g	Train all appropriate 1st responders in CBRNE agents	EMA Local Govt	Grant Local Funds	100,000 400,000	2010 2012	67
WF2c	Train fire 1st responders in wild-land fire response techniques	AFC	Grant Local Funds	50,000 150,000	2010 2011	67
AH3b2	Develop redundancy capabilities for emergency radio communications	911 1st Responder Depts	Existing	5,000 100,000	On Going	66
AH3e	Obtain/install emergency generators or "pigtails" for critical government facilities and fuel depots.	Co Govt Local Govt, EMA	Grant Local Funds	200,000 400,000	2011 2012	66
FL3a3	Educate builders, developers and the public on the National Flood Insurance Program (NFIP)	County Govt Local Govt Devel Svcs	Existing	5,000 100,000	On Going	66
FL3f	Develop a storm water management plan for the jurisdiction	County Govt Environ Services	Existing	5,000 100,000	On Going	66
PD2k	Acquire equipment to detect/monitor of agriculture vectors or diseases	USDA County Extension Services ADPH	Grants DHL Grants	100,000 300,000	2011 2012	66
TR2h	Fund/maintain a trained bomb dog and handler to serve the entire county	Law Enforcement	Grant Local Funds	50,000 150,000	2011 2012	66
UF1d	Obtain a fire education-training trailer for the jurisdiction.	EMA	Grant Local Funds	100,000 300,000	2011 2012	66
UF3f	Obtain fire equipment to combat fires where water hydrants are non-existent	County Govt Local Govt	Grant Local Funds	1,000,000 4,000,000	On Going	66
WF2e	Obtain DNR compatible radios for interoperable communications.	EMA	Grant Local Funds	100,000 300,000	2011 2012	66
AH3s1	Assist all businesses in developing Business Continuity Plans	County Govt Local Govt EMA	Existing	5,000 100,000	On Going	65
FL3e	Adopt/enforce land use flood plain wetlands and watershed zoning	County Govt Local Govt Devel Svcs	Existing	5,000 100,000	On Going	65

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
FL3g	Adopt/enforce storm water legislation to reduce runoff from developments.	County Govt Environ Services Develop Services	Existing	5,000 100,000	On Going	65
PD2b	Train Pandemic event 1st responders on preparedness and response actions	ADPH EMA	Grant Local Funds	50,000 150,000	On Going	65
TR2j	Exercise a potential terrorism event with 1st responders at least annually	EMA 1st Responders	Grant Local Funds	25,000 100,000	2009 2014	65
UF3h	Acquire and install six inch water mains/hydrants county wide	County Govt Local Funds	Federal/ State Grant Local Funds	5,000 100,000	2012 2014	64
FL3i	Obtain equipment to build water flow and water retention areas to mitigate flooding	Co. Govt. Local Govt.	Grant Local funds	5,000 100,000	2012 2014	63
Hm2b	Obtain hazmat detecting equipment for 1st responders	EMA Fire Svcs, Police Depts	Grant Local Funds	200,000 500,000	2010 2011	63
HM3c	Develop/maintain a countywide hazard materials response plan	EMA LEPC	Grant Local Funds	10,000 100,000	On Going	63
WF2f	Exercise fire response regularly for residences, businesses and industry	AFC Local Fire Services	Existing	10,000 100,000	On Going	63
FL2f	Obtain equipment to develop a swift water rescue team	EMA	Grant Local Funds	35,000 300,000	On Going	62
FL2f1	Train appropriate 1st responders for a swift water rescue team	Fire College Local Entities EMA	Grant Local Funds	25,000 200,000	2009 2010	62
TR2d	Establish and equip a CBRNE team to respond to incidents in the county.	Law Enforcement EMA	Grant Local Funds	100,000 300,000	2009 2014	62
TR3n	Train and fund a position for school or work place hostage negotiation	BOE Law Enforcement	Grant Local Funds	100,000 300,000	2012 2013	62
WF2b	Obtain specialized equipment to combat wild-land fires.	EMA	Grant Local Funds	100,000 400,000	2012 2013	62
FL3f1	Install/replace/maintain culverts ditches and bridges to reduce storm water flooding (Hiawatha Rd, Crenshaw Swamp Rd, Dead Hollow Rd)	County Engineer	Funds Local Funds	1,150,000 2,300,000	2011 2013	61
FL3f2	Obtain equipment to mitigate bridge, culverts, and roadway flooding	County Engineer	Grant Local Funds	750,000 4,000,000	On Going	61
PD3f	Obtain software/hardware systems to manage Pandemic supplies inventory and distribution	ADPH EMA	Health Grant Local Funds	5,000 100,000	2009 2010	61
HM3a	Create a GIS Maps of hazmat sites to display ERG established zones	IT Services EMA	Grant Local Funds	20,000 100,000	2010 2011	60
PD2d	Identify and Obtain supplies and materials needed to vaccinate and prophylax 1st responders	ADPH EMA	HLS Grant Health Grant	5,000 100,000	On Going	60
PD3d	Exercise infectious disease events in conjunction with in Strategic National Stock pile drills	ADPH EMA	Grant Local Funds	25,000 100,000	08/09	60
IL2d	Obtain, maintain and train an Illegal drug canine unit	Law Enforcement	Existing	5,000 100,000	On Going	59
HM2g	Equip a hazardous materials response vehicle	EMA HAZMAT	Grant Local Funds	50,000 150,000	On Going	58

Table 7.15 Shelby County Mitigation Actions

Hazard Goal & Action	Action/Project Description	Responsibility	Funding Source	Estimated Cost/ Benefit	Start/ End Date	Priority
WF3j	Develop Procedures by the county Solid Waste Department to respond to landfill fires.	Co Govt Envir Svcs	Existing	5,000 100,000	On Going	56
WF3k	Inspect the county Solid Waste Facility for mitigation efforts to prevent methane gas buildup	Co Govt Envir Svcs	Existing	5,000 100,000	On Going	56

Table 7.16 "STAPLEE" Mitigation Actions Prioritization Table

	Social				Technical			Administrative			Political			Legal			Economic				Environmental					Prioritization
Action/Project Description	High Community Acceptance	High effect on Loss of Life-WF=3	High Effect on Property Loss WF=2	High Effect on Economic Loss WF=1-9	Is Technical Feasibility	Is a Long-Term Solution	No Secondary Impacts	Little Staffing required	Funding Potential is High	Low Maintenance/Operations	High Political Support	Has a Local Champion	Has Public Support	State Authorized	Local Authority Exists	Potential Legal Challenge is High	Action Benefit is High WF=2	Action Cost is Low WF=2	High Economic Goal Contribution	Outside Funding Not Required	Land/Water Effect is Low	Low Endangered Species Effect	HAZMAT Waste Site Effect is Low	Environmental Effect is low	Federal law Compliant is High	Total Priority Score
Schedule regular maintenance and testing of hazard warning units (Monthly Testing)	3	9	0	9	3	3	2	1	3	1	3	3	3	3	3	3	6	4	2	2	2	2	3	2	3	78
Obtain and/or expand warning sirens to all uncovered areas (20 Systems)	3	9	0	9	3	3	2	2	3	1	3	3	3	3	3	2	4	2	2	1	2	2	2	2	3	72
Obtain backup power systems for audible warning devices	3	9	0	9	3	3	2	1	2	1	3	3	3	3	3	3	4	2	2	1	2	2	3	3	3	73
Distribute safe room/shelter in place information to schools, special needs and the public	3	9	0	9	3	3	3	2	3	2	3	2	2	3	3	3	6	6	2	2	3	3	3	3	3	84
Assist schools and special needs facilities to develop disaster preparedness/response plans.	3	6	6	9	3	2	3	2	3	2	3	3	2	3	3	3	6	6	3	2	3	3	3	3	3	88
Obtain/install an automated wide area rapid notification system.	2	9	6	9	3	3	3	1	3	1	2	1	3	3	3	3	2	1	3	1	3	3	3	3	3	77
Develop a media warning program to warn the public of hazard event	2	9	6	9	3	3	3	2	2	2	2	1	3	3	3	3	3	3	3	2	3	3	3	3	3	82
Develop/maintain a public information web site on hazard preparedness and response	2	9	6	9	3	2	3	2	2	2	2	2	2	3	3	3	4	4	3	2	3	3	3	3	3	83
Obtain/distribute interoperable radios for all 1st responders	2	6	2	9	3	3	3	2	2	1	2	2	2	3	3	3	4	2	2	2	3	3	3	3	3	73
Evaluate/maintain 1st responders emergency kits annually	2	3	0	9	3	1	3	3	2	2	2	2	2	3	3	3	6	6	1	3	3	3	3	3	3	74

Train 1st responders in search and rescue techniques	2	9	0	9	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	76
Exercise 1st responder and hospital Mass Casualty plans regularly.	2	6	0	9	3	2	2	2	2	2	2	2	2	3	3	3	4	4	2	2	2	2	3	3	3	70
Train 1st responders on responding to mass casualty events	2	6	0	9	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	73
Train 1st responders and officials on the National Incident Management System (NIMS)	2	3	0	9	3	3	3	2	2	2	2	2	2	3	3	3	4	6	2	3	3	3	3	3	3	74
Train 1st responders and officials in Emergency Operations Center Ops and the EOP	2	3	0	9	3	3	3	2	2	2	2	2	2	3	3	3	4	6	2	3	3	3	3	3	3	74
Train 1st responders/officials in performing damage assessments.	2	3	0	9	3	3	3	2	2	2	2	2	2	3	3	3	4	6	2	3	3	3	3	3	3	74
Adopt the National Incident Management System (NIMS)	2	3	0	9	3	3	3	2	3	3	2	2	2	3	3	3	6	6	3	3	3	3	3	3	3	79
Develop/maintain a countywide NIMS resource inventory software	2	3	4	9	3	2	3	1	2	1	1	2	2	3	3	3	4	2	4	2	3	3	3	3	3	71
Obtain and continually update 911 technology and capabilities	2	9	6	9	3	3	3	1	1	2	3	3	3	3	3	3	2	1	3	1	3	3	3	3	3	79
Develop redundancy capabilities for 911 services and equipment	2	6	4	9	3	3	3	2	2	1	2	2	2	3	3	3	2	1	2	1	3	3	3	3	3	71
Develop redundancy capabilities for emergency radio communications	2	3	2	9	3	3	3	2	2	1	1	2	2	3	3	3	2	2	2	1	3	3	3	3	3	66
Ensure the Emergency Action System (EAS) can be activated by officials at the local level	3	9	6	9	1	2	1	2	2	2	1	1	1	3	3	3	2	2	2	2	3	3	3	3	3	72
Obtain additional Emergency Operations Center equipment and crisis management software	2	6	4	9	3	2	3	1	1	1	1	1	2	3	3	3	4	2	4	1	3	3	3	3	3	71
Obtain equipment and train staff to implement NOAA and Emergency Management Software	2	6	4	9	3	2	3	1	1	1	1	1	2	3	3	3	4	2	4	1	3	3	3	3	3	71
Obtain/install emergency generators or "pigtails" for critical government facilities and fuel depots.	3	3	4	9	3	3	2	2	2	1	2	2	3	3	3	2	2	2	2	1	2	2	2	3	3	66
Assist non-governmental critical facilities to obtain emergency generators/pigtails	2	3	4	9	3	2	3	2	2	2	3	2	2	3	3	2	4	2	4	1	2	3	3	3	3	72
Develop EOP ESF's/annexes for all hazards that may impact the jurisdiction	3	3	2	9	2	3	2	2	2	1	3	3	3	3	3	2	4	4	3	2	3	3	3	3	3	74
Review/revise the county Emergency Operations Plan annually and after each disaster	3	3	2	9	2	3	2	2	2	1	3	3	3	3	3	2	4	4	3	2	3	3	3	3	3	74
Evaluate shelter requirements annually & develop a program to add necessary shelters	3	9	0	9	3	3	2	2	1	2	3	2	3	3	3	2	4	2	2	1	2	2	2	2	3	70
Coordinate a shelter program for the Red Cross and volunteers	2	6	0	9	2	3	2	2	3	2	2	3	3	3	3	3	6	6	2	3	3	3	3	3	3	80
Maintain a supplier list of food, medicines, water and fuel vendors	2	6	0	9	2	2	3	2	2	2	3	2	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Obtain disaster supply kits for schools/special needs facilities	3	3	0	9	2	2	3	2	2	2	3	2	3	3	3	3	6	4	2	2	3	3	3	3	3	74
Assist schools in implementing an emergency phone line	3	3	2	9	2	2	3	3	3	3	3	2	3	3	3	3	6	4	2	3	3	3	3	3	3	80

Assist medical services to develop a Mass Casualty Plan	2	6	0	9	3	3	3	2	2	1	2	1	2	3	3	3	3	3	2	1	3	3	3	3	3	69
Ensure that utility restoration plans and mitigation efforts are in place with the various electric utilities.	2	6	2	9	3	2	3	2	2	2	2	2	2	3	3	3	6	6	2	2	3	3	3	3	3	79
Assist all businesses, schools, special needs and government facilities to post evacuation routes	2	3	2	9	2	2	3	2	3	3	2	1	2	3	3	2	6	6	2	3	3	3	3	3	3	76
Obtain signage to direct the public evacuation during hazard events	2	3	0	9	2	2	3	2	2	2	2	2	3	3	3	3	4	4	4	2	3	3	3	3	3	72
Develop/implement/maintain the jurisdictions Mitigation Action Plan	2	3	4	9	2	3	3	2	3	2	2	2	2	3	3	3	4	4	4	2	2	3	3	3	3	76
Participate in NFIP's Cooperating Technical Partners Program (CTP)	2	3	4	9	3	3	3	2	3	2	2	2	2	3	3	2	6	6	4	3	3	2	3	3	3	81
Obtain funds for critical government departments to develop Continuity of Operations Plans	2	0	2	9	3	3	3	2	1	2	1	1	2	3	3	3	4	4	4	1	3	3	3	3	3	68
Assist all businesses in developing Business Continuity Plans	2	0	2	9	3	3	3	3	1	3	1	1	1	3	3	3	3	2	3	1	3	3	3	3	3	65
Assist jurisdictions to develop strategies to prevent loss of public records	2	0	4	9	3	3	3	2	3	2	2	2	2	3	3	3	4	4	3	3	3	3	3	3	3	76
Annually review and update hazard related legislation	3	3	2	9	3	2	3	2	3	2	2	2	2	3	3	3	4	4	3	3	3	3	3	3	3	76
Ensure that all mutual aid shelter, response, mass casualty and recovery agreements are current	2	3	2	9	3	2	3	3	3	2	2	2	2	3	3	3	6	6	2	3	3	3	3	3	3	79
Require critical sites to develop and provide to EMA an emergency plan	2	6	4	9	2	2	3	2	3	2	2	2	2	3	3	3	6	6	2	3	3	3	3	3	3	82
Obtain/maintain a grant writing position for the county jurisdictions	2	6	6	9	3	2	3	2	1	2	2	1	2	3	3	3	4	4	2	3	3	3	3	3	3	78
Develop a community shelter program for mobile home parks	2	9	0	9	3	3	2	2	3	2	2	2	2	3	3	3	6	6	6	2	2	3	3	2	3	83
Insure building code compliance Inspections are conducted on construction projects	2	6	6	9	3	3	3	1	2	1	2	2	2	3	3	3	4	4	3	3	2	3	3	3	3	79
Distribute flood awareness and preparedness literature at events	2	6	2	7	3	2	3	2	3	2	3	3	2	3	3	3	6	6	3	3	3	3	3	3	3	82
Obtain PPE for all personnel responding to flood events	2	6	4	7	3	3	3	2	3	2	3	3	3	3	3	3	4	4	4	2	3	3	3	3	3	82
Train all 1st responders on repetitive flooding areas and structures	2	3	2	7	3	2	3	2	3	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	71
Obtain equipment to develop a swift water rescue team	2	6	0	7	3	3	3	2	1	2	2	1	2	3	3	3	2	1	1	1	2	3	3	3	3	62
Train appropriate 1st responders for a swift water rescue team	2	6	0	7	3	3	3	2	1	2	2	1	2	3	3	3	2	1	1	1	2	3	3	3	3	62
Participate in the National Flood Insurance Program (NFIP)	3	0	4	7	3	3	3	3	2	3	2	2	2	3	3	3	6	6	3	3	3	3	3	3	3	79
Adopt/enforce an NFIP flood plain management plan	2	0	4	7	3	3	2	1	2	1	2	2	1	3	3	2	4	6	3	3	3	3	3	3	3	69

Adopt/enforce floodplain legislation to require structures built to be elevated above the NFIP BSE	2	3	6	7	3	3	2	1	2	1	1	1	2	3	3	2	4	6	3	3	2	2	2	2	3	69
Educate builders, developers and the public on the National Flood Insurance Program (NFIP)	2	0	2	7	3	2	3	2	2	2	2	2	2	3	3	3	4	6	2	3	2	2	2	2	3	66
Educate developers, builders and the public on the location of NFIP designated flood prone areas	2	3	4	7	3	2	3	2	2	2	2	2	2	3	3	3	4	6	2	3	2	2	2	2	3	71
Obtain and maintain NFIP FIRMS to identify jurisdiction flood prone areas	2	3	4	7	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	3	3	3	3	3	3	73
Obtain funding to retrofit, elevate or relocate NFIP repetitive flooding structures in flood prone areas	2	6	6	7	3	3	3	1	2	2	1	1	2	3	3	2	2	1	3	1	3	3	3	3	3	69
Adopt/enforce mobile home legislation to restrict development of lots within flood plains.	2	6	4	7	3	3	3	1	3	1	2	2	2	3	3	2	4	4	3	3	2	2	2	2	3	72
Participate in the NFIP Community Rating System	3	0	0	7	3	2	3	3	3	2	2	2	3	3	3	3	6	6	3	3	3	3	3	3	3	75
Adopt/enforce land use flood plain wetlands and watershed zoning	2	3	4	7	3	3	2	1	2	1	2	1	1	3	3	2	4	4	3	3	2	2	2	2	3	65
Develop a program to inspect and maintain natural drainage channels to clear beaver dams and debris; Co Rd 26,81, 61, 24, 86, 43 & 77)	2	6	6	7	2	2	2	3	2	2	2	2	2	3	3	2	6	6	6	2	3	3	3	3	3	83
Develop a storm water management plan for the jurisdiction	2	3	2	7	3	2	2	2	2	2	2	2	2	3	3	3	4	4	2	3	2	2	2	2	3	66
Identify roadways, culverts and bridges damaged by flooding (Hiawatha Road, Crenshaw Road, Dead Hollow Road South)	3	0	2	7	3	2	3	2	2	2	2	2	2	3	3	3	6	6	1	3	3	3	3	3	3	72
Install/replace/maintain culverts ditches and bridges to reduce storm water flooding (Hiawatha Rd, Crenshaw Swamp Rd, Dead Hollow Rd)	2	6	4	7	3	3	1	1	1	1	2	2	2	3	3	2	2	2	2	1	2	2	2	2	3	61
Obtain equipment to mitigate bridge, culverts, and roadway flooding	2	6	4	7	3	3	1	1	1	1	2	2	2	3	3	2	2	2	2	1	2	2	2	2	3	61
Obtain/Install barriers to block flooding roadways and bridges	2	6	2	7	3	2	2	2	2	2	2	2	2	3	3	3	4	4	1	2	3	3	3	3	3	71
Update County Land Use Plan to identify areas where development should be restrictive	2	3	6	7	3	2	2	3	2	2	2	2	1	3	3	1	4	4	2	3	3	3	3	3	3	72
Adopt/enforce storm water legislation to reduce runoff from developments.	2	0	2	7	3	3	2	1	2	1	2	2	2	3	3	2	4	6	3	3	2	2	2	3	3	65
Educate developers on Watershed, Floodplain and wetland development restrictions	2	3	4	7	3	2	3	2	3	2	2	2	2	3	3	3	6	6	2	3	3	3	3	3	3	78
Request a study of the feasibility of flood control measures along the Cahaba and Coosa Rivers.	2	6	6	7	3	3	3	2	2	2	2	1	2	3	3	3	4	4	6	1	3	2	3	3	3	79
Obtain equipment to build water flow and water retention areas to mitigate flooding	2	6	6	7	3	3	1	1	1	1	2	2	2	3	3	2	2	2	2	1	2	2	2	2	3	63
Use HAZUS-MH to develop a database of structures in 100/500-year flood plains	2	6	6	9	3	2	2	2	2	2	1	1	1	3	3	2	2	2	3	3	3	3	3	3	3	72

Obtain/install/maintain/monitor rainfall and stream gauges to predict local flooding	2	6	6	7	3	3	2	2	2	2	2	2	3	3	3	6	4	6	1	2	3	3	3	3	3	82
Identify alternative access points for single access neighborhoods	2	3	0	7	3	2	3	3	3	3	2	2	3	3	3	3	4	6	1	3	3	3	3	3	3	74
Acquire signage to indicate water depth at flooding points	2	3	0	7	3	2	3	3	3	3	2	2	3	3	3	3	4	6	1	3	3	3	3	3	3	74
Educate school populations on hazardous materials preparedness and response	2	6	2	6	3	2	3	2	2	2	2	2	2	3	3	3	4	4	1	2	3	3	3	3	3	71
Educate the public on common hazardous materials in home	3	6	2	6	3	2	3	2	3	2	2	3	3	3	3	3	6	6	2	3	3	3	3	3	3	81
Educate schools special needs, and community populations on chemical hazards in the area.	2	6	2	6	3	2	3	2	3	2	2	3	3	3	3	3	6	6	2	3	3	3	3	3	3	80
Educate schools, special needs and local population on hazmat evacuation	3	6	2	6	3	2	3	2	3	2	2	3	3	3	3	3	6	6	2	3	3	3	3	3	3	81
Establish school hazard materials environmental impact programs	3	6	0	6	3	2	3	2	3	2	2	3	3	3	3	3	6	6	1	3	3	3	3	3	3	78
Obtain PPE for all personnel responding to hazmat incidents (Level C)	2	6	2	6	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	72
Obtain hazmat detecting equipment for 1st responders	1	3	2	6	3	2	3	2	1	1	2	2	2	3	3	3	4	4	2	1	3	3	2	2	3	63
Develop/maintain hazmat Response Plan and SOG's for 1st responders	2	6	2	6	3	2	3	1	3	1	3	3	2	3	3	3	6	6	2	3	3	3	3	3	3	78
Fund hazmat response training for all 1st responders	2	6	2	6	3	2	3	2	2	2	3	2	2	3	3	3	4	4	2	2	3	3	3	3	3	73
Maintain an inventory of Mark I packs to respond to chemical agents	2	3	0	6	3	2	3	1	2	2	3	2	2	3	3	3	4	4	1	3	3	3	3	3	3	67
Exercise an annual hazardous materials event with appropriate agencies and 1st responders	2	6	2	6	3	2	2	2	2	2	2	2	2	3	3	2	4	4	2	2	3	2	2	2	3	67
Equip a hazardous materials response vehicle	2	3	2	6	3	3	3	2	1	1	1	1	1	3	3	3	2	2	2	1	3	3	2	2	3	58
Create a GIS Maps of hazmat sites to display ERG established zones	2	0	0	6	3	2	3	2	2	1	1	2	2	3	3	3	2	4	2	2	3	3	3	3	3	60
Develop evacuation perimeters and routes for high risk hazmat sites	2	0	0	6	3	2	3	2	3	2	2	2	2	3	3	3	6	6	2	3	3	3	3	3	3	70
Maintain and annually update an inventory of hazmat sites.	2	6	4	6	3	2	3	2	3	2	2	2	2	3	3	3	6	4	2	2	3	3	3	3	3	77
Develop/maintain a countywide hazard materials response plan	1	6	2	6	3	3	2	3	1	1	1	1	2	3	3	3	4	2	2	1	3	3	2	2	3	63
Obtain monitoring equipment for high risk hazmat sites	2	6	4	6	3	3	2	2	1	2	1	1	2	3	3	2	4	2	2	1	3	3	3	3	3	67
Obtain hazmat containment equipment for water, roads/railroads	2	3	4	6	3	3	3	2	2	2	2	2	2	3	3	3	4	1	2	1	3	3	3	3	3	68
Enforce pre-planning requirements for Extremely Hazardous Substances (EHS)	2	6	2	6	3	2	3	2	2	2	2	2	2	3	3	3	4	6	2	3	3	3	3	3	3	75
Maintain a current list of Hazardous Materials spill clean up companies available to the county	2	0	2	6	3	2	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	76
Enforce S.A.R.A. Title III and Tier II company reporting of hazardous chemicals.	2	6	2	6	3	2	3	1	3	2	3	3	3	3	3	3	4	6	3	3	3	3	2	2	3	77

Adopt/enforce hazardous materials site building setbac,000 legislation	1	6	2	6	3	3	2	1	2	1	2	1	1	3	3	2	4	6	3	3	3	3	3	3	3	70
Obtain NOAA weather radios for schools, government and special needs facilities	3	6	0	8	3	3	3	2	2	1	2	2	3	3	3	3	4	4	2	2	3	3	3	3	3	74
Educate the public on High Wind weather preparedness, response and recovery	3	6	4	8	3	2	3	2	3	2	3	3	3	3	3	3	6	6	3	3	3	3	3	3	3	87
Educate the special needs and education populations on High Wind preparedness and response	3	6	4	9	3	2	3	3	3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	3	86
Educate and distribute High Wind preparedness information	3	6	4	8	3	2	3	2	3	2	3	3	3	3	3	3	6	6	3	3	3	3	3	3	3	87
Insure NWS Hurricane watches and warnings are monitored by Emergency Management	3	6	4	8	3	2	3	2	3	2	3	3	3	3	3	3	6	6	3	3	3	3	3	3	3	87
Develop a plan to provide weather radios to low income residents Distribute radios	2	6	0	8	3	2	3	2	2	1	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	71
Train citizens in weather observation in conjunction with the National Weather Service (NWS) Conduct Storm Spotter's Courses	2	6	0	8	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	72
Hurricane watch and warning procedures are in place to alert 1st responders and the public	3	9	6	9	3	2	3	2	3	2	3	2	2	3	3	2	6	6	3	3	3	3	3	3	3	90
Obtain 1st responder PPE and supplies for High Wind response	2	6	0	8	3	2	3	1	3	2	3	3	2	3	3	3	4	4	2	2	3	3	3	3	3	74
Train 1st responders to respond to High Wind events	3	6	0	8	3	2	3	2	3	2	3	3	2	3	3	3	4	4	2	2	3	3	3	3	3	76
Exercise a High Wind event with 1st responders at least annually (Tornado)	3	6	0	8	3	2	2	2	3	2	3	2	2	3	3	2	4	4	2	2	3	3	3	3	3	73
Adopt/enforce comprehensive Building Code legislation	2	6	6	8	3	3	2	1	3	1	2	3	2	3	3	2	4	6	3	3	3	3	3	3	3	81
Insure county EMA participates in High Wind planning as a potential reception area for evacuees.	3	9	0	8	3	2	3	2	3	2	3	3	3	3	3	3	6	6	3	3	3	3	3	3	3	86
Develop a debris clearance program that can be utilized countywide Update plan annually	3	0	2	8	3	3	1	1	3	2	3	3	3	3	3	3	6	6	6	3	2	2	1	2	2	74
Obtain funding to build mobile home community storm shelters	2	6	0	8	3	3	2	2	1	2	2	2	2	3	3	2	4	2	2	1	3	3	3	3	3	67
Adopt/enforce mobile home tie down and skirting legislation	2	6	4	8	3	3	3	1	3	1	2	3	2	3	3	2	4	4	2	3	3	3	3	3	3	77
Assist the use of shatter-proof windows in schools	1	6	4	8	3	3	3	2	2	2	2	2	3	3	3	3	2	1	2	1	3	3	3	3	3	71
Adopt/enforce legislation to control construction standards of mobile homes moved into the county.	2	6	2	8	3	3	3	1	3	1	2	2	2	3	3	2	4	4	2	3	3	3	3	3	3	74
Adopt/enforce legislation for mobile home parks to install ground anchors	2	6	2	8	3	3	3	1	3	1	2	2	2	3	3	2	4	4	2	3	3	3	3	3	3	74
Educate school and local populations on Meth Lab awareness	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Obtain PPE for all personnel that respond to Meth Labs	2	6	0	3	3	2	3	1	3	2	3	3	2	3	3	3	4	4	2	2	3	3	3	3	3	69

Train 1st responders in Methamphetamine Lab chemicals	3	6	0	3	3	2	3	2	3	2	3	3	2	3	3	3	4	4	2	2	3	3	3	3	3	71
Provide Meth Lab training to all personnel responding to Meth Labs	3	6	0	3	3	2	3	2	3	2	3	3	2	3	3	3	4	4	2	2	3	3	3	3	3	71
Obtain, maintain and train an Illegal drug canine unit	2	3	4	3	3	3	3	1	1	1	2	2	2	3	3	2	2	1	2	1	3	3	3	3	3	59
Join/participate in local state and federal drug task forces	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Maintain/publicize a hotline to report suspected meth labs	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	6	4	2	3	3	3	3	3	3	3	76
Require businesses to refuse large quantity sales of precursors	3	9	0	4	3	3	3	2	3	2	3	2	2	3	3	2	3	3	2	3	3	3	3	3	3	73
Assist jurisdictions to establish snow and ice removal methods	2	6	2	4	3	2	2	2	3	2	3	2	3	3	3	3	6	6	2	3	2	2	2	2	3	73
Educate the public on preparedness and self care for a Pandemic event	2	6	0	4	3	2	3	2	3	2	3	2	3	3	3	3	6	6	2	3	3	3	3	3	3	76
Educate schools, special needs and local population on preparing for a pandemic	3	9	0	4	3	2	3	2	3	2	3	2	3	3	3	3	3	3	2	3	3	3	3	3	3	74
Develop/distribute Pandemic preparedness information to limited English speaking residents	3	6	0	4	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Develop Public Health Emergency Preparedness Web-page for Pandemic Events	2	9	0	4	3	3	3	2	2	2	2	1	2	3	3	3	2	2	2	2	3	3	3	3	3	67
Assist schools in developing an infectious disease surveillance program	2	6	0	4	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	77
Obtain infectious disease PPE for all personnel responding to a pandemic	2	6	0	4	3	2	3	2	2	1	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Obtain appropriate Pandemic personal protected equipment (PPE) and fit for 1st responders	2	6	0	4	3	2	3	2	2	1	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Train Pandemic event 1st responders on preparedness and response actions	2	3	0	4	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	65
Develop a list of 1st responders for early infectious disease vaccination	2	3	0	4	3	2	3	3	3	3	3	3	2	3	3	3	6	6	2	3	3	3	3	3	3	75
Identify and Obtain supplies and materials needed to vaccinate and prophylax 1st responders	2	3	0	4	3	2	2	2	2	2	2	2	2	3	3	2	4	4	2	2	3	2	2	2	3	60
Exercise response to a pandemic event in conjunction with the medical community	2	6	0	4	3	3	3	3	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	80
Train 1st responders on agriculture and vector disease and infection response	2	6	6	4	3	3	3	2	3	2	2	2	2	3	3	3	2	2	3	2	3	3	3	3	3	73
Acquire equipment to detect/monitor of agriculture vectors or diseases	1	6	6	4	3	3	3	2	1	2	2	2	2	3	3	3	2	1	3	1	2	3	3	2	3	66
Participate in the national Pandemic surveillance program	2	6	0	4	3	3	3	3	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	80
Identify storage location, inventory management, security for Pandemic supplies/materials	3	9	0	4	3	2	3	2	2	2	2	1	2	3	3	3	3	3	2	3	3	3	3	3	3	70

Develop a traffic flow and security plan for medical dispensing sites	2	0	0	4	3	2	2	2	2	2	3	2	3	3	3	3	6	6	1	3	3	3	3	3	3	67
Exercise infectious disease events in conjunction with in Strategic National Stock pile drills	2	3	0	4	3	2	2	2	2	2	2	2	2	3	3	2	4	4	2	2	3	2	2	2	3	60
Identify population density data and mass medical dispensing sites	2	9	0	4	3	2	3	2	2	2	2	1	2	3	3	3	3	3	2	3	3	3	3	3	3	69
Obtain software/hardware systems to manage Pandemic supplies inventory and distribution	1	9	0	4	3	3	2	2	1	1	2	1	2	3	3	3	2	1	2	1	3	3	3	3	3	61
Assist hospitals to develop procedures to respond to infectious diseases	3	9	0	4	3	3	3	2	2	2	2	2	2	3	3	3	3	3	2	3	3	3	3	3	3	72
Adopt/enforce Pandemic Flu legislation to cancel large public and private events	2	6	0	4	3	2	2	2	3	2	2	2	3	3	3	2	6	6	2	3	3	3	3	3	3	73
Maintain contact with state and federal agencies regarding biological and disease threats.	3	9	0	4	3	3	3	3	3	3	2	2	3	3	3	3	3	3	2	3	3	3	3	3	3	76
Develop a pandemic plan for housing high risk populations	2	6	0	4	3	3	3	2	2	2	2	2	2	3	3	2	3	2	3	3	3	3	3	3	3	67
Assist in developing procedures to prevent an outbreak of agriculture related hazards	2	3	6	4	3	3	3	2	2	2	2	2	2	3	3	3	6	6	3	3	3	3	3	3	3	78
Develop a pandemic response plan and EOP annex's	3	9	0	4	3	3	3	2	3	2	2	2	2	3	3	3	6	4	2	1	3	3	3	3	3	75
Educate schools, special needs and the community population on recognizing potential terrorist events	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Educate schools, special needs and government officials on procedures for handling suspicious mail	3	9	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	82
Distribute terrorism awareness information to the public	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Educate school, special needs, officials and the local population on terrorism preparedness info.	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Post terrorism and bomb identification information in buildings and schools	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Identify/distribute to appropriate officials potential terrorism targets information	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Train terror response agencies on terrorist potential and county potential terrorism targets.	3	6	2	3	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	79
Train all terrorism 1st responders in terrorism attack techniques	2	6	0	3	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Train 1st responders and agencies on CBRNE response	2	6	0	3	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Establish and equip a CBRNE team to respond to incidents in the county.	2	6	4	3	3	3	3	1	2	1	1	1	2	3	3	3	2	1	2	1	3	3	3	3	3	62
Obtain terrorism PPE for personnel responding to terrorism incidents	2	6	0	3	3	2	3	3	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	68
Obtain terrorism response and control equipment and supplies	2	6	0	3	3	2	3	3	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	68

Train all appropriate 1st responders in CBRNE agents	2	6	0	3	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Fund/maintain a trained bomb dog and handler to serve the entire county	2	6	4	4	3	3	3	1	2	1	2	2	2	3	3	2	2	3	2	1	3	3	3	3	3	66
Obtain CBRNE detection devices and train 1st responders on use	2	6	0	3	3	2	3	3	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	68
Exercise a potential terrorism event with 1st responders at least annually	2	6	2	3	3	2	2	2	2	2	2	2	2	3	3	2	4	4	2	2	3	3	2	2	3	65
Support State Homeland Security strategies to counter terrorism	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Join and/or continue to participate in the Joint Terrorism Task Force.	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Work with schools to develop terrorism preparedness and response plans	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Assist Medical Health entities in developing CBRNE response plans	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Assist special needs facilities to implement a security system	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Train and fund a position for school or work place hostage negotiation	2	6	2	3	3	3	3	1	2	2	2	1	3	3	2	2	1	1	2	3	3	3	3	3	3	62
Develop evacuation plans for identified terrorism targets (Government facilities, critical facilities, etc)	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	78
Educate school, special needs and the community populations on fire safety and response	3	6	4	5	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	83
Educate school, special needs and the community population on fire extinguisher use	3	6	4	5	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	83
Assist fire departments in obtaining fire prevention program materials	3	6	4	5	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	83
Obtain a fire education-training trailer for the jurisdiction.	2	6	4	5	3	3	3	2	1	2	2	1	2	3	3	3	2	1	2	1	3	3	3	3	3	66
Obtain fire PPE for all personnel responding to fire incidents	2	6	4	5	3	2	3	2	3	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	74
Train firefighters to obtain for state and national certifications	2	3	4	5	3	2	3	2	3	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	71
Obtain/maintain fire fighting supplies at all fire departments	2	6	6	5	3	2	3	2	3	2	3	3	2	3	3	3	4	4	3	2	3	3	3	3	3	79
Train all fire responders in fire combat techniques annually	2	6	4	5	3	2	3	2	3	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	74
Obtain fire equipment to combat fires in high rise buildings	2	6	6	5	3	3	3	2	2	2	2	2	2	3	3	3	2	2	3	1	3	3	3	3	3	72
Train fire 1st responders to at least the "Awareness and Operations level" under OSHA 1910.120	2	3	4	5	3	2	3	2	3	2	2	2	2	3	3	3	4	4	2	3	3	3	3	3	3	72
Ensure that NFPA standards and codes are followed.	2	0	4	5	3	1	3	3	3	2	3	2	2	3	3	3	6	6	2	3	3	3	3	3	3	74

Ensure that fire codes are rigidly enforced with citations issued for violations.	2	6	6	5	3	2	2	1	2	1	3	3	2	3	3	3	4	4	3	3	3	3	3	3	3	76
Assist fire inspections to be regularly conducted at businesses and industry	2	6	6	5	3	2	3	1	2	1	3	3	2	3	3	3	4	4	3	3	3	3	3	3	3	77
Develop fire plans for all major businesses and critical facilities	2	6	6	5	3	2	3	2	2	2	3	2	2	3	3	3	6	6	3	3	3	3	3	3	3	82
Adopt/enforce sprinkler and smoke alarm legislation	2	6	4	5	3	2	2	1	2	2	2	2	2	3	3	2	4	4	2	3	3	3	3	3	3	71
Adopt/enforce commercial and special needs facilities sprinkler legislation	2	6	4	5	3	2	2	1	2	2	2	2	2	3	3	2	4	4	2	3	3	3	3	3	3	71
Obtain fire equipment to combat fires where water hydrants are non-existent	2	6	2	5	3	3	2	3	1	1	1	1	2	3	3	3	4	2	3	1	3	3	3	3	3	66
Enforce legislation that fire extinguishers are clearly marked, available and regularly tested	2	6	4	5	3	2	3	1	3	2	3	3	2	3	3	3	6	6	2	3	3	3	3	3	3	80
Acquire and install six inch water mains/hydrants county wide	2	9	6	5	3	3	1	1	1	2	2	1	2	3	3	2	2	2	2	1	2	2	2	2	3	64
Adopt/enforce housing code legislation to limit number of citizens in sub-standard housing	2	6	0	5	3	3	2	1	2	1	2	2	2	3	3	2	6	6	1	3	3	3	3	3	3	70
Adopt/enforce legislation to restrict the disposal of flammable liquids and other hazardous materials	2	6	2	5	3	3	1	1	2	1	3	3	2	3	3	2	6	6	2	3	3	3	3	3	3	74
Obtain smoke detectors and provide free to residents in need.	2	6	2	5	3	2	2	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	70
Educate homeowners and businesses on wildfire fuels reduction	2	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	2	2	2	2	3	72
Educate businesses and the public on the causes of wild land fires	3	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	77
Educate school populations on causes of, preparedness for and response to a wild-land fire	3	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	2	2	2	3	74
Develop a plan to distribute wildfire awareness and prevention information	3	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	2	2	2	3	74
Work with the DNR to distribute USFS fuels reduction information (Firewise.)	3	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	2	2	2	3	74
Publish outdoor burn ban info in area newspapers during Wild-land fire seasons.	3	6	2	1	3	2	3	2	3	2	3	3	3	3	3	3	6	6	2	3	3	3	3	3	3	77
Obtain specialized equipment to combat wild-land fires.	2	6	2	1	3	3	2	3	1	1	1	1	2	3	3	3	4	2	3	1	3	3	3	3	3	62
Train fire 1st responders in wild-land fire response techniques	2	6	2	1	3	2	3	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	67
Obtain DNR compatible radios for interoperable communications.	2	6	2	1	3	2	2	2	2	2	2	2	2	3	3	3	4	4	2	2	3	3	3	3	3	66
Exercise fire response regularly for residences, businesses and industry	2	6	2	1	3	2	2	2	2	2	2	2	2	3	3	2	4	4	2	2	3	3	2	2	3	63
Identify Private 1st responders and contractors to assist in wild-land fire response	2	3	2	1	3	1	3	3	3	3	3	3	2	3	3	3	6	6	2	3	3	3	3	3	3	73

Maintain contact with the Forestry office that issues daily "fire potential" reports	3	3	2	1	3	2	3	2	3	3	3	3	2	3	3	3	6	6	2	3	3	3	3	3	3	74
Adopt/enforce wildfire legislation that includes burning bans	2	6	2	1	3	3	2	1	3	1	3	3	2	3	3	2	4	6	2	3	3	3	3	3	3	70
Develop Procedures by the county Solid Waste Department to respond to landfill fires.	2	3	2	1	3	2	2	2	3	2	2	2	2	3	3	2	2	4	2	3	2	2	1	2	2	56
Inspect the county Solid Waste Facility for mitigation efforts to prevent methane gas buildup	2	3	2	1	3	2	2	2	3	2	2	2	2	3	3	2	2	4	2	3	2	2	1	2	2	56

SECTION 8
MITIGATION PLAN MAINTENANCE

8.1 INTRODUCTION

Periodic revisions and updates of the Hazard Mitigation Plan are required to ensure that the goals of the Plan are kept current, taking into account potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with applicable federal and state regulations. Periodic evaluation of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to each jurisdiction's individual Mitigation Action Plan

8.1.1 2009 Plan Update

This chapter is now Section 8 in the 2009 plan update. This section has been enhanced in the 2009-updated plan to expand documenting and describing of monitoring, maintenance and updating. This includes aggressive methodologies to include public participation in plan maintenance and updating. The current mitigation committee extensively reviewed the 2004 plan maintenance and updating methodologies and processes. Documented in this section are the status of the 2004 methodologies and their effectiveness.

8.2 MONITORING, EVALUATION AND UPDATING METHODOLOGY

The Shelby County Mitigation Committee intends to remain intact as the organization responsible for monitoring, evaluating and updating this Plan. The Shelby County EMA Director shall continue to act as the coordinator for the Mitigation Committee. Each participating jurisdiction is expected to maintain representation on the committee which shall fulfill the monitoring, evaluation and updating responsibilities identified in this Section. The Shelby County Hazard Mitigation Plan will be monitored, evaluated and updated for the following purposes:

1. Maintain the currency of hazard and risk information.
2. Ensure that mitigation projects and actions reflect the priorities of the county and its constituents.
3. To comply with Federal Emergency Management Agency (FEMA) requirements, and maintain the county's eligibility for federal disaster assistance and mitigation grants.

Requirement §201.6(c)(4)(i): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. A. Does the new or updated plan describe the method and schedule for monitoring the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)
CRS Step 8: Draft an Action Plan: Credit is based on how a community monitors and evaluates its plan on an annual basis and updates it on a five-year cycle.
FMA Requirement §78.5(e): Presentation of the strategy for reducing flood risks and continued compliance with the NFIP, and procedures for ensuring implementation, reviewing progress, and recommending revisions to the plan

It is recognized that individual commitments change over time, and it shall be the responsibility of each department to inform the mitigation committee coordinator of any changes in representation by formal letter. The Coordinator will keep the committee makeup as a uniform representation of planning partners and stakeholders within the planning area. The planning committee shall be informed at the time of each change in representation on the committee

8.3 SCHEDULE FOR MONITORING THE PLAN

The Mitigation Committee shall be responsible for monitoring progress on, and evaluating the effectiveness of, the Plan, and documenting this in an annual progress report. During each year, and prior to the annual meeting of the Mitigation Committee, representatives will collect and process the annual reports from the departments, agencies and organizations involved in implementing mitigation projects or activities, or conduct phone calls and meetings with persons responsible for initiating and/or overseeing the mitigation projects to obtain progress information. Further, they shall obtain from their municipal supervisor/mayor or clerk any public comments made on the plan. The Mitigation Committee representatives shall be expected to document, as needed and appropriate:

- Hazard events and losses occurring in their jurisdiction including their nature and extent and the effects that hazard mitigation actions have had on impacts and losses,
- Progress on the implementation of mitigation actions, including efforts to obtain outside funding for mitigation actions
- Any obstacles or impediments to the implementation of actions
- Additional mitigation actions believed to be appropriate and feasible
- Public and stakeholder input and comment on the Plan.

Mitigation Committee representatives may use the progress reporting forms, Worksheets #1 and #3 in the FEMA 386-4 guidance document, to facilitate collection of progress data and information on mitigation actions. Local progress reports shall be provided to the Committee Coordinator at least two weeks prior to the annual Mitigation Committee plan review meeting.

8.4 SCHEDULE AND METHODOLOGY FOR PLAN EVALUATION

Requirement §201.6(c)(4)(i): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
B. Does the new or updated plan describe the method and schedule for evaluating the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?

The evaluation of the mitigation plan is an assessment of whether the planning process and actions have been effective, if the Plan goals are being reached, and whether changes are needed. The Plan will be evaluated on an annual basis to determine the effectiveness of the programs, and to reflect changes that may affect mitigation priorities or available funding.

The status of the Plan will be discussed and documented at an annual plan review meeting of the Mitigation Committee, to be held in the month of March. In February at least one month before the annual plan review meeting, the Shelby County Mitigation Plan Coordinator will advise Mitigation Committee members of the meeting date, agenda and expectations of the members.

The Mitigation Coordinator will be responsible for calling and coordinating the annual plan review meeting, and assessing progress toward meeting plan goals and objectives. These evaluations will assess whether:

- Goals and objectives address current and expected conditions.
- The nature or magnitude of the risks has changed.
- Current resources are appropriate for implementing the Mitigation Plan and if different or additional resources are now available.
- Actions were cost effective.
- Schedules and budgets are feasible.
- Implementation problems, such as technical, political, legal or coordination issues with other agencies exist.
- Outcomes have occurred as expected.
- Changes in county resources impacted plan implementation (e.g., funding, personnel, and equipment)
- New agencies/departments/staff should be included, including other local governments as defined by 44 CFR 201.6.
- Documentation for hazards that occurred within the jurisdiction during the last year

Specifically, the Mitigation Committee will review the mitigation goals, objectives, and activities/projects using performance based indicators, including:

- New agencies/departments created that have authority to implement mitigation actions or are required to meet goals, objectives, and actions
- Project evaluation based on current needs of the mitigation plan
- Project completion regarding progress of proposed or ongoing actions
- Under/over spending regarding proposed mitigation action budgets
- Achievement of the goals and objectives
- Resource allocation to note if resources are required to implement mitigation activities
- Timeframes-comment on whether proposed schedules are sufficient to address actions
- Budgets-note if budget basis should be changed or is sufficient
- Lead/support agency commitment-note if there is a lack of commitment on the part of lead or support agencies
- Resources regarding whether resources are available to implement actions
- Feasibility –comment regarding whether certain goals, objectives, or actions prove to be unfeasible

Finally, the Mitigation Committee will evaluate how other programs and policies have conflicted or augmented planned or implemented measures, and shall identify policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions. Other programs and policies can include those that address:

- Economic Development
- Environmental Preservation & Permitting
- Historic Preservation

- Redevelopment
- Health and/or safety
- Recreation
- Land use/zoning
- Public Education and Outreach
- Transportation

The Mitigation Committee may refer to the evaluation forms, Worksheets #2 and #4 in the FEMA 386-4 guidance document to assist in the evaluation process.

The Mitigation Committee Coordinator shall be responsible for preparing an Annual Mitigation Plan Progress Report, based on the provided local annual progress reports from each department presented at the annual Mitigation Committee meeting, and other information as appropriate and relevant. These annual reports will provide data for the 5-year update of this Mitigation Plan and will assist in pinpointing implementation challenges. By monitoring the implementation of the Plan on an annual basis, the Mitigation Committee will be able to assess which projects are completed, which are no longer feasible, and what projects may require additional funding.

This annual progress report shall apply to all planning partners, and as such, shall be developed according to an agreed format and with adequate allowance for input and comment of each planning partner prior to completion and submission to the State Hazard Mitigation Officer. Each planning partner will be responsible for providing this report to its governing body for their review. During the annual Mitigation Committee meeting, the planning partners shall establish a schedule for the draft development, review, comment, amendment and submission of the Annual Mitigation Plan Progress Report to the State.

The Annual Mitigation Plan Progress Report shall be posted on the County's Hazard Mitigation Plan website to keep the public apprised of the Plan's implementation.

The Plan will also be evaluated and revised following any major disasters, to determine if the recommended actions remain relevant and appropriate. The risk assessment will also be revisited to see if any changes are necessary based on the pattern of disaster damages or if data listed in the Hazard profile Section of this Plan has been collected to facilitate the risk assessment is still relevant. This is an opportunity to increase the community's disaster resistance and build a better and stronger community.

8.5 FIVE YEAR PLAN REVIEW SCHEDULE AND METHODOLOGY

Requirement §201.6(c)(4)(i): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
C. Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?

44 CFR 201.6.d.3 requires that local hazard mitigation plans be reviewed, revised as appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under DMA 2000. It is the intent of the Shelby County Mitigation Committee to update this Plan on a five-year cycle from the date of this 2009 plan adoption.

To facilitate the update process, the Mitigation Plan Coordinator, with support of the Mitigation Committee, shall use the third annual Mitigation Committee meeting (March of 2013 assuming this Plan is approved in 2010) to develop and commence the implementation of a detailed Plan update program. The Mitigation Plan

Coordinator shall invite representatives from the State to this meeting to provide guidance on plan update procedures. This program shall, at a minimum, establish who shall be responsible for managing and completing the Plan update effort, what needs to be included in the updated plan, and a detailed timeline with milestones to assure that the update is completed according to regulatory requirements.

At this meeting, the Mitigation Committee shall determine what resources will be needed to complete the update. The Mitigation Committee Coordinator will prepare a report: 1) describing the update requirements; 2) summarizing the staff analysis of the Plan, highlighting areas that require modification and identifying why the modification is needed, and; 3) providing detailed recommendations about how the Plan should be updated, noting any technical work that may be required. The report will be provided to Mitigation Committee and County Commission for consideration. The County Commission and Mitigation Committee will review the report and make recommendations to the County Supervisor on how to proceed with the update process. The County Supervisor will designate an individual or county department to carry out the recommendations and any technical work, and will prepare draft updates to the Plan on a schedule determined by the Mitigation Committee, the County Commission and/or the County Supervisor.

During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the Plan?
- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did the jurisdictions, agencies, and other partners participate in the Plan implementation process as proposed?

Shelby County and its participating departments or agency's will forward information on any proposed change(s) to all interested parties including, but not limited to, all affected parish and municipal departments, residents and businesses. When a proposed amendment may directly affect particular private individuals or properties, Shelby County will follow existing local, state or federal notification requirements, which may include published public notices as well as direct mailings. Information on any proposed Plan amendments will also be forwarded to the State. This information will be disseminated in order to seek input on the proposed amendment(s) for not less than a 45-day review and comment period. At the end of the 45-day review and comment period, the proposed amendment(s) and all comments will be forwarded to the Mitigation Committee for final consideration. The committee will review the proposed amendment along with the comments received from other parties, and if acceptable, the committee will submit a recommendation for the approval and adoption of changes to the Plan to each appropriate governing body within 60 days. In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered by the Mitigation Committee:

- There are errors, inaccuracies or omissions made in the identification of issues or needs in the Plan.
- New issues or needs have been identified which are not adequately addressed in the Plan.
- There has been a change in information, data, or assumptions from those on which the Plan is based.
- There has been a change in local capabilities to implement proposed hazard mitigation activities.

Upon receiving the recommendation from the Mitigation Committee and prior to adoption of the Plan, The local governing body will hold a public hearing. The governing body will review the recommendation from the Mitigation Committee (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, the governing body will take one of the following actions:

- Adopt the proposed amendments as presented;
- Adopt the proposed amendments with modifications;
- Refer the amendments request back to the Mitigation Committee for further revision; or

Defer the amendment request back to the Mitigation Committee for further consideration and/or additional hearings. When the draft updates are completed, the Mitigation Committee will convene to conduct a comprehensive evaluation and revision. The Mitigation Committee (with input from the Stakeholders Group) will produce a final draft of the updated Plan for consideration by the Mayor and County Council. The Council and Mayor will review the updated Plan, initiate changes, approve and adopt the Plan in sufficient time to meet FEMA requirements.

8.6 INCORPORATING MITIGATION REQUIREMENTS INTO EXISTING PLANNING MECHANISMS

It is the intention of the Mitigation Committee and participating departments to incorporate mitigation planning as an integral component of daily government operations. Mitigation Committee members will work with local government officials to integrate the newly adopted hazard mitigation goals and actions into the general operations of government and partner organizations. By doing so, the Mitigation Committee anticipates that:

1) Hazard mitigation planning will be formally management efforts

2) The Hazard Mitigation Plan will become a mutually supportive document that works in concert to meet the goals and needs of County residents; and

3) Duplication of effort can be minimized.

It is recognized by all participating departments that this information can be invaluable in making decisions under other planning programs.

The primary process for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each of the individual plans that require specific planning and administrative tasks (e.g. plan amendments, ordinance revisions, capital improvement projects, etc.). The Mitigation Committee will identify which parts of this plan would be most appropriate to have incorporated into other county plans or mechanisms. The Mitigation Committee Coordinator is charged with identifying the schedule and contacts responsible for updating other county plans and mechanisms.

Requirement §201.6(c)(4)(ii): The plan shall include 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
A. Does the new or updated plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan
B. Does the new or updated plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?
C. Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (*e.g.*, risk assessment) into other planning mechanisms, when appropriate

CRS Step 3: Coordination with Other agencies:
If the plan includes a review of existing studies, reports, and technical information for the needs goals and plan for that area.

During the planning process for new and updated local planning documents, such as a comprehensive plan, capital improvements plan, or emergency management plan, the Shelby County will provide a copy of the Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Hazard Mitigation Plan and will not contribute to increased hazards.

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

The members of the Mitigation Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents are consistent with the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the Shelby County. The Table below includes existing processes and programs through which the mitigation plan should be implemented.

Table 8.1 Plan Integration		
Process	**Action**	**Implementation of Plan**
Administrative	Departmental or organizational work plans, policies, and procedural changes	▪ Public Works ▪ Building/Engineering ▪ Planning ▪ Emergency Services ▪ Health and Social Services ▪ Transportation ▪ Business and Economic Development
Administrative	Other organizations' plans	▪ Include reference to this plan in risk reduction section of the Municipal Emergency Operations Plans ▪ Include references in the creation of ordinances, public education, ▪ County Household Hazardous Waste information
Administrative	Jobs/Job Descriptions	Unpaid internships to assist in hazard mitigation plan maintenance
Budgetary	Capital and operational budgets	Review of county and local budgets to include line item mitigation actions
Regulatory	Executive Orders, ordinances and other directives	▪ Comprehensive Planning - Institutionalize hazard mitigation for new construction and land use. ▪ Zoning and Ordinances ▪ Building Codes-enforcement of codes or higher standard in hazard areas ▪ Capital Improvements Plan - Ensure that the person responsible for projects under this plan evaluate if the new construction is in a high hazard area, flood plain, etc. so the construction is designed to mitigate the risk. Revise requirements for this plan to include hazard mitigation in the design of new construction. ▪ National Flood Insurance Program – Continue participation in this program and increase participation in Community Rating System Program • Continue to implement storm water management plans. • Prior to formal changes (amendments) to comprehensive plans, zoning, ordinances, capital improvement plans, or other mechanisms that control development must be reviewed to ensure they are consistent with the hazard mitigation plan
Funding	Secure traditional sources of financing	▪ Apply for grants from federal or state government, nonprofit organizations, foundations, and private sources including Pre-Disaster Mitigation Program (PDM), Flood Mitigation Assistance Program (FMA), and the Hazard Mitigation Grant Program (HMGP-Stafford Act, Section 404). ▪ Research grant opportunities through U.S. Department of Housing and Urban Development's Community Development Block Grant (CDBG) ▪ Stafford Act, Section 406 – Public Assistance Program Mitigation Grants ▪ Federal Highway Administration ▪ Catalog of Federal Domestic Assistance

Table 8.1 Plan Integration		
Process	**Action**	**Implementation of Plan**
		▪ United States Fire Administration – Assistance to Firefighter Grants ▪ United States Small Business Administration Pre and Post Disaster Mitigation Loans ▪ United States Department of Economic Development Administration Grants ▪ United States Army Corps of Engineers ▪ United States Department of Interior, Bureau of Land Management
Partnerships	Develop creative partnerships, funding and incentives	▪ Public-Private Partnerships ▪ State Cooperation ▪ In-kind resources
Partnership	Existing Committees and Councils	▪ Local Government Committees: ▪ Environmental Commissions ▪ Planning Boards ▪ Zoning Board of Appeals ▪ Media and Communications ▪ Merchants Association ▪ Property Owners Association
Partnership	Working with other federal, state, and local agencies	▪ Army Corps of Engineers (USACE) ▪ American Red Cross ▪ Department of Homeland Security (DHS) ▪ Federal Emergency Management Agency (FEMA) ▪ National Oceanic and Atmosphere Agency (NOAA) ▪ National Weather Service (NWS) ▪ Minnesota Department of Transportation ▪ Minnesota Department of Environmental Protection ▪ Minnesota State Police ▪ United States Department of Agriculture (USDA) ▪ United States Department of Transportation (USDOT) ▪ United States Geological Service (USGS) ▪ Watershed Associations

8.6.1 Previous Plan Maintenance and Incorporation of Mitigation Strategy

The current mitigation team extensively reviewed the previous plan maintenance and updating methodologies and processes. Documented in this section are the methodologies that were effective and those that need improvements.

Table 8.2 Plan Maintenance Effectiveness Review		
Plan Maintenance Component	**Status**	**Effectiveness**
Annually Evaluate the effectiveness of previously-implemented mitigation actions;	Review annually	Medium

Table 8.2 Plan Maintenance Effectiveness Review		
Plan Maintenance Component	**Status**	**Effectiveness**
Annually Explain why any actions are not completed or behind schedule;	Annually	Medium
Annually Address changing land use patterns and new developments; and,	As required	
Annually Identify any changes in risk assessment and/or risk vulnerability.	Risk Assessment/vulnerability study made each year	Medium
For continued public involvement a hard copy of the plan will be available for viewing at all appropriate agencies throughout the county; including, at a minimum, the Shelby County EMA Office, the office of the Shelby County Commission, the offices of the mayors, and the main public library. After adoption, a notice in the newspaper will inform the public that the plan may be viewed at these locations.	Posted to County Web site; each municipality provide hard copy for files	Medium
Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the HMPC.	Public meeting held as necessary	
If any of the jurisdictions develop future plans that pertain to items that may have an affect on natural hazard planning, the findings of this plan would likewise need to be incorporated into that community' s plan.	Updated with 5-year plan	Medium
At the end of the five-year cycle of the Action Program, the committee will oversee a major update to the plan that follows the Federal planning criteria in effect at the time of the update.	Plan updated every 5 years	High

Shelby County and many of the participating jurisdictions have reviewed and incorporated Hazard identification and risk assessment into other plans including Comprehensive Plans, Flood Management Plans and Emergency Operations Plans. Information from the previous plan was also used to develop SOG's and FOG's for hazard event response

8.7 CONTINUED PUBLIC INVOLVEMENT

Public participation is an integral component of the mitigation planning process and will continue to be essential as this Plan evolves over time. Significant changes or amendments to the Plan require a public hearing prior to any adoption procedures.

The public will have an opportunity to comment on the Plan at the annual review meeting for the Mitigation Plan and during the 5-year plan update. The annual progress reports will be posted on the County mitigation website in addition to the Hazard Mitigation Plan. The County will maintain this website, posting the annual progress reports and maintaining an active link to collect public comments.

The Mitigation Committee Coordinator is responsible for coordinating the Plan evaluation portion of the meeting, soliciting feedback, collecting and reviewing the comments, and ensuring their incorporation in the 5-year

Requirement §201.6(c)(4)(iii): The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.
A. Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)

CRS Step 10: Impalement, evaluate and revise: The community must have procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in and annual evaluation report..

plan update as appropriate. Additional meetings may also be held as deemed necessary by the mitigation committee. The purpose of these meetings would be to provide the public an opportunity to express concerns, opinions, and ideas about the mitigation plan. Annual progress reports will also be posted to the project web site.

Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary. These efforts may include:

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

The Shelby County is committed to the continued involvement of the public in the hazard mitigation process. Therefore, copies of the Plan will be made available for review during normal business hours at the Shelby County Library, the County Planning Department, and on the county website.

SECTION 9
APPENDICES

9.1 REFERENCES AND ACKNOWLEDGEMENTS

The resources were accessed during plan development and in many cases provided specific content, maps and images.

Agency for Toxic Substances and Disease Registry (ATSDR)
Alabama Department of Agriculture
Alabama Department of Justice
Alabama Department of Transportation
Alabama Emergency Management Agency
Alabama Department of Health
Alabama Department of Homan Resources

Centers for Disease Control and Prevention (CDC)
Coast Guard, National Response Center
Colorado State University
City-Data.com
City of Alabaster
City of Calera
City of Chelsea
City Of Harpersville
City of Helena
Indian Springs Village
City of Montevallo
City of Pelham
City of Vincent
City of Westover
City of Wilsonville
City of Wilton

E-Podunk.com
Environmental Protection Agency

Federal Bureau of Investigation
Federal Computer Incident Response Center
Federal Emergency Management Agency (FEMA)
Federal Motor Carrier Safety Administration

International Association of Emergency Managers (IAEM)

Jurisdictions Websites

Jurisdictions Comprehensive Plans

National Climatic Data Center, National Oceanic and Atmospheric Administration-Storm Event Database
National Earthquake Hazards Reduction Program
National Emergency Management Association (NEMA)
National Highway Traffic Safety Administration
National Nuclear Security Administration
National Oceanic and Atmospheric Agency
National Performance of Dams Program-Dam Incident Notification Database
National Response Team (NRT)
National Weather Service
Natural Hazards Center

Office of Domestic Preparedness
Office of Emergency Preparedness

Red Cross/VOAD
Root3.eb.com

Shelby County Chamber of Commerce
Shelby County Newspapers
Shelby County Emergency Management
Shelby County Appraiser and GIS
Shelby County 911
Shelby County Public Health
Shelby County Red Cross
Shelby County Department of Agriculture
Shelby County Sheriffs Department
State of Florida Enhanced Hazard Mitigation Plan
State of North Carolina Hazard Mitigation Plan
State of Alabama Hazard Mitigation Plan

USACE. National Inventory of Dams
U.S. Census Bureau
U.S. Department of Agriculture
U.S. Department of Agriculture Forest Service
U.S. Department of Justice
U.S. Department of Transportation
U.S. Fire Administration
U.S. Geological Survey
U.S. Geological Survey Earthquakes Hazard Program
U.S. Health and Human Services

Wikipedia.org

9.2 MITIGATION MEETINGS, NOTICES AND MINUTES

All committee and public meeting notices are copied or scanned into this section.

Initial Mitigation Plan Meeting

MINUTES

(1) **Date / Location**. Shelby County EMA hosted an initial mitigation-planning meeting on March 27, 2008, in preparation for developing a Multi-jurisdictional, All Hazard Mitigation Plan for Shelby County, Alabama and thirteen participating municipalities.

(2) **Participants**

Name	Title	Telephone	E-mail Address
Don Greene	EMA Supervisor	205.669.3999	dgreene@shelbyal.com
Chad Scroggins	Environmental Supervisor	205.669.3999	cscroggins@shelbyal.com
Cherie Cornelius	Mitigation Territory Mgr.	205.280.2406	cherie.cornelius@ema.al.gov
Mindy Nash	Administrative Assistant	205.669.3999	mnash@shelbyal.com
Les Junge	EM Assist Consultant	256.453.5112	les.junge@exspend.com
Bill Karl	EM Assist President	256.282.1781	bill_karl@msn.com
Jim Kincaid	EM Assist Consultant	205.919.8129	contact@jimkincaid.biz

(3) **Purpose.** The purpose of the meeting was to review the proposed mitigation planning concept, including: the project plan, sample meeting and jurisdiction documents, planning methodology, to schedule the mitigation planning public and kickoff meetings and contract signing. These minutes provide an overview of the meeting.

OVERVIEW OF ACTIVITIES

- General. The Agenda for the Initial Planning Meeting was:
  - **Team Introductions**
  - **Shelby County Expectation**
  - **Mitigation Planning Presentation**
  - **Project Plan Review**
  - **Prepared Documents Review**
  - **Schedule for the Public Meeting**
  - **Schedule for the "Kickoff" meeting**
  - **Contract Signing**
- **Agreements**:
  - The Mitigation Plan would be completed by May 31, 2009
  - The planning team will consist of 1 person from each municipality and participating agencies. An alternate contact will be identified for each municipality/agency
  - Mindy Nash will serve as the Administrative Support Person for the Mitigation Plan

Shelby County, Alabama
Multi-jurisdictional, All Hazards Mitigation Plan

- Don Greene will serve as the Shelby County EMA Point of Contact
- Les Junge will be the EM Assist Point of Contact and construct the plan
- Jim Kincaid will be the EM Assist alternate contact, collect data and conduct interviews
- EM Assist will provide data collection surveys and conduct municipal interviews
- EM Assist will provide forms for logging In Kind Contribution hours
- The LEPC will provide municipal vulnerability data in August
- The municipalities that overlap Jefferson and Shelby County are in the Jefferson County plan and will only be identified in the Shelby County Mitigation Plan.
- Reports and payments will follow the schedule in the EM Assist proposal
- Contract Signing was completed

- **Outstanding Issues**

  - The proposed meeting date for the Mitigation Plan Public and Kickoff meeting is May 12, 2008. Don Greene will confirm the actual date at a later time
  - To ensure that the Shelby County Mitigation Plan is in compliance with the State Plan Don Greene will obtain hazard related information from the draft State Plan

MINDY NASH

From: MINDY NASH
Sent: Thursday, April 24, 2008 3:30 PM
To: 'Tim.Prince@shelbycountyreporter.com'
Subject: public notice for April 30 and May 7

Mindy Nash
Administrative Assistant
Shelby County Environmental Services and Emergency Management Agency
504 Highway 70
Columbiana, Alabama 35051
205-669-3737/3999
205-669-3871 fax
mnash@shelbyal.com

"The opinions expressed here are my own and do not necessarily represent those of the County Commission, County Government or Elected Officials."

PUBLIC NOTICE

Public Notice of Hazard Mitigation Plan Meeting

Notice is hereby given to all residents of Shelby County, Alabama and its local jurisdictions, and all other parties of interest, that an open public called meeting of the Shelby County Hazard Mitigation committee will be held in the Shelby County Commissioner's chambers on Monday, May 12, 2008 at 10:30 a.m. for the purpose of developing the Shelby County and its local jurisdictions a multi-jurisdictional, all Hazard Mitigation Plan.

Information on assessing local and regional natural manmade hazards, establishing mitigation goals and objectives and identifying projects that will enable the Shelby County office of Environmental Services/Emergency Management to prepare for and reduce the impacts of a disaster will be available.

Any person requiring auxiliary aid must make request to the County's Environmental Services/Emergency Management office 48 hours prior to meeting. Contact 669-3999 for additional information.

LEGAL NOTICE

Public Notice of Hazard Mitigation Plan Meeting

Notice is herby given to all residents of Shelby County, Alabama and its local jurisdictions, and all other parties of interest, that an open public called meeting of the Shelby County Hazard Mitigation committee will be held in the Shelby County Commissioner's chambers on Monday, May 12, 2008, at 10:30 a.m. for the purpose of developing Shelby County and its local jurisdictions a multi-jurisdictional, all Hazard Mitigation Plan.

Information on assessing local and regional natural manmade hazards, establishing mitigation goals and objectives and identifying projects that will enable the Shelby County Office of Environmental Services/Emergency Management to prepare for an reduce the impacts of a disaster will be available.

Any person requiring auxiliary aid must make requests to the County's Environmental Services/Emergency Management office 48 hours prior to meeting. Contact 669-3999 for additional information.

Shelby County Reporter
April 30 and May 7, 2008
HAZARD MITIGATION

REMINDER

Reference, Letter, dated April 16, 2008, Subject: Multi-jurisdictional All Hazard Mitigation Plan.

Just to remind you of the important Multi-jurisdictional All Hazard Mitigation Plan Workshop that will be conducted for Shelby County and all municipalities on **Monday, May 12, 2008 at 8:30 a.m. at the John Jones (Ag Building) in Columbiana.** The meeting will last approximately 1 ½ hours. The workshop will cover details and information that will be required from the county and each agency/department in the development of the mitigation plan.

It is imperative that your agency/department be represented at this meeting. Representation from your agency should be the point of contact (POC) person(s) that you have provided. If you have not designated a POC from your agency/department, listed below are the Agency/Department and their responsibility in developing the plan.

American Red Cross	Provide shelter information
County Appraiser	Provide hazard structure cost data
Chamber of Commerce	Population/demographics/housing/economic data
Forestry	Wildfire incident survey
IT	Information Maps
Law Enforcement	Complete Terrorist, METH & critical facilities survey
Public Health	Complete epidemic/pandemic survey
Co Engineer/Highway Department	Repetitive flooding/Flood Plain Information
Schools	Complete critical education facility surveys
Zoning/Inspections	Provide current and future land use narrative
Surrounding Counties EMA	Provide guidance

If you need additional information, please contact EMA office at (205) 669-3999.

Thanking you in advance for your participation.

"Kickoff" and Public Mitigation Plan Meeting

MINUTES

(1) **Date / Location**. Shelby County EMA hosted the "Kickoff" mitigation plan-planning meeting on May 12, 2008, at the Agricultural Building in Columbiana, Al. and a Public Meeting at the County Commission Meeting Room in Columbiana Al. in preparation for developing a Multi-jurisdictional, All Hazard Mitigation Plan for Shelby County, Alabama and thirteen participating municipalities.

(2) **Participants**

Name	Agency/Department Jurisdiction	Title	Contact Number	Email
Les Junge	EM Assist	Consultant	256.453.5112	les.junge@exspend.com
Jim Kincaid	EM Assist	Consultant	205.919.8129	contact@jimkincaid.biz
Ricky	ACES	CEC	205-669-6763	colqurw@aces.edu

Colquitt				
Mindy Nash	Shelby County EMA	Administrative Assistant	205-669-3999	mnash@shelbyal.com
Don Greene	Shelby County EMA	Director	205-669-3999	dgreene@shelbyal.com
Mary Kinard	American Red Cross, Shelby County	Manager	205-987-2792	kinardm@usa.redcross.org
Greg Farrell	Alabaster Fire Department	Deputy Chief	205-621-8752	gfarrell@cityofalabaster.com
Larry Riggins	Town of Westover	Council Member	205-978-7598	larryrigg1@charter.net
Bryan Schaefers	St. Clair County EMA	Planner	205-884-6800	bryans@scema.co.saint-clair.al.us
Lee Helms	Chilton County EMA Representative	Owner LHA	205-280-3027	lee@leehelmsllc.com
Tom Ferguson	Shelby County Schools	Assistant Superintendent	205-682-7013	tferguson@shelbyed.k12.al.us
James Ponseti	Shelby County Development Services	Senior Planner	205-620-6635	jponseti@shelbyal.com
Sherri Thompson	NGO, VOAD, Private Citizen		205-678-4591	sherri@handsonbirmingham.org
John Hooper	Public Health Area V	Senior Environmentalist	205-685-4195	jhooper@adph.state.al.us
Stephanie Gibson	Alabama EMA	Area Coordinator	888-390-0132	stephanie.gibson@ema.alabama.gov
Wayne Hayes	Bibb County EMA	Director	205-926-3113	bcema@dbtech.net
Kelli B. Alexander	Alabama EMA	Planner	205-280-2269	kelli.alexander@ema.alabama.gov
Kay M. Ray	Town of Wilsonville	Town Clerk	205-669-6180	wilsonvilleclerk@bellsouth.net
Tony Acre	Shelby County Tax Commissioners Office	Senior Appraiser	205-670-6935	tacre@shelbyal.com
Brad Lang	Alabama Forestry Commission	County Manager	205-669-4133	shelby.county@forestry.alabama.gov
Mark Bishop	Shelby County Sheriff's Office	Administrative Sergeant	205-670-6172	mbishop@shelbyso.com
Annette Davis	Jefferson County EMA	EMA Officer	205-254-2051	davisa@jccal.org
Jim Hairston	Town of Vincent	Planning Committee	205-672-7330	
Jesse Jowers	City of Pelham	City Engineer	205-620-6408	jjowers@pelhamonline.com
S. Earl Niven	City of Chelsea	Mayor	205-678-7260	eniven@cityofchelsea.com

(3) **Purpose.** The purpose of the "Kickoff" meeting was to review the proposed mitigation plan-planning concept, including methodology, process and data collection. Jurisdiction surveys were distributed to collect pertinent data and schedules were defined as to planning schedule.

The Public meeting was held subsequent to the monthly County Commission Meeting. The purpose, scope and requirements for a hazard mitigation plan were presented to 6 attendees. Don Greene of the Shelby County EMA addressed questions.

OVERVIEW OF ACTIVITIES

- General. The Agenda for the "Kickoff" and Public Planning Meetings were:

    - **Team Introductions**
    - **Shelby County Expectation**
    - **Mitigation Planning Presentation**
    - **Survey Distribution**
    - **Survey Completion Instructions**

- **Agreements**:

    - The planning team will consist of 1 person from each municipality and participating agencies. An alternate contact will be identified for each municipality/agency
    - Mindy Nash will serve as the Administrative Support Person for the Mitigation Plan
    - Don Greene will serve as the Shelby County EMA Point of Contact
    - Les Junge will be the EM Assist Point of Contact and construct the plan
    - Jim Kincaid will be the EM Assist alternate contact, collect data and conduct interviews
    - EM Assist will conduct municipal interviews
    - The State Form for logging In Kind Contribution hours will be used
    - The municipalities that overlap Jefferson and Shelby County are in the Jefferson County plan and will only be identified in the Shelby County Mitigation Plan.
    - The University of Montevallo will participate and be included with the City of Montevallo
    - Don Greene provided FEMA "How to – Guides" for each municipality

- **Outstanding Issues**

    - Don Greene will present the mitigation plan data collection process to the monthly City Clerks, Law Enforcement, and Fire Service Association meetings.
    - Les Junge will provide electronic copies of the surveys to Shelby County EMA for distribution to all participants.
    - A conference call will be scheduled with 911 Information Technology to determine what data can be provided from 911 database logs.

- The participants will be required to return the completed surveys by June 15th.

After compiling the survey information Shelby County will schedule on-site municipality interviews, for EM Assist, with the city clerks, law enforcement, fire service and public works.

HAZARD MITIGATION PLANNING MEETING
June 30, 2008

✓	Karren Smith	Calera Police Department	Records		ksmith@calera.org
✓	Kay M. Ray	Town of Wilsonville	Town Clerk	205-669-6180	wilsonvilleclerk@bellsouth.net
	Kelli B. Alexander	Alabama EMA	Planner	205-280-2269	kelli.alexander@ema.alabama.gov
	Larry Riggins	Town of Westover	Council Member	205-978-7598	larryrigg1@charter.net
	Lee Helms	Chilton County, St. Clair	Owner LHA	205-280-3027	lee@leehelmsllc.com
	Lynda Shelley Tyree	University of Montevallo	Chief of Police	205-665-8000	tyreelm@montevallo.edu
	Mark Bishop	Shelby County Sheriff's Office	Administrative Sergeant	205-670-6172	mbishop@shelbyso.com
	Mary Kinard	American Red Cross, Shelby County	Mager	205-987-2792	kinardm@usa.redcross.org
✓	Mindy Nash	Shelby County EMA	Administrative Assistant	205-669-3999	mnash@shelbyal.com
✓	Ricky Colquitt	ACES	CEC	205-669-6763	colqurw@aces.edu
✓	Robert Kelley	Shelby County Environmental Services	Manager	205-669-3737	rkelley@shelbyal.com
	S. Earl Niven	City of Chelsea	Mayor	205-678-7260	eniven@cityofchelsea.com
	Sharon Anderson	City of Montevallo	Mayor	205-665-2555	sanderson@cityofmontevallo.com
	Sherri Thompson	NGO, VOAD, Private Citizen		205-678-4591	sherri@handsonbirmingham.org
	Stacy Walkup	South Shelby Chamber of Commerce	Executive Director	205-669-9075	soshelby@bellsouth.net
	Stephanie Gibson	Alabama EMA	Area Coordinator	888-390-0132	stephanie.gibson@ema.alabama.gov
	Steve Zerkis	Indian Springs Village	Mayor	205-988-4276	stevezerkis@yahoo.com
	Theoangelo Perkins	Town of Harpersville	Mayor	205-672-9961	hvillemayor@aol.com
	Tom Ferguson	Shelby County Schools	Assistant Superintendent	205-682-7013	tferguson@shelbyed.k12.al.us
	Tony Acre	Shelby County Tax Commissioners Office	Senior Appraiser	205-670-6935	tacre@shelbyal.com
	Wayne Hayes	Bibb County EMA	Director	205-926-3113	bcema@dbtech.net
✓	Wayne Shirley	City of CHelsea	Fire Chief	205-678-6060	chiefshirley@bellsouth.net

Data Collection Meeting

MINUTES

(1) **Date / Location**. Shelby County EMA hosted the "Data Collection" mitigation plan-planning meeting on June 30, 2008, at the Agricultural Building in Columbiana, Al. to review progress and address issues in collection the appropriate data for the Multi-jurisdictional, All Hazard Mitigation Plan for Shelby County, Alabama and thirteen participating municipalities.

(2) **Participants**

Name	Agency/Department	Title	Contact	Email

	Jurisdiction		Number	
Les Junge	EM Assist	Consultant	256.453.5112	les.junge@exspend.com
Jim Kincaid	EM Assist	Consultant	205.919.8129	contact@jimkincaid.biz
Mindy Nash	Shelby County EMA	Administrative Assistant	205-669-3999	mnash@shelbyal.com
Don Greene	Shelby County EMA	Director	205-669-3999	dgreene@shelbyal.com
Ricky Colquitt	ACES	CEC	205-669-6763	colqurw@aces.edu
Wayne Shirley	City of Chelsea	Fire Chief	205-678-6060	chiefshirley@bellsouth.net
Greg Farrell	Alabaster Fire Department	Deputy Chief	205-621-8752	gfarrell@cityofalabaster.com
Robert Kelly	Shelby County Environmental Svcs	Manager	205-669-3737	rkelly@shelbyal.com
John Hooper	Public Health Area V	Senior Environmentalist	205-685-4195	jhooper@adph.state.al.us
Andy Barber	City of Vincent	Street Dept	205-672-2261	
April Price	Town of Wilton	Town Clerk	205-665-2021	wiltontownutilityclerk@charter.net
Chad Scroggins	Shelby County Environmental Svcs	Supervisor	205-669-4133	csgroggins@shelbyal.com
Kay M. Ray	Town of Wilsonville	Town Clerk	205-669-6180	wilsonvilleclerk@bellsouth.net
Danny Endress	City of Pelham	Fire Chief	205-620-6490	dendress@pelhamonline.com
Karren Smith	Calera Police Dept	Records		ksmith@calera.org
Brad Lang	Alabama Forestry Commission	County Manager	205-669-4133	shelby.county@forestry.alabama.gov
Gina Antolini	City of Columbiana	City Clerk	205-669-5801	cityclerk@cityofcolumbiana.com
Hilton Shirley	Calera Fire Dept	Fire Marshall	205-668-3832	hshirley@calera.org
Jim Hairston	Town of Vincent	Planning Committee	205-672-7330	
Jesse Jowers	City of Pelham	City Engineer	205-620-6408	jjowers@pelhamonline.com
John Ellison	Shelby County 911	Director	205-439-6911	john@shelby911.org
JR Henderson	Shelby IT/Mapping	Supervisor	205-670-6980	jhenderson@shelbyal.com

(3) **Purpose.** The purpose of the "Data Collection" meeting was to review the data collection progress by the participating entities. Jurisdiction surveys were distributed, discussed and reviewed to ensure pertinent data was being collected and the planning schedule was on time.

OVERVIEW OF ACTIVITIES

- General. The Agenda for the "Data Collection" meeting was:
  - **Team Introductions**
  - **Mitigation Planning Presentation**
  - **Survey Distribution**
  - **Survey Completion Instructions**
  - **Data Collection Progress**
  - **Next Steps**
- **Agreements**:
  - EM Assist will conduct municipal interviews
  - EM Assist will provide historic severe weather and flooding occurrences
  - Each municipality will write a short paragraph on the most severe hazard events that have impacted the community
  - EM Assist will provide a checklist of what information the municipalities need to have for the on-site interviews
  - Municipalities can roll up critical facilities to one list
  - Surveys will be sent in electronically if at all possible
- **Outstanding Issues**
  - Scheduling of municipal interviews

SHELBY COUNTY
ALL HAZARD MULTI-JURISDICTIONAL MITIGATION PLAN

IT/APPRAISERS MEETING-AGENDA

July 3, 2008
9:00 am – 10:00 am

Item # 1: What is required by IT/Appraiser !!!

Item # 2: What IT/Appraiser can provide!!!!

Item # 3: Develop a list and timeframe for project completion by IT/Appraiser!!!!

Attendance Roster

Name	Department	Phone #	Email Address
Don Greene	EMA	205-669-3999	dgreene@shelbyal.com
Mindy Nash	EMA	205-669-3999	Mnash@shelbyal.com
Don Armstrong	Property Tax Commissioner	205-669-3900	dona@shelbyal.com
J.R. Henderson	Mapping Supervisor	205-670-6980	jhenderson@shelbyal.com
Chuck Owen	IT Administrator-Database	205-670-6968	cowen@shelbyal.com
Tony Acre	Senior Appraiser	205-670-6935	tacre@shelbyal.com

- Ensure all planning participants keep up with time spent on the plan

MEMORANDUM

TO: Mayors/City Clerks

FROM: Shelby County EMA

DATE: August 8, 2008

SUBJECT: **Mitigation Plan Interview Schedule**

To keep on established timeframe for completion of the mitigation plan, it is imperative that we conduct interviews and obtain the necessary information/data that you have complied. Attached is a “proposed” schedule for the mitigation plan interview for each municipality. If your schedule does not allow you and other representatives to be present on the date in which we have provided, please advise and we will work in a time that is convenient, but keeping in mind the county has (13) municipalities to interview.

What we are asking from your municipality is to complete the police, fire and municipality surveys that have been provided. Please have these available in 'hardcopies". Also, if you have electronic copies of the ordinances, plans, and codes as listed in the municipality survey, please have these available. If possible, have a representative from police, fire and public works as well as the city clerk available on date of interview.

I understand that most of you are involved in election year requirements but this interview will not take more than 1-1½ hours of your time.

Please have available the in-kind worksheets that personnel from your municipality have spent on gathering and compiling the required information and data.

Thanking you in advance for your cooperation.

Sincerely,

Don Greene
Director

SHELBY COUNTY ENVIRONMENTAL SERVICES
EMERGENCY MANAGEMENT AGENCY

504 Highway 70
Columbiana, Alabama 35051

Don Greene
Director

Phone: 205-669-3999
Fax: 205-669-3871

MEMORANDUM

TO: Mayors/City Clerks

FROM: Shelby County EMA Don Greene

DATE: October 29, 2008

SUBJECT: Jurisdiction Visit

As part of the Hazard Mitigation Plan planning process, each municipality is required to participate in the planning and provide certain information and data about their jurisdiction. To get the required information for the plan, EMA will schedule a visit to your office. For your convenience and planning purposes we have prepared a "tentative schedule" for the interview and data gathering. Hopefully you can arrange your schedule to coincide with the date/time on the enclosed schedule *(Note the schedule is for planning purposes only and can be adjusted somewhat)*. The visit should not last more than 1 ½ hours.

If possible, request a representative from the following departments attend this meeting:

- Mayor
- City clerk
- Fire department
- Police department
- Public works

Further request the following documentation be available:

- Municipality survey: (fire, law, pubic works) that were provided earlier
- Copies of ordinances that you have identified on the survey form.

Also, during the visit we would like to get the In-Kind-Cost Worksheet for Labor that has been performed by personnel in your jurisdiction.

If you have any questions, please contact the EMA office at 669-3999.

Attachments:
1. Tentative schedule
2. In-Kind Cost Worksheet

MITIGATION PLAN INTERVIEW SCHEDULE			LES JUNGE OR JIM KINCAID				
Please include representatives from the City Clerk, Fire Department, Law Enforcement and Public Works							
Please have available hardcopies of the mitigation survey(s) and a copy of ordinances and any city plans (electronic if possible)							
Meeting Coordinator	**Title**	**Jurisdiction**	**Contact #**	**Day**	**Date**	**Time**	**Location**
Don Greene	EMA	Shelby County	669-3999	Friday	11/07/08	10:00-11:30AM	EMA Office
Gina Antolini	City Clerk	Columbiana	669-5801	Friday	11/07/08	1:00-2:30PM	City Hall
John Ellison	Director	911	439-6912	Friday	11/07/08	3:00-4:30PM	911 Office
Meeting Coordinator	**Title**	**Jurisdiction**	**Contact #**	**Day**	**Date**	**Time**	**Location**
Linda Steele	City Clerk	Calera	668-3500	Monday	11/17/08	10:00-11:30AM	City Hall
Mayor Anderson	Mayor	Montevallo	665-2553	Monday	11/17/08	1:00-2:30PM	City Hall
April Price	City Clerk	Wilton	665-2021	Monday	11/17/08	3:00-4:30PM	City Hall
Meeting Coordinator	**Title**	**Jurisdiction**	**Contact #**	**Day**	**Date**	**Time**	**Location**
Marsha Massey	City Clerk	Alabaster	664-6800	Tuesday	11/18/2008	10:00-11:30AM	City Hall
Donna Treslar	City Clerk	Pelham	620-6400	Tuesday	11/18/2008	1:00-2:30PM	City Hall
Peggy Dunaway	City Clerk	Helena	663-2161	Tuesday	11/18/2008	3:00-4:30PM	City Hall
Meeting Coordinator	**Title**	**Jurisdiction**	**Contact #**	**Day**	**Date**	**Time**	**Location**
Joyce Robertson	City Clerk	Harpersville	672-9961	Wednesday	11/19/08	10:00-11:30AM	City Hall
Joy Marler	City Clerk	Vincent	672-2261	Wednesday	11/19/08	1:00-2:30PM	City Hall
Wayne Jones	City Clerk	Westover	678-9079	Wednesday	11/19/2008	3:00-4:30PM	City Hall
Meeting Coordinator	**Title**	**Jurisdiction**	**Contact #**	**Day**	**Date**	**Time**	**Location**
Becky Landers	City Clerk	Chelsea	678-8455	Friday	11/21/2008	10:00-11:30AM	City Hall
Kay Ray	City Clerk	Wilsonville	669-6180	Friday	11/21/2008	1:00-2:30PM	City Hall
Steve Zerkis	Mayor	Indian Springs	982-1755	Friday	11/21/2008	3:00-4:30PM	City Hall

Date	Name	City of Alabaster Department/Position
Nov 18, 2008	Marsha Massey	City Clerk
Nov 18, 2008	Harry Still	City Planner
Nov 18, 2008	Mark Harris	Public Works
Nov 18, 2008	Frank Matherson	Fire Chief
Nov 18, 2008	Andrew Bryant	Police

Date	Name	City of Helena Department
Nov 18, 2008	Peter S. Valenti	Fire Chief
Nov 18, 2008	John H. Wilder II	Dep Fire Chief
Nov 18, 2008	Amanda Traywick	City Clerk
Nov 18, 2008	Doug Jones	Police Chief
Nov 18, 2008	Brian Hinds	Utility Department
Nov 18, 2008	Brian Hayes	Parks & Recreation
Nov 18, 2008	Charles "Sonny" Penhale	Mayor

Date	Name	Town of Harpersville/Department
Nov 19, 2008	Joyce Robertson	Town Clerk
Nov 19, 2008	Wade Holley	Fire Chief
Nov 19, 2008	David Latimer	Police Chief

Date	Name	Town of Vincent Department
Nov 19, 2008	Joy Marler	Town Clerk
Nov 19, 2008	Andy Barber	Street Department
Nov 19, 2008	Ray McAllister	Mayor
Nov 19, 2008	Michael Smiley	Fire Chief
Nov 19, 2008	James Srygley	Police Chief

HAZARD MITIGATION PLAN - MUNICIPALITY SITE VISIT

Date	Name	City of Calera Department/Position
Nov 17, 2008	Sean Lemley	Police Chief
Nov 17, 2008	Karren Smith	Police
Nov 17, 2008	Linda Steele	City Clerk
Nov 17, 2008	David L. Jones	Public Works Director
Nov 17, 2008	Tommy Moon	Fire Chief
Nov 17, 2008	Connie Payton	Administrative
Nov 17, 2008	Clint Barnett	Police
Nov 17, 2008	Chris Pappas	Engineering Department
Nov 17, 2008	Michael Wood	Building Official

Date	Name	City of Montevallo – Department/Position
Nov 17, 2008	Ben W. McCrory	Mayor
Nov 17, 2008	Herman Lehman	City Clerk
Nov 17, 2008	Steve Holt	Police Chief
Nov 17, 2008	Bill Reid	Fire Chief

Date	Name	Town of Wilton – Department/Position
Nov 18, 2008	Joe H. Fancher	Mayor
Nov 18, 2008	April Price	Town Clerk/Administrative

Notes from Shelby County Mitigation Planning meeting – November 7th 2008

- **PDM funds can't be used for man-made hazards (Les comment)**
- **EOP? and mitigation plans should be combined**
- **Pandemic – which plan is it in?**
- **Shelby County mitigation plan must include all hazards identified in the Alabama State plan.**
- **County schools, universities, non-profit organizations can be part of plan.**
- **Water authorities must participate in mitigation plan to be eligible for grants. Same applies to volunteer fire departments.**
- **Shelby County Fire Departments website has all fire departments and coverage.**
- **911 has fire district maps, GIS maps.**
- **Question for Les – Do you have a list of who you have received survey's from and who has not responded?**
- **State EMA Website –Mitigation plan is a public record and is online.**
- **Health Department – Need name of position and name of individuals.**
- **Pandemic EMA Plan – Dealing with the health department is an issue????**
- **Public Works – Hi-ways, When floods occur,**
- **Water Works – Water plans to keep water running, redundancy plans**

- **Meeting with John – 911**
  - **911 – Only 2 years' worth of data.**
  - **Fire – 911 – Just local fires, not fires caused by lighting storms**
  - **County has Maps**
  - **County 911 does not answer 911 for Hoover or Pelham.**
  - **911 website – www.shelby911.org**
  - **911 needs generator for backup to maintain service. Need 2 generators so maintenance can be performed.**
  - **Only have one place that activates sirens.**

- **Meeting with JR of IT**
  - **MAPS……**
  - **A list was provided to Les of "critical facilities", fire departments, police departments, hospitals, etc…..**
    - **Need to add schools, nursing homes, city halls, court houses, airports….**
    - **Special needs, day care also need to be added**
  - **Les asked for maps with all critical facilities listed that are in the 100 and 500 year flood plains.**
  - **MAPS need to include legend and who generated maps.**
  - **Les needs to send JR a sample from another county.**
  - **Need geological maps of Shelby County (sink holes).**
  - **JR – MPAS**
    - **Need Fire District maps with area of coverage.**
    - **Send email / maps in PDF format.**
    - **Alabama does not have a dam program**

Shelby County, Alabama
Multi-jurisdictional, All Hazards Mitigation Plan

Data Collection Meeting

MINUTES

(1) **Date / Location.** Shelby County EMA hosted a mitigation plan "Steering Committee" meeting" November 7, 2008, at the EMA Building in Columbiana, Al. to review progress and address issues in collection the appropriate data for the Multi-jurisdictional, All Hazard Mitigation Plan for Shelby County, Alabama and thirteen participating municipalities.

(2) **Participants**

Name	Agency/Department Jurisdiction	Title	Contact Number	Email
Les Junge	EM Assist	Consultant	256.453.5112	les.junge@exspend.com
Jim Kincaid	EM Assist	Consultant	205.919.8129	contact@jimkincaid.biz
Mindy Nash	Shelby County EMA	Administrative Assistant	205-669-3999	mnash@shelbyal.com
Don Greene	Shelby County EMA	Director	205-669-3999	dgreene@shelbyal.com
John Ellison	Shelby County 911	Director	205-439-6911	john@shelby911.org
JR Henderson	Shelby IT/Mapping	Supervisor	205-670-6980	jhenderson@shelbyal.com

(3) **Purpose.** The purpose of the meeting was to review the data collection progress by the participating entities and establish the criteria for mapping and structure loss data

OVERVIEW OF ACTIVITIES

- General. The Agenda for the "Data Collection" meeting was:
    - **Data Collection Progress**
    - **Mapping Requirements**
    - **Structure Loss methodology**
    - **Next Steps**

- **Agreements:**
    - EM Assist and Shelby County EMA have municipal interviews scheduled for the week of November 17
    - Participant surveys and IN Kind contribution forms will be distributed and collected in the municipal interviews
    - EM Assist will review mapping requirements
    - Shelby County must forward all emails containing mitigation information to EM Assist

- Shelby County is expanding mitigation plan participants to include school districts, volunteer fire departments and independent water authorities
- EM Assist will attend the next LEPC meeting

- **Outstanding Issues**
  - EM Assist will provide mapping requirements to Shelby County EMA
  - EM Assist will work with EMA to develop a MOU for school districts, volunteer fire departments and water authorities
  - Shelby County EMA must review all received mitigation information and forward to EM Assist
  - EM Assist will determine if and how manmade hazards can be included in the mitigation plan

SHELBY COUNTY ENVIRONMENTAL SERVICES
EMERGENCY MANAGEMENT
504 Highway 70
Columbiana, Alabama 35051

MEMORANDUM

TO: Addressee

FROM: Shelby County
Emergency Management

DATE: January 26, 2009

SUBJECT: All -Hazard Mitigation Plan – Update

The All-Hazard Mitigation Plan for Shelby County is being developed on schedule, but there are still some necessary information that is required from the county in order to complete the plan.

On Thursday, February 5, 2009 at 1:00 p.m., members of the county's Mitigation Planning committee will meet at the EMA Office (Ray Building, 504 Highway 70, Columbiana), to discuss and provide additional information. Meeting should last approximately (2) hours. The tentative agenda will be:

- Providing additional information as it pertains to your department
- Completing the surveys that have been provided
- Documenting labor/material that was provided for in-kind services from your office.

If you have any questions please feel free to contact EMA at 669-3999.

y REPORTER

151 LEGALS

LEGAL NOTICE

Public Notice of Hazard Mitigation Plan Meeting

Notice is hereby given to all residents of Shelby County, Alabama and its local jurisdictions and all other parties of interest that an open public meeting will be held on August 21, 2009, 8:00 am to 4:00 pm to receive public input on the proposed changes and amendments to the County's Multi-Jurisdiction Natural Hazard Mitigation Plan. This plan will be available for view at the following locations: County Environmental Services/Emergency Management, 504 Highway 70, Columbiana, AL; County Development Services, 1123 County Service Drive, Pelham, AL; Columbiana Public Library, 50 Lester Street, Columbiana, Alabama.

The Shelby County Hazard Mitigation Plan is also posted on Shelby County website: www.shelbycountyalabama.com. The Mitigation Plan focuses on eliminating or reducing the loss of life and property from natural occurrences, such as floods, tornadoes, hurricanes, winter storms, sinkholes, etc.

Any person requiring auxiliary aid must make a request to the County's Environmental Services/Emergency Management office within 48 hours prior to the meeting. Contact 669-3999 for additional information.

Shelby County Reporter
August 12 and 19, 2009
HAZARD MITIGATION MEETING

SHELBY COUNTY
MULTI-JURISDICTIONAL
ALL HAZARDS MITIGATION PLAN

CITIZEN REVIEW AND COMMENTS SHEET

Date of Review	Do you live in the county or city/town? If city/town specific which one	Zip Code	Comments about Hazard Mitigation Plan
8/21/2009	yes. Pelham S.C.	35124	Glad Shelby County is planning
8/21/2009	yes, Columbiana	35051	
8-21-2009	Yes, Columbiana ML.	35051	Reviewed PLAN on website
8-21-2009	Yes, Helena G.J.	35080	
8-21-2009	Yes. Columbiana H.B.	35051	
8-21-2009	yes Columbiana [illegible]	35051	[illegible] from website
8-21-2009	yes, Columbiana [illegible]	35051	
8/21/2009	yes, Harpersville. [illegible]	35078	PLAN well Developed
8-21-09	Yes Wilsonville M.Lee.	35186	
8-21-09	Yes Montevallo HH	35115	Read PLAN on website
8/21/09	county	35242	
8/21/09	yes, Columbiana, AL	35051	
8-21-09	YES, Johnston	35051	

SHELBY COUNTY ENVIRONMENTAL SERVICES
EMERGENCY MANAGEMENT AGENCY

504 Highway 70
Columbiana, Alabama 35051

Don Greene
Director

Phone: 205-669-3999
Fax: 205-669-3871

MEMORANDUM

TO: All Mayors

FROM: Shelby County EMA Don Greene

DATE: August 17, 2009

SUBJECT: Shelby County Mitigation Planning Committee

First, we at EMA would like to thank each municipality for the assistance that was provided in development of the multi-jurisdictional Hazard Mitigation Plan. The plan is now ready to be reviewed and final comments be made. You should have received, by electronic means, a complete copy of the "draft" with mitigation actions for your jurisdiction.

As a part of the planning process, each municipality should participate in the final review before the plan is submitted to State EMA for review and FEMA for approval. To accomplish this requirement, a public meeting will be held at the EMA office (504 Highway 70, Columbiana) on Friday, August 21, 2009, beginning at 9:00 a.m. Meeting will not last more than (2) hours. Each municipality should have a representative from their jurisdiction in attendance. The representative should be someone that is familiar with the contents of the Mitigation Plan. This person could be Mayor, City Clerk, Fire Chief, Police Chief or Public Works person.

Hope you can arrange your schedule to be in attendance or have a representative present.

Thanks.

9.3 MITIGATION PLAN CERTIFICATION AND ADOPTION

This section of the plan includes Plan certification and copies of local resolutions passed by each of Shelby County's local jurisdictions

The notarized certification and the adoption resolutions are scanned into this section

44 CFR Requirement

44 CFR Part 201.6(c)(5): The plan shall include documentation that the plan has been formally adopted by the local governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Shelby County Hazard Mitigation Plan Certification

I, xxx xxxxxxxxxxx, Emergency Management Agency Director for the County of Shelby, State of Alabama, do hereby certify that public involvement and input regarding the Shelby County Multi-Jurisdictional Hazard Mitigation Plan was carried out in accordance with Plan requirements and in accordance with local policy and ordinance.

I further certify that public notification was given and public input was sought, during the planning process and preceding adoption of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan by the jurisdictional governments in Shelby County, by placing notice to the public in the Courier News on January 30, 2005; March 20, 2005; and August 21, 2005, in accordance with the open meetings laws of Alabama, and that citizens had ample opportunity for input during Plan development.

I further certify that public meetings were held at Shelby County Courthouse on February 10, 2005, and March 24, 2005, to solicit citizen comment and input into the Shelby County Multi-Jurisdictional Hazard Mitigation Plan.

I further certify that a public hearing was held at Shelby County Courthouse on September 8, 2005 to solicit public comment preceding adoption of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan by the jurisdictional governments of xxxxxxx xxxxxxxxxx xxxxxxxxxxxx xxxxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxxxxxx xxxxxxxx
I further certify that copies of jurisdictional Board or Council meeting minutes, kept in accordance with Alabama law, regarding approval and adoption of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan are on file and available to members of the public, and local, state, and federal agencies. Inspection of these minutes may be made upon reasonable request to the respective jurisdictional authority.

This certification is in accordance with provisions of the Disaster Mitigation Act of 2000 (44 CFR 201.6 and NCGS 62A).

Certified this _________ day of _______________________, 2005.

____

Shelby County Emergency Management Agency Director

State of Alabama,
County of Shelby County

I, ___________________________________, a Notary Public for said County and State, do hereby certify that xxx xxxxxxxxxx personally appeared before me this day and acknowledged the foregoing instrument.

Witness my hand and seal this __________ day of ___________, 2005.

____
Notary Public

My Commission expires _________________________

RESOLUTION TO ADOPT
THE SHELBY COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

County of Shelby
State of Alabama

WHEREAS, the State of Alabama has ordained that every county and incorporated municipality in the state is required to have a Hazard Mitigation Plan approved by the Alabama Emergency Management Agency to maintain eligibility for state disaster assistance after November 2004; and

WHEREAS, the Federal Emergency Management Administration (FEMA) under the Disaster Mitigation Act of 2000 has ordained that every county and incorporated municipality within the county is required to have a Hazard Mitigation Plan approved by FEMA in order to be eligible for Hazard Mitigation Grant Program Funding for Presidential disasters declared after November 2004; and

WHEREAS, under the Disaster Mitigation Act of 2000, the Federal Emergency Management Agency (FEMA) has issued an Interim Final Rule that details the minimum criteria for local hazard mitigation plans; and

WHEREAS, Shelby County agrees with the concept of and necessity for hazard mitigation planning; and

WHEREAS, The Shelby County Hazard Mitigation Planning Committee recommends the adoption of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan and;

WHEREAS, the Alabama Emergency Management Agency and the Federal Emergency Management Agency have conducted a review of and approved the Shelby County Multi-Jurisdictional Hazard Mitigation Plan;

NOW THEREFORE, we the Board of Commissioners hereby adopt the Shelby County Multi-Jurisdictional Hazard Mitigation Plan as submitted this ________ day of ________________2005, the public welfare requiring it.

____
Chairman – Shelby County Board of Commissioners

____

Clerk to the Board

RESOLUTION TO ADOPT
THE SHELBY COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

City of
County of Shelby
State of Alabama

WHEREAS, the State of Alabama has ordained that every county and incorporated municipality in the state is required to have a Hazard Mitigation Plan approved by the Alabama Emergency Management Agency to maintain eligibility for state disaster assistance after November 2004; and

WHEREAS, the Federal Emergency Management Administration (FEMA) under the Disaster Mitigation Act of 2000 has ordained that every county and incorporated municipality within the county is required to have a Hazard Mitigation Plan approved by FEMA in order to be eligible for Hazard Mitigation Grant Program Funding for Presidential disasters declared after November 2004; and

WHEREAS, under the Disaster Mitigation Act of 2000, the Federal Emergency Management Agency (FEMA) has issued an Interim Final Rule that details the minimum criteria for local hazard mitigation plans; and

WHEREAS, the City of agrees with the concept of and necessity for hazard mitigation planning; and

WHEREAS, The Shelby County Hazard Mitigation Planning Committee recommends the adoption of the Shelby County Multi-Jurisdictional Hazard Mitigation Plan and;

WHEREAS, the Alabama Emergency Management Agency and the Federal Emergency Management Agency have conducted a review of and approved the Shelby County Multi-Jurisdictional Hazard Mitigation Plan;

NOW THEREFORE, we the City Council hereby adopt the Shelby County Multi-Jurisdictional Hazard Mitigation Plan as submitted this ________ day of ________________2005, the public welfare requiring it.

____

Chairman – City Council

____

Clerk to the Council