This is the draft of the Cass County Hazard Mitigation Plan Five Year Update. Hazard Mitigation is defined as any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events. It is an on-going process that occurs before, during, and after disasters and serves to break the cycle of damage and repair in hazardous areas. The Texas Plans are reviewed by the Texas Department of Emergency Management and approved by FEMA. The Cass County Hazard Mitigation Plan Five Year Update is being edited for content and design and we are making it available to the public for viewing and/or comment.

If you have any questions or comments regarding the plan, please contact:

Don Shipp
Hazard Mitigation Planner
Ark-Tex Council of Governments
4808 Elizabeth St.
Texarkana, TX 75503
903-255-3535

MITIGATION ACTION PLAN

FOR

CASS COUNTY TEXAS

And the jurisdictions of
Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City

Five Year Update

DEVELOPED BY THE ARK-TEX COUNCIL OF GOVERNMENTS

April 2015

TABLE OF CONTENTS

CASS COUNTY TEXAS

FORWARD

Development of a comprehensive all-hazard Mitigation Plan was approved by the Division of Emergency Management, Texas Department of Public Safety, in a letter dated February 21, 2002. The Planning Project Number is DR-1379-3.145. This Hazard Mitigation Plan identifies the potential impact of natural and man-made hazards that threaten the nine (9) county region of the Ark-Tex Council of Governments. The specific counties area as follows: Bowie, Cass, Delta, Franklin, Hopkins, Lamar, Morris, Red River, and Titus. This section is for **CASS COUNTY,** and includes the cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City.

FEDERAL AUTHORITIES

Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)

Public Law (PL) 106-390 (Disaster Mitigation Act of 2000)

Code of Federal Regulations (CFR) 44

44 CFR Parts 78, 201, and 206

STATE AUTHORITIES

Emergency Management Plan for Cass County, Texas

Joint Resolution Between the County of Cass, Texas and the Cities of Atlanta, Avinger, Bloomburg, Domino, Hughes Springs, Linden, Queen City, Douglassville, and Marietta.

Inter-local Agreements

Don Shipp, Ark-Tex Council of Governments, Texarkana, Texas reviewed this plan in June, 2007. Area Code: 903 832-8636. Fax: 903 832-3441 or 903-792-3012. dshipp@atcog.org

SECTION I

CASS COUNTY TEXAS

PURPOSE

The goal of all mitigation efforts is long-term reduction. The emphasis on sustained actions to reduce long-term risk differentiates mitigation from preparedness and response tasks that are required to survive a disaster and from recovery tasks, which are essentially the return to pre-disaster status. Mitigation actions follow a disaster focus on making the situation safer and better than before the incident occurred. Mitigation is an essential component of emergency management. Effective mitigation actions can decrease the impact, the requirements and the expense of future hazard events. None of the communities in this plan have been designated for special consideration because of minority or economically disadvantaged populations.

Hazard mitigation planning is never ending. The primary purpose of this plan is to ensure that the residents, visitors, and businesses in Cass County, Texas are safe and secure from natural hazards by reducing the risk and vulnerability before disasters happen, through federal, state, and local community communication, public education, research, and data analysis. This plan is intended to serve as a guide in coordinating and implementing hazard mitigation policies, programs, and projects.

The Cass County Emergency Management Plan has been developed, and the assessment level of planning preparedness is Intermediate. The MAP will only serve to enhance the County's already considerable capabilities in recognizing, planning for, responding to, and recovering from disaster. The County's history of the careful development, monitoring, and integration of emergency management and hazard mitigation planning is testament to its standing commitment to make the jurisdictions as disaster-resistant as possible.

The Plans, ordinances, maps and codes were reviewed by the Hazard Mitigation Committee and staff before mitigation action items and implementation strategies were determined. Information gathered from the Plans, ordinances, maps, permits, and codes were considered and incorporated into this Hazard Mitigation Plan. The lack of various plans and codes were considered also. This was factored in when considering the various mitigation action items and implementation strategies.

We cannot control natural phenomena such as floods, tornadoes, winter storms, wildfires and other hazardous events. Despite their destructiveness, these occurrences are part of the natural system.

While we cannot prevent natural hazards, we can reduce some of their adverse consequences. We can avoid the worst-case scenario when a hazard does occur by managing the known characteristics of the hazard.

The following objectives will be addressed in the plan:

- What hazards could occur
- Frequency of occurrence
- Hazards impact on community and severity of impact
- Vulnerability to each hazard
- Hazards with greatest risks
- Prioritized mitigation actions

PLAN ORGANIZATIONAL STRUCTURE

Organizational Structure

Ark-Tex Council of Governments (ATCOG), is an organization comprised of city and county governments, colleges, service organizations, school districts, chambers of commerce, etc., with the goal to build strength through regional cooperation. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens of Cass County.

ATCOG served as the coordinating agency for the development of the plan. As the coordinator, ATCOG had many responsibilities including administration, content organization, and text development. The following is a brief summary of ATCOG's responsibilities for the plan:

- Assign a lead planning staff member to provide technical assistance and necessary data to the Cass County Hazard Mitigation Planning Team (HMPT).
- Schedule, coordinate and facilitate community meetings with the assistance of the planning team.
- Provide any necessary materials, handouts, etc., necessary for public planning meetings.
- Work with the planning team to collect and analyze data and develop goals and implementation strategies.
- Prepare, based on community input and team direction, the first draft of the plan and provide technical writing assistance for review, editing and formatting.
- Coordinate with stakeholders within the cities and the unincorporated areas of Cass County during plan development.
- Submit the final plan to the State of Texas and provide follow up technical assistance to the Cass County Community Mitigation Planning Team to correct any noted deficiencies subsequent to the review of the plan by the State of Texas.
- Upon approval by the State of Texas, submit the updated plan to FEMA and provide follow up technical assistance to the Cass County Community Mitigation Planning Team to address any noted deficiencies subsequent to the review of the plan by FEMA.
- Coordinate adoption and final approval process by all City and Town Councils and the Commissioners Court of the updated and approved FEMA plan.

- Submit a final plan, with adoption documentation and approval signatures for all participating jurisdictions, to the State and FEMA and ensure plan is noted as complete and approved by both agencies.
- Prepare for and attend City Council/Commissioners Court/public meetings during plan consideration and plan adoption process.
- Complete and acquire approval of all necessary forms associated with the application for Cass County's Multi-Jurisdictional Hazard Mitigation Grant.

A Multi-Jurisdictional Hazard Mitigation Planning Team (HMPT) was formed consisting of representatives appointed by local jurisdictions to work together with ATCOG in the plan development. The team's primary duties were:

- Ensure that the Cass County HMPT includes representatives from the neighborhood stakeholders groups. Each participating city must provide at least one representative to the county team and provide active support and input. ATCOG will approve the final composition of the planning team.
- Assist ATCOG staff with identifying hazards and estimating potential losses from future hazard events.
- Assist ATCOG in developing and prioritizing mitigation actions to address the identified risks.
- Assist ATCOG in coordinating meetings to develop the plan.
- Identify the community resources available to support the planning effort.
- Assist with recruiting participants for planning meetings.
- Gain the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- After adoption, appoint members to a committee to monitor and work toward plan implementation.
- After adoption, publicize the plan to neighborhood interests and ensure new community members are aware of the plan and its contents.
- Subsequent to State of Texas and FEMA approval of the plan, assume responsibility for bringing the plan to life by ensuring it remains relevant by monitoring progress, through regular maintenance and implementation projects.

THE PLANNING PROCESS

BENEFITS OF MITIGATION PLANNING

1. Increases public awareness and understanding of vulnerabilities as well as support for specific actions to reduce losses from future natural disasters.

2. Builds partnerships with diverse stakeholders increasing opportunities to leverage data and resources in reducing workloads as well as achieving shared community objectives.

3. Expands understanding of potential risk reduction measures to include structural and regulatory tools, where available, such as ordinances and building codes.

4. Informs development, prioritization, and implementation of mitigation projects. Benefits accrue over the life of the project as losses are avoided from each subsequent hazard event.

The Multi-Jurisdictional Planning Process.

A multi-jurisdiction plan was chosen to best prepare the communities of Cass County for Hazards. The Ark Tex Council of governments worked hand in hand with the jurisdictions within the planning area of Cass County to develop the current plan. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens

Mitigation plans need to be a living document and to ensure this the plan must be monitored, evaluated, and updated on a five-year or less cycle. This includes incorporating the mitigation plan into county and local comprehensive or capital improvement plans as they are developed.

Organize Resources:

Effective planning efforts result in practical and useful plans, but written plans are only one element in the process. The planning process is as important as the plan itself. A successful planning process organizes resources by encouraging cooperation and bringing together a cross-section of government agencies, local entities, concerned citizens and other stake holders to reach consensus on how to achieve a desired outcome or resolve a community issue. Applying a community wide approach and including multiple aspects adds validity to the plan. Those involved gain a better understanding of the problem and how solutions and actions were devised. The result is a common set of community values and widespread support for directing financial, technical, and human resources to an agreed upon action.

- ✓ A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. This was done by having public meetings that were advertised with notices in public places and by media press releases..

- ✓ Each participant was given an explanation of the Hazard Mitigation Planning Process. These opportunities were also used to gather hazard information, develop mitigation strategies, and edit the plan during the writing process.

- ✓ The review and incorporation of appropriate existing plans, studies, reports, technical information, and other research was included into the plan during its drafting process

- ✓ Support and information was obtained from other government programs and agencies such as the National Flood Insurance Program (NFIP), Natural Resources Conservation Service (NRCS), US Geological Survey (USGS), NOAA Weather, etc.

Risk and Vulnerability Assessment:
The plan must be reactive to hazards that face the community. It is not sufficient to just identify the hazards. The potential consequences of these hazards must be assessed. This phase included identifying and profiling all hazards, assessing vulnerability and risk. Research into the history of Cass County to document past disasters was required. Local libraries, national weather records and the life experiences from local residents were used to assess the plan.

A general assessment included using local residents, historical data, Texas State Mitigation Plan, Local or Regional Reports, Strategic Plans, Flood Studies, and other data to establish the following:

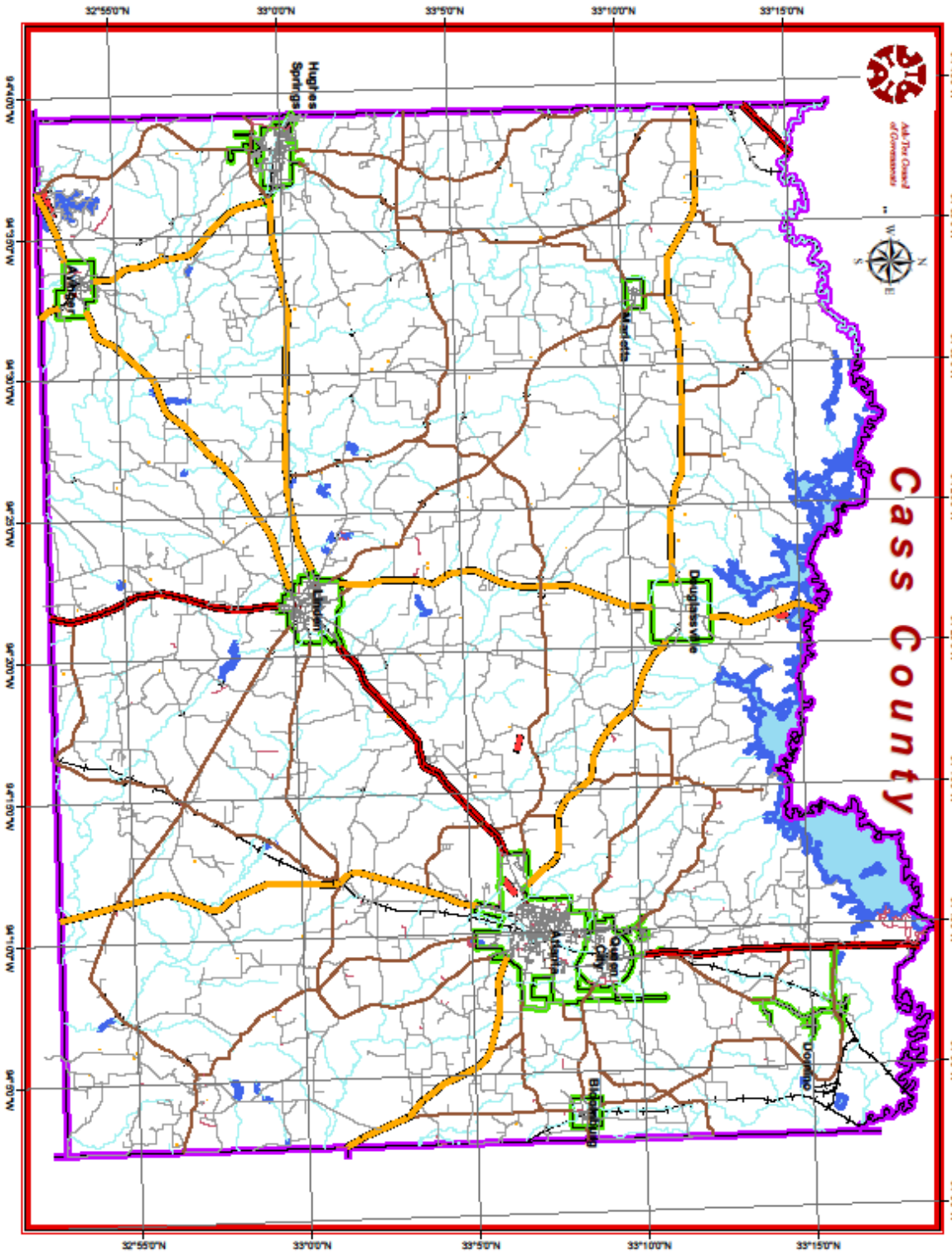
- The type, location and extent of all hazards that can affect the jurisdiction, both historically and in the future.
- Past occurrences of hazard events in or near the community and the severity, duration, and the resulting influences on the area.
- Description of the jurisdictions vulnerability to those hazards including types and numbers of existing and future buildings, infrastructure and critical facilities in identified hazard areas.
- Probability or likelihood of hazard occurrence.
- General description of land uses and development trends for future land use decisions.

The development of a Multi-Jurisdictional Hazard Mitigation Plan involves the use of many types of information including historical data on previous disasters, information on critical infrastructures, zoning and flood plains maps, records, charts, etc., from many sources.

Develop Mitigation Strategies:
Written Strategies were developed to demonstrate how Cass County, Texas intends to reduce losses identified in the Risk Assessment. It includes goals and objectives to guide the selection of mitigation activities and reduce potential losses. This is a blueprint for reducing the potential losses identified in the risk assessment. The Mitigation Strategy also includes:

- A description of mitigation objectives meant to reduce long-term vulnerabilities. These objectives were identified by the HMPT using hazard profiles, survey assessments, etc.
- Identification and a comprehensive analysis of a range of mitigation actions and projects.
- An Action Plan describing how the mitigation actions and projects were prioritized, and how they would be implemented and administered.

CASS COUNTY TEXAS


Cass County
Hughes Springs
Linden
Douglassville
Atlanta
Queen City
Domino
Bloomburg
32°55'0"N
33°0'0"N
33°5'0"N
33°10'0"N
33°15'0"N

COUNTY GOVERNMENT

County government is spelled out in the Texas Constitution, which makes counties functional agents of the state. Thus, counties, unlike cities, are limited in their actions to areas of responsibility specifically spelled out in laws passed by the legislature.

At the heart of each county is the commissioner's court. Cass County has four-precinct commissioners and a county judge who serve on this court. This body conducts the general business of the county and oversees financial matters. The major elective offices found include the county judge and attorneys, county and district clerks, county treasurer, tax assessor-collector, justices of the peace, and constables. There is an auditor appointed by the district courts.

Economic Considerations.

Cass County and the jurisdictions of Atlanta, Avenger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have very limited budgets. Their tax base and annual budgets are low. They will have to rely on grants and volunteerism to accomplish the bulk of the projects. Cass County has experienced a -7% variation in population between April, 2010-July, 2014

Resource Information

Resource information was obtained from the following government programs and agencies:

National Flood Insurance Program (NFIP), which provided information about flooding and actions needed to satisfy compliance with NFIP.

The US Geological Survey (USGS), provided information that was incorporated into the hazards of drought and flooding.

Natural Resources Conservation Service (NRCS), provided information about water management and climate change that are found in the identified hazards of drought and extreme heat.

The Texas Hazard Mitigation Plan helped to develop the common language used in the Delta Mitigation Plans.

The Emergency Management Plan of Cass County provided information regarding current emergency management preparedness. The information helped determine the most immediate needs relating to all identified mitigated hazards.

Fort Worth. Texas Mitigation Plan provided an example of action tables that was used to organize and clarify the actions.

Texas Wildfire Risk Assessment Portal (TXWRAP) provided statistical graphs and maps regarding wildfire activity in Cass County. This information is found in the wildfire section of the Plan.

NOAA Weather web site provided information regarding climate data and global warming.

The US Census Bureau provided statistics and population information found throughout the plan.

CASS COUNTY TEAM MEMBERS	
Name	**Title**
Becky Wilbanks	Cass County Judge/Linden Resident
Robin Betts	Atlanta Fire Chief Acting County EMC
Harold Martin	Mayor of Queen City
Marvin Parvino	Avinger Mayor
Carroll Sulley	Bloomburg City Secretary
Marvin Campbell	Mayor of Domino
Alfred Point	Douglassville VFD Chief
Jay Cates	Hughes Springs VFD Chief/EMC
Chuck Ham	Marietta VFD Chief
Sharon Brown	Linden Resident, Asst. to County Judge

Team Members were informed of the progress, discussed issues, and were notified of any changes to FEMA's guidelines for the creation of the plan. Existing plans were reviewed to determine how they might be incorporated into the MAP. The Emergency Management Coordinator of Cass County and the Mayors of Atlanta, Avenger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City will oversee the Mitigation Plan.

Area Stakeholder Contacts				
Name	**Title**	**Company**	**Location**	**Type of Contact**
Nelson Gagne	Director	Victim Relief Ministries	Atlanta, TX	E-mail &/or phone call
Sidney Harrist	Superintendent	Atlanta ISD	Atlanta, TX	E-Mail and/or phone call
Angela Gutsch		Queen City ISD	Queen City, TX	E-mail and/or phone call
Scott Farler	Acting Sup.	Linden-Kildare ISD	Linden, TX	E-mail and/or phone call
Brian Whatley	Agriculture Ext. Agent	State of Texas	Linden	E-mail and/or phone call
Lee McNeely	Texas Forest Service	Texas Forest Service District Fire Coordinator	Linden, TX	E-mail and/or phone call
Robbie Hood	Linden City Mgr.	City of Linden	Linden, TX	E-mail and/or phone call
Linda Munkries	County Judge	Morris County Texas	Daingerfield, TX	E-mail and/or phone call
Lex A Jones	County Judge	Marion County, Texas	Jefferson, TX	E-mail and/or phone call
James Carlow	County Judge	Bowie Count	New Boston, TX	E-mail and/or phone call
Clare Francavilla	Director	American Red Cross	Texarkana, TX	E-mail &/or phone call

Adoption, Implementation and Maintenance:

This describes the system that Delta County and the participating jurisdictions have established to monitor the plan; provides a description of how, when, and by whom the HMPT process and mitigation actions will be evaluated; presents the criteria used to evaluate the plan; and explains how the plan will be maintained and updated.

Through citizen involvement, the plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities. Mitigation team members consist of representatives from various county departments and representatives from private organizations, businesses, and various city government officials. Delta County entered into a contract with The Ark-Tex Council of Governments Council of Governments in Texarkana, Texas, to develop the plan. The Mitigation Action Team assisted in developing plan goals and action items and shared their expertise to create a more comprehensive plan.

Newspaper postings helped publicize the meeting to neighboring counties and non-profits or other interested parties. These meetings are documented in the plan appendix (see pages 142-144). The Ark-Tex Council of Governments staff has also met numerous times, had numerous telephone conversations, and worked individually with officials and employees from the County and each of the cities in gathering the data necessary for the plan.

Upon approval by FEMA the plan will be submitted to the County by the Mitigation Planner for final signatures. The Plan will be available for public viewing at the county seat and the city hall of Atlanta, Avenger, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City.

SECTION II

HAZARDS

All of Cass County and the cities included in this plan are susceptible to several possible natural and technical hazards. The Hazard Mitigation Team with the assistance of the Ark-Tex Council of Governments Hazard Mitigation Planner conducted a comprehensive Hazard Analysis beginning in May, 2003. The hazard analysis will be reviewed annually, and up-dated as needed during the Formal Review Process. Review and up-date of the plan can be found on page 123.

The Hazard Mitigation Team identified the following hazards that had the potential to cause personal or property damage in the county (Note: the hazards of dam failure and earthquake have been dropped in the 2015 update. Lightning and windstorm have been moved under thunderstorm. Hazmat Spills are not a natural hazard and have been removed from the update.

- Flood
- Tornado
- Winter Storm
- Thunderstorm
- Hailstorm
- Drought
- Extreme Heat
- Wildfire

Table 2.1

Hazards with distinct area of risk	Hazards without distinct area of risk
Flood	Tornado
Wildfire	Drought
Lightning	Extreme Heat
	Winter Storm
	Thunderstorm
	Hailstorm
	Windstorm
	Earthquake

The process for identifying hazards included looking at historical data to determine which hazards seemed to occur in Cass County. Sources used were newspaper articles, minutes of Commissioner's Court meetings, general local knowledge of jurisdictions' staff and local residents, NOAA Satellite and Information Service National Climatic Data Center reports, and advise from FEMA Hazard Mitigation Plan reviewers and Texas Department of Emergency Management staff.

Some hazards were chosen that have no history of occurrences in the County. Even though there is no history, these hazards were included because there is the potential for them to occur (such as earthquakes, dam failures, wildfires).

Natural Hazards Most Likely to Occur in Cass County. Table 3.1			
Hazard	**Type of Disaster**	**How Identified**	**Why Identified**
Floods	Natural	• Review Repetitive Flood Properties • NOAA • Newspaper accounts • Input from public • Review of FIRMS	• The County contains many creeks, streams and rivers • The County has experienced flooding in the past. • Flooding is a frequent issue
Tornado	Natural	• Public Input • National Weather Service • Past History • NCDC Data Base	• Public Concern • Past History • Frequency
Winter Storms	Natural	• Past Disasters (2000 ice storm) costliest in recent memory • Public input • NOAA • National Weather Center	• Little equipment to fight ice and snow • Heavy psychological toll on population • Population not educated about dealing with outages etc.
Thunderstorms	Natural	• NOAA reports • Public Input • Newspaper Accounts	• Wind shears an ongoing problem • Severe thunderstorms occur every year
Droughts	Natural	• History • Review of NCDC database • Public Input	• Costly to agri-business • Drought common to state and county
Extreme Heat	Natural	• History • Review of NCDC database • Public Input	• Costly to agri-business • Extreme heat common to state and county
Wildfire	Natural	• Fire databases • Public Input • Texas Forestry • Newspaper Articles	• More wildfire occurrences than any other natural disaster • Can be common to drought and storms • Rural areas most vulnerable

Potential Severity of Impact: (45% of Priority Risk Index)	
SUBSTANTIAL **Index Value = 4**	• Possible fatalities • Complete shutdown of facilities for 30 days or more • More than 50 percent of property destroyed or with major damage
MAJOR **Index Value - 3**	• Possible permanent disability from Injuries and/illnesses • Complete shutdown of critical facilities for at least 2 weeks • More than 25 percent of property destroyed or with major damage
MINOR **Index Value = 2**	• Injuries and/or illnesses do not result in permanent disability • Complete shutdown of critical facilities for more than 1 week • More than 10 percent of property destroyed or with major damage
LIMITED **Index Value = 1**	• Injuries and/or illnesses are treatable with first aid • Shutdown of critical facilities and services for 24 hours or less • Less than 10 percent of property destroyed or with major damage

Probability of Future Events is categorized as Unlikely to "Highly Likely". These terms are defined as follows:

Probability of Future Events: (30% of Priority Risk Index)	
Highly Likely Index Value = 4	Event probable in the next year. 1/1 = 1.00 (Greater than .33)
Likely Index Value = 3	Event probable in next 3 years 1/3 = .33 (Greater than 0.20, but less than or equal to 0.33)
Occasional Index Value = 2	Event probable in next 5 years 1/5 = 0.20 (Greater than 0.10, but less than or equal to 0.20)
Unlikely Index Value = 1	Event probable in next 10 years 1/10 = 0.10 90.10 or less)

Formula for probability: # events divided by the # of years on record i.e. 10 flood events in a 20 year period would give a 10/20 = .50 Value index of 4 (Highly Likely)

Warning Time: (15% of Priority Risk Index)	
Index Value = 4	Less than 6 hours
Index Value = 3	6 to 12 hours
Index Value = 2	12 to 24 hours
Index Value = 1	More than 24 hours

Duration: (10% of Priority Risk Index)	
Index Value = 4	More than a week
Index Value = 3	Less than a week
Index Value = 2	Less than 24 hours
Index Value = 1	Less than 6 hours

Priority Risk Index (PRI)

High Risk	PRI of 3.0 or greater
Medium Risk	PRI score 2.0 to 3.0
Low Risk	PRI score less than 2.0

Hazard*	Impact (45%)	Probability (30%)	Warning Time (15%)	Duration (10%)	PRI Score
Floods	Major PRI=3	Highly Likely PRI=4	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	High 3.2
Tornados	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< 6 hrs. PRI=1	High 3.7
Thunderstorms	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Hail	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Winter Storms	Minor PRI = 2	Highly likely PRI = 4	12 to 24 PRI = 2	< 1 Week PRI = 3	Medium 2.7
Drought	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Extreme Heat	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Wildfires	Substantial PRI 4	Highly Likely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	high 3.9

*Hazards considered significant enough for further evaluation.

PRI Value = (Impact x .45%) + Probability x 30%) + (Warning Time x 15%) + (Duration x 10%)

Vulnerability is categorized as “Low” to “High”. These terms are defined as follows:
Table 2.1.1

Hazard Vulnerability	
LOW	Limited or no history of significant impacts to property, infrastructure and/or public safety.
MODERATE	People and facilities located in areas that have low levels of historic occurrence of impacts from hazard and/or in areas where impact is possible but not probable.
HIGH	People and facilities located in areas that have previously experienced impacts from hazards and/or in areas where impacts from hazards are possible and probable. Future damage to property and infrastructure is probable and/or a documented history of threat to public safety exists.

CASS COUNTY DAMAGE ASSESSMENT

INCLUDING THE JURISDICTIONS* OF
ATLANTA, AVINGER, BLOOMBURG, DOMINO, HUGHES SPRINGS, LINDEN, & QUEEN CITY

CASS COUNTY				
Structure Type	Value	75%	50%	25%
Residential	492,530,037	369,397,528	246,265,019	123,132,509
Commercial	145,235,329	108,926,497	72,617,665	36,308,832
Industrial	531,248,148	398,436,111	265,624,074	132,812,037
Exempt Property	177,087,465	132,815,599	88,543,733	44,271,866
Totals	1,346,100,979	1,009,611,735	584,507,267	336,525,244

ATLANTA				
Structure Type	Value	75%	50%	25%
Residential	160,128,268	120,096,201	80,064,134	40,032,067
Commercial	84,896,591	63,672,443	42,448,295	21,224,148
Industrial	17,628,770	13,221,578	8,814,385	4,407,193
Exempt Property	69,507,353	52,130,515	34,753,677	17,376,838
Totals	332,160,982	249,120,737	166,080,491	83,040,246

AVINGER				
Structure Type	Value	75%	50%	25%
Residential	10,101,869	7,576,402	5,050,935	2,525,468
Commercial	2,225,290	1,668,968	1,112,645	556,323
Industrial	957,700	718,275	478,850	239,425
Exempt Property	5,651,406	4,238,554	2,825,703	1,412,852
Totals	18,936,265	14,202,189	9,468,133	4,734,068

BLOOMBURG				
Structure Type	Value	75%	50%	25%
Residential	7,783,490	5,837,618	3,891,745	1,945,873
Commercial	1,197,280	897,960	598,640	299,320
Industrial	944,860	708,645	472,430	236,215
Exempt Property	2,787,019	2,090,264	1,393,510	696,755
Totals	12,712,649	9,534,487	6,356,325	3,178,163

DOMINO				
Structure Type	Value	75%	50%	25%
Residential	4,669,090	3,501,818	2,334,545	1,167,273
Commercial	602,570	451,928	301,285	150,643
Industrial	1,026,000	769500	513,000	256,500
Exempt Property	267,270	200,453	133,635	66,818
Totals	6,564,930	1,773,699	3,282,465	1,641,234

HUGHES SPRINGS				
Structure Type	Value	75%	50%	25%
Residential	38,883,300	29,162,475	19,441,650	9,720,825
Commercial	11,853,139	8,889,855	5,926,570	2,963,285
Industrial	5,121,990	3,841,493	2,560,995	1,280,498
Exempt Property	11,351,889	8,513,917	5,675,945	2,837,972
Totals	67,210,318	50,407,740	33,605,160	16,802,580

LINDEN				
Structure Type	Value	75%	50%	25%
Residential	5,0875,083	38156312	25,437,542	12718,771
Commercial	15,095,816	11,321,862	7,547,908	3,773,954
Industrial	2,569,020	1,926,765	1,284,510	642,255
Exempt Property	22,926,461	17,194,845	11,463,230	5,731,615
Totals	114,466,380	68,599,784	45,733,190	22,866,595

QUEEN CITY				
Structure Type	Value	75%	50%	25%
Residential	36,201,196	27,150,897	18,100,598	9,050,299
Commercial	10,455,838	7,841,879	5,227,919	2,613,960
Industrial	3,360,860	2,520,645	1,680,430	840,215
Exempt Property	7,727,261	5,795,446	3,863,631	1,931,816
Totals	57,745,155	43,308,867	28,872,578	14,436,290

*** Property Value Assessments are not available for Douglassville and Marietta.**

HAZARD ANALYSIS

Simply put, hazard analysis is an evaluation of the types of hazards (emergencies) that have occurred in the past or could occur in the future, identification of the population at risk, and an evaluation of the hazards versus the population to determine overall vulnerability.

The following steps were taken:

- Identification of the Hazards. Determination of the hazards, both natural and technical, that could affect the county.
- Profiling the Hazard Events. Determination of how bad a hazard can get.
- Inventorying Assets. Determination of where and/or to what extent the hazards can affect the assets of the county/cities.
- Estimating Losses. Determining how the hazards will affect the county/cities.

FLOOD

Flood Types

Flash Flood: A flash flood generally results from a torrential rain on a relatively small drainage area. Runoff from these rainfalls results in high floodwater that can cause destruction of homes, buildings, bridges, and roads. Flash floods are a threat to public safety in areas where the terrain is steep and surface runoff rates are high.

Riverine Floods: Riverine floods are caused by precipitation over large areas and differ from flash floods in their extent and duration. Floods in large river systems may continue for periods ranging from a few hours to many days.

Floodplains

100-Year Flood: There is one chance in 100, or a 1% chance of a flood of such magnitude or greater occurring in any given year. There is no guarantee that a similar flood will not occur in the next year, or in the next month.

Floodplain: The lowland and flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

Floodway: That portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where water depths and velocities are the greatest. It is the area along the channel that provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot.

HISTORY OF FLOODING IN CASS COUNTY

Twenty-two flood events were reported in Cass County, between 0220/1997 and 12/23.2009. There were no fatalities or injuries reported. (Data from National Climatic Data Center)

Begin Date	Location	Description	PrD
02/20/97	1 mile S/E Hughes Springs	Hwy 49 closed/washed out	0.00K
02/20/97	2 miles N of Hughes Springs	FM 250 closed/high water	0.00K
04/29/97	5 miles S/E Atlanta	CR 4659 from Bloomberg to McCloud flooded/closed	0.00K
05/28/98	Queen City	Hwy 59 closed	0.00K
05/28/98	5 miles S/E Atlanta	Street flooding in town	0.00K
05/19/00	2 Miles N of Avinger	Hwy 49 closed rapid flood	0.00K
11/24/00	Linden	Numerous roads under water	0.00K
02/16/01	Not known	Hwy 11 closed at Black Cypress Creek	0.00K
02/27/01	Atlanta	Numerous roads under water	0.00K
07/27/06	Hughes Springs	Numerous roads had high water across them. Some county roads closed.	0.00K
01/13/07	Linden	Locally heavy rainfall resulted in the closure of Hwy 125 just south of town	0.00K
Flash Flood Occurrence Update			
05/02/09	Atlanta	Excessive heavy rainfall resulted in several streets flooded.	0.00K
5/2/09	2 miles WNW of Bloomburg	Excessive heavy rainfall resulted in water in a home near Bloomberg, Texas.	20.00K
05/03/09	2 W 2 SW Linden	Numerous reports of flooding and road closures across secondary roads throughout the county.	0.00K
07/28/09	3NNE Atlanta Municipal Airport	Numerous roads and highways were underwater in Atlanta, Texas. Several roads were closed. Water was also reported in a few homes in town with evacuations needed. Several high water vehicle rescues were also reported in town.	500.00K

Begin Date	Location	Description	PrD
07/28/09	2SW of Atlanta	Local emergency manager reported a total of 11 high water rescues from stalled vehicles in flooded roadways around and close to the city. Four children were rescued from a flooded home on Thomas Street and another 5 homes in various portions of the city were evacuated due to flooding. Two other flood related vehicle rescues were also made in Queen City with several homes evacuated. Two residents on CR 1896 were driving on the road in a truck when they spotted a woman hanging onto a fence post in rushing flood waters with a disabled vehicle. The occupants of the truck attempted to drive the truck close enough to rescue the woman but their vehicle was also disabled by the high water. Another resident of the county road brought a boat with him and all victims were rescued.	250K
08/18/09	1 mile NNE of Avinger	Three inches of rainfall fell in 20 minutes and a total of 4.70 inches fell in 65 minutes near the town of Avinger, Texas. Several roads and secondary roads were underwater southwest of town.	0.00K
10/13/09	2 miles ENE of Hughes Springs	High water was reported across Hwy. 11 and Hwy. 49	0.00K
10/13/09	2 miles W of Linden	High water was reported across Hwy. 59 in town. In addition, one foot of water flooded the Westside Baptist Church in Atlanta, Texas.	10.00K
12/23/09	1 mile WNW Avinger	Very heavy rainfall resulted in numerous road closures across the entire county.	0.00K
12/23/09	2 miles SW of Linden	Flooding was reported on Hwy. 125 southeast of Linden, Texas, resulting in a road closure.	0.00K
12/23/09	3 miles NNE of Atlanta Municipal Airport	Flooding on Main Street resulted in cars being washed over into sidewalks.	0.00K
		TOTAL	**780K**

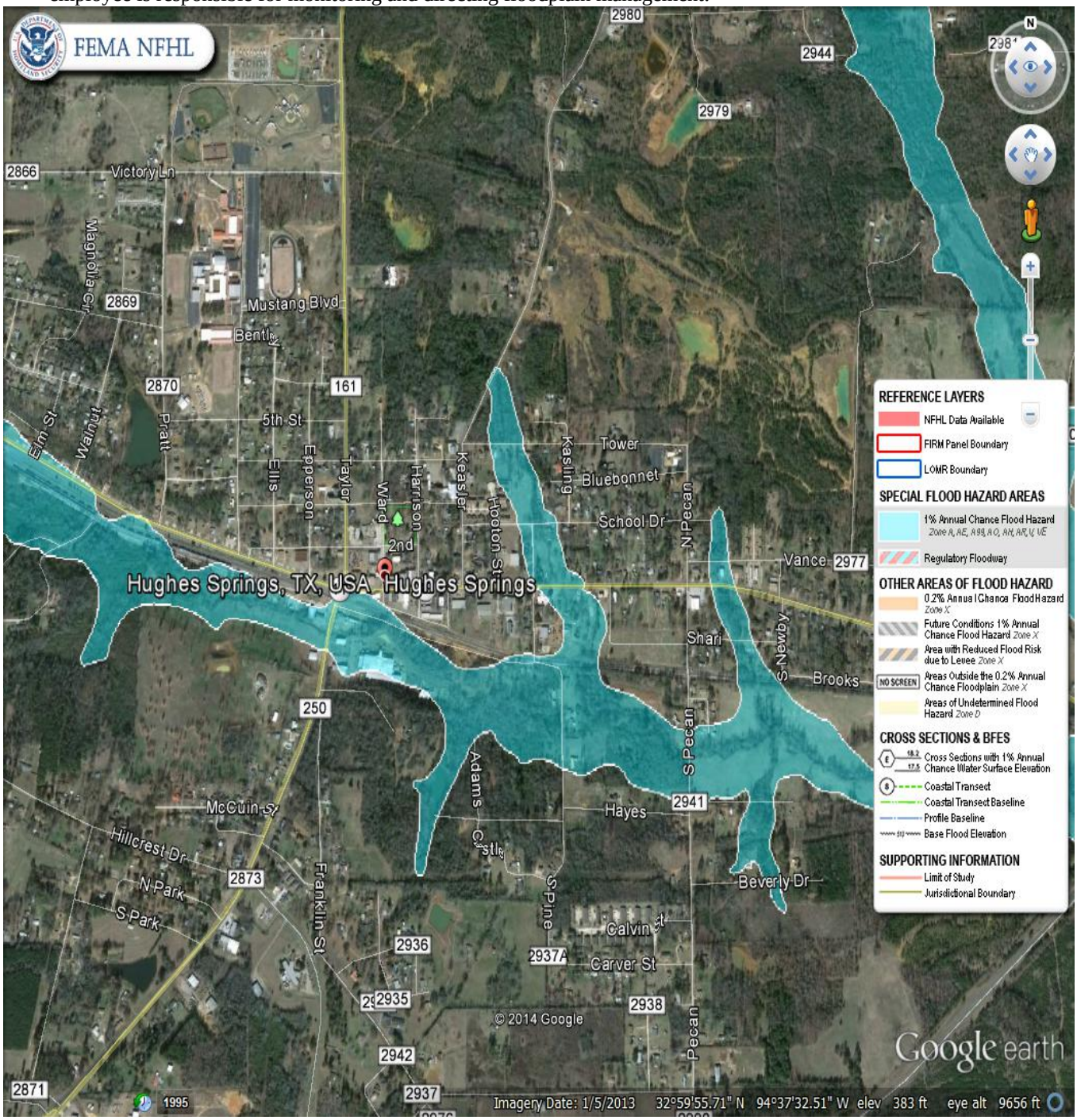
Queen City, Texas CID 481117 Queen City did pass Ordinance #2010.02 on 08/18/2010, joining the National Flood Insurance Program. Also updated that by Ordinance #2012.03 as required by NFIP on 03/22/2012. The City Secretary is in possession of the flood maps and monitors the activity in these areas.

. Marietta Floodplain

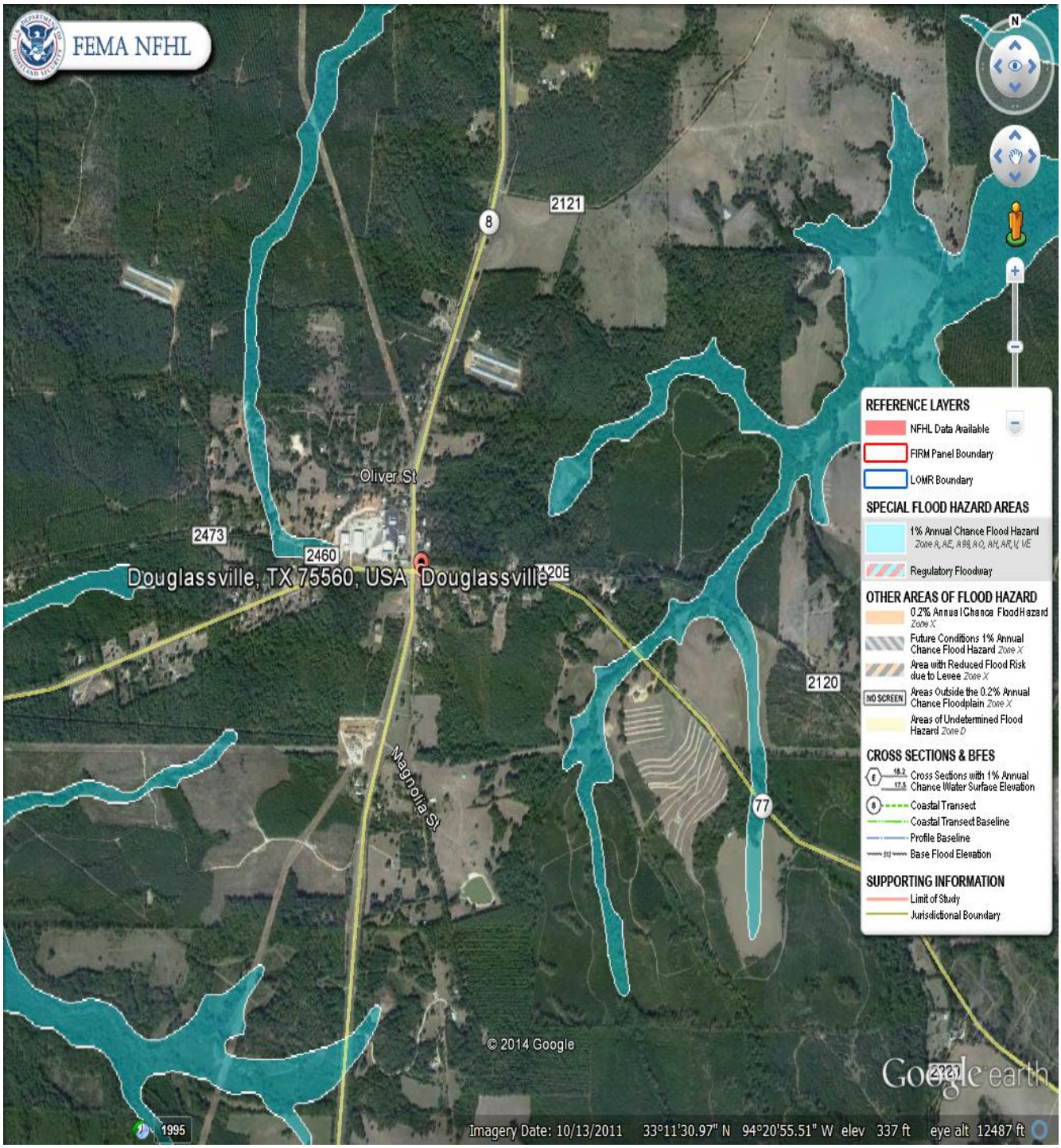
Marietta, Texas CID 480736 is not participating in the national flood insurance program at this time. Marietta is a small township with a sparse population. There are no structures and no repetitive loss properties in the floodplain. Actions in the mitigation strategy, flood actions 1, 2, 3, and 4, will maintain the City of Marietta's compliance with the NFIP

Linden, Texas, CID: 480735 adopted a floodplain management ordinance number 1-88 dated June 11, 1988 in order to comply with minimum standards for coverage under the National Flood Insurance Program. The city of Linden possesses floodplain maps and monitors for development activity in the flood plain area. A city employee is responsible for managing the activity. Linden has no record of repetitive loss in their jurisdiction. Actions in the mitigation strategy, flood actions 1, 2, 3, and 4, will maintain the City of Linden's compliance with the NFIP.

Hughes Springs, Texas, CID: 480734 adopted a floodplain management ordinance On May 21, 1991. Hughes Springs currently has floodplain maps that identify special hazards areas. There are currently no repetitive loss structures in the jurisdiction. The floodplain area is monitored to advise any possible development. A city employee is responsible for monitoring and directing floodplain management.

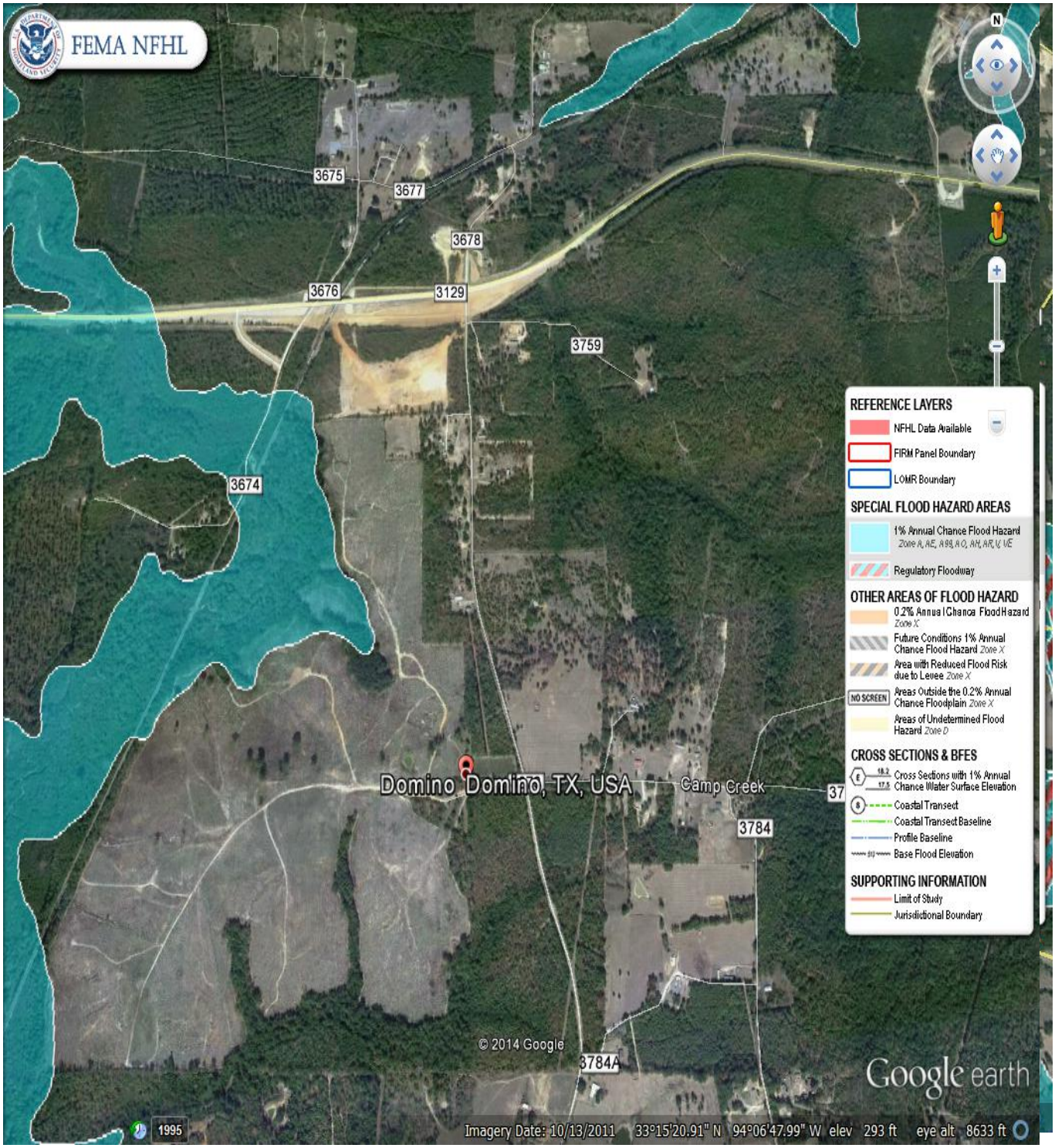


Avinger, Texas CID: 480731 is not participating in the national flood insurance program at this time. Avinger is a small township with a sparse population. There are no structures and no repetitive loss properties in the floodplain.



Douglassville, Texas CID: 480733 is not participating in the national flood insurance program at this time. Douglassville is a small township with a sparse population. There are no structures and no repetitive loss properties in the floodplain. Actions in the mitigation strategy, flood actions 1, 2, 3, and 4, will maintain the City of Douglassville's compliance with the NFIP.

Bloomburg Floodplain Bloomburg, Texas CID 480732 is participating in the national flood insurance program at this time. Bloomburg is a small township with a sparse population. There are no structures and no repetitive loss properties in the floodplain. The floodplain area is monitored to advise any possible development. A city employee is responsible for monitoring and directing floodplain management.



Domino Floodplain Domino, Texas CID: 481515 is not participating in the national flood insurance program at this time. Domino is a small township with a sparse population. There are no structures and no repetitive loss properties in the floodplain. Actions in the mitigation strategy, flood actions 1, 2, 3, and 4, will maintain the City of Domino's compliance with the NFIP.

The city of Atlanta has a total of 7,332 acres inside the city limits. The 100-year flood plain covers approximately 23 acres or .3% of the total acreage. The total taxable value of all property in the city is approximately 186 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is one record of repetitive flood losses within the flood plain and two incidences outside the plain. All listed properties are residential. No other repetitive losses are recorded in the county.

Cass County Flood Risk					
Jurisdiction	**Impact**	**Probability**	**Warning Time**	**Duration**	**PRI Score**
Cass County	Major PRI=3	Highly Likely PRI=4	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	High 3.35
Atlanta	Major PRI =3	Occasional PRI=2	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Medium 2.75
Avenger	Limited PRI=1	Unlikely PRI= 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Bloomburg	Limited PRI = 1	Unlikely PRI = 1	<6 hrs. PRI = 4	< 24 hrs. PRI = 2	Low 1.55
Domino	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Douglassville	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Hughes Springs	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Linden	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Marietta	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Queen City	Major PRI=3	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 2.45

Possible Amounts of Flooding Within Jurisdictions		
Jurisdiction	**From**	**To**
Cass County	¼ inch	3 feet
Atlanta	¼ inch	1 foot
Avenger	No history of flash flooding	
Bloomburg		
Domino	No history of flash flooding	
Douglassville	No history of flash flooding.	
Hughes Springs	¼ inch	1 foot
Linden	¼ inch	1 foot
Marietta	No history of flash flooding	
Queen City	1/4	1 foot

Cass County and the jurisdiction of Atlanta, Bloomburg, Domino, Hughes Springs, Linden and Queen City participate in the NFIP program. They have flood plain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas. Priority was given to each action by the HMPT. Each NFIP action was weighted regarding ultimate impact on buildings and infrastructure. These participating jurisdictions are taking positive steps to remain in compliance such as widening ditches and revising building codes.

Avinger, Douglassville, Marietta, and Domino are not participating in the national flood insurance program at this time. Each have chosen an action of participating in the NFIP Program.

Estimated Property Loss at 25%	
Cass County	177,087,465
Atlanta	83,040,246
Avinger	4,734,068
Bloomburg	3178163
Domino	1641234
Douglassville	Not Available
Hughes Springs	16,802,580
Linden	22,866,595
Marietta	Not Available
Queen City	14,436,290

Location: Historically, the entire County has suffered from flooding. If future trends occur as they have in the past, the County area will continue to have floods. Countywide, the Highways and County roads will continue to flood. Avinger, Domino, Douglassville, and Marietta appear to be the least likely to experience problems with flooding.

Probability: Flash floods are possible at any time during the storm season. These types of floods occur often during that period. According the NOAA weather service in Shreveport, LA, a flash flood is defined as flooding that occurs within 6 hours after or during a rain.

Vulnerability: The probability of a flash flood and the inability to accommodate the existing drainage on some of the FM roads is a constant problem. Cass County is ranked in the top 64 counties in Texas regarding possibility of flooding according to the Texas Hazard Mitigation Plan. Over 2 to 3 inches of rain per hour is considered a heavy rain in Cass County. Flooding is likely to occur in many areas if that amount falls for several hours. There is a moderate chance of flooding if rain falls at a rate of 1-2 inches per hour and slight for anything under.

Impact: the rural areas of Cass County will continue to have issues with flooding. The flood severity categories include substantial, major, minor, and limited flooding. Cass County, Queen City and Atlanta have an *impact rating* of *major* because some of the flood history indicates the need for rescues from autos or homes. There have been no injuries or deaths

recorded. Avenger, Domino, Douglassville and Marietta were rated LIMITED in impact because they have no history of flooding in the 12 years that events have been recorded by the NOAA Weather Service for Cass County. The impact of flash floods varies locally. Roads may flood in Atlanta and Queen City and in rural county areas after heavy rains. There are no repetitive loss properties, and no reported deaths or injuries due to flooding with minimal financial loss. In the participating jurisdictions improvements such as new culverts and the retrenching of ditches could help to minimize the problem, however, should it rain hard enough in a short period of time, streets will flood. All the jurisdictions are responsive to the dangers of high water and know to place warning signs out for motorists when needed. The Assessment Damage Tables on page 18-19 address the amount of loss that can occur with flooding.

Summary: Historically, Cass County has suffered from flooding. If future trends continue, Cass and rural county roads will continue to flood during periods of heavy rains. Countywide, the FM roads have seen flooding in the past and will continue to do so. Farm to Market roads and state highways are depicted on the Cass County map on page.

TORNADOES

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally March through August, although tornadoes can occur at any time of the year. They tend to occur in the afternoons and evenings: over 80 percent of all tornadoes strike between noon and midnight. Cass County tornadoes are depicted by magnitude, and by amount of property damage in the following Figures.

Compared with other States, Texas ranks number one for frequency of Tornadoes, number of deaths, number of injuries and for cost of damages. When compared to other States by the frequency per square mile, Texas ranks, number 10 for the frequency of tornadoes, number 16 for fatalities, number 21 for injuries per area and number 21 for costs per area.

Tornados in Cass County 1950-2011
Probability/Severity Table 2.3

Fujita Scale	Tornadoes	Percent
F0	17	21
F1	22	42
F2	14	30
F3	3	7
F4	0	0
F5	0	0
Total	56	100

The **Enhanced Fujita Scale**, or **EF Scale**, shown on the following page in Table 2.51, is the scale for rating the strength of tornadoes in the United States estimated via the damage they cause. Implemented in place of the Fujita scale, it was used starting February 1, 2007. The scale has the same basic design as the original Fujita scale, six categories from zero to five representing increasing degrees of damage. It was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale takes into account how most structures are designed, and is thought to be a much more accurate representation of the surface wind speeds in the most violent tornadoes.
Source: http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF0	65-85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	**Devastating damage.** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd.); high-rise buildings have significant structural deformation; incredible phenomena will occur.
source: http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale		

A HISTORY OF TORNADOES IN CASS COUNTY

Table 2.6

(National Climatic Data Center) 43 Tornadoes were reported in Cass County between 01/01/1950 and 12/31/2006 (Only those with recorded property damage (PrD) are listed)

Begin Date	Location	F SCALE	Description	$PrD
02/11/50	32°59'N 94°38W	F2	5 miles long, 67 yards wide, 6 injured	250K
04/30/54	32°56'N 94°03'W	F3	39 miles long, 50 yards wide, 1 injury	25K
04/06/55	33°10'N 94°21W	F1	None, 2 injured	2.5K
05/03/58	33°00'N 94°39W	F2	29 miles long, 133 yds. wide	25K
05/28/58	33°07'N 94°09'W	F2	2 miles long, 100 yds. wide	2.5K
12/27/68	Not Known	F2	1 mile long, 23 yds. wide	25K
03/03/70	Not Known	F1	0 miles long, 100 yds. wide	2.5K
11/18/71	Not Known	F2	1 mile long, 333 yds. wide	250K
11/24/73	Not Known	F2	None	2.5K
05/13/82	Not Known	F1	1 mile long, 73 yds. wide	25K
12/23/82	Not Known	F2	10 miles long, 123 yds. wide	25K
03/27/84	Not Known	F0	1 mile long, 40 yds. wide	2.5K
11/15/87	Not Known	F3	12 miles long, 200 yds. wide	250K
04/27/91	Not Know	F1	3 miles long, 220 yds. wide	2.5K
05/14/94	4 miles South East of Hughes Springs	F0	0 miles long, 10 yds. wide	5K
10/21/96	14 miles North West of Linden	F1	22 miles long, 25 yds. wide A tornado skipped across central and east central Cass County. First touched down FM250 South of Hwy 77 or 14 miles northwest of Linden.	35K
04/23/00	4 miles East N/E of Marietta	F2	14 miles long, 150 yds. wide Several homes in Douglasville, and businesses, including Post Office damaged	250K
04/23/00	4 miles North West of Linden	F3	16 miles long, 880 yds. wide Several barns and 2 cross country electrical towers toppled	165K

Begin Date	Location	F SCALE	Description	$PrD
Occurrences Since Original Plan				
10/06/08	A tornado occurred near Hwy. 77 and moved north approximately 1.5 miles.	F0	A storage building was destroyed and a carport was lifted from a home and dropped in a yard along County Road 4798. A large tree fell across a parked vehicle near a residence as well. A utility trailer was picked up and thrown into the side of another parked vehicle. There were no injuries reported. Multiple trees were snapped or downed along the 100 yard wide path.	75K
04/09/09	This storm developed near the Cass County line, about 5 miles northwest of Hughes Springs.	F1	Numerous trees were uprooted and snapped, with power lines downed as well. with winds of around 90 mph.	10K
04/09/09	This storm developed about 5 miles northwest of Linden in central Cass County	F2	Numerous trees were downed, with a tree crushing a truck, and another tree falling through the roof of a house. A two-story home was nearly destroyed. The roof of a two story house was torn off, and a portable building behind the home was blown nearly 400 yards east across Highway 8 into some nearby woods The path length was nearly 16 miles long, with a path width of 190 yards.	750 K
04/09/09	This storm developed along CR 4670, about 5 miles northeast of Bivins	F0	Numerous trees were snapped or blown down . The path length was 2.4 miles, with a path width of 75 yards.	50K
4/23/10	one mile west of Queen City, along Highway 96	F0	Tornado uprooted a large tree. The tornado proceeded into Queen City where it caused damage to several large tree limbs and branches and caused moderate damage to the roof of a building.	5K
5/01/10	Bivins	F0	Damage consisted of many hardwood trees uprooted, numerous tree limbs down, minor roof and siding damage to about 7 homes, and minor roof damage to one church.	50K
4/30/11	southwest side of Hughes Springs where several trees were snapped near FM 250.	F0	Tornado downed trees onto power lines and removed shingles from a home. As the storm continued to move northeast, several trees were uprooted, some large in nature, with shingles removed from a business along the east side of town. The tornado lifted just after downing 6 large pecan trees near a resident. One of the large limbs from the trees punctured the back of the roof and damaged a storage building nearby. Estimated wind speeds were 75-80 mph.	5K
			Total	**2.290M**

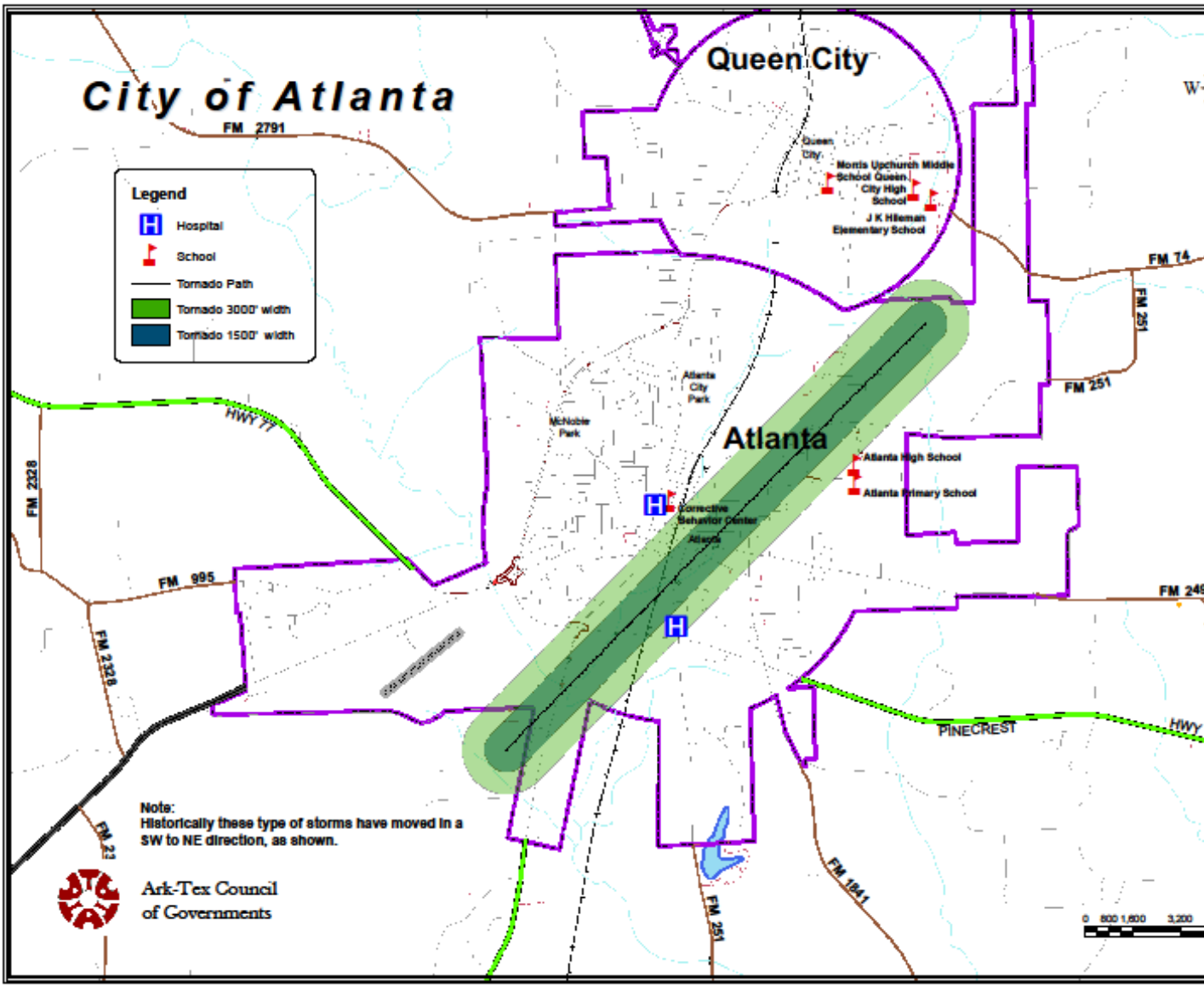
A tornado can cause major problems with infrastructure. Power lines are often down creating power outages and the possibility of electrocution from live downed wires in Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City. Falling trees can block roads and cause major structural damage to houses and businesses. Depending on the severity of a tornado, businesses could lose needed revenue. Employees might suffer from layoffs or terminations. Efficient coordination of emergency services, including police, fire departments and city utilities would play a vital role in lessening impact and reducing injury.

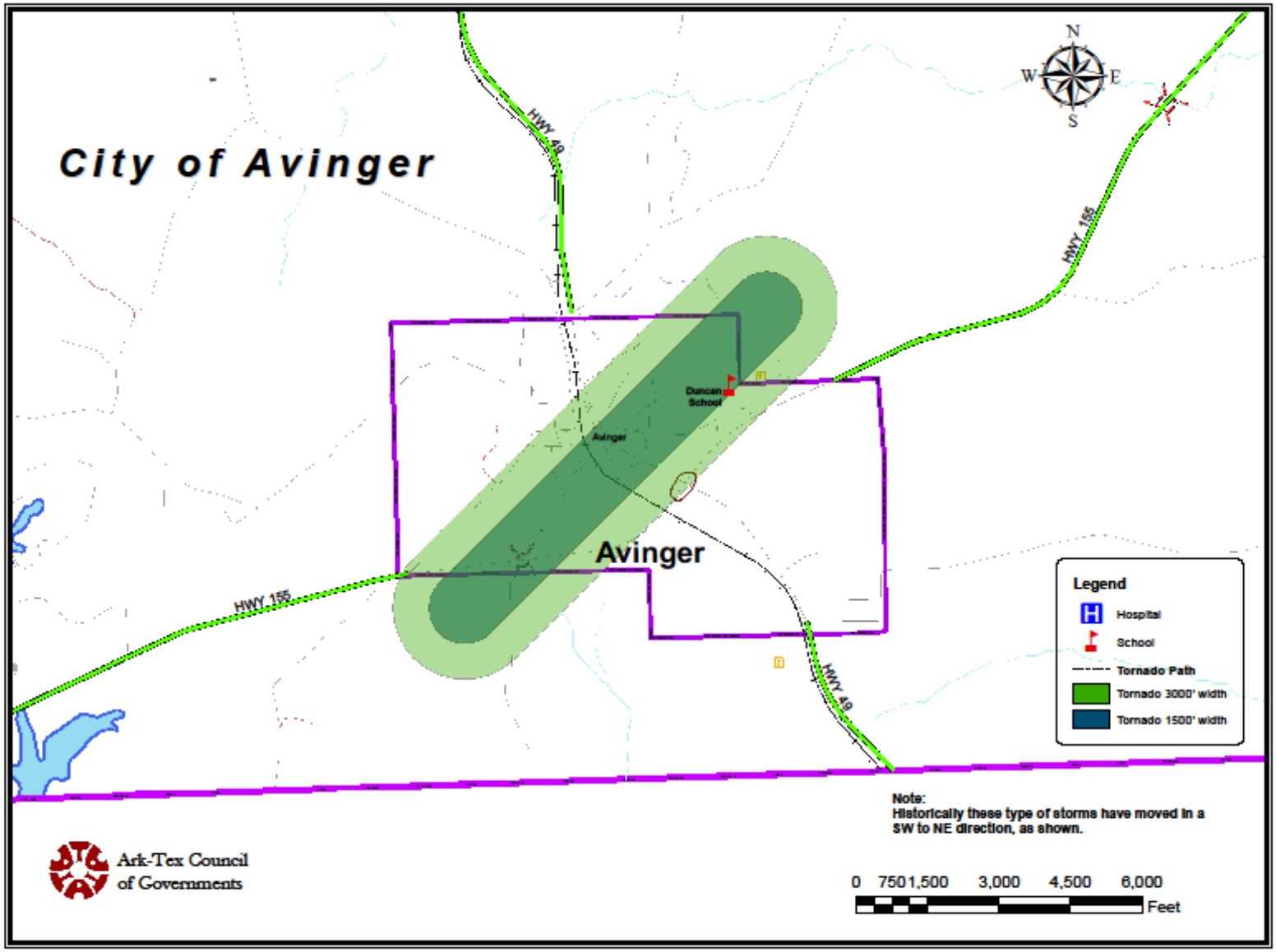
Alternate routes to reach schools and housing might need to be established due to debris and fallen trees. Death can occur from flying debris and incredible wind speeds. Emergency transport might be delayed in reaching injured people due to blocked roads. It is important that the emergency services be coordinated and their equipment be of high quality.

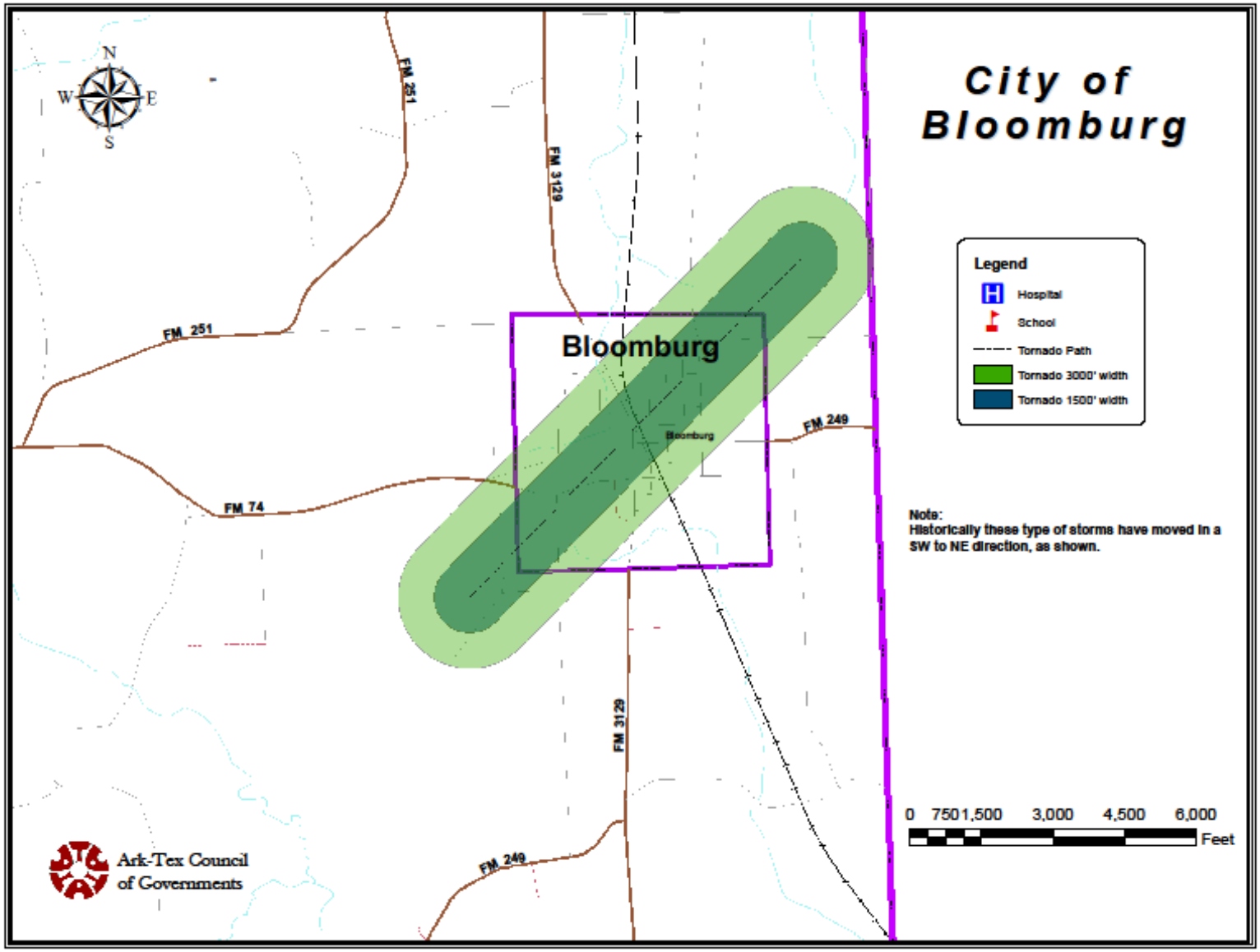
The probability of a tornado striking Cass county in a given year is high but the probability of a tornado developing in the jurisdictions remains low. The jurisdictions represent only 3% of the total area in Cass County and the historical data relating to frequency of tornadoes and the probability is low.

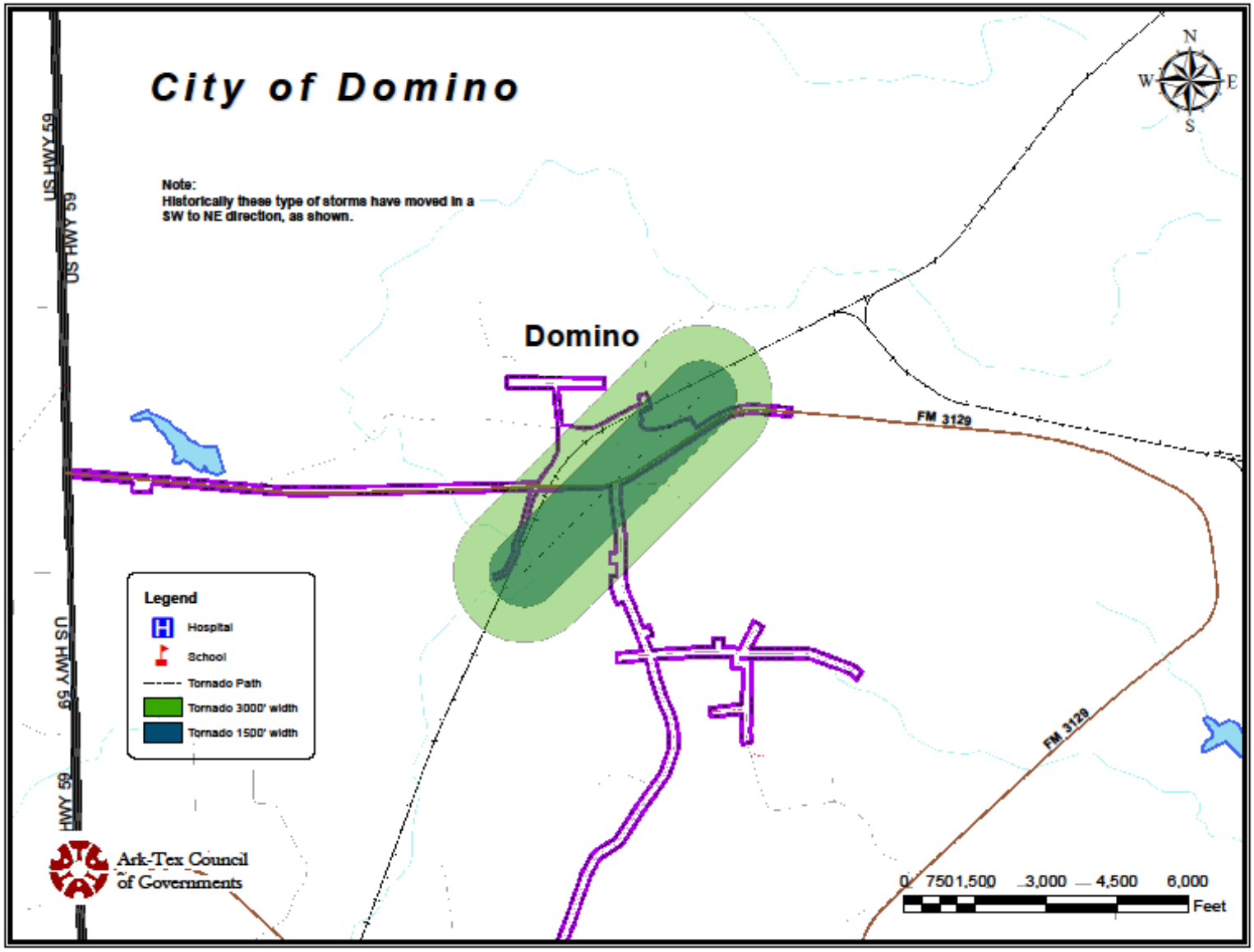
The following maps represent typical paths for tornadoes (southwest to northeast) in the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City.

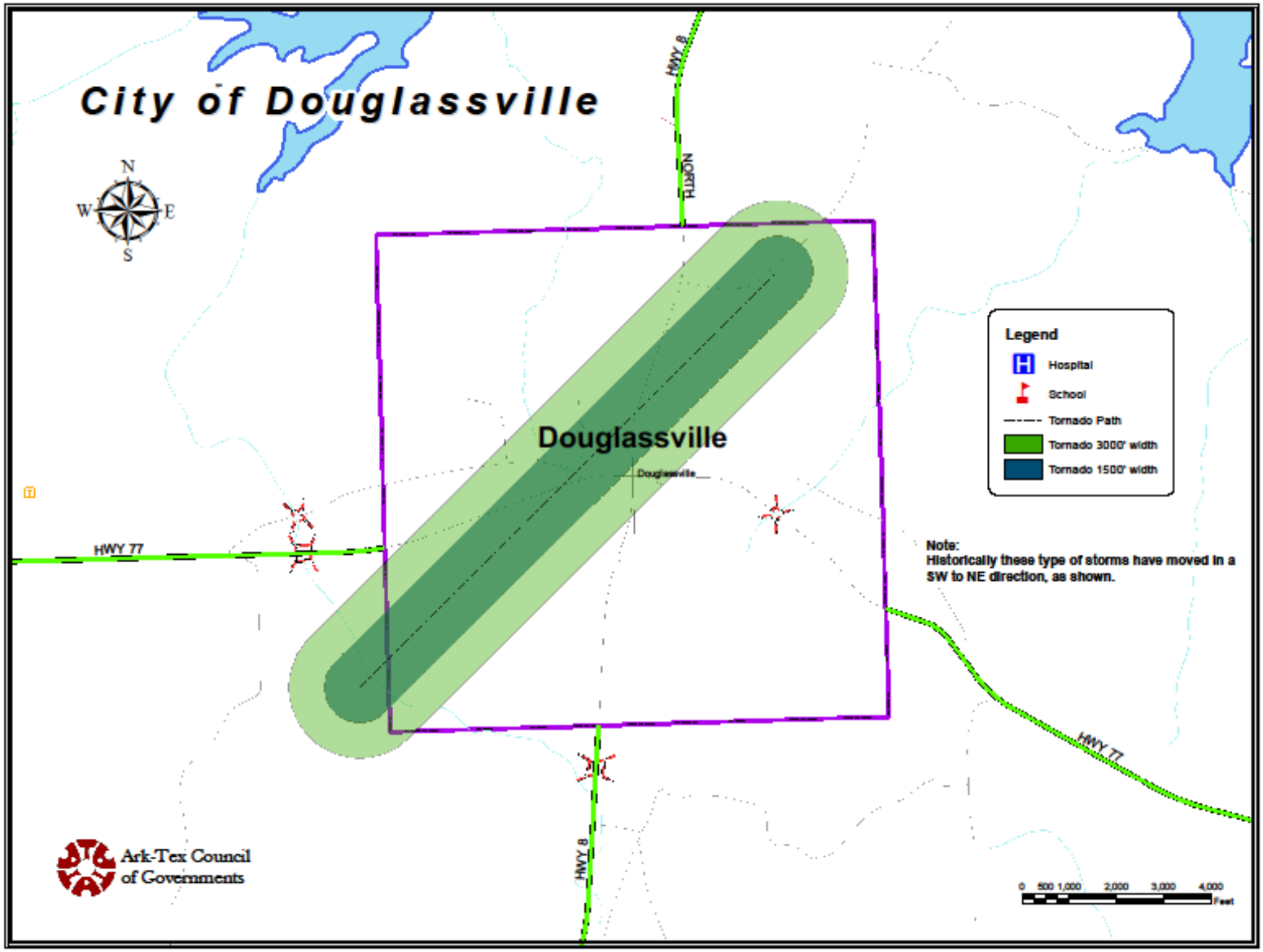
In the U.S. alone, weather disasters caused ***$50 billion in economic damages in 2010.***

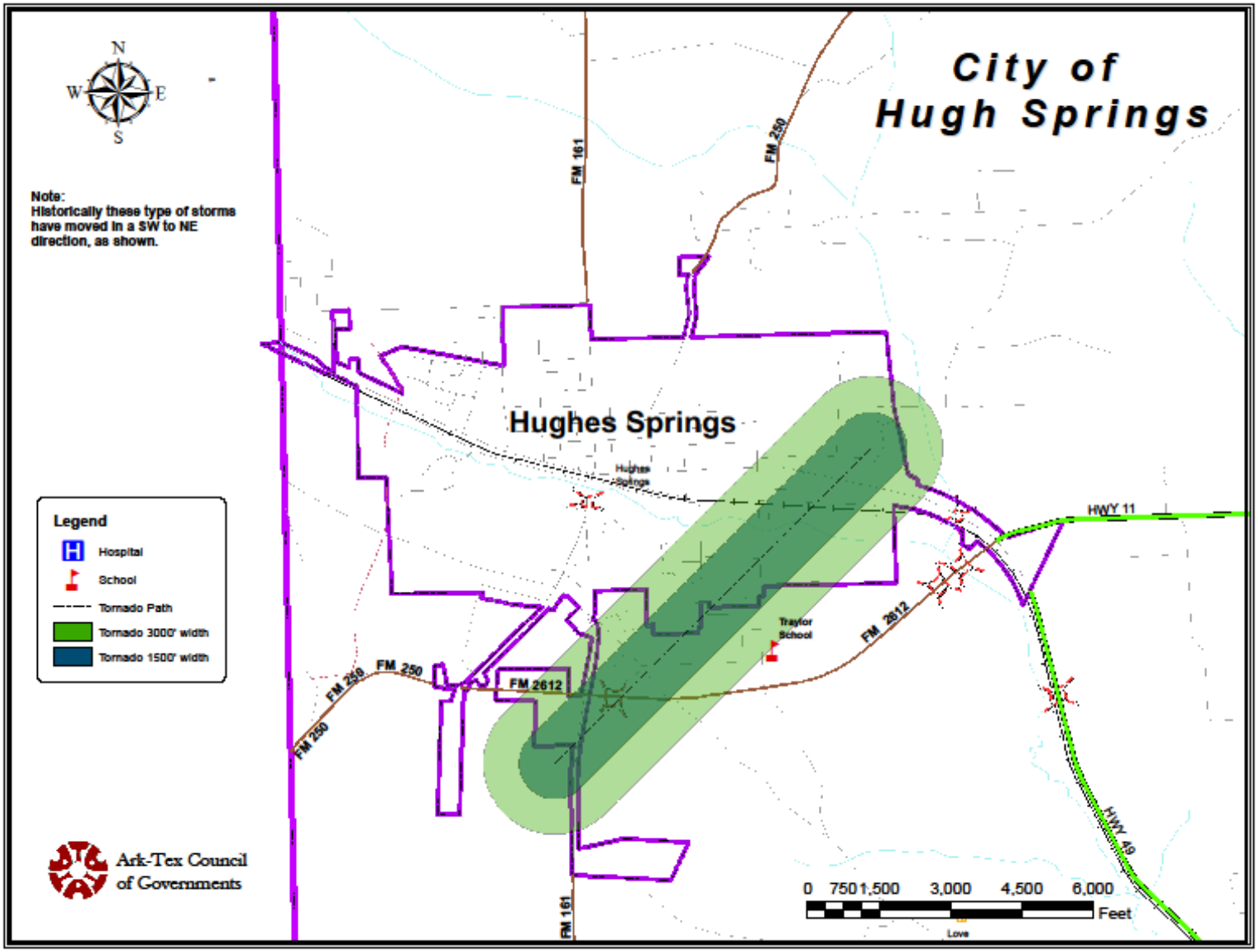

City of Atlanta
Queen City
Atlanta
FM 2791
FM 74
FM 251
HWY 77
FM 2328
FM 995
PINECREST
FM 1841
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Morris Upchurch Middle School
Queen City High School
J K Hileman Elementary School
Atlanta High School
Atlanta Primary School
Atlanta City Park
McNobie Park
Corrective Behavior Center Atlanta
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Ark-Tex Council of Governments

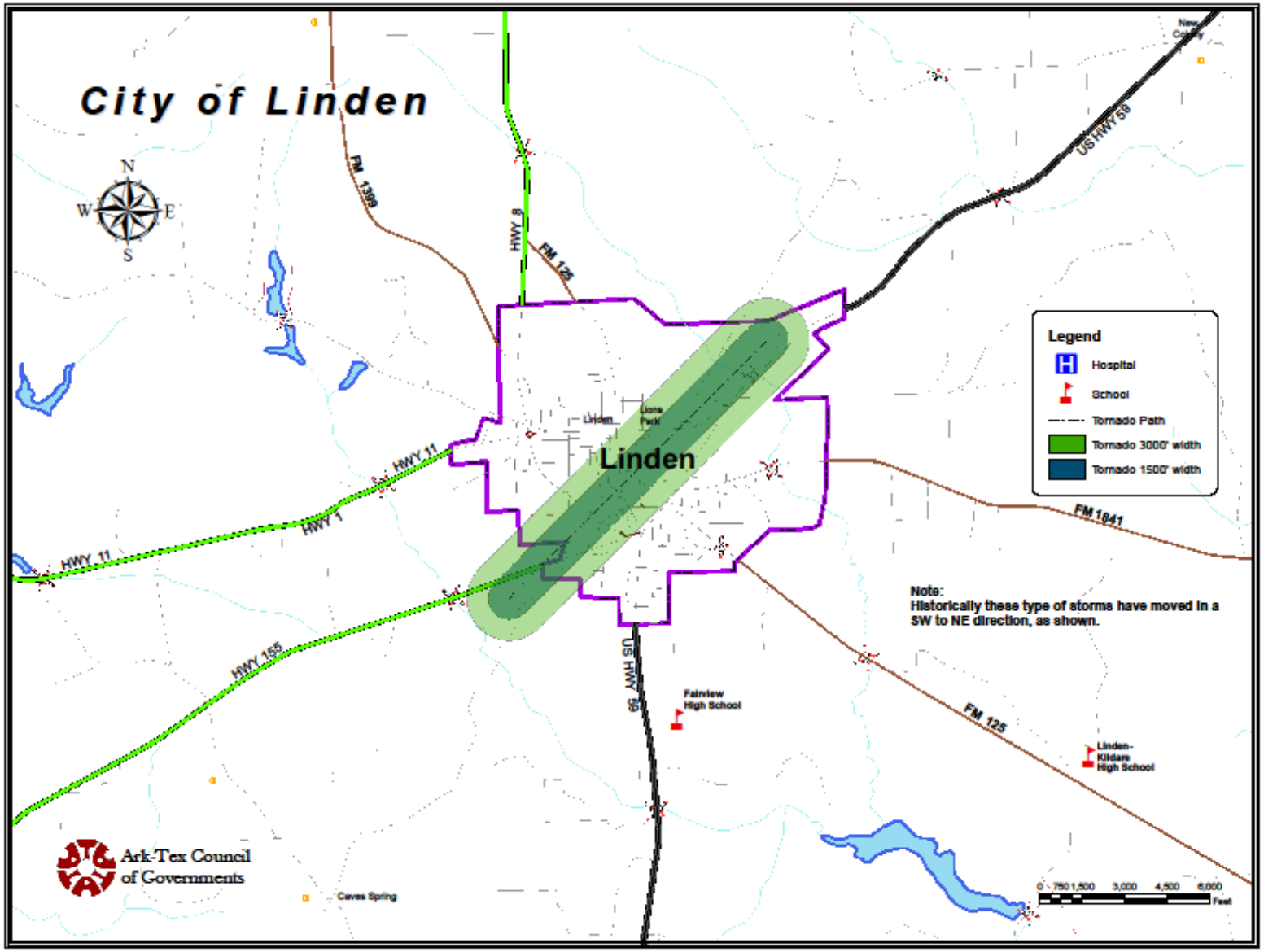

City of Avinger
HWY 49
HWY 155
Duncan School
Avinger
Avinger
HWY 155
HWY 49
N
W
E
S
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Ark-Tex Council of Governments
0 750 1,500 3,000 4,500 6,000
Feet

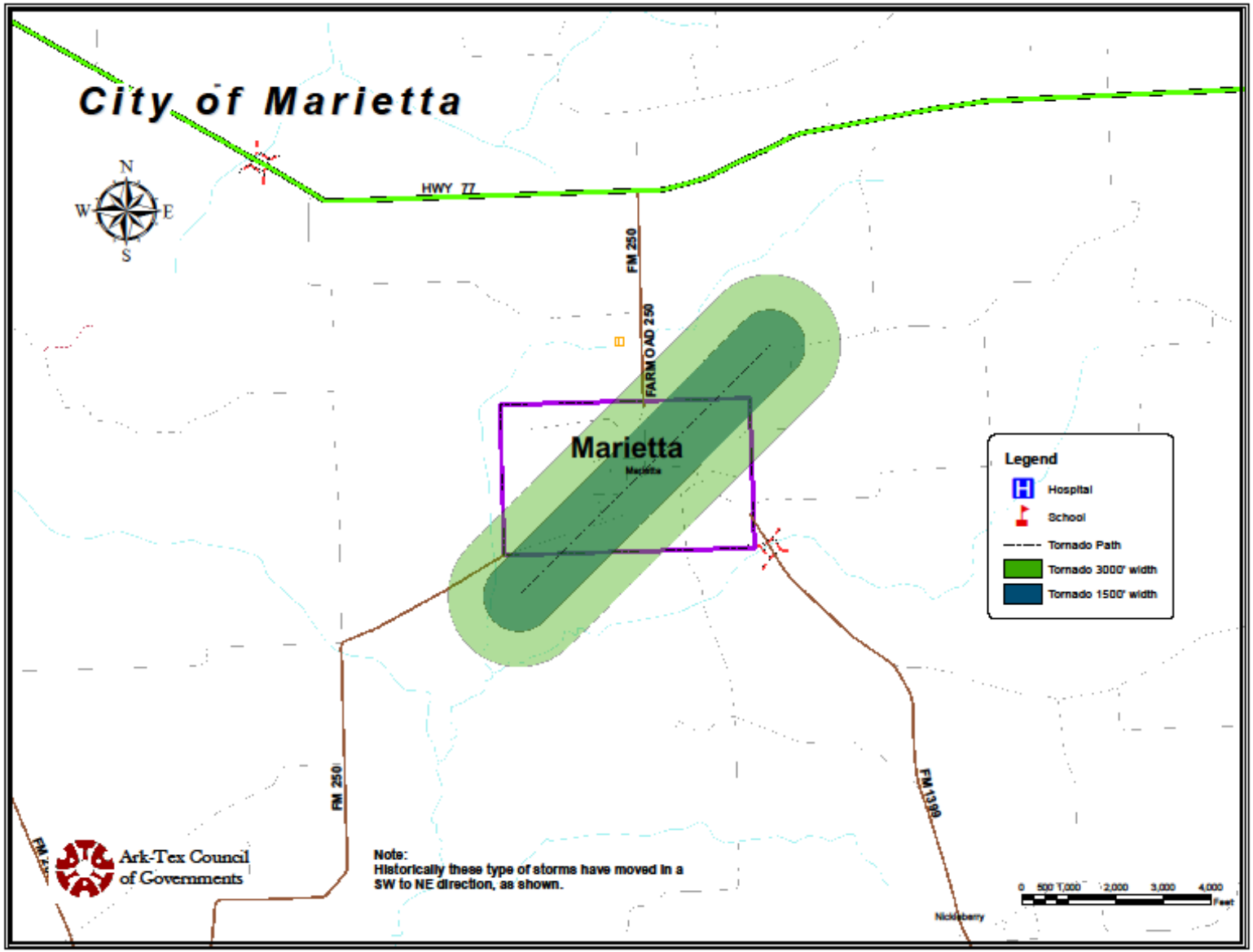

City of Bloomburg
N
W
E
S
FM 251
FM 3129
FM 251
Bloomburg
Bloomburg
FM 249
FM 74
FM 3129
FM 249
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
0 750 1,500 3,000 4,500 6,000
Feet
Ark-Tex Council of Governments

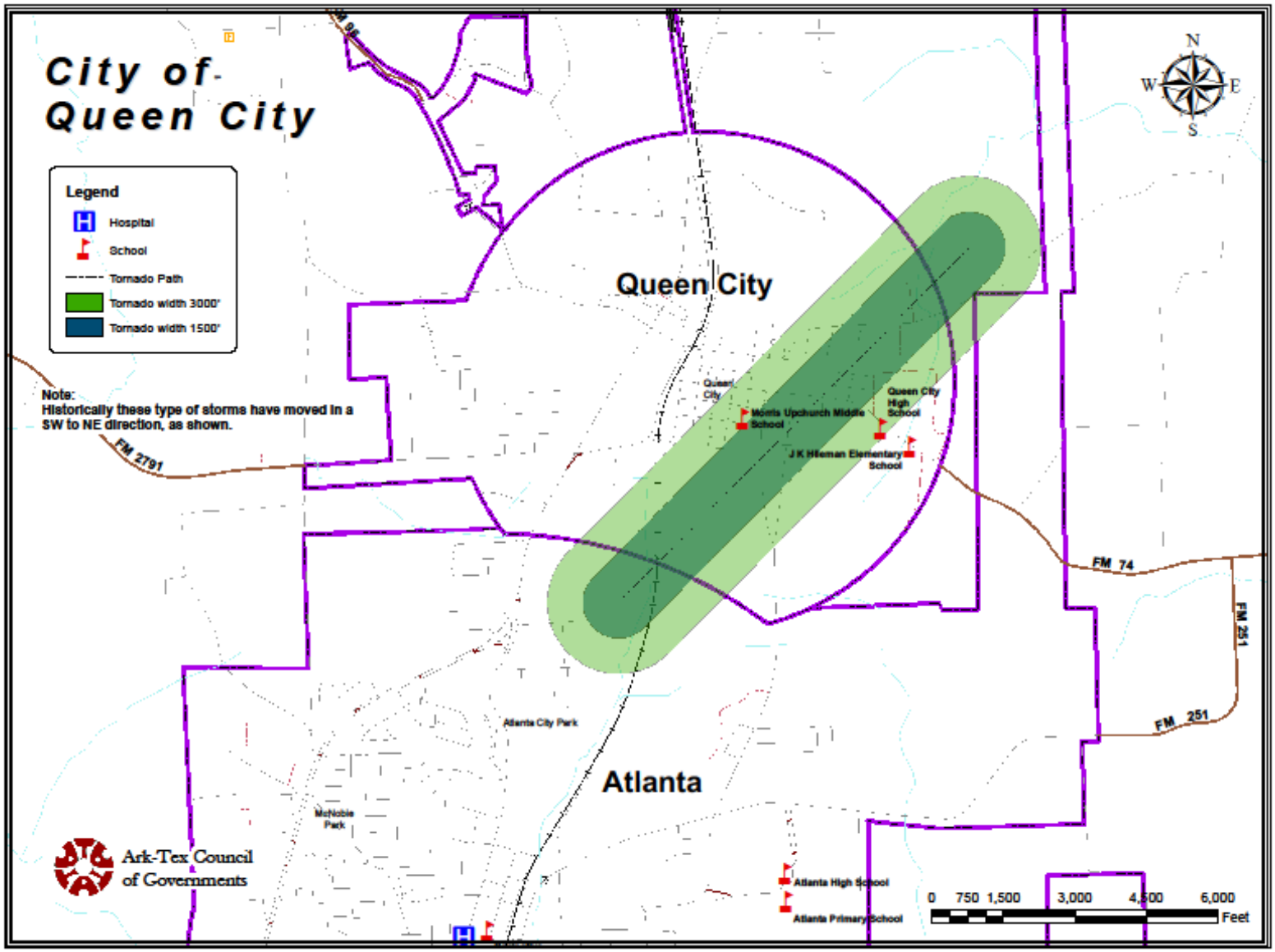

City of Domino
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Domino
US HWY 59
US HWY 59
US HWY 59
HWY 59
FM 3129
FM 3129
N
W
E
S
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Ark-Tex Council of Governments
0 750 1,500 3,000 4,500 6,000
Feet


City of Douglassville
N
W
E
S
HWY 8
NORTH
Douglassville
Douglassville
HWY 77
HWY 77
HWY 8
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Ark-Tex Council of Governments
0 500 1,000 2,000 3,000 4,000
Feet


City of
Hugh Springs
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Hughes Springs
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Ark-Tex Council of Governments
FM 161
FM 250
HWY 11
HWY 49
FM 2612
Traylor School
0 750 1,500 3,000 4,500 6,000
Feet


City of Linden
N
W
E
S
FM 1399
HWY 8
FM 125
US HWY 59
Linden
Lions Park
HWY 11
HWY 1
HWY 11
HWY 155
US HWY 59
FM 1841
FM 125
Fairview High School
Linden-Kildare High School
Caves Spring
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Ark-Tex Council of Governments
0 750 1,500 3,000 4,500 6,000
Feet


City of Marietta
N
W
E
S
HWY 77
FM 250
FARM ROAD 250
Marietta
Legend
Hospital
School
Tornado Path
Tornado 3000' width
Tornado 1500' width
FM 250
FM 1399
Ark-Tex Council of Governments
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
0 500 1,000 2,000 3,000 4,000
Feet
Nickleberry


City of
Queen City
Legend
Hospital
School
Tornado Path
Tornado width 3000'
Tornado width 1500'
Note:
Historically these type of storms have moved in a SW to NE direction, as shown.
Queen City
Atlanta
Morris Upchurch Middle School
Queen City High School
J K Hileman Elementary School
Atlanta City Park
McNobie Park
Atlanta High School
Atlanta Primary School
FM 2791
FM 74
FM 251
FM 251
N
W
E
S
0 750 1,500 3,000 4,500 6,000
Feet
Ark-Tex Council of Governments

Cass County Tornadoes Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< 6 hrs. PRI=1	High 3.7
Atlanta	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Medium 2.8
Avinger	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Bloomburg	Substantial PRI=4	Unlikely PRI=1	<6hrs. PRI=4	<6 hrs. PRI=1	Medium 2.8
Domino	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Medium 2.8
Douglassville	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Hughes Springs	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Linden	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Marietta	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Queen City	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8

Probability: Tornadoes are most frequent in the months of April, May and June. While tornadoes can occur at any time during the day or night, they tend to form during the late afternoon and into the evening. Based on a historical trend over the past 61 years, there is a 75% chance that Cass County will experience a tornado touchdowns in a given year. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to several miles long. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. The occurrence of a tornado touchdown on an annual basis is considered highly likely in the county but unlikely for the participating jurisdictions because they represent only 3% of the total county area.

Vulnerability: All of Cass County is vulnerable to tornado damages. The damage potential is high due to the number of mobile homes, manufactured housing and older wood framed homes found in the participating jurisdictions. The Atlanta/Queen City area is more likely to experience significant damage because of the population density of the adjoining cities.

Extent: Based on a historical trend over the past 61 years, Cass County can experience one or more tornadoes annually. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to 10 miles long. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. A F1 tornado could destroy the small participating jurisdictions. Small towns can experience a complete loss of communications. Roads could be blocked by downed trees and building debris. There are no few new buildings in any of the jurisdictions other than Atlanta. This would contribute to the possibility of injury and death. The Damage Assessment Tables on 18-19 demonstrate the amount of loss that can occur from a tornado. The extent of damage can be substantial.

Historically the severity has ranged from F0 to F2. The entire scale presented is used to determine ranges and severity. The full range of 65 (F0) to 200 mph (F5 +) are possible in Cass County and its jurisdictions.

Location: All of Cass County can possibly be affected. Tornadoes have an unpredictable pattern, so the entire County is subject to being hit by a tornado. All the jurisdictions and with the unincorporated parts of Cass County could be affected.

Summary: Cass County is located in tornado alley. There have been 46 tornado events in Cass County with no deaths and 6 injuries recorded over the 61 year history. Warning sirens, safe rooms, enforced modern building codes and generators for emergency power are needed safeguards for the small communities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City, to help protect its citizens from tornadoes.

Estimated Property Loss at 50%	
Cass County	584,507,267
Atlanta	166,080,491
Avinger	9,468,133
Bloomburg	6,356,325
Domino	32,82,465
Douglassville	Not Available
Hughes Springs	33,605,160
Linden	45,733,190
Marietta	Not Available
Queen City	288,72,578

CITIZENS JOURNAL

60 VOL. 121, NO. 34 50 CENTS CASS COUNTY, TEXAS • 2 SECTIONS

Tornadoes twist their way across Cass Co

By JUDY WILLIAMS
Journal Staff Writer

Events took an unusual twist in East Texas Easter Sunday afternoon when severe thunderstorms and four tornadoes caused damage to area homes and businesses and caused an extensive power outage.

At approximately 4:14 p.m. Atlanta residents were warned to take cover as a storm with rotation, which reportedly caused damage in Hughes Springs, was headed toward the cities of Atlanta and Queen City.

The communication system for the county dispatcher in Linden was down, due to lack of power, causing confusion in transmitting weather information.

Heavy damage was reported in the Crossroads community, Zion Hill community, Douglassville, and the New Colony/Frazier Creek area.

In the Zion Hill community a woman was reported to be trapped in a trailer upon which a tree had fallen. It later turned out she was at her neighbor's and safe.

"I had gone to my neighbor's to call my children and wish them a Happy Easter," the lady explained.

"After it was all over we came and found the tree on my trailer. Half of it is gone," she concluded.

Along U.S. Highway 59 in the Zion Hill area, south of Linden, an 18-wheeler was blown over on it's side by a twister that also shredded the Cross Country Trucking business. Sheets of metal siding from the building were wrapped around trees and some were on the opposite side of the highway.

Back in Atlanta, the civil defense siren blared, and residents took cover in their homes and the first United Methodist Church basement. Another group took cover in the Atlanta Independent School District building.

Meanwhile a funnel cloud, visible over Queen City, was reported on the scanner.

Rotation was also detected by Doppler radar along U.S. Highway 59 at the New Colony/Frazier Creek location.

At approximately 6:10 p.m. a power outage occurred in the greater Atlanta and Queen City area. It was reported as, but never confirmed to be countywide.

After the Atlanta Police Department communication system lost power and the back-up generator failed, the military generator used during the February ice storm was again put to use.

Trees were blown down blocking Texas Highway 43 near Bivins and Farm-to-Market 125. Numerous county roads were blocked by uprooted trees.

New Colony took a direct hit that tore the roof off and pushed in the southern wall of the Flying Horse Trading Post. All of the tin roof was off the building, and much of it rested in the trees behind the building.

Owners Robin and Darrell Vincent arrived on the scene to find things soaked and strewn everywhere.

Ironically, the Mobil Flying Horse, for which the trading post was named, had been recently sold and now the business was destroyed.

The Vincents used a key to open the front door of the building. They waded through the debris toward the back of the store only to find the back door open, and the

Please see TORNADO page 7

Photo by JUDY WILLIAMS

The Flying Horse Trading Post on U.S. Highway 59 at New Colony was destroyed by one of Sunday's tornadoes.

Crowd gathers

30 years later

Atlanta Citizens Journal, April 26, 2000

SEVERE WINTER STORM

Ice Storms

Winter Storms pose a threat to the entirety of the planning area. Winter Storms in the context of this document refers to Freezing Rain, Ice Storms, Blizzards, and Heavy Snow events that may occur during the winter months in Cass County. The National Weather Service (NWS) glossary defines Ice Storms, Blizzards, and Heavy Snow events as:

Freezing Rain is "rain that falls as a liquid but freezes into glaze upon contact with the ground."

"An **ice storm** is an occasion when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater."

"A **blizzard** means that the following conditions are expected to prevail for a period of 3 hours or longer:

- Sustained wind or frequent gusts to 35 miles an hour or greater; and
- Considerable falling and/or blowing snow (i.e., reducing visibility frequently to less than ¼ mile)."

"A **heavy snow** generally means...

- snowfall accumulating to 4" or more in depth in 12 hours or less; or
- snowfall accumulating to 6" or more in depth in 24 hours or less

In forecasts, snowfall amounts are expressed as a range of values, e.g., "8 to 12 inches." However, in heavy snow situations where there is considerable uncertainty concerning the range of values, more appropriate phrases are used, such as "...up to 12 inches..." or alternatively "...8 inches or more..."

The following National Weather Service warnings detail the potential extent of a storm.

National Weather Service WATCH: A message indicating that conditions favor the occurrence of a certain type of hazardous weather. For example, a severe winter weather watch means that a severe winter weather event is expected in the next six hours or so within an area approximately 120 to 150 miles wide and 300 to 400 miles long (36,000 to 60,000 square miles). The NWS Storm Prediction Center issues such watches. Local NWS forecast offices issue other watches 12 to 36 hours in advance of a possible hazardous- weather or flooding event. Each local forecast office usually covers a state or a portion of a state.

NWS WARNING: Indicates that a hazardous event is occurring or is imminent in about 30 minutes to an hour. Local NWS forecast offices issue warnings on a county-by-county basis.

Winter Storm WATCH: A winter storm is occurring, or will soon occur, in your area.

Winter Storm WARNING: Means sustained winds or frequent gusts to 35 miles per hour or greater and considerable falling or blowing snow (reducing visibility to less than a quarter mile) are expected to prevail for a period of three hours or longer, and dangerous wind chills are expected in the warning area.

The *Wind Chill* temperature is simply a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30° day would feel just as cold as a calm day with 0° temperatures. The index was created in 1870, and on November 1, 2001, the National Weather Service released a more scientifically accurate equation, which is used today. Below is a chart for calculating wind chill. (Please note that it is not applicable in calm winds or when the temperature is over 50°.)

Wind Chill Chart

Wind (mph) \ Temperature (°F)	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	29	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

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

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

Effective 11/01/01

Source: National Weather Service and NOAA

Ice storms most commonly develop along a line stretching from northern Texas to Newfoundland in slow-moving low-pressure systems where there is a large temperature difference between the warm Gulf air and cold Arctic air. Local accumulations of ice may be heavy if the storm stalls over a region for an extended time. Ice storms lasting 12 hours or more generally produce ice accumulations several centimeters thick. The typical ice storm

swath is 30 miles wide and 300 miles long. Ice storms generally warrant major headlines only one year in three.

Ice storms typically begin with snow and strong easterly winds conditions well ahead of an approaching warm front. The snow, however, changes briefly to sleet and then to rain that freezes on impact, coating all exposed surfaces with a growing layer of ice.

For drivers, the consequences of icing can be serious, for stopping distances on glaze ice are ten times greater than on dry pavement, and double that on packed snow.

Power and communication systems using overhead lines are perhaps hardest hit by ice storms. Hanging wire cables collect ice until the cable breaks or the rain stops. Animal and plants may be killed or injured by ice accumulation. Damage to trees rivals disease and insects as destructive agents.

The Christmas Day storm of 2000 clobbered counties along a 260-mile stretch of the Red River. Cass County was one of several counties declared a disaster area.
Back-to-back December weather fronts slammed North Texas with ice that produced the perfect ice storm. Many electric cooperatives were sent to their knees by the fury of the storms.

Potential Damage/Loss Due To Ice Storms

Life and Property

Slick roads and other surfaces cause traffic accidents resulting in death and injury. People shoveling snow have heart attacks. Property is at risk from flooding. Trees, power lines, telephone lines and subject to damage from accumulation of ice and snow. Trees fall on utility lines and houses.

Roads and Bridges

Fallen trees across roads can block access to emergency services. The ability to travel after an ice storm is a priority issue for hospitals, utilities and emergency service vehicles.

Power Lines

Falling trees are a major cause of power outages resulting in interruption of services and damaged property. Downed power lines also create the danger of electrical shock.

Water Lines

Cast iron mainlines frequently break during severe freezes. Also, residential water lines often fail.

The potential for severe winter storms is high and records indicate that the cost can be in the millions of dollars, depending on the severity of the storm.

HISTORY OF WINTER STORMS IN CASS COUNTY

17 Snow and Ice events were reported in Cass County between 02/09/94 and 02/11/14. (Data from National Climatic Data Center)

Begin Date	Location	Description	$ PD
02/09/94	77 Counties	Arctic cold front moved into Northern Texas during the afternoon of the 8th, causing temps. to fall 60 degrees within 48 hours in many locations. Up to four inches of ice and sleet accumulated, making this the most significant ice storm across East Texas in 2 years. Numerous highways, businesses, and schools were closed. Over 30K homes suffered power outages & damage from falling trees was widespread to homes and businesses. 2 indirect fatalities occurred as icy roads caused traffic accidents.	$50M
01/06/97	16 Counties	Abundant low-level moisture was pumped northward across the region from low pressure over the northwest Gulf of Mexico. Moisture overran a freezing air mass across NE Texas. The result was 2-4 inches of freezing rain and sleet across the area. Numerous accidents were reported along with power outages. Several highways were closed.	0
01/14/97	8 Counties	Ice accumulations of ¼- ½ inch occurred across portions of NE Texas. Several traffic accidents resulted	0.00k
12/22/98	22 Counties	A shallow air mass spread across NE and East Texas while low pressure formed in the Gulf of Mexico. This allowed overrunning of warm moist air over the cold dome producing widespread freezing rain & sleet. Overall ice accumulations were less than one inch. Ice accumulated mainly across exposed surfaces such as trees & power lines as well as bridges & overpasses. A few automobile accidents, downed trees, & power lines were the worst result of the storm.	0.00kk
01/26/00	13 Counties	Moisture laden air from the Gulf overran the freezing surface temperature producing ice across the northern half of northeast Texas. Ice accumulations of one to four inches fell across most of the area with the ice and snow accumulations near 8 inches. Thousands of homes were left without power due to ice covered tree limbs falling and snapping power lines. Hundreds of chicken houses were destroyed & 7 million chicks were killed. Barns, carports, & weak structure homes suffered collapse from the weight of the ice and snow. Numerous traffic accidents and I-30 was impassable.	0.00k
12/12/00	18 Counties	A mixture of freezing rain, sleet and snow north of Quitman to Linden Texas line, while further south, precipitation was in the form of freezing rain. Ice accumulations of 2 to 6 inches were common across the northern third of northeast Texas with accumulations of 1 to 2 inches further south. Over 235,000 people were without power from several hours to several weeks from snapped power lines. Upwards of 29 transmission lines atop "H" shaped steel towers were snapped due to the weight of the ice. Northeast Texas was declared a disaster area.	123M
12/24/00	8 Counties	Ice storm struck the northern third of northeast Texas. Freezing rain resulted in ice accumulations from ¼ inch to 3 inches. Bowie, **CASS**, Cass Counties declared disaster area.	31.5M

Begin Date	Location	Description	$ PD
02/19/06	21 Counties	Weak storm system moved into southern plains and into lower Mississippi Valley with light freezing rain and freezing drizzle falling across much of region. Ice accumulations were very light—mainly less than ¼ of an inch cross most places. While road surfaces remained wet from ground warmth, most elevated bridges and overpasses saw some ice accumulation which resulted in numerous traffic accidents. Many elevated bridges & overpasses had to be closed due to ice accumulation.	0.00k
Winter Storms Since Plan Adoption			
03/07/08	18 Counties	One inch of snow reported in Atlanta, Texas & Two inches of snow reported in Linden, Texas.	0.00k
01/28/09	15 Counties	Freezing rain mixed with sleet developed after midnight across the Middle Red River Valley of Northeast Texas. Trace amounts of freezing rain were reported across the county.	0.00k
03/21/10	14 Counties	Trace amounts of snow in Cass County. While the event was not considered significant for most areas, there were a number of traffic accidents across the region.	0.00k
02/03/11	21 Counties	Cass County reports 2 inches of snow	0.00k
01/15/13	21 Counties	Light ice accumulations from the freezing rain and sleet were noted across Northeast Texas but some minor snow accumulations were also reported. Some bridges and overpasses quickly became slick resulting in a few automobile accidents across Northeast Texas. In addition, there were some minor power outages from falling limbs due to the weight of the ice.	0.00k
11/24/13	13 Counties	Ice accumulation mainly on elevated objects such as bridges, overpasses, trees, powerlines and car tops**.**	0.00k
12/06/13	10 Counties	Ice accumulation was mainly less than one quarter of an inch but resulted in accumulation on bridges and overpasses, trees and powerlines. Some traffic accidents were noted across Northeast Texas during the height of the winter weather along with a few power outages.	0.00k
02/07/14	7 Counties	The snow across the northern half of Northeast Texas was mainly near one inch in accumulation. The snow caused some slick spots across some locations, mainly across elevated bridges and overpasses.	0.00k
02/11/14	19 Counties	Predominantly freezing rain with ice accumulations mainly less than one quarter of an inch across Northeast Texas. Impacts included several automobile accidents that occurred from icing in elevated bridges and overpasses as well as isolated power outages from ice accumulating on limbs which fell across powerlines.	0.00k
		Total	**204.5M**

Cass County Winter Storms

In the event of a major winter storm, Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Linden could be affected physically, economically and socially. Drivers face serious consequences from a winter ice storm. Stopping distances on glazed ice are ten times greater than on dry pavement, and double that on packed snow. Emergency vehicles from the police and fire departments are brought to a crawl when responding to emergency situations. Ambulance service must take extra time and care responding to accidents and emergency medical situations because of the hazard of ice on the streets and highways. It is possible that emergency vehicles would have to find alternate ways into neighborhoods because of downed trees and power lines. In Northeast Texas many yards and streets are lined with tall trees that are subject to damage. Also, communications with emergency teams can be compromised because of downed phone lines.

Public schools typically close when hazardous driving conditions exist. The jurisdictions are not equipped to clear roads and de-ice thoroughfares efficiently. Atlanta can be out as long as a week during a major ice storm. In many instances the ice partially melts during the daylight hours only to re-freeze the following night causing patches of "black ice;" i.e., ice that is difficult to detect from a moving vehicle.

When Cass County and participating jurisdictions are faced with a winter storms that causes a power failure, families and individuals may be forced to vacate their homes and seek alternate housing such as hotels or emergency shelters because so many homes are heated by electricity. The elderly and the young are particularly susceptible to cold temperatures and both populations must take additional precautions to stay warm. Rose Haven Retreat and Golden Villa Nursing Centers in Atlanta would need to make sure that their emergency generator power and lighting were operating properly. Atlanta Memorial Hospital would also have to ensure that their backup power was working. After a storm there can be prolonged periods of time without power. Utility companies do focus on facilities that are located in select power grids first.

In past winter storms, residences that were heated with gas or propane or had gas cooking appliances in the kitchen, or gas log inserts in the fireplace fared much better than homes that were all electric. Homes with central gas heating were still left in the cold because the systems are run electrically.

Businesses would suffer due to a winter storm. In the storm of 2000 the pharmacy, gas stations and convenience stores closed due to power outages. Fuel became scarce creating hardships for both employees and employers. This in turn, caused lost wages and income, plus profit loss due to damaged merchandise and perishables. The local veterinary clinics might find its' practice compromised because of power loss making it impossible to keep ill animals warm or to perform necessary procedures. Clients would hesitate to navigate dangerous roads in order to come to the clinic with ill or injured pets.

A few inches of snow can have a significant impact on Cass County.

Issued Tuesday, February 24, 2015.

Cass Severe Watches & Warnings
Winter Storm Warning in effect from midnight tonight to 6 PM CST Wednesday...

The National Weather Service in Shreveport has issued a Winter Storm Warning for snow up to 4 inches... which is in effect from midnight tonight to 6 PM CST Wednesday. The Winter Storm Watch is no longer in effect.

* Event... an upper level trough will be approaching the region late tonight bringing with it a mixture of sleet and snow. During the day Wednesday... the upper trough will be directly overhead with much of the precipitation changing over from sleet to snow. Sleet accumulations should be less than one quarter of an inch while snow accumulations around 4 inches possible. Precipitation will move east of the region late Wednesday afternoon.

* Timing... the winter precipitation should begin after midnight tonight and continue through the day Wednesday.

* Impact... impacts will be confined to mainly elevated and exposed surfaces including bridges and overpasses. If the snow comes down quickly enough... then surface streets will see accumulations as well.

Precautionary/preparedness actions...

A Winter Storm Warning for heavy snow means severe winter weather conditions are expected or occurring. Significant amounts of snow are forecast that will make travel dangerous. Only travel in an emergency. If you must travel... keep an extra flashlight... food... and water in your vehicle in case of an emergency.

Cass County Winter Storms Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Atlanta	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Avinger	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Bloomburg	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Domino	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Douglassville	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Hughes Springs	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Linden	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Marietta	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Queen City	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55

Location:
Winter Storms have no distinct geographic boundary. They can occur in every area of the county including the North Texas region.

Extent
Although East Texas does not have severe winters it is not immune from some of the hazards of cold weather. Every year, winter weather indirectly kills hundreds of people in the U.S, primarily from automobile accidents but from overexertion, and hypothermia as well.

Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days. Heavy snow or ice can immobilize communities by shutting down transportation into, out of, and within the county. In rural areas and smaller communities homes and farms may be isolated for days. Livestock and other animals can die from exposure. When the event happens in the early spring, crops such as fruit can be destroyed. The Cass County and its jurisdictions can expect ice accumulations on streets, power lines and trees that will range from ¼ to ¾ of an inch. The Damage Assessment Tables found on page 19-20 demonstrate the amount of damage that can be possible. A temperature range between 32 degrees f. and 10 degrees f. is the range of temperature anticipated in Cass that would create conditions for winter storms. (see the wind chill chart on page 289).

Probability: The probability of the occurrence of a freeze is high, given historical weather patterns. Fifteen winter storms have occurred between 1994 and 2010. It is highly likely that a winter storm will occur in any given year. Cass County and the participating jurisdictions share the same likelihood of experiencing a winter storm.

Vulnerability/Impact: Cass County has a significant amount of acreage designated as conservation, public lands and agricultural land uses. The small towns and communities are always vulnerable. All jurisdictions could lose power to its sewage and water plant, power to homes and damage to city infrastructure. The elderly could suffer from lack of heat and lights during a winter storm. Small businesses could experience lost revenue due to reduced traffic during winter storm events. Falling trees and tree limbs could damage property and block roadways in all jurisdictions. Auto accidents related to travel on the icy roads increase.

Summary: In rural East Texas, when moist gulf air meets arctic temperatures winter storms can occur. The storms usually take their toll from heavy accumulations of ice that form, often overnight, on trees, power lines and structures. In the more remote areas of the county homes may be without electrical power for days but critical facilities in most urban areas are operating within a few days. Atlanta, Avenger, Bloomburg, Domino, Douglassville Hughes Springs, Linden, Marietta, Queen City and rural Cass County may have power outages lasting one week or longer.

Estimated Property Loss at 15%	
Cass County	201,915,147
Atlanta	49,824,147
Avinger	2,840,440
Bloomburg	1,906,897
Domino	984,740
Douglassville	Not Available
Hughes Springs	10,081,548
Linden	17,169,957
Marietta	Not Available
Queen City	8,661,773

Atlanta Citizens Journal, Sunday, December 31, 2000

County Emergency Management Team goes into action...again

By CHARLEY HARRIST
Journal Staff Writer

For the third time this year, the Cass County Emergency Management Team was called into action as a huge ice storm enveloped much of Arkansas, Oklahoma and the northeast tip of Texas.

"I hate to say it, but we are getting better and better at this," Emergency Management Coordinator Gary Stewart said from emergency headquarters Thursday morning. "Unfortunately, the only way we can get better is through going through this over and over."

There was no shortage of emergencies to handle.

Atlanta, Queen City, Douglassville, Domino, Marietta, McLeod and Bloomburg were all virtually without electricity and water.

Stewart, Atlanta Mayor Kay Phillips and Acting City Manager Mike Dupree were all on the phone Wednesday morning in a conference call with the regional emergency team in Tyler, which has access to all the different agencies that might be called into service in a disaster situation such as the one gripping the Atlanta area.

"We called them when we realized that the scope of our problem is beyond our capabilities," Stewart said. "They have direct contact with Austin, but the beauty is that any problem we have on this end we have someone at the regional level we can talk to immediately."

Among those agencies represented on that regional team are DPS, Texas Department of Transportation, Texas Natural Resource Conservation Commission, the Salvation Army, the Red Cross and Texas Public Utilities Commission. In Austin, the Division of Emergency Management is involved on the state level.

"It is like a clearinghouse of resources for us," Stewart said of the regional disaster team. "We've been through this enough now that we're on a first-name basis with a lot of these people."

As if all that isn't bad enough, even the Emergency Management Team had an emergency of its own. The telephone system at Atlanta City Hall where the temporary headquarters is set up went out Tuesday night.

But two temporary phone lines were extended to get the emergency team and the APD dispatchers and 911 operators back in operation, said Dupree.

Dupree is acting city manager because Atlanta City Manager Mike Ahrens was snowed and iced in in West Texas where he had been visiting relatives for Christmas.

"Department of Public Safety Sgt. Harvey Stamper, a member of the emergency team, was on the phone throughout Tuesday night and Wednesday trying to secure generators for all those cities which wanted one.

Shortly before noon on Wednesday, Stamper had located another generator in Monroe, La., and was trying to contact Bloomburg city officials to make arrangements for that city to have it.

Atlanta Police Officer Toni Owens was at city hall working with the team despite the fact that a tree uprooted and tore up a gas main at her residence on Pecan Street.

"This is a dedicated bunch of people," said Stewart as workers ran to and fro in city hall answering phone calls and running errands. "Most of them have been with us all through the night."

Stewart gave special praise to the police dispatchers and the clerical staff at city hall who were handling most of the complaints and minor emergencies.

Like the lady who came into the police station at around noon and asked for help in searching for her dog, which she said had been missing for two days.

"We have pretty much covered the gamut of problems," Stewart said. "We are strictly a team here. There is no freelancing going on here."

Stewart said his team is far ahead of other area teams because the paperwork had already been submitted early Tuesday to Austin.

"We are actually right on the edge of this storm," Stewart said. "Bowie and Red River counties got hit a lot worse than us. At one point yesterday, they only had about 5 percent power in Texarkana."

Because of the power outage, it took a while to set up area shelters, Stewart said.

"Without electricity, a shelter is not much good," Stewart said.

As of about noon Wednesday, however, shelters had been established at the First Baptist Church in Linden, at the First United Methodist Church in Queen City and at the Queen City City Hall Annex.

Other members of the emergency team with Stewart, Phillips, Dupree, Owens and Stamper are Atlanta Fire Chief David Burden, all the mayors in the county, County Judge Charles McMichael, all the police departments, all the volunteer fire departments and the public works department and clerical staff at Atlanta City Hall.

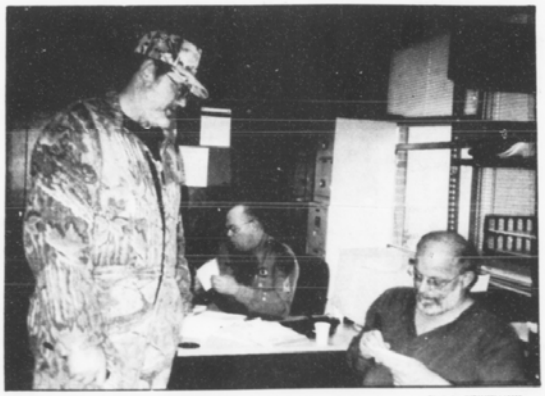


Photo by JUDY WILLIAMS

Department of Public Safety Sgt. Harvey Stamper, center, back, is on the telephone trying to locate a generator for Bloomburg, while Atlanta Water Superintendent Tom Townsend, left, updates *Citizens Journal* Editor Charley Harrist on the water situation.

By CHARLEY HARRIST
Journal Staff Writer

Atlanta Chief of Police Mike Dupree found himself in a role this week that he probably never thought he would have to fulfill, but all those around him said he handled it admirably.

Dupree became acting city manager of Atlanta when City Manager Mike Ahrens got stuck in bad weather in West Texas and could not get home from his holiday visit.

"He said I could do anything I wanted to do, so I asked him if I could be off," Dupree laughed Wednesday. "He said anything but that."

But Dupree had much more to do than be off and, for that matter, much more than even the city manager himself might have had to do had he been here. Dupree played a lead role on the Cass County Emergency Management Team and on Thursday literally did have the lead role.

While Emergency Management Coordinator Gary Stewart was attending a funeral on Thursday, Dupree filled in as head of a team that has worked around the clock all week, handling emergencies arising from the Christmas Day ice storm,

One of the most vital functions the team has had this week is a conference call every morning at 10 a.m. with a statewide and regional team headed by Jack Colley, assistant state emergency management coordinator with the Department of Public Safety.

The conference call literally puts representatives from about any agency that could be called upon in a disaster or emergency situation within earshot of local officials. That communications resulted in generators for area cities to cope with their power and water outages, bottled water from the Texas Department of Criminal Justice, saw crews from the Texas Forest Service, up-to-date weather reports from the National Weather Service and ultimately emergency money for the local entities trying to handle the crisis.

Dupree secured for Cass County on Thursday an additonal 5,000 gallons of bottled water for rural residents in the area still without electric power.

Among the good news Dupree had to report to the statewide group was that Atlanta was at that moment coming back on line with its water system. Dupree and the committee made arrangements so that the water samples from the Atlanta system could be expedited and tested in Tyler as soon as possible.

Dupree told the group that the city is instructing its citizens to boil the water until those test results give the system a go-ahead that it is clear of bacteria.

Dupree also advised those emergency units statewide of a generator that Sgt. Harvey Stamper of the DPS has found that is available for anyone who might need it. Stamper is a member of the local team who has worked around the clock this week.

Dupree told the group that the city of Queen City was about 40 percent restored to electricity (at that time) and the city of Atlanta about 80 percent. He said he thought that both cities would be nearly fully restored by the day's end with some exceptions.

Dupree reported that about 25 people had taken advantage of the team's shelters set up around the county.

At the end of Dupree's report, Colley told him, "Excellent report, Chief."

Atlanta Mayor Kay Phillips praised both Stewart and Dupree for their work this week on behalf of the city and entire county.

"I can't say enough good things about them and their dedication," Phillips said after the conference call Thursday. "I wish our citizens could see just how hard they and every member of this team have worked this week and they would appreciate their efforts even more."

Phillips said the emergency team, particularly with its hookup with the regional and state teams, has provided "the absolute best there is to offer our county's residents during this very terrible crisis."

"I want to thank each and every member of this team for all they have done on behalf of our citizens and I want to thank our citizens as well for their patience and understanding."

Superintendent says to boil water

Atlanta Water Superintendent Tom Townsend is advising city water customers to boil their water if they plan to consume it until tests from Tyler come back.

Townsend said it is only a precautionary measure that is taken when a water system has been down for a period of time.

"If you can boil it, boil it," Townsend said, referring to the area residents who are still without electricity.

Tests are being taken and results should be known soon, Townsend said. The citizens will be notified through the media, he said.

THUNDERSTORMS

A thunderstorm is a storm with lightning and thunder, produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain and sometimes hail. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Nearly 1,800 thunderstorms are occurring at any moment around the world.

Thunderstorms may occur singly, in clusters, or in lines. Some of the most severe occur when a single thunderstorm affects one location for an extended time. Thunderstorms typically produce heavy rain for a brief period, anywhere from 30 minutes to an hour. Warm, humid conditions are highly favorable for thunderstorm development. Every thunderstorm needs (1) moisture to form clouds and rain; (2) unstable air - warm air that can rise rapidly; and (3) lift - cold or warm fronts, sea breezes, mountains, or the sun's heat are capable of lifting air to help form thunderstorms.

All thunderstorms are dangerous. About 10% of the thunderstorms that occur each year in the United States are classified as severe. (A thunderstorm is considered severe if it produces hail at least ¾ inch in diameter, winds 58 mph or greater or tornadoes). Every thunderstorm produces lightning, which kills more people each year than tornadoes. Heavy rain from thunderstorms can lead to flash flooding (which is the number one thunderstorm killer). Strong winds, hail, and tornadoes are also dangers associated with some thunderstorms.

According to research by Jeremy Pal, a professor of civil engineering and environmental science at Loyola Marymount University severe thunderstorms are predicted to increase dramatically in the United States and in some cities, like Atlanta, Ga., New York, and Dallas, storms are expected to double by the end of the century.

Lightning Activity Level (LAL) Values are labeled 1-6	
LAL 1	No Thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period
LAL 6	Dry lightning (same as LAL 3 but without rain) This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecast with a Red Flag Warning.

The Beaufort Scale measures wind speeds and the effects of winds on land.

Beaufort Scale

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

Source: www.mountwashington.org

A HISTORY OF SEVERE THUNDERSTORMS IN CASS COUNTY

A total of 144 days of Thunderstorms Storms were reported to National Climatic Storm Center from 1960 to 2014. Only those storms listing property damage are shown in the following table beginning on the next page. All of the events are recorded as "Thunderstorm Winds".

Begin Date	Location	Description	$ PD	Magnitude
1/23/93	Linden	Trees and power lines were downed.	5K	Not Available
08/03/93	8 miles South of Wright	None given	5K	Not Available
10/09/93	5 miles east of Naples	Thunderstorm winds blew shingles off of some houses	5K	Not Available
11/18/93	8 Miles North East of Linden	Strong winds downed numerous trees across Highway 8.	5K	Not Available
04/11/94	Beacon Hill	Trees were blown down by high winds.	1K	Not Available
04/11/94	3 Miles South West of Queen City	Numerous trees were blown down by strong winds.	5K	Not Available
05/14/94	4 Miles South East of Avinger	Several trees were blown down by thunderstorm winds.	5K	Not Available
05/14/94	Springdale	Some trees were blown down by thunderstorm winds	5K	Not Available
05/14/94	5 Miles North West of Kellyville	Some trees were blown down by thunderstorm winds	5K	Not Available
05/14/94	Harris Chapel	Trees were blown down by thunderstorm winds.	5K	Not Available
05/14/94	5 Miles East of Avinger	Numerous trees were blown down by thunderstorm winds.	50K	Not Available
05/14/94	5 Miles East of Hughes Springs	A falling tree from high wind damaged a mobile home.	5K	Not Available
06/15/94	Marietta	Trees were blown down by thunderstorm winds.	5K	Not Available
06/15/94	Atlanta	A sheet metal roof was blown off a business and into some power lines. There were numerous reports of downed trees and power lines.	50K	Not Available
06/21/94	Domino	Trees were blown down by thunderstorms winds.	5K	Not Available
07/26/94	Linden	Power lines were blown down by thunderstorm winds.	5K	Not Available
07/26/94	7 Miles South West of Atlanta	Several trees were blown down by thunderstorm winds.	5K	Not Available
08/20/94	Hughes Springs	Fallen trees blocked fourteen streets. Two cars were crushed and falling trees damaged roofs. Power lines also blown down.	500K	Not Available

Begin Date	Location	Description	$ PD	Magnitude
08/20/94	Linden	Roofs were damaged and trees were blown down by high winds.	50K	Not Available
08/20/94	Avinger	Trees were blown down by thunderstorm winds.	5K	Not Available
10/21/94	1 Miles South East of Avinger	Trees were blown down.	5K	Not Available
11/04/94	East of H. Springs	Trees were blown down by high winds.	5K	Not Available
11/04/94	8 Miles North East of Hughes Springs	A barn was unroofed by high winds.	5K	Not Available
11/04/94	Lanier	Trees were blown down by high winds	5K	Not Available
11/05/94	5 Miles South West of Linden	A barn was damaged and numerous trees were blown down by high winds.	5K	Not Available
11/05/94	4 Miles South West of Atlanta	Trees were blown down by high winds onto Highway 43.	5K	Not Available
11/05/94	1 Mile East of Avinger	Trees and power lines were blown down onto Highway 49 East of Avinger.	5K	Not Available
08/20/95	Linden	Several trees were blown down by high winds, one of which damaged a carport.	1K	Not Available
06/13/97	5 Miles North of Linden	Severe thunderstorms, which produced so much damage across northeast Texas, continued to move east into Cass County. Numerous trees and power lines were toppled. A total of 50 telephone poles were broken in the city smashing cars and homes. Plenty of warning was received than no injuries occurred.	170K	70 knots
01/22/99	Atlanta	Damage to the roof of the local high school.	40K	40 knots
08/10/99	Linden	Trees and power lines down in town.	8K	Not Available
03/25/02	Atlanta	Survey conducted by the National Weather Service determined damage across south and southeast Atlanta, TX to be consistent with downburst winds. Damage pattern was 5 miles long and started with a width of ¾ miles wide ending with a width of 3.5 miles wide. Downburst stripped a McDonald sign, awning collapsed on a car. A tree uprooted a gas main otherwise numerous large pine trees were toppled by the roots.	30K	100 knots
06/06/2006	Linden	Reports of several rural buildings with wind damage.	15K	58 knots

Thunderstorms After Plan Approval				
07/13/08	Queen City/Atlanta	An awning was torn off a home and windows blown out on Farm to Market 2328 just north of Queen City, Texas. Numerous trees were downed in Atlanta, Texas. One tree was down on a home in town. Power lines were downed across town as well.	23k	55 Knots
10/09/09	Linden	Numerous trees were downed along with power lines in Linden, Texas. A home east of Hughes Springs, Texas was heavily damaged when a tree fell on it. The master bedroom was destroyed and adjacent portions of the home suffered wind and water damage. Also, the roof was taken off a barn. At the height of the storm, 100 roads throughout the county had trees across them. Another tree fell on top of a large travel trailer in the Hughes Springs community.	325k	57 Knots
04/04/11	Hughes Springs	Multiple trees down all across the county but especially in Hughes Springs. One tree fell on a building with people trapped inside. There were no report of any injuries.	50k	55 Knots
01/29/13	Hughes Springs	Two travel trailers were rolled with a few dumpsters moved as well. One injury was reported inside the trailer with cuts to his face after the trailer was rolled.	30k	63 Knots
03/31/13	Jennings Lake	A roof was blown off an outbuilding near Simms, Texas	10k	56 Knots
05/12/14	Red Hill	Wind damage was reported to a roof at Hwy. 8 and the CR. 1238 intersection	5k	54 Knots

Total 1.49 M

Cass County Thunderstorm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI 3	<6 hrs. PRI 1	Medium 2.65
Atlanta	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI 3	<6 hrs. PRI 1	Medium 2.65
Avinger	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI 3	<6 hrs. PRI 1	Medium 2.65
Bloomburg	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI 3	<6 hrs. PRI 1	Medium 2.65
Domino	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65
Douglassville	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65
Hughes Springs	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65
Linden	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65
Marietta	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65
Queen City	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI 1	Medium 2.65

Location: Historically, all of Cass County has been affected by thunderstorms. If this trend continues, the entire County will be subject to thunderstorms. This would include the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City.

Probability: Given the climate and history, thunderstorms are highly likely during the storm season. Thunderstorms are most prolific in the spring and summer months, however, thunder storms may occur at any time in Cass County given the right conditions.

Vulnerability: The County is susceptible to flash flooding and wind damage from severe thunderstorms. Vulnerability depends on the magnitude of the storm. Damage potential is high in populated areas.

Thunderstorms can produce high winds and fires generated from lightening. Lightning will be dangerous to people and property from a Lightning Activity Level (LAL) of 2 to a LAL of 6. See table p. 61.

Impact: According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 144 thunderstorm wind events reported in Cass County between 1960 and July of 2014. The magnitudes ranged from 50 knots to 90 knots.

There have been no reported injuries or deaths from thunderstorm wind events in Cass County. Storms cause power outages, disruptions of transportation and property damage.

Historical data indicate that the entire county is susceptible to windstorms during the thunderstorm season and, depending on the severity, costs will vary. See the Damage Assessment Tables on page18-19 demonstrating possible loss for the county and each participating jurisdiction.

Summary: High winds, and lightning are the two main destructive forces associated with thunderstorms. Thunderstorms also spawn tornadoes. Deteriorating infrastructure, mobile homes business signage and crops are most susceptible to damage. Cass County and the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City share susceptibility to thunderstorm damage.

Estimated Property Loss at 25%	
Cass County	336,525,244
Atlanta	83,040,246
Avinger	4,734,068
Bloomburg	3,178,163
Domino	1,641,234
Douglassville	Not Available
Hughes Springs	16,802,580
Linden	22,866,595
Marietta	Not Available
Queen City	14,436,290

CITIZENS JOURNAL

NO. 114-160 VOL. 119, NO. 49 50 CENTS CASS COUNTY, TEXAS • 1 SECTI

12398
HOAG & SONS
127 RAILROAD ST
SPRINGPORT MI 49284-97

TEBOOK

hool
na Baptist Church
e vacation Bible
t the church, lo-
Texas 77
port Highway),
through 20.
will be for kinder-
rough sixth grade
be from 8:30 a.m.
on, daily.

Security help
resentative from
arkana Social Secu-
ice will be at At-
ty Hall Thursday,
, beginning at 8:45
ternoon times are
pintment only.

's Market
Farmer's Market is
esday, Thursday
rdays in the City
king lot.

reunion
nd Mrs. Dave
will sponsor a fam-
ion Friday, July 4,
ng at 3:30 p.m.
reunion will be held
Wood Street in At-
ll relatives are in-
attend.

camp
an Hills Country
ill hold a summer
camp June 23
h 27. Morning
will be held for
to 12 and older
with less playing
ence and afternoon
for ages 13 to 18
gh school and tour-
t players.
cost is $60 a week
a day. Members and

Storm strikes terror into heart of community

By ANNETTE CALLAWAY
Journal Editor

Storms raced across East Texas Friday night, leaving a path of destruction as high tornadic-like winds swept across the landscape.

As the main brunt of the storms bore down on the Atlanta area, winds seemed to single out Bivins, honing in on a path approximately four miles wide and several miles in length. The main force of the storm began approximately three miles north of the small community and ended about one mile to the south.

Trees toppled from the high winds, falling like dominoes laid out in a row. Many of the fallen trees went down, roots pulled from the saturated ground due to recent heavy rains.

Other trees were twisted off, some at root level, some with just the tops snapped off, leaving residents to speculate that a tornado skipped through the area.

Paula Cooper, whose house and yard on Texas 43 were covered with fallen trees and power lines, was positive that what came through was a tornado.

"All of my trees, that are not on the ground, have their tops twisted out," she said.

"That had to have been a tornado to do that to the trees."

Numerous residents were left in the dark as trees and limbs took out power lines and snapped off electric poles.

Residents were lucky, as the homes that were hit by trees suffered minimum damage. Trees smashed cars beneath them as they fell, and roadways were blocked by downed trees and power lines.

Erma McClain had a tree fall through her front porch during the storm. The tree's branches tore off part of the screen door and were still inside the house Saturday.

"I didn't get scared while the storm was going on," she said. "But just a little while ago I started thinking about it and I started shaking," McClain related shortly before noon Saturday.

"When the wind started blowing hard it was shaking our trailer," related Ernice Daniels, who's home is on Texas 43, just south of Bivins.

"I knew better than to try to go outside, so

Please see STORM page 7

Photo by ANNETTE CALLAW

Rick Moorhead of Bivins and his dog, Heather, stand beside the oak tree the two tried to use fo cover when Friday's storm blew through. (More storm photos on page 4.)

Atlanta Pre-K going to all day program

Journal Staff Report

Atlanta Primary School is ex- the same as students in other grades.

come guidelines.

The child's birth certificate,

Board appointments cause controversy

Atlanta Citizens Journal , April 18, 1997

HAILSTORM

Hail is a form of precipitation that occurs at the beginning of thunderstorms. It is in the form of balls or lumps of ice, usually called hailstones. Hail is formed when raindrops pass through a belt of cold air on their way to earth. This belt of cold air causes the raindrops to freeze into small blocks of ice. The formation of hail requires the presence of cumulonimbus or other convective clouds with strong updrafts. The air turbulence that accompanies thunderstorms aids the formation of hailstones. The water that goes into the formation of hailstones is super-cooled water, that is to say, it is at a temperature below freezing point but still in the form of a liquid. Hailstones start falling when they become too heavy to be supported by air currents.

Hailstones are not formed of single raindrops. However the process of formation of a hailstone does start with the freezing of a single raindrop. This may be carried by a strong current to the level where rain is still falling as drops. And as this again passes through the cold air belt, new raindrops may cling to the frozen hailstone, thus increasing its size. Hailstones grow in size by repeated collisions with super-cooled water. This water is suspended in the cloud through which the particle is traveling. Those single frozen raindrops that do not get carried back to the raindrop level remain as smaller hailstones.

Hailstorms are very common in middle latitudes and a heavy shower generally lasts around 15 minutes. Hailstorms generally occur during mid to late afternoon. Big hailstones falling with force are known to have caused fatal harm to human and animal life.

HISTORY OF HAILSTORMS IN CASS COUNTY

The NOAA Satellite and Information Service, National Climatic Data Center, reports that there have been 149 days with hail events reported between 1959 and April 2010 in Cass County, and an additional 24 days of hail events since the plans adoption in 2010. The last event recorded was April 28, 2014 There were no injuries, deaths, or property damage reported. Three (3) of those events reported a magnitude of 2.75 inches. Two of these events' locations are listed as unknown, and the other occurred in the Linden area. The largest magnitude occurred 3 miles west of Linden on April 22, 1997, with a magnitude of 4.50 inches. A description is not available. Several hail events reported the smallest magnitude of .75 inches. Hail events were reported throughout Cass County, as well as Linden, Douglassville, Bivens, Hughes Springs, Atlanta, Queen City, McLeod, Kildare, Springdale, Kellyville, Domino, Marietta, and Red Hill community, and Bloomburg.

Combined NOAA/TORRO Hailstorm Intensity Scales

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33-0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60-0.80	Dime or grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80-1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2-1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.6-2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very destructive	2.4-3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Sources: www.noaa.gov and www.torro.org

The largest hailstone ever reported was September 3, 1970, in Coffeyville, Kansas. It was approximately the size of a softball—758 grams, 45 centimeters in circumference, and 14.2 centimeters in diameter.

Cass County Hail Storm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Atlanta	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Avinger	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Bloomburg	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Domino	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Douglassville	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Hughes Springs	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Linden	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Marietta	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Queen City	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35

Hail can damage roofs, siding, windows, cars, and satellite dishes. Each year hailstorms cause millions of dollars of damage to crops like corn and soy beans. It can rip the leaves off of trees and in extreme cases, kill small animals. Business signage can be destroyed by large hail. In the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs Linden, Marietta and Queen City probability of a hailstorm occurring is high due to the number of thunderstorms that visit our area each year.

In all of Cass County's jurisdictions there are many wood framed houses that were built in the early post World War II period that are more likely to experience structural damage from hailstorms. Roofs of homes and businesses are very susceptible to hail damage, resulting in repairs costing hundreds or even thousands of dollars to a single family dwelling. Many new homes are built with additional roof-top skylights that many break or crack during periods of large hail. Water damage as well as roof repair becomes a factor when skylights break. Also, cars that are open to the elements are susceptible to damage, including broken windshields and dented car bodies.

Location: Hailstorms can strike anywhere in Cass County including the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City.

Probability: The probability of a hailstorm in Cass County is highly likely. The jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City are at risk.

Impact: The impact of a hailstorm has historically been limited however, large size hail can cause injuries. Hail can damage autos, roofs, siding and crops. A 2% loss to residential property in the county could result in a monetary value of $9,850,601. See the tables on page 18-19 for a more comprehensive look at possible damage values.

Vulnerability: Buildings, autos, crops, can be damaged by hail. Hail is often part of thunderstorm activity. In some rare cases hail can cause physical injury. The overall vulnerability level in Cass County and its jurisdictions is high.

Summary: Hailstorms are unpredictable and often associated with thunderstorm activity. Thunderstorms have historically occurred throughout the county, and if the trend continues, all of Cass County and its jurisdictions could be affected by hailstorms.

Estimated Property Loss at 2%		
Cass County	Residential	9,850,601
Atlanta	Residential	3,202,565
Avinger	Residential	20,217
Bloomburg	Residential	155,670
Domino	Residential	93,382
Douglassville	Residential	Not Available
Hughes Springs	Residential	777,666
Linden	Residential	1,017,502
Marietta	Residential	Not Available
Queen City	Residential	7,240,239

WINDSTORMS

Cass County windstorm data can be found under Thunderstorms in the 2015 Five year Update. There are no instances of windstorms, high winds or strong winds for Cass County found in the NOAA Weather Data Base for Cass County.

DROUGHT

A drought is a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance (for example crop damage, water supply shortage, etc.) The severity of the drought depends upon the degree of moisture deficiency, the duration and the size of the affected area.

There are four different ways that drought can be defined:

- Meteorological – a measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location.
- Agricultural – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
- Hydrological – occurs when surface and subsurface water supplies are below normal.
- Socioeconomic – refers to the situation that occurs when physical water begins to affect people.

Drought is a period of time when precipitation falls below normal levels.

Defining the beginning or the end of a drought can be difficult. Some droughts may be short in duration, but more severe in their intensity. Low humidity and high temperatures usually accompany droughts, which means that any additional moisture evaporates quickly before it has the chance to improve conditions.

Droughts not only lead to water shortages, they produce widespread crop failure and environmental stress, and in recent years have caused more than 300 Texas cities and utilities to resort to ordinances or other measures to limit water use. The extreme heat associated with some droughts has led to heat related deaths, job losses among agricultural workers, and significant acreage and property destroyed by wildfires.

Drought ends when it rains. When enough precipitation has fallen, a region's soil moisture profile will improve enough to sustain plants and crops. Once recovery continues to the extent that the water levels of lakes, rivers, wells and reservoirs have returned to normal, then a drought is considered over.

The 1996, 1998 and 2000 Texas Droughts

The statewide droughts of 1996 and 1998 produced widespread crop failure, significant environmental stress and required more than 300 cities and utilities to implement some form of water demand management. Most of these demand management measures were taken because the utility could not treat and distribute water as fast as it was being used.

The drought of 1996 began with below normal precipitation in November 1995. Precipitation (meteorological drought) did not return to "normal" until August 1996, and reservoir levels (hydrological drought) generally did not begin to recover until October of that year. This 10-month drought period saw significant drops in reservoir and aquifer levels over much of Texas. Agriculture impacts as a result of the drought were estimated to be in the range of $5 billion.

Of the two droughts, the 1996 drought had more impact on water supplies. Statewide reservoir levels dropped to 68 percent of conservation storage capacity, similar to the drought of 1984 when storage capacity dropped to 66 percent.

The 1998 drought was shorter in duration. It began with an abrupt end to the much wetter conditions caused by El Nino and beginning of La Nina in March 1998. It did not end until five months later in the fall of 1998, with devastating floods in much of the state. By November 1998, crop moisture indices for the whole state had returned to adequate levels, and statewide reservoir levels had returned to 82 percent of capacity. Total losses were estimated to be more than $6 billion. The extreme heat also led to 131 heat-related deaths, more than 14,000 farm workers out of jobs and almost a half a million acres burned by wildfires.

The 2000 drought caused about 595 million in crop losses and 178 counties were declared federal agricultural disaster areas. As of September, North Texas had been rainless for 77 days, surpassing the no-rain record of 59 days set in 1934 and 1950.

Data is insufficient to project total losses on a severe drought. A severe drought like the 1996, 1998 and 2000 droughts would cause significant loss in basic agriculture items along with timber and livestock losses.

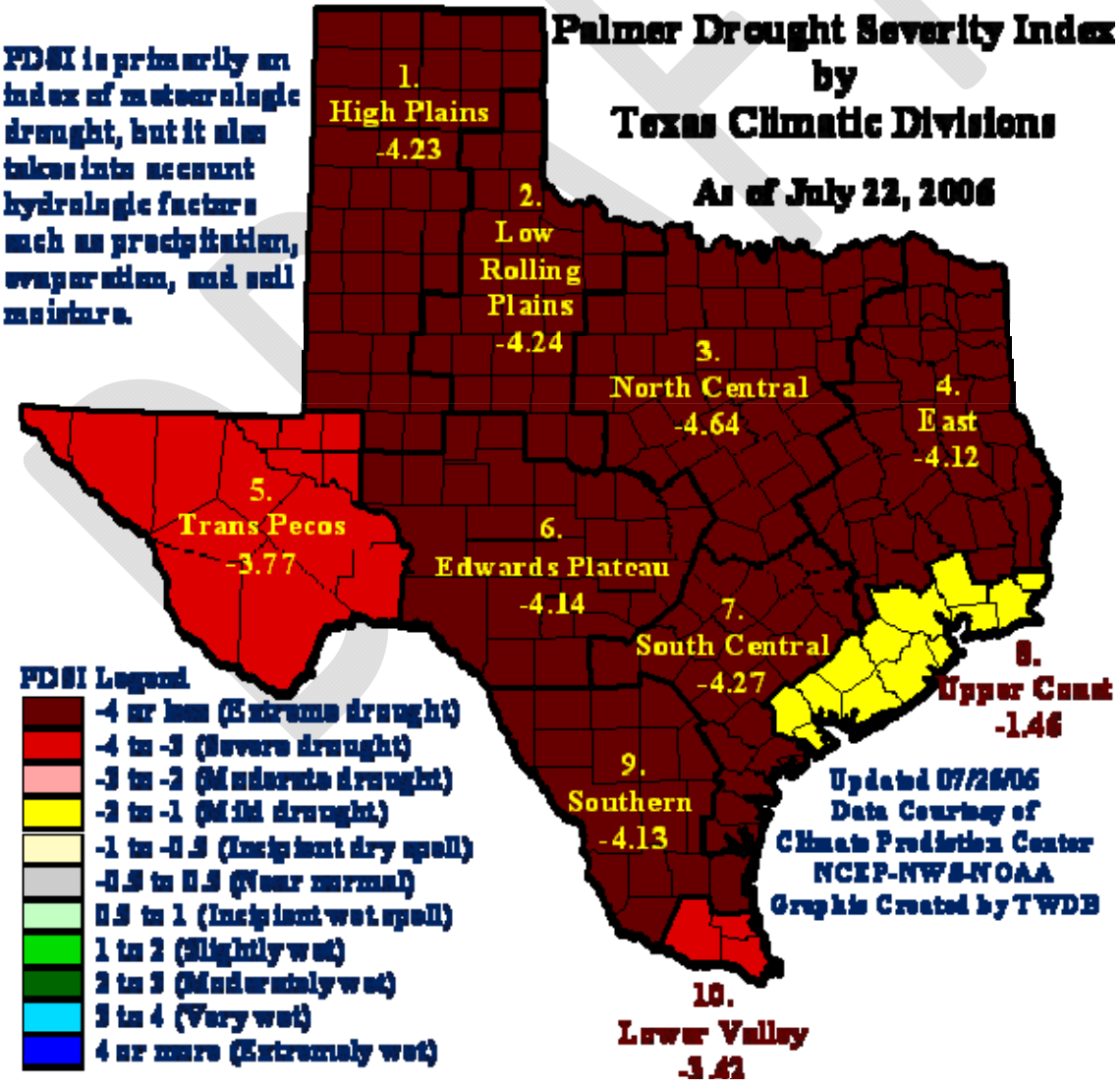
Figure 2.5 provided by TexasWaterInfo.Net provides an Explanation of the Palmer Drought Severity Index by Texas Climatic Divisions. PDSI is primarily an index of meteorologic drought, but it also takes into account hydrologic factors such as precipitation, evaporation, and soil moisture. As of July 1, 2006, Texas Climatic Division, which includes Cass County, was shown to be –3.82. The PDSI Legend shows that –4 to –3 is severe drought. Figure 2.6, provided by the NOAA Climate Prediction Center, which shows the Palmer Forecast for the United States by division, also shows that Cass County, as of May, 2007, is near normal. Figure 2.7, the USDA Top Soil Moisture Short-Very Short Percent of State Area for May 27, 2007, shows the state of Texas as not Dry or Very Dry.

The wide variety of disciplines affected by drought, its diverse geographical and temporal distribution, and the many scales drought operates on make it difficult to develop both a definition to describe drought and an index to measure it. Many quantitative measures of drought have been developed in the United States, depending on the discipline affected, the region being considered, and the particular application. Several indices developed by Wayne Palmer, as well as the Standardized Precipitation Index, are useful for describing the many scales of drought.

Common to all types of drought is the fact that they originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (say, a few weeks or a couple months), the drought is considered *short-term*. But if the weather or atmospheric circulation pattern becomes entrenched and the precipitation deficits last for several months to several years, the drought is considered to be a *long-term* drought. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought

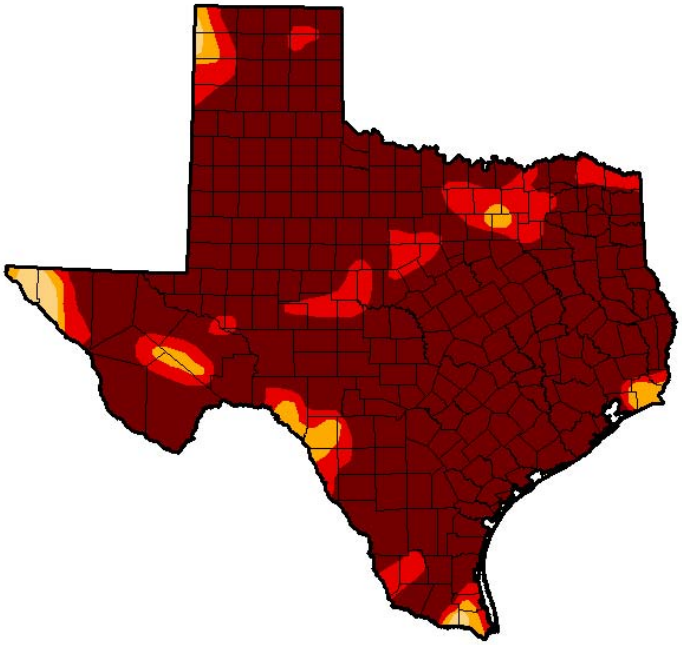
You can see that in July of 2006 most of East Texas was experiencing drought conditions.

Explanation of PDSI



U.S. Drought Monitor

Texas



September 20, 2011

(Released Thursday, Sep. 22, 2011)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	99.03	96.10	85.43
Last Week *9/13/2011*	0.00	100.00	100.00	99.17	96.75	87.83
3 Months Ago *6/21/2011*	3.33	96.67	95.71	94.52	91.31	70.61
Start of Calendar Year *1/4/2011*	13.55	86.45	66.68	36.30	13.04	0.00
Start of Water Year *9/28/2010*	75.57	24.43	2.43	0.99	0.00	0.00
One Year Ago *9/21/2010*	77.29	22.71	3.34	0.97	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Michael Brewer
NCDC/NOAA

http://droughtmonitor.unl.edu/

HISTORY OF DROUGHT IN CASS COUNTY

Begin Date	Location	End Date	Description	$Crop Damage
05/01/96	18 Counties, Including Cass	05/31/96	May was one of the hottest and driest on record. Over ninety percent of cooperative observers reported rainfall far below climatologic averages. Some reporting stations in northeast Texas including New Summerfield had no measurable rainfall the entire month. Numerous industries were hard hit including agricultural, timber, crop and livestock.	$4M
06/01/98	21 Counties, Including Cass	06/30/98	No description given.	$150M
07/01/98	21 Counties, Including Cass	07/31/98	No description given.	Not Available
08/01/05	13 Counties, Including Cass	08/31/05	The drought and extreme heat resulted in burn bans for much of the Middle Red River Valley country of Northeast Texas. The drought continued to take its toll on the agricultural and hydrological community of the region as well. The lack of rainfall through the period resulted in many crops being unusable which put a significant strain on the farming community. Water conservation measures were also in place in some areas as pool stages on various lakes were well below normal.	Not Available

12/01/05	21 Counties, Including Cass	12/31/05	High fire danger continued across all of Northeast and East Central Texas throughout December. The month was a continuation to a devastating drought that impacted much of the eastern half of the state throughout 2005. Many lakes and reservoirs remained near or set all time record low levels and a series of dry cold fronts that blew through the region during the month did not help the already dry conditions. Several small fires broke out across the region during the month, but the resulting damage was minimal. Burn bans continued for many counties across Northeast Texas, as most of the region experienced rainfall deficits of 15 to 20 inches for the year.	Not Available
12/01/2010		03/012013	This drought reached historical proportions creating severe drought conditions throughout the state of Texas. In September of 2011 Cass County experienced the greatest forest fire ever recorded in East Texas.	

Cass County Drought Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass County	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Atlanta	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Avinger	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Bloomburg	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Domino	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Douglassville	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Hughes Springs	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Linden	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Marietta	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Queen City	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55

Estimated Loss Potential for Crops & Livestock		
Type	**2014 Estimates in US $**	**35% Loss**
Watermelon	49,600	17,360
Grapes	13,910	4,869
Bedding Plants	500,000	175,000
Flowering Pot Plants	500,000	175,000
Foliage Pot Plants	2,500,000	875,000
Poultry Broilers	24,600,000	8,610,000
Breeder Cattle, Beef	1,268,800	4,440,801
Breeder calves	9,813,375	3,434,681
Slaughter Cattle	1,145,300	400,855

Probability: Droughts will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. A drought will affect Cass County and its participating jurisdictions. There were 15 recorded droughts between 1892 and 2011. Historically a drought can last from a few days to over a year.

Vulnerability The region is vulnerable when there is a deficiency of precipitation over an extended period of time. All of Cass County and its jurisdictions are vulnerable to drought. For Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City droughts have a social dynamic that includes affecting the elderly and young, causing depression, creating job loss, requiring residents to relocate due to economic impact and rising costs for food

Impact: Cass County Drought Defined: Drought is determined by using the Palmer Drought Index which is illustrated on the following page. It is based on precipitation and temperature data for the area. The scale ranges from 3.99, which is very wet to -4.00 or less, which is considered extreme drought. The scale is most accurate when used to determine drought over a period of months. See the Damage Assessment Tables on page 29. The extent of drought experienced in Delta County and its jurisdictions will range from ***0 Abundantly Dry to 4 Exceptional Drought*** (see drought monitor on page 50 for further detail).

The impact of a drought on Cass County and all the participating jurisdictions include economic problems due to high food prices, the water from municipal works can drop in quality causing illness, lawns and other plants are impacted. Public safety can be threatened by the increased likelihood of wildfires. If the water levels of Lake Wright Patman become low there would be a decrease in recreational activities such as fishing and boating.

Location: Historically, drought has affected the all of Cass County including the jurisdictions. The agricultural areas, which include the rural parts of the County, would be affected more so than the urban areas.

Summary: Drought is seen as an issue for Cass County, Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Marietta and Queen City. If the climatologists' predictions are correct, more severe drought may be in store for the future.

ttacked
d each

"We're really excited about achieving the exemplary status

about each student and where they

Please see EXEMPLARY page 7

Fire danger 'extreme'

By JUDY WILLIAMS
Journal Staff Writer

East Texas is "sitting on a powder keg," according to Ronnie Hamm, branch fire coordinator with the Texas Forest Service.

"This is the worst I've seen it in 23 years," said Hamm.

The rains in the area late Monday did little to alleviate the problem, he said.

Fire risk potential is in the extreme range across all of Northeast Texas.

Fire risk potential and fire behavior are predicted by the Keetch-Byram Drought Index (KBDI) which is a mathematical system for relating current and recent weather conditions to potential or expected fire behavior.

It is the most widely used drought index system by fire managers in the south, and is one of the only drought index systems specifically developed to equate the effects of drought with potential fire activities.

The system uses an index number ranging from 0-800 that accurately describes the amount of moisture that is missing. A zero rating defines a point where no moisture is missing, and 800 is the maximum drought possible.

Texarkana has a current KBDI of 735, and Longview has an index of 727.

"That would mean Cass County is probably around 730," said Hamm.

With the KDBI in the extreme fire danger range (600-800) surface litter and most of the organic layer is consumed. Stumps will burn to the end of roots underground. Any dead snag will ignite. Spotting from snags is a major problem if close to a fire line. Dead limbs on trees can be expected to ignite from sparks.

Extreme intensity on all fires is to be expected which makes control efforts difficult. With winds

Please see FIRE page 6

Cass County
BURN BAN
is in effect!

Atlanta Citizens Journal , August 23, 2000

EXTREME HEAT

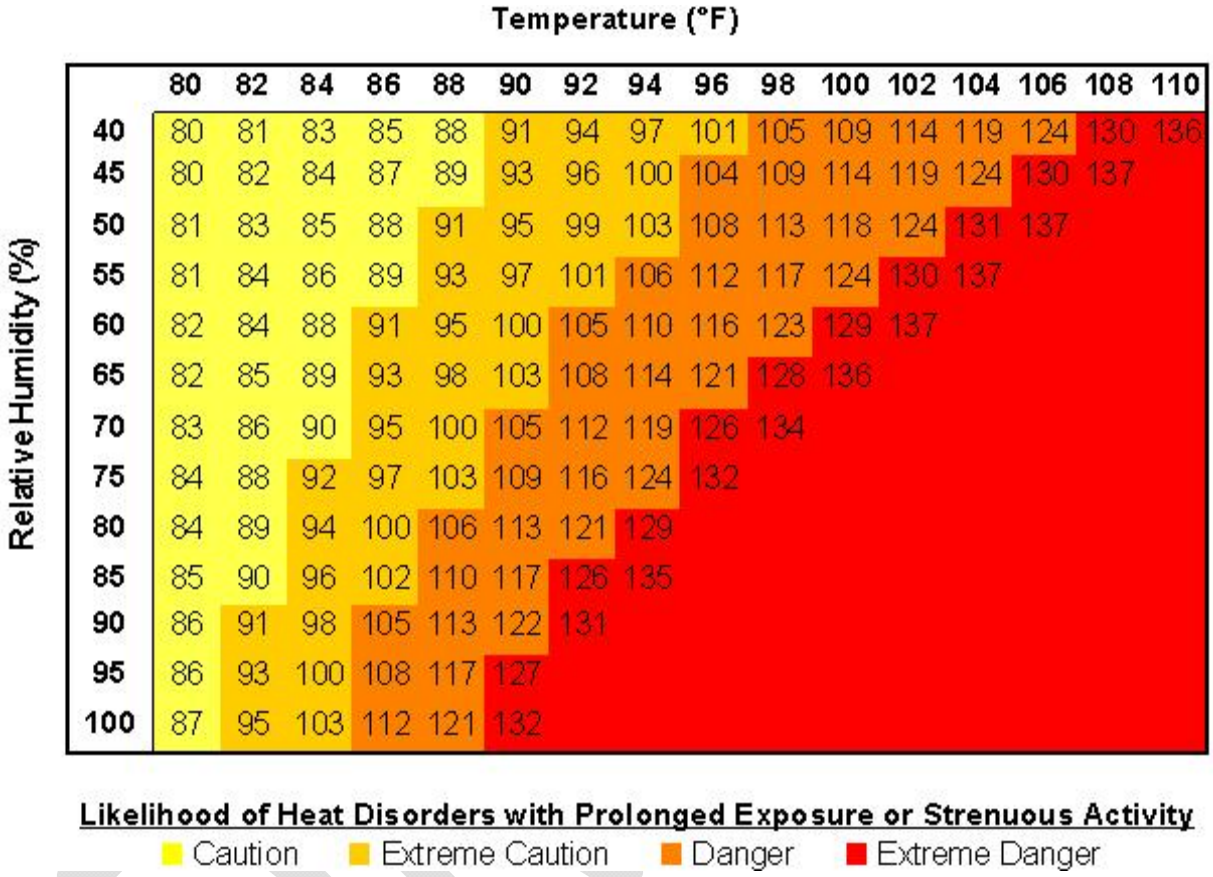
Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans die because of summer heat. Among the large continental family of natural hazards, only the cold of winter-not lighting, hurricanes, tornadoes, floods, or earthquakes-takes a greater toll. In the 40 year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died. These are the direct casualties. No one can know how many more deaths are advanced by heat wave weather-how many diseased or aging hearts surrender that under better conditions would have continued functioning.

North American summers are hot; most summers see heat waves in one section or another of the United States. East of the Rockies, they tend to combine both high temperature and high humidity although some of the worst have been catastrophically dry.

The stagnant atmospheric conditions of the heat wave trap pollutants in urban areas and add the stresses of severe pollution to the already dangerous stresses of hot weather, creating a health problem of undiscovered dimensions. The high inner-city death rates also can be read as poor access to air-conditioned rooms. While air conditioning may be a luxury in normal times, it can be a lifesaver during heat wave conditions. The cost of cool air moves steadily higher, adding what appears to be a cruel economic side to heat wave fatalities. Indications from the 1978 Texas heat wave suggest that some elderly people on fixed incomes, many of them in buildings that could not be ventilated without air conditioning, found the cost too high, turned off their units, and ultimately succumbed to the stresses of heat. Elderly persons, small children, chronic invalids, those on certain medications or drugs (especially tranquilizers and anticholinergics), and persons with weight and alcohol problems are particularly susceptible to heat reactions, especially during heat waves in areas where a moderate climate usually prevails.

Based on the latest research findings, the National Weather Service has devised the Heat Index (HI). The HI, given in degrees F, is an accurate measure of how hot it really feels when relative humidity (RH) is added to the actual air temperature. Exposure to full sunshine can increase HI values by up to 15 degrees Fahrenheit. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous. The following shows heat index/heat disorders.

NOAA's National Weather Service
Heat Index



Extreme Heat Dangers

Heat Index	Heat Disorder
130 degrees or higher	Heatstroke/Sunstroke, highly higher likely with continued exposure.
105 degrees – 130 degrees	Sunstroke, heat cramps or heat exhaustion likely and heatstroke possible with prolonged exposure and/or physical activity.
90 degrees – 105 degrees	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
89 degrees – 90 degrees	Fatigue possible with prolonged exposure and/or physical activity.

Extreme heat is often categorized in terms of weather events with draught. As stated in this document earlier, many deaths each year are heat related.

In the jurisdictions of Atlanta, Avinger, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City those at greatest risk of death due to excessive heat are the elderly without access to an air-conditioned environment for at least part of the day. Thus the issues of prevention and mitigation combine issues of aging and of public health.

Infrastructure is often affected in urban areas.. Asphalt roads soften and concrete roads have been known to "explode" lifting 3 - 4 foot pieces of concrete. During the 1980 heat wave hundreds of miles of highways buckled (NOAA, 1980)

Further economic impact occurs when stress is placed on automobile cooling systems, diesel trucks and railroad locomotives. This leads to an increase in mechanical failures. Train rails develop sun kinks and distort. Refrigerated goods experience a significant greater rate of spoilage due to extreme heat. Additional impact will be felt as food prices rise due to crop loss.

The following chart shows the past history of Extreme Heat occurrences in the Cass County Region from 2006 through 2014. Source of data is the National Weather Service Forecast Office in Shreveport, Louisiana.

Table 2.12

CASS COUNTY SUMMERS 2006-2010 Update				
Month/Year	**Days 90 +**	**Highest Temp**	**Days 100 +**	**Avg.**
June 2006	16	96	0	89.8
July 2006	25	104 (2 days)	10	96.
August 2006	28	102 (2days)	9	96.3
June 2007	7	93	0	87.2
July 2007	9	91 (2 days)	0	86.9
August 2007	30	101 (5 days)	6	95.3
June 2008	15	92	0	89
July 2008	24	102	3	94.6
August 2008	16	104 (2 days)	3	89.3
June 2009	17	100 (2 days)	2	90.6
July 2009	17	99 (2 days)	0	91.5
August 2009	12	92 (2 days)	0	88.2
June 2010	26	99	0	92.6
July 2010	27	100 (2days)	2	93.4
August 2010	30	105	13	98.2
June 2011	28	103 (2 days)	4	84.3
July 2011	31	106	19	88
August 2011	30	111	26	89.5
June 2012	25	107	7	82.4
July 2012	27	103	5	85.1
August 2012	28	101	3	83.6
June 2013	16	100	1	79.8
July 2013	23	100	1	80.7
August 2013	25	101	6	83.2
June 2014	10	94	0	79.1
July 2014	16	100	1	78.3
August 2014	24	97 (2 days)	0	81.2

CASS COUNTY EXTREME HEAT RISK					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Atlanta	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Avinger	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Bloomburg	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Domino	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Douglassville	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Hughes Springs	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Linden	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Marietta	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Queen City	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1

Probability: It is likely that extreme heat waves will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. Cass County typically has three or four extreme heat occurrences every summer. It is highly likely that Cass County and its jurisdictions will experience extreme heat.

Vulnerability: The region is vulnerable when there is a deficiency of precipitation over an extended period of time and high temperatures. The extent of damage or injury increases with the temperature and relative humidity levels. All of Cass County and the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta and Queen City are vulnerable. The elderly, young and ill are most vulnerable to extreme heat. Crops and livestock are stressed during extended periods of extreme heat suffer, Extreme heat causes heat stroke, time lost on the job and psychological stress

Impact:
According to the NOAA weather service in Shreveport, Louisiana, extreme heat by definition exists when over a two day period the heat index high reaches 105-109 with a minimum evening index temperature of 75 degrees or better. The heat index is calculated by combining air temperature and humidity levels. The full range of the heat index on the preceding page is applicable for Hopkins County and its jurisdictions. There is no specific history regarding property or crop damage due to excessive heat available for examples of loss in dollars. The

financial loss could be extensive. Extreme heat in conjunction with drought can impact crop and livestock production. (see the Estimated loss potential on page (drought) for more detail.) Poultry in particular are sensitive to hot conditions. The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 degrees F to 114 degrees F

Location: The entire county would be affected by extreme heat. All the jurisdictions suffer from the impact of extreme heat.

Summary: Hot temperatures are part of the East Texas landscape. During the months of June, July and August we can expect temperatures of over 100 degrees. The citizens who live in Hopkins County and the participating jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Hughes Springs Linden, Marietta and Tira Queen City aware of extreme heat's lethal potential and take precautions to prevent overheating and heat related strokes. Models produced by the environmental sciences project increase incidents of extreme temperature climate change due to global warming.

The demand for electric power during heat waves is well documented. According to the Institute for Research in the Atmosphere at Colorado State University, "In 1980, consumers paid $1.3 billion more for electric power during the summer than the previous year. The demand for electricity, 5.5% above normal, outstripped the supply, causing electric companies to have rolling black outs."

EARTHQUAKES

It has been determined that earthquakes are not an issue for Cass County. No earthquake has occurred since the Hazard Mitigation Plan Adoption and there is no recorded history of earthquakes ever occurring in Cass County. After careful consideration it was determined that earthquakes will not be mitigated in the 2015 Cass County Five Year Update

DAM FAILURE

There are no High Risk Dams located in Cass County. After careful evaluation of the current data it was determined that dam failure would not be mitigated in the Cass County 2015 Five Year Update.

WILDFIRE

Wildfires are nothing new to the State of Texas. They are a part of our natural history and have shaped many of our native Texas ecosystems. What is new is the unprecedented growth and development that is occurring in locations across the state that were once rural. It is in this area where development meets native vegetation that the greatest risk to public safety and property from wildfire exists. Wildfires typically start in woodland or prairie areas. They can occur naturally though they are often exacerbated by human activities. Wildfires can be hard to control as they threaten homes and communities located nearby. Wildfires happen in every state, and they do not respect county or state lines. The impact of fire reaches well beyond the initial flames and smoke. Even if firefighters are able to protect homes and business, the aftermath of wildfire can be just as devastating as floods.

In Texas, the greatest high-danger fire threats are forest, brush and grass fires. The East Texas Piney Woods belt of commercial timber is most susceptible to forest fires. In East Texas, the most monetary damage was caused by arson. Arsonists were responsible for 1 of every 4 fires. Debris burning is and continues to be the major cause of fires; therefore, the entire area of Cass County is subject to the threat of fires. Other causes such as control burns, construction fires and other miscellaneous fires rank second.

A HISTORY OF WILDFIRES IN TEXAS

Texas has had some significant fires in the urban wild land interface areas, where combustible homes meet combustible fuels. In 1996, the Poolville Fire burned 141structures and 16,000 acres in Parker and Wise counties west of Fort Worth. During the 2000 fire season, 48 homes were lost to wildfires in Texas that burned more than a quarter of a million acres.

In 1996, a historical record number of fires and losses in terms of acreage lost due to fires that burned across the state during a four-month period of the traditional fire season in the state. A total of 113 homes and 170,000 acres were lost due to fire in what is undoubtedly the worst siege of fire in the history of Texas. Over three hundred- trained fire fighters were brought in from across the nation to assist and supplement the Texas Forest Service personnel in control of these fires. The Southern States Forest Fire Compact was invoked in order for Texas to receive help in terms of personnel and equipment from neighboring states.

Over the five-year period of 1991 – 1995, an average of 1178 fires a year burned an average of 17,022 acres with the average fire size being 14 acres. Compare this to 1996, when 2622 fires burned 76,581 acres with an average fire size of 29 acres.

Texas Wildfire Facts

- 1900 local Fire Departments
- Debris Burning is the number one cause of wildfire
- 96% of wildfires are caused by humans
- 3,500 homes lost 2005-2011
- 118,700 wildfires reported 2005-2011
- 80% of wildfires within 2 miles of a community
- 8.9 million acres burned 2005-2011
- 12% of wildfires are caused by arson
- 24 civilian fatalities 2005-2009

Should any part of the State of Texas experience extended periods of fair, windy weather, implementation of countywide bans on outdoor burning may be advised as a wild fire prevention tool in that area. The Texas Forest Service recommends that local governments consider a KBDI of 600 and above for imposition of burn bans. Other indicators that dictate the need for a burn ban include: 1000 HR fuel moisture, Energy Release Component and run occurrence of local fire departments.

The Keetch-Byram Drought Index (KBDI) is basically a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI is the most widely used drought index system by fire managers in the south. It is also one of the only drought index systems specifically developed to equate the effects of drought with potential fire activities. The result of this system is a drought index number ranging from 0 to 800 that accurately describes the amount of moisture that is missing. A rating of zero defines the point where there is no moisture deficiency and 800 is the maximum drought possible. These numbers correlate with potential fire behavior as follows in Table 2.19:

Expected Fire Conditions With Varying KBDI Levels

0 – 200 Low Fire Danger	Soil and fuel moisture is high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
200 – 400 Moderate Fire Danger	Fires more readily burn and will carry across an area with no "gaps". Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smokes to carry into and possibly through the night.
400 – 600 High Fire Danger	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600 – 800 Extreme Fire Danger (600 – 800 continued)	Surface litter and most organic layers are consumed. 1000-hour fuels contribute to intensity. Stumps will burn to the end of roots underground. Any dead snag will ignite. Spotting from snags is a major problem if close to line. Expect dead limbs on trees to ignite from sparks. Expect extreme intensity on all fires that makes control efforts difficult. With winds above 10 miles per hour, spotting is the rule. Expect increased need for resources for fire suppression. Direct initial attack is almost impossible. Only rapid response time to wildfire with complete mop-up and patrol will prevent a major fire situation from developing.

Potential Wildfire Damages and Losses In Cass County

The "urban wildfire interface" is the geographical area where combustible homes are mixed with combustible vegetation. The determination of specific wildfire hazard sites depends on several factors.

- Topographic location and fuels;
- Site/building construction and design;
- Defensible space;
- Accessibility;
- Fire protection response; and
- Water availability.

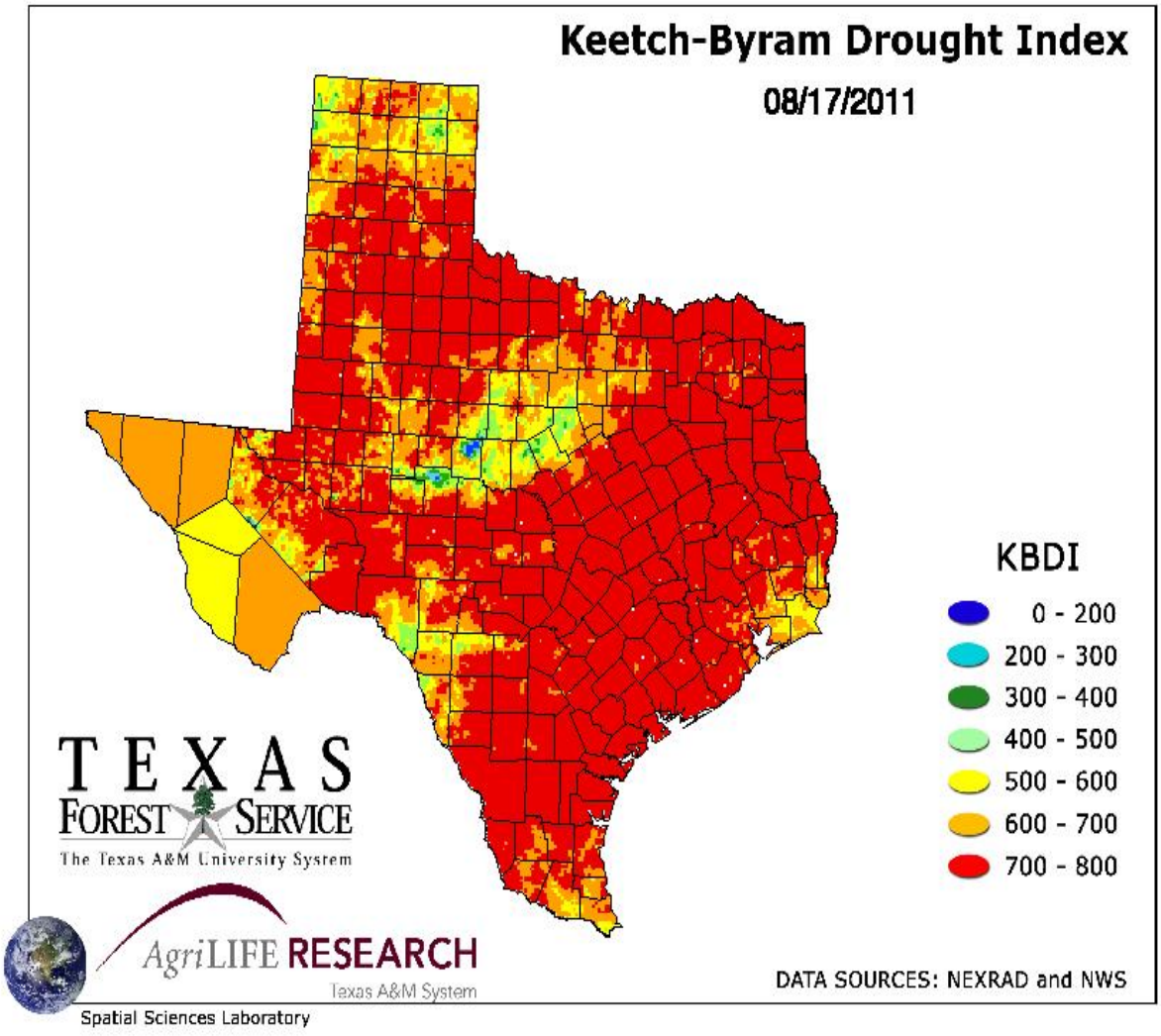
Cass County residents are served by a variety of local fire departments. According to the National Climatic Data Center, sixty one fire events were reported in Cass County between 01/01/2008 and 12/31/2008. Cass County is at risk of fires due to the frequency of drought and dense, wooded terrain.

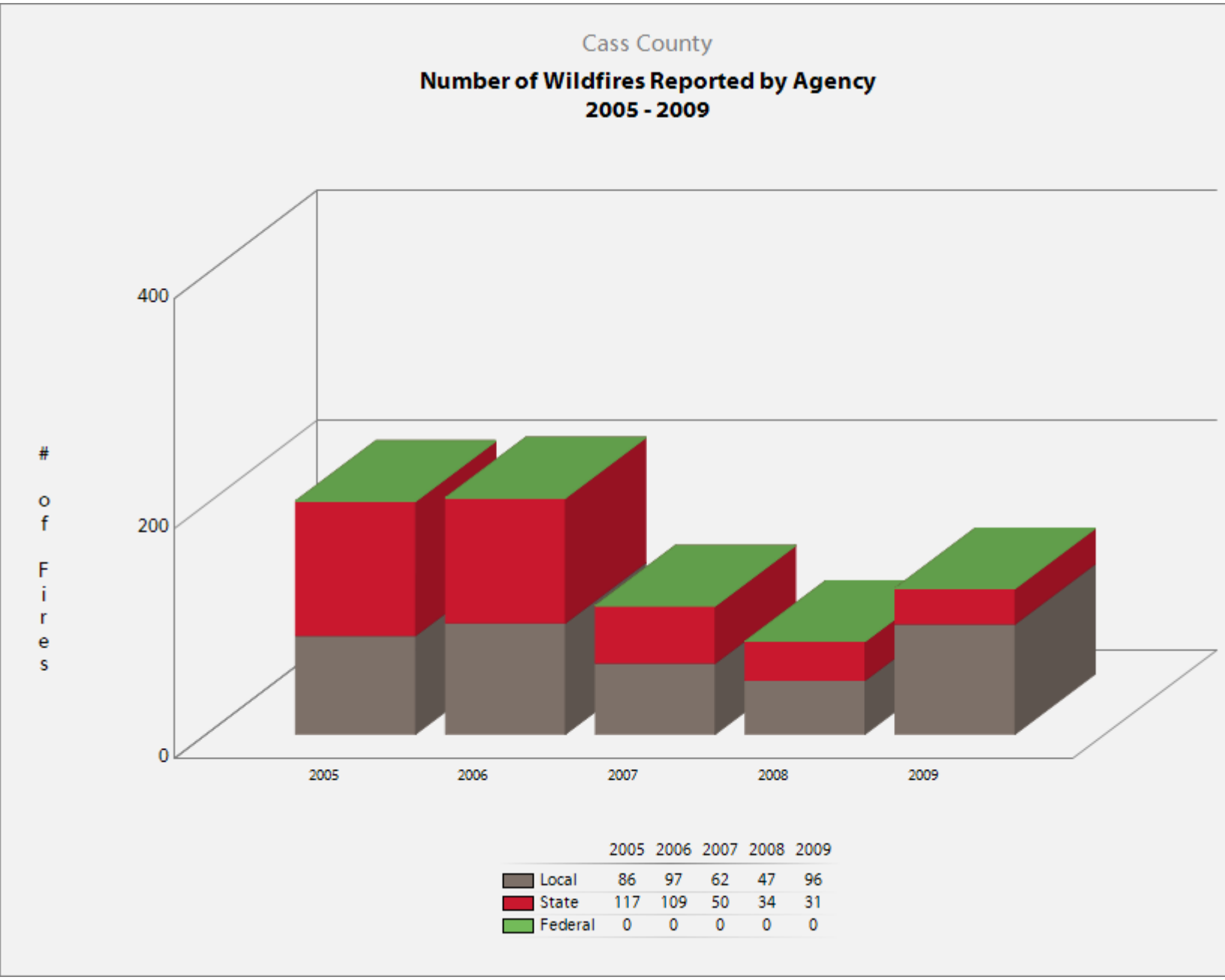
Figure 2.13 shows the (August 17, 2011) KBDI for Cass County at 700-800, which means that from 700-800 soil and fuel moisture very low. Most fuels will not readily ignite or burn.

However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches. As stated earlier in Section I, Geography, most of the soils in Cass County are light colored and are sandy and loamy. **T**he Sulphur River (major watershed) drains Northern Cass County, and the remainder is drained by Cypress Creek. Between 21 and 30 percent of the land in Cass County is considered prime farmland. Mineral resources include ceramic clay, granite, industrial sand, oil, gas, iron, and lignite coal.

June of 2011 a record 235 counties in the state were under a burning ban.

The devastating drought of 2011 left most of Texas like a tinderbox ready for Wildfire. In June of 2011 a record 235 counties were placed under a burn ban. The map below indicates the Drought index for Cass County on August 17, 2011 was at the highest level.



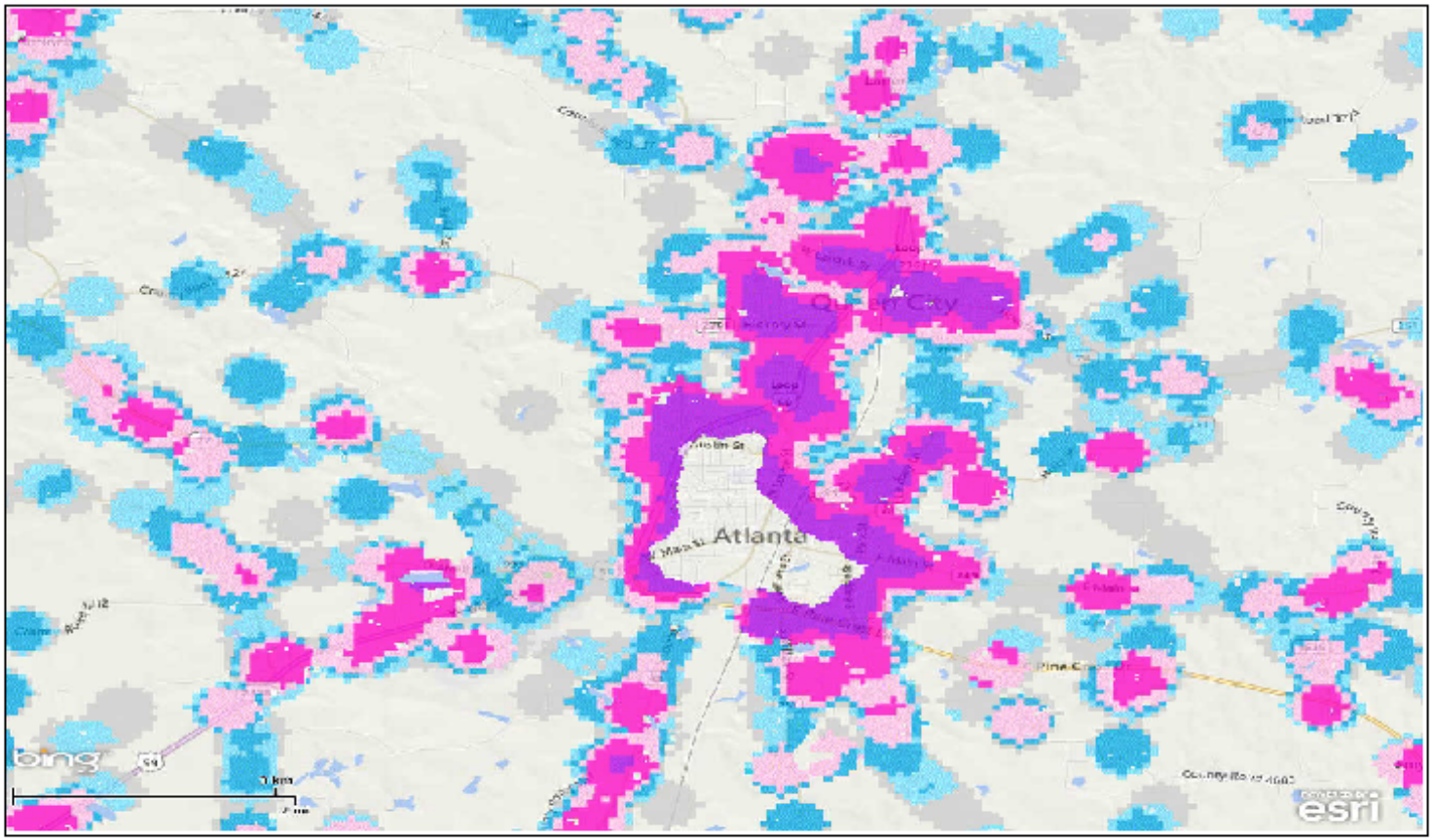

Cass County
Number of Wildfires Reported by Agency
2005 - 2009
# of Fires
400
200
0
2005
2006
2007
2008
2009
2005 2006 2007 2008 2009
Local 86 97 62 47 96
State 117 109 50 34 31
Federal 0 0 0 0 0

The Texas Forest Service revised their data collection system and data pertaining to wildfires is available from 2005-2009.

Number of Fires Reported in Cass County 2006-2009			
Year	Local	State	Total
2005	86	117	203
2006	97	109	206
2007	62	50	112
2008	47	34	81
2009	96	31	127

Atlanta WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 9:23 AM

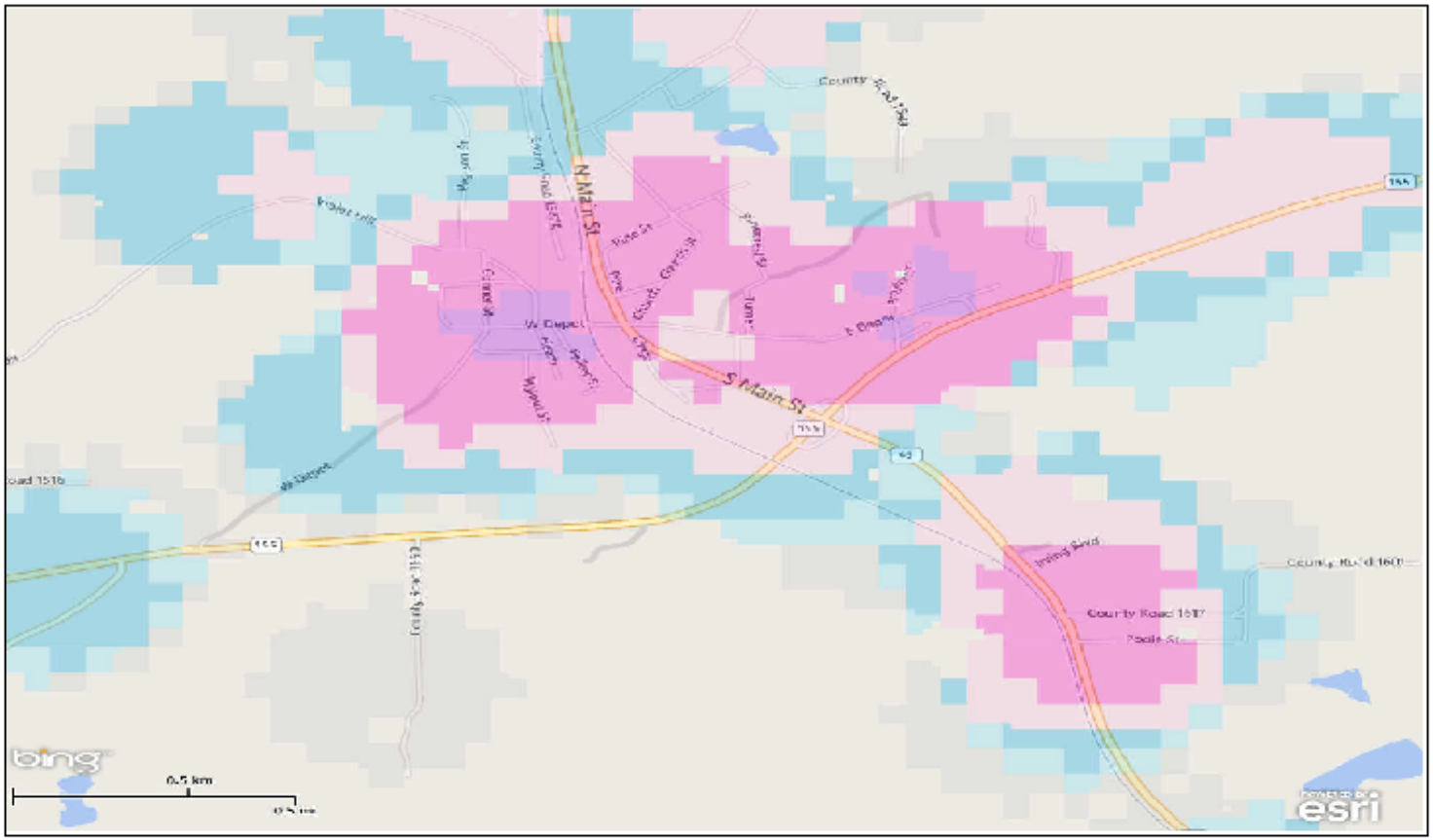
Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Avinger WUI

Depicts where humans and their structures meet or intermix with wildland fuels



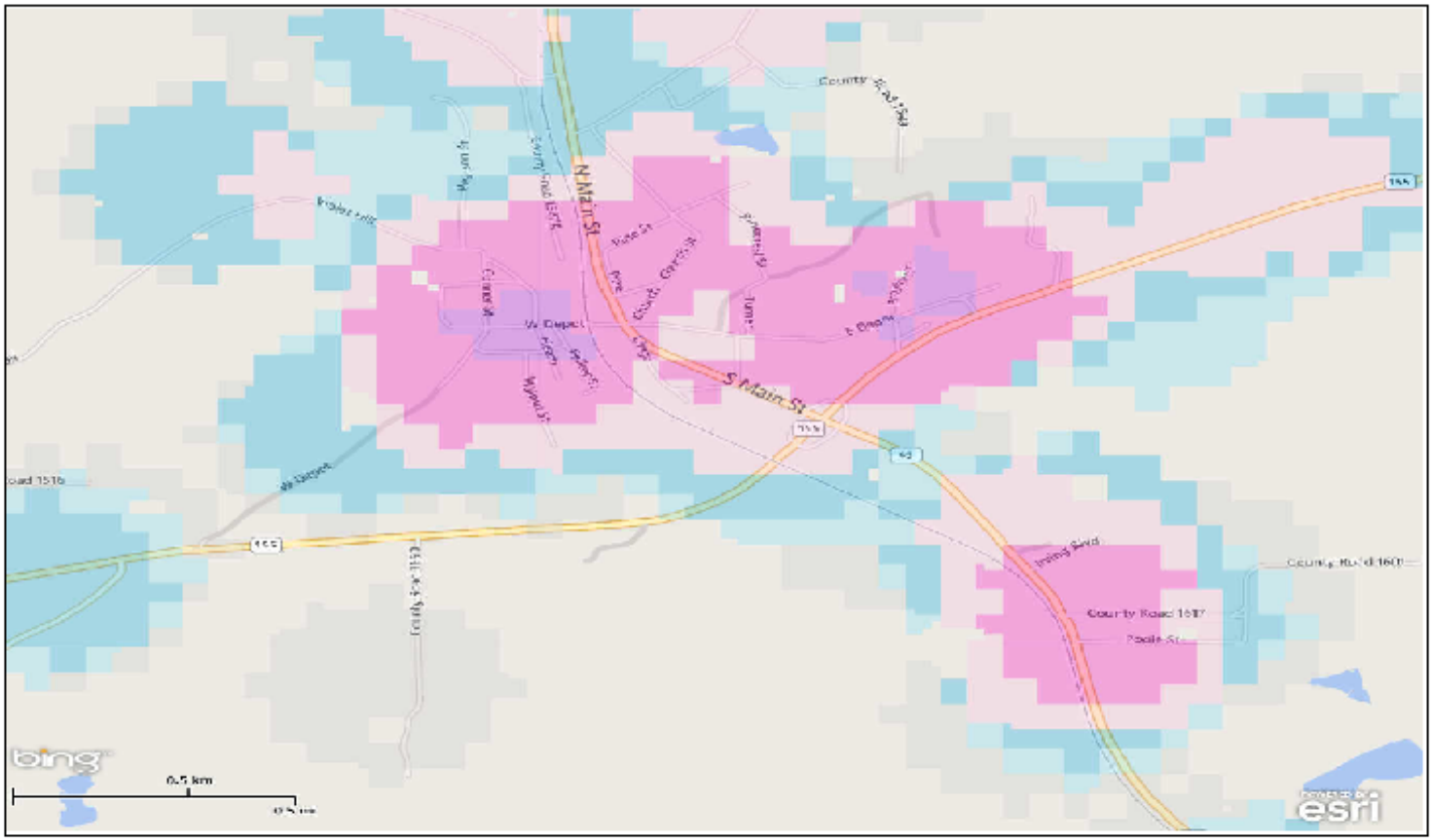
Report Created:
02/03/2015 1:10 PM

Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Bloom WUI

Depicts where humans and their structures meet or intermix with wildland fuels



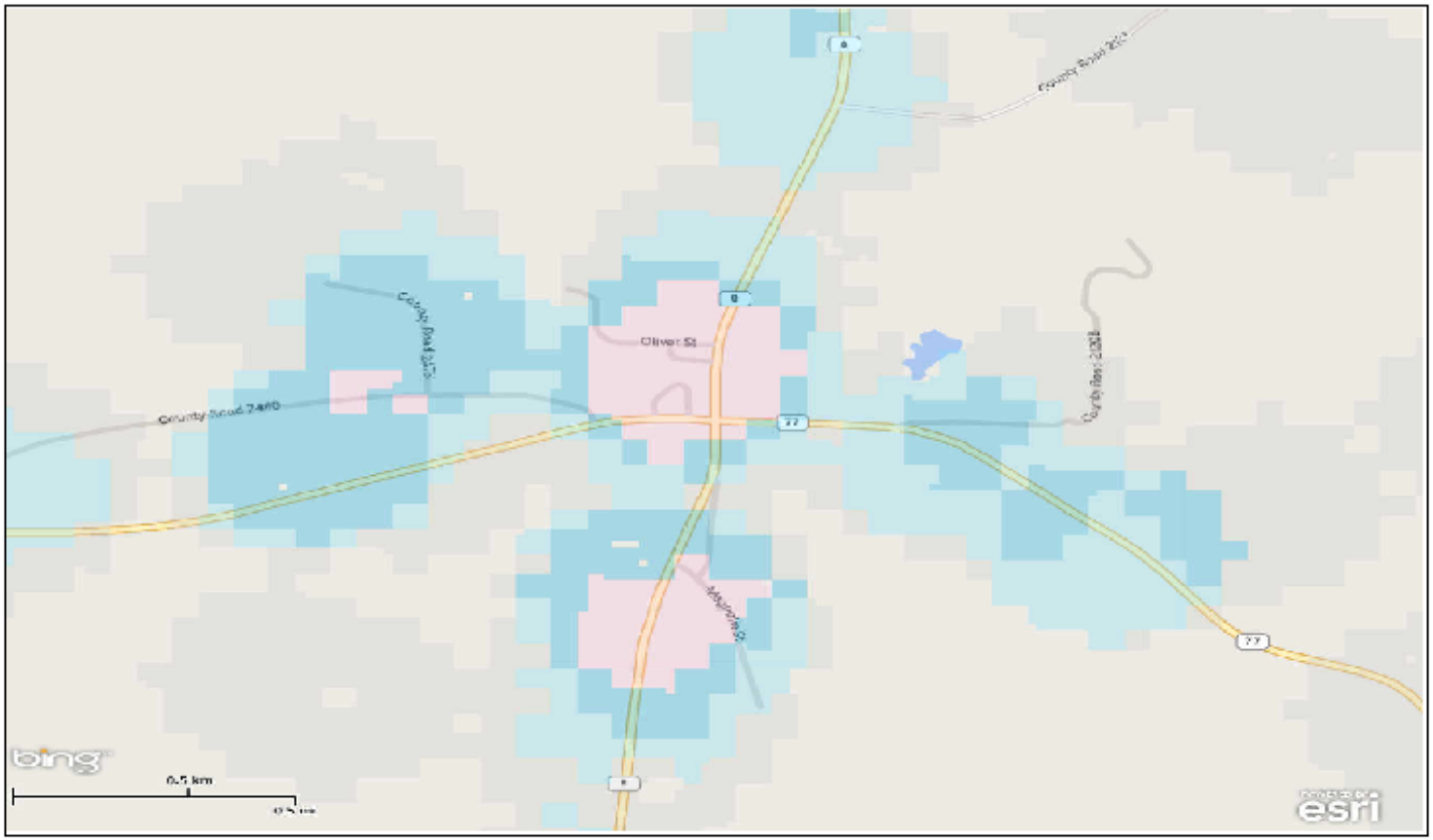
Report Created:
02/03/2015 1:12 PM

Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Domino WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 1:14 PM

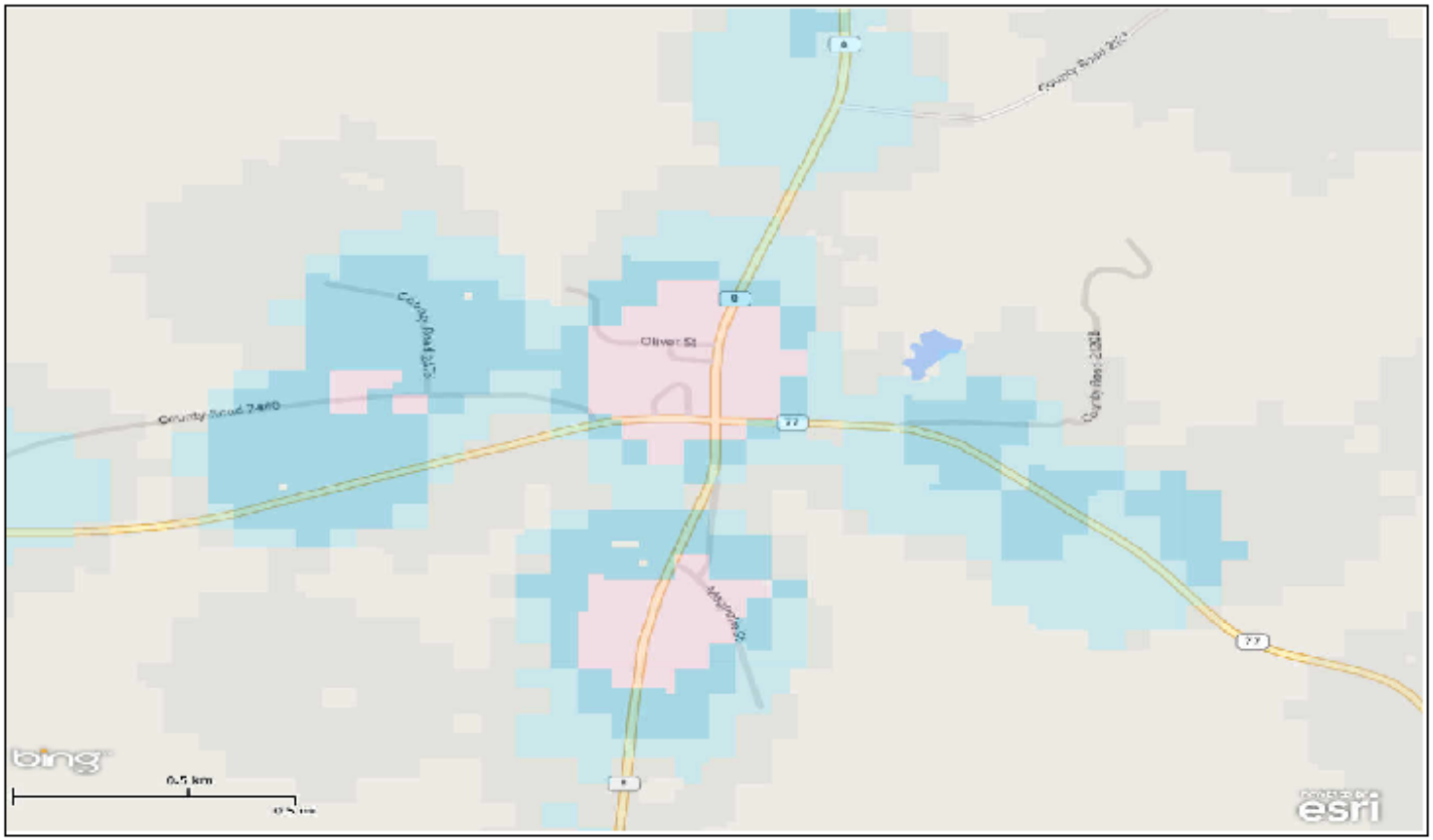
Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Douglassville WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 1:15 PM

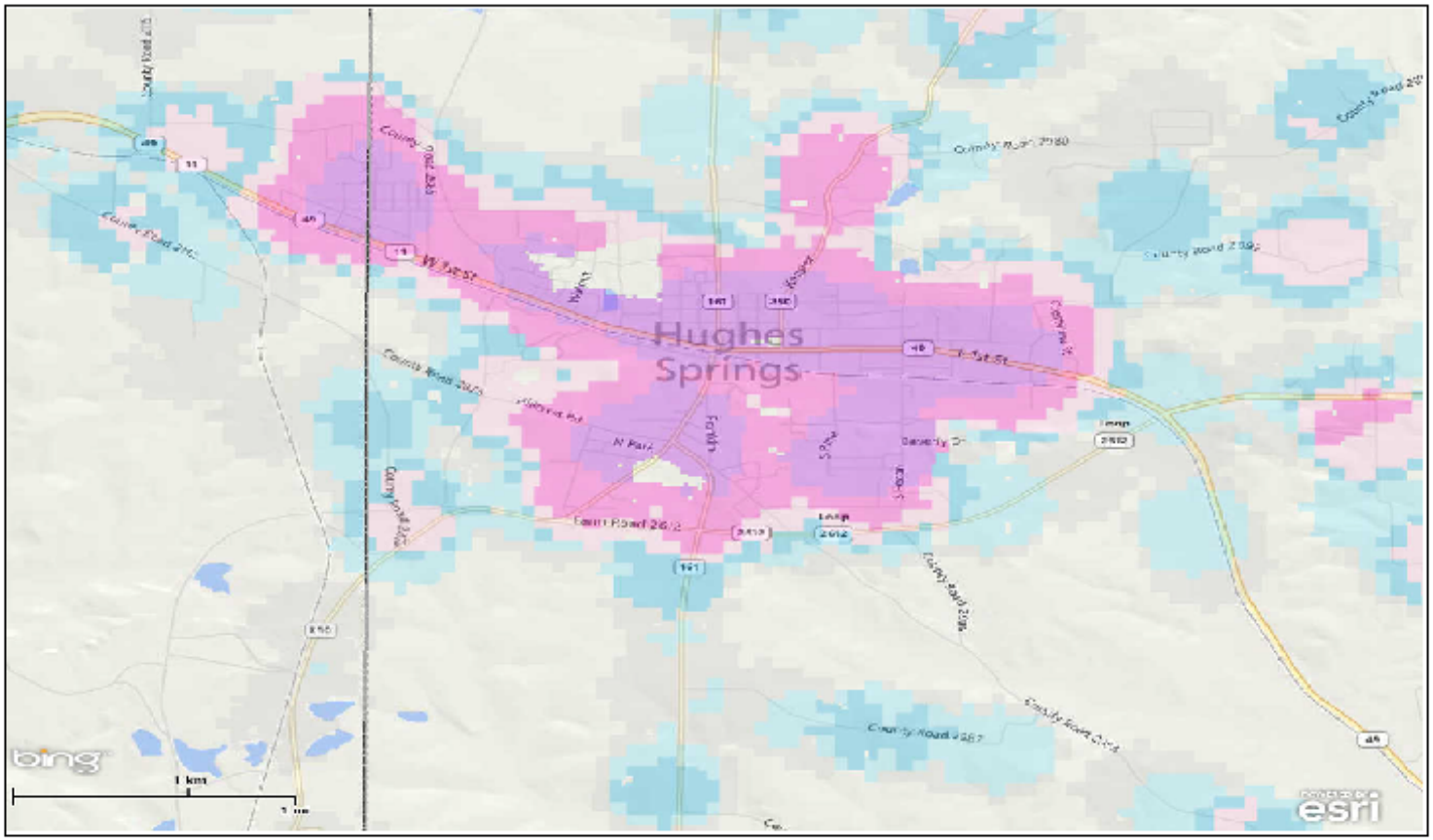
Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Hughes Springs WUI

Depicts where humans and their structures meet or intermix with wildland fuels



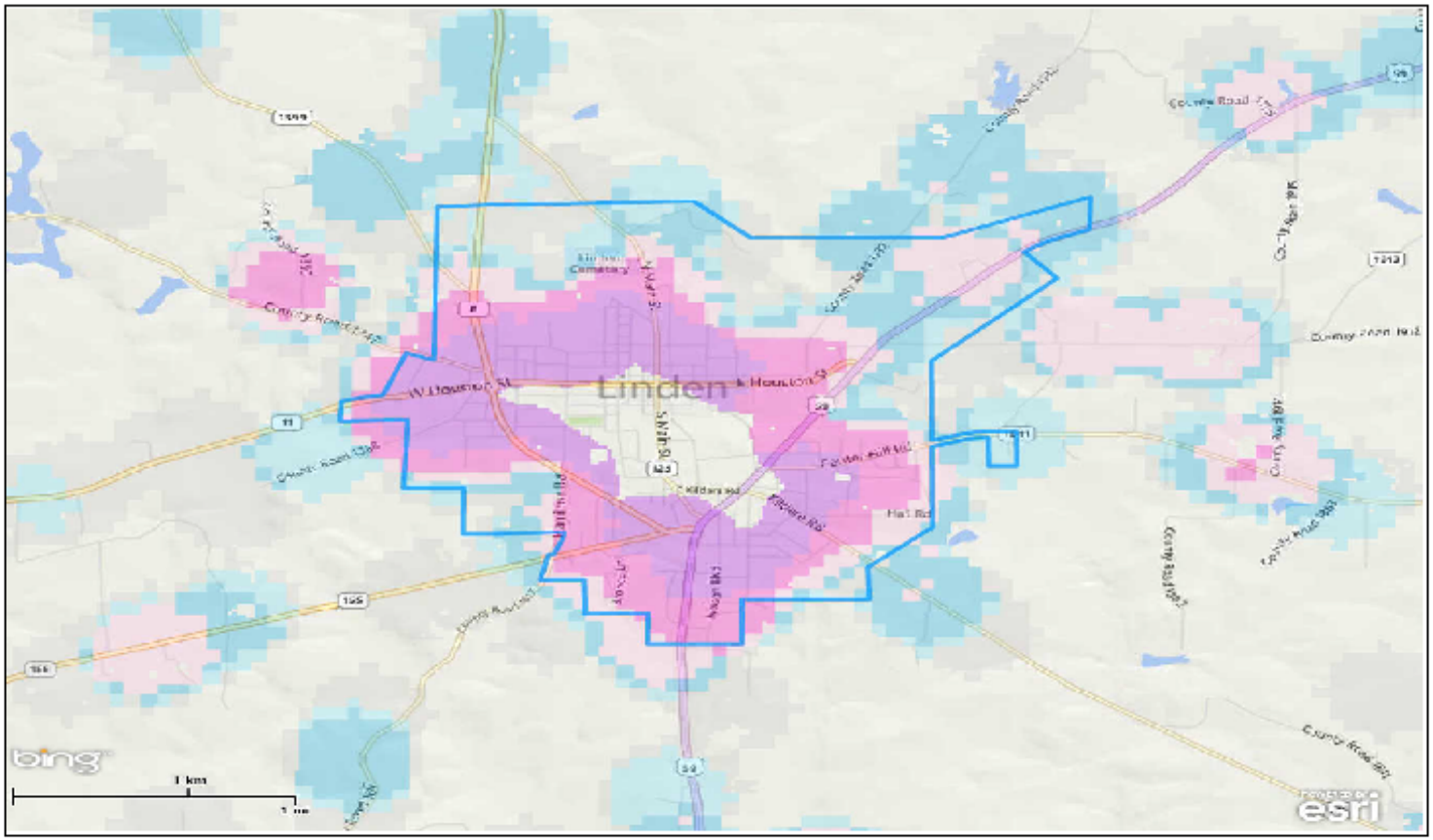
Report Created:
02/03/2015 1:16 PM

Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Linden WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 1:19 PM

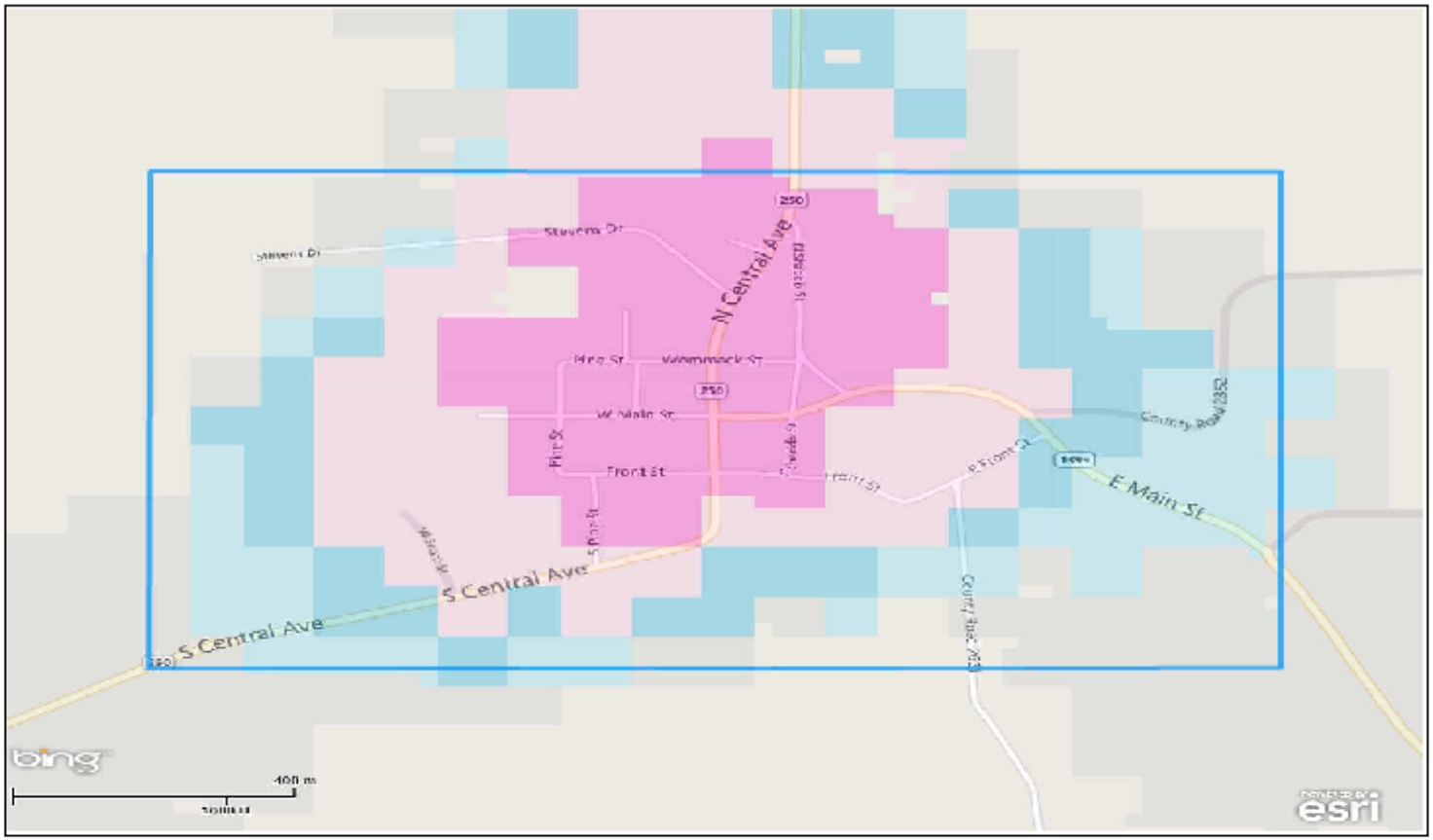
Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Marietta WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 1:21 PM

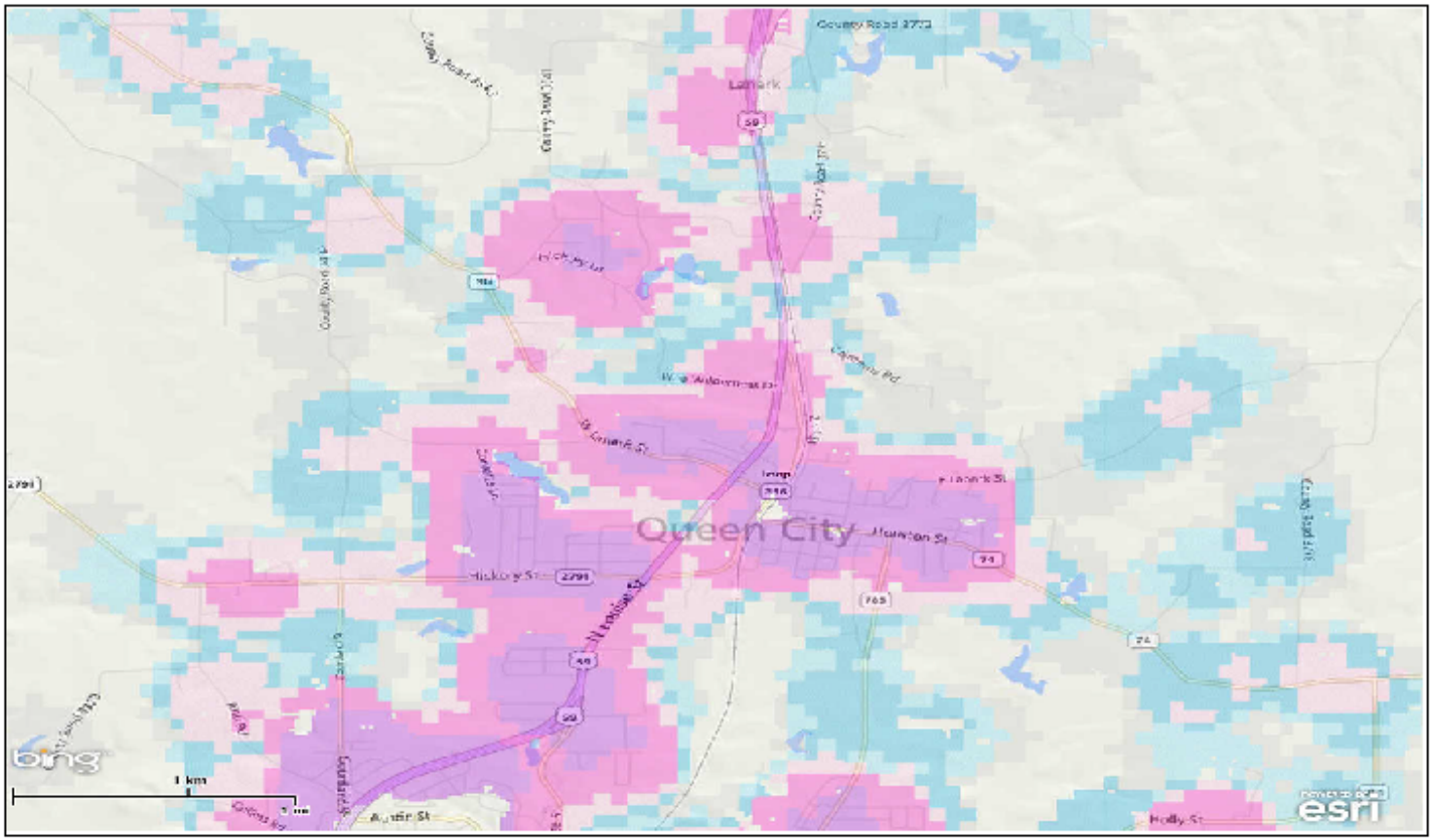
Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Queen City WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:
02/03/2015 1:17 PM

Texas Wildfire Risk Assessment 2010

www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

WILDFIRES IN CASS COUNTY

Cass County Wildfire Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Cass Unincorporated	Substantial PRI 4	Highly Likely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	High 3.9
Atlanta	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Avinger	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Bloomburg	Substantial PRI 4	Unlikely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Domino	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Douglassville	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Hughes Springs	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Linden	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Marietta	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Queen City	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85

Estimated Property Loss at 50%	
Cass County	584,507,267
Atlanta	166,080,491
Avinger	9,468,133
Bloomburg	6,356,325
Domino	32,82,465
Douglassville	Not Available
Hughes Springs	33,605,160
Linden	45,733,190
Marietta	Not Available
Queen City	288,72,578

Probability: Historical weather conditions indicate that the probability of occurrence is possible. The threat of fires cannot be eliminated but public education and the use of prescribed burns can be used to better manage this hazard. (See Table 2.1.0)

Vulnerability: Cass County consists of heavily wooded pine, hard wood, rolling hills and pasture. Crops, timber, pasture and dwellings are in danger of being destroyed by wildfires. Wildfires are contained by volunteer fire units working in coordination with each other. The fires that have occurred in the county have been contained by the dedicated fighters.

Data is not available to determine the extent that each fire must reach before it runs out of control. There were 729 fires reported to the Texas Forestry Service between 2005 and 2009.

Bear Creek Fire
On September 4, 2011 the largest fire in East Texas History began along Bear Creek in Cass County scorching more than 43,000 acres in Cass and Marion Counties. The fire took over 5 days to get under control and numerous houses, and property were involved. Multiple fire departments aided in the suppression efforts. This was the largest wildfire ever recorded in East Texas. A Type 1 Incident Management Team assisted in getting the fire under control. This fire attracted local, state and national news coverage.

Summary: There are no Cass County "Communities at Risk" listed in the Federal Register. Fires can destroy property, and homes causing injury and death. Fortunately no lives were lost in any of the fires listed. It is important that communities have up to date emergency warning, reporting, and response systems in place. Well trained cohesive VFD's play a critical role in protecting people and property. The rural areas of Cass County are particularly at risk.

The Bear Creek fire demonstrated how vulnerable a community can be in the event of a wildfire in Cass County. Although there is no history of wildfires threatening the jurisdictions of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City. Fires are likely to occur in the jurisdictions but are not caused by Wildfire/Urban interface as defined. House and apartment fires have not been known to spread over significant areas.

Humor starts like a wildfire, but then continues on, smoldering, smoldering for years. ***Robert Orben***

Mitigation Plan Update Strategy for Cass County

The previous goals and actions were never acted on and many of the old actions are no longer valid. This updated plan represents the most current data available regarding actions needed to reduce loss of life and property through mitigation. The five year update is seen as an opportunity to set actions in place that are current, valid and obtainable.

- A new way to measure risk has been introduced in the 5 year update. There are no changes noted that would impact the development of the plan.
- Added language reflects a desire to see that the Plan is acted upon in a measured fashion with at least annual meetings being held to monitor overall action priorities and progress.
- The Bear Creek fire, which occurred in September of 2013 was substantial but it did not alter the current plan's prioritization because wildfire has been a top priority. No natural event has occurred since the original plan that would alter the current plan's prioritization.
- There have been no new developments in the county or jurisdiction that would alter vulnerability. Cass County has experienced a -7% variation in population between April, 2010-July, 2014.
- There have been no changes politically or financially that would impact the plan's development.

Cass County recognizes the importance of dedicated involvement regarding the integration of the plan into existing county and participating jurisdiction plans and budgets and codes. Cass County has initiated a proactive course of action that includes annual reviews and reports to the Cass County Commissioners Court and the city councils of Atlanta, Avinger, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City.

The presiding Cass County Judge or his/her appointed representative will maintain a schedule to ensure that the plan is addressed and updated in a timely manner.

Cass County Hazard Mitigation Actions 2010

Hazard	Action	Disposition	Explanation
Thunderstorms	Purchase emergency alert system and shelters/safe rooms	Reworded and deferred.	Simplified action and edited content
Thunderstorms	Disseminate weather information to media (local radio and TV stations	Delete	Not a viable FEMA action
Thunderstorms	Inform general public of newly acquired emergency alert system's procedure and tests.	Delete	Not a viable FEMA action
Thunderstorms	Encourage Households to develop plans before severe weather strikes.	Delete	Not a viable FEMA action
Thunderstorms	Inform public of locations of newly acquired shelters/safe rooms	Delete	Not a viable FEMA action
Winter Storms	Work with utility providers and county and local public works agencies to document known hazard area.	Delete	Not a viable FEMA action
Winter Storms	Develop SOP to require identification of Hangers (limbs) after storms	Delete	Not a viable FEMA action.
Winter Storms	Identify potentially hazardous trees in urban areas. Develop SOP for maintenance	Deferred	Reworded for clarification and to meet FEMA guidelines
Winter Storms	Develop strategies for clearing roads and fallen trees and debris from public and private property	Delete	Not a viable FEMA action
Winter Storms	Use underground utilities where possible	Delete	Cost prohibitive
Winter Storms	Work with jurisdiction to encourage adoption of building codes	Delete	Not a viable FEMA action
Winter Storms	Collect educational materials for protecting life and property from winter storm events	Delete	No longer a viable FEMA action
Winter Storms	Distribute educational materials to Cass County residents concerning actions they may take to protect life, property and the environment from winter storm events	Delete	Not a viable FEMA action
Flood	Include information regarding flooding in the utility bills.	Delete	Not a viable FEMA action
Flood	Utilize radio, television, newspaper to convey message to the pubic	Delete	Not a viable FEMA action
Flood	Encourage teaching of flood information in public schools.	Delete	Not a viable FEMA action
Flood	Enlist the aid of civic organizations to disseminate information on local flooding.	Delete	Not a viable FEMA action
Flood	Evaluate elevation requirements for new residential and non-residential structures.	Delete	Not a viable FEMA action
Flood	Explore raising base elevation requirement for new resident construction	Delete	Not a viable FEMA action
Flood	Coordinate with appropriate organizations to evaluate the need for more stream gauges	Deleted	Not a viable FEMA action
Flood	Distribute flood information to public.	Delete	Not a viable FEMA action
Flood	Encourage the development of floodplain maps for all local streams not currently mapped on Flood Insurance Rate Maps or county maps.	Delete	Not a viable FEMA action
Tornadoes	Check local building codes and ordinances about wind-resistant designs and strengthening un-reinforced masonry and adopt new codes	Deferred	Will be reworded
	Encourage families to develop emergency	Delete	Not a viable FEMA action

Tornadoes	communication plans in case family members are separated from one another during a tornado. Have a plan to get back together.		
Tornadoes	Require more stringent tie-down for mobile homes.	Deferred	Will be reworded
Tornadoes	Educate citizens on steps that can be taken to reduce the impact of tornadoes with the use of disaster supply kits.	Deferred	Will be reworded
Drought	Develop guidelines for drought plan development	Delete	
Drought	Develop a comprehensive county drought plan.	Deferred	Reworded
Drought	Draft policy to require water use reporting	Delete	Not a viable FEMA action
Drought	Evaluate vulnerabilities to water shortage.	Delete	Not a viable FEMA action
Drought	Design county-wide/local information and education program	Delete	Not a viable FEMA action
Drought	Conduct workshops on conserving water and managing drought impacts	Deferred	
Extreme Heat	Radio/TV/newspapers /PSA's advising public of hazards of heat and heat advisories.	Completed	
Extreme Heat	Educate public of heat index/heat disorders	Deferred	Will be re-worded
Extreme Heat	Enlist Red Cross and other public agencies to assist in awareness campaigns.	Delete	Not a viable FEMA action.
Extreme Heat	Develop agreements with utility companies to offer special arrangements for paying high utility bills during extreme heat periods.	Deleted	Not a viable FEMA action
Extreme Heat	Request local agencies and private businesses to sponsor fan drives for low-income and elderly who cannot afford air conditioning	Deferred	Will be re-worded
Wildfire	Make evacuation routes available to general public.	Delete	Not a viable FEMA action
Wildfire	KBDI Response: air surveillance will be activated at 600 KBDI.	Completed	
Wildfire	Publish burn ban information. (County Judge)	Completed	
Wildfire	Ensure adequate number of reporting stations for better access and coverage	Deleted	Unclear
Wildfire	Develop a county call list that includes all at-risk residents in Cass County in order to contact them in case of need for evacuation.	Deferred	See Code RED actions
Wildfire	Inventory bridges on evacuation routes and make assessment for bridge ability to support fire apparatus ingress.	Delete	Not a viable FEMA action
Wildfire	Consider water storage facilities with fire-resistant gasoline/diesel pump systems in developments outside of areas not connected to a community water system.	Delete	Not a viable FEMA action
Wildfire	Develop SOP to utilize available ponds for water source and helicopter dip operations.	Delete	Not a viable FEMA action
Wildfire	Develop a protocol for fire jurisdictions to communicate	Completed	
Wildfire	Identify and prioritize wild land areas for hazardous fuels reduction treatments, as well as recommend methods for achieving hazardous fuels reduction on both private and public lands.	Delete	Not a viable FEMA action
Wildfire	Recommend measures of reducing structural ignitability throughout the at-risk communities.	Delete	Not a viable FEMA action

SECTION III
MITIGATION GOALS AND LONG TERM STRATEGY

GOALS

Mitigation Plan Goals

The Cass County Mitigation Action Plan goals describe the direction that Cass County agencies, organizations, and citizenry can take to minimize the impacts of natural hazards. Specific recommendations are outlined in the action items. These goals help guide direction of future activities aimed at reducing risk and preventing loss from natural hazards.

Goal #1: Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to natural hazards.
- Improve hazard assessment information to make recommendations for discouraging new development in areas vulnerable to natural hazards.

Goal #2: Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, and funding resources to assist in implementing mitigation activities.

Goal #3: Natural Systems

- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

Goal #4: Partnerships and Implementation

- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

Goal #5: Emergency Services

- Establish policy to ensure mitigation projects for critical facilities, services and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations and business.
- Integrate natural hazard mitigation activities with emergency operation plans and procedures.

CASS COUNTY HAZARD MITIGATION ACTIONS

ATLANTA

Flood

Atlanta Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Atlanta Flood Mitigation Action #2
Install Caution Road May Flood warning signs on roadways that flood.

Tornadoes
Atlanta Tornadoes Mitigation Action # 1
Participate in the Texas Individual Tornado Safe Room Program
Atlanta Tornadoes Mitigation Action #2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Atlanta Thunderstorms Mitigation Action #1
Install lightning detectors in local parks and playgrounds.
Atlanta Thunderstorm Mitigation Action #2
Expand CERT training and activities that contribute to the education of mitigation for winter storms for community, family and workplace. Specifying training/education in winter storms will allow citizens to mitigate the potential harm caused during winter storm events.

Winter Storms

Atlanta Winter Storms Mitigation Action #1
Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities
Atlanta Winter Storms Mitigation Action # 2
Develop and maintain adequate road and debris clearing capabilities.

Hail

Atlanta Hail Mitigation Action # 1
Install hail resistant film on the windows of critical facilities.
Atlanta Hail Mitigation Action #2
Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property from hail damage

Drought

Atlanta Drought Mitigation Action #1
Conduct Xeriscaping and water conservation workshops for the county.
Atlanta Drought Mitigation Action #2
Enforce water rationing during severe drought

Extreme Heat

Atlanta Extreme Heat Mitigation Action #1
Provide cooling centers and advertise their locations during extreme heat events.

Atlanta Extreme Heat Mitigation #2
Conduct fan drives for low-income and elderly who cannot afford air conditioning*

Wildfire

Atlanta Wildfire Mitigation Action #1
Clear dense vegetation away from areas that are close to buildings or dwellings
Atlanta Wildfire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning

AVINGER

Floods

Avinger Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Avinger Flood Mitigation Action # 2
Participate in the National Flood Insurance Program.

Tornadoes

Avinger Tornadoes Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Avinger Tornado Mitigation Action #2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Avinger Thunderstorms #1
Create and implement a schedule to regularly remove sediment and debris from the storm drainage system.
Avinger Thunderstorms #2
Create and enforce a city ordinance requiring mobile home tie-downs

Winter Storms

Avinger Winter Storms Action #1
Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms*
Avinger Winter Storm Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities

Hail

Avinger Hail Mitigation Action # 1
Install hail resistant film on the windows of critical facilities.

Avinger Hail Mitigation Action #2
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Avinger Drought Mitigation Action #1
Conduct workshops on Xeriscaping and water conservation
Avinger Drought Mitigation Action #2
Replace municipal appliances or equipment with water-saving models or parts.

Extreme Heat

Avinger Extreme Heat Mitigation Action #1
Provide cooling centers and publicize their locations during extreme heat events
Avinger Extreme Heat Mitigation Action #2
Organize a local fan drives to assist lower income families and individuals during summer months*.

Wildfires

Wildfires Mitigation Action #1
Clear dense vegetation away from areas that are close to buildings or dwellings
Wildfire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning

BLOOMBURG

Flood

Bloomburg Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Bloomburg Flood Mitigation #2
Dredge the waste water treatment tanks to prevent overflow during flash flooding

Tornado

Bloomburg Tornado Mitigation Action # 1
Participate in the Texas Individual Tornado Safe Room Program
Bloomburg tornado Mitigation Action #2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Bloomburg Thunderstorm Mitigation #1

Create and enforce a city ordinance requiring mobile home tie-downs

Bloomburg Thunderstorm Mitigation #2

Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*

Winter Storms

Bloomburg Winter Storms Mitigation Action #1

Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities

Bloomburg Winter Storms Mitigation Action #2

Develop and maintain adequate road and debris clearing capabilities.

Hail

Bloomburg Hail Mitigation Action # 1

Install hail resistant film on the windows of critical facilities.

Bloomburg Hail Mitigation Action #2

Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Bloomburg Drought Mitigation Action #1

Conduct Xeriscaping and water conservation workshops for the county.

Bloomburg Drought Mitigation Action #2

Enforce water rationing during severe drought

Extreme Heat

Bloomburg Extreme Heat Mitigation Action #1

Conduct fan drives for low-income and elderly who cannot afford air conditioning*

Bloomburg Extreme Heat Mitigation Action #2

Establish cooling centers in public buildings and churches that can provide daytime shelter for at risk populations in the community.

Wildfires

Bloomburg Wildfires Mitigation Action #1

Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.

Bloomburg Wildfires Mitigation Action #2

Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.

DOMINO

Domino Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Domino Flood Mitigation Action #2
Participate in the National Flood Insurance Program

Tornadoes

Domino Tornado Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Domino Tornado Mitigation Action #2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Domino Thunderstorms Mitigation Action #1
Provide a community awareness campaign concerning the risks and consequences of thunderstorm winds. By educating the public on High Winds loss of life and property may be mitigated as they take steps to secure their property and respond to warnings
Domino Thunderstorms Mitigation Action #2
Create and enforce city ordinance requiring approved mobile home tie downs.

Winter Storms

Domino Winter Storms Mitigation Action #1
Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall causing injury or property damage.*
Domino Winter Storms Mitigation Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities

Hail

Domino Hail Mitigation Action #1
Install hail resistant film on the windows of critical facilities.
Domino Hail Mitigation Action #2
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Domino Drought Mitigation Action #1
Replace municipal appliances or equipment with water-saving models or parts.
Domino Drought Mitigation Action #2
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*

Extreme Heat

Domino Extreme Heat #1
Provide Cooling centers and publicize their location for at risk populations
Domino Extreme Heat Mitigation Action #2
Conduct a workshop for residents about how to protect themselves from Summer Heat*

Wildfires

Domino Wildfires Mitigation Action #1
Conduct a wildfire education program stressing the dangers of trash burning
Domino wildfires Mitigation Action #2
Clear dense vegetation away from areas that are close to buildings or dwellings

DOUGLASSVILLE

Douglassville Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Douglassville Flood Mitigation Action #2
Participate in the National Flood Insurance Program

Tornadoes

Douglassville Tornadoes Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Douglassville Tornadoes Mitigation Action #2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Douglassville Thunderstorms Mitigation Action #1
Create and enforce an ordinance requiring approved tie-downs for mobile homes**.**
Douglassville Thunderstorms Mitigation Action #2
Mitigate harmful effects from lightning strikes by installing lightning rods on the city's radio communications sites.

Winter Storms

Douglassville Winter Storms Mitigation Action #1
Provide and identify community shelters for the most vulnerable populations of low income elderly and children.
Douglassville Winter Storms Mitigation Action #2
Conduct workshops regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops and/or information pamphlets.

Hail

Douglassville Hail Mitigation Action #1
Install hail resistant film on the windows of critical facilities.

Douglassville Hail Mitigation Action #1
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Douglassville Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*
Douglassville Drought Mitigation Action #2
Install water saving appliances and devices for the city as old equipment wears out

Extreme Heat

Douglassville Extreme Heat Mitigation Action #1
Conduct a fan drive so the most vulnerable of the population can stay safe during extreme heat weather events.
Douglassville Extreme Heat Mitigation Action #2
Educate the residents about how to protect themselves from Summer Heat*

Wildfires

Douglassville Wildfires Mitigation Actions #1
Conduct a wildfire education program stressing the dangers of trash burning.
Douglassville Wildfires Mitigation Action #2
Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.

HUGHES SPRINGS

Hughes Springs Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Hughes Springs Flood Mitigation Action #2
Widen ditches to accommodate more flash flood waters

Hughes Springs Tornadoes Mitigation Action # 1
Participate in the Texas Individual Tornado Safe Room Program
Hughes Springs Tornadoes Mitigation Action # 2
Conduct a workshop regarding protecting life and property from Tornadoes*

Thunderstorms

Hughes Springs Thunderstorm Mitigation Action #1
Create and enforce a city ordinance requiring tie downs for mobile homes.
Hughes Springs Thunderstorm Mitigation Action #2
Purchase lightning prediction devices to be deployed around Parks and Schools. This would provide advance warning to those in the area.

Winter Storms

Hughes Springs Winter Storms Mitigation Action #1
Organize a Community Emergency Response Team (CERT)
Hughes Springs Winter Storms Mitigation Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities

Hail

Hughes Springs Hail Mitigation Action # 1
Install hail resistant film on the windows of critical facilities.
Hughes Springs Hail Mitigation Action #2
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Hughes Springs Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*
Hughes Springs Drought Mitigation Action #2
Establish water rationing protocol for times of intense drought

Extreme Heat

Hughes Springs Extreme Heat Mitigation Action #1
Convert community Centers and other public access buildings to cooling centers during times of extreme heat.
Hughes Springs Extreme Heat Mitigation Action #2
Conduct fan drives for low-income and elderly who cannot afford air conditioning*

Wildfires

Hughes Springs Wildfires Mitigation Action #1
Conduct a wildfire education program stressing the dangers of trash burning.
Hughes Springs Wildfire Mitigation Action #2
Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.

LINDEN

Floods

Linden Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Linden Flood Mitigation Action #2
Widen ditches to increase volume capacity of flash flood waters

Tornadoes

Linden Tornado Mitigation Action #1

Participate in the Texas Individual Tornado Safe Room Program

Linden Tornado Mitigation Action #2

Develop a public education program that will provide the public with understanding of their risk to Tornado events and the steps to take to protect themselves, their family, and their property

Thunderstorms

Linden Thunderstorms Mitigation Action #1

Install Lightning Grade Surge Protectors for city computer system

Linden Thunderstorms Mitigation Action #2

Install lightning prediction sensors in school yards and parks

Winter Storms

Linden Winter Storms Mitigation Action #1

Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops or information pamphlets.

Linden Winter Storms Mitigation Action #2

Organize a Community Emergency Response Team (CERT)

Hail

Linden Hail Mitigation Action # 1

Install hail resistant film on the windows of critical facilities.

Linden Hail Mitigation Action #2

Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Linden Drought Mitigation Action #1

Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*

Linden Drought Mitigation Action #2

Establish and enforce water rationing protocol for times of intense drought

Extreme Heat

Linden Extreme Heat Mitigation Action#1

Establish and Identify public cooling centers.

Extreme Heat Mitigation Action #2

Conduct fan drives for low-income and elderly who cannot afford air conditioning*

Wild Fire

Linden Wildfires Mitigation Action #1

Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.

Linden Wildfires Mitigation Action # 2
Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.

MARIETTA

Flood

Marietta Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Marietta Flood Mitigation Action #2
Participate in the National Flood Insurance Program

Tornadoes

Marietta Tornadoes Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Marietta Tornadoes Mitigation Action #2
Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*

Thunderstorms

Marietta Thunderstorms Mitigation Action #1
Maintain "Storm Ready Community" Status
Marietta Thunderstorms Mitigation Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages at critical facilities.

Winter Storms

Marietta Winter Storms Mitigation Action #1
Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms causing dangers to life and property*
Marietta Winter Storms Mitigation Action #2
Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops or information pamphlets.

Hail

Marietta Hail Mitigation Action #1
Install hail resistant film on the windows of critical facilities
Marietta Hail Mitigation Action #2.
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought
Marietta Drought Mitigation Action #1
Conduct Xeriscaping and water conservation workshops for the county.*

Marietta Drought Mitigation Action #2
Create and enforce water rationing during severe drought

Extreme Heat

Marietta Extreme Heat Mitigation Action #1
Conduct a fan drive to supply fans for low income elderly**.**
Marietta Extreme Heat Mitigation Action #2
Provide workshops on the dangers of extreme heat and how to prevent heat stroke

Wildfires

Marietta Wildfires Mitigation Action #1
Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.
Marietta Wildfires Mitigation Action # 2
Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.

QUEEN CITY

Flood

Queen City Flood Mitigation Action #1
Participate in the Turn Around, Don't Drown Program
Queen City Flood Mitigation Action #2
Clearly mark roads that are prone to wash out with "Caution Road May Flood" signs.

Tornadoes
Queen City Tornadoes Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Queen City Tornadoes Mitigation Action #2
Develop a public education program that will provide the public with understanding of their risk to Tornado events and the steps to take to protect themselves, their family, and their property

Thunderstorms

Queen City Thunderstorms Mitigation Action #1
Require structures on temporary foundations to be securely anchored to permanent foundations.
Queen City Thunderstorms Mitigation Action #2
Maintain "Storm Ready Community" Status

Winter Storms
Queen City Winter Storms Mitigation Action #1
Organize a Community Emergency Response Team (CERT
Queen City Winter Storms Mitigation Action #2
Provide and identify community shelters for the most vulnerable populations of low income elderly and children.

Hail

Queen City Hail Mitigation Action # 1
Install hail resistant film on the windows of critical facilities.
Queen City Hail Mitigation Action #2
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought
Queen City Drought Mitigation Action #1
Conduct Xeriscaping and water conservation workshops for the county.
Queen City Drought Mitigation Action #2
Enforce water rationing during severe drought

Extreme Heat
Queen City Extreme Heat Mitigation Action #1
Conduct a fan drive to supply fans for low income elderly**.**
Queen City Extreme Heat Mitigation Action #2
Provide workshops on the dangers of extreme heat and how to prevent heat stroke

Wildfire

Queen City Wildfire Mitigation Action #1
Clear dense vegetation away from areas that are close to buildings or dwellings
Queen City Wildfire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning

CASS COUNTY

Flood

Cass County Flood Mitigation Action # 1
Participate in the Turn Around, Don't Drown Program
Cass County Flood Mitigation Action #2
Place "Caution Road May Flood" road signs in areas that are prone to flood

Tornadoes

Cass County Tornadoes Mitigation Action #1
Participate in the Texas Individual Tornado Safe Room Program
Cass County Tornadoes Mitigation Action #2
Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*

Thunderstorms

Cass County Thunderstorms Mitigation Action #1
Require and enforce tie downs for mobile homes

Cass County Thunderstorm Mitigation Action #2
Install Lightning Grade Surge Protectors for city computer system

Winter Storms

Cass County Winter Storms Mitigation Action #1
Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops or information pamphlets.
Cass County Winter Storms Mitigation Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages at critical facilities

Hail

Cass County Hail Mitigation Action # 1
Install hail resistant film on the windows of critical facilities.
Cass County Hail Mitigation Action #2
Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.

Drought

Cass County Drought Mitigation Action #1
Conduct Xeriscaping and water conservation workshops for the county.
Cass County Drought Mitigation Action #2
Replace municipal appliances or equipment with water-saving models or parts.

Extreme Heat

Cass County Extreme Heat Mitigation Action #1
Provide cooling centers and advertise their locations during extreme heat events.
Cass County Extreme Heat Mitigation #2
Conduct fan drives for low-income and elderly who cannot afford air conditioning*

Wildfire

Cass County Wildfire Mitigation Action #1
Clear dense vegetation away from areas that are close to buildings or dwellings
Cass County Wildfire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning

* updated from original Cass County Hazard Mitigation Action Plan

Comprehensive Range of Specific Mitigation Action Tables

The comprehensive range of specific mitigation actions being considered are listed below. A cost benefit review was performed to help decide which action items are feasible. The cost estimate and funding source are listed below. A cost benefit analysis will be performed prior to submission of any application to FEMA. Priorities listed below are defined as:

- **High 1-3 Years**
- **Medium 4-7 Years**
- **Low 8+ Years.**

Estimated Cost of Actions	
Low	0-$10,000
Medium	$10,000-$25,000
High	$25,000 +

ATLANTA

NOTE: ***All Atlanta projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Atlanta Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. , County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Atlanta
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Atlanta Flood Mitigation Action #2	Install Caution Road May Flood warning signs on roadways that flood.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Atlanta, Texas Hwy. Dept., State
Estimated Cost	Low (0-$10k)
Responsible Agency	City of Atlanta
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Atlanta Tornadoes Mitigation Action # 1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside.

Atlanta Tornadoes Mitigation Action #2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Atlanta
Estimated Cost	Low (0-$10k)
Responsible Agency	City of Atlanta
Estimated Completion Time	6 years
Effect on New Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Effect on Existing Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Comments:	

Atlanta Thunderstorms Mitigation Action #1	Install lightning detectors in local parks and playgrounds
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Low
Funding Source(s)	FEMA, other grant money
Estimated Cost	High ($25k +)
Responsible Agency	City of Atlanta
Estimated Completion Time	8+ years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Lightning is the #1 natural hazard killer.

Atlanta Thunderstorm Mitigation Action #2	Expand CERT training and activities that contribute to the education of mitigation for winter storms for community, family and workplace. Specifying training/education in winter storms will allow citizens to mitigate the potential harm caused during winter storm events.
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #2: Public Awareness** **Goal #5: Emergency Services**
Priority	Medium
Funding Source(s)	City of Atlanta
Estimated Cost	Low (0-$10,000)
Responsible Agency	City of Atlanta
Estimated Completion Time	5 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Atlanta Winter Storms Mitigation Action #1	Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High (1-3 years)
Funding Source(s)	FEMA, City of Atlanta
Estimated Cost	Medium ($10,000-$25,000)
Responsible Agency	City of Atlanta
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Atlanta Winter Storms Mitigation Action # 2	Develop and maintain adequate road and debris clearing capabilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Low
Funding Source(s)	FEMA, City of Atlanta
Estimated Cost	High ($25,000 +)
Responsible Agency	City of Atlanta
Estimated Completion Time	8+ years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Atlanta Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Atlanta
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Atlanta Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings.
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Atlanta Hail Mitigation Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property from hail damage.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Atlanta
Estimated Cost	Low ($0-$10,000)
Responsible Agency	City of Atlanta
Estimated Completion Time	2 years
Effect on New Buildings	Implementing ways to protect roofs and surfaces of new structures.
Effect on Existing Buildings	Implementing ways to protect roofs and surfaces of existing structures.
Comments:	

Atlanta Drought Mitigation Action #1	Conduct Xeriscaping and water conservation workshops for the county.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Atlanta, Agriculture Extension Office
Estimated Cost	($0-$10,000)
Responsible Agency	Extension Office
Estimated Completion Time	5 years
Effect on New Buildings	Implement ways to protect foundations on new buildings.
Effect on Existing Buildings	Implement ways to protect foundations on existing buildings.
Comments:	

Atlanta Drought Mitigation Action #2	Enforce water rationing during severe drought.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Atlanta
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Atlanta
Estimated Completion Time	Three years if needed
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Atlanta Extreme Heat Mitigation Action #1	Provide cooling centers and advertise their locations during extreme heat events.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Atlanta
Estimated Cost	Low ($0-!0,000)
Responsible Agency	City of Atlanta, EMC, Fire dept.
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Atlanta Extreme Heat Mitigation #2	Conduct fan drives for low-income and elderly who cannot afford air conditioning*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Local contributors, donations
Estimated Cost	Low ($0-$10K)
Responsible Agency	City of Atlanta, local civic organizations
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	* Deferred from original plan

Atlanta Wildfire Mitigation Action #1	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	City of Atlanta, Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	City of Atlanta, Fire Dept., TFS
Estimated Completion Time	3 years
Effect on New Buildings	Protect homes and businesses from encroaching wildfires
Effect on Existing Buildings	Protect homes and businesses from encroaching wildfires
Comments:	

Atlanta Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Atlanta, City Fire Dept.
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Atlanta Fire Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Trash burning is the #1 cause of fires in Cass County

Avinger

NOTE: ***All Avinger projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Avinger Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	State Hwy Dept. City of Avinger, Cass County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	This program is known to save lives by making people more mindful of flooded road dangers.

Avinger Flood Mitigation Action # 2	Participate in the National Flood Insurance Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Avinger, FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger, State Hwy. Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Protecting New Buildings from financial loss due to flooding.
Effect on Existing Buildings	Protecting Existing Buildings from financial loss due to flooding
Comments:	

Avinger Tornadoes Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	6 years
Effect on New Buildings	Placing safe rooms in new buildings will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be placed in new buildings, existing buildings or outside.

Avinger Tornado Mitigation Action #2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Avinger
Estimated Cost	Low (0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	6 years
Effect on New Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Effect on Existing Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Comments:	Conduct a workshop regarding protecting life and property from Tornadoes*

Avinger Thunderstorms #1	Create and implement a schedule to regularly remove sediment and debris from the storm drainage system.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Avinger
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	3 years (on going from time of implementation)
Effect on New Buildings	Could prevent flash flooding in areas with poor or obstructed drainage
Effect on Existing Buildings	Could prevent flash flooding in areas with poor or obstructed drainage
Comments:	

Avinger Thunderstorms #2	Create and enforce a city ordinance requiring mobile home tie-downs
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Avinger
Estimated Cost	Low ($0-$10k) enforcement the primary cost
Responsible Agency	City of Avinger
Estimated Completion Time	1 year (ongoing)
Effect on New Buildings	Reduce the probability of mobile homes blowing over.
Effect on Existing Buildings	Reduce the probability of mobile homes blowing over.
Comments:	

Avinger Winter Storms Action #1	Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Avinger
Estimated Cost	Medium ($0-$25k)
Responsible Agency	City of Avinger
Estimated Completion Time	4 years (seasonal and ongoing after implementation)
Effect on New Buildings	Reduce the likelihood of damage from limbs and trees
Effect on Existing Buildings	Reduce the likelihood of damage from limbs and trees
Comments:	

Avinger Winter Storm Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Medium ($0-10k)
Responsible Agency	City of Avinger/FEMA
Estimated Completion Time	5 years
Effect on New Buildings	Could protect building from flooding or provide critical services such as electricity water.
Effect on Existing Buildings	Could protect building from flooding or provide critical services such as electricity water.
Comments:	

Avinger Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA or other grant, City of Avinger
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	7 years
Effect on New Buildings	Protecting new critical facilities from damage
Effect on Existing Buildings	Protecting existing critical facilities form damage
Comments:	

Avinger Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Avinger
Estimated Cost	Low ($0-$10k)
Responsible Agency	City or County EMC
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Avinger Drought Mitigation Action #1	Conduct workshops on Xeriscaping and water conservation.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Avinger/State of Texas
Estimated Cost	Low ($0-$10K)
Responsible Agency	City of Avinger/County Extension Agent
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Avinger Drought Mitigation Action #2	Replace municipal appliances or equipment with water-saving models or parts.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	City of Avinger, Grants
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	2 years (ongoing after implementation)
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Avinger Extreme Heat Mitigation Action #1	Provide cooling centers and publicize their locations during extreme heat events
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Avinger, Grant money, Donations
Estimated Cost	Medium ($10k-25k)
Responsible Agency	City of Avinger
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Avinger Extreme Heat Mitigation Action #2	Organize a local fan drives to assist lower income families and individuals during summer months*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Grant Money, Local Donations, Churches
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable

Comments:	Deferred from original plan

Avinger Wildfires Mitigation Action #1	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	Avinger Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	Avinger, Fire Dept., TFS
Estimated Completion Time	3 years
Effect on New Buildings	Protect homes and businesses from encroaching wildfires
Effect on Existing Buildings	Protect homes and businesses from encroaching wildfires
Comments:	Clear dense vegetation away from areas that are close to buildings or dwellings

Avinger Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #2: Public Awareness** **Goal #4: Partnerships and Implementation**
Priority	High
Funding Source(s)	Donations, TFS
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Avinger, TFS, VFD
Estimated Completion Time	1 year
Effect on New Buildings	Implementation of program could indirectly prevent fires
Effect on Existing Buildings	Implementation of program could indirectly prevent fires
Comments:	

BLOOMBURG

NOTE: ***All Bloomburg projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Bloomburg Flood Mitigation Action #1	Participate in the "Turn Around, Don't Drown" Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	FEMA, Texas Hwy. Dept.
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Flood Mitigation #2	Dredge the waste water treatment tanks to prevent overflow during flash flooding
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	Medium
Funding Source(s)	Grant Money, City of Bloomburg
Estimated Cost	Medium ($0-$10k)
Responsible Agency	Bloomburg Public Works
Estimated Completion Time	5 years
Effect on New Buildings	Could protect New Buildings from raw sewage contamination
Effect on Existing Buildings	Could protect Old building from raw sewage contamination
Comments:	

Bloomburg Tornado Mitigation Action # 1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, Individual Contribution
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg, FEMA
Estimated Completion Time	7 years
Effect on New Buildings	Reinforcing new buildings could help protect property from high winds.
Effect on Existing Buildings	Reinforcing existing buildings could help protect property from high winds.
Comments:	

Bloomburg tornado Mitigation Action #2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Bloomburg
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	3 years
Effect on New Buildings	New knowledge could influence property owners to take action.
Effect on Existing Buildings	New knowledge could influence property owners to take action.
Comments:	

Bloomburg Thunderstorm Mitigation #1	Create and enforce a city ordinance requiring mobile home tie-downs
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Bloomburg
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	2 years
Effect on New Buildings	Could protect mobile homes from toppling in high winds
Effect on Existing Buildings	Could protect mobile homes from toppling in high winds
Comments:	

Bloomburg Thunderstorm Mitigation #2	Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Bloomburg
Estimated Cost	Low ($0k-$10K)
Responsible Agency	City of Bloomburg
Estimated Completion Time	5 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Winter Storms Mitigation Action #1	Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Low
Funding Source(s)	FEMA Grant
Estimated Cost	Medium ($0-$10k)
Responsible Agency	City of Bloomburg/FEMA
Estimated Completion Time	8 + years
Effect on New Buildings	Could provide New Buildings with needed electricity or water
Effect on Existing Buildings	Could provide Existing Buildings with needed electricity or water
Comments:	

Bloomburg Winter Storms Mitigation Action #2	Develop and maintain adequate road and debris clearing capabilities.
Mitigation Goal/Objective	**Goal #1: Protect Life and Property**
Priority	Low
Funding Source(s)	Grant money, City of Bloomburg
Estimated Cost	High ($25k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	8+ years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA Grant, City of Bloomburg
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	5 years
Effect on New Buildings	Protects critical facilities
Effect on Existing Buildings	Protects critical facilities
Comments:	

Bloomburg Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Bloomburg, Volunteer
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Bloomburg Drought Mitigation Action #1	Conduct Xeriscaping and water conservation workshops for the county.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Bloomburg, State of Texas
Estimated Cost	($0-$10k)
Responsible Agency	Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Drought Mitigation Action #2	Enforce water rationing during severe droughts
Mitigation Goal/Objective	*Goal #1 Protect Life and Property* **Goal #3 Natural Systems**
Priority	High
Funding Source(s)	City of Bloomburg
Estimated Cost	Low ($0-$10k)
Responsible Agency	City police and public works
Estimated Completion Time	3 years (or when drought occurs)
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Extreme Heat Mitigation Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* **Goal #4: Partnerships and Implementation**
Priority	High
Funding Source(s)	Local Contributors, Donations
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Extreme Heat Mitigation Action #2	Establish cooling centers in public buildings and churches that can provide daytime shelter for at risk populations in the community.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	Donations, Civic Groups, Grant Money, City of Bloomburg
Estimated Cost	Low ($0-$10)
Responsible Agency	City of Bloomburg
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Bloomburg Wildfires Mitigation Action #1	Implement a vegetation management program to reduce the danger of wildfire reaching dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Bloomburg
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg, TFS,VFD
Estimated Completion Time	3 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

Bloomburg Wildfires Mitigation Action #2	Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #3: Natural Systems** **Goal #4: Partnerships and Implementation**
Priority	Medium
Funding Source(s)	City of Bloomburg, Grant Money
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Bloomburg with community and county assistance
Estimated Completion Time	4 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

DOMINO

NOTE: ***All Bloomburg projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Domino Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Domino Flood Mitigation Action #2	Participate in the National Flood Insurance Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Domino, FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino
Estimated Completion Time	3 years (on going from time of implementation)
Effect on New Buildings	Protecting New Buildings from financial loss due to flooding
Effect on Existing Buildings	Protecting Existing Building from financial loss due to flooding
Comments:	

Domino Tornado Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside of buildings.

Domino Tornado Mitigation Action #2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Domino
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	New knowledge could influence property owners to take action.
Effect on Existing Buildings	New knowledge could influence property owners to take action
Comments:	

Domino Thunderstorms Mitigation Action #1	Provide a community awareness campaign concerning the risks and consequences of thunderstorm winds. By educating the public on High Winds loss of life and property may be mitigated as they take steps to secure their property and respond to warnings
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Domino
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	New knowledge could influence property owners to take action
Effect on Existing Buildings	New knowledge could influence property owners to take action
Comments:	

Domino Thunderstorms Mitigation Action #2	Create and enforce city ordinance requiring approved mobile home tie downs.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Low
Funding Source(s)	FEMA, City of Domino
Estimated Cost	High ($25,000 +)
Responsible Agency	City of Domino
Estimated Completion Time	8+ years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Domino Winter Storms Mitigation Action #1	Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall causing injury or property damage.*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Domino
Estimated Cost	Medium ($0-$25k)
Responsible Agency	City of Domino working with utility companies, county and state
Estimated Completion Time	4 years (seasonal and ongoing after implementation)
Effect on New Buildings	Reduce the likelihood of damage from limbs and trees
Effect on Existing Buildings	Reduce the likelihood of damage from limbs and trees
Comments:	

Domino Winter Storms Mitigation Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High (1-3 years)
Funding Source(s)	FEMA Grant, City of Domino
Estimated Cost	Medium ($10,000-$25,000)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Domino Hail Mitigation Action #1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Domino
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Domino Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Domino Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Domino
Estimated Cost	Low ($0-$10,000)
Responsible Agency	City of Domino
Estimated Completion Time	2 years
Effect on New Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Effect on Existing Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Comments:	

Domino Drought Mitigation Action #1	Replace municipal appliances or equipment with water-saving models or parts.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	City of Domino, Grants
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino
Estimated Completion Time	2 years (ongoing after implementation)
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Domino Drought Mitigation Action #2	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Domino, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	City of Domino, Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Domino Extreme Heat #1	Provide Cooling centers and publicize their location for at risk populations
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Domino
Estimated Cost	Low ($0-!0,000)
Responsible Agency	City of Domino, EMC, Fire dept.
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Domino Extreme Heat Mitigation Action #2	Conduct a workshop for residents about how to protect themselves from Summer Heat*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Domino, county
Estimated Cost	Low ($0-10k)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Domino Wildfires Mitigation Action #1	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Domino VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Domino VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Trash burning is the #1 cause of fires in Cass County

Domino Wildfires Mitigation Action #2	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	City of Domino, Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	City of Domino Fire Dept., TFS
Estimated Completion Time	3 years
Effect on New Buildings	Protect homes and businesses from encroaching wildfires
Effect on Existing Buildings	Protect homes and businesses from encroaching wildfires
Comments:	

DOUGLASSVILLE

NOTE: ***All Douglassville projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Douglassville Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Flood Mitigation Action #2	Participate in the National Flood Insurance Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Douglassville
Estimated Cost	Low (#0-$10k)
Responsible Agency	City of Douglassville, FEMA
Estimated Completion Time	3 years
Effect on New Buildings	Protect new building from flash flooding
Effect on Existing Buildings	Protect existing buildings from flash flooding
Comments:	

Douglassville Tornado Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside of buildings.

Douglassville Tornado Mitigation Action #2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Douglassville
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville
Estimated Completion Time	3 years
Effect on New Buildings	New knowledge could influence property owners to take action.
Effect on Existing Buildings	New knowledge could influence property owners to take action
Comments:	* Deferred from original plan

Douglassville Thunderstorm Mitigation #1	Create and enforce a city ordinance requiring mobile home tie-downs
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Douglassville
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville
Estimated Completion Time	2 years
Effect on New Buildings	Could protect mobile homes from toppling in high winds
Effect on Existing Buildings	Could protect mobile homes from toppling in high winds
Comments:	

Douglassville Thunderstorms Mitigation Action #2	Mitigate harmful effects from lightning strikes by installing lightning rods on the city's radio communications sites.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Douglassville, FEMA Grants,, State Funding
Estimated Cost	Low ($0-$!0K)
Responsible Agency	City of Douglassville
Estimated Completion Time	3 years
Effect on New Buildings	Protect radio communications in new buildings
Effect on Existing Buildings	Protect radio communications in existing buildings
Comments:	

Douglassville Winter Storms Mitigation Action #1	Provide and identify community shelters for the most vulnerable populations of low income elderly and children
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation* *Goal #5: Emergency Services*
Priority	Low
Funding Source(s)	City of Douglassville, FEMA Grants, State Funding
Estimated Cost	Medium ($10-25k)
Responsible Agency	City of Douglassville
Estimated Completion Time	8 + years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Winter Storms Mitigation Action #2	Conduct workshops regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops and/or information pamphlets.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Douglassville working with county EMC and VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	Douglassville VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Hail Mitigation Action #1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Douglassville
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Douglassville Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Douglassville Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Douglassville
Estimated Cost	Low ($0-$10,000)
Responsible Agency	City of Douglassville
Estimated Completion Time	2 years
Effect on New Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Effect on Existing Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Comments:	

Douglassville Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Douglassville, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	City of Douglassville Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Drought Mitigation Action #2	Install water saving appliances and devices for the city as old equipment wears
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	FEMA or other grant money, City of Douglassville
Estimated Cost	Low ($0-$10k)
Responsible Agency	Douglassville Public Works
Estimated Completion Time	2 years (on going after implementation)
Effect on New Buildings	Saves water
Effect on Existing Buildings	Saves water
Comments:	

Douglassville Extreme Heat Mitigation Action #1	Conduct a fan drive so the most vulnerable of the population can stay safe during extreme heat weather events.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* **Goal #4: Partnerships and Implementation**
Priority	High
Funding Source(s)	Local Contributors, Donations
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Extreme Heat Mitigation Action #2	Educate the residents about how to protect themselves from Summer Heat*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Douglassville, Cass County
Estimated Cost	Low ($0-10k)
Responsible Agency	City of Douglassville
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Douglassville Wildfires Mitigation Actions #1	Conduct a wildfire education program stressing the d
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Douglassville VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Trash burning is the #1 cause of fires in Cass County

Douglassville Wildfires Mitigation Action #2	Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #3: Natural Systems** **Goal #4: Partnerships and Implementation**
Priority	Medium
Funding Source(s)	City of Douglassville, Grant Money
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Douglassville with community and county assistance
Estimated Completion Time	4 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

HUGHES SPRINGS

NOTE: ***All Douglassville projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Hughes Springs Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Hughes Springs Flood Mitigation Action #2	Widen ditches to accommodate more flash flood waters
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low (#0-$10k)
Responsible Agency	City of Hughes Springs, state funding
Estimated Completion Time	7 years
Effect on New Buildings	Protect new building from flash flooding
Effect on Existing Buildings	Protect existing buildings from flash flooding
Comments:	

Hughes Springs Tornadoes Mitigation Action # 1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside of buildings.

Hughes Springs Tornadoes Mitigation Action # 2	Conduct a workshop regarding protecting life and property from Tornadoes*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	3 years
Effect on New Buildings	New knowledge could influence property owners to take action.
Effect on Existing Buildings	New knowledge could influence property owners to take action
Comments:	* Deferred from original plan

Hughes Springs Thunderstorm Mitigation Action #1	Create and enforce a city ordinance requiring tie downs for mobile homes
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	2 years
Effect on New Buildings	Could protect mobile homes from toppling in high winds
Effect on Existing Buildings	Could protect mobile homes from toppling in high winds
Comments:	

Hughes Springs Thunderstorm Mitigation Action #2	Purchase lightning prediction devices to be deployed around Parks and Schools. This would provide advance warning to those in the area.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA and other grant money
Estimated Cost	Medium
Responsible Agency	Hughes Springs
Estimated Completion Time	7 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Hughes Springs Winter Storms Mitigation Action #1	Organize a Community Emergency Response Team (CERT)
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #2: Public Awareness** **Goal #5: Emergency Services**
Priority	Medium
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low (0-$10,000)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	5 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Hughes Springs Winter Storms Mitigation Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages for critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High (1-3 years)
Funding Source(s)	FEMA, City of Hughes Springs
Estimated Cost	Medium ($10,000-$25,000)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Hughes Springs Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Hughes Springs
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Hughes Springs Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Hughes Springs Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low ($0-$10,000)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	2 years
Effect on New Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Effect on Existing Buildings	New knowledge could help citizens implement ways to protect roofs and surfaces of new structures
Comments:	

Hughes Springs Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Hughes Springs, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	City of Hughes Springs Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Hughes Springs Drought Mitigation Action #2	Establish water rationing protocol for times of intense drought
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Hughes Springs
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Hughes Springs
Estimated Completion Time	Three years if needed
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Hughes Springs Extreme Heat Mitigation Action #1	Convert community Centers and other public access buildings to cooling centers during times of extreme heat
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	Donations, Civic Groups, Grant Money, City of Hughes Springs
Estimated Cost	Low ($0-$10)
Responsible Agency	Hughes Springs
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Hughes Springs Extreme Heat Mitigation Action #2	Conduct fan drives for low-income and elderly who cannot afford air conditioning*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* **Goal #4: Partnerships and Implementation**
Priority	High
Funding Source(s)	Local Contributors, Donations
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Wildfires Mitigation Action #1	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Hughes Springs, City Fire Dept.
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs Fire Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Careless trash burning is the #1 cause of fires in Cass County

Hughes Springs Wildfire Mitigation Action #2	Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #3: Natural Systems** **Goal #4: Partnerships and Implementation**
Priority	Medium
Funding Source(s)	City of Hughes Springs, Grant Money
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Hughes Springs with community and county assistance
Estimated Completion Time	4 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

LINDEN

NOTE: ***All Linden projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Linden Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. , County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Linden
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Linden Flood Mitigation Action #2	Widen ditches to increase volume capacity of flash flood waters
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Linden
Estimated Cost	Low (#0-$10k)
Responsible Agency	City of Linden, state funding
Estimated Completion Time	7 years
Effect on New Buildings	Protect new building from flash flooding
Effect on Existing Buildings	Protect existing buildings from flash flooding
Comments:	

Linden Tornado Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside.

Linden Tornado Mitigation Action #2	Develop a public education program that will provide the public with understanding of their risk to Tornado events and the steps to take to protect themselves, their family, and their property
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Linden
Estimated Cost	Low (0-$10k)
Responsible Agency	City of Linden
Estimated Completion Time	6 years
Effect on New Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Effect on Existing Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Comments:	

Linden Thunderstorms Mitigation Action #1	Install Lightning Grade Surge Protectors for city computer system
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Linden
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Linden
Estimated Completion Time	2 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Thunderstorms Mitigation Action #2	Install lightning prediction sensors in school yards and parks
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA and other grant money
Estimated Cost	Medium ($10-$25k)
Responsible Agency	Linden
Estimated Completion Time	7 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Winter Storms Mitigation Action #1	Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops or information pamphlets.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Linder working with county EMC and VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	Linden VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Winter Storms Mitigation Action #2	Organize a Community Emergency Response Team (CERT)
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #2: Public Awareness** **Goal #5: Emergency Services**
Priority	Medium
Funding Source(s)	City of Linden
Estimated Cost	Low (0-$10,000)
Responsible Agency	City of Linden
Estimated Completion Time	5 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Linden Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Linden
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Linden Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Linden Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Linden
Estimated Cost	Low ($0-$10k)
Responsible Agency	City or County EMC
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Linden Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Linden, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	City of Linden, Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Drought Mitigation Action #2	Establish and enforce water rationing protocol for times of intense drought
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Linden
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Linden
Estimated Completion Time	Three years if needed
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Extreme Heat Mitigation Action#1	Establish and Identify public cooling centers.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Linden
Estimated Cost	Low ($0-!0,000)
Responsible Agency	City of Linden, EMC, Fire dept.
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable

Comments:	

Extreme Heat Mitigation Action #2	Conduct fan drives for low-income and elderly who cannot afford air conditioning*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Local Contributors, Donations
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Linden
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Linden Wildfires Mitigation Action #1	Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.
Mitigation Goal/Objective	**Goal #1: Protect Life and Property** **Goal #3: Natural Systems** **Goal #4: Partnerships and Implementation**
Priority	Medium
Funding Source(s)	City of Linden, Grant Money
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Linden with community and county assistance
Estimated Completion Time	4 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

Linden Wildfires Mitigation Action # 2	Implement a vegetation management program to reduce the danger of wildfire reaching dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Linden
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Linden TFS,VFD
Estimated Completion Time	3 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

MARIETTA

NOTE: ***All Marietta projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Marietta Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. , County
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Marietta
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Marietta Flood Mitigation Action #2	Participate in the National Flood Insurance Program.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Marietta, FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Marietta
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Tornadoes Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside.

Marietta Tornadoes Mitigation Action #2	Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Marietta
Estimated Cost	Low ($0k-$10K)
Responsible Agency	City of Marietta
Estimated Completion Time	5 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Thunderstorms Mitigation Action #1	Maintain "Storm Ready Community" Status
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	City of Marietta
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Marietta
Estimated Completion Time	5 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Thunderstorms Mitigation Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages at critical facilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High (1-3 years)
Funding Source(s)	FEMA, City of Marietta
Estimated Cost	Medium ($10,000-$25,000)
Responsible Agency	City of Marietta
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Marietta Winter Storms Mitigation Action #1	Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms causing dangers to life and property*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	City of Marietta
Estimated Cost	Medium ($0-$25k)
Responsible Agency	City of Marietta
Estimated Completion Time	4 years (seasonal and ongoing after implementation)
Effect on New Buildings	Reduce the likelihood of damage from limbs and trees
Effect on Existing Buildings	Reduce the likelihood of damage from limbs and trees
Comments:	

Marietta Winter Storms Mitigation Action #2	Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly ventilated heaters. This may be done by workshops or information pamphlets.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Marietta working with county EMC and VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	Marietta VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Hail Mitigation Action #1	Install hail resistant film on the windows of critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, City of Marietta
Estimated Cost	Low ($0-$10k)
Responsible Agency	Marietta Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Marietta Hail Mitigation Action #2.	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	***Goal #2: Public Awareness***
Priority	High
Funding Source(s)	City of Marietta
Estimated Cost	Low ($0-$10k)
Responsible Agency	City or County EMC
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Marietta Drought Mitigation Action #1	Conduct Xeriscaping and water conservation workshops for the county.*
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	City of Marietta, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	City of Marietta, Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Drought Mitigation Action #2	Create and enforce water rationing during severe drought
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Marietta
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Marietta
Estimated Completion Time	Three years if needed
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Extreme Heat Mitigation Action #1	Conduct a fan drive to supply fans for low income elderly**.**
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Local contributors, donations
Estimated Cost	Low ($0-$10K)
Responsible Agency	City of Marietta, local civic organizations
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	* Deferred from original plan

Marietta Extreme Heat Mitigation Action #2	Provide workshops on the dangers of extreme heat and how to prevent heat stroke
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	City of Marietta, Cass County
Estimated Cost	Low ($0-10k)
Responsible Agency	City of Marietta
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Marietta Wildfires Mitigation Action #1	Participate in the Community Wildfire Protection Plan, a collaborative approach to help protect life, property and natural resources through community-based planning.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	City of Marietta, Grant Money
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Marietta with community and county assistance
Estimated Completion Time	4 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

Marietta Wildfires Mitigation Action # 2	Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	City of Marietta
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Marietta TFS,VFD
Estimated Completion Time	3 years
Effect on New Buildings	Protect new building from wildfire/urban interface
Effect on Existing Buildings	Protect new building from wildfire/urban interface
Comments:	

QUEEN CITY

NOTE: ***All Marietta projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Queen City Flood Mitigation Action #1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. , County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Queen City Flood Mitigation Action #2	Clearly mark roads that are prone to wash out with "Caution Road May Flood" signs.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	State of Texas, City
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City, State Hwy. Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Tornadoes Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside.

Queen City Tornadoes Mitigation Action #2	Develop a public education program that will provide the public with understanding of their risk to Tornado events and the steps to take to protect themselves, their family, and their property
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	Queen City
Estimated Cost	Low (0-$10k)
Responsible Agency	Queen City
Estimated Completion Time	6 years
Effect on New Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Effect on Existing Buildings	Implementing ideas for the workshop on new building could save both lives and property.
Comments:	

Queen City Thunderstorms Mitigation Action #1	Require structures on temporary foundations to be securely anchored to permanent foundations
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	Queen City
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City
Estimated Completion Time	2 years
Effect on New Buildings	Could protect mobile homes from toppling in high winds
Effect on Existing Buildings	Could protect mobile homes from toppling in high winds
Comments:	

Queen City Thunderstorms Mitigation Action #2	Maintain "Storm Ready Community" Status
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	Queen City
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City
Estimated Completion Time	5 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Winter Storms Mitigation Action #1	Organize a Community Emergency Response Team (CERT
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation* *Goal #5: Emergency Services*
Priority	Medium
Funding Source(s)	Queen City, FEMA Grants, State Funding
Estimated Cost	Medium ($10-25k)
Responsible Agency	Queen City
Estimated Completion Time	6 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Winter Storms Mitigation Action #2	Provide and identify community shelters for the most vulnerable populations of low income elderly and children.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation* *Goal #5: Emergency Services*
Priority	Medium
Funding Source(s)	Queen City, FEMA Grants, State Funding
Estimated Cost	Medium ($10-25k)
Responsible Agency	Queen City
Estimated Completion Time	6 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA grant , Queen City
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City Public Works
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Queen City Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	Queen City, Volunteer
Estimated Cost	Low ($0-$10k)
Responsible Agency	Queen City
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Queen City Drought Mitigation Action #1	Conduct Xeriscaping and water conservation workshops for the county.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	Queen City, State of Texas
Estimated Cost	Low ($0-$10k
Responsible Agency	Queen City, Cass County Extension Agent
Estimated Completion Time	Five Years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Drought Mitigation Action #2	Enforce water rationing during severe drought
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	Queen City
Estimated Cost	Low ($0-$10k)
Responsible Agency	City police and public works
Estimated Completion Time	3 years (or when drought occurs)
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Extreme Heat Mitigation Action #1	Conduct a fan drive to supply fans for low income elderly**.**
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Local contributors, donations
Estimated Cost	Low ($0-$10K)
Responsible Agency	Queen City, local civic organizations
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	* Deferred from original plan

Queen City Extreme Heat Mitigation Action #2	Provide workshops on the dangers of extreme heat and how to prevent heat stroke
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	Queen City, Cass County
Estimated Cost	Low ($0-10k)
Responsible Agency	Queen City
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Queen City Wildfire Mitigation Action #1	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	Queen City, Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	Queen City VFD, TFS
Estimated Completion Time	3 years
Effect on New Buildings	Protect homes and businesses from encroaching wildfires
Effect on Existing Buildings	Protect homes and businesses from encroaching wildfires
Comments:	

Queen City Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	Queen City VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	City of Atlanta Fire Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Careless trash burning is the #1 cause of fires in Cass County

CASS COUNTY

NOTE: ***All Cass County projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.***

Cass County Flood Mitigation Action # 1	Participate in the Turn Around, Don't Drown Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	State Hwy. Dept. , County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	This will raise awareness of the dangers from flooded roads

Cass County Flood Mitigation Action #2	Place "Caution Road May Flood" road signs in areas that are prone to flood
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	State Hwy. Dept. ,Cass County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County, State Hwy. Dept.
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Tornadoes Mitigation Action #1	Participate in the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	Low ($0-$10k)
Responsible Agency	No cost to county or jurisdiction, cost would depend on participation by individuals
Estimated Completion Time	5 years
Effect on New Buildings	Placing safe rooms in new homes will save lives
Effect on Existing Buildings	Placing safe rooms in existing buildings will save lives
Comments:	Safe rooms can be places in existing buildings, new buildings or outside of buildings.

Cass County Tornadoes Mitigation Action #2	Participate in the CodeRED Weather alert system ***CodeRED Weather Warning*** delivers advanced *warning* of severe ***weather*** as soon as a bulletin is issued by the National *Weather* Service. The system delivers voice calls, text messages and emails to subscribed users within the direct path of the ***storm***.*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	Cass County
Estimated Completion Time	5 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Thunderstorms Mitigation Action #1	Require and enforce tie downs for mobile homes
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	Cass County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	2 years
Effect on New Buildings	Could protect mobile homes from toppling in high winds
Effect on Existing Buildings	Could protect mobile homes from toppling in high winds
Comments:	

Cass County Thunderstorm Mitigation Action #2	Install Lightning Grade Surge Protectors for city computer system
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	Cass County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	2 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Winter Storms Mitigation Action #1	Educate the public regarding the hazards of carbon monoxide asphyxiation from faulty of poorly
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High
Funding Source(s)	County EMC and VFD
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County VFD
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Winter Storms Mitigation Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages at critical facilities
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	High (1-3 years)
Funding Source(s)	FEMA Grant, Cass County
Estimated Cost	Medium ($10,000-$25,000)
Responsible Agency	City of Domino
Estimated Completion Time	3 years
Effect on New Buildings	Not applicable
Effect on Existing Buildings	Not applicable
Comments:	

Cass County Hail Mitigation Action # 1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	FEMA, Cass County
Estimated Cost	Low ($0-$10,000)
Responsible Agency	Cass County
Estimated Completion Time	4 years
Effect on New Buildings	Protect the integrity of window in new buildings.
Effect on Existing Buildings	Protect the integrity of windows in existing buildings.
Comments:	

Cass County Hail Mitigation Action #2	Educate residents on the likelihood of hailstorms and how to mitigate their home and property from hail damage.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	High
Funding Source(s)	Cass County
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	3 years
Effect on New Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Effect on Existing Buildings	Could give property owners tools to mitigate against adverse effects of hail.
Comments:	

Cass County Drought Mitigation Action #1	Conduct Xeriscaping and water conservation workshops for the county.
Mitigation Goal/Objective	*Goal #2: Public Awareness*
Priority	Medium
Funding Source(s)	Cass County Agriculture Extension Office
Estimated Cost	($0-$10,000)
Responsible Agency	Extension Office
Estimated Completion Time	5 years
Effect on New Buildings	Implement ways to protect foundations on new buildings.
Effect on Existing Buildings	Implement ways to protect foundations on existing buildings.
Comments:	

Cass County Drought Mitigation Action #2	Replace municipal appliances or equipment with water-saving models or parts.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	Cass County, Grants
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	2 years (ongoing after implementation)
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Extreme Heat Mitigation Action #1	Provide cooling centers and advertise their locations during extreme heat events.
Mitigation Goal/Objective	*Goal #1: Protect Life and Property*
Priority	Medium
Funding Source(s)	Cass County
Estimated Cost	Low ($0-!0,000)
Responsible Agency	Cass County, EMC, Fire dept.
Estimated Completion Time	4 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Extreme Heat Mitigation #2	Conduct fan drives for low-income and elderly who cannot afford air conditioning*
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #4: Partnerships and Implementation*
Priority	High
Funding Source(s)	Local Contributors, Donations
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	

Cass County Wildfire Mitigation Action #1	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #3: Natural Systems*
Priority	High
Funding Source(s)	Cass County
Estimated Cost	Medium ($10k-$25k)
Responsible Agency	Cass County, Rural Fire Dept., TFS
Estimated Completion Time	3 years
Effect on New Buildings	Protect homes and businesses from encroaching wildfires
Effect on Existing Buildings	Protect homes and businesses from encroaching wildfires
Comments:	

Cass County Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning
Mitigation Goal/Objective	*Goal #1: Protect Life and Property* *Goal #2: Public Awareness*
Priority	High
Funding Source(s)	Cass County, Rural VFD, TFS.
Estimated Cost	Low ($0-$10k)
Responsible Agency	Cass County
Estimated Completion Time	3 years
Effect on New Buildings	Not Applicable
Effect on Existing Buildings	Not Applicable
Comments:	Trash burning is the #1 cause of fires in Cass County

*** updated from original Cass County Hazard Mitigation Action Plan**

Method of Prioritization: The Cass County Commissioners and County Judge, the City staffs, and Hazard Mitigation Team members were involved in the selection of the above priority actions. Actions were prioritized using the STAPLE+E criteria, planning tool used to evaluate alternative actions. The actions do not adversely affect a particular segment of the population or cause relocation of lower income people. They provide long-term reduction of losses and have minimal secondary adverse impacts. They do not have adverse effects on the environment, and are consistent with the community's environmental goals, and have mitigation benefits while they are environmentally sound. The following table explains the STAPLE+E criteria.

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

SECTION IV
COMMITMENT, ADOPTION, IMPLEMENTATION, MAINTENANCE

PLAN MAINTENANCE

This section documents the formal process that Cass County will utilize to ensure that the mitigation action plan remains active. This includes a schedule for monitoring and evaluating and improving the Plan annually beginning at the time of FEMA's Final Approval and producing a plan revision every five years. The Cass County Judge and Emergency management Coordinator will be responsible for implementing the action items that affect Cass County. The City Managers and/or Mayors will be responsible for implementing action items that affect the Cities. The county will integrate public participation throughout the plan maintenance process. This section will also explain how Cass County government intends to incorporate the mitigation strategies outlined in the plan into existing mechanisms such as Capital Improvement Plans, and Building Codes. The County will have the opportunity to implement recommended mitigation actions items through existing programs and procedures by resolutions.

City Building Divisions are responsible for administering the building codes in local municipalities. After the adoption of the mitigation plan, they will work with the State Building Code Office to make sure that minimum standards are enforced. There is no Capital Improvement Plan in place. Cass County and the jurisdictions will incorporate the mitigation plan recommendations into their budgeting processes. The jurisdictions will incorporate the mitigation recommendations using the building codes through Ordinances. In addition, the Hazard Mitigation Team will work with appropriate county and state agencies to review, develop and ensure that building codes are adequate to mitigate or prevent damage by natural hazards.

Cass County and each participating jurisdiction will be responsible for implementing its own mitigation actions contained in Section IV. Each action has been assigned to a specific person or local government office that is responsible for implementing it. The Cass County and its jurisdictions have very lean budgets and staff. They rely on grants and federal funding for many of the improvements that are made within their borders. State law requires that the city council and the Commissioners' Court of Cass County approve changes to budgets, improvement plans and mitigation plans. The governing bodies of each participating jurisdiction have adopted the mitigation action plan for their jurisdictions.

Monitoring and Implementation

The Cass County Commissioners will be responsible for adopting the Cass County Mitigation Action Plan. (All jurisdictions must officially adopt and commit to implementation of the plan to be covered by the plan. This includes all participating cities/towns). This governing body has the authority to make public policy regarding natural hazards. The Cass Mitigation Plan will be submitted to the Texas Department of Emergency Management for review and upon their approval, TDEM will then submit the plan to the Federal Emergency Management Agency (FEMA) for review and final approval. The review will address the federal criteria

outlined in FEMA Interim Final Rule 44 CFR Part 201. Once accepted by FEMA, Cass County/City will formally adopt it and gain eligibility for Hazard Mitigation Grant Program funds.

The Cass County Judge or his designee will serve as the leader who will insure that the plans are being monitored, incorporated and revised. The county judge or his/her designee will communicate by telephone and e-mails to ensure that mitigation continues to be a working part of the county and city plans. Cass County and its jurisdictions will meet at a minimum of annually to review what progress has been made and to consider recommended changes. The County Judge or his designee will expect a report on the findings from each participant within one month after the review meeting. The county judge or his designee will have the authority to approve or disapprove of the actions within the plan.

A funding source has been listed for each identified action. This source may be used when the jurisdiction begins to seek funds to implement the actions. An implementation time period or specific implementation date also has been assigned to each action as an incentive for seeing the action through to completion and to gauge whether actions are timely implemented. Participating jurisdictions will integrate implementation of their mitigation action plans with other, existing planning mechanisms such as capital improvement plans, long range growth plans, master storm water and drainage plans, and regional planning efforts. Jurisdictions will ensure that the actions contained in the mitigation action plans are reflected in these other planning efforts on an annual basis. These other planning efforts will be used to advance the mitigation strategies of the jurisdictions.

Coordinating Committee

The Cass County Hazard Mitigation Committee will be responsible for coordinating implementation of the five year plan action items and undertaking the formal review process. The county formed a Hazard Mitigation Committee that consists of members from local agencies, organizations, and citizens.

Upon formal adoption of the plan, hazard mitigation team members from each participating jurisdiction will review all comprehensive land use plans, capital improvement plans, Annual Budget Reviews, Emergency Operations or Management Plans, transportation plans, and any building codes to guide and control development. The hazard mitigation team members will work to integrate the hazard mitigation strategies into these other plans and codes. Each jurisdiction will conduct annual reviews of their comprehensive and land use plans and policies and analyze the need for any amendments in light of the approved hazard mitigation plan. Participating jurisdictions will ensure that capital improvement planning in the future will also contribute to the goals of this hazard mitigation plan to reduce the long-term risk to like and property from all hazards. Within one year of formal adoption of the hazard mitigation plan, existing planning mechanisms will be reviewed by each jurisdiction.

The Cass County HMAP will be incorporated into a variety of new and existing planning mechanisms for Como, Cumby, Sulphur Springs Tira and the County government including: grant applications, human resource manuals, ordinances, building codes and budgets. Each

team member will communicate new ideas and issues found within the plan to the city boards. The county and its participating jurisdictions will consider how to best incorporate the plans together. This includes incorporating the mitigation plan into county and local comprehensive or capital improvement plans as they are developed.

Formal Review Process

To prevent issues regarding meeting the goals of The Cass County Hazard Mitigation Action Plan it is agreed that the county and participating jurisdictions will evaluate the plan on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process will include a definite schedule and timeline, and will identify the local agencies and organizations participating in plan evaluation. The first meeting will occur one year after the update approval date and a minimum of one meeting will occur annually. The County Judge **or his/her designated appointee** will be responsible for contacting the Hazard Mitigation Committee members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the plan.

The committee will review the hazards, goals and actions items to determine their relevance to changing situations in the county, as well as changes in State or Federal policy, to ensure they are addressing current and expected conditions. They will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. This plan can and will pave the way for other plans, codes and programs. A written record of the annual meeting, along with any project reports, will be accomplished and kept on file in the county office. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer.

Copies of the Plan will be kept at the county courthouse and all city halls. The existence and location of these copies will be publicized in the appropriate local papers. The plan includes the address and the phone number of the county department responsible for keeping track of public comments on the Plan.

Cass County is committed to supporting the cities, communities and other jurisdictions in the planning area as they implement their mitigation plans. Cass County will review and revise as needed, the long-range goals and objectives in its strategic plan and budgets to ensure that they are consistent with this mitigation action plan Cass County will work with participating jurisdictions to advance the goals of the is hazard mitigation plan through its routine, ongoing, long-range planning, budgeting and work processes.

A public meeting will be held after each annual evaluation **or when deemed necessary by the Hazard Mitigation Committee (or county judge).** The meetings will provide the public an opportunity for which they can express its concerns and opinions about the Plan. Notification will be posted at the courthouse and in the newspaper and on the website prior to these meetings.

Cass County HMAP Orientation Meeting
Cass County Courthouse
January 23, 2015

Name	Representing	Address	E-Mail	Phone
Don Shipp	ATCOG	4808 Elizabeth, Texarkana, Tx	dShipp@ATCOG.org	903-255-3535
Becky Williams	Cass County	604 St. Hwy 8 N, Linden, TX	cassecojudge@gmail.com	903-756-5181
Vicki Williamson	ATCOG			

ATTENDANCE ROSTER
Kick-Off Team Meeting
CASS COUNTY
HAZARD MITIGATION PLAN-5 Year Update
Thursday, February 12, 2015
2:00 pm

NAME	REPRESENTING
Harold Martin	Mayor Queen City
Robin Betts	COA
Becky Wilbanks	Cass County Judge
Alfred E Point	Douglassville VFD & FR
Jay Cates	Hughes Springs
Marvin Campbell	City of Domino, TX.
Carol Y Salley	City of Bloomburg
[illegible]	ATCOG
Vickie Williamson	ATCOG

ATTENDANCE ROSTER
Team Meeting, Public Comment, Stakeholder
CASS COUNTY
HAZARD MITIGATION PLAN-5 Year Update
Thursday, April 16, 2015
2:00 pm

NAME	REPRESENTING
Lee McNeely	TFS
LARRY BOTTS	MC OMC / NASCOS VFD
ROBERT W. MCGEE	City of Queen City
HAROLD MARTIN	City of Queen City Mayor
Nelson Gagne	Victim Relief Ministries
Robin Betts	COA / County
Jay Cates	Hughes Springs
Sharon Brown	Linden
Richie Williamson	ATCOG

APPENDIX

IMPACT OF EACH HAZARD ON JURISDICTIONS
Table 2.30

HAZARD: Flood				
JURSIDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Damage from previous floods is not available. 98.62% chance of flood in any year. 13,890 housing units; $994,003,700 appraised value of all property available for county taxation; Moderate Impact	Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers .3% of total acreage. Population is 5,745; 2,596 housing units; $186 million taxable value of all property; Low Impact	Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers 7% of total acreage. Population is 2,256; 1,033 housing units; $45 million taxable value of all property; Low Impact	Damage from previous floods not available. No record of repetitive flood losses. 100-year flood plain covers 12% of total acreage. Population is 1,856; 782 housing units; $31 million taxable value of all property; Low Impact	Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers 2.5% of total acreage. Population is 1,613; 659 housing units; $29 million taxable value of all property; Low Impact
Avinger	**Bloomburg**	**Douglasville**	**Marietta**	**Domino**
Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers 7.1% of total acreage. Population is 464; 254 housing units; $7 million taxable value of all property; Low Impact	Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers 7% of total acreage. Population is 375; 180 housing units; $6 million taxable value of all property; Low Impact	Douglassville is not in a flood plain.	Marietta is not in a flood plain.	Damage from previous floods not available. No record of repetitive flood losses. 100-Year flood plain covers 3% of total acreage. Population is 52; 24 housing units; $4 million taxable value of all property; Low Impact
HAZARD: Tornado				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Damage from previous tornadoes is $1,345,000.	Damage from previous tornadoes not available. As	Damage from previous tornadoes is $200,000; 114%	Damage from previous tornadoes is $5,000; 67%	Damage from previous tornadoes not available. Due to low population

82% chance of tornado in any year with a potential average damage of $31,279; Moderate Impact	with county, 75% chance of tornado in any year. Due to population & # of houses, Moderate Impact	chance of tornado in any year with a potential average damage of $50,000; Moderate Impact.	chance of tornado in any year with a potential average damage of $1,250; Low Impact	and small number of houses, Low Impact.
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	Domino
Damage from previous tornadoes not available. Due to low population and small number of houses, Low Impact.	Damage from previous tornadoes not available. Due to low population and small number of houses, Low Impact.	Damage from previous tornadoes not available. Due to low population and small number of houses, Low Impact.	Damage from previous is $250,000; 100% chance of tornado in any year with a potential average damage of $125,000. Due to low population and small number of houses, Low Impact.	Damage from previous tornadoes not available. Due to low population and small number of houses, Low Impact
HAZARD: Winter Storms				
		JURISDICTIONS		
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Damage from previous winter storms is $204.5 million; 67% chance of winter storm in any year with a potential average damage of $25,562,500; High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact	Damage from previous winter storms not available. As with county, 67% chance of winter storm in any year with a High Impact

HAZARD: Thunder Storms				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Reported Damage from previous thunderstorms is $1.035 million; 350% chance of thunderstorm in any year with a potential average damage of $6,429; Low Impact	Reported damage from previous thunderstorms is $130,000; 104% chance of thunderstorm in any year with a potential average damage of $6,500; Low Impact	Damage from previous thunderstorms is $259,000; 193% chance of thunderstorm in any year with a potential average damage of $9,962; Low Impact	Damage from previous thunderstorm is $515,000; 122% chance of thunderstorm in any year with a potential average damage of $34,334; Low Impact	Damage from previous thunderstorms is $5,000; 36% chance of thunderstorm in any year with a potential average damage of $1,250; Low Impact
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
Damage from previous thunderstorms is $70,000; 100 % chance of thunderstorm in any year with a potential average damage of $11,667; Low Impact	Damage from previous thunderstorms is $15,000; 82% chance of thunderstorm in any year with a potential average damage of $1,500; Low Impact	Damage from previous thunderstorms not available.	Damage from previous thunderstorms is $5,000; 89% chance of thunderstorm in any year with a potential average damage of $2,500; Low Impact	Damage from previous thunderstorms not available.
HAZARD: Hail Storm				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Damage from previous hailstorms not available. Of 191 storms reported, 105 have occurred in County. 313% chance of hailstorm in any year. Medium Impact	Damage from previous hailstorms not available. Of 191 storms reported, 4 have occurred in Atlanta. 201% chance of hailstorm in any year. Medium Impact	Damage from previous hailstorms not available. Of 191 storms reported, 20 have occurred in Linden. 154% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 8 reported for Hughes Springs. 85% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 4 reported in Queen City. 40% chance of hailstorm in any year. Low Impact

Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
Damage from previous hailstorms not available. Of 191 storms reported, 1 was reported in Avinger. .5% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 1 was reported in Bloomburg. .5% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 10 have occurred in Douglassville. 82% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 1 has occurred in Marietta. .5% chance of hailstorm in any year. Low Impact	Damage from previous hailstorms not available. Of 191 storms reported, 4 have occurred in Domino. 44% chance of hailstorm in any year. Low Impact
HAZARD: Wind Storm				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Reported Damage from previous thunderstorms and windstorms is $1.035 million; 350% chance of thunderstorm or windstorm in any year with a potential average damage of $6,429; Low Impact	Reported damage from previous thunderstorms and windstorms is $130,000; 104% chance of thunderstorm or windstorm in any year with a potential average damage of $6,500; Low Impact	Damage from previous thunderstorms and windstorms is $259,000; 193% chance of thunderstorm or windstorm in any year with a potential average damage of $9,962; Low Impact	Damage from previous thunderstorms and windstorms is $515,000; 122% chance of thunderstorm or windstorm in any year with a potential average damage of $34,334; Low Impact	Damage from previous thunderstorms and windstorms is $5,000; 36% chance of thunderstorm or windstorm in any year with a potential average damage of $1,250; Low Impact
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
Damage from previous thunderstorms and windstorms is $70,000; 100 % chance of thunderstorm or windstorm in any year with a potential average damage of $11,667; Low Impact	Damage from previous thunderstorms and windstorms is $15,000; 82% chance of thunderstorm or windstorm in any year with a potential average damage of $1,500; Low Impact	Damage from previous thunderstorms not available.	Damage from previous thunderstorms and windstorms is $5,000; 89% chance of thunderstorm or windstorm in any year with a potential average damage of $2,500; Low Impact	Damage from previous thunderstorms not available.

HAZARD: Drought				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Cass County cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Atlanta cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Linden cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Hughes Springs cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Queen City cannot be determined because of insufficient data; High Impact
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Avinger cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Bloomburg cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Douglassville cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Marietta cannot be determined because of insufficient data; High Impact	Damage from previous droughts for 21 counties, including Cass, is $154,000,000; 48% chance of drought in any year; damage for Domino cannot be determined because of insufficient data; High Impact
HAZARD: Extreme Heat				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available.	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available.	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available; Low Impact

Moderate Impact	Moderate Impact	Impact		
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact	569 days of extreme heat recorded in the last 8 years. 104% chance of extreme heat in any year; no $ amount is available. Low Impact
HAZARD: Hazardous Materials Spills				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
No previous events	No previous events	No previous events	No previous events	No previous events
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
No Previous events	No previous events	No previous events	No previous events	No previous events
HAZARD: Earthquake				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
No previous events	No previous events	No previous events	No previous events	No previous events
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
No Previous events	No previous events	No previous events	No previous events	No previous events
HAZARD: Dam Failure				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
No previous events	No previous events	No previous events	No previous events	No previous events
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
No Previous events	No previous events	No previous events	No previous events	No previous events
HAZARD: Wildfire				
JURISDICTIONS				
Cass County	**Atlanta**	**Linden**	**Hughes Springs**	**Queen City**
No Previous Sig. Events	No previous sig. events	No previous significant events	No previous significant events	No previous significant events
Avinger	**Bloomburg**	**Douglassville**	**Marietta**	**Domino**
No Previous Sig. events	No previous sig. events	No previous significant events	No previous significant events	No previous significant events

MMON AND UNIQUE RISKS TO EACH JURSIDICTION
TABLE 2.31

	JURISICTIONS							
HAZARDS	CASS COUNTY	ATLANTA	LINDEN	HUGHES SPRINGS	QUEEN CITY	AVINGER	BLOOM-BURG	DOUGLASS-VILLE
FLOOD	X	X	X	X	X	X	X	
TORNADO	X	X	X	X	X	X	X	X
WINTER STORMS	X	X	X	X	X	X	X	X
THUNDER STORM	X	X	X	X	X	X	X	X
HAIL STORM	X	X	X	X	X	X	X	X
WIND STORM	X	X	X	X	X	X	X	X
DROUGHT	X	X	X	X	X	X	X	X
EXTREME HEAT	X	X	X	X	X	X	X	X
HAZARDOUS MATERIALS SPILLS								
EARTHQUAKE								
DAM FAILURE								
WILDFIRE								

X = Common to the jurisdiction. Blank Space = Hazard has not occurred in that jurisdiction Worksheet #3a

Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*
Jurisdiction: Cass County, Census Tract Sector 1

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	2,739	23	975,097,000	196,626,000	20	30,438	6,290	21
Commercial	125	8	6	114,860,000	6,908,000	6	30,438	6,290	21
Industrial	29	1	3	33,064,000	1,566,000	5	30,438	6,290	21
Agricultural	6	1	17	858,000	93,000	11	30,438	6,290	21
Religious/ Non-profit	14	2	14	13,918,000	1,621,000	12	30,438	6,290	21
Government	2	1	50	4,100,000	765,000	19	30,438	6,290	21
Education	10	1	10	13,736,000	1,553,000	11	30,438	6,290	21
Utilities	12,203.64 kms	1,927.1 kms	16	1,155,169,000	*NA	*NA	30,438	6,290	21
Total	****12,256**	****2,753**	****22**	****1,155,633,000**	****209,132,000**	****18**	30,438	6,290	21

*NA – Not Available Source: HAZUS
**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for		X

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 2

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	1,420	12	975,097,000	100,620,000	10	30,438	2,839	9
Commercial	125	4	3	114,860,000	4,696,000	4	30,438	2,839	9
Industrial	29	1	3	33,064,000	652,000	2	30,438	2,839	9
Agricultural	6	0	0	858,000	44,000	5	30,438	2,839	9
Religious/ Non-profit	14	0	0	13,918,000	0	0	30,438	2,839	9
Government	2	0	0	4,100,000	338,000	8	30,438	2,839	9
Education	10	0	0	13,736,000	319,000	2	30,438	2,839	9
Utilities	12,203.64 kms	1,808.02 kms	15	1.155,169,000	*NA	*NA	30,438	2,839	9
Total	**12,256	**1,425	**12	**1,155,633,000	**106,669,000	**9	30,438	2,839	9

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data. Y

1. Do you know where your greatest damages may occur in your hazard areas? X ____
2. Do you know whether your critical facilities will be operational after a hazard event? X ____
3. Is there enough data to determine which assets are subject to the greatest potential damages? X ____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? X ____
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? X ____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? ____ X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? ____ X

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 3

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	668	6	975,097,000	61,534,000	6	30,438	1,764	6
Commercial	125	13	10	114,860,000	9,379,000	8	30,438	1,764	6
Industrial	29	6	21	33,064,000	10,666,000	32	30,438	1,764	6
Agricultural	6	1	17	858,000	95,000	11	30,438	1,764	6
Religious/ Non-profit	14	2	14	13,918,000	1,995,000	14	30,438	1,764	6
Government	2	0	0	4,100,000	208,000	5	30,438	1,764	6
Education	10	2	20	13,736,000	3,005,000	22	30,438	1,764	6
Utilities	12,203.64 kms	138.91 kms	1	1,155,169,000	*NA	*NA	30,438	1,764	6
Total	****12,256**	****692**	**6**	****1,155,633,000**	****86,982,000**	****8**	30,438	1,764	6

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 4

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	2,170	18	975,097,000	204,513,000	21	30,438	5,518	18
Commercial	125	60	48	114,860,000	54,691,000	48	30,438	5,518	18
Industrial	29	7	24	33,064,000	6,619,000	20	30,438	5,518	18
Agricultural	6	2	33	858,000	271,000	32	30,438	5,518	18
Religious/ Non-profit	14	5	36	13,918,000	5,475,000	39	30,438	5,518	18
Government	2	1	50	4,100,000	1,171,000	29	30,438	5,518	18
Education	10	2	20	13,736,000	2,479,000	18	30,438	5,518	18
Utilities	12,203.64 kms	317.87 kms	3	1,155,169,000	*NA	*NA	30,438	5,518	18
Total	****12,256**	****2,247**	****18**	****1,155,633,000**	****275,219,000**	****24**	30,438	5,518	18

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 5

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	602	5	975,097,000	40,867,000	4	30,438	2,859	9
Commercial	125	1	.8	114,860,000	860,000	.7	30,438	2,859	9
Industrial	29	2	7	33,064,000	1,299,000	4	30,438	2,859	9
Agricultural	6	1	17	858,000	90,000	10	30,438	2,859	9
Religious/ Non-profit	14	1	7	13,918,000	713,000	5	30,438	2,859	9
Government	2	0	0	4,100,000	158,000	4	30,438	2,859	9
Education	10	1	10	13,736,000	751,000	5	30,438	2,859	9
Utilities	12,203.64 kms	807.48 kms	72	1,155,169,000	*NA	*NA	30,438	2,859	9
Total	**12,256	**608	5	**1,155,633,000	**44,738,000	**4	30,438	2,859	9

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 6

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	2,521	21	975,097,000	201,111,000	21	30,438	6,009	20
Commercial	125	14	11	114,860,000	17,018,000	15	30,438	6,009	20
Industrial	29	3	10	33,064,000	2,589,000	8	30,438	6,009	20
Agricultural	6	0	0	858,000	76,000	9	30,438	6,009	20
Religious/ Non-profit	14	2	14	13,918,000	1,650,000	12	30,438	6,009	20
Government	2	0	0	4,100,000	897,000	22	30,438	6,009	20
Education	10	1	10	13,736,000	1,697,000	12	30,438	6,009	20
Utilities	12,203.64 kms	2,652.71kms	22	1,155,169,000	*NA	*NA	30,438	6,009	20
Total	**12,256	**2,541	**21	**1,155,633,000	**225,038,000	**19	30,438	6,009	20

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Worksheet #3a Inventory Assets step 3

Date: June, 2004 *What will be affected by the hazard event?*

Jurisdiction: Cass County, Census Tract Sector 7

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard:Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfires

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	$ in Community Or State	$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	12,070	1,950	16	975,097,000	169,826,000	17	30,438	5,159	17
Commercial	125	25	20	114,860,000	21,308,000	19	30,438	5,159	17
Industrial	29	9	31	33,064,000	9,673,000	29	30,438	5,159	17
Agricultural	6	1	17	858,000	189,000	22	30,438	5,159	17
Religious/ Non-profit	14	2	14	13,918,000	2,464,000	18	30,438	5,159	17
Government	2	0	0	4,100,000	563,000	14	30,438	5,159	17
Education	10	3	30	13,736,000	3,932,000	29	30,438	5,159	17
Utilities	12.203.64 kms	1,277.12 kms	10	1,155,169,000	*NA	*NA	30,438	5,159	17
Total	**12,256	**1,990	**16	**1,155,633,000	207,955,000	**18	30,438	5,159	17

*NA – Not Available Source: HAZUS

**-Excluding Utilities

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Worksheet #3b **InventoryAssets** **step 3**

Date: June, 2004 *What will be affected by the hazard event?*

Task C. Compile a detailed inventory of what can be damaged by a hazard event.

Inventory the assets (critical facilities, businesses, historic, cultural, and natural resource areas, and areas of special consideration), that can be damaged by a hazard event.

Hazard Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Floods, Wildfires

Name or Description of Asset	Sources of Information	Critical Facility ✓	Vulnerable Populations ✓	Economic Assets ✓	Special Considerations ✓	Historic/Other Considerations ✓	Size of Building (sq ft)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($ per day)	Occupancy or Capacity (#)	Other Hazard Specific Information
Courthouse	Tax Roles	X				X	NA	$975,650	NA	NA	NA	NA	NA
Sheriff's Office	Tax Roles	X					NA	$2,248,060	NA	NA	NA	NA	NA
County Building	Tax Roles	X					NA	$106,830	NA	NA	NA	NA	NA
Tax Office	Tax Roles	X		X			NA	$48,600	NA	NA	NA	NA	NA
Criminal Justice Bldg.	Tax Roles	X					NA	$609,090	NA	NA	NA	NA	NA
Atlanta													
City Hall	Tax Roles	X					NA	$728,970	NA	NA	NA	NA	NA
Sewerage Plant	Tax Roles	X					NA	$33,780	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	$166,860	NA	NA	NA	NA	NA
Linden													
City Hall	Tax Roles	X					NA	$33,750	NA	NA	NA	NA	NA
Maintenance Bldg.	Tax Roles	X					NA	$2,250	NA	NA	NA	NA	NA
Police Dept.	Tax Roles	X					NA	$6,380	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	$75,660	NA	NA	NA	NA	NA

Hughes Springs													
City Hall	Tax Roles	X					NA	$62,410	$50,000	NA	NA	NA	NA
Maintenance	Tax Roles	X					NA	$24,900	NA	NA	NA	NA	NA
Fire Station	Tax Roles	X					NA	$68,750	NA	NA	NA	NA	NA
Queen City													
City Hall	Tax Roles	X					NA	$40,380	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	$5,000	NA	NA	NA	NA	NA
Avinger													
City Hall	Tax Roles	X					NA	$39,750	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	$23,900	NA	NA	NA	NA	NA
Bloomburg													
City Hall	Tax Roles	X					NA	$37,720	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	$11,860	NA	NA	NA	NA	NA
Domino													
City Hall	Tax Roles	X					NA	$129,210	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	$12,400	NA	NA	NA	NA	NA

NA—Not Available

METHODOLOGY: Methodology used to determine the potential dollar loss estimates includes information from 1990 Hazus, 2000 Census data, insurance policies, and data from the County Tax Assessor's Office.

IDENTIFYING ASSETS
ESTIMATING POTENTIAL LOSSES

Tables 2.30 and 2.31 analyze the development trends in Cass County. U.S. Census data shows that there has been practically no increase in population from 1990 to 2000 and practically no new construction from 1990 to 2000. The overall population for Cass County increased by 456, from 29,982 in 1990 to 30,438 in 2000. The employed civilian population age 16 and over for Cass County was 22,757 in 1990, and 23,727 in 2000, an increase of 970 employed persons. Projections from the Texas State Data Center and Office of the State Demographer show the population estimates of Cass County as of July 1, 2002, decreasing to 30,280, and increasing to 30,348 by January 1, 2003. Using the scenario that assumes rates of net migration one-half of those of the 1990's, the Data Center and State Demographer project the population in 2005 as 30,232; 30,235 in 1020; 30,184 in 2015; and 29,950 in 2020. With this downward trend in development in Cass County, there is very little increase in the vulnerability for each jurisdiction.

The only future housing development reported for Cass County is Silo Springs, a 21-lot subdivision in Queen City. See Figures 2.14 and 2.15.

Hughes Springs is in the process of adopting a code for abandoned structures. Abandoned structures are covered under the Nuisance Ordinance 03142002B in Queen City. Atlanta has a condemnation ordinance--# 2001-3.

Any future new construction in Atlanta, Queen City, and Hughes Springs will be required to adhere to the International Building Code. New construction in Bloomburg will be required to the Southern Building Codes. The rest of the County has no adopted building codes.

Table 2.32
Population Trends

JURISDICTION	1990	2000
Atlanta	6,118	5,745
Avinger	478	464
Bloomburg	376	375
Domino	101	52
Hughes Springs	1,938	1,856
Linden	2,375	2,256
Queen City	1,748	1,613
Douglassville	192	175
Marietta	161	112
Cass County	29,982	30,438

Source: U. S. Census Data

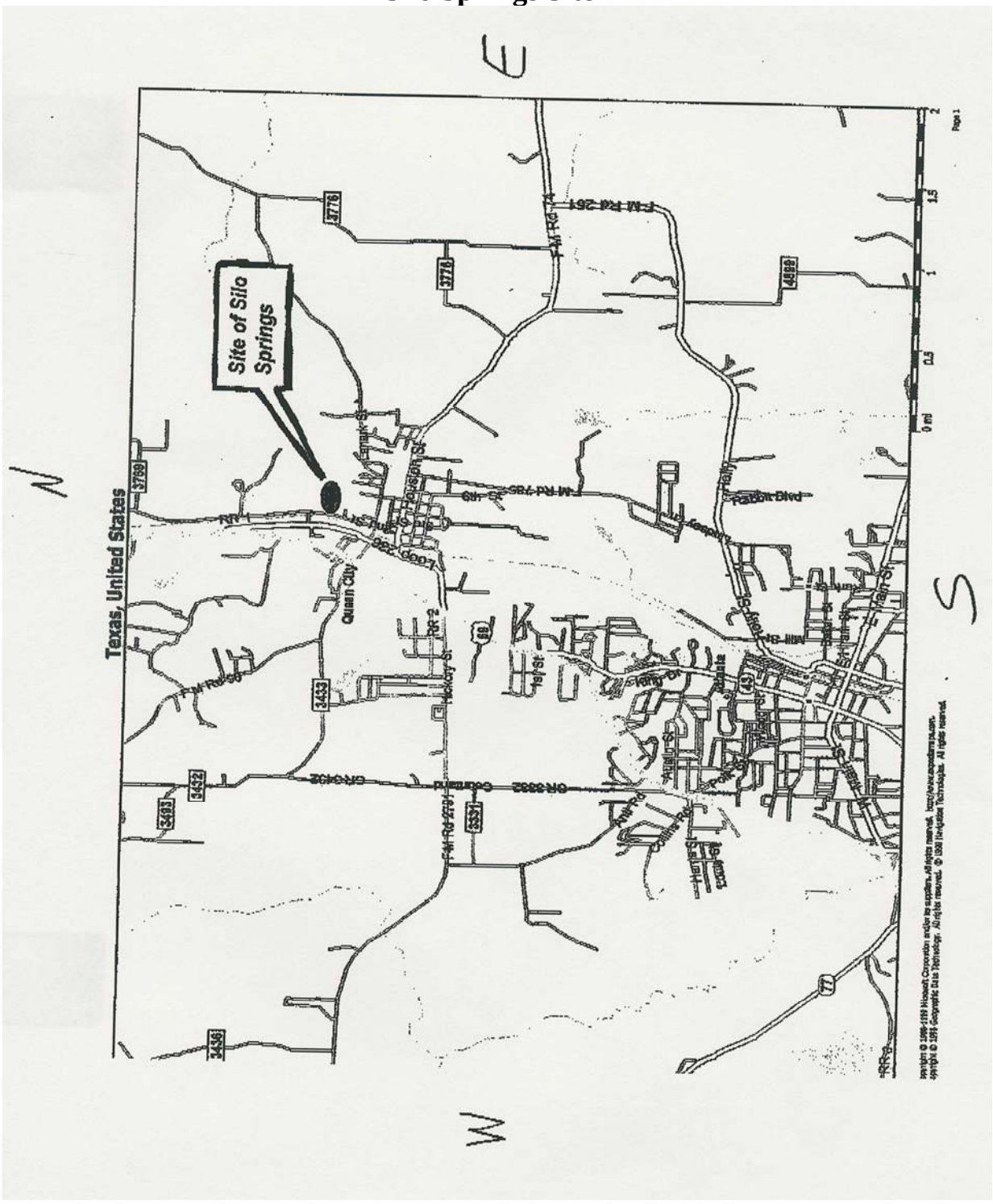
Table 2.33
Housing Trends

JURISDICTION	TOTAL HOUSING UNITS	OCCUPIED	VACANT	OWNER OCCUPIED	RENTER OCCUPIED
Atlanta	2000-2,556 1990-2,735	2000-2,254 1990-2,368	2000-302 1990-367	2000-1,547 1990-1,583	2000-707 1990-785
Avinger	2000-236 1990-222	2000-203 1990-195	2000-33 1990-27	2000-138 1990-136	2000-65 1990-59
Bloomburg	2000-177 1990-170	2000-155 1990-149	2000-22 1990-21	2000-118 1990-117	2000-37 1990-32
Domino	2000-20 1990-38	2000-19 1990-34	2000-1 1990-4	2000-18 1990-27	2000-1 1990-7
Hughes Springs	2000-856 1990-880	2000-777 1990-762	2000-79 1990-118	2000-423 1990-466	2000-354 1990-296
Linden	2000-1,048 1990-1,058	2000-940 1990-940	2000-108 1990-118	2000-606 1990-603	2000-334 1990-337
Queen City	2000-763 1990-720	2000-660 1990-617	2000-103 1990-103	2000-412 1990-444	2000-248 1990-173
Douglassville	2000-87 1990-95	2000-76 1990-77	2000-11 1990-18	2000-69 1990-62	2000-7 1990-15
Marietta	2000-75 1990-83	2000-58 1990-67	2000-17 1990-16	2000-52 1990-59	2000-6 1990-8
Cass County	2000-13,890 1990-13,191	2000-12,190 1990-11,320	2000-1,700 1990-1,871	2000-9,584 1990-8,806	2000-2,606 1990-2,514

Source: U.S. Census Data

Figure 2.25
Silo Springs Subdivision

Figure 2.26
Silo Springs Site



SECTION III
PUBLIC PRIVATE PARTNERSHIP

HAZARD MITIGATION TEAM MEMBERS

Table 3.1

Charles McMichael	County Judge, Cass County, Linden Texas
Larry Trevino	Linden and Cass Co. Emergency Management Coord.
Harold Martin	Queen City Mayor
Robin Beck	Atlanta Fire Department
Carroll Sulley	Bloomburg Municipal Secretary
Marvin Campbell	Domino Mayor
Alfred Point	Douglassville VFD
Jay Cates	Hughes Springs VFD, Emergency Mgt.
Chuck Ham	Marietta Fire Department

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions.

Integrating public participation during the development of the Cass County Mitigation Action Plan has resulted in increased public awareness. Through citizen involvement, the plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities. When contacted in person or by telephone, each of the above members contributed information and assisted in the development of this MAP by offering suggestions, ideas and recommendations. Each member provided information from the represented jurisdictions, based on their knowledge and their field of expertise.

Mitigation team members consist of representatives from various county Departments and representatives from private organizations, businesses, and various city government officials. The Mitigation Action Team assisted in developing plan goals and action items and shared their expertise to create a more comprehensive plan. Many serve their counties in a volunteer capacity, attending training and devoting time without compensation.

Cass County Committee Members
Contributions and Expertise

Robin Beck, Fire Chief, Atlanta Texas

Robin Beck has served the Atlanta Area as a member of the fire department for many years. He was promoted to Fire Chef in 2008. Mr. Beck is also the designated emergency management coordinator for Atlanta, Texas.
Mr. Beck has training and practical experience in dealing with a variety of natural disasters and their aftermath. He represents the largest city in the Cass county study. Mr. Beck gave a helpful overview of his offices responses to emergency situations. Mr. Beck also explained Atlanta's level of preparedness in dealing with each situation.

Marvin Parvino, Mayor, Avinger Texas

Marvin Parvino is the current Mayor of Avinger Texas. Mr. Parvino provided helpful information regarding past natural disasters. Mr. Parvino was particularly helpful in pinpointing potential hazardous spill problems from trucking and railroad activity. Avinger is a small community that looks for assistance from the county offices in dealing with emergencies of all types including hazard mitigation.

Carol Sulley, Bloomburg City Secretary

Carol Sulley is the City secretary for the small township of Bloomburg Texas. Ms. Sulley is active giving assistance to the mayor and volunteer fire departments anytime it is needed. Ms. Sulley was very helpful in providing historical and technical data regarding Bloomburg. She has experience in assisting citizens' response to a wide variety of natural disaster situations including ice storms, power outages and wind damage.

Marvin Campbell, Mayor of Domino

Committee member Marvin Campbell has been the mayor of the small township of Domino, Texas since 1999.
Mr. Campbell is a dedicated volunteer who is also the designated emergency management coordinator for his small jurisdiction.

Mr. Campbell provided valuable information regarding the citizens of Domino and how they responded to the Ice Storm disaster of 2000. He also provided information regarding fire departments and police support to the Domino township.

Mr. Campbell expressed concern and history regarding hazardous materials transportation and gas lines in the area that is reflected in this report under the appropriate headings.

Alfred Point, Douglassville Volunteer Fire Chief

Alfred Point has been the fire chief in Douglassville, Texas since 1982. He was able to provide a good historical perspective regarding some of the challenges faced by rural fire departments. Mr. Point is also an ETA and works in a cooperative effort with Chuck Ham, in neighboring Marietta assisting their rural communities in time of natural disasters and emergencies. Mr. Point indicated that it is often necessary for the small rural areas and the county to provide backup for each other in such situations.

Jay Cates, Emergency Management Coordinator, Hughes Springs

Mr. Cates is wearing a variety of hats requiring skills that could impact Hazard Mitigation. Mr. Cates is the Emergency management Coordinator, a city police officer and a member of the fire department. He gave a good history of past events that might impact hazards mitigation planning. Mr. Cates also provided information regarding the railroad, trucking and steel industries activity that could produce hazardous spills. He provided an overview of all the possible events listed in this report.

Chuck Ham, Fire Chief, Marietta Volunteer Fire Department

Chuck Ham is an EMT and fire chief of the volunteer fire department in Marietta, Texas. He is knowledgeable about many aspects of Hazardous Mitigation and rescue. Mr. Ham was very helpful in providing information about hazardous spills, wildfires and emergency evacuations. Due to the rural setting, many emergency medical situations are handled by helicopter. Mr. Ham has been involved in every major hazardous event for the last five years.

He provided needed information regarding sour gas pipelines and refineries that exist in the area. Mr. Ham was also informative regarding wildfires, emergency transportation, ice storms and high wind activity.

Harold Martin, Mayor, Queen City Texas

Mr. Martin, mayor of Queen City, Texas, brings a lot of knowledge regarding Hazardous Mitigation to the committee, because he is also the troubleshooter for South Western Electric Power Company. When there is a power outage due to any natural event, it is his crew that handles the problem or coordinates the

activity with others. Mr. Martin provided needed historical data regarding natural disasters and the potential for new events.
As mayor, Mr. Martin provided a thorough understanding of his areas needs and the services currently in place to assist his area in the event of a natural disaster.

Charles McMichael, Cass County Judge, Linden Texas

County Judge Charles McMichael is a lifelong resident of Cass County and has served as county judge for the last twelve years. He has a broad knowledge of the history of Cass County. He is a lifelong resident of Cass County and is knowledgeable regarding the emergency response system and he directly supervises the emergency management coordinator for the county.

Larry Trevino, Cass County Emergency Coordinator, Linden Texas

Larry Trevino has served in a variety of positions dealing with emergency management including Homeland Security Coordinator for the Ark-Tex Council of Governments. Mr. Trevino has been helpful in providing basic emergency management information regarding Cass County and explaining the role of his position dealing with Hazard Mitigation. In many cases the jurisdictions look to Mr. Trevino's office to coordinate local mitigation activities.

SECTION IV
PUBLIC INVOLVEMENT

The Cass County Mitigation Action Plan includes a cross-section of citizen input throughout the planning process. Three public meetings were publicized, attempting to involve local citizens who could help identify common concerns and ideas regarding hazard mitigation and to discuss specific goals and actions of the mitigation plan. Through public involvement, the mitigation plan reflects community issues, concerns, and new ideas on mitigation opportunities and action items. Public interest and participation was poor.

PUBLIC MEETINGS

MEETING NUMBER 1: Friday, May 30, 2003, held at Cass County Courthouse. A Power Point presentation was given to county judge and environmental officer. Presentation covered requirements of Mitigation Action Plan for elected officials.

MEETING NUMBER 2: A public meeting to discuss hazard mitigation efforts in Cass County held Friday, July 25, 2003 at the Commissioners Court Room at the Cass County Courthouse in Linden. Meeting held to comply with state and federal requirements to complete the Emergency Management Plan for Cass County. The meeting was advertised in the Atlanta Citizens Journal.

MEETING NUMBER 3: A public meeting to discuss hazard mitigation efforts in Cass County held from 9AM to 1 PM, Tuesday, October 7 at the Commissioners Courtroom in the Cass County Courthouse in Linden. Advertised two times, 1 and 5 October, 2003 in the Atlanta Citizens Journal.

C. McMICHAEL
10AM

30 MAY, 03 **SIGN-UP SHEET** CASS COUNTY, TEXAS

POWER POINT PRESENTATION FOR PUBLIC OFFICIALS
HAZARD MITIGATION

DATE 30 MAY 03

	SIGNATURE	ORGANIZATION
1	Gary Stewart	Cass County Emergency Mgt.
2	Chuck L McMillin	Cass Co Judge
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

ATTENDANCE ROSTER

Public Hearing
For
Disaster Recovery

1:30 P.M., Wednesday, February 11, 2009
Cass County Law Enforcement Training Facility
Linden, Texas

NAME	AGENCY	ADDRESSS	TELEPHONE #	E-MAIL ADDRESS
Charles McMichael	Cass Co	Linden TX PO Box 825	903-754-5181	
Genevieve Burtchell	ATCOG			
L.D. Williamson	✓			
Buddy Erwin	Linden [illegible]	Po Box 214	903-756-7502	cityoflinden@fastlineisp.com
Larry [illegible]	Cass Co	LINDEN TX PO BOX 825	903-748-6375	
Don [illegible]	ATCOG			

A follow-up meeting regarding Hazard Mitigation Planning with the same members present was held following the Public Hearing.

ATTENDANCE ROSTER

Hazard Mitigation Plan

Friday, February 13, 2009

NAME	AGENCY	ADDRESSS	TELEPHONE #	E-MAIL ADDRESS
[illegible]	City Hall City Security	[illegible] TX	[illegible] 721-5323	[illegible]
Harold [illegible]	Queen City	P.O Box 771	903 748 1656	
Jay [illegible]	City of Hughes Springs	PO BX 356	9035734914	hsfd28 [illegible]@aol.com
Feb. 17, 2009 Melvin [illegible]	City of Domino, Tx.	14555 FM 3129 Queen City [illegible]	(903) 796-2843	

Hazard mitigation meeting set

Journal Staff Report

A public meeting to discuss hazard mitigation efforts in Cass County will be held at 9 a.m. on Friday, July 25.

The meeting will be held in the Commissioners Court Room at the Cass County Courthouse in Linden.

According to Gary Stewart, coordinator of Cass County Emergency Management in Atlanta, this meeting is being held to comply with state and federal requirements to complete the Emergency Management Plan for Cass County.

Ran in Citizens Journal
Atlanta, TX.
7-19-03 & 7-23-03

Public Meeting

A public meeting will be held from 9 a.m. until 1 p.m. on Tuesday, Oct. 7 at the Commissioners Courtroom in the Cass County Courthouse in Linden to discuss hazard mitigation efforts in Cass County.

This meeting is being held to comply with state and federal requirements to complete the Emergency Management Plan for Cass County.

Gary Stewart is the coordinator for Cass County Emergency Management.

Ran in Citizens Journal
Atlanta, TX.
10-1-03

Public Meeting

A public meeting will be held from 9 a.m. until 1 p.m. on Tuesday, Oct. 7 at the Commissioners Courtroom in the Cass County Courthouse in Linden to discuss hazard mitigation efforts in Cass County.

This meeting is being held to comply with state and federal requirements to complete the Emergency Management Plan for Cass County.

Gary Stewart is the coordinator for Cass County Emergency Management.

Ran in Citizens Journal
Atlanta, TX
10-5-03

SECTION V
ASSESSMENT OF CURRENT/COMPLETED MITIGATION ACTIVITIES

Each individual jurisdiction was contacted and requested to provide information for the following Table. Each jurisdiction reviewed and provided the information for this table. There are no existing Plans from which this information was taken. The jurisdictions that do have codes reviewed their codes and procedures and provided the information for this Plan.

Table 5.1

RULE – REGULATION – POLICY – PLAN - ENTITY	CONTENTS
Avinger Flood Map	08/06/1976
Domino Flood Map	07/10/1979
Linden Flood Map	06/19/1985
Daingerfield Flood Map	12/07/1982
Cass County Codes	County has no building codes.
Bloomburg Codes	– Southern Building Code. Flood Map 11/5/1976 Mechanical, Fire Prevention, Building Gas, Electrical and Plumbing Codes One inspector.
Hughes Springs – Mutual Aid Agreement/Fires	Agreements with Morris County Firefighters Association which includes cities of Lone Star, Daingerfield and Naples
Hughes Springs Codes	City Ordinance 091603 Adoption of NFPA 101 Life Safety Code and International Fire Codes, 2000 International Building Code which includes the Fire Code. Steve Derrick is a licensed inspector. Have had 8 building starts and 8 completions in last 12 months. Have a floodplain management ordinance. Steve Derrick is inspector.
Hughes Springs Flood Map	01/01/1992
Hughes Springs – Grant from Texas Domestic Preparedness	Up-grade Equipment
Queen City – Standard Operating Procedures Fire District #2	For Dispatching Fire Departments to Emergency Incidents
Queen City – Inter-Jurisdictional Mutual Aid Agreement	Between County and municipalities in county to provide mutual aid during disasters/civil emergencies.
Queen City	Flood Prevention Ordinance
Queen City – Flood Map	April 23, 1976
Queen City **PA** Projects	FEMA Grants for 2001 Ice Storm $21,066.80 + $2,265.25 + $2,924.22
Queen City Drought Contingency Plan #08/10/2000	Rules/policies for orderly and efficient management of limited water supplies during drought.
Queen City Codes	Ordinance #04102003 Adopting International Building Codes, including fire codes. Currently do not have an inspector; in process of recruiting with ability to certify. No building starts and inspections conducted during last 12 months.
Atlanta Fire Department SOP June 2000	Incident Command, Protective Clothing, SCBA, Emergency Response, Incidents and Investigation.
Atlanta Police SOP	Emergency Call-out, Critical Incident Response, Security of

	Police Facility, Emergency Preparedness
Atlanta Ordinance, Article 1.400 Emergency Management June, 1997	Emergency Management Coordinator position with duties assigned.
Atlanta Codes	Atlanta Ordinance, Article 3.100 Building Code Standards Establishes building codes, permits, fees and inspections for Atlanta. International Building Code adoption., includes fire code. Permit process follows 2002 NEC. 1 inspector, James Williams, state licensed plumber and code enforcement officer. Calendar year 2003 building permits in total amount of $5,634,438; includes 14 new houses for total value of $1.5 million and total of over $2.9 million in new commercial construction, including 16 unit apartment complex, car wash, bank, and 50,000 square foot Newark building.
Atlanta Ordinance Article 3.600 Flood Damage Prevention Regulations	Adopts regulations for the enforcement of flood prevention activities. City is a participant in Federal Flood Insurance Program. Flood map May 19,1981
Atlanta Ordinance Article 11.400 Water Conservation	Adopts Water conservation/drought contingency plan, defines drought conditions, allows for water rationing and enforcement.
No PI, PDM, or PP-M Programs. No CAV or HMGP for cities/county.	
PA Cass County	Ice Storm 2001, $1,233.780.00
NFIP Cass County Court Order. Nov. 13, 2000	Authorizes subsidized flood insurance. Requires evaluation of flood hazards.

There are no communities in Cass County participating in the Community Rating System.

ISO FIRE PROTECTION CLASSES FOR CASS COUNTY
Table 5.2

Fire Protection Area	Protection Class	Primary Fire Response
Atlanta	5	Atlanta FD
Avinger	10	Avinger FD
Bloomburg	9	Bloomburg FD
Douglassville	9/10*	Douglassville VFD
Hughes Springs	7	Linden FD
Linden	7	Linden FD
Marietta	10	Marietta FD
Queen City	7/9	Queen City FD

*Split class means that all properties within 1,000 feet of a water supply (fire hydrant) and within 5 road miles of a fire station are eligible for the first class (Class 1 through 8). Properties more than 1,000 feet from a water supply from a water supply but within 5 road miles of a fire station are eligible for Class 9. All properties more than 5 road miles from a fire station are Class 10.

Insurance Service Building Code Effectiveness Grading System (BCEGS)
Table 5.3

City	Survey Year	Result
Atlanta	1966	Personal lines building code enforcement programs exist but it is outside the scope of the BCEGS program.
Linden	1966	No recognized building code enforcement program exists.
Avinger		No Survey
Bloomburg		No Survey
Douglassville		No Survey
Domino		No Survey
Hughes Springs		No Survey
Marietta		No Survey
Queen City		No Survey

Available Flood-Related Publications

A Guide to FLOOD MAPS, How To Use a Flood Map To Determine Flood Risk For a Property	FEMA 258/May 1995
Answers to Questions About the National Flood Insurance Program (NFIP)	FEMA-387
Design Guidelines for Flood Damage Reduction	FEMA-15
Elevated Residential Structures	FEMA-54
Manufactured Home Installation in Flood Hazard Areas	FEMA-85
A Unified National Program for Floodplain Management	FEMA-100
Flood-proofing Non-Residential Structures	FEMA-102
Design Manual for Retrofitting Flood-prone Residential Structures	FEMA-114
Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials	FEMA-116
Mandatory Purchase of Flood Insurance Guidelines	FEMA-186
Answers to Questions About Substantially Damaged Buildings	FEMA-213
Engineering Principles and Practices for Retrofitting Flood-prone Residential Buildings	FEMA-259
Managing Floodplain Development in Approximate Zone A Areas	FEMA-265
Protecting Floodplain Resources	FEMA-268
Increased Cost of Compliance Coverage: Interim Guidance for State and Local Officials	FEMA-301
Appeals, Revisions and Amendments to Flood Insurance Maps: A Guide for Community Officials	FIA-12

Acronyms

ATCOG	Ark-Tex Council of Governments
BEA	Bureau of Economic Analysis
CFR	Code of Federal Regulations
DEM	Department of Emergency Management
EDAP	Economically Distressed Areas Program
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous Materials
HAZUS	Hazards, U. S.
HMIS	Hazardous Material Information System
HMPG	Hazard Mitigation Program Grant
HMT	Hazard Mitigation Team
MAP	Mitigation Action Plan
PA	Public Assistance
PDM	Pre-Disaster Mitigation
PI	Project Impact
PL	Public Law
PP-M	Property-Project Mitigation Program
TWDB	Texas Water Development Board

RESOLUTIONS

Comment: Resolutions that are included in the Mitigation Action Plan on the following pages will be signed and formally adopted by the appropriate representatives when final approval has been given by FEMA.

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

County Judge, Cass County

ATTEST_____

County Clerk

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Atlanta in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Atlanta

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Avinger in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Avinger

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City Bloomburg in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Bloomburg

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Domino in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Domino

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Douglassville in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Douglassville

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Hughes Springs in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Hughes Springs

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Linden in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Linden

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Marietta in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Marietta

ATTEST_____

City Secretary

R E S O L U T I O N

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Cass and the Cities of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Cass County Judge and the Mayors of Atlanta, Avinger, Bloomburg, Domino, Douglassville, Hughes Springs, Linden, Marietta, and Queen City shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Cass and the City of Queen City in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2010.

_____

Mayor, City of Queen City

ATTEST_____

City Secretary

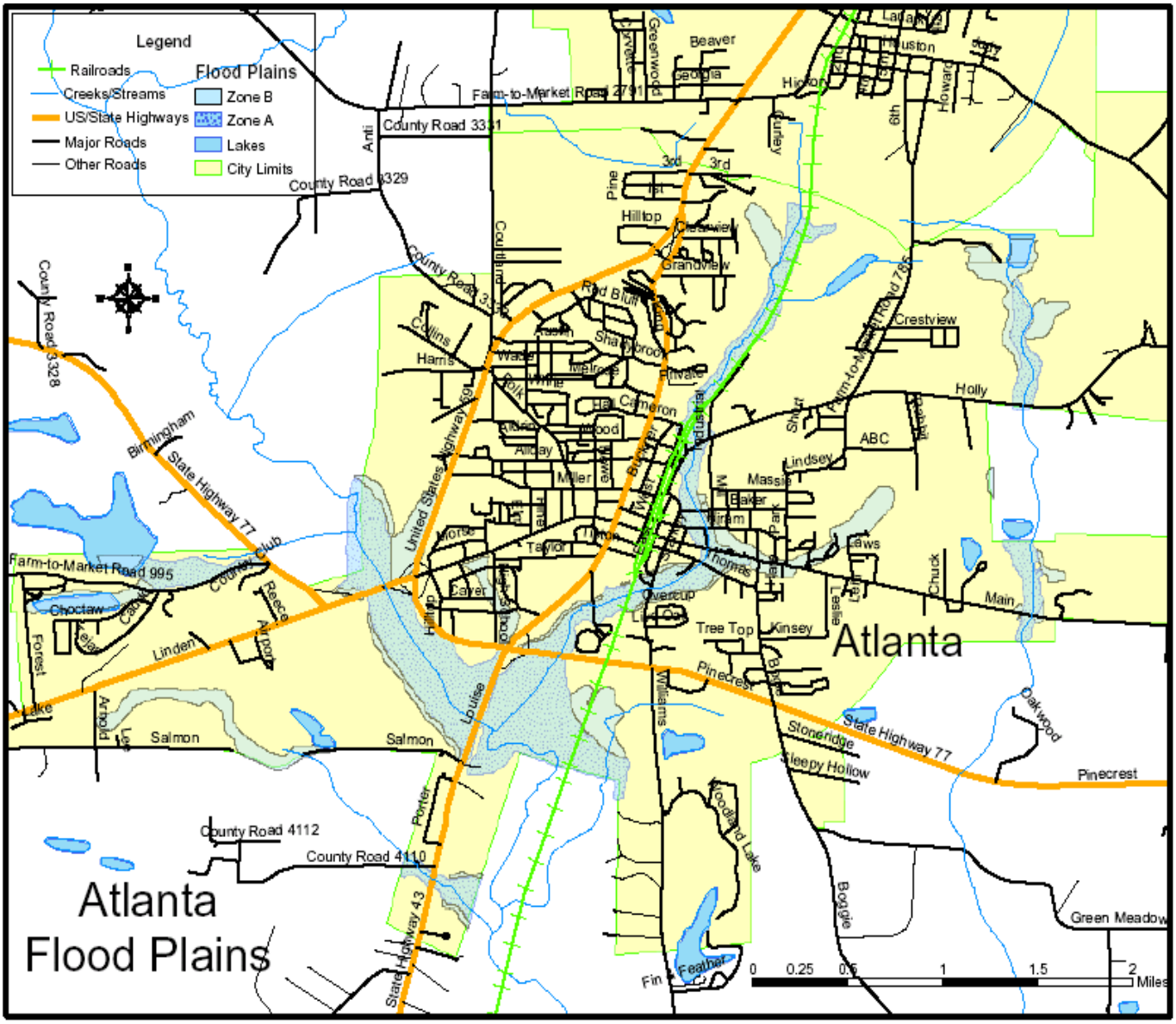


Figure 1.11

The city of Atlanta has a total of 7,332 acres inside the city limits. The 100-year flood plain covers approximately 23 acres or .3% of the total acreage. The total taxable value of all property in the city is approximately 186 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is one record of repetitive flood losses within the flood plain and two incidences outside the plain. All listed properties are residential. No other repetitive losses are recorded in the county.

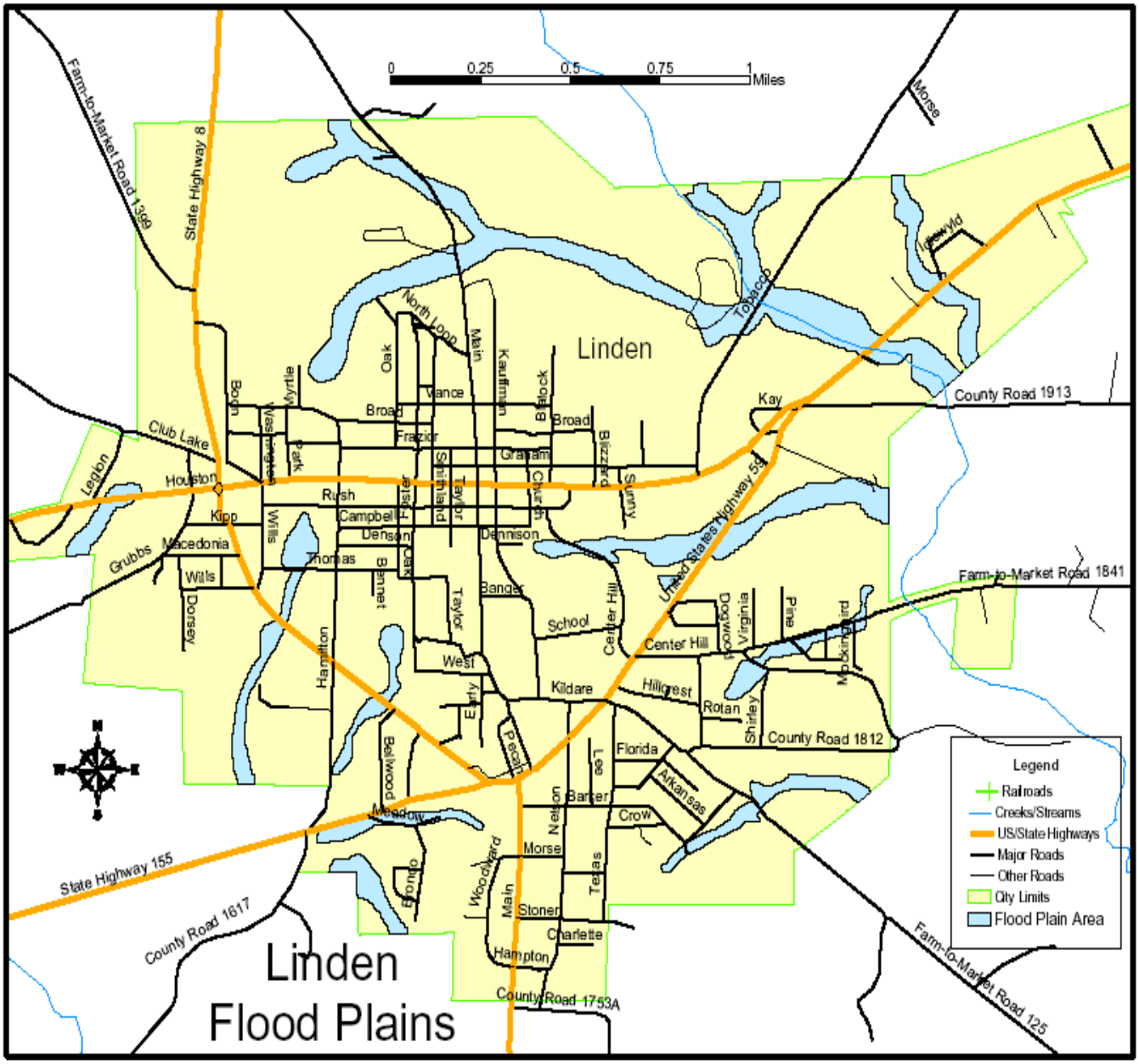


Figure 1.12

The city of Linden has a total of 2,240 acres inside the city limits. The 100-year flood plain covers approximately 156.6 acres or 7% of the total acreage. The total taxable value of all property in the city is approximately 45 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is no record of repetitive flood losses.

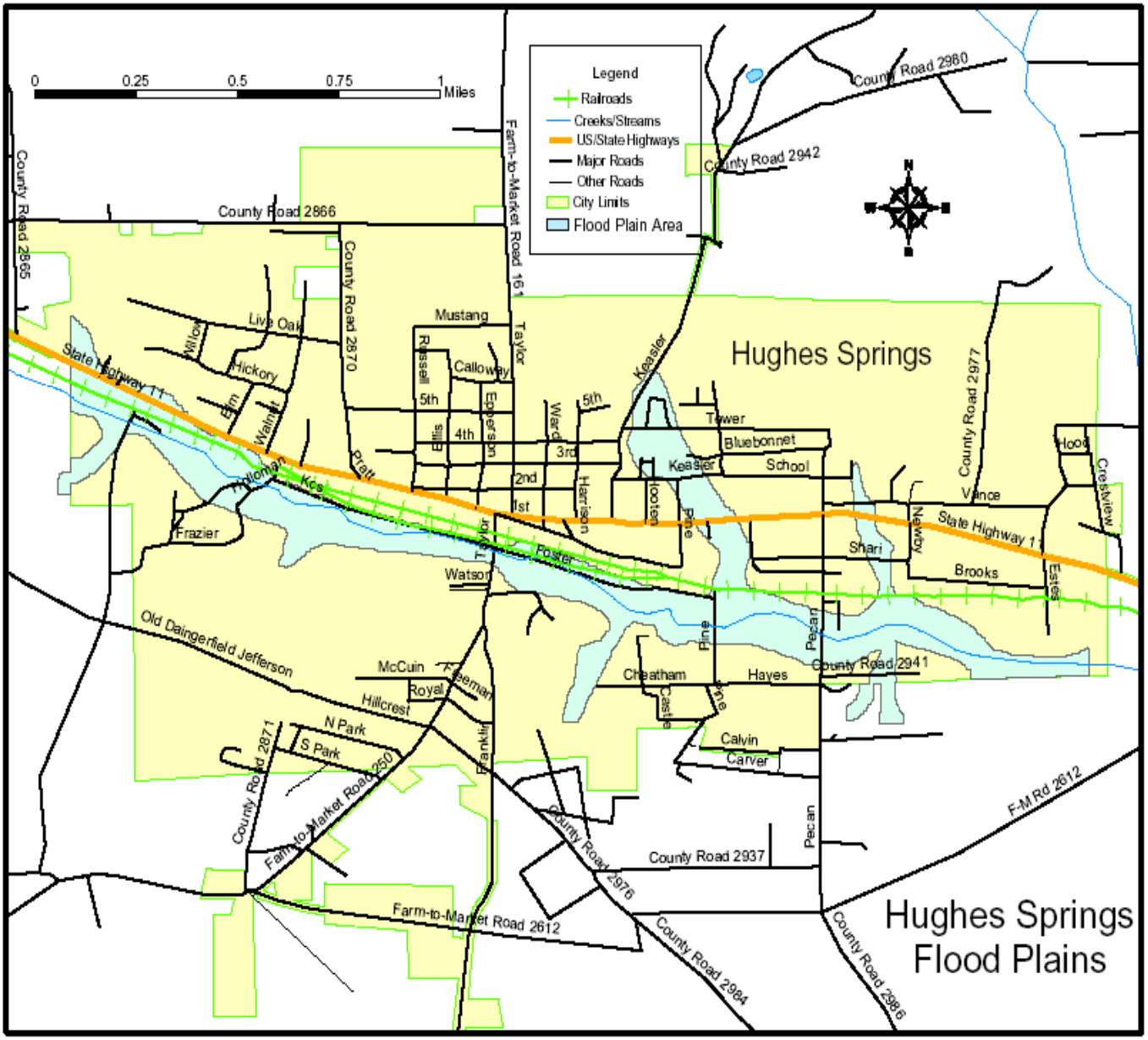


Figure 1.13

The city of Hughes Springs has a total of 1,472 acres inside the city limits. The 100-year flood plain covers approximately 176 acres or 12% of the total acreage. The total taxable value of all property in the city is approximately 31 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minor damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is no record of repetitive flood losses.

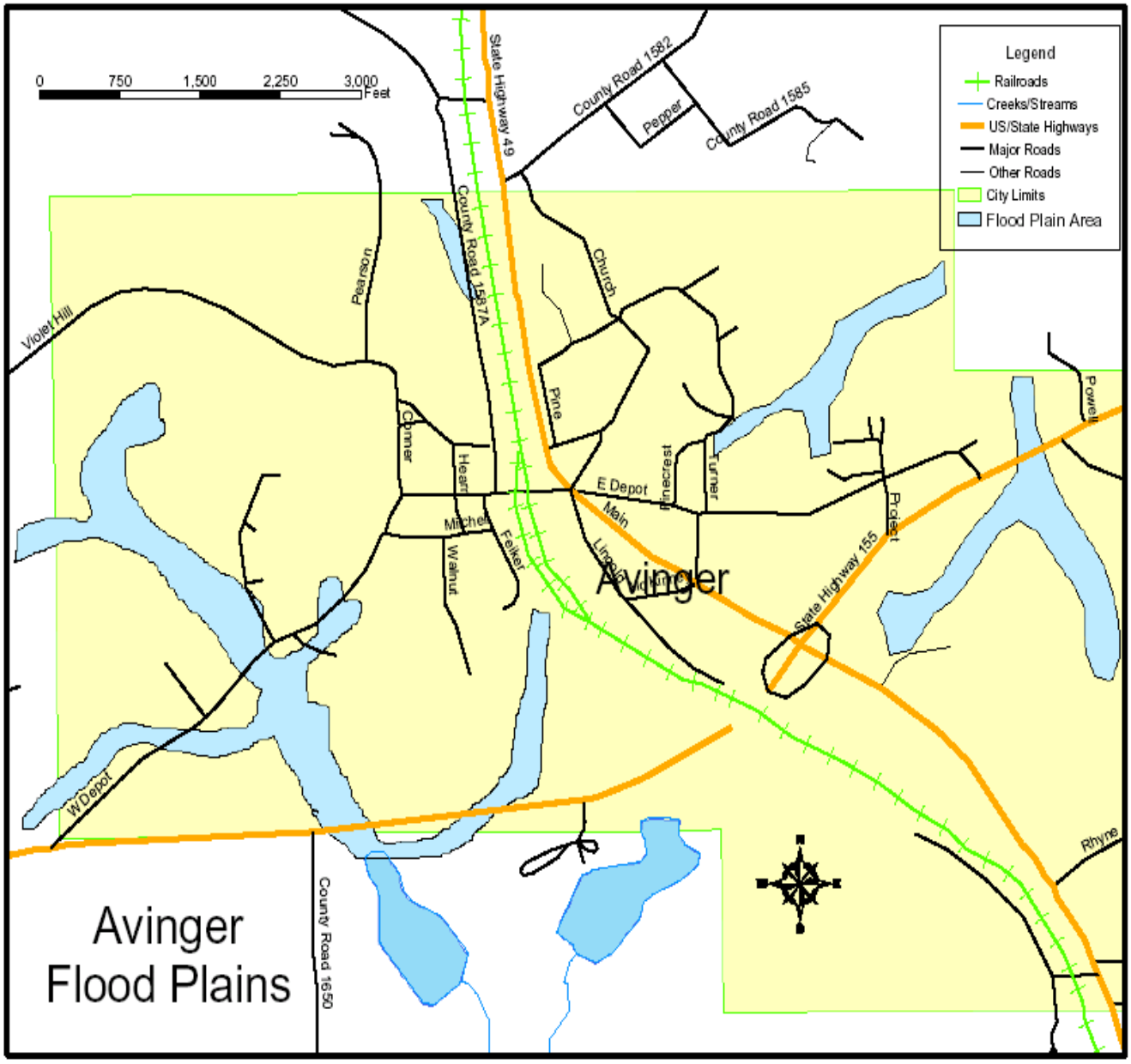


Figure 1.15

The city of Avinger has a total of 1,216 acres inside the city limits. The 100-year flood plain covers approximately 86 acres or 7.1% of the total acreage. The total taxable value of all property in the city is approximately 7 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is no record of repetitive flood losses.

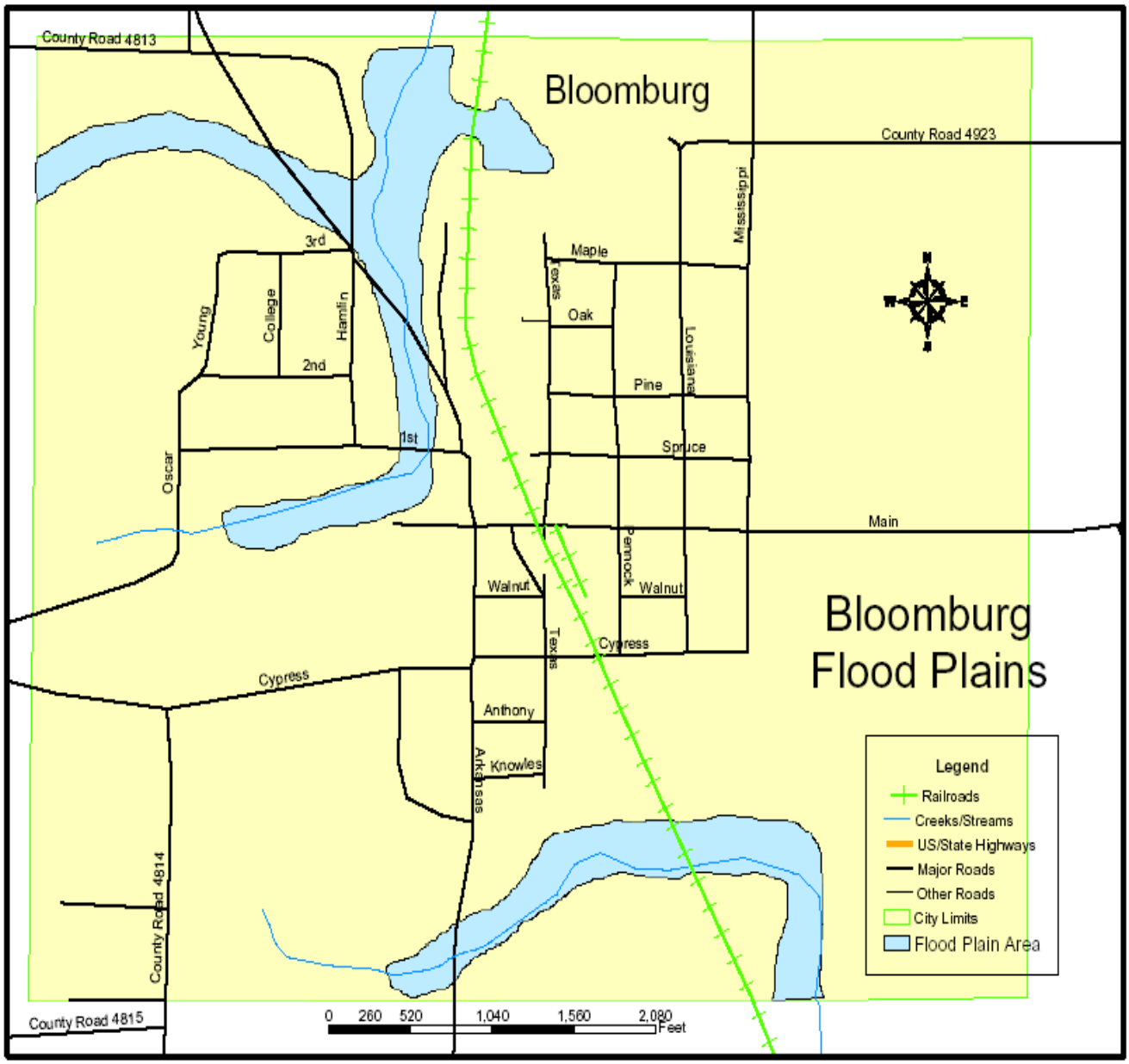


Figure 1.16

The city of Bloomburg has a total of 640 acres inside the city limits. The 100-year flood plain covers approximately 44 acres or 7% of the total acreage. The total taxable value of all property in the city is approximately 6 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is no record of repetitive flood losses. There are no repetitive loss properties in Bloomburg.

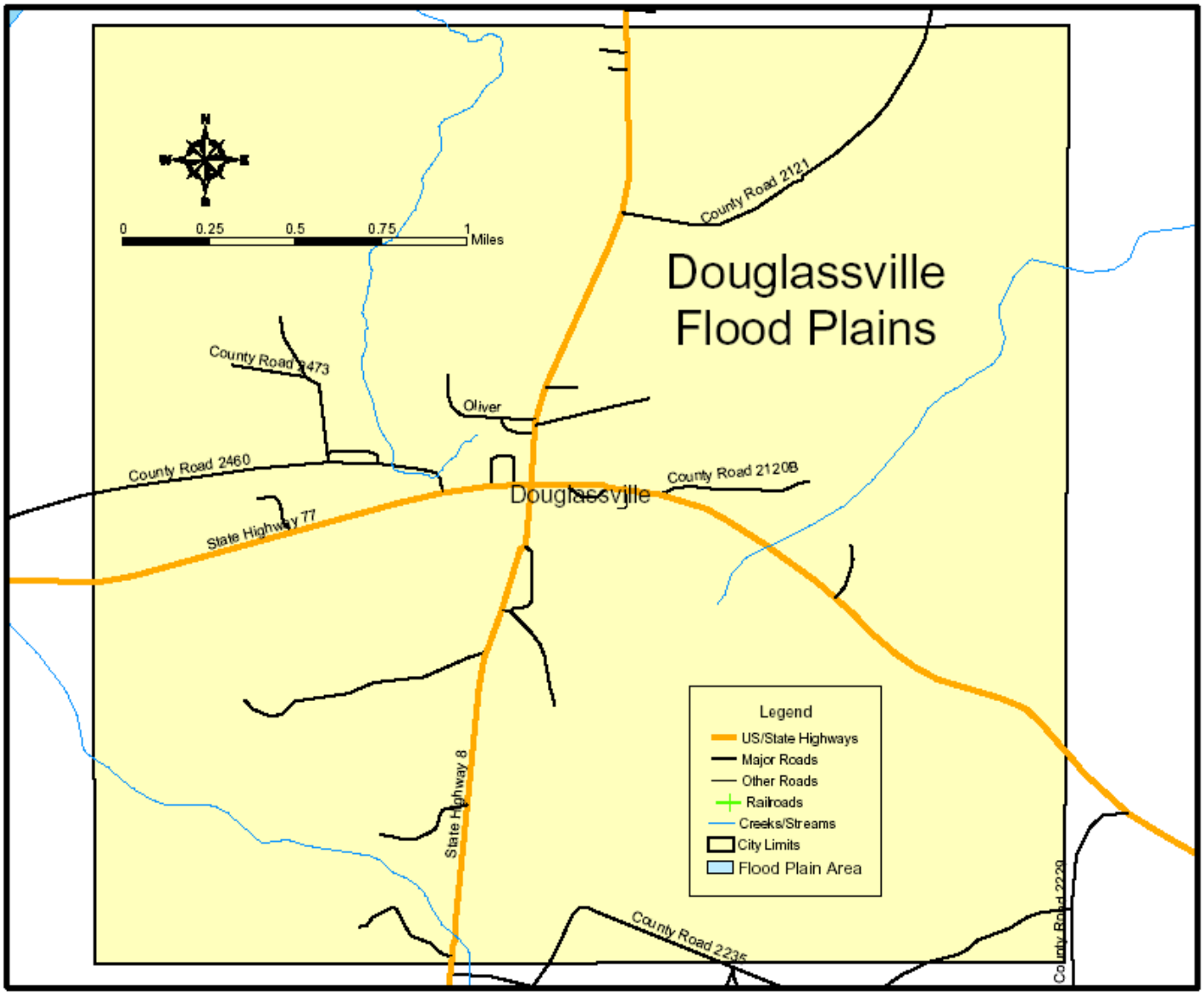


Figure 1.17
Douglassville is not in a flood plain.
There is no record of repetitive loss.

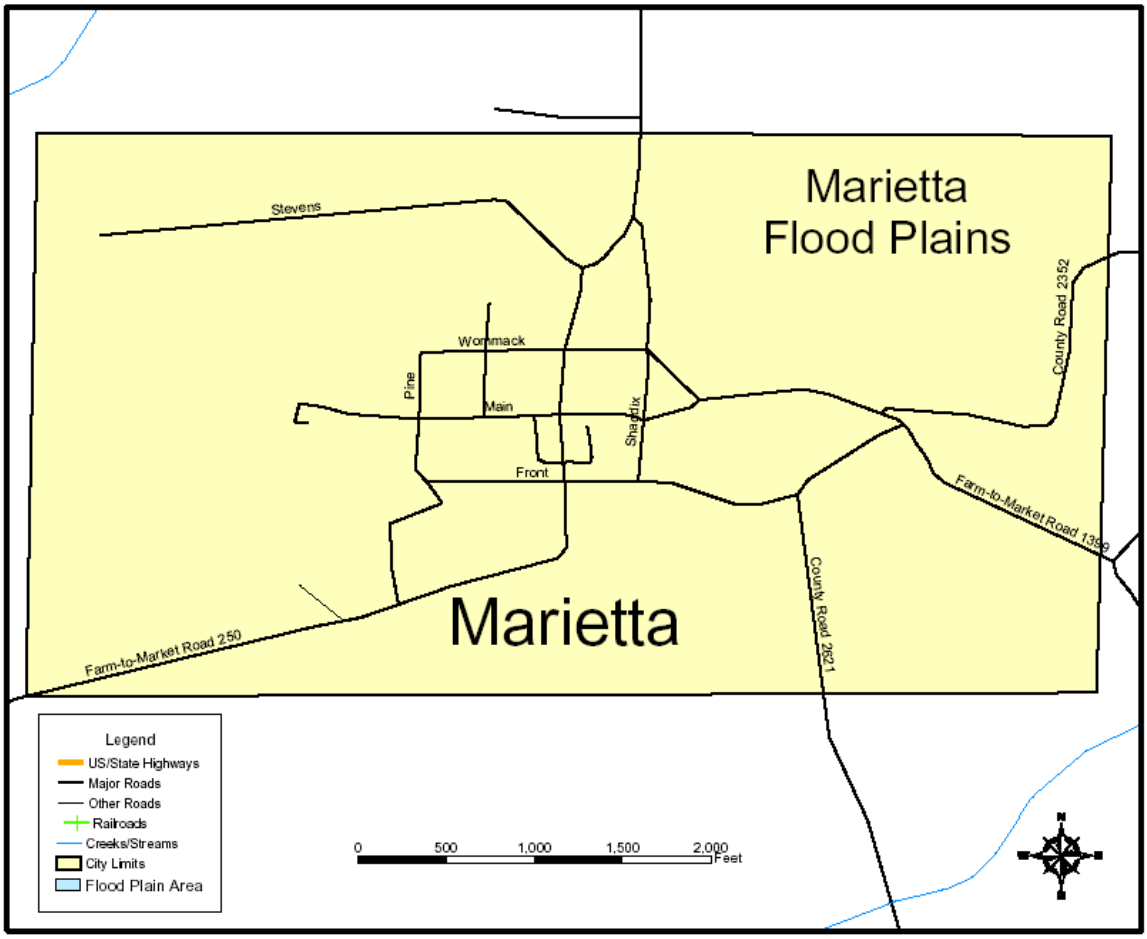


Figure 1.18
Marietta is not in a flood plain.
There is no record of repetitive loss.

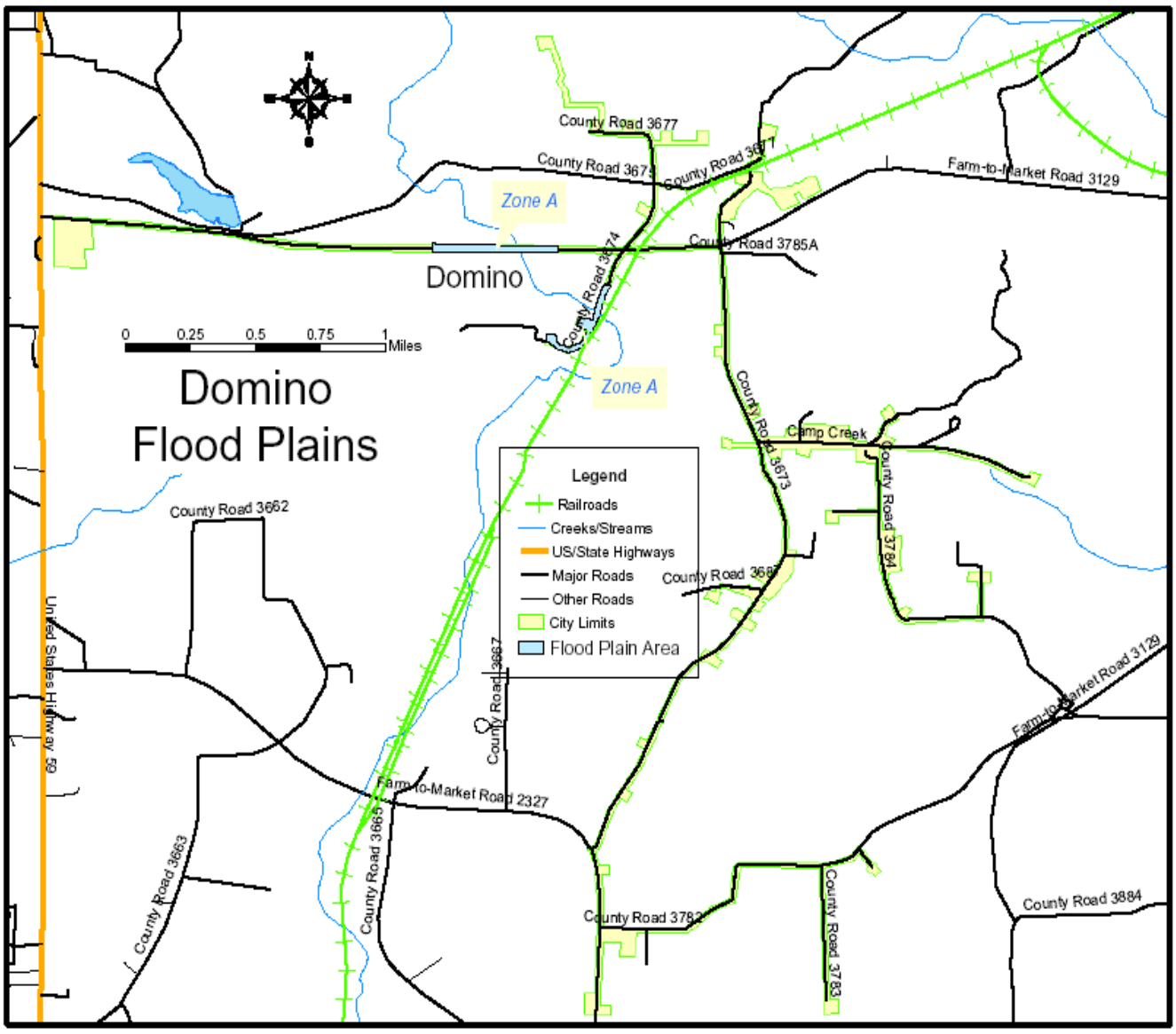


Figure 1.19

The city of Domino has a total of 192 acres inside the city limits. The 100-year flood plain covers approximately 5.7 acres or 3% of the total acreage. The total taxable value of all property in the city is approximately 4 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There is no record of repetitive flood losses.