

Tipton County Hazard Mitigation Plan



2021 Update

Prepared By:

Tipton County Hazard Mitigation Committee
Covington-Tipton County Emergency Management Agency

Assistance Provided By:

Tennessee Emergency Management Agency
as part of the Tennessee Mitigation Initiative



U. S. Department of Homeland Security
Region 4
3005 Chamblee Tucker Road
Atlanta, GA. 30341

FEMA

January 14, 2022

Mr. Doug Worden
State Hazard Mitigation Officer
Tennessee Emergency Management Agency
3041 Sidco Drive
Nashville, TN 37204

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Tipton County

Dear Mr. Worden:

We are pleased to inform you the Tipton County Hazard Mitigation Plan update is in compliance with the Federal hazard mitigation planning requirements resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR 201.6. Effective January 6, 2022, the plan is approved for a period of five (5) years to January 5, 2027.

This plan approval extends to the following participating jurisdictions that provided copies of their resolutions adopting the plan:

- Tipton County, Unincorporated
- Town of Atoka
- Town of Brighton
- Town of Burlison
- City of Covington
- Town of Garland
- Town of Gilt Edge
- Town of Mason
- Town of Munford

The approved participating jurisdictions are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

National Flood Insurance Program (NFIP) participation is required for some programs.

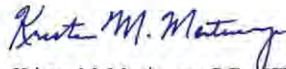
We commend the participants of Tipton County for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included in a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive

Land Use Plan or other plans that affect hazard mitigation or land use and development. When you prepare a comprehensive plan update, it must be resubmitted through the State as a "plan update" and is subject to a formal review and approval process by our office. If the plan is not updated prior to the required five (5) year updates, please ensure that the draft update is submitted at least six (6) months prior to expiration of this plan.

The State and the participants in the Tipton County Hazard Mitigation Plan should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or Tipton County have any questions or need any additional information, please do not hesitate to contact Harlie Clark, of the Hazard Mitigation Assistance Branch, at (770) 220-5219, or Robin Berzins, of my staff, at (678) 822-8516.

Sincerely,



Kristen M. Martinenza, P.E., CFM
Branch Chief
Risk Analysis
FEMA Region 4



U. S. Department of Homeland Security
Region 4
3005 Chamblee Tucker Road
Atlanta, GA 30341

FEMA

January 18, 2022

Mr. Doug Worden
State Hazard Mitigation Officer
Tennessee Emergency Management Agency
3041 Sidco Drive
Nashville, TN 37204

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Tipton County

Dear Mr. Worden:

This is a follow-up to our previous correspondence of January 6, 2022, in which we approved the Tipton County Hazard Mitigation Plan and all the participating communities that submitted their resolutions at the time of plan approval. We have recently received from your office the following resolution for inclusion within this plan and subsequently have approved the jurisdiction under the approved Tipton County Hazard Mitigation Plan, effective January 18, 2022:

- Tipton County Board of Education

The approved participating jurisdiction is hereby an eligible applicant through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

National Flood Insurance Program (NFIP) participation is required for some programs.

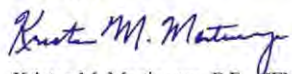
We commend the participants in Tipton County Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included within a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development.

When the Plan is amended or revised, the amendments and revisions should be incorporated into the next plan update. If the Plan is not updated prior to the required five (5) year update, please ensure that the Draft update is submitted at least six (6) months prior to expiration of this plan approval.

If you or the participants in Tipton County Hazard Mitigation Plan have any further questions or need any additional information, please do not hesitate to contact Harlie Clark, of the Hazard Mitigation Assistance Branch, at (770) 220-5219, or Robin Berzins, of my staff, at (678) 822-8516.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza".

Kristen M. Martinenza, P.E., CFM
Branch Chief
Risk Analysis
FEMA Region 4

Executive Summary

Over the past two decades, hazard mitigation has gained increased national attention due to the large number of natural disasters that have occurred throughout the U.S. and the rapid rise in costs associated with those disaster recoveries. It has become apparent that money spent mitigating potential impacts of a disaster event can result in substantial savings of life and property. With these benefit cost ratios being extremely advantageous, the Disaster Mitigation Act of 2000 was developed as U.S. Federal legislation that reinforces the importance of pre-disaster mitigation planning by calling for local governments to develop mitigation plans (*44 CFR 201*).

The purpose of a local hazard mitigation plan is to identify the **community's** notable risks and specific vulnerabilities, and then to create/implement corresponding mitigation projects to address those areas of concern. This methodology helps reduce human, environmental, and economical costs from natural and man-made hazards through the creation of long-term mitigation initiatives.

The advantages of developing a local hazard mitigation plan are numerous including improved post-disaster decision making, education on mitigation approaches, an organizational method for prioritizing mitigation projects, etc. It has been noted that communities who successfully complete and maintain a mitigation plan receive larger amounts of Federal and State funding to be used on mitigation projects, and receive these funds faster, than communities who do not have a plan. Such funding sources that the plan caters to are Pre-Disaster Mitigation, Flood Mitigation Assistance, Severe Repetitive Loss, and Hazard Mitigation Grant Programs.

The 2021 update of the Tipton County Hazard Mitigation Plan was created to act as a well-thought-out guide to be used by, and for, the people of Tipton County. For this plan to be successful, each jurisdiction/district within the county participated in the drafting and preparation of the plan update. These participating jurisdictions/districts include:

- Tipton County (Unincorporated)
- City of Covington (County Seat)
- Town of Atoka
- Town of Brighton
- Town of Burlison
- Town of Garland
- Town of Gilt Edge

- Town of Mason
- City of Munford
- Tipton County Schools

In reference to federal code title *44 CFR 201*, an updated hazard mitigation plan is required to be submitted to both TEMA (State) and FEMA (Federal) for review every five-years to be reapproved. When the **plan is deemed “approval pending adoption” by FEMA (44 CFR 201.6(c)5)**, each of the participating jurisdictions will adopt the plan through a local resolution.

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- 7: Ongoing Performance Tasks
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Section 1: Planning Process

Planning Process Update

The previous Tipton County Hazard Mitigation Plan was approved by FEMA on September 20th, 2016. Per federal requirements stated in *44 CFR 201*, all local hazard mitigation plans are required to go through a FEMA update review every 5 years to remain eligible for hazard mitigation grants. This update methodology was developed to assure that local governments are continuing to re-evaluate their risks and to regularly implement mitigation projects that can reduce community vulnerabilities.

The beginning of the plan's five-year update process took place at a meeting on April 6th, 2021 (See [Appendix 1 for the meeting's attendance sheet](#)). At this meeting Covington-Tipton County Emergency Management Agency stated that they would continue the role of leading staff and interested persons in updating their mitigation plan. The tasks to be undertaken by Covington-Tipton County Emergency Management Agency consisted of continuing to get agencies and the public involved in **the county's mitigation efforts** and performing the written plan required 5-year update.

Prior to this meeting Tipton County began reorganizing the county-wide hazard mitigation committee. Realizing that a successful mitigation committee includes diverse representatives, specialists, and individuals who can give valuable/unique insights that local emergency management staff may not have considered, invites to be a part of this plan update included open invitations from Tipton County EMA, via email, to the following agencies/individuals:

- Tipton County elected officials
- Town of Atoka
- Town of Brighton
- Town of Burlison
- Town of Garland
- Town of Gilt Edge
- Town of Mason
- City of Munford
- Tipton County Highway Department
- Tipton County Health Department
- Tipton **County Sheriff's** Office
- Tipton County Fire
- Tipton County 911
- Tipton County Property Assessor

- Tipton County Schools

In addition to email invitations and public advertisements, adjacent counties were invited to participate via announcements at the quarterly West Tennessee Regional Emergency Management **Director's Meetings**.

The Tipton County Hazard Mitigation Committee for the plan update consists of the following members:

Member	Title	Agency/ Jurisdiction	Representation
Tommy Dunavant (Committee Chairperson)	Director	Covington-Tipton County Emergency Management Agency	Tipton County
Brent Phillips	Regional Planner	Tennessee Emergency Management Agency	Tennessee
Dalton Patrick	Public Works Director	Atoka	Atoka
Shawn Andersen	GIS Director	Tipton County	Tipton County
Stephanie Chapman- Washam	Mayor	Brighton	Brighton
Charles Jenkins	Fire Chief	Mason	Mason
Shannon Reed	Director	Tipton County Public Works	Tipton County
David Gray	Director	Covington Public Works	Covington
Jeremy Channell	Assistant Chief	Covington Fire Department	Covington
Steve Fletcher	Mayor	Gilt Edge	Gilt Edge
Kelley Gray	Mayor	Garland	Garland
Sherry Bernard	Director	Munford Public Works	Munford
W.T. Bailey	Financial Director	Tipton County	Tipton County
Hannah Free	Firefighter	Garland Fire Department	Garland
Bob Beanblossom	Budget and Accounting	Tipton County	Tipton County
William Veazy	Planner	Tipton county Planning	Tipton County
Joyce Howard	Town Official	Burlison	Burlison
Danny Howard	Councilman	Burlison	Burlison
Richard Griggs	Chief	Covington Fire Department	Covington
John Combs	Superintendent	Tipton County Schools	Tipton County Schools
Jim Kenny	Mayor	Burlison	Burlison

Amanda Faurbo	Assistant to Town Administration	Atoka	Atoka
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The Tipton County Hazard Mitigation Committee continues to be the **county's lead in all mitigation efforts and in the development of the county's mitigation plan. The committee member's efforts in the plan** update were broken down into five stages: 1) analysis of the original plan (*the plan as it stood prior to the updates*), 2) updating of the plan, 3) public participation, 4) review of the final updated plan, and 5) adoption of the plan.

Stage 1: During the analysis of the plan, Covington-Tipton County Emergency Management Agency reviewed the original county plan and made notes on what sections would require the main updates. Covington-Tipton County Emergency Management Agency suggested that the two core areas for needed updates were in the risk/vulnerability assessment **and in the restructuring of the county's listed hazard mitigation projects, as well as re-evaluating the plan's hazards, re-assessing their risks, re-calculating each jurisdiction's vulnerable areas,** and re-establishing the county's mitigation goals.

Stage 2: From there the committee started making the updates to the plan. A large amount of this effort took place at the second Tipton County Hazard Mitigation Committee meeting that was held on May 5th, 2021. Tasks included developing and prioritizing projects for the new plan and concluding any remaining business. TEMA personnel were present at this meeting to answer mitigation planning and grant questions. [Appendix 2](#) provides a copy of the meeting attendance sheet.

Stage 3: To encourage public involvement, the Tipton County Hazard Mitigation Committee held a third meeting on June 10th, 2021. The purpose of this meeting was to elicit public comment on the planning process as well as the plan content. No members of the public were in attendance, so no public commentary was added to the plan. [Appendix 3](#) contains a copy of the meeting attendance sheet. [Appendix 4](#) presents a copy of the public notice.

Stage 4: Next the committee evaluated the written updates of the plan **against FEMA's crosswalk requirements via email correspondence.** This also included having the jurisdictions review the drafts that specifically addressed aspects of their jurisdiction before the plan is sent to FEMA for review.

Stage 5: Upon receiving the “Approval Pending Adoption” designation from FEMA’s review, the public will be given a chance to comment on the final draft of the update plan prior to its adoption by each local jurisdiction. This opportunity will take place at a local board meeting for each jurisdiction before the updated plan adoption decision takes place. The opportunity for final public comment will therefore be documented through the receipt of a signed adoption resolution.

Review of Existing Information

A preliminary review of existing plans, reports, and information was conducted during the initial phase of creating the Tipton County Hazard Mitigation Plan. The primary purpose of reviewing this information was to identifying local hazards, recognizing local risks, and understanding different local vulnerabilities. The following list of sources identifies some of the existing studies that were reviewed:

- State of Tennessee Hazard Mitigation Plan
- Tennessee Emergency Management Plan (TEMP)
- U.S. Census Bureau
- **FEMA Mitigation “How to” Guides**
- NOAA National Climatic Data Center (NCDC) storm reports
- Tipton County BEOP
- Tipton County Schools Emergency Plans
- Tipton County Highway Department Plan
- County & Jurisdictional Public Works Development Plans
- County & Jurisdictional Fire Department 5 Year Plans
- **Jurisdictional Plans, SOP’s, & SOG’s**

These sources helped to develop **the plan’s hazard, risk, and vulnerability** assessment sections that in return led to the establishment of meaningful mitigation actions.

Updates within the Plan

It is important to note that this countywide plan was a minor revision of the previous Tipton County Hazard Mitigation Plan. Tipton County reviewed and analyzed each section of the original plan and made updates in the following ways:

Section 1: Planning Process

Tipton County updated the original plan’s description of the planning process to include the new or no longer participating committee members, the most recent countywide mitigation

meetings that took place for the plan's update, and the latest opportunity for the public to get involved. Tipton County also compiled a new list of existing documents that they reviewed in updating their sections in the plan.

Section 2: County Profile

Tipton County created a new development trends section in this plan update.

Section 3: Risk Assessment

Tipton County kept all of their listed natural hazards from the original hazard mitigation plan. As part of the plan update, Tipton County updated their previous occurrence hazard listings to cover all occurrences for flood and tornado events, the most recent twenty years for all other hazards. The committee then re-**evaluated each hazard's extent, probability, and potential impacts.**

Section 4: Mitigation Strategy

Tipton County has brainstormed some new mitigation projects that were added to the list, used a new chart method to profile project details, and developed a system to describe where their previous **plan's projects are in terms of being implemented.** Projects were then prioritized based on specific criteria.

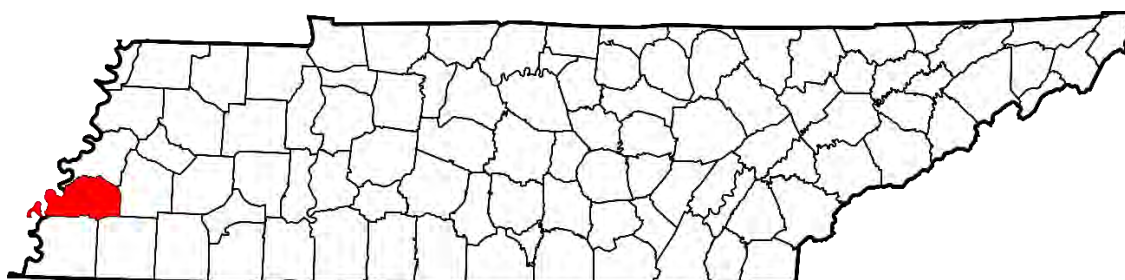
Section 5: Plan Maintenance

Tipton County updated how they would work with the other jurisdictions in monitoring, evaluating, and updating the plan; provided an updated list of mechanisms they could incorporate mitigation within; stated that now the Tipton County BEOP has mitigation concepts incorporated into it; and updated how all the jurisdictions would keep the public involved in updating processes.

Section 2: County Profile

Development Trends

Tipton County and its jurisdictions can be found in the western portion of West Tennessee. It is bordered by the Lauderdale County to the North, Haywood County to the East, Fayette County to the Southeast, Shelby County to the South, and the Mississippi River/Arkansas to the West. It has a population of 61,081 (2010 census). The county has a total area of 473 square miles, of which 458 square miles is land and 15 square miles is water. Covington is the county seat.



The incorporated jurisdictions have populations as follows (2010 census):

Jurisdiction	Population
Covington	9,038
Atoka	8,387
Brighton	2,735
Burlison	425
Garland	310
Gilt Edge	477
Mason	1,609
Munford	5,927

There is a large commercial, agricultural, and industrial base, as well as accompanying support services, throughout the county.

Construction and development are occurring rapidly in Tipton County, which has led to complications related to flooding, specifically in commercial and residential areas. The county, as well as the jurisdictions, recognize the need to be proactive in reducing the threats from hazards posed by future development.

Due to current land use trends, the Tipton County Property Assessor predicts significant future growth in residential, commercial, and industrial categories. The following noteworthy growth has occurred in the last 10 years:

Location	Type	Information
Unincorporated County	Industrial, Commercial, Residential	<ul style="list-style-type: none"> Potential industrial growth in the northeast and southeast portions of the county. Sites are currently being marketed and are receiving interest. Commercial growth along the Highway 14 corridor is expected to continue. Steady residential growth county-wide.
Covington	Industrial, Commercial, Residential	<ul style="list-style-type: none"> US Cold Storage locating in North Industrial Park, as well as 80 acres becoming certified for addition. Small commercial development on and along Highway 51

		<ul style="list-style-type: none"> Minimal residential growth.
Atoka	Residential	<ul style="list-style-type: none"> Strong residential growth along the southeast corner of the town.
Brighton	Industrial, Commercial, Residential	<ul style="list-style-type: none"> Some industrial development in Grandview area Highway 51 cleared for commercial growth Significant residential growth
Burlison	N/A	<ul style="list-style-type: none"> No growth
Garland	Commercial	<ul style="list-style-type: none"> Convenience store and Dollar General built on Highway 59
Gilt Edge	Residential	<ul style="list-style-type: none"> Scattered single family home construction
Mason	N/A	<ul style="list-style-type: none"> While no significant growth has occurred, the town's proximity to the new industrial megasite will likely lead to significant growth in all areas
Munford	Industrial, Commercial, Residential	<ul style="list-style-type: none"> Growth in all areas on and around Highway 51, as well as residential growth on the west side of the city
Tipton County Schools	N/A	<ul style="list-style-type: none"> Student population is declining

Jurisdictional & School District Capabilities

The following chart indicates the legal and regulatory adherence of each of the jurisdictions within Tipton County:

Jurisdictional Tools, Plans, & Capabilities	Tipton County	Covington	Atoka	Brighton	Burlison	Garland	Gilt Edge	Mason	Munford
Building Codes	Y	Y	Y	Y	N	Y	Y	Y	Y
Zoning	Y	Y	Y	Y	N	Y	Y	Y	Y
Emergency Response Plan	Y	Y	Y	Y	Y	Y	Y	Y	Y

Jurisdictional Tools, Plans, & Capabilities	Tipton County	Covington	Atoka	Brighton	Burlison	Garland	Gilt Edge	Mason	Munford
National Flood Insurance Program Participant	Y	Y	Y	Y	N	N	Y	Y	Y
Post-Disaster Recovery Plan	Y	Y	Y	Y	Y	Y	Y	Y	Y
Law Enforcement	Y	Y	Y	Y	N	N	N	Y	Y
Full Time Fire Services	Y	Y	Y	Y	N	N	Y	N	Y
Grant Writer	Y	N	N	N	N	N	N	N	N
Public Information Officer	Y	Y	N	N	N	N	N	N	N

School District Tools, Plans, & Capabilities	Tipton County Schools
Emergency Response Plan	Y
Post-Disaster Recovery Plan	Y
Law Enforcement/SRO	Y
Grant Writer	Y
Public Information Officer	N
Capital Improvement Funding	Y
Bond Funding	N
Private Contributions	N
State/Federal Funding	Y
Emergency Notification System	Y

Expanding & Improving Mitigation Programs

Tipton County have been active in the past in pursuing mitigation projects. Burlison, Garland, Gilt Edge, and Mason have very limited budgets and small tax bases, which leads to challenges in finding local match funding. All involved see the opportunity in BRIC state funding minimums, as well as multiple HMGP funding streams from several recent declared-disasters within the state.

Building and zoning codes were addressed in both meetings. With the exception of Burlison, which lacks the growth or funding to consider code enforcement, there is optimism that community resiliency will continue to improve through regulatory enforcement and adoption by other jurisdictions and the county.

Section 3: Risk Assessment

Hazard Identification

To begin to assess Tipton County's risk to natural hazards and identify the community's areas of highest vulnerability, the mitigation committee had to identify which hazards have or could impact the county. This hazard identification process began with researching previous hazard events that have occurred in Tipton County by going through newspaper articles, Covington-Tipton County Emergency Management Agency records, NOAA Storm Database event listings, and recalling personal experiences. From there Emergency Management staff also analyzed hazard events that could occur in the county by reviewing scientific studies and the State of Tennessee Hazard Mitigation Plan. The following hazards have been identified as hazards of concern by the Tipton County mitigation committee within the update process.

Flooding

Flooding events occur when excess water from rivers and other bodies of water overflow onto riverbanks and adjacent floodplains. In addition, lower lying regions can collect water from rainfall and poorly drained land can accumulate rainfall through ponding on the surface. Floods in Tipton County are usually caused by rainfall but may also be caused by snowmelt and man-made incidents. The below charts explain common ways flooding occurs and common factors that contribute toward the severity of floods.

Common Ways Flooding Occurs	
Methods	Description
Overland Flow	
(a) Infiltration	-Excess overland flow occurs when the rain is falling more rapidly that it infiltrates into the soil.
(b) Saturation	-Excess overland flow occurs when soil spaces are so full of water that no more rain can be absorbed.
Throughflow	-Rainwater which has infiltrated into unsaturated soil can move horizontally to the river channel. This process is slower than overland flow but faster than base flow.
Baseflow	-Rainwater which has percolated to the aquifer can seep into the river channel. This is the slowest process.

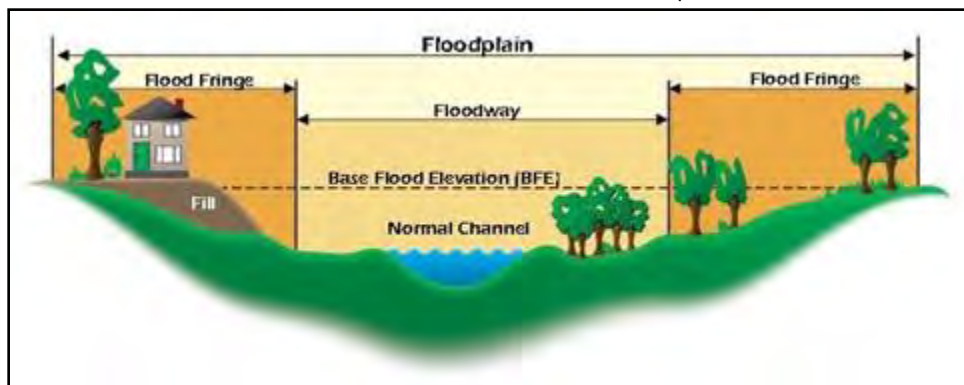
Source: The Field Studies Council

Common Causes of Flooding	
Factor	Effect on Flooding
Geology	Impermeable rocks are saturated more quickly than porous and pervious rocks. Saturation excess overland flow is more common. Sandy soils have larger pore spaces than clay soils. Infiltration is most rapid in sandy soils.
Relief	Water reaches the channel more rapidly in a steeper basin as water is travelling more quickly downhill.
Vegetation	Vegetation intercepts a large proportion of rainfall. Where trees are deciduous, discharge is higher in a forested basin in winter as there is less interception.
Meteorological Factors	Where rain is falling faster than the infiltration rate, there is infiltration-excess overland flow. This is common after a summer storm. Snow does not reach the channel but is stored on the ground surface. As snow melts, the meltwater will reach the channel quickly as infiltration is impeded if the ground is still frozen.
Catchment Shape	It takes less time for water to reach the channel in a circular basin as all extremities are roughly equidistant from the channel.
Land Use	Surface runoff is higher in urban areas because there are more urban surfaces (concrete & tarmac) and sewers take water rapidly to rivers. There is less interception and evapotranspiration and more surface runoff in a deforested catchment.
Catchment Size	Water reaches the channel more rapidly in a smaller basin as water has a shorter distance to travel.
Antecedent Conditions	The level of discharge before the storm is called the antecedent discharge. Even a small amount of rain can lead to flooding.

Source: The Field Studies Council

In Tipton County some areas are more flood-prone than others. One of the ways of identifying these flood-prone areas is through determining **the county's 100- and 500-year floodplains**. 100-year floods are calculated to be the level of flood water expected to be equaled or exceeded every 100 years on average, meaning a flood that has a 1% chance of being equaled or exceeded in magnitude in any single year. A 500-year floodplain has a 0.2% chance. A 100-year floodplain would include the areas adjoining a stream, river, or watercourse that would be covered by water in the event of a 100-year flood (see diagram below).

Characteristics of a Floodplain



Source: FEMA

Detailed Flood Insurance Rate Maps (FIRMs) are also included in [Appendix 5](#), which shows where FEMA has placed the 500-year floodplain for each jurisdiction.

Tipton County historically has had many flood events in the past. Based on NOAA NCDC data, the following charts provide a list of flood events occurring in Tipton County from January 1950 to present and a list of floods with descriptions of their impacts imposed on the community.

Flood Events in Tipton County: January 1950–Present

Location	Date	Type	Deaths	Injuries	Property Damage
TIPTON (ZONE)	5/9/1996	Flood	0	0	5.00K
TIPTON (ZONE)	3/1/1997	Flood	0	0	200.00K
COVINGTON	6/17/1997	Flash Flood	0	0	5.00K
COVINGTON	7/13/1998	Flood	0	0	1.00K
MUNFORD	6/4/2001	Flash Flood	0	0	10.00K
COVINGTON	11/26/2001	Flash Flood	0	0	5.00K
TIPTON (ZONE)	11/28/2001	Flood	0	0	100.00K
TIPTON (ZONE)	12/12/2001	Flood	0	0	1.00K
BRIGHTON	3/29/2002	Flood	0	0	1.00K
COVINGTON	11/9/2002	Flash Flood	0	0	1.00K
COVINGTON	11/10/2002	Flash Flood	0	0	1.00K
COVINGTON	12/18/2002	Flash Flood	0	0	1.00K
COVINGTON	12/19/2002	Flood	0	0	0.50K
MUNFORD	12/19/2002	Flood	0	0	0.50K
COVINGTON	5/10/2003	Flash Flood	0	0	1.00K
ATOKA	5/16/2003	Flash Flood	0	0	1.00K
MUNFORD	5/16/2003	Flash Flood	0	0	10.00K
COVINGTON	4/23/2004	Flash Flood	0	0	1.00K
ATOKA	7/19/2005	Flash Flood	0	0	1.00K
COVINGTON	11/15/2005	Flash Flood	0	0	1.00K
COVINGTON	4/4/2008	Flash Flood	0	0	0.00K
MASON	5/10/2008	Flash Flood	0	0	0.00K
MUNFORD	5/9/2009	Flash Flood	0	0	30.00K
COVINGTON	5/9/2009	Flash Flood	0	0	0.00K
MASON	12/8/2009	Flash Flood	0	0	0.00K
DETROIT	5/1/2010	Flash Flood	1	0	20.500M
MUNFORD	7/3/2010	Flash Flood	0	0	0.00K
DIXONVILLE	5/1/2011	Flood	0	0	750.00K
CANAAN GROVE	5/23/2011	Flash Flood	0	0	0.00K
WALNUT GROVE	1/30/2013	Flash Flood	0	0	20.00K
BRIGHTON CATES ARPT	4/27/2013	Flash Flood	0	0	0.00K
MUNFORD	12/21/2013	Flash Flood	0	0	0.00K
HOLLY GROVE	4/28/2014	Flash Flood	0	0	0.00K

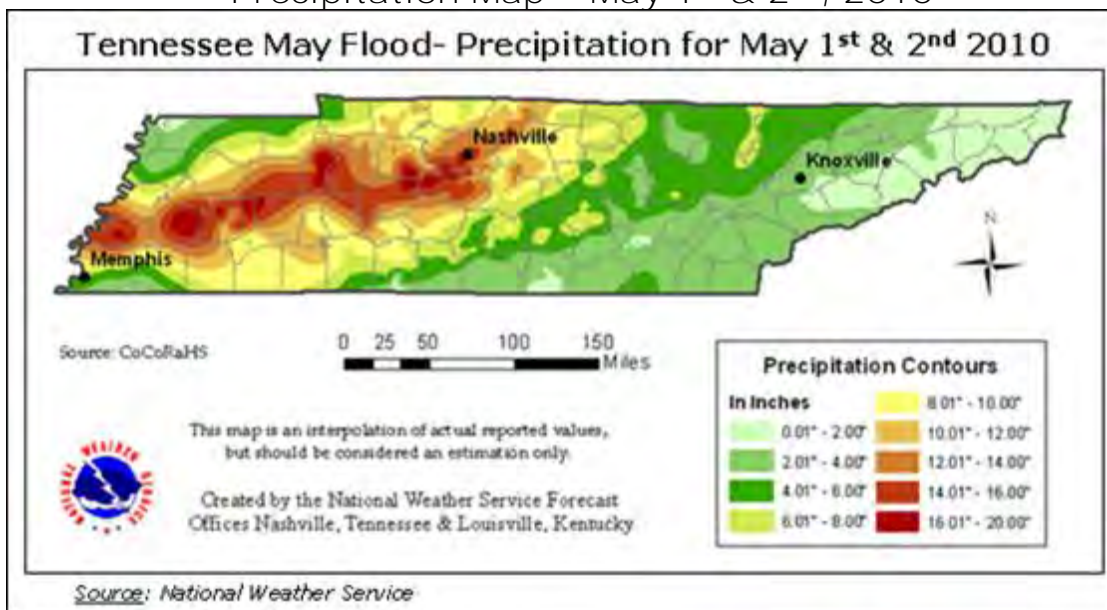
JAMESTOWN	9/11/2014	Flash Flood	0	0	0.00K
TABERNACLE	2/21/2015	Flood	0	0	0.00K
ATOKA	4/13/2015	Flash Flood	0	0	0.00K
GAINESVILLE	2/2/2016	Flash Flood	0	0	0.00K
SALEM	3/9/2016	Flash Flood	0	0	10.00K
MASON	3/10/2016	Flood	0	0	0.00K
MUNFORD	6/3/2016	Flash Flood	0	0	0.00K
GAINESVILLE	7/14/2017	Flash Flood	0	0	0.00K
TIPTON	2/22/2018	Flood	0	0	10.00K
HOLLY GROVE	3/1/2018	Flood	0	0	0.00K
CROSSTOWN	2/23/2019	Flash Flood	0	0	0.00K
TABERNACLE	8/30/2020	Flash Flood	0	0	5.00K
MASON	8/30/2020	Flash Flood	0	0	10.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature with the NCDC.

Small, localized flood events are likely to occur approximately twice times per year (over the last 24 years) in Tipton County. The severity of flooding that may occur in the county is measured by depth of inundation. Per the NCDC, the May 1st-2nd, 2010 flooding event (*DR-1909-TN*) was from a stalled front, where heavy rain produced widespread flash flooding across Tipton County. Up to 20 inches of rain fell causing devastating damage to homes, businesses, roads, and bridges. In fact, 40 roads were impassable in Tipton County due to the flooding. Twenty-one of those roads and 14 bridges were washed out as a result of the flooding. Other roads received damage just from the heavy rain. Damage was particularly bad in Atoka and Mason. Numerous vehicles were completely submerged in water. Two apartment complexes in Covington sustained major damage. In total, 309 homes received damage from the flooding. Of those, 96 homes were completely destroyed. As many as 93 businesses were flooded and of those 21 were completely destroyed. Nineteen mobile homes were flooded with 14 being destroyed. Many other structures or buildings were flooded as well. One fatality occurred in Mason. The flash flooding event transitioned into a flood event as rivers rose rapidly and overflowed their banks. Additionally, the following inundation was documented:

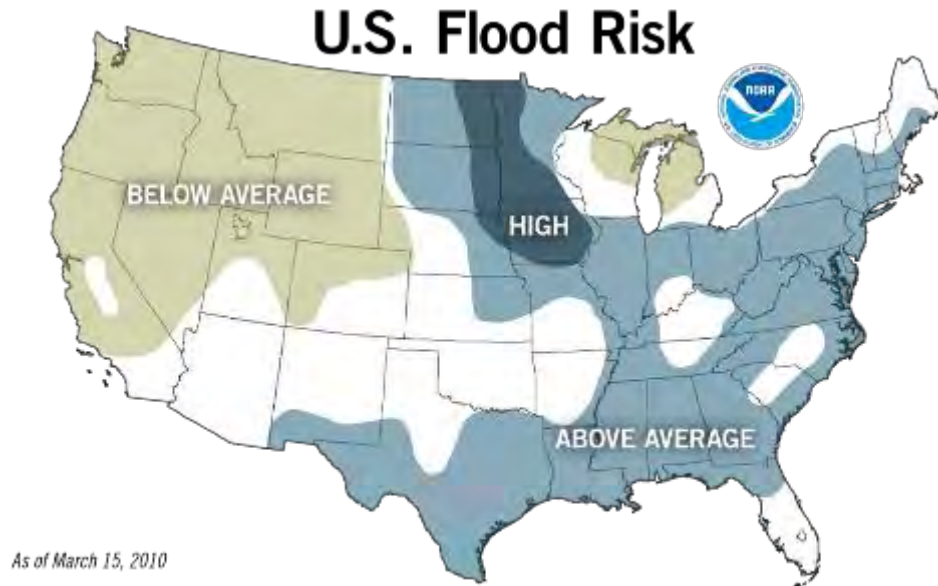
Location	Extent
Tipton County	<ul style="list-style-type: none"> Over 3' of water covering Gainsville Road, Beaver Creek Road, Grimsville Road, Beaver Creek Road, and Holly Grove Road
Covington	<ul style="list-style-type: none"> 2' of water covering Highway 51, the major thoroughfare for the city
Atoka	<ul style="list-style-type: none"> 2' of water over Maple Drive

Brighton	<ul style="list-style-type: none"> • 2-3' of water flooded fire department, with multiple requests for water rescues
Burlison	<ul style="list-style-type: none"> • No impact as Burlison has experienced zero flooding events
Garland	<ul style="list-style-type: none"> • No impacts from this event, but the jurisdiction still experiences small, localized flooding with little to no impact
Gilt Edge	<ul style="list-style-type: none"> • 3' of water over Highway 59 and SR 178
Mason	<ul style="list-style-type: none"> • 4' of water in several residential areas
Munford	<ul style="list-style-type: none"> • 2-3' of water over Watson Road

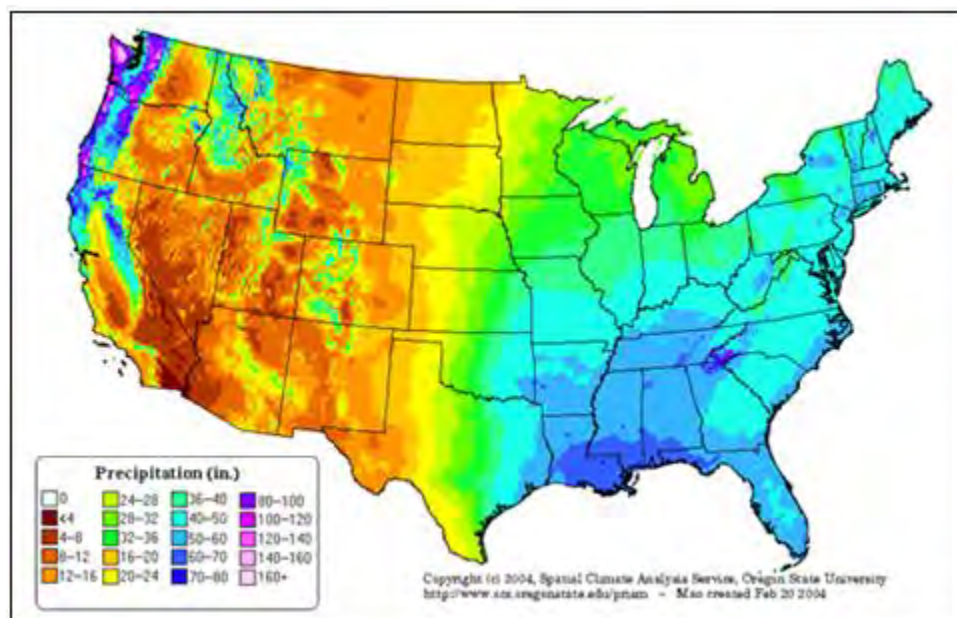
Precipitation Map – May 1st & 2nd, 2010

According to a NOAA Flood Risk Map (see map below), the majority of Tennessee was located in an “above average” risk of flooding zone during spring 2010. This proposed vulnerability is coupled with the fact that on average Tennessee usually acquires over 50-60 inches of rainfall a year (see following map).

U.S. Flood Risk (2010)



Average Annual Precipitation per Year (1971-2000)



Source: Spatial Climate Analysis Service, Oregon State University

Tipton County uses a ranking system to determine each jurisdiction's vulnerability to flooding events. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of a flood event occurring to calculate a flood risk ranking for each jurisdiction.

Flooding

Jurisdiction/Applicant	Impacts			Vulnerability $H+P+B=\#$, $\#/3=V$
	Human	Property	Business	
Tipton County	2	3	2	2.3
Covington	1	3	2	2.0
Atoka	1	3	1	1.7
Brighton	2	4	2	2.7
Burlison	1	1	1	1.0
Garland	1	2	1	1.3
Gilt Edge	2	3	1	2.0
Mason	1	2	2	1.7
Munford	1	3	1	1.7
Tipton County Schools	1	2	1	1.3

Jurisdiction/ Applicant	Vulnerability	Probability	Risk	
			$V+P=R$	
Tipton County	2.3	4	6.3	Medium
Covington	2.0	5	7.0	High
Atoka	1.7	5	6.7	Medium
Brighton	2.7	3	5.7	Medium
Burlison	1.0	1	2.0	Low
Garland	1.3	5	6.3	Medium
Gilt Edge	2.0	2	4.0	Moderate
Mason	1.7	4	5.7	Medium
Munford	1.3	5	6.3	Medium
Tipton County Schools	1.7	1	2.7	Low
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

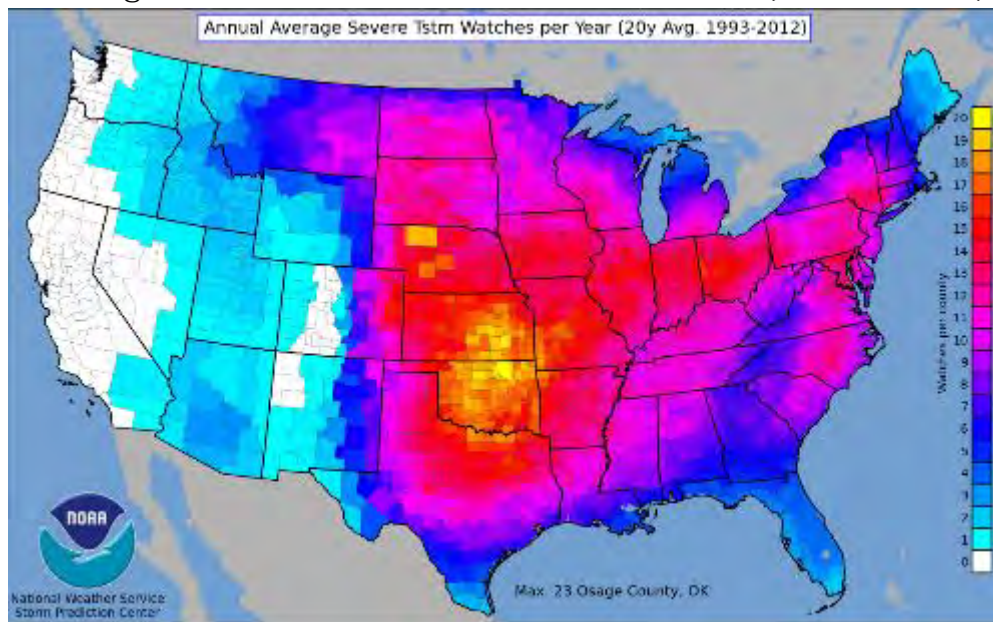
Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

For further information about flooding hazards in Tipton County, see the HAZUS vulnerability study in [Appendix 5](#).

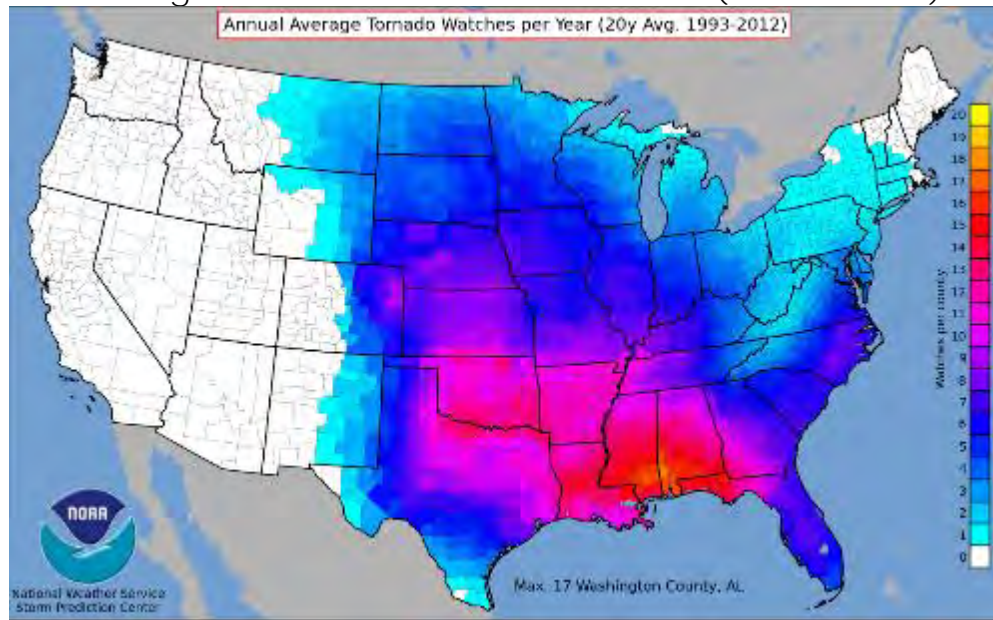
Severe Weather

According to the National Weather Service, to consider a storm severe it must encompass one of three traits: produce winds greater than 58 miles per hour (50.4 knots), produce hail $\frac{3}{4}$ of an inch or greater in diameter, or produce tornadoes. On average, a typical county in Tennessee has about 10 severe storm watches per year (see map below).

Average Severe Storm Watches Per Year (1993-2012)

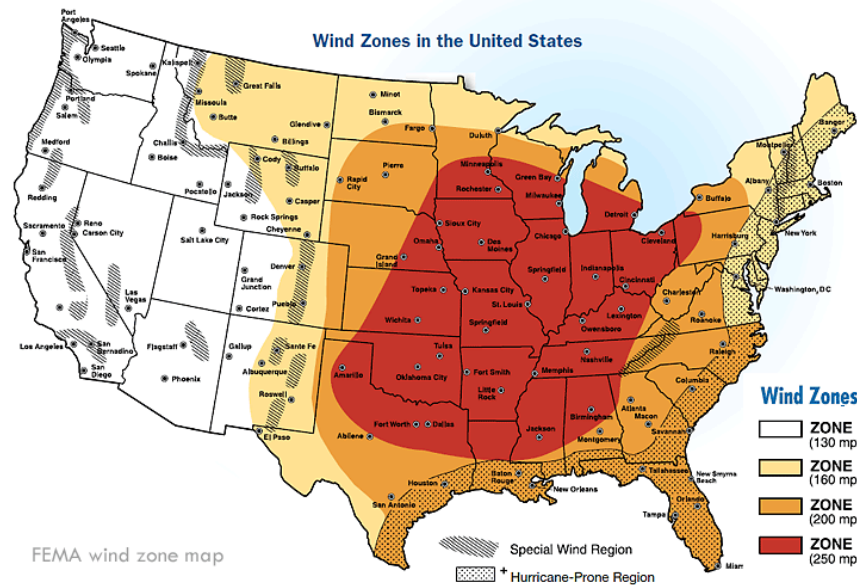


Average Tornado Watches Per Year (1993-2012)



A tornado is a violently rotating column of air that extends from a thunderstorm, etc. down to the ground, and can reach wind speeds of 40 mph to 250 mph and higher. Tornadoes paths, lengths, and widths can vary greatly. In Tipton County, all jurisdictions are vulnerable to tornado threats. The following map places much of Tennessee in the highest wind zone (see following map).

Wind Zones in the United States



Source: FEMA

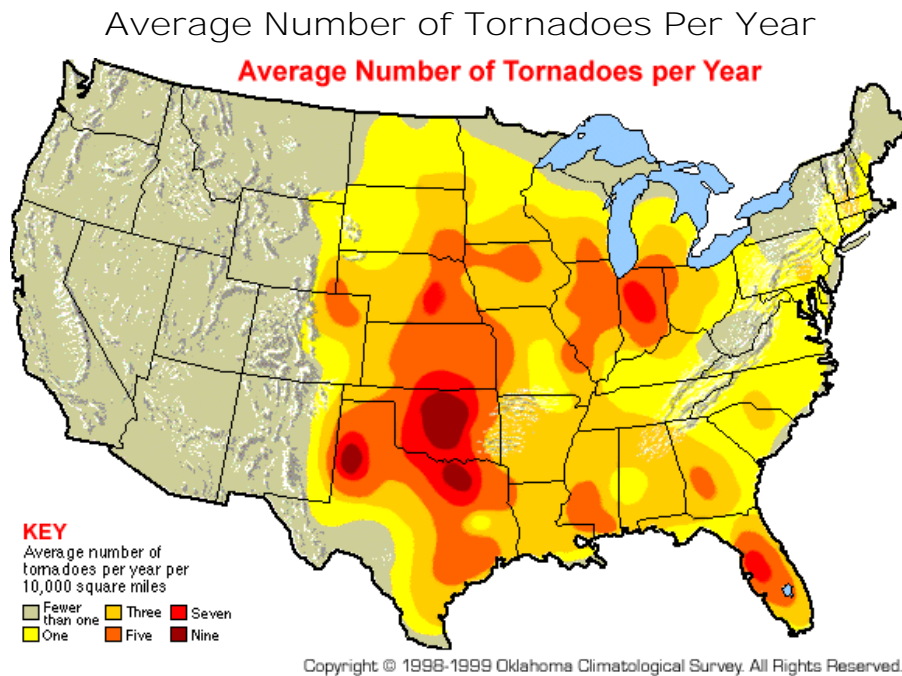
Tipton County historically has had several tornado events in the past. Based on NOAA NCDC data, the following chart provides a list of tornado events occurring in Tipton County from January 1950 to present.

Tornado Events in Tipton County: January 1950–Present

Location	Date	Magnitude	Deaths	Injuries	Property Damage
TIPTON CO.	3/4/1964	F2	0	3	25.00K
TIPTON CO.	5/31/1967	F1	1	1	25.00K
TIPTON CO.	4/3/1968	F3	4	28	2.500M
TIPTON CO.	9/3/1970	F0	0	0	0.25K
TIPTON CO.	6/7/1974	F1	1	1	25.00K
TIPTON CO.	2/22/1975	F1	0	2	25.00K
TIPTON CO.	4/25/1975	F1	1	1	25.00K
TIPTON CO.	3/29/1976	F1	0	0	25.00K
TIPTON CO.	1/7/1978	F1	0	0	250.00K
TIPTON CO.	12/7/1978	F0	0	0	25.00K
TIPTON CO.	5/9/1981	F0	0	0	0.03K
TIPTON CO.	6/4/1989	F0	0	0	0.25K
Detroit	11/27/1994	F1	0	0	50.00K
COVINGTON	9/16/1996	F0	0	0	0.00K
RANDOLPH	11/9/2002	F2	0	1	6.000M
GAINESVILLE	2/5/2008	EF0	0	0	5.00K

CANAAN GROVE	2/5/2008	EF0	0	0	7.00K
CHARLESTON	2/5/2008	EF1	0	0	75.00K
ANTIOCH	2/5/2008	EF1	0	0	50.00K
AVRETT	5/31/2013	EF1	0	0	180.00K
COVINGTON	4/30/2017	EF0	0	0	100.00K
RICHARDSONS	10/21/2019	EF0	0	0	25.00K
JAMESTOWN	10/21/2019	EF0	0	0	10.00K

The above list represents all listed incidents from the NCDL site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.



Source: Oklahoma Climatological Survey

Tornadoes occur approximately once every 2 to 3 years in Tipton County over the time period since the first recorded event (1964). The severity of tornadoes that may occur in the county is measured using the Fujita/Enhanced Fujita Scale for tornadoes (see chart below). Based on historical events, in a worst case scenario it is possible for the extent of a tornado to reach an F3 ranking, as demonstrated on April 3rd, 1968. This storm killed 4 people, injured 28, and led to over \$2.5 million in damage, or over \$20 million in inflation adjusted dollars.

Fujita Scale/Enhanced Fujita Scale for Tornadoes

Fujita / Enhanced Fujita Scale for Tornadoes				
F-Scale	Fastest Quarter Mile Wind Speed	Typical Impacts	Enhanced Scale: 3 Sec Wind Gust Speed	Enhanced F-Scale
F0	40-72 MPH	Some damage to chimney; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	65-85 MPH	EFO
F1	73-112 MPH	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.	86-110 MPH	EF1
F2	113-157 MPH	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	111-135 MPH	EF2
F3	158-206 MPH	Roof and some walls torn off well-constructed homes; trains overturned; most trees in forest uprooted.	136-165 MPH	EF3
F4	207-260 MPH	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	166-200 MPH	EF4
F5	261-318 MPH	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.	Over 200 MPH	EF5

Source: NOAA National Weather Service; The Tornado Project

Severe storm winds most commonly occur as straight-line winds; a downburst of wind created by an area of significantly rain-cooled air that spreads out in all directions after hitting the ground. All jurisdictions are vulnerable to receiving damage from these severe storm winds.

The following chart provides severe storm wind event information for Tipton County from January 2000 to present. Historically, severe storm wind events occur approximately 4 to 5 times per year in Tipton County. The severity of severe storm winds is commonly measured by wind speed (knots or mph). The strongest severe storm wind event within Tipton County in recent years was recorded on April 19th, 2011 (*DR-1979-TN*). Per the NCDC, this system caused damage from Atoka to Brighton. Six houses, four mobile homes, three businesses and eight farm buildings were destroyed. Many trees and signs were also knocked down. Total damages exceeded \$1.6 million.

Wind Events in Tipton County: January 2000 – Present

Location	Date	Type	Extent	Deaths	Injuries	Property Damage
COVINGTON	5/26/2000	Thunderstorm Wind		0	0	5.00K
COVINGTON	7/20/2000	Thunderstorm Wind		0	0	5.00K
COVINGTON	8/4/2000	Thunderstorm Wind		0	0	5.00K
MUNFORD	8/10/2000	Thunderstorm Wind		0	0	10.00K
MUNFORD	2/21/2001	Thunderstorm Wind		0	0	10.00K
IDAVILLE	2/24/2001	Thunderstorm Wind		0	0	5.00K
COVINGTON	5/11/2001	Thunderstorm Wind		0	0	10.00K
MUNFORD	5/20/2001	Thunderstorm Wind		0	0	10.00K
ATOKA	6/4/2001	Thunderstorm Wind		0	0	5.00K
MUNFORD	6/4/2001	Thunderstorm Wind		0	0	5.00K
ATOKA	6/28/2001	Thunderstorm Wind		0	0	10.00K
RICHARDSONS	10/24/2001	Thunderstorm Wind		0	1	10.00K
COVINGTON	5/5/2003	Thunderstorm Wind	60 kts. EG	0	0	5.00K
ATOKA	5/6/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MASON	5/6/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
DRUMMONDS	5/10/2003	Thunderstorm Wind	65 kts. EG	0	0	30.00K
DRUMMONDS	5/16/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
TIPTON	5/16/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
COVINGTON	6/11/2003	Thunderstorm Wind	50 kts. EG	0	0	1.00K
COVINGTON	6/11/2003	Thunderstorm Wind	55 kts. EG	0	0	5.00K
COUNTYWIDE	8/22/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MASON	3/4/2004	Thunderstorm Wind	50 kts. EG	0	0	1.00K

COUNTYWIDE	5/30/2004	Thunderstorm Wind	55 kts. EG	0	0	10.00K
GILT EDGE	6/13/2004	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MUNFORD	7/4/2004	Thunderstorm Wind	50 kts. EG	0	0	10.00K
GILT EDGE	7/6/2004	Thunderstorm Wind	55 kts. EG	0	0	5.00K
COVINGTON	8/28/2004	Thunderstorm Wind	50 kts. EG	0	0	10.00K
DRUMMONDS	1/13/2005	Thunderstorm Wind	50 kts. EG	0	0	25.00K
ATOKA	2/21/2005	Thunderstorm Wind	55 kts. EG	0	0	10.00K
BURLISON	9/25/2005	Thunderstorm Wind	50 kts. EG	0	0	5.00K
COVINGTON	9/25/2005	Thunderstorm Wind	50 kts. EG	0	0	1.00K
COVINGTON	11/15/2005	Thunderstorm Wind	60 kts. EG	0	0	1.00K
GARLAND	4/2/2006	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MUNFORD	8/18/2007	Thunderstorm Wind	50 kts. EG	0	0	4.00K
MUNFORD	9/26/2007	Thunderstorm Wind	50 kts. EG	0	0	3.00K
GARLAND	10/18/2007	Thunderstorm Wind	50 kts. EG	0	0	4.00K
ATOKA	10/18/2007	Thunderstorm Wind	50 kts. EG	0	0	10.00K
BEAVER	11/5/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
TIPTON (ZONE)	1/29/2008	High Wind	50 kts. MG	0	0	12.00K
TIPTON (ZONE)	2/11/2009	Strong Wind	44 kts. EG	0	0	10.00K
IDAVILLE	7/26/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MASON	4/24/2010	Thunderstorm Wind	50 kts. EG	0	0	1.00K
ATOKA	7/12/2010	Thunderstorm Wind	52 kts. EG	0	0	0.00K
TIPTON (ZONE)	10/26/2010	Strong Wind	48 kts. EG	0	0	10.00K
ATOKA	4/4/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K

ATOKA	4/19/2011	Thunderstorm Wind	65 kts. EG	0	0	1.660M
ATOKA	5/23/2011	Thunderstorm Wind	54 kts. MG	0	0	0.00K
ATOKA	6/16/2011	Thunderstorm Wind	55 kts. MG	0	0	0.00K
BURLISON	6/16/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BURLISON	6/28/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MASON	1/22/2012	Thunderstorm Wind	55 kts. EG	0	0	5.00K
ATOKA	5/31/2012	Thunderstorm Wind	50 kts. EG	0	0	1.00K
MASON	6/3/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BRIDE	6/11/2012	Thunderstorm Wind	56 kts. EG	0	0	0.00K
ATOKA	9/7/2012	Thunderstorm Wind	59 kts. MG	0	0	0.00K
BURLISON	5/21/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
WALNUT GROVE	5/31/2013	Thunderstorm Wind	50 kts. EG	0	0	28.00K
COVINGTON	7/18/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
COVINGTON	12/21/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
CROSSTOWN	12/21/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
JAMESTOWN	6/5/2014	Thunderstorm Wind	61 kts. EG	0	0	0.00K
BRIGHTON	6/7/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K
COVINGTON	6/12/2014	Thunderstorm Wind	52 kts. MG	0	0	0.00K
COVINGTON	6/12/2014	Thunderstorm Wind	62 kts. MG	0	0	0.00K
BURLISON	10/2/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GARLAND	4/3/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GILT EDGE	7/14/2015	Thunderstorm Wind	61 kts. EG	0	0	0.00K
MUNFORD	7/14/2015	Thunderstorm Wind	76 kts. MG	0	0	0.00K

COVINGTON	7/14/2015	Thunderstorm Wind	50 kts. EG	0	0	3.00K
MT CARMEL	8/5/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
RICHARDSONS	8/5/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SALEM	11/6/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
COVINGTON	11/11/2015	Thunderstorm Wind	55 kts. EG	0	0	0.00K
BRIGHTON	3/15/2016	Thunderstorm Wind	50 kts. EG	0	0	0.00K
DRUMMONDS	3/31/2016	Thunderstorm Wind	50 kts. EG	0	0	0.00K
IDAVILLE	7/15/2016	Thunderstorm Wind	60 kts. EG	0	0	20.00K
COVINGTON	7/22/2016	Thunderstorm Wind	50 kts. EG	0	0	10.00K
TIPTON (ZONE)	11/28/2016	Strong Wind	48 kts. EG	0	0	5.00K
CROSSTOWN	3/1/2017	Thunderstorm Wind	50 kts. EG	0	0	10.00K
SALEM	3/7/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SOLO	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
FLATWOOD	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	50.00K
MASON	6/18/2017	Thunderstorm Wind	50 kts. EG	0	0	20.00K
COVINGTON	7/15/2018	Thunderstorm Wind	52 kts. EG	0	0	0.00K
DIXONVILLE	6/19/2019	Thunderstorm Wind	55 kts. EG	0	0	30.00K
SOLO	6/19/2019	Thunderstorm Wind	53 kts. EG	0	0	0.00K
ATOKA	5/22/2020	Thunderstorm Wind	56 kts. EG	0	0	0.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Hail is the frozen form of precipitation, falling as small spheres of solid ice. Even though the risk from hail is relatively low, all jurisdictions have the possibility of hail causing some window and roof damage.

TORRO Hail Index

TORRO Hail Index			
Scale	Max Diameter	Comparisons	Typical Impacts
H0	5-9 MM	Pea	No damage.
H1	10-15 MM	Mothball	Slight general damage to plants, crops.
H2	16-20 MM	Marble	Significant damage to fruit, crops, vegetation.
H3	21-30 MM	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	31-40 MM	Pigeon's Egg	Widespread glass damage, vehicle bodywork damage.
H5	41-50 MM	Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	51-60 MM	Hen's Egg	Bodywork of grounded aircraft dented, brick walls pitted.
H7	61-75 MM	Tennis Ball	Severe roof damage, risk of serious injuries.
H8	76-90 MM	Soft Ball	Severe damage to aircraft bodywork.
H9	91-100 MM	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

Source: The Tornado & Storm Research Organization

The following chart provides hail event information for Tipton County. Historically, hail events occur approximately 3 times per year in Tipton County. The severity of hail is measured by the diameter of the hail itself, commonly using the TORRO Hail Index (see following chart). Tipton County's largest hail extent is reported at 2.75" (H7), as indicated on April 29th, 2005. In this event, hail led to damage to vehicles and roofs.

Hail Events in Tipton County: January 2000 – Present

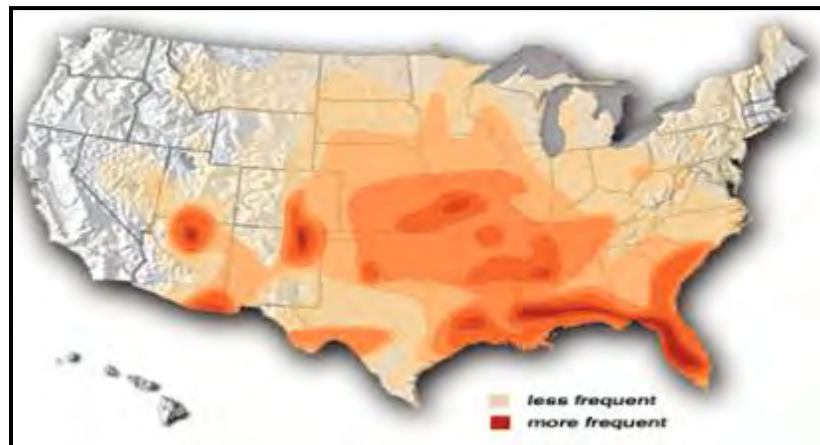
Location	Date	Extent	Deaths	Injuries	Property Damage
COVINGTON	4/27/2000	0.75 in.	0	0	0.01K
BRIGHTON	3/29/2002	1.00 in.	0	0	0.12K
COVINGTON	11/10/2002	1.00 in.	0	0	0.10K
COVINGTON	11/10/2002	1.00 in.	0	0	0.20K
COVINGTON	12/18/2002	0.75 in.	0	0	0.01K
BRIGHTON	4/6/2003	1.00 in.	0	0	0.10K
COVINGTON	4/6/2003	0.75 in.	0	0	0.01K
BURLISON	4/20/2003	0.75 in.	0	0	0.02K
COVINGTON	5/5/2003	0.88 in.	0	0	0.05K
COVINGTON	5/5/2003	0.88 in.	0	0	0.05K
ATOKA	5/5/2003	1.25 in.	0	0	0.25K
BRIGHTON	5/6/2003	2.75 in.	0	0	7.50K
COVINGTON	5/6/2003	0.75 in.	0	0	0.01K
COVINGTON	5/10/2004	0.75 in.	0	0	0.01K
BRIGHTON	9/12/2004	0.75 in.	0	0	0.01K
BRIGHTON	9/12/2004	0.75 in.	0	0	0.01K
COVINGTON	2/21/2005	1.00 in.	0	0	2.00K
COVINGTON	2/21/2005	2.00 in.	0	0	1.00K
COVINGTON	2/21/2005	0.88 in.	0	0	0.06K
COVINGTON	3/30/2005	0.75 in.	0	0	0.02K
GILT EDGE	4/29/2005	2.75 in.	0	0	8.50K
MUNFORD	11/15/2005	1.00 in.	0	0	0.10K

MUNFORD	11/15/2005	1.00 in.	0	0	0.10K
MUNFORD	4/2/2006	0.88 in.	0	0	2.50K
DIXONVILLE	4/2/2006	1.25 in.	0	0	6.00K
COVINGTON	5/3/2006	0.75 in.	0	0	1.00K
COVINGTON	4/3/2007	0.75 in.	0	0	1.00K
DRUMMONDS	4/3/2007	1.00 in.	0	0	1.00K
DRUMMONDS	8/2/2007	0.75 in.	0	0	1.00K
ATOKA	8/18/2007	0.75 in.	0	0	1.00K
ATOKA	3/15/2008	0.75 in.	0	0	1.00K
MASON	5/10/2008	0.75 in.	0	0	1.00K
ATOKA	3/25/2010	0.75 in.	0	0	0.00K
MASON	4/24/2010	1.50 in.	0	0	0.00K
BURLISON	4/19/2011	1.00 in.	0	0	0.00K
DRUMMONDS	4/19/2011	0.75 in.	0	0	0.00K
TIPTON	4/26/2011	1.50 in.	0	0	0.00K
DRUMMONDS	4/26/2011	1.50 in.	0	0	0.00K
ATOKA	4/26/2011	1.00 in.	0	0	0.00K
ATOKA	5/1/2011	1.00 in.	0	0	0.00K
MUNFORD	5/13/2011	0.75 in.	0	0	0.00K
ATOKA	5/25/2011	1.00 in.	0	0	0.00K
CANAAN GROVE	5/25/2011	1.25 in.	0	0	0.00K
GILT EDGE	9/14/2011	1.00 in.	0	0	0.00K
ATOKA	1/22/2012	0.88 in.	0	0	0.00K
CROSSTOWN	3/31/2012	0.75 in.	0	0	0.00K
ATOKA	3/31/2012	0.75 in.	0	0	0.00K
ATOKA	3/31/2012	1.00 in.	0	0	0.00K
IDAVILLE	10/17/2012	1.00 in.	0	0	0.00K
SALEM	7/10/2013	0.75 in.	0	0	0.00K
MUNFORD	9/1/2013	1.00 in.	0	0	0.00K
BURLISON	9/1/2013	1.00 in.	0	0	0.00K
MASON	12/23/2015	1.50 in.	0	0	0.00K
BURLISON	1/9/2016	1.00 in.	0	0	0.00K
CANAAN GROVE	3/15/2016	1.00 in.	0	0	0.00K
ATOKA	3/31/2016	1.00 in.	0	0	0.00K
IDAVILLE	2/7/2017	0.88 in.	0	0	0.00K
COVINGTON	3/27/2017	1.50 in.	0	0	0.00K
ANTIOCH	3/27/2017	1.50 in.	0	0	0.00K
MUNFORD	5/15/2019	0.88 in.	0	0	0.00K
CROSSTOWN	5/15/2019	1.00 in.	0	0	0.00K
CROSSTOWN	5/15/2019	1.25 in.	0	0	0.00K
DIXONVILLE	5/15/2019	1.25 in.	0	0	0.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Lightning is an enormous electrical discharge that is caused by an imbalance between positive and negative charges. During a storm, colliding particles of rain, ice, or snow increase this imbalance and often negatively charge the lower reaches of storm clouds. Objects on the ground, like steeples, trees, and the Earth itself, become positively charged—creating an imbalance that nature seeks to remedy by passing current between the two charges. Lightning events may affect the entire area of Tipton County any time of the year, though they are more numerous in spring and summer.

Lightning Probability Incidence Map:
Annual Frequency of Cloud-to-Ground Lightning



The following chart provides lightning event information for Tipton County. Per the NCDC, lightning strikes occur approximately once every two to three years in Tipton County per the mitigation committee, although this data is often not captured by the NCDC. This is indicated by only one strike being recorded within the last 20 years. The severity of damages depends on what the lightning strikes, as illustrated on May 3rd, 2007. In this event, lightning struck a house on Eagle Tree Road in Covington. As a result of the lightning, smoke was coming from the house. In addition, a hole was punched in the roof and the chimney had collapsed.

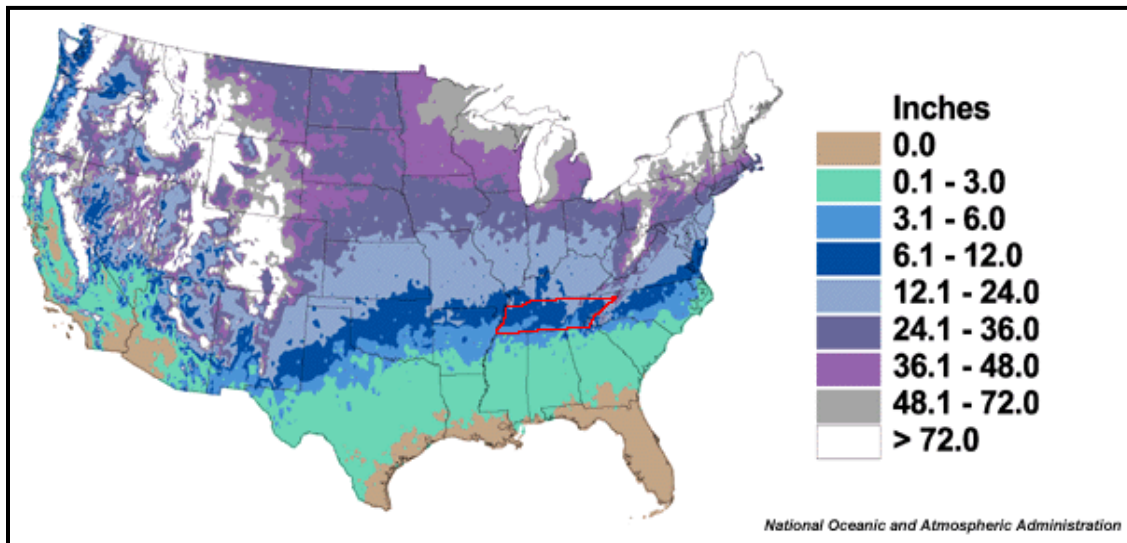
Recorded Lightning Impacts in Tipton County: January 2000 – Present

Location	Date	Deaths	Injuries	Property Damage
COVINGTON	5/3/2007	0	0	5.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

A freeze occurs when temperatures are below 32 degrees Fahrenheit for a period of time. These temperatures can damage agricultural crops, burst **water pipes, and create layers of "black ice."** Winter storms are events that can range from a few hours of moderate snow to blizzard-like circumstances that can affect driving conditions and impact communications, electricity, and other services. In Tipton County, all jurisdictions are vulnerable to freezes and moderate winter storms in varying degrees, but not to the severity level seen in much of the northern U.S. Mean snowfall per year is from 6-12" annually.

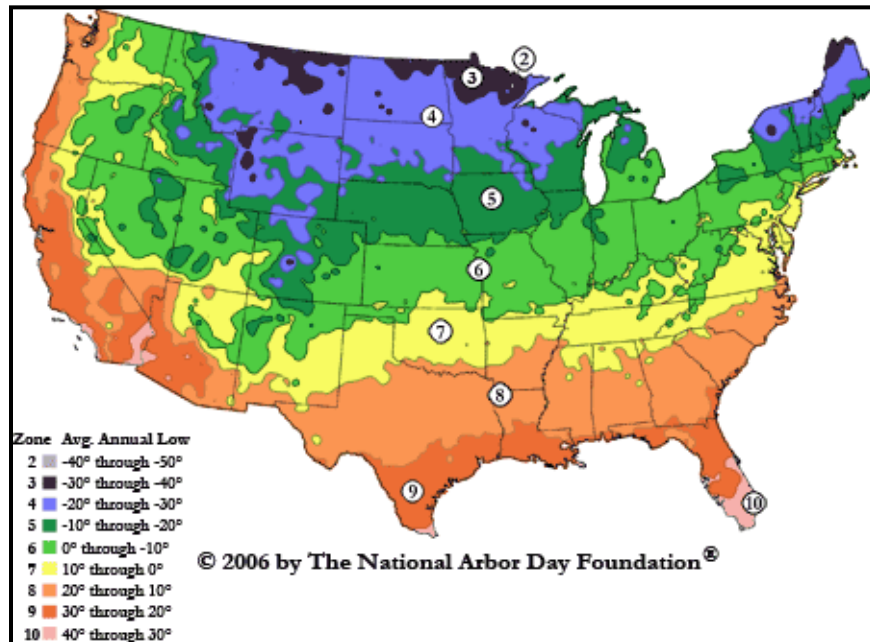
Average Mean Snowfall Per Year



Source: NOAA

Tipton County can experience temperatures between 15 to 5 degrees Fahrenheit, thus causing multiple freeze conditions during the winter months (see the following map for other average lows).

Average Annual Low Temperatures



Source: NOAA

The following chart provides winter weather event information for Tipton County. Based on previous occurrences, Tipton County experiences winter weather 2 to 3 times per year. Winter weather can occasionally be severe, as illustrated in the ice storm on January, 1998. In this event, a winter storm brought a mix of freezing rain, sleet, and snow to much of southwest Tennessee. Numerous trees, power lines and phone lines were brought down by the freezing rain and sleet leaving more than 75,000 homes without power. Several areas had fallen trees damaging homes and cars. Up to 4 inches of snow accumulated in some areas.

Winter Events in Tipton County: January 2000 – Present

Jurisdiction	Date	Type	Deaths	Injuries	Property Damage
TIPTON (ZONE)	1/27/2000	Heavy Snow	0	0	0.00K
TIPTON (ZONE)	12/13/2000	Winter Storm	0	0	20.00K
TIPTON (ZONE)	2/5/2002	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/6/2003	Heavy Snow	0	0	1.00K
TIPTON (ZONE)	2/25/2003	Heavy Snow	0	0	1.00K
TIPTON (ZONE)	12/22/2004	Winter Storm	0	0	1.00K
TIPTON (ZONE)	2/10/2006	Winter Storm	0	0	1.00K
TIPTON (ZONE)	2/18/2006	Winter Storm	0	0	1.00K
TIPTON (ZONE)	2/1/2007	Winter Weather	0	0	0.00K
TIPTON (ZONE)	3/7/2008	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/5/2009	Ice Storm	0	0	0.00K
TIPTON (ZONE)	1/26/2009	Ice Storm	0	0	0.00K
TIPTON (ZONE)	2/28/2009	Winter Storm	0	0	0.00K

TIPTON (ZONE)	3/1/2009	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/29/2010	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/8/2010	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/9/2011	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/20/2011	Winter Weather	0	0	0.00K
TIPTON (ZONE)	1/25/2011	Winter Weather	0	0	0.00K
TIPTON (ZONE)	2/7/2011	Winter Weather	0	0	0.00K
TIPTON (ZONE)	2/9/2011	Winter Storm	0	0	0.00K
TIPTON (ZONE)	11/28/2011	Winter Weather	0	0	0.00K
TIPTON (ZONE)	12/7/2011	Winter Weather	0	0	0.00K
TIPTON (ZONE)	12/25/2012	Winter Weather	0	0	0.00K
TIPTON (ZONE)	1/15/2013	Winter Weather	0	0	0.00K
TIPTON (ZONE)	12/5/2013	Winter Storm	0	0	0.00K
TIPTON (ZONE)	12/7/2013	Winter Weather	0	0	0.00K
TIPTON (ZONE)	2/2/2014	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/4/2014	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/8/2014	Winter Weather	0	0	0.00K
TIPTON (ZONE)	3/2/2014	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/15/2015	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/20/2015	Winter Storm	0	0	0.00K
TIPTON (ZONE)	3/4/2015	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/20/2016	Winter Weather	0	0	0.00K
TIPTON (ZONE)	1/22/2016	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/6/2017	Winter Weather	0	0	0.00K
TIPTON (ZONE)	3/11/2017	Winter Weather	0	0	0.00K
TIPTON (ZONE)	1/12/2018	Winter Storm	0	0	0.00K
TIPTON (ZONE)	1/15/2018	Winter Storm	0	0	0.00K
TIPTON (ZONE)	11/14/2018	Winter Weather	0	0	0.00K
TIPTON (ZONE)	12/8/2018	Winter Weather	0	0	0.00K
TIPTON (ZONE)	2/10/2021	Ice Storm	0	0	0.00K
TIPTON (ZONE)	2/14/2021	Winter Storm	0	0	0.00K
TIPTON (ZONE)	2/17/2021	Heavy Snow	0	0	0.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Throughout the county all buildings and infrastructure are vulnerable to severe weather impacts. Tipton **County's building stock can be broken** down into the following percentage categories: 69% residential, 18% commercial, 6% industrial, 1% agricultural, 3% religious, 1% governmental, and 2% educational. In the county, manufactured homes, electrical lines, and older barns are some of the most vulnerable features. **Many of these structures wouldn't receive direct impacts from winter** storms but they could receive indirect impacts such as downed electrical lines that cut off electricity to the structures, frozen pipelines that crack,

destroyed agriculture crops, and customers not being able to access travels to the structures due to ice covered roads. In the county, road traveling conditions, electrical lines, and agricultural functions are some of the most vulnerable features.

Tipton County uses a ranking system to determine each jurisdiction's vulnerability to severe weather events. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of a freeze/winter storm event occurring to calculate a risk ranking for each jurisdiction.

In evaluating the risk of severe weather, jurisdictions viewed incidents that impacted day-to-day business as opposed to all incidents indicated by the NCDC. Additionally, Tipton County Schools views the threat as impacting the ability to transport school children as opposed to a direct threat to infrastructure.

Severe Weather

Jurisdiction/Applicant	Impacts			Vulnerability <i>H+P+B=#; #/3=V</i>
	<i>Human</i>	<i>Property</i>	<i>Business</i>	
Tipton County	4	5	3	4.0
Covington	4	5	5	4.7
Atoka	2	3	1	2.0
Brighton	2	2	1	1.7
Burlison	3	3	1	2.3
Garland	3	3	1	2.3
Gilt Edge	3	3	1	2.3
Mason	2	2	3	2.3
Munford	4	3	2	3.0
Tipton County Schools	4	5	3	4.0

Jurisdiction/ Applicant	Vulnerability	Probability	Risk $V+P=R$	
Tipton County	4.0	5	9.0	Severe
Covington	4.7	4	8.7	Severe
Atoka	2.0	5	7.0	High
Brighton	1.7	5	6.7	Medium
Burlison	2.3	5	7.3	High
Garland	2.3	5	7.3	High
Gilt Edge	2.3	2	4.3	Moderate
Mason	2.3	3	5.3	Medium
Munford	3.0	5	8.0	High
Tipton County Schools	4.0	5	9.0	Severe
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

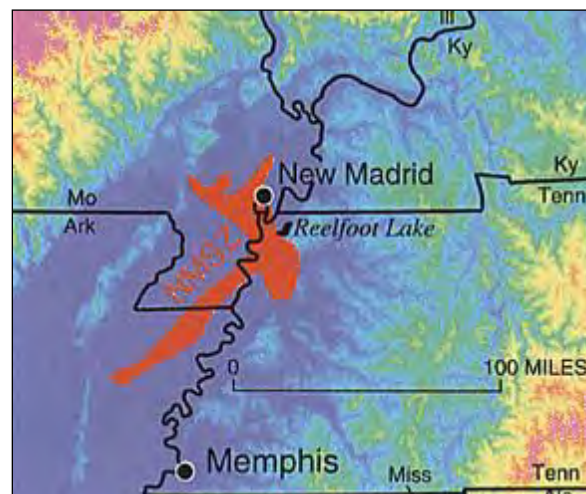
Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

Earthquakes

Tipton County is in close proximity to the major intraplate (within a tectonic plate) seismic zone known as the New Madrid Seismic Zone. The New Madrid Seismic Zone (NMSZ) is an approximately 120-mile long fault system that stretches across five states including Western Tennessee.

New Madrid Seismic Zone



Tipton County experiences small magnitude earthquakes approximately once every 4 years, as indicated on the list below.

Location	Date	Magnitude	Depth
11 km SSE of Wilson, Arkansas	4/15/2004	1.6	9.13
10 km SSE of Wilson, Arkansas	12/4/2016	1.87	10.3
9 km SE of Wilson, Arkansas	9/2/2020	1.89	8.6
3 km N of Gilt Edge, Tennessee	10/6/2020	2.31	12.82
6 km ENE of Garland, Tennessee	10/26/2020	1.86	1.51

That said, the NMSZ is known for producing four of the largest North American earthquakes in recorded history, all in which would have had been felt in Tipton County. This includes the noted three-month period

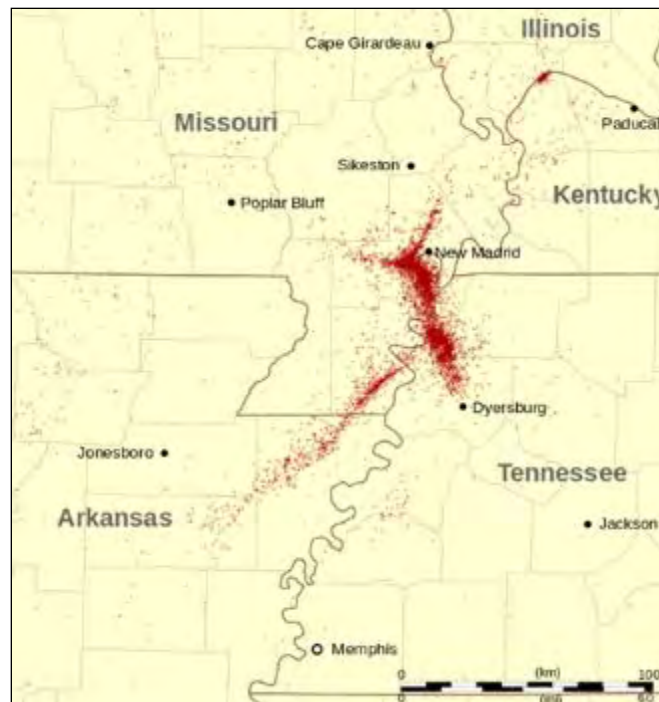
between December 1811 and February 1812 that had quakes reaching Richter Scale magnitudes into the 7.0 through 8.6 ranges, which created Reelfoot Lake in Lake County, Tennessee.

Richter Scale for Earthquakes		
Magnitudes	Description	Typical Impacts
< 2.0	Micro	Not felt.
2.0-2.9	Slight	Generally not felt, but recorded.
3.0-3.9	Minor	Often felt, but rarely causes damage.
4.0-4.9	Light	Noticeable shaking of indoor items, rattling noises. Significant damage likely.
5.0-5.9	Moderate	Can cause major damage to poorly constructed building over small regions. At most slight damage to well-designed buildings.
6.0-6.9	Strong	Can be destructive in areas up to about 100 miles across populated areas.
7.0-7.9	Major	Can cause serious damage over larger areas.
8.0-8.9	Great	Can cause serious damage in areas several hundred miles across.
9.0-9.9	Epic	Devastating in areas several thousand miles across.

Source: USGS

Since the 1812 earthquakes, the largest recorded quakes from this zone were the October 1895, 6.6 magnitude quake (epicenter Charleston, MO) and the November 1968, 5.5 magnitude quake (epicenter in Dale, IL). From the time when seismic measurement instruments were installed in **and around the zone in the 1970's, more than 4,000 small earthquakes** have been recorded, with the vast majority being too small to be felt.

NMSZ Earthquakes Recorded Since 1974

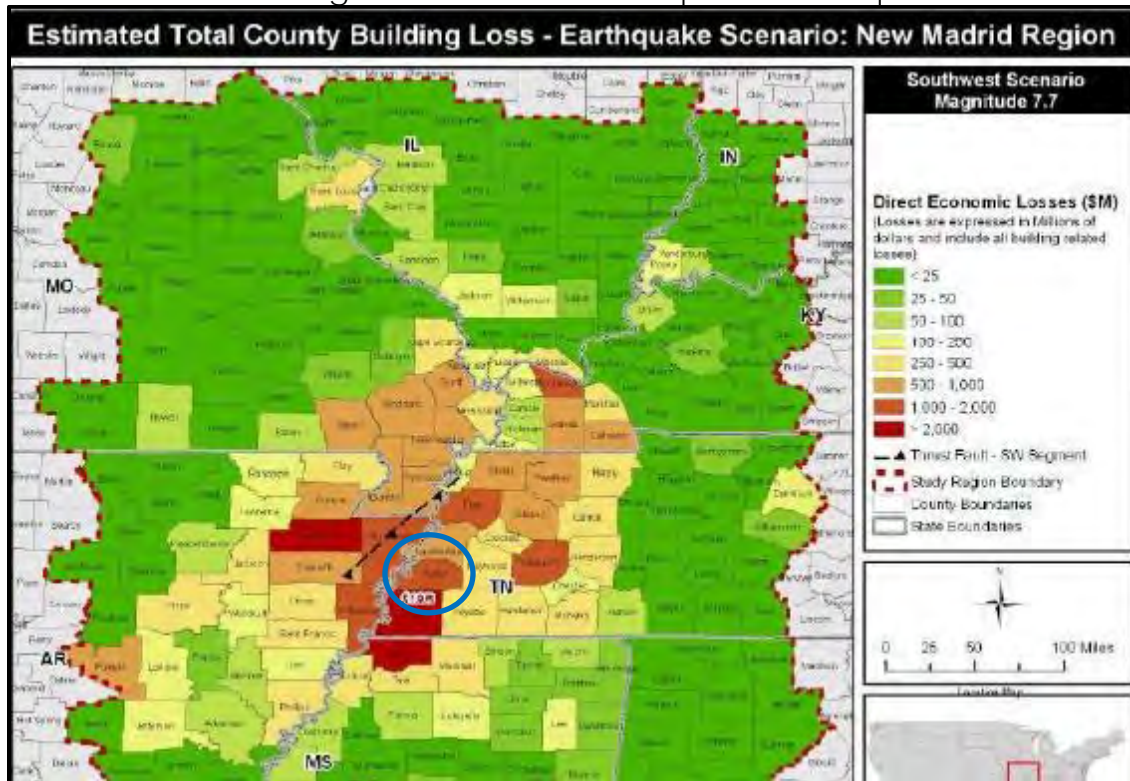


Source: USGS

According to a FEMA report filed in 2008, a serious earthquake in the NMSZ could result in the highest economic loss due to a natural disaster

in U.S. history, causing widespread and catastrophic damage across a seven-state radius with most of the worst impacts taking place in Western Tennessee (includes Tipton County). Based on this report, a 7.7 magnitude quake in the NMSZ would result in thousands of fatalities, hundreds-of-billions of dollars in damage to structures, and total disruption of vital infrastructure in Western Tennessee.

Estimated Building Losses – Catastrophic Earthquake Scenario



Source: USGS

Tipton County sits in what FEMA/TEMA considers the 20-county New Madrid Impact Zone. Statistical earthquake vulnerability studies from FEMA show that out of these 20 counties that Tipton County will receive moderate to severe impacts because of its close proximity to the NMSZ. As indicated in the above map, building damage will be \$1-2 billion in a catastrophic earthquake event.

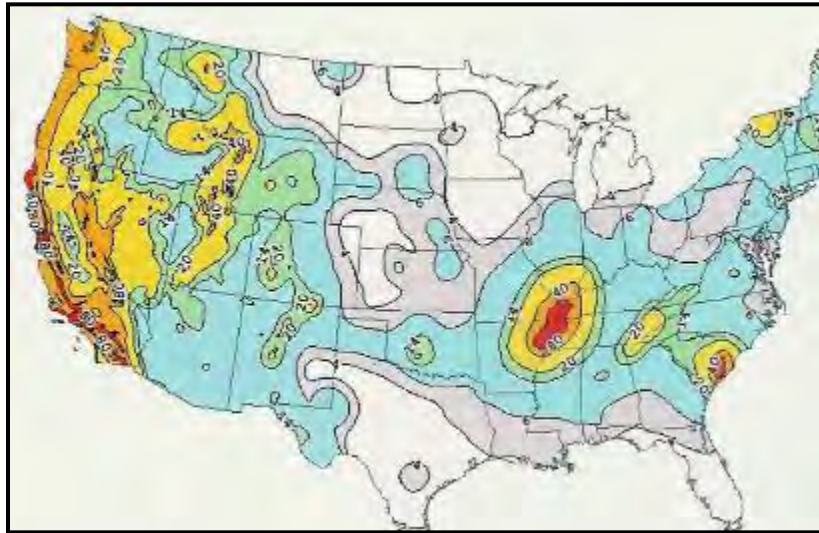
Furthermore, according to the 2007 Mid-American Earthquake (MAE) Center Study, Tipton County will experience the following in a catastrophic earthquake scenario:

- 104 fatalities
- 1,523 injuries
- 18,244 displaced residents, of which 4,390 will require shelter
- >931,000 tons of debris

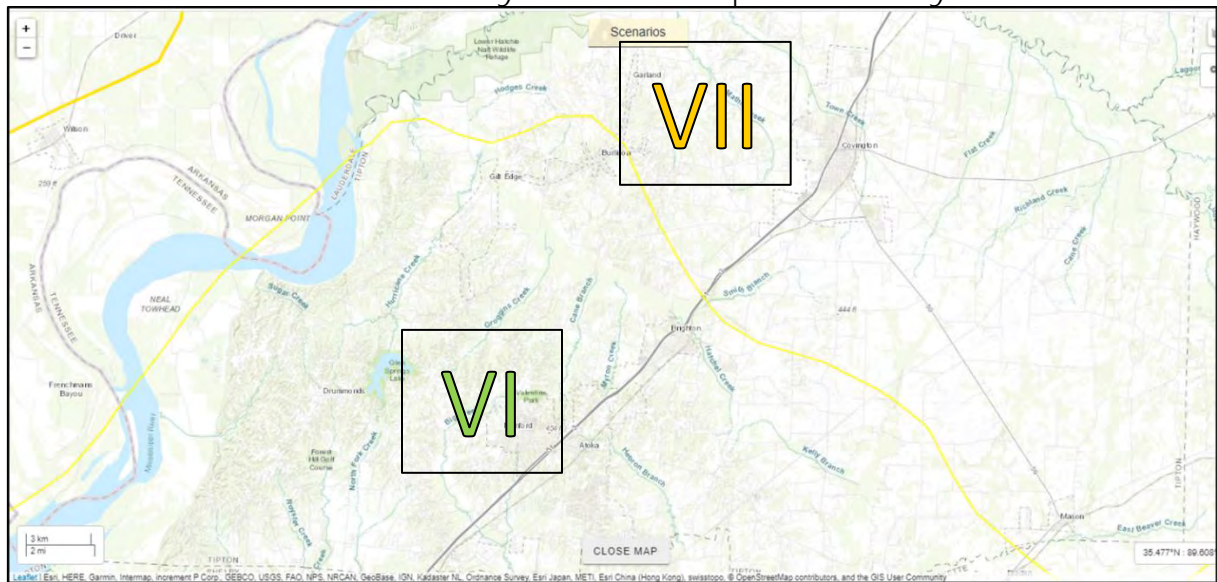
- >18,000 households without power on day 1
- >93% of households without potable water 30 days post-event
- >18,500 residences will experience moderate or greater damage
- 0% police station functionality on day 1
- 0% fire station functionality on day 1
- 0% hospital functionality until approximately 30 days post-event
- 0% school functionality on day 1
- <27% communications functionality on day 1

Throughout the county many buildings and the majority of infrastructure networks could be vulnerable to earthquake impacts. Tipton **County's** building stock can be broken down into the following percentage categories: 69% residential, 18% commercial, 6% industrial, 1% agricultural, 3% religious, 1% governmental, and 2% educational. Throughout the county all buildings and infrastructure are vulnerable to earthquake impacts.

National Seismic Hazard Map
Ground Motions with a 2% Chance of Occurring in 50 Years



Mercali Intensity Zones In Tipton County



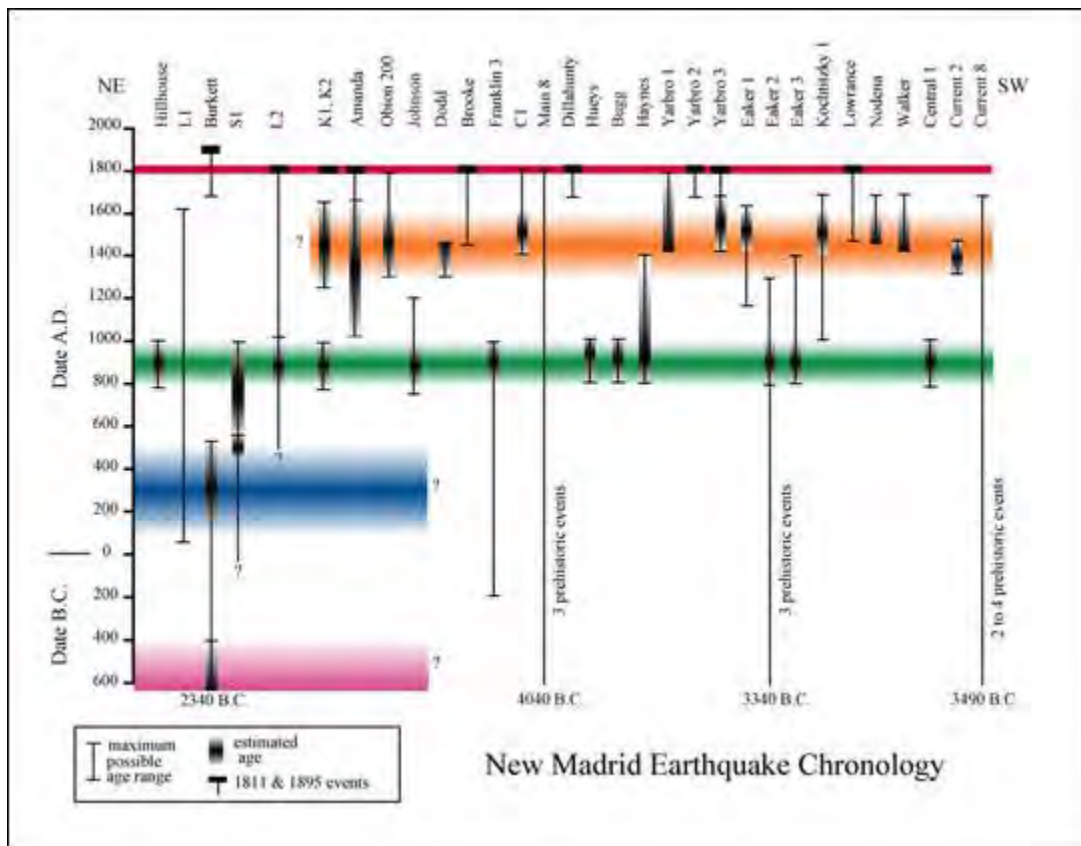
Source: USGS

As indicated in the above maps, all of Tipton County's jurisdictions and districts sit within intensity zones VI (strong) to VII (very strong) of the Modified Mercali Intensity Scale due to its proximity to the New Madrid Seismic Zone.

CIIM Intensity	People's Reaction	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		
III	Felt by several; vibration like passing of truck.	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows within the community.	Trees and bushes shaken noticeably.
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

The current lack of apparent land movement along the NMSZ has long puzzled scientists. Currently, GPS measurements show that the NMSZ faults are moving no more than 0.0079 inches a year. In contrast the San Andreas Fault in California moves up to 1.5 inches a year. This has led some researchers to believe that the fault may be “shutting down” while others say it is a “sleeping giant.” These differing views have made it difficult for public policy makers to decide on if, how, and how much to prepare for and spend on mitigating a potential large-scale earthquake.

New Madrid Seismic Zone Earthquake Liquefaction Chronology



Source: USGS

Over the past decade, paleo seismic studies have begun to unravel the earthquake history of the New Madrid seismic zone. Studies focusing on earthquake-induced liquefaction features utilized archaeology and radiocarbon dating to estimate the ages of liquefaction features, and thus, the timing of the earthquakes that caused them. In this way, sand blows across the New Madrid region were found to have formed during earthquakes about 1450 A.D., 900 A.D., 300 A.D., and 2350 B.C.

In addition, the size and spatial distributions of historic and sand blows that formed about 1450 A.D. and 900 A.D. were determined to be

strikingly similar to each other, suggesting that the prehistoric earthquakes had similar locations and magnitudes to the 1811-1812 earthquakes. Furthermore, sand blows attributed to the 1450 A.D., 900 A.D., and 2350 B.C. earthquakes are composed of multiple, fining upward layers similar in thickness to those that formed in 1811-1812. These observations support the interpretation that the prehistoric events were similar in location and magnitude to the 1811-1812 earthquakes, and also suggest that they too were earthquake sequences. Paleo seismic studies concluded that the New Madrid seismic zone generated magnitude 7 to 8 earthquakes about every 500 years during the past 1,200 years.

Tipton County uses a ranking system to determine each jurisdiction's vulnerability to a large NMSZ earthquake. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of an earthquake event occurring to calculate a risk ranking for each jurisdiction.

Earthquake

Jurisdiction/Applicant	Impacts			Vulnerability <i>H+P+B=#; #/3=V</i>
	<i>Human</i>	<i>Property</i>	<i>Business</i>	
Tipton County	5	5	5	5.0
Covington	4	5	4	4.3
Atoka	4	5	3	4.0
Brighton	4	4	3	3.7
Burlison	3	3	3	3.0
Garland	4	4	1	3.0
Gilt Edge	5	5	4	4.7
Mason	5	5	5	5.0
Munford	4	4	2	3.3
Tipton County Schools	4	5	4	4.3

Jurisdiction/ Applicant	Vulnerability	Probability	Risk $V+P=R$	
Tipton County	5.0	1	6.0	Medium
Covington	4.3	1	5.3	Medium
Atoka	4.0	1	5.0	Moderate
Brighton	3.7	1	4.7	Moderate
Burlison	3.0	2	5.0	Moderate
Garland	3.0	1	4.0	Moderate
Gilt Edge	4.7	2	6.7	Medium
Mason	5.0	1	6.0	Medium
Munford	3.3	2	5.3	Medium
Tipton County Schools	4.3	1	5.3	Medium
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

Tipton County Declared Disasters 2011 – 2020

Year	Disaster Recovery Number(s)	Hazard(s)
2011	DR-1979-TN	Severe Storms, Flooding, Tornadoes, And Straight-line Winds
2012		
2013		
2014	DR-4171-TN	Severe Winter Storm
	DR-4189-TN	Severe Storms, Tornadoes, Straight-line Winds, And Flooding
2015		
2016		
2017		
2018		
2019	DR-4427-TN	Tennessee Severe Storms, Flooding, Landslides, And Mudslides
2020	DR-4514-TN	Pandemic
2021		

Section 4: Mitigation Strategy

Mitigation Goals

The purpose for developing a set of goals is to clearly state the **community's overall vision for hazard mitigation and to provide a path** towards building a safer, more resilient community. The Tipton County Hazard Mitigation Committee identified the following goals to be the forefront in the overall development of this plan update. All actions/projects recommended as mitigation efforts for the Hazard Mitigation Plan must first meet or further at least one of these goals. The goals are provided in a ranked order where the first goal is paramount. There have been no changes to the goals and priorities from the previous plan.

Goals

1. Protect public health, safety, and welfare by increasing the public awareness of existing hazards and by fostering both individual and public responsibility in mitigating risks due to those hazards.
2. Reduce loss of life and property from future flooding events in Tipton County.
3. Reduce the repeated flooding of the transportation infrastructures in the County.
4. Minimize losses to existing and future structures within hazard areas.
5. To reduce loss of life and property from future tornado events in Tipton County.
6. To reduce loss of life and property from future earthquake events in Tipton County.
7. Reduce the risk of failure and/or structural damage to the transportation infrastructure in the event of an earthquake occurring in Tipton County

Identification and Prioritization of Mitigation Projects

Tipton County has developed a comprehensive range of mitigation projects. These projects were solicited and identified by the different entities that make up the Tipton County Hazard Mitigation Committee. Once the proposed projects attained a sponsoring agency and the details of the projects were discussed by the committee, the committee then proceeded to prioritize the mitigation projects.

The prioritization process was important since most mitigation projects represent a large investment of financial and personal resources. By **evaluating each project's degree of feasibility and the level of costs versus** benefits, Tipton County was able to determine when and which projects should be implemented based on available funding and time.

For the plan update, the Tipton County Hazard Mitigation Committee used the SAFE-T method to prioritize these projects. This approach was adopted from the successful methodology used by other counties in FEMA Region 4. This rating system uses five variables to evaluate the overall feasibility and appropriateness: Societal, Addministrative, Financial, Environmental, and Technical. A focus on this methodology emphasizes the use of a cost-benefit review to maximize benefits.

Project Prioritization Method: SAFE-T			
Variable		Value	Description
S	Societal: The public must support the overall implementation strategy and specified mitigation actions. The projects will be evaluated in terms of community acceptance and societal	1	Low community priority, few societal benefits
		2	Moderate community acceptance / priority
		3	High community acceptance / priority
A	Administrative: The projects will be evaluated for anticipated staffing and maintenance requirements to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the project or whether outside help will be needed.	1	High staffing, outside needed
		2	Some staffing, help may be needed
		3	Low staffing, no outside help needed
F	Financial: The projects will be evaluated on their general cost-effectiveness and whether additional outside funding will be required	1	Somewhat cost-effective
		2	Moderately cost-effective
		3	Very cost-effective
E	Environmental: The projects will be evaluated for any immediate or long-term environmental impacts caused by their construction or operation	1	Many environmental impacts, possibly long term
		2	Some environmental impacts, some possibly long term
		3	Few, if any, environmental impacts
T	Technical: the projects will be evaluated on their ability to reduce losses in the long-term, whether there are secondary impacts, and whether the proposed project solves the associated problem or if additional components are necessary.	1	Other actions are needed or short-term fix
		2	Other actions may be needed for long-term fix
		3	Other actions not needed, long-term fix

Committee members ranked the projects as a group by determining the value for each variable and then by adding the variables rates up for a project sum value. All the project rankings can be seen on the Tipton County Hazard Mitigation Project List.

Tipton County Project List

The following Project List provides an overview of all projects decided on by the Tipton County Hazard Mitigation Committee. This includes potential funding sources, implementation **timeframes, the project's** responsible agency, and other information. This list is to remain active **and updated. Additionally, any hazard determined to be "low" by a** jurisdiction was determined by the committee to not necessitate a corresponding project. Additionally, the only threat to Tipton County Schools infrastructure from flooding is to bus routes, which is beyond the **district's sphere of control, so no flood projects were submitted.**

Tipton County Project List

Tipton County															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
TC1	15	H	Buyout two residential homes in Happy Valley Subdivision and build two detention basins to eliminate flooding in neighborhood	x	x		Existing	\$500,000	Public Works	x	x	x		500	2-3 Years
TC2	13	M	Replace Watson Road Bridge	x		x	Existing	\$800,000	Public Works	x	x	x		15,000	2-3 Years
TC3	12	M	Adopt 2018 Building Codes	x	x	x	Both	\$5,000	Codes Enforcement				x	65,000	1 Year
TC4	12	M	Continue to educate the public and decision makers about hazards and the need for hazard risk reduction	x	x	x	Both	\$10,000	GIS				x	65,000	Semi Annually

TC5	12	M	Reroute and raise Curry Jones Road	x			Existing	\$250,000	Public Works	x	x	x		65,000	2-3 Years
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Covington															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
C1	15	M	Earthquake retrofit of water treatment plant with generator		x	x	Existing	\$1,000,000	Public Works	x	x			9,022	2-3 Years
C2	15	M	Earthquake retrofit of wastewater treatment plant with generator		x	x	Existing	\$1,000,000	Public Works	x	x			9,022	2-3 Years
C3	15	M	Public safe space for severe weather and earthquake		x	x	New	\$3,000,000	Fire Department / Police Department	x	x			9,022	2-3 Years
C4	15	M	Upgrade tornado sirens		x		Existing	\$400,000	Fire Department	x	x			9,022	2-3 Years
C5	15	M	Civic center generator for shelter	x	x	x	Existing	\$75,000	HR Department	x	x			9,022	2-3 Years
C6	14	M	Drainage improvement Hazen Branch Creek	x			Existing	\$300,000	Public Works	x	x	x		9,022	2-3 Years

C7	14	M	Address blockage, silt, and overgrowth of Town Creek	x			Existing	\$200,000	Public Works	x	x		x	9,022	2-3 Years
C8	12	M	Drainage improvement South College underpass	x			Existing	\$200,000	Highway Department	x	x	x		9,022	2-3 Years
C9	12	M	Drainage improvement Main Street underpass	x			Existing	\$250,000	Highway Department	x	x	x		9,022	2-3 Years
C10	10	M	Improve drainage at maintenance building	x			Existing	\$500,000	Public Works	x	x	x		9,022	2-3 Years
C11	13	H	Safe space with generator at Covington Police Department	x	x	x	Existing	\$3,500,000	Covington Police Department	x	x			9,022	2-3 Years

Atoka															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
A1	15	M	Reinforce major storm water ditches/channels	x			Existing	\$150,000	Public Works	x	x	x		8,500	2-3 Years
A2	15	M	Public outreach for natural hazard mitigation	x	x	x	Both	\$1,000	Fire Department				x	8,500	Annually
A3	14	M	Enlarge culverts at Betty Boyd Drive	x			Existing	\$50,000	Public Works	x	x	x		8,500	2-3 Years
A4	13	M	Stormwater detention expansion - Walker Park	x			Existing	\$150,000	Public Works	x	x	x		8,500	2-3 Years
A5	13	M	Stormwater detention Blaydes S/D	x			Existing	\$200,000	Public Works	x	x	x		8,500	2-3 Years

A6	11	H	Retrofit Fire Station #3			x	Existing	\$250,000	Fire Department	x	x			8,500	2-3 Years
A7	10	M	Bury critical power lines		x		Both	\$500,000	Public Works	x	x			8,500	2-3 Years
A8	11	H	Warning Sirens	X	X	X	Both	\$122,000	Fire Department	X	X			8,500	2-3 Years
A-9	11	H	Back-Up Generators at Fire Stations	X	X	X	Existing	\$20,000	Fire Department	X	X			8,500	2-3 Years

Brighton															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
BR1	15	H	Add 911 address numbers to all houses in fire service area	x	x	x	Both	\$45,000	Fire Department				x	3,000	6 Months
BR2	15	H	Install backup generators in 3 main pump stations	x	x	x	Existing	\$150,000	Public Works	x	x			5,000	2-3 Years
BR3	14	H	Build public safety complex with safe room and generator to move current buildings out of flood zone	x	x	x	New	\$3,000,000	Mayor	x	x			3,000	7 Months
BR4	13	H	Culvert repair and enlargement at Old Highway 51 and	x			Existing	\$10,000	Public Works	x	x	x		4,000	2-3 Years

			Brighton Elementary School												
BR5	12	H	Removal of dilapidated old school buildings		x	x	Existing	\$75,000	Public Works				x	3,000	6 Months
BR6	11	H	Develop list of all medically fragile people, addresses, and medical needs for 1st responders	x	x	x	Both	\$2,000	Fire Department				x	1,500	6-9 Months

Burlison															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRI C	FMA	Local		
BU1	15	H	Clearing of ditches and rights of way	x	x		Both	\$1,200	Town Handyman				x	350	Monthly
BU2	14	H	Safe space with generator in community center		x	x	Existing	\$1,000,000	City Council	x	x			350	2-3 Years
BU3	14	H	Warning sirens		x		New	\$100,000	City Council	x	x			350	2-3 Years

Garland															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
GA1	15	H	Safe space with backup generator for shelter at community center	x	x	x	Existing	\$1,000,000	Mayor	x	x			340	2-3 Years
GA2	15	H	Emergency sirens for severe weather		x		New	\$100,000	Mayor	x	x			340	2-3 Years
GA3	15	H	Equipment with side mount mowers for clearing	x	x	x	Both	\$35,000	Mayor				x	340	Annually
GA4	15	H	Drainage improvements, ditch cleaning, debris removal	x			Both	\$50,000	Mayor				x	340	Annually

Gilt Edge															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRI C	FMA	Local		
GE1	14	H	Install backup generator system at Gilt Edge fire station	x	x	x	Existing	\$75,000	Fire Department	x	x			4,200	2-3 Years
GE2	12	H	Create safe space at Gilt Edge fire department		x	x	Existing	\$1,000,000	Fire Department	x	x			4,200	2-3 Years
GE3	11	M	Raise road at 9000 area of Munford-Gilt Edge Road	x			Existing	\$250,000	Public Works/Coun ty/TDOT	x	x	x		4,200	2-3 Years
GE4	11	M	Raise road at 10229 TN Highway 59 West just east of canal bridge	x			Existing	\$25,000	Public Works/Coun ty/TDOT	x	x	x		4,200	2-3 Years

Mason															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
MA1	15	H	Storm shelter Mason City Hall		x		Existing	\$200,000	Public Works	x	x			25	2-3 Years
MA2	15	H	Storm shelter at fire department		x		Existing	\$200,000	Fire Department	x	x			25	2-3 Years
MA3	15	H	Storm shelter at public works		x		Existing	\$200,000	Fire Department	x	x			25	2-3 Years
MA4	15	H	Further development of CERT program to include mitigation and community awareness projects	x	x	x	Both	\$1,000	Fire Department				x	1,600	Annually

MA5	15	H	Backup generator for city hall	x	x	x	Existing	\$250,000	Public Works	x	x			1,600	2-3 Years
MA6	15	H	Backup generator for public works	x	x	x	Existing	\$250,000	Public Works	x	x			1,600	2-3 Years
MA7	15	H	Backup generator for fire department	x	x	x	Existing	\$250,000	Public Works	x	x			1,600	2-3 Years
MA8	12	H	Outdoor warning siren for severe weather		x		New	\$65,000	Fire Department	x	x			1,600	2-3 Years
MA9	10	H	Sewer system improvements to mitigate effects of heavy rainfall on environmental impact at lagoons	x			Both	\$500,000	Public Works	x	x	x		1,600	2-3 Years

Munford															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRI C	FMA	Local		
MU1	15	H	New building with safe room and generator		x	x	New	\$1,000,000	Police Department	x	x			6,110	2-3 Years
MU2	15	H	Mobile command center	x	x	x	New	\$100,000	Police Department				x	6,110	1-2 Years
MU3	15	H	Removal of dilapidated buildings and structures	x	x	x	Existing	\$200,000	Code Enforcemen t				x	6,110	1-2 Years
MU4	15	H	Culvert improvement with concrete headwall 194 Wordon Way	x			Existing	\$15,000	Public Works	x	x	x		6,110	2-3 Years
MU5	15	H	Culvert improvement with concrete headwall 690 Plum Tree Circle	x			Existing	\$15,000	Public Works	x	x	x		6,110	2-3 Years

MU6	15	H	Drainage improvement Beaver Road	x			Existing	\$125,000	Public Works	x	x	x		6,110	2-3 Years
MU7	15	H	Flood control study	x			Both	\$50,000	Public Works	x	x	x		6,110	2-3 Years
MU8	15	H	Culvert improvement Reeder Street from Park Street to Brenda Street	x			Existing	\$250,000	Public Works	x	x	x		6,110	2-3 Years
MU9	15	H	New generator at water and sewage treatment plant	x	x	x	Existing	\$750,000	Public Works	x	x			6,110	2-3 Years
MU10	15	H	Drainage improvement Quinton Drive	x			Existing	\$100,000	Public Works	x	x	x		6,110	2-3 Years
MU11	15	H	Culvert improvement on Charles Street between Peggy and Maple Hill	x			Existing	\$50,000	Public Works	x	x	x		6,110	2-3 Years
MU12	14	H	Implement Code Red sign up	x	x	x	Both	\$100	Fire Department				x	9,629	Annually
MU13	14	H	Fire/weather, home safety, and smoke alarm programs	x	x	x	Both	\$2,000	Fire Department				x	6,336	Annually
MU14	13	H	Promote CERT training	x	x	x	Both	\$1,000	Fire Department				x	9,629	Annually

MU15	12	H	Replace/update tornado sirens		x		Existing	\$175,000	Fire Department	x	x			9,629	2-3 Years
MU16	12	H	Weather spotter classes		x		Both	\$1,000	Fire Department				x	6,336	Semi Annually
MU17	12	H	Partner with drone pilots for damage assessments and awareness	x	x	x	Both	\$2,000	Fire Department				x	6,336	Annually

Tipton County School System															
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated			Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Earthquake				HMGP	BRIC	FMA	Local		
TS1	15	H	60 KW natural gas generator at Austin Peay Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			710	2-3 Years
TS2	15	H	60 KW natural gas generator at Alternative School		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			74	2-3 Years
TS3	15	H	60 KW natural gas generator at Brighton Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			791	2-3 Years
TS4	15	H	60 KW natural gas generator at Brighton Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			955	2-3 Years

TS5	15	H	60 KW natural gas generator at Brighton High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,261	2-3 Years
TS6	15	H	60 KW natural gas generator at Crestview Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			860	2-3 Years
TS7	15	H	60 KW natural gas generator at Crestview Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			577	2-3 Years
TS8	15	H	60 KW natural gas generator at Covington High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			806	2-3 Years
TS9	15	H	60 KW natural gas generator at Munford Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			846	2-3 Years
TS10	15	H	60 KW natural gas generator at Munford Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,038	2-3 Years
TS11	15	H	60 KW natural gas generator at Munford High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,242	2-3 Years
TS12	15	H	60 KW natural gas generator at Drummonds Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			772	2-3 Years
TS13	15	H	60 KW natural gas generator at Covington Integrated Arts Academy		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			595	2-3 Years

TS14	15	H	Retrofit hallways for storm shelter at Austin Peay Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			710	2-3 Years
TS15	15	H	Retrofit hallways for storm shelter at Alternative School		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			74	2-3 Years
TS16	15	H	Retrofit hallways for storm shelter at Brighton Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			791	2-3 Years
TS17	15	H	Retrofit hallways for storm shelter at Brighton Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			955	2-3 Years
TS18	15	H	Retrofit hallways for storm shelter at Brighton High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,261	2-3 Years
TS19	15	H	Retrofit hallways for storm shelter at Crestview Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			860	2-3 Years
TS20	15	H	Retrofit hallways for storm shelter at Crestview Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			577	2-3 Years
TS21	15	H	Retrofit hallways for storm shelter at Covington High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			806	2-3 Years
TS22	15	H	Retrofit hallways for storm shelter at Munford Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			846	2-3 Years

TS23	15	H	Retrofit hallways for storm shelter at Munford Middle		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,038	2-3 Years
TS24	15	H	Retrofit hallways for storm shelter at Munford High		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			1,242	2-3 Years
TS25	15	H	Retrofit hallways for storm shelter at Drummonds Elementary		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			772	2-3 Years
TS26	15	H	Retrofit hallways for storm shelter at Covington Integrated Arts Academy		x	x	Existing	\$38,000	Tipton County Board of Education	x	x			595	2-3 Years

Project List Update

The following chart shows the status of each approach/project from 2016 plan:

Action/Project	Project Status
Upgrade early warning system to electronic based for use with cell phone/social media	Completed
Adopt 2012 building codes	Completed
Continue to place address numbers on all houses	Delete
Issue weather radios to residents	Delete
Continue to educate the public and decision makers about hazards and the need for hazard risk reduction	Carried Forward
Monitor and develop GIS maps that assist in disaster event response	Completed
Use GIS to identify county vulnerabilities and create maps that outline abilities and resources to limit risks	Carried Forward
Use GIS to map core utilities such as water, gas, electric and sewer	Completed
Continue sharing GIS data throughout the GIS board and other agencies	Carried Forward
Enlarge culverts at Betty Boyd Drive	Carried Forward
Create safe space with generator at existing location of Gilt Edge City Hall/Community Center with shower and restroom facilities	Carried Forward
Enlarge culvert at Quinton Road and Big Creek	Carried Forward
Enlarge culvert at Reeder and Park	Carried Forward
Enlarge culvert at Shannon and West Drive	Carried Forward
Clear utility right of ways	Carried Forward
Safeguarding/training of population, vulnerable structures/ facilities/utilities	Delete
Reroute and raise Curry Jones Road	Carried Forward
Replace bridge on Cooper Road	Carried Forward
Add additional cameras and DVR's at all schools	Carried Forward
Reinforce major storm water ditches/channels	Carried Forward
Expand universal shelter to include generator, showers/bedding, laundry facilities and toiletries	Carried Forward
Seismic retrofit of water infrastructure	Carried Forward
Create public safe space with generator	Carried Forward
Hazen Branch Creek improve drain system	Carried Forward
Improve drainage at South College - railroad underpass	Completed
Update NFIP flood maps	Carried Forward

Create retention pond to prevent flooding of Lucado Road	Carried Forward
Vegetation control - county roads	Completed
Install debris racks on bridge on Crane Road	Carried Forward
Create safe rooms with generators at remaining 13 schools	Carried Forward
Create safe space with generator	Carried Forward
Stormwater detention expansion - Walker Park	Carried Forward
Stormwater detention Blaydes S/D	Carried Forward
Retrofit wastewater treatment plant to earthquake codes	Carried Forward
Retrofit water plant to earthquake codes	Carried Forward
Improve drainage at Maintenance Department building	Carried Forward
Safe space with generator at board of education building	Carried Forward
Bridge replacement Meade Lake Road	Completed
Retrofit Fire Station #3	Carried Forward
Raise road at 9000 area of Munford-Gilt Edge Road (SR 178)	Carried Forward
Raise road at 10229 TN Highway 59 West just east of Canal bridge	Carried Forward
Bury critical power lines	Carried Forward

The following definitions apply to the status as listed in the above chart:

- Completed-All work on the project complete
- Carried Forward-Project was not funded from the previous plan, and has been added to the new project list
- Deleted-Project has been deemed unqualified, unnecessary, or infeasible
- In Progress-Project application has been approved and is ongoing

National Flood Insurance Program Compliance

The National Flood Insurance Program (NFIP) is a pre-disaster flood hazard mitigation and insurance protection program which has reduced the increasing cost of disasters. The intent of the program is to: require new and substantially improved structures be designed and constructed to minimize or eliminate future flood damage; provide floodplain residents and business owners with financial insurance assistance in the form of insurance after floods; and it transfers most of the cost of private property flood losses from the taxpayers to floodplain property owners through flood insurance premiums. Participation in the NFIP is based on an agreement between communities and FEMA.

Currently, all jurisdictions except Burlison and Garland are NFIP participants. FEMA has listed these jurisdictions to have a current effective map date as of 5/2009. Below are three charts that give an overview of NFIP policy and loss data for Tipton County. This data represents the most recent data available to the State of Tennessee regarding NFIP policy and loss data.

NFIP Policy Data for Tipton County			
Jurisdiction	Policies In-Force	Insurance In-Force Whole \$	Written Premium In-Force
Tipton County	69	\$53,914,900	\$176,694
Covington	27	\$9,339,500	\$22,642
Atoka	85	\$22,309,900	\$69,732
Brighton	11	\$1,770,100	\$9,655
Gilt Edge	1	\$28,000	\$121
Mason	2	\$2,924	\$3,203,400
Munford	18	\$16,517,800	\$21,936

Policies In-force: number of NFIP flood insurance policies

Insurance In-force whole \$: value of building and contents insured by the NFIP

Written Premium In-force: total premiums paid for NFIP insurance policies

NFIP Loss Data for Tipton County		
Jurisdiction	Total Paid Losses	Total Payments
Tipton County	45	\$1,947,284
Covington	14	\$277,522
Atoka	21	\$630,847
Brighton	6	\$335,455
Gilt Edge	0	N/A
Mason	2	\$142,723
Munford	40	\$1,947,284

Total Losses: number of flood insurance claims filled by policyholders

Closed Losses: number of flood insurance claims paid to policyholders

Total Payments: total dollars paid to policyholders

Repetitive Loss/Severe Repetitive Loss Properties				
Location	Dwelling Type	Flood Zone	Total Losses	Total Payout
ATOKA	SINGLE FMLY	X	2	\$149,205.80
COVINGTON	OTHR-NONRES	AE	7	\$129,686.00
MUNFORD	OTHR-NONRES	X	2	\$82,468.04
MUNFORD	OTHR-NONRES	X	3	\$162,074.00
TIPTON COUNTY	SINGLE FMLY	X	2	\$161,295.40
TIPTON COUNTY	SINGLE FMLY	X	2	\$27,544.09
TIPTON COUNTY	OTHR-NONRES	X	3	\$88,042.36

To continue compliance with the NFIP, the jurisdictions have identified, analyzed, and prioritized three mitigation strategies to stay active with the program.

1. Continue to evaluate improved standards that are proven to reduce flood damage.
2. Maintaining supplies of FEMA/NFIP materials to help homeowners evaluate measures to reduce damage.
3. Maintaining a map of areas that flood frequently and prioritizing those areas for inspection immediately following heavy rains or flooding event.
4. Develop GIS system that will assist in flooding preparedness.

Section 5: Plan Maintenance

Monitoring, Evaluating, and Updating

The Tipton County Hazard Mitigation Committee is designated to monitor and evaluate the mitigation plan. This committee is chaired by Covington-Tipton County Emergency Management Agency who leads the monitoring, evaluating, and updating process.

Monitoring of the previous mitigation plan, progress and projects occurred informally over the life-cycle of the previous plan.

Monitoring activities will involve Covington-Tipton County Emergency Management Agency setting up a committee meeting to be held on a quarterly basis in conjunction with the Local Emergency Planning Committee meetings. Covington-Tipton County Emergency Management Agency **will prepare a brief annual report of the meeting's findings by** addressing mitigation progress and shortfalls within the county.

The plan is to be evaluated annually and after any significant disaster causing human, infrastructure, and property losses. Following each annual informal evaluation of the plan by emergency management staff, any proposed revisions or recommendations will be brought before the Mitigation Committee to be incorporated into the plan. Potential updates to the plan will address changes to the hazard assessment, the repetitive loss list, the committee membership list, and the project priority list.

The plan will be formally updated every five-years in accordance to 44 CFR 201.6(d)3, which states that the plan shall be reviewed, revised, and resubmitted for approval within five-years to continue eligibility for hazard mitigation grant funding. For the five-year update, Covington-Tipton County Emergency Management Agency will notify the jurisdictional governments and the Tipton County Hazard Mitigation Committee **approximately one year prior to the plan's expiration date. The review of** the plan will include updating the planning process, the County profile, the hazard profiles, the risk assessment, the vulnerability assessment, the mitigation strategies, and the plan maintenance descriptions.

The five-year plan update will also include soliciting other interested persons/agencies to join the Mitigation Committee and a review of what has been accomplished in the past 5 years. The Tipton County Hazard **Mitigation Committee's goal is to have at least 5 meetings within this time** span; dates, public notices, and objectives for these meetings will be determined by Covington-Tipton County Emergency Management Agency.

Five months prior to **the plan's expiration date**, Covington-Tipton County Emergency Management Agency will submit the revised plan to the Tennessee Emergency Management Agency for preliminary review. Upon approval by the state, TEMA will submit the updated plan to FEMA for review.

Once Tipton **County has attained the designation of the plan's approval** pending adoption, each jurisdiction will adopt the plan through a resolution within a year.

Incorporation into Planning Cycle

In the previous planning cycle, Tipton County and its jurisdictions/school districts did not have a systematic process for incorporating mitigation into other planning mechanisms, and instead left it up to individual entities and agencies to review and incorporate as necessary. This resulted in mitigation not being incorporated into planning processes as appropriate.

Moving forward, the Tipton County Hazard Mitigation Committee sees opportunities for all jurisdictions to incorporate mitigation into the planning cycles of several agency plans. Information contained in the mitigation plan can help fill-in missing gaps in existing documents, can contribute to already existing mitigation-based projects, and can create a strengthen stance of mitigation implementation and awareness within the county and its jurisdictions.

Some of the mechanisms that the Tipton County Hazard Mitigation Plan could be incorporated into include:

- Tipton County BEOP
- Tipton County Schools Emergency Plans
- Tipton County Highway Department Plan
- County & Jurisdictional Public Works Development Plans
- County & Jurisdictional Fire Department 5 Year Plans
- **Jurisdictional Plans, SOP's, & SOG's**

The process of incorporating the hazard mitigation plan into other plans **will begin during the other plan's update cycles**. All jurisdictions will first review the plans side-by-side to make applicable notes on how mitigation concepts and actions can be incorporated into the other plans. These recommendations will be submitted to the lead agencies of the other planning mechanisms for them to place relevant information within the documents.

Continued Public Participation

The Tipton County Mitigation Committee will strive to involve the public in future mitigation activities. This will be accomplished by continuing to post Mitigation Committee Meeting dates in the local newspaper, by attempting to have a public mitigation meeting once a year, by providing public access to copies of the Tipton County Hazard Mitigation Plan in the local emergency management office, and by soliciting other interested persons to participate in the mitigation planning process. By implementing these methods, the public will have an opportunity to comment on the plan during the update drafting stage and prior to plan approval.

Appendix 1

Attendance Sheet – Committee Meeting #1

Sign-In Sheet
Tipton County Hazard Mitigation Meeting #1
4/6/2021

Name	Title	Department	Email Address	Phone Number
Brent Phillips	Planner	TRMA	brent.phillips@tcta.gov	731-225-2823
Dalton Retrick	Public Works Director	Town of Atoke	dpatrick@townofatoka.com	901-545-9103
Shawn Anderson	GIS Director	Tipton County Govt	sanders@tipton.com	901-476-0234
Stephanie Chapman-Walsh	Mayor	Town of Brighton	mayor@townofbrighton.com	(901) 596-1092
Charles Jenkins	Fire Chief	Town of Mason	cjenkins@townofmason.org	731-466-9750
Shannon Reed	Director - TFW	Tipton Co. Public Works	Shannon@twpw.net	901-837-5700
David Gray	Director PW	City of Covington	dgray@covington.com	901-237-8665
JEREMY CHANNELL	Asst. Chief	City of Covington Fire	jchannell@covington.com	901-579-0219
Steve Fletch	Mayor	TOWN OF CANTON	sfletch@cantontn.com	901-483-7486
Tommy Donovan	Director	Covington-Tipton Co. EMA	tdonovan@tipton.com	901-490-1833
Kelley Gray	Garland Mayor	Town of Garland	kgray@insouth.com	901-355-5741
Shawn Burdick	Director	City of Munford	sburdick@munford.com	490-3816
John Combs	Supt.	Tipton Co.	jcombs@tipton-county.com	(901) 428-1528
W.T. Bailey	Fin. Director	Tipton Co.	wtbailey@tipton.com	901-476-0219
Hannah Free	Firefighter	Garland	hfree@garland.com	901-351-6654
Bob Beamblosson	Budget & Accts	Tipton Co	rbeamblosson@tipton.com	901-476-0219
William Vetter	Planner	Planning Tipton Co	tvetter@tipton.com	901-476-0219

Appendix 2

Attendance Sheet – Committee Meeting #2

Sign-In Sheet
Tipton County Hazard Mitigation Meeting #2
5/5/2021

Name	Title	Department	Email Address	Phone Number
Joyce Howard			joycebhoward@belkouth	
Danny Howard	Councilman	Burlison, TN		901-476-2960
Brent Phillips	Planner	TFMA	brent.phillips@tfgov	731-225-2823
David Gray	PW Director	City of Covington	dgray@covingtontn.com	901-237-8165
Sham Anderson	GIS Director	Tipton County GIS	sanderson@tiptonco.com	901-476-0234
Stere Fletcher	Mayor	Gilt Edge	SF5iltedge@901.com	901-483-4456
Richard Griggs	Fire Chief	Covington	rgriigg@covingtontn.com	901-237-3209
Kelley Gray	Mayor	Garland	kgray@insouth.com	901-353-5741
Charles Jenkins	Fire Chief	Mason	cjenkins@townofmasontn.org	731-460-9750
John Combs	Supt. TCS	TCS	jcombs@tipton-county.com	901-428-1528
Sherry Bonard	Mayor	City of Murfreesboro	sherryb@murford.com	490-3816
Sim Kenny	Burlison	Mayor of Burlison	rkfjmk@gmail.com	901-848-3289
Tommy Denavant	Director	Tipton County EMA	tdenavant@tiptonco.com	901-490-1833
Heather Chapman-Watson	Mayor	Brighton	mayor@townofbrighton.com	901-596-1092
Amanda Faurbo	Assistant Town Admin	Atoka	afaurbo@townofatoka.com	901-837-5300
Shannon Reed	Director - TCPW	Tipton County Public Works	Shannon@tcpw.net	(901) 837-5900

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Appendix 3

Attendance Sheet – Committee Meeting #3

Tipton County Hazard Mitigation Meeting #3 – Public Comment Meeting Only
6/10/2021

[illegible]Page 1 of 1

Appendix 4

Public Notice/Meeting Minutes/Letters

en to the Department of the
 Treasury – Internal Revenue
 Service. This sale will be
 subject to the right of the De-
 partment of the Treasury –
 Internal Revenue Service to
 redeem the land as provided
 in 26 U.S.C. § 7425(d)(1).

Whereas, THE BANK OF
 FAYETTE COUNTY the
 owners of the debt secured
 by said Deed of Trust, having
 requested the undersigned to
 advertise and sell the prop-
 erty described in and conveyed
 by said Deed of Trust, all of
 said indebtedness having
 matured by a default in the
 payment of the debt and ob-
 ligations secured, at the op-
 tion of the Owner, after being
 authorized to proceed with
 a sale under the aforesaid
 Deed of Trust in the event of
 a default there under, this is
 to give notice that the under-
 signed will on Wednesday,
 the 16th day of June, 2021,
 commencing at 12:00 noon,
 at the front door of the Court-
 house in Covington, Tipton
 County, Tennessee, proceed
 to sell at public outcry to the
 highest and best bidder for
 cash, the following described
 property situated in Tipton
 County, Tennessee, to wit:

Lot 251, Blades Estates
 Subdivision, Section M, as
 recorded in Plat Cabinet D,
 Slide 50 in the Tipton Coun-
 ty Register's Office, to which
 plat reference is hereby
 made for a more particular
 description of said lot.

Subject to the subdivision
 restrictions in Book 764,
 Page 618, building lines and
 easements in Plat Cabinet D,
 Slide 50, and Southwest Ten-
 nessee Easement at Book
 761, Page 735 in the Tipton
 County Register's Office.

This being the same prop-
 erty conveyed to Tipton In-
 vestment Properties, LLC,
 by Warranty Deed of record
 at Record Book 1824, Page
 920 in the Register's Office
 of Tipton County, Tennessee.
 Tipton Investment Proper-

(901) 465-3117
 20may3w

EMAIL LEGAL ADS TO
 RBAXTER@
 COVINGTONLEADER.
 COM

mail, return receipt request-
 ed, within ten (10) business
 days of the date of this
 publication:
 4298 Marshall Rd.,
 Munford, TN 38058
 03jun1w

**COVINGTON-TIPTON COUNTY
 EMERGENCY MANAGEMENT AGENCY**
 8629 Hwy. 51 S. Brighton, TN 38011
 P.O. BOX 306
 COVINGTON, TENNESSEE 38019
 PHONE: 901-840-3000 FAX: 901-840 4199
tdunavant@tiptonco.com

The Tipton County Hazard Mitigation Planning Committee will
 be held on June 10, 2021 at 6:00 pm in the Tipton County EMA
 Facility located at 8629 Hwy. 51 S. Brighton, TN 38011. This
 meeting will be held to obtain the public's interest in reviewing
 and updating the County's Mitigation Plan. Social distancing
 practices will be followed.

03jun1w

SPECIAL EDUCATION RECORDS
 The Tipton County School system is giving written
 notice to parents regarding student special educa-
 tion records. Records of students that have been
 inactivated by moving, mainstreaming, graduating,
 etc., are kept at the Tipton County Board of Educa-
 tion for three (3) years. In accordance to the confi-
 dentiality law, the records are destroyed after three
 years. If you would like a copy of your child's re-
 cord, please contact Michelle at (901)475-5808 no
 later than June 11, 2021.

27may2w

PUBLIC HEARING
 The Atoka Planning Commission will hold a
 Public Hearing on:

**Thursday, June 24, 2021
 5:00 p.m.**

To consider amendments to the Atoka
 Subdivision Regulations.

More information, including a copy of the proposed
 amendments, is available at Atoka Town Hall during
 regular business hours.

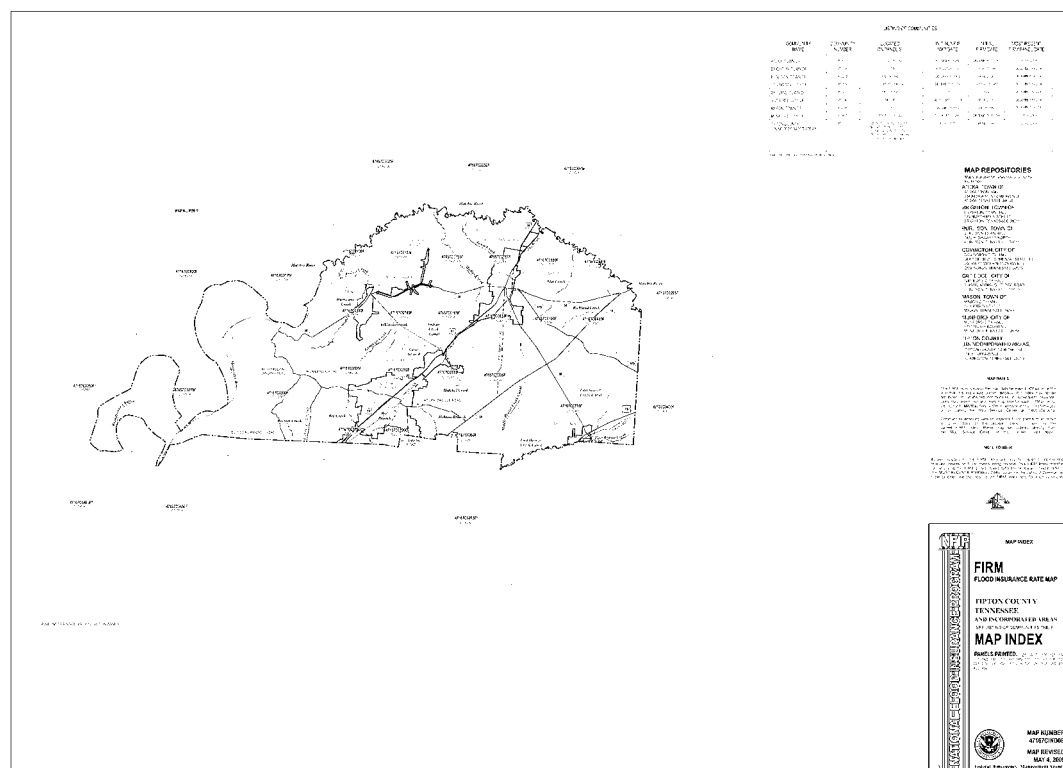
The meeting will be held at Town Hall
 334 Atoka-Munford Avenue

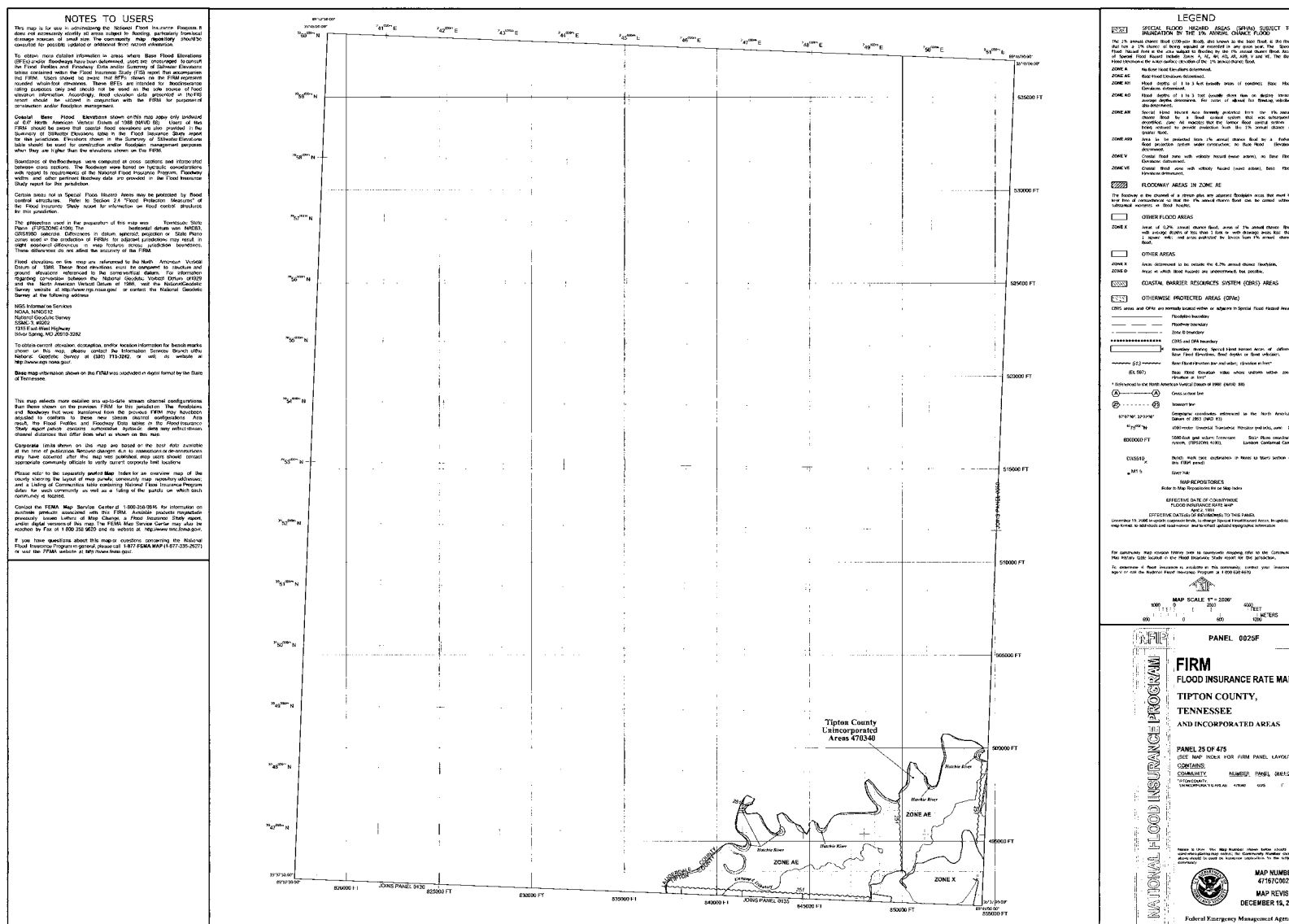
The public is encouraged to attend.

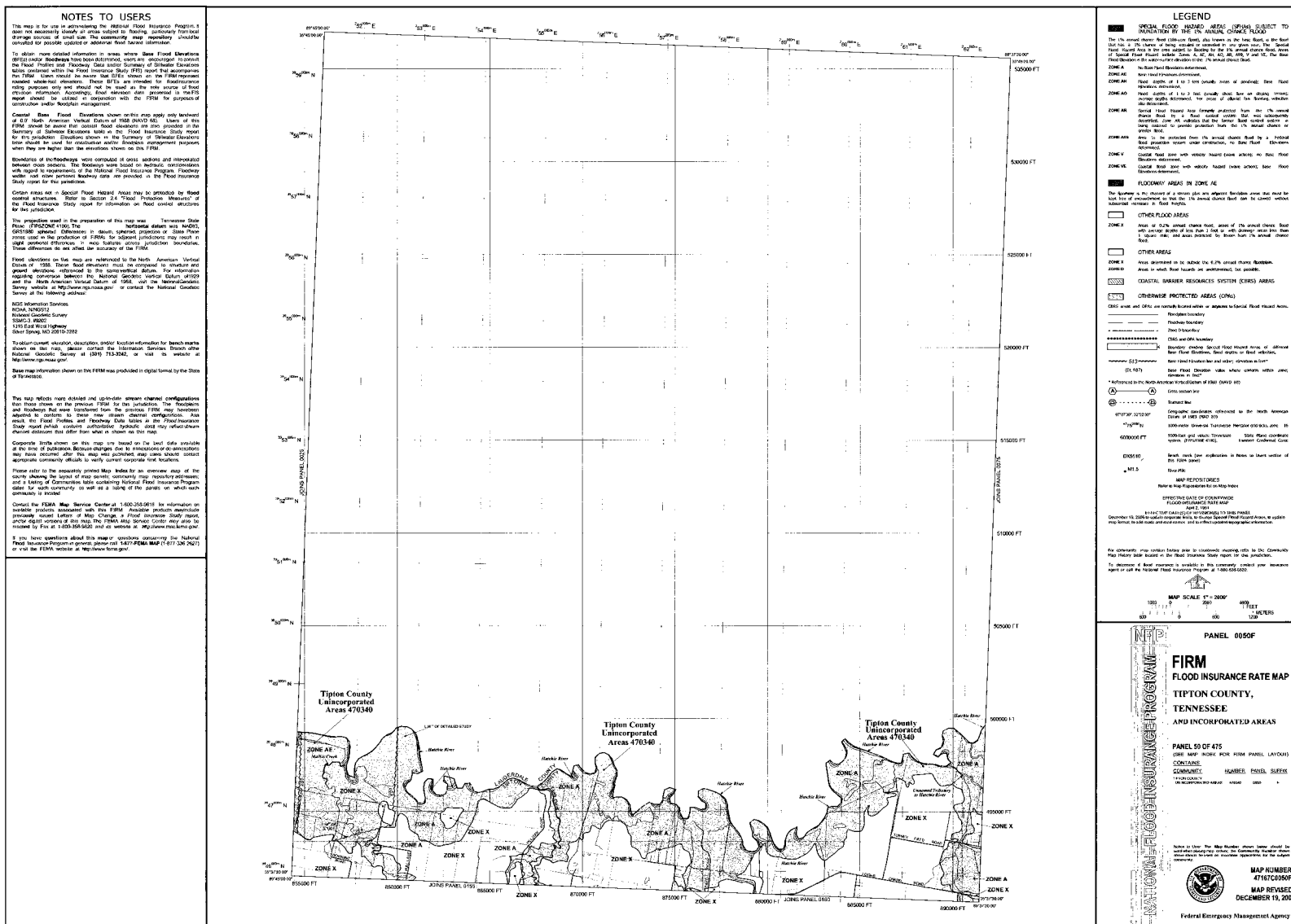
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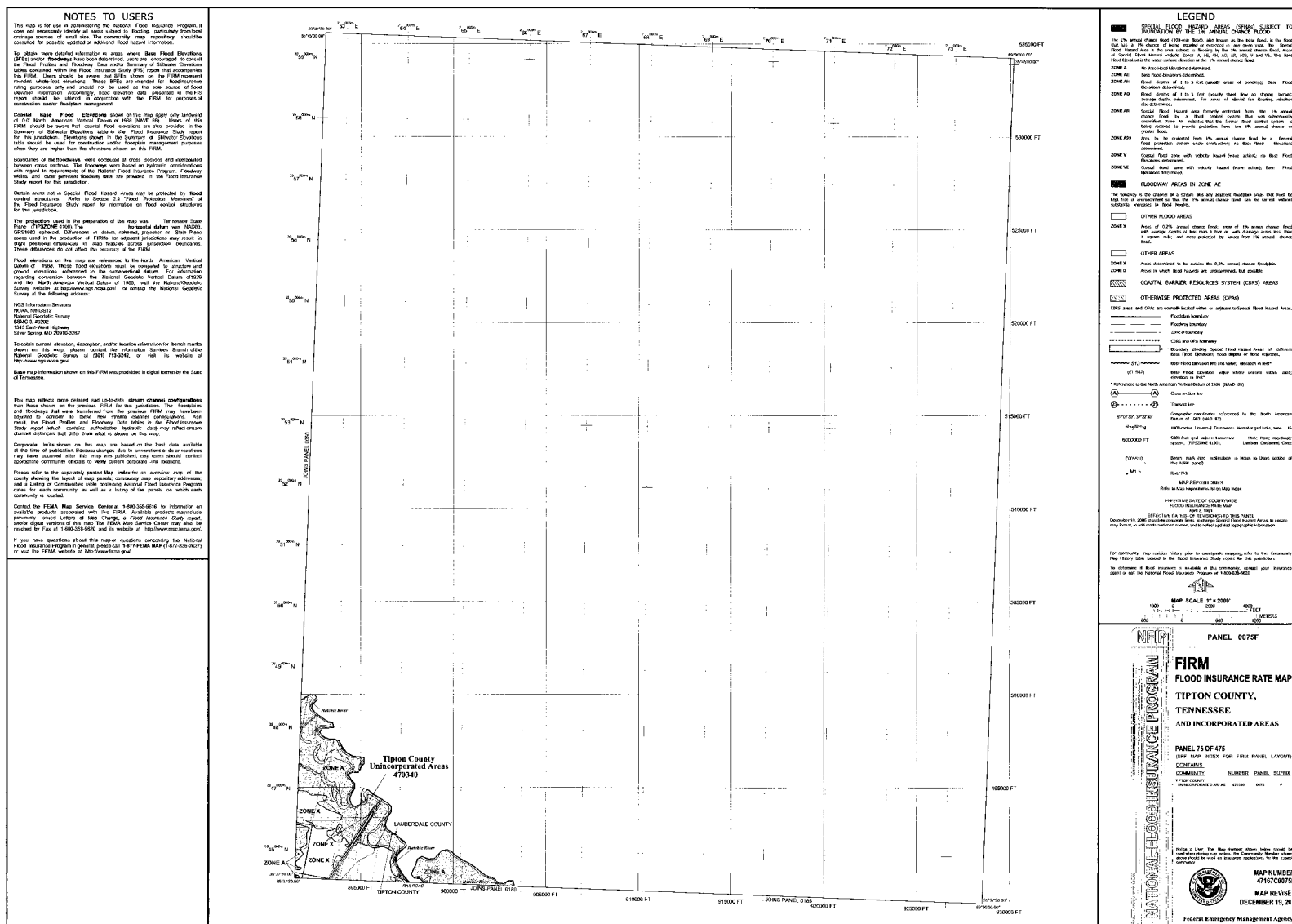
Appendix 5

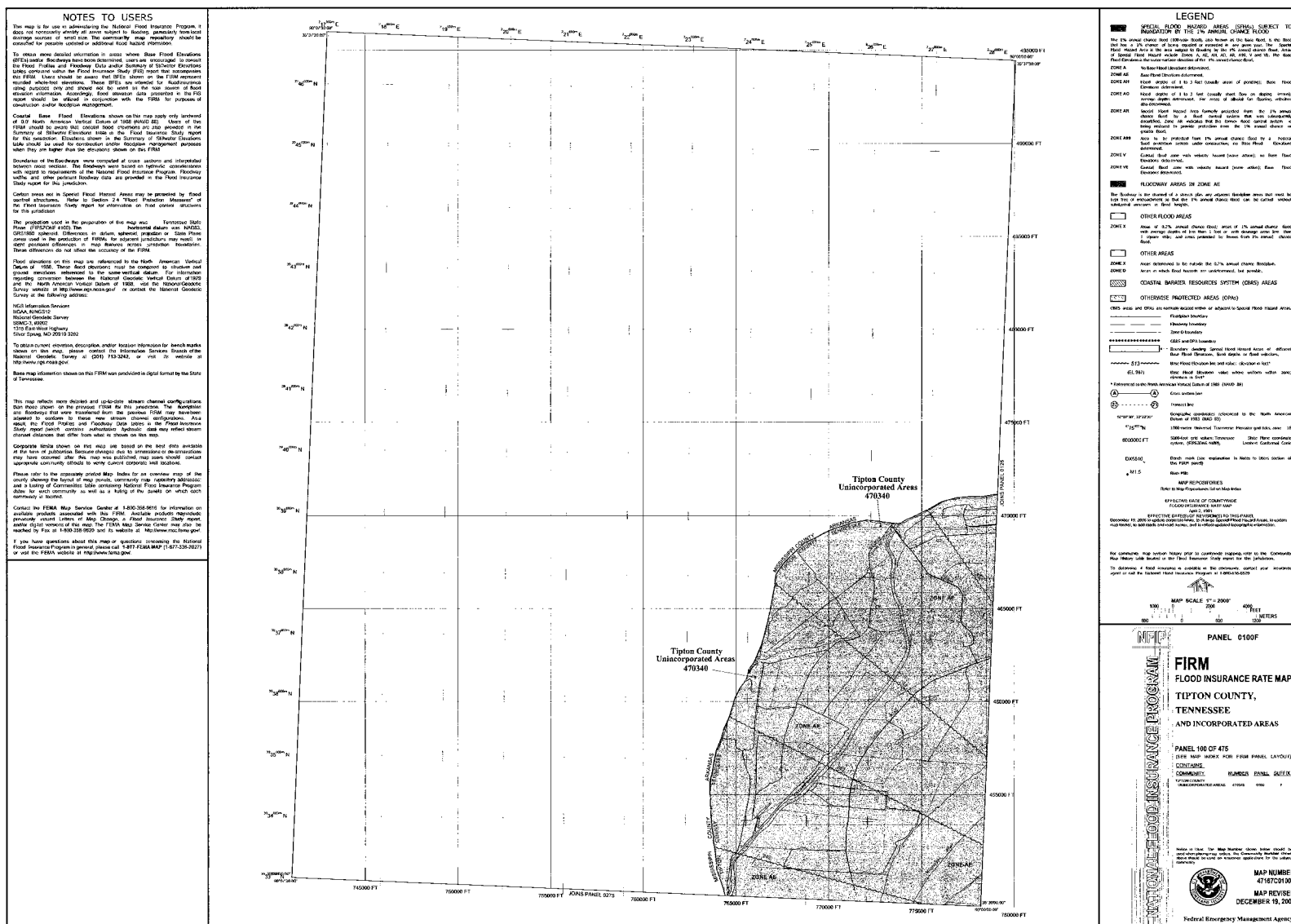
Flood Insurance Rate Maps for Tipton County

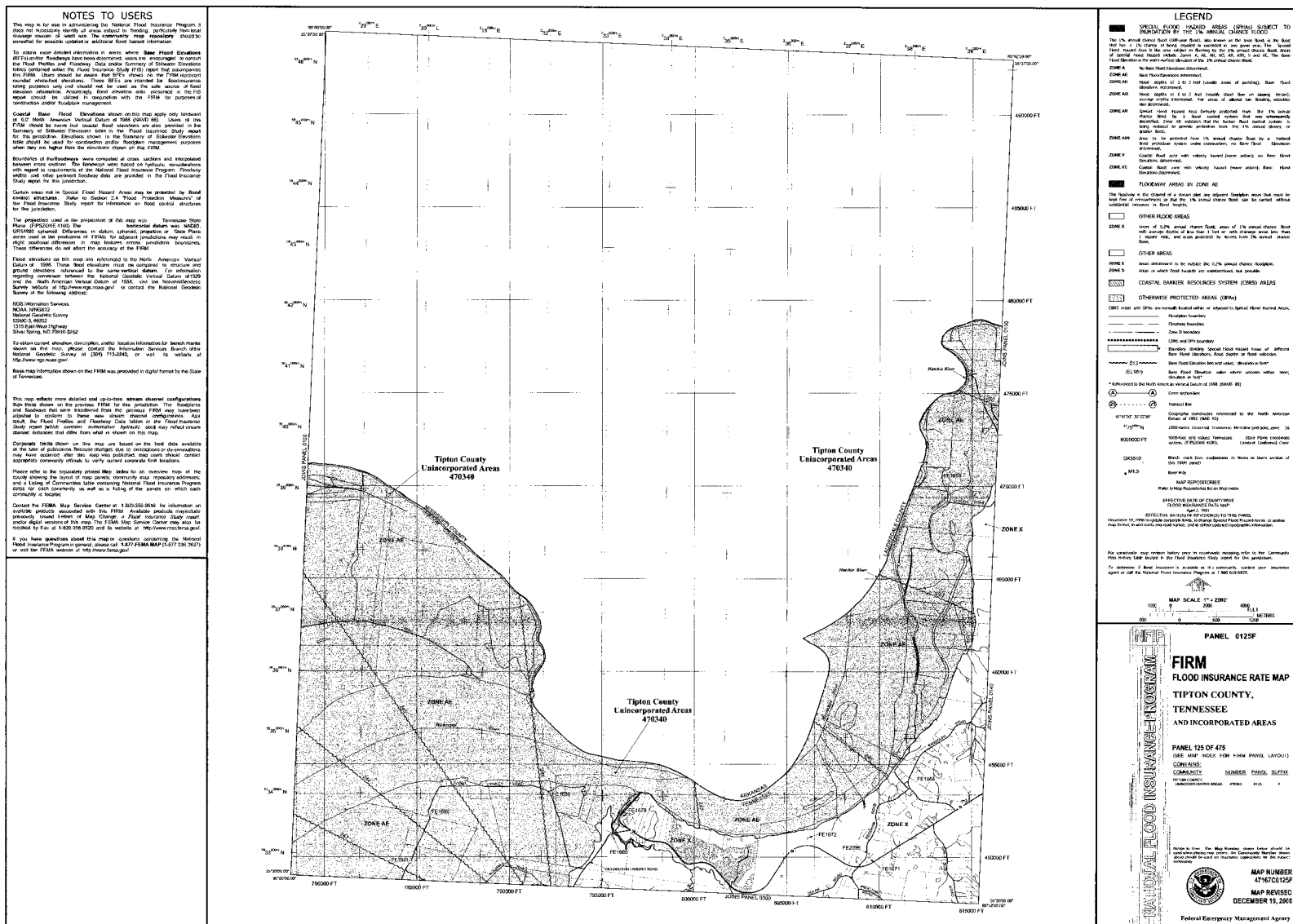


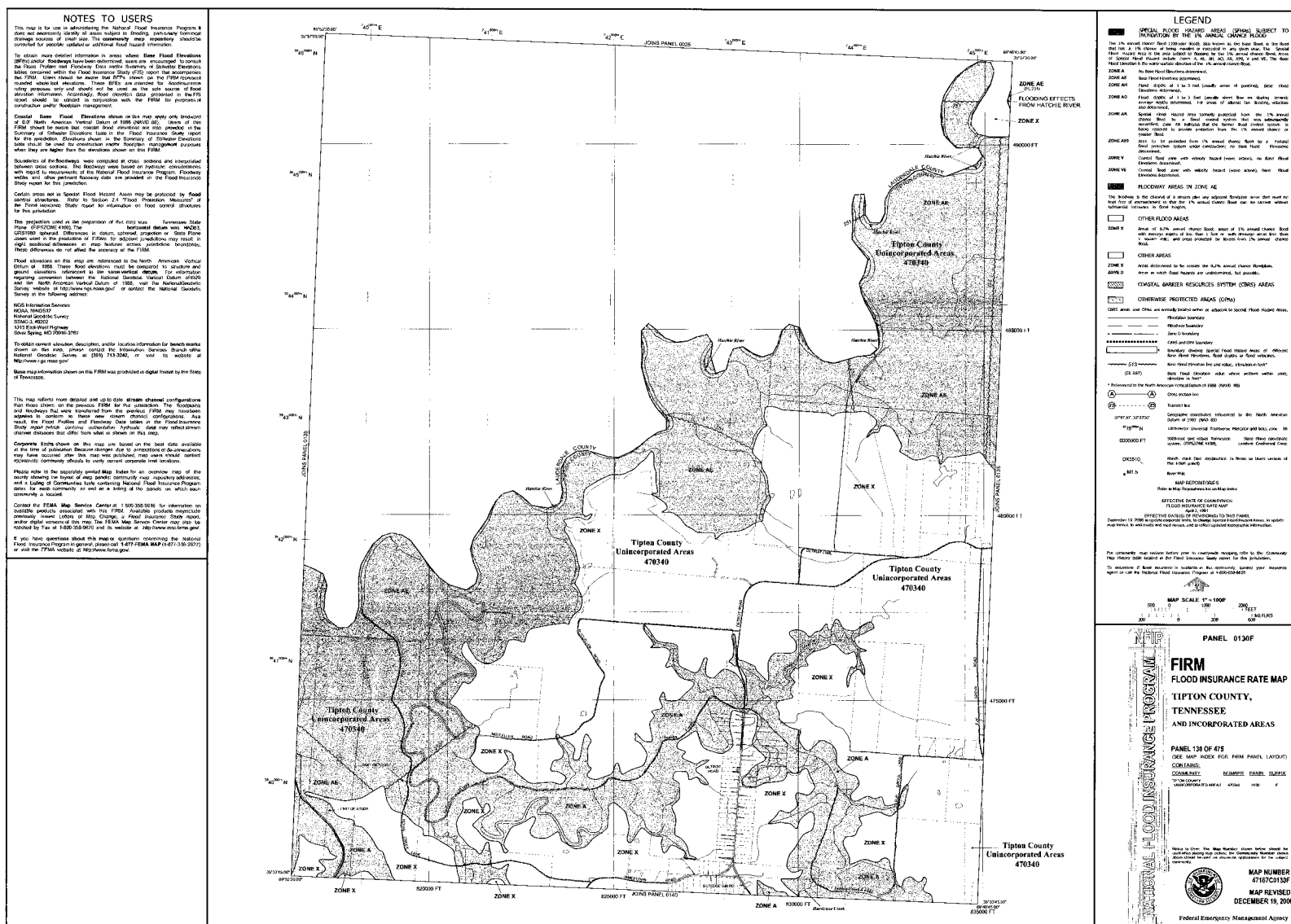


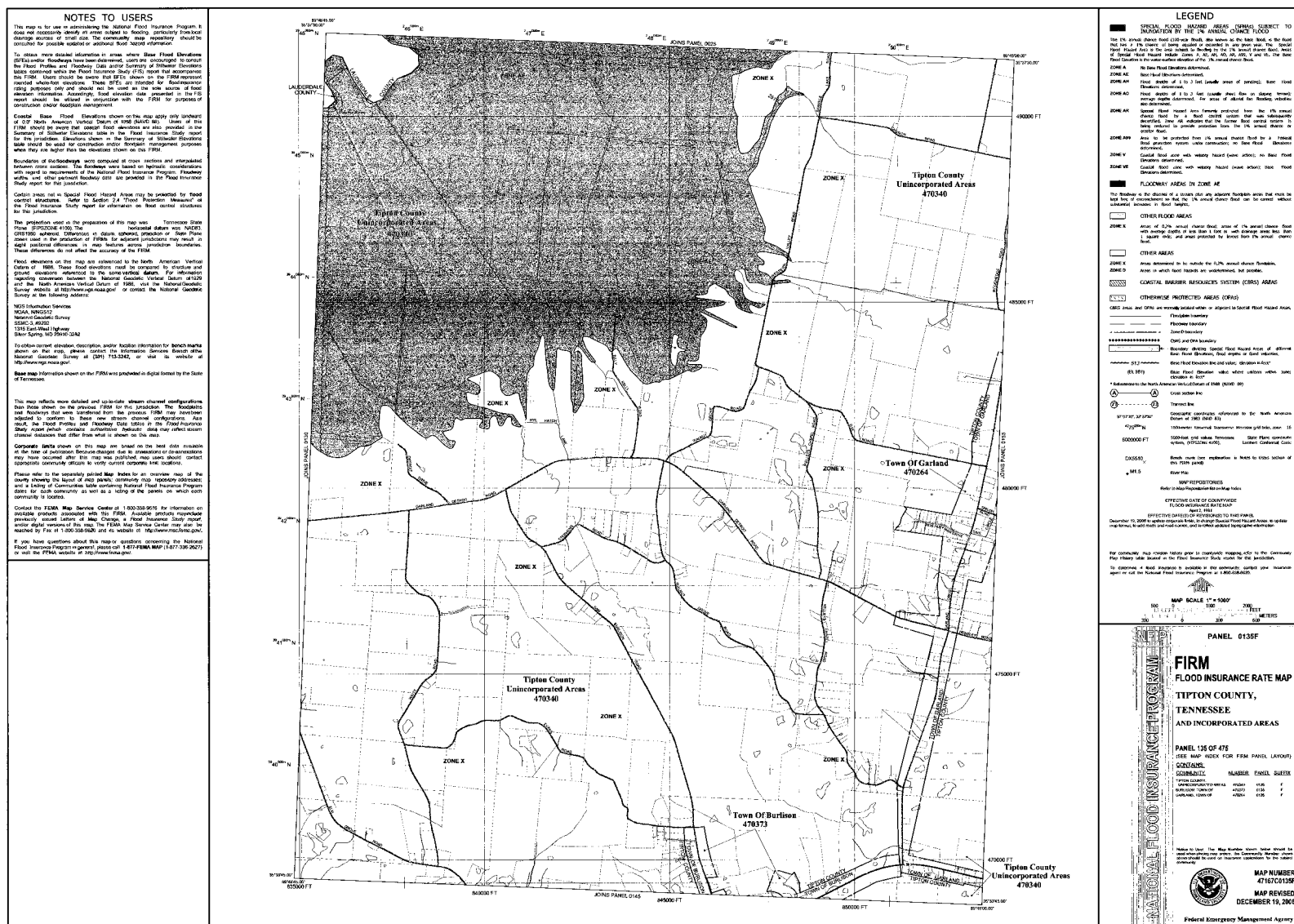


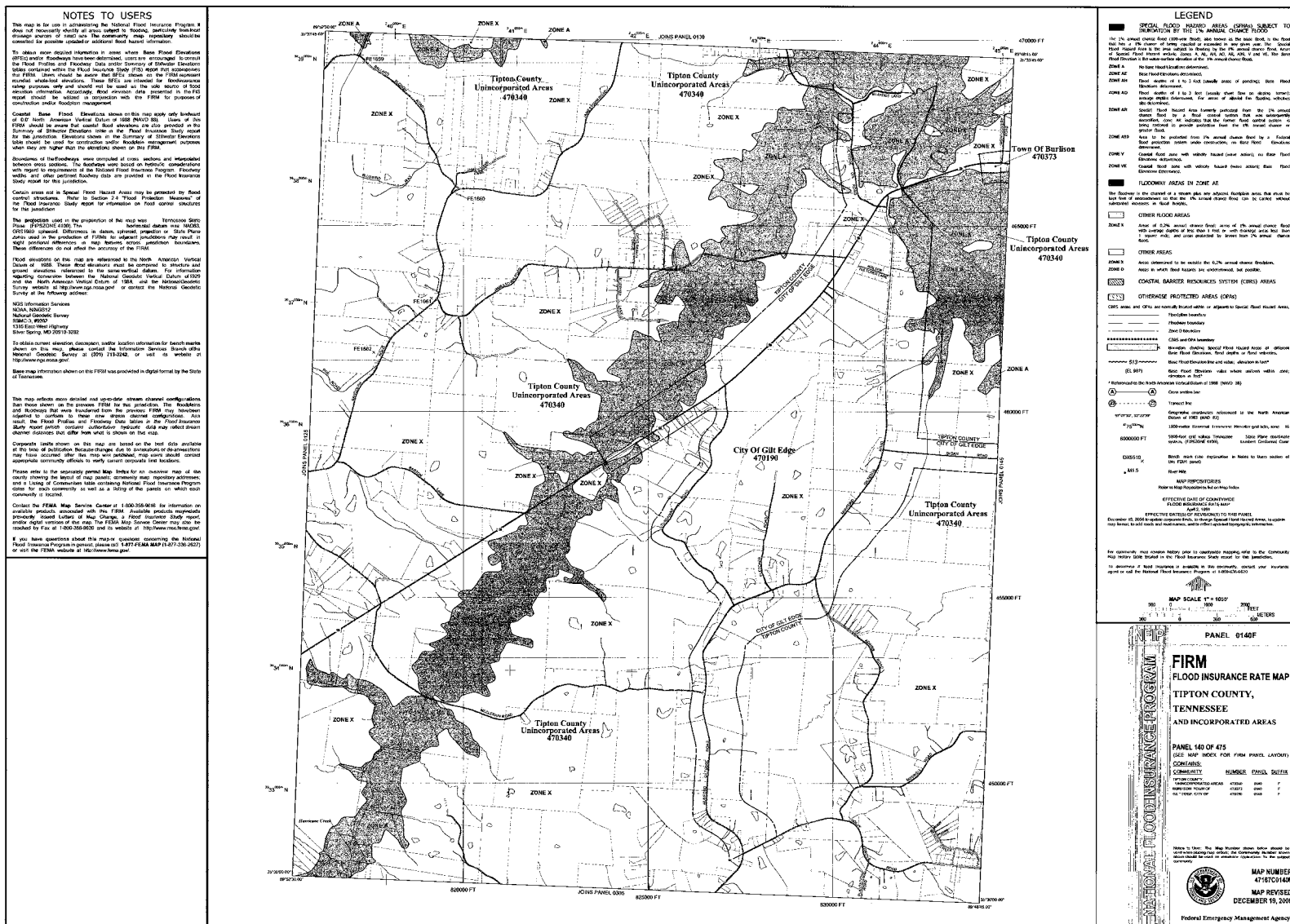


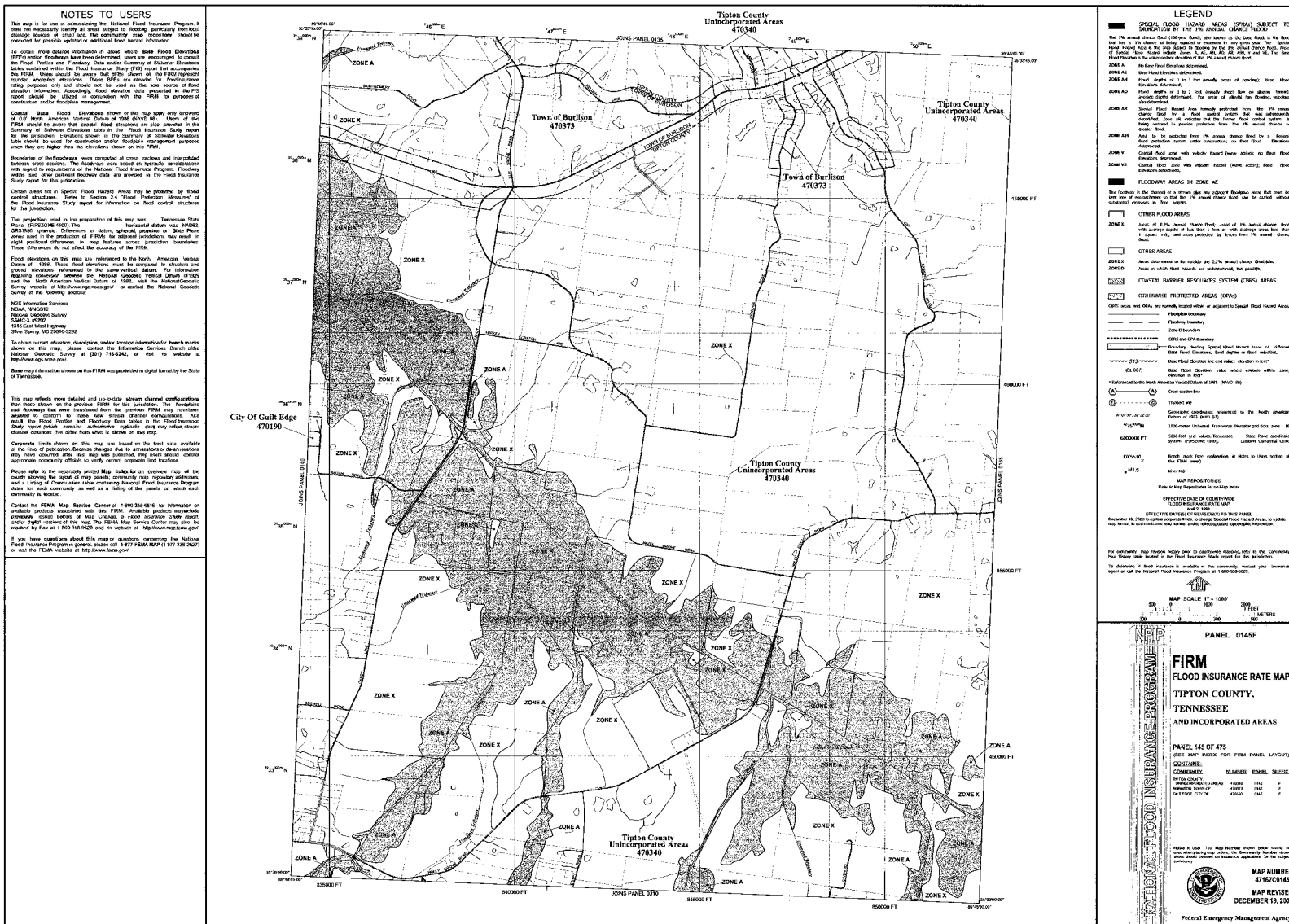


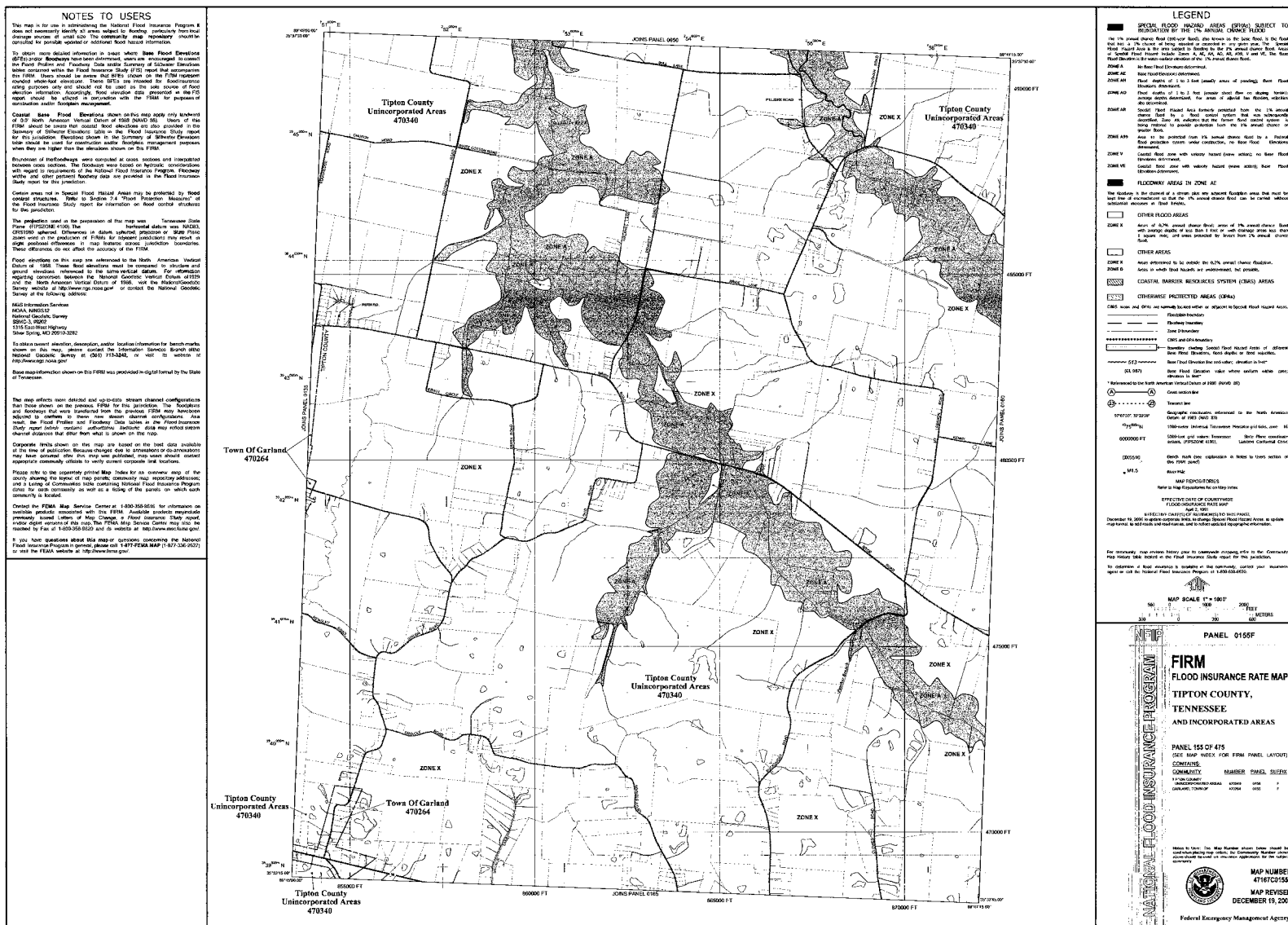




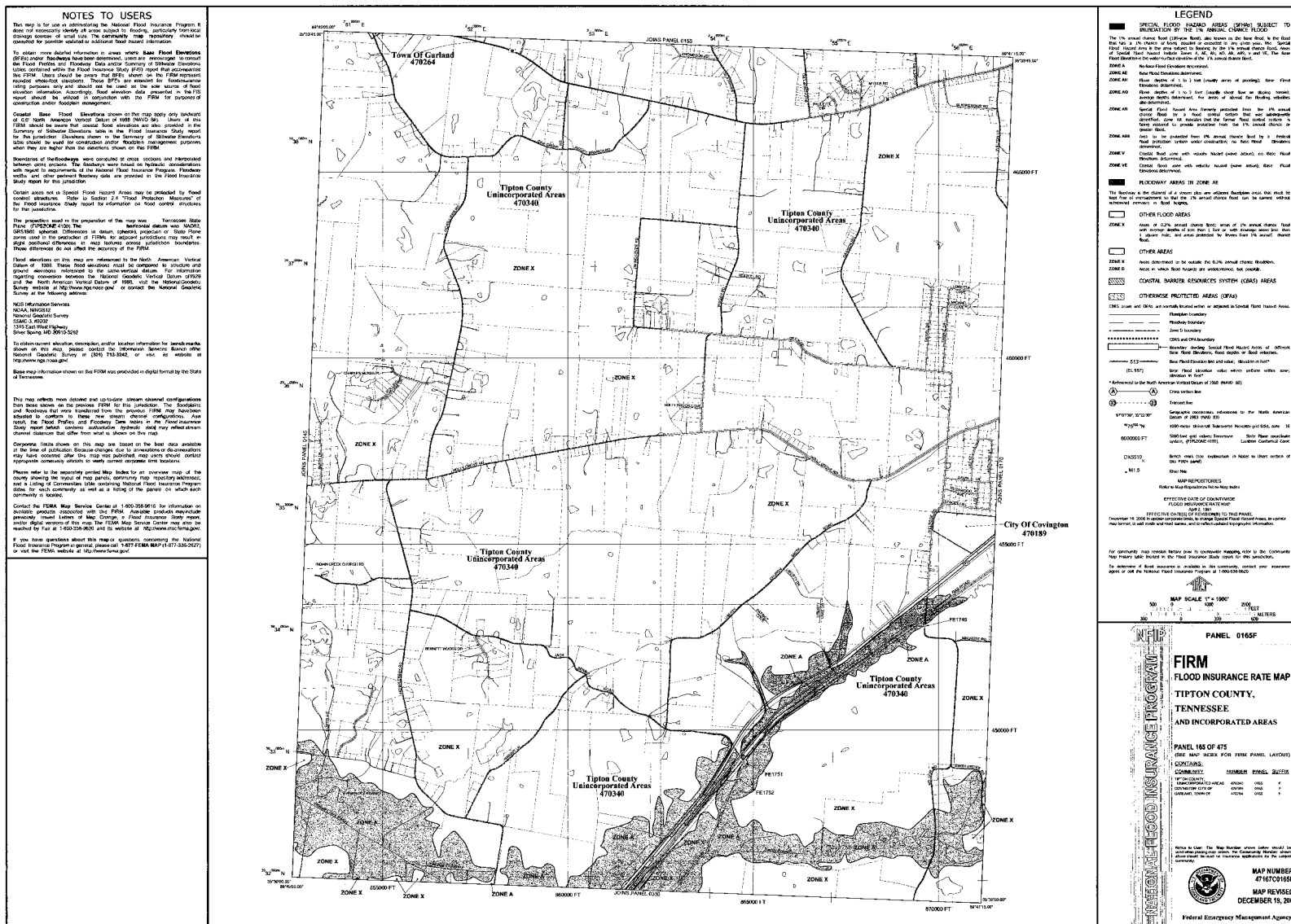


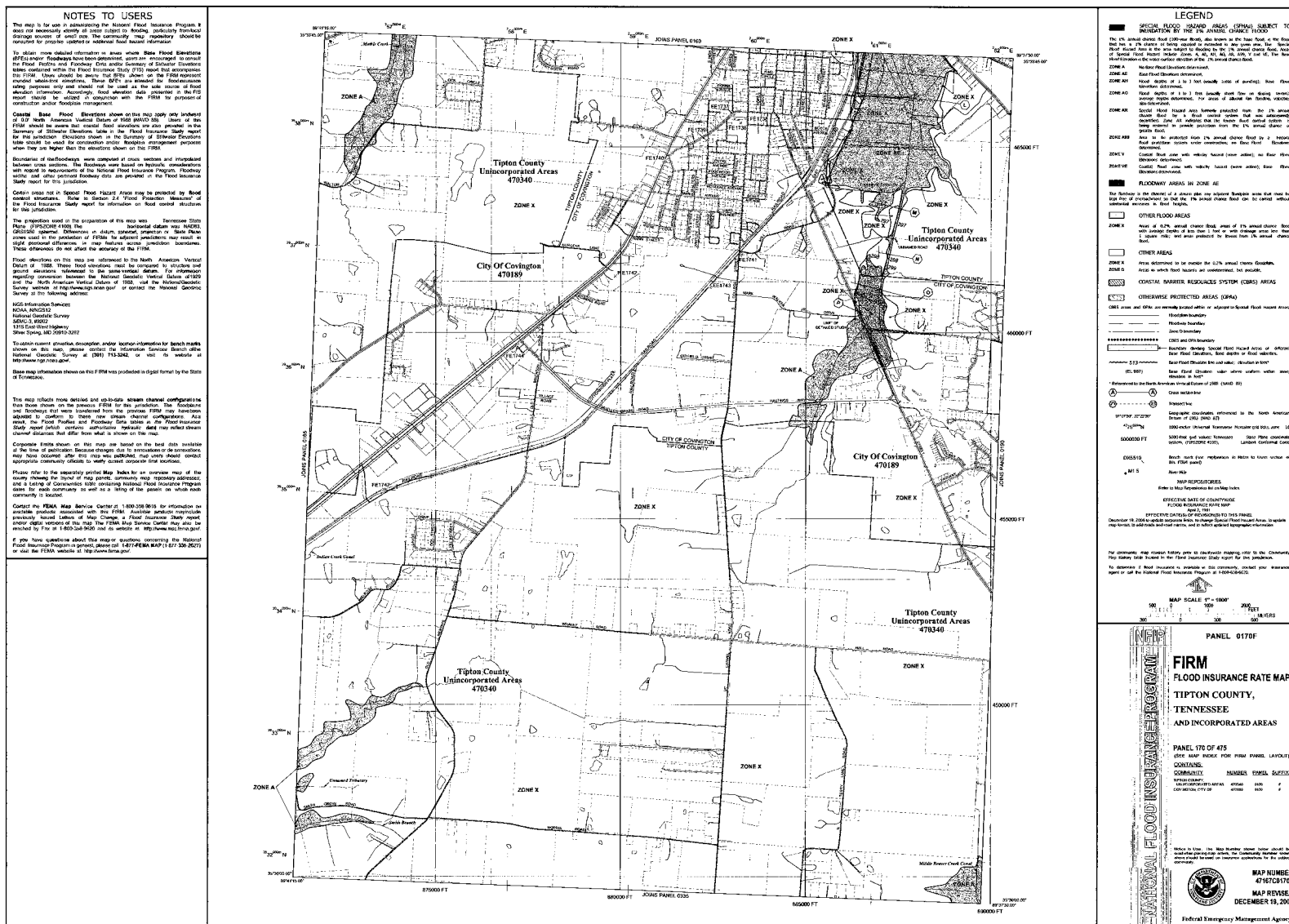


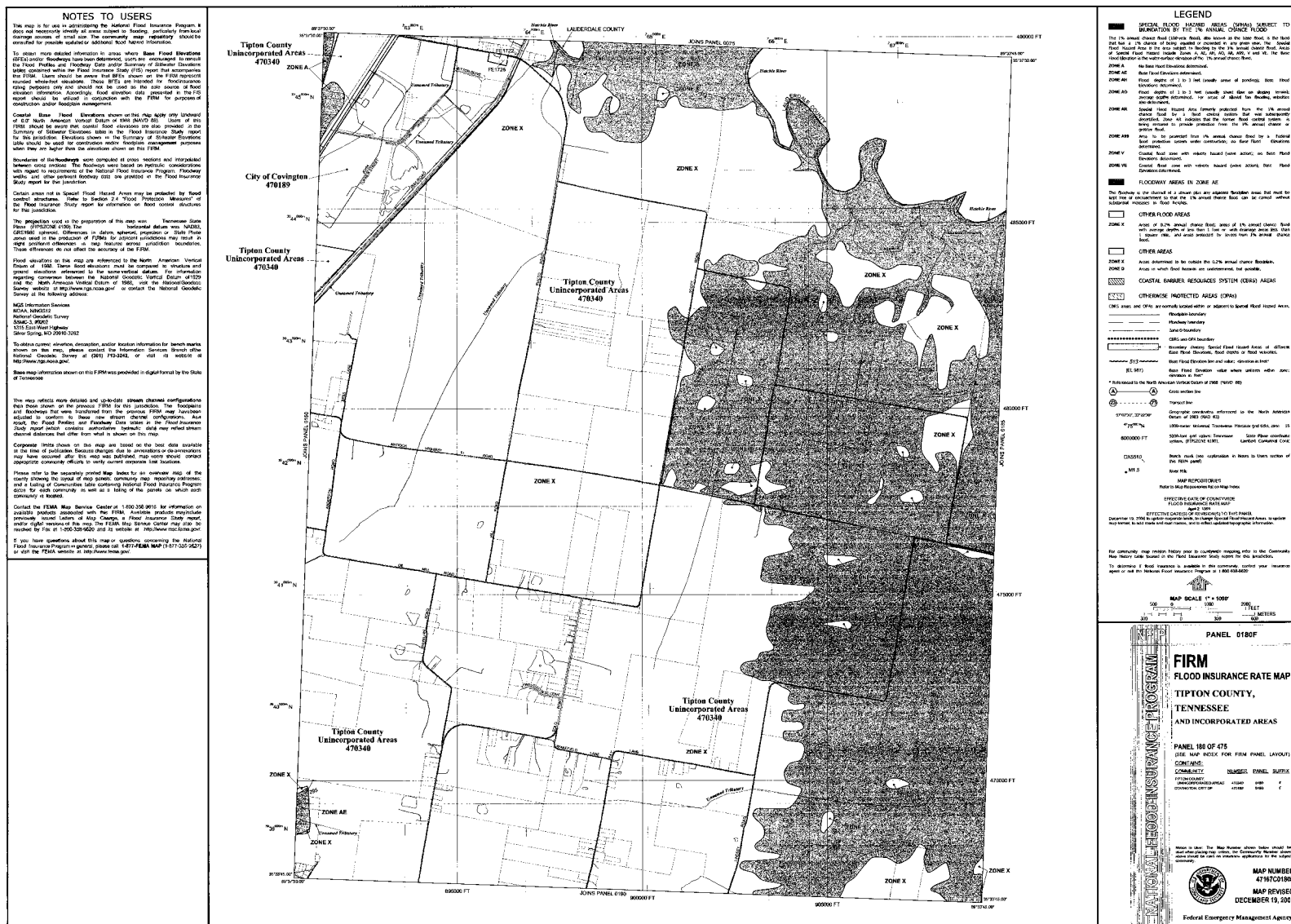


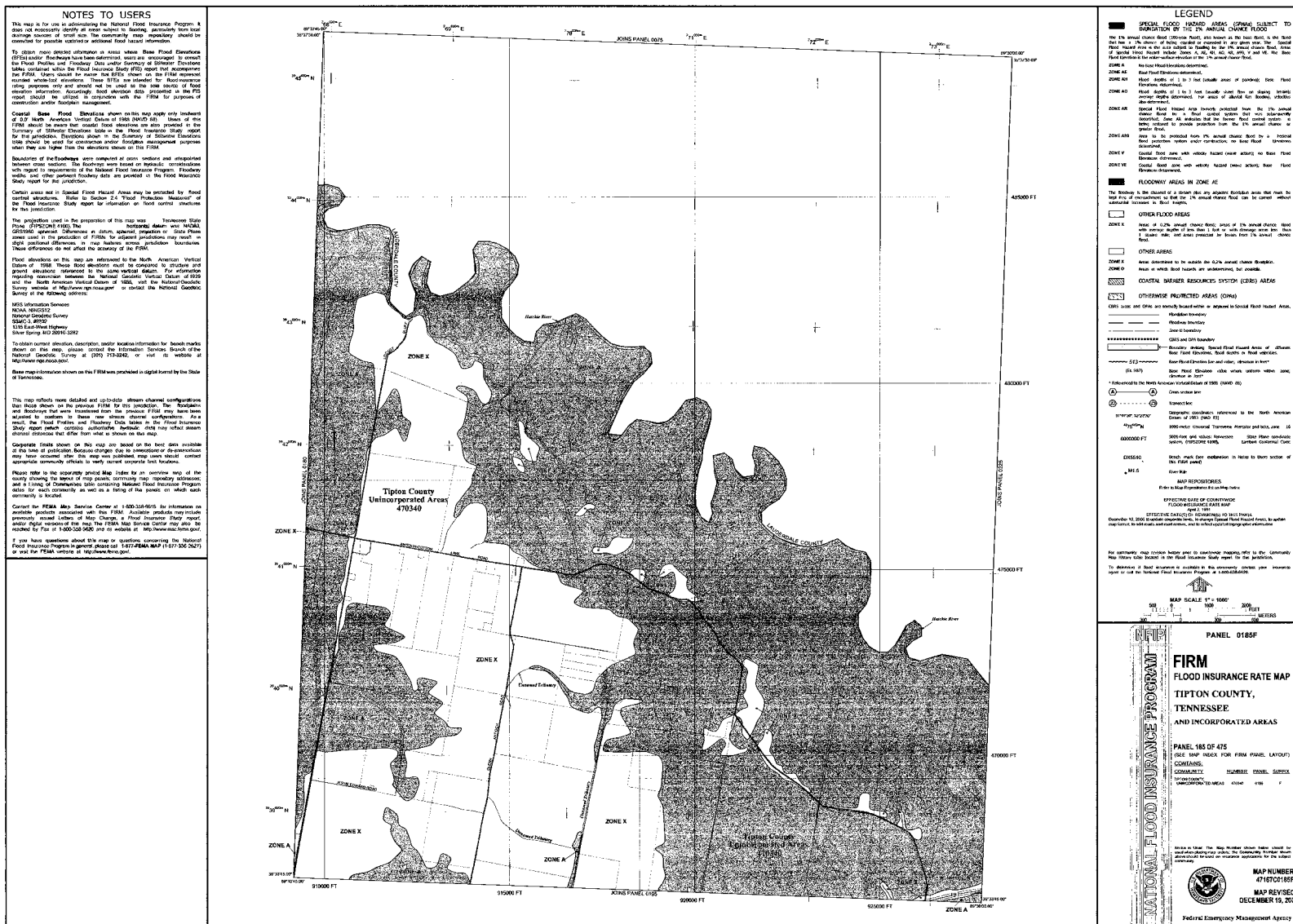


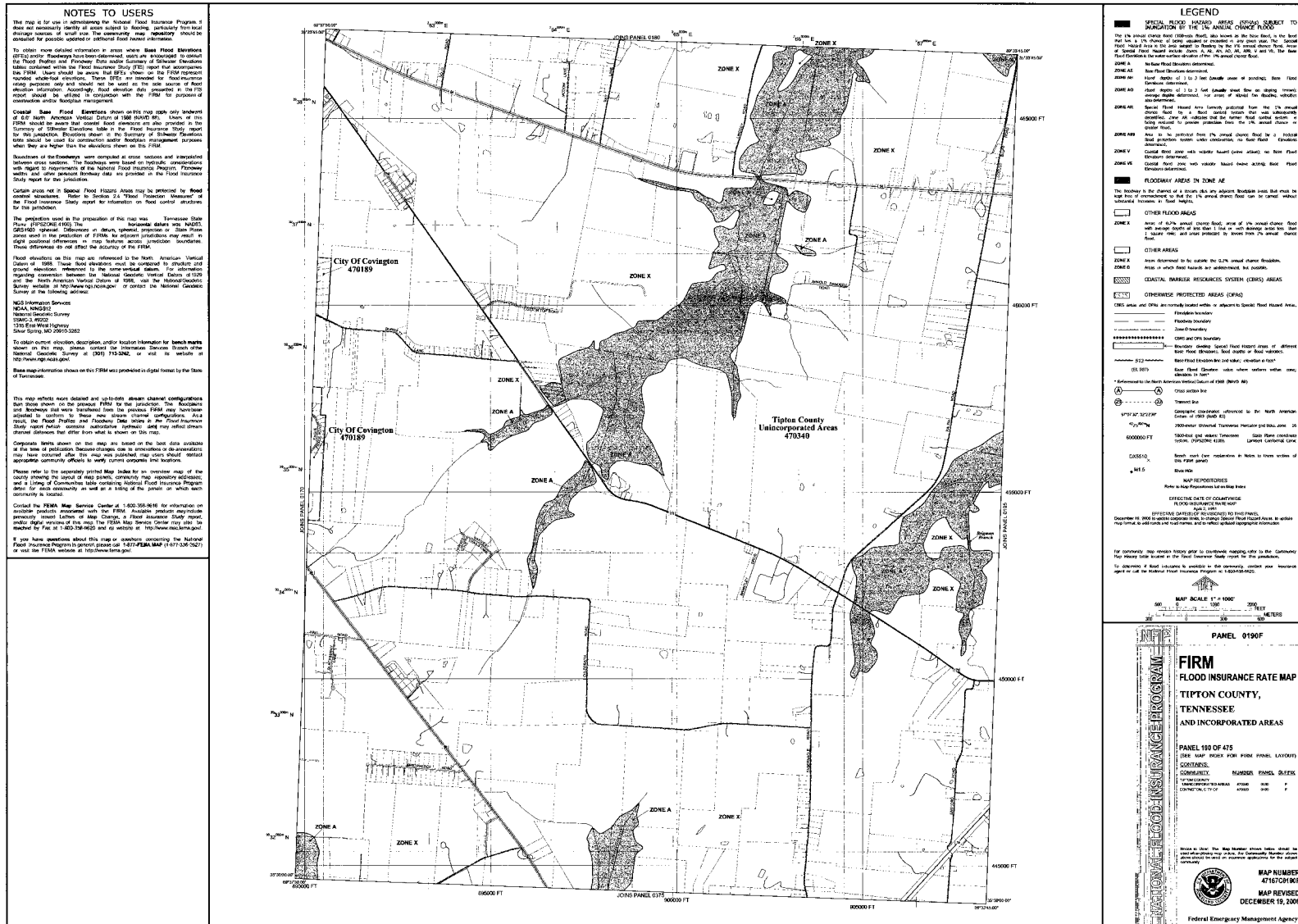


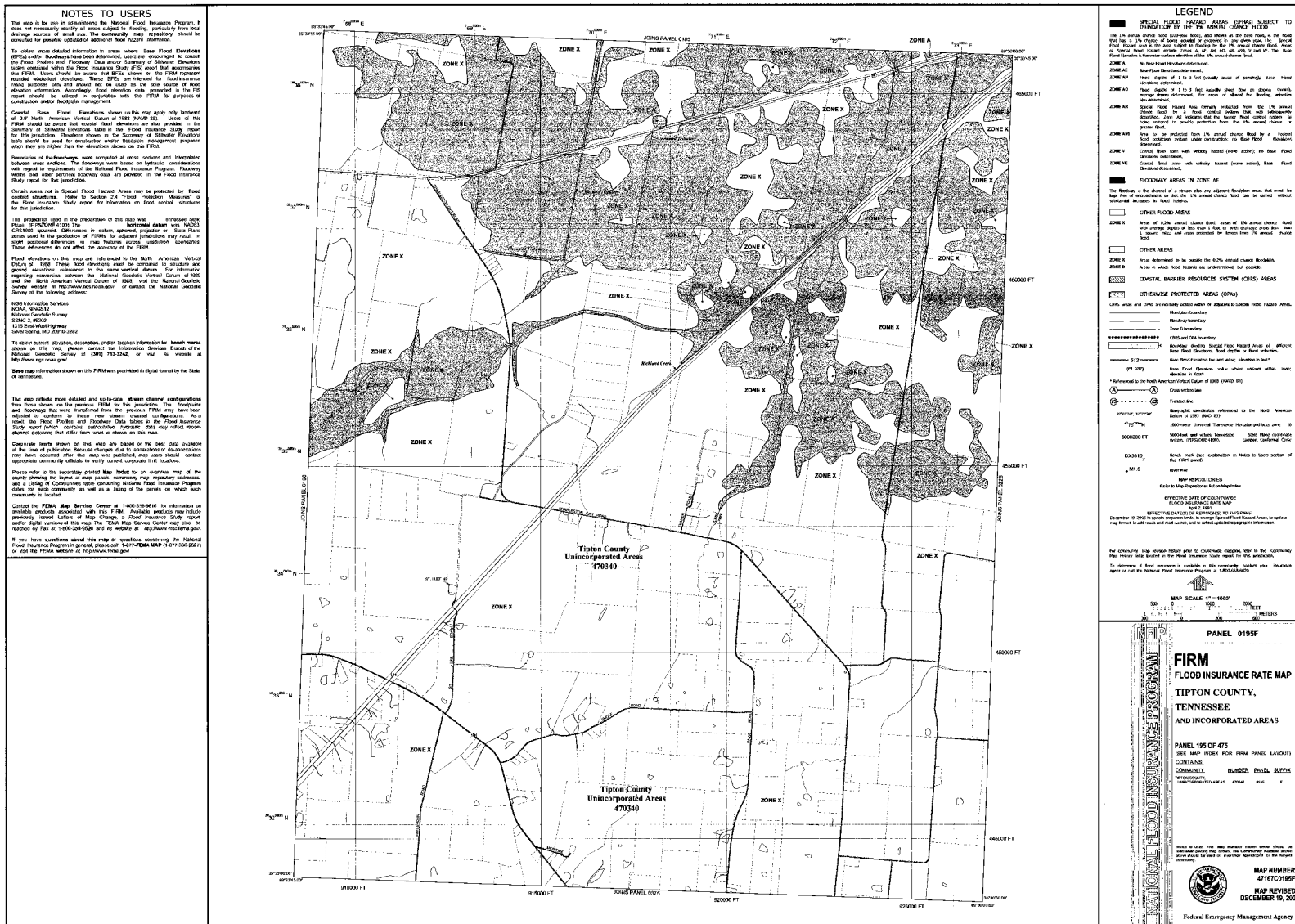


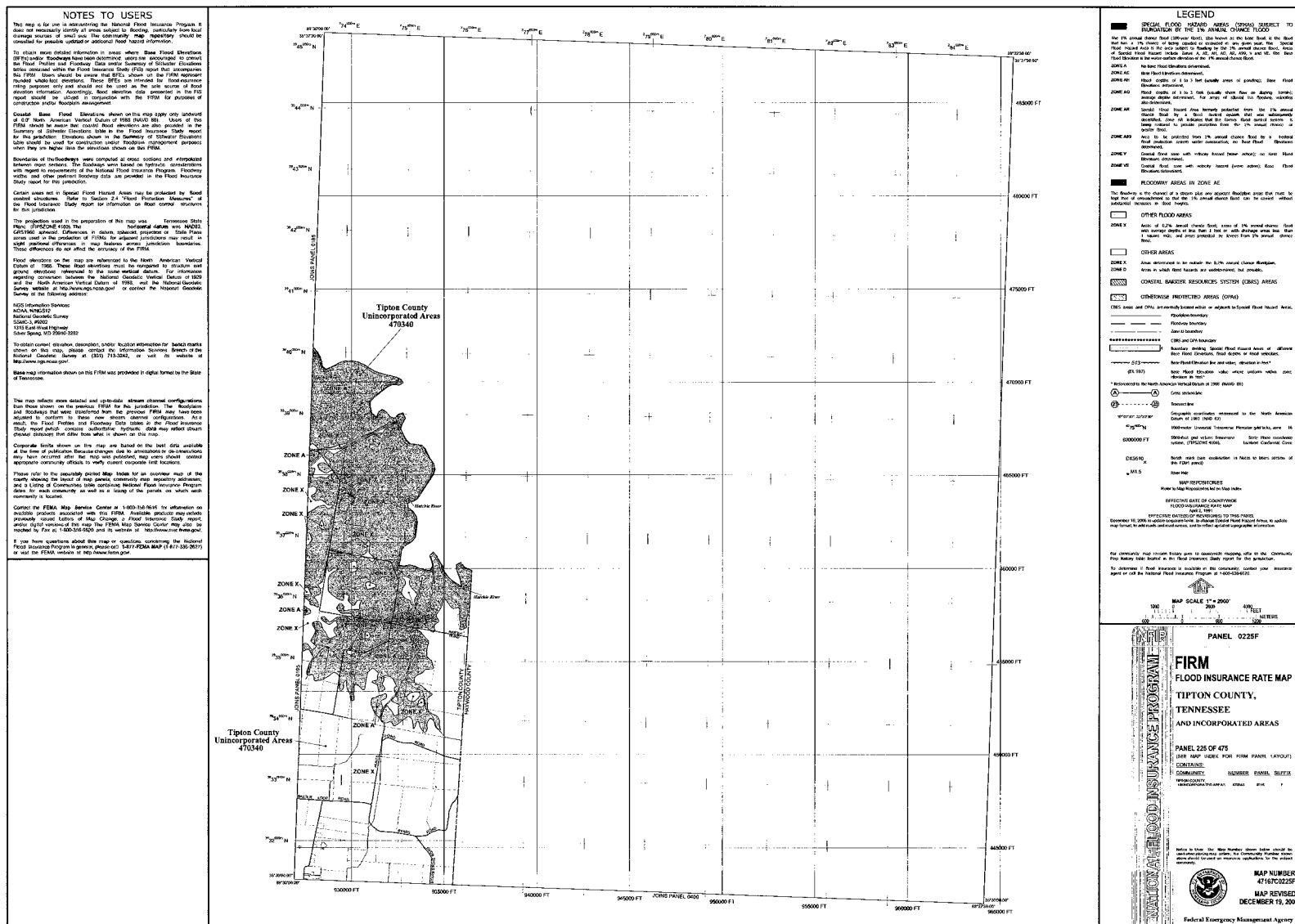


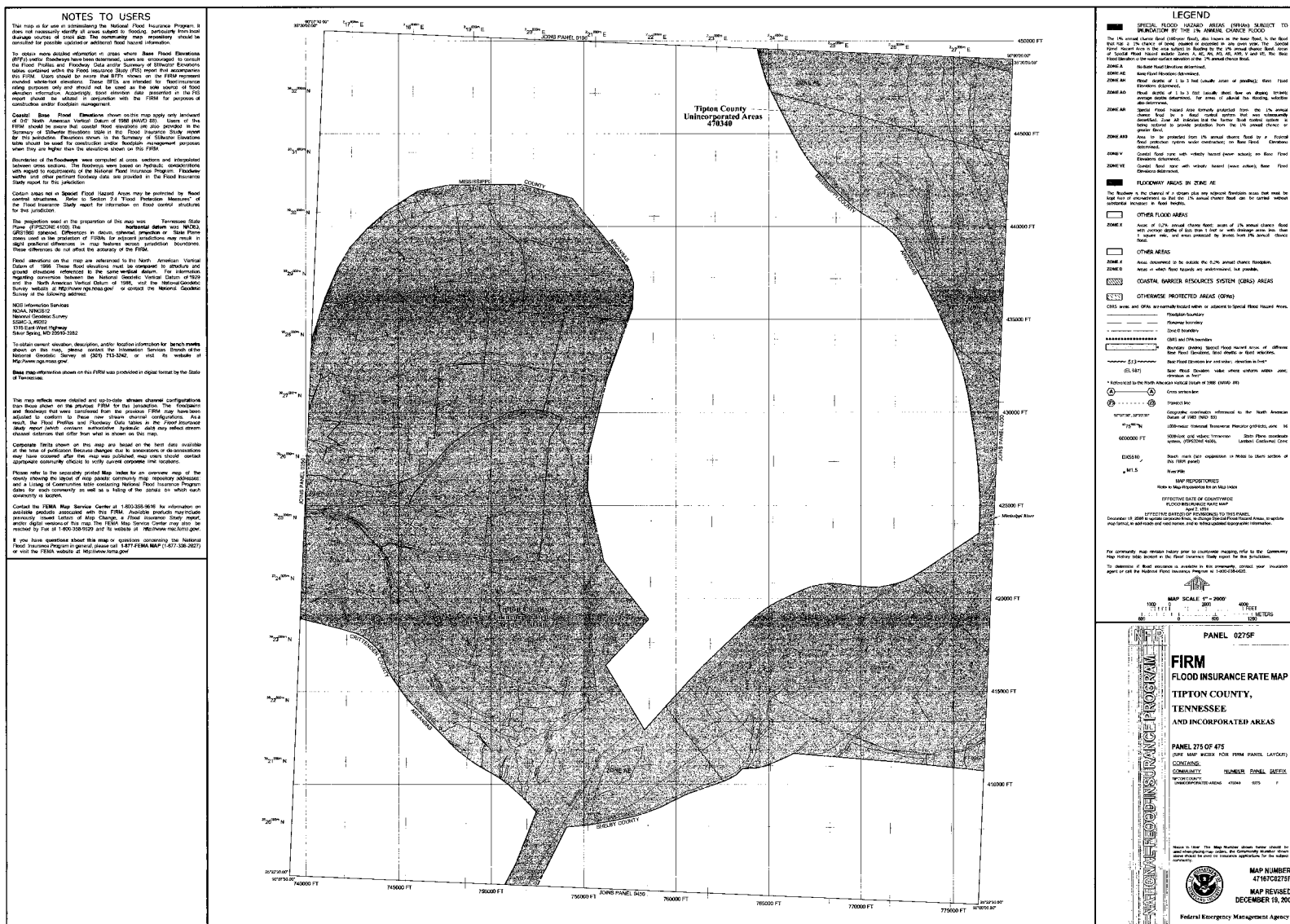


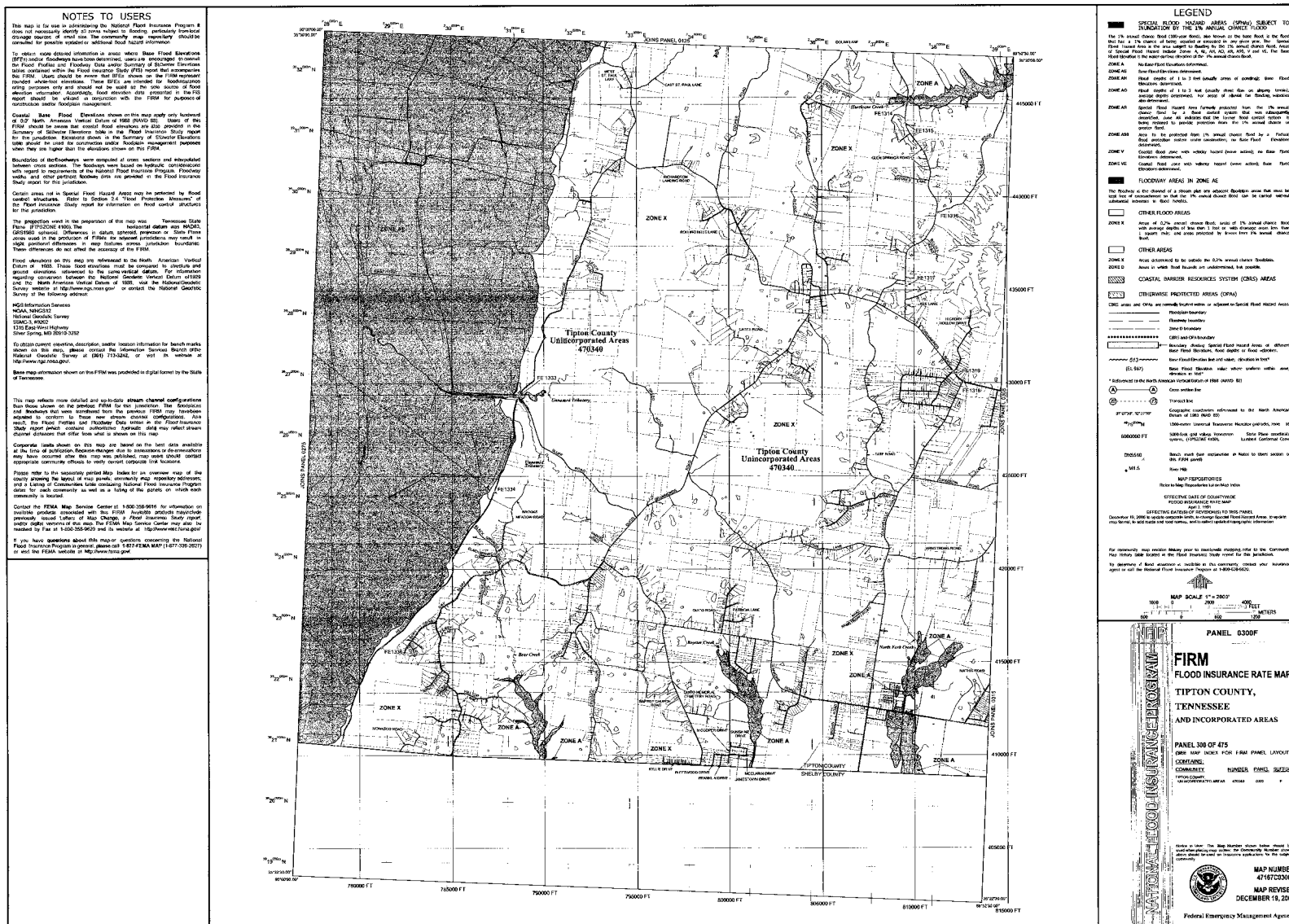


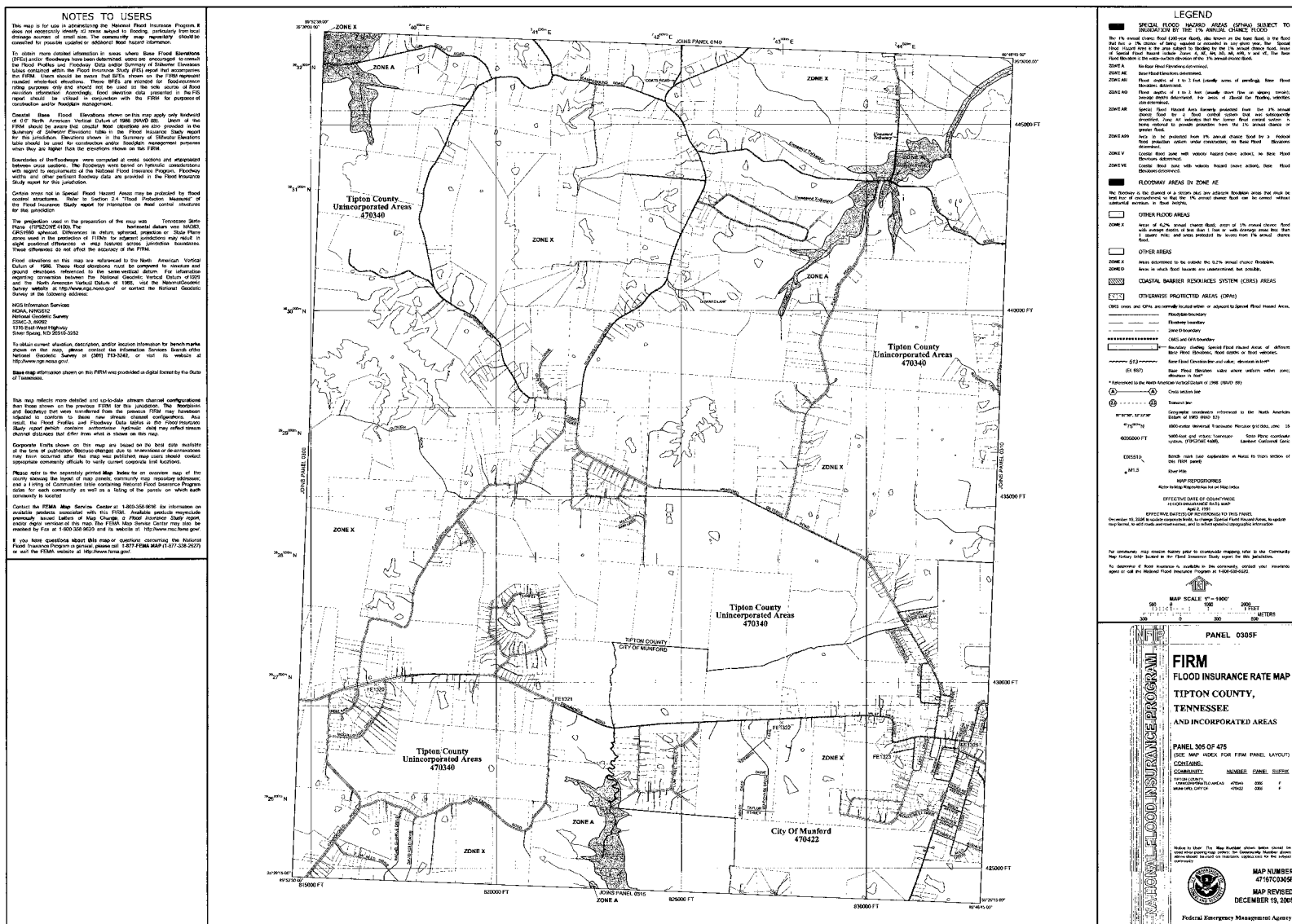


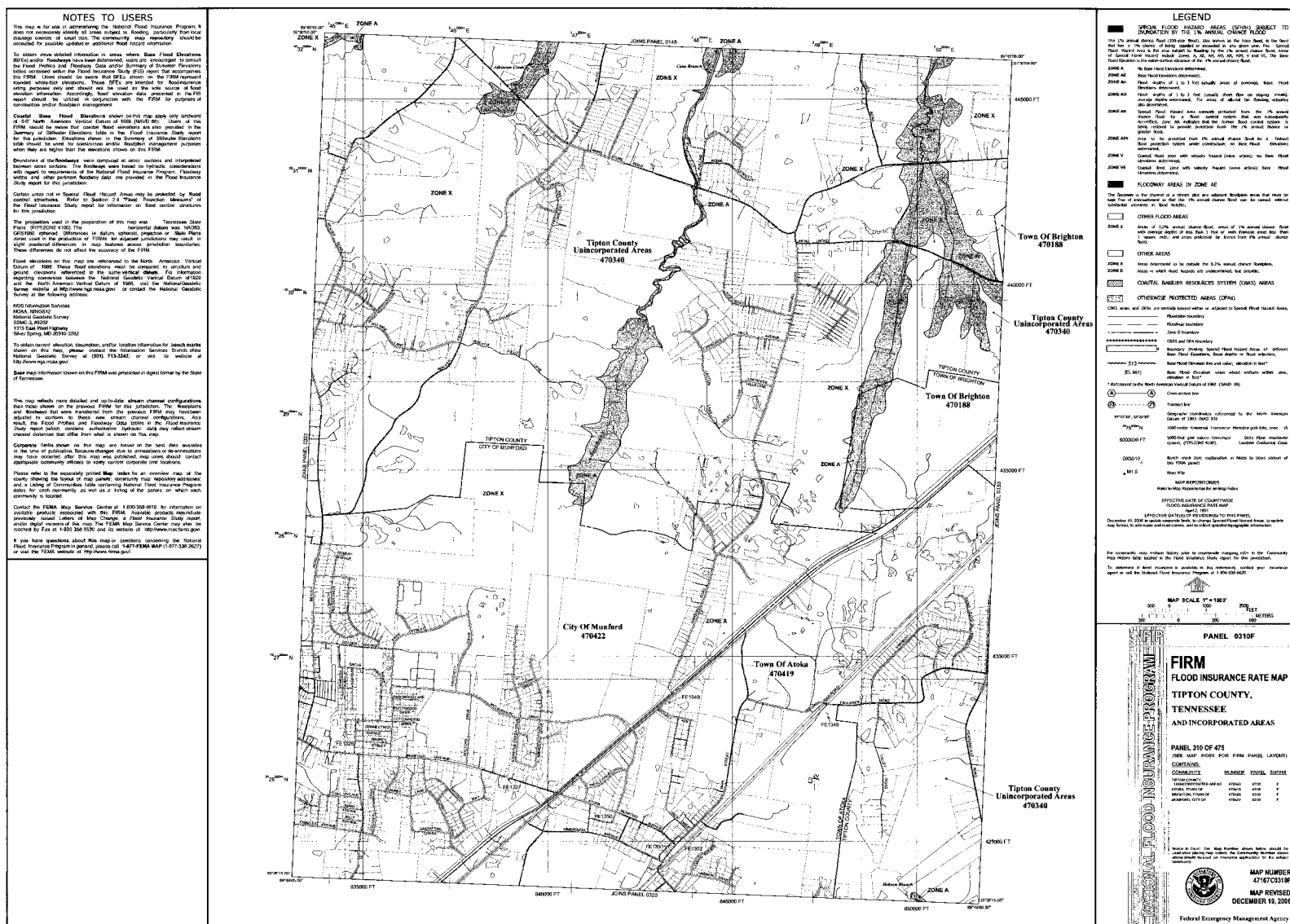


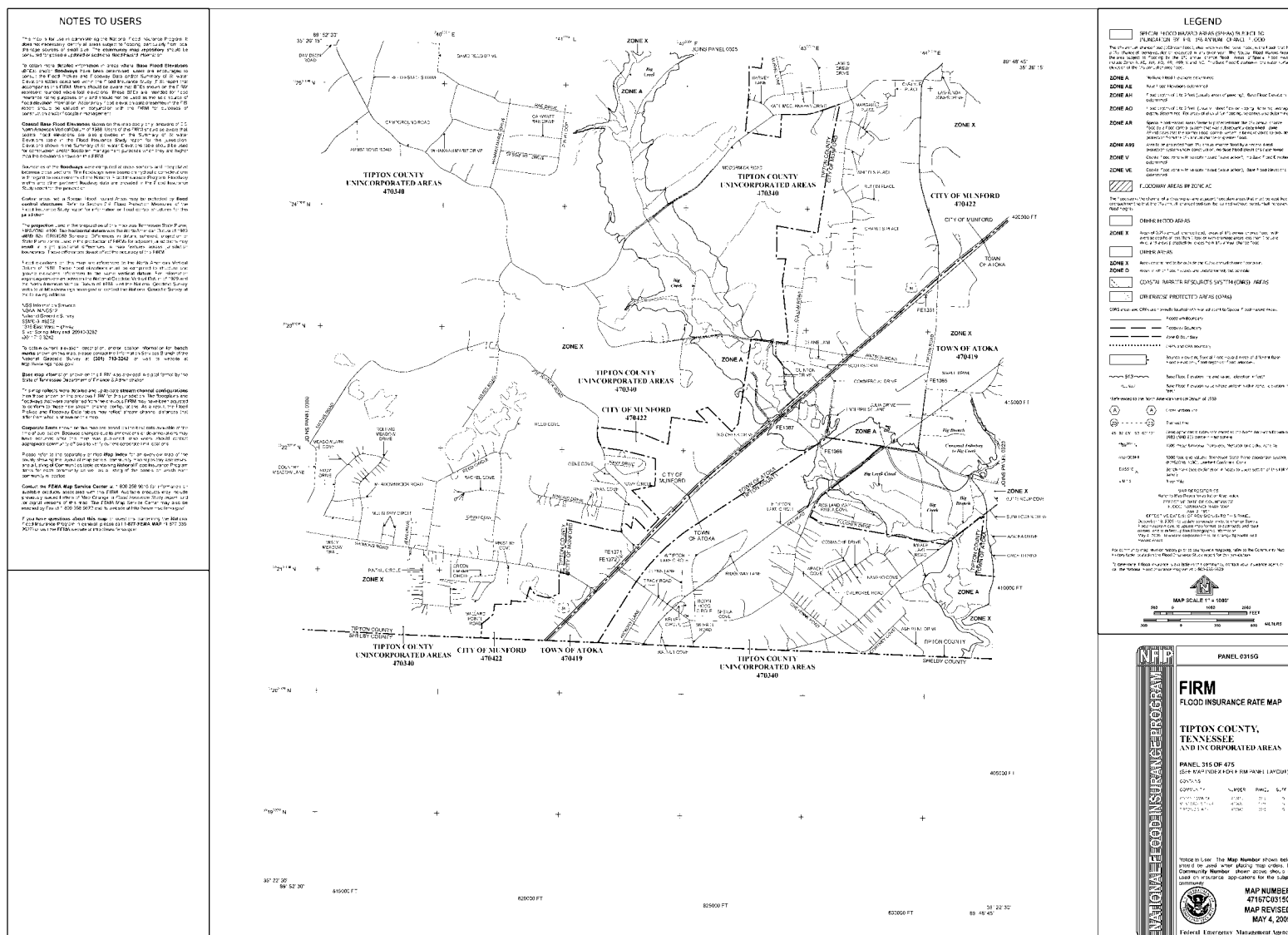


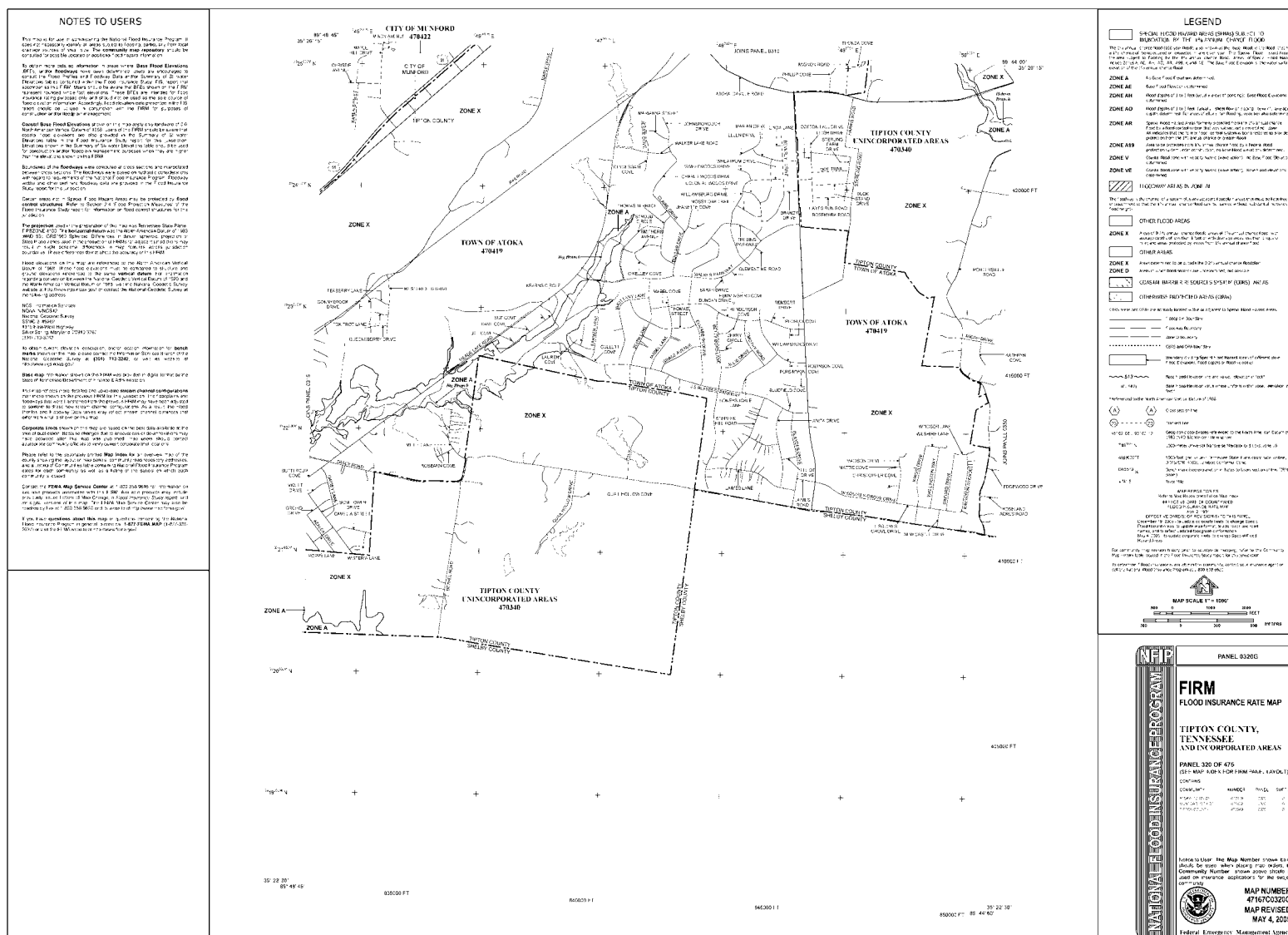


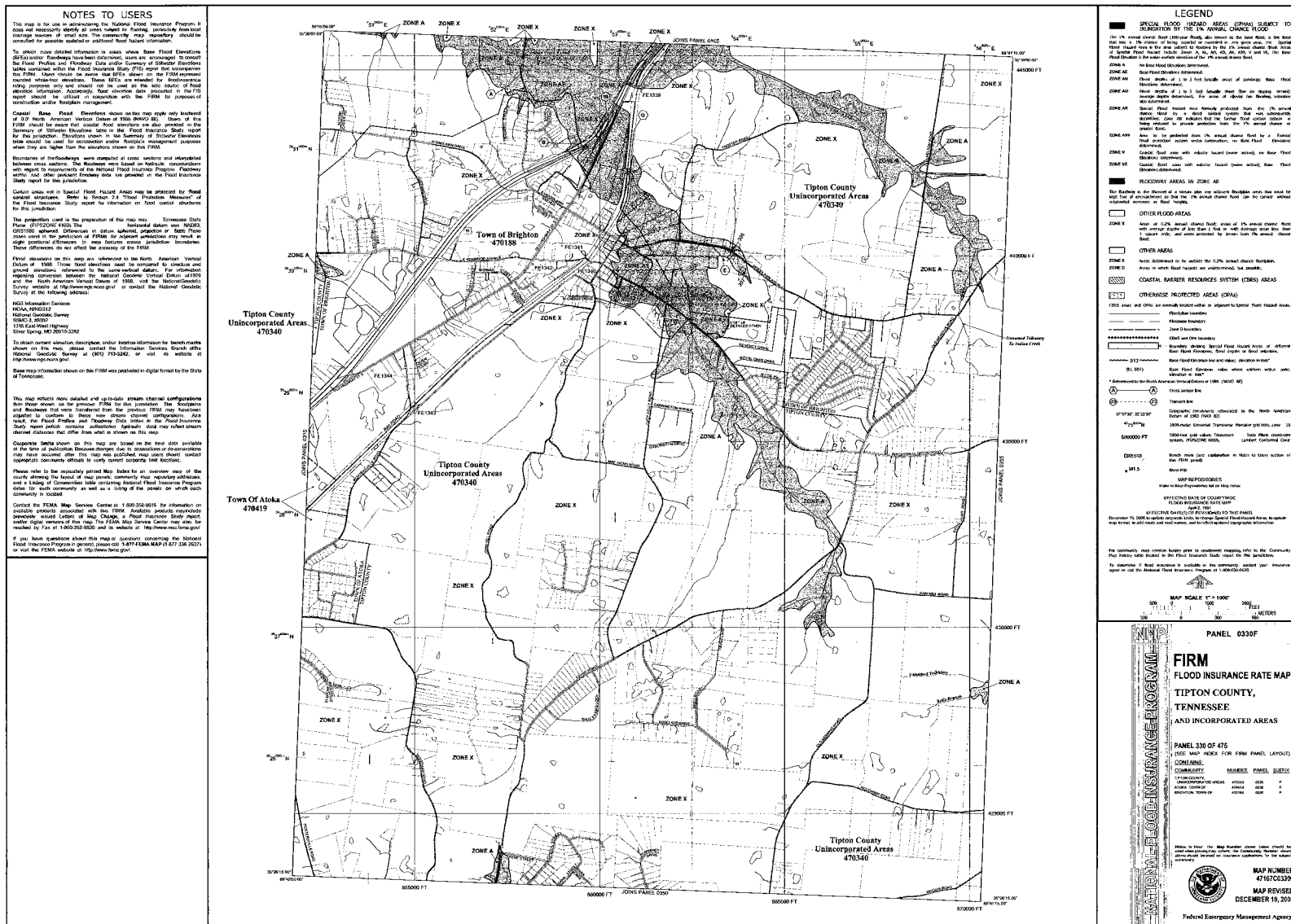


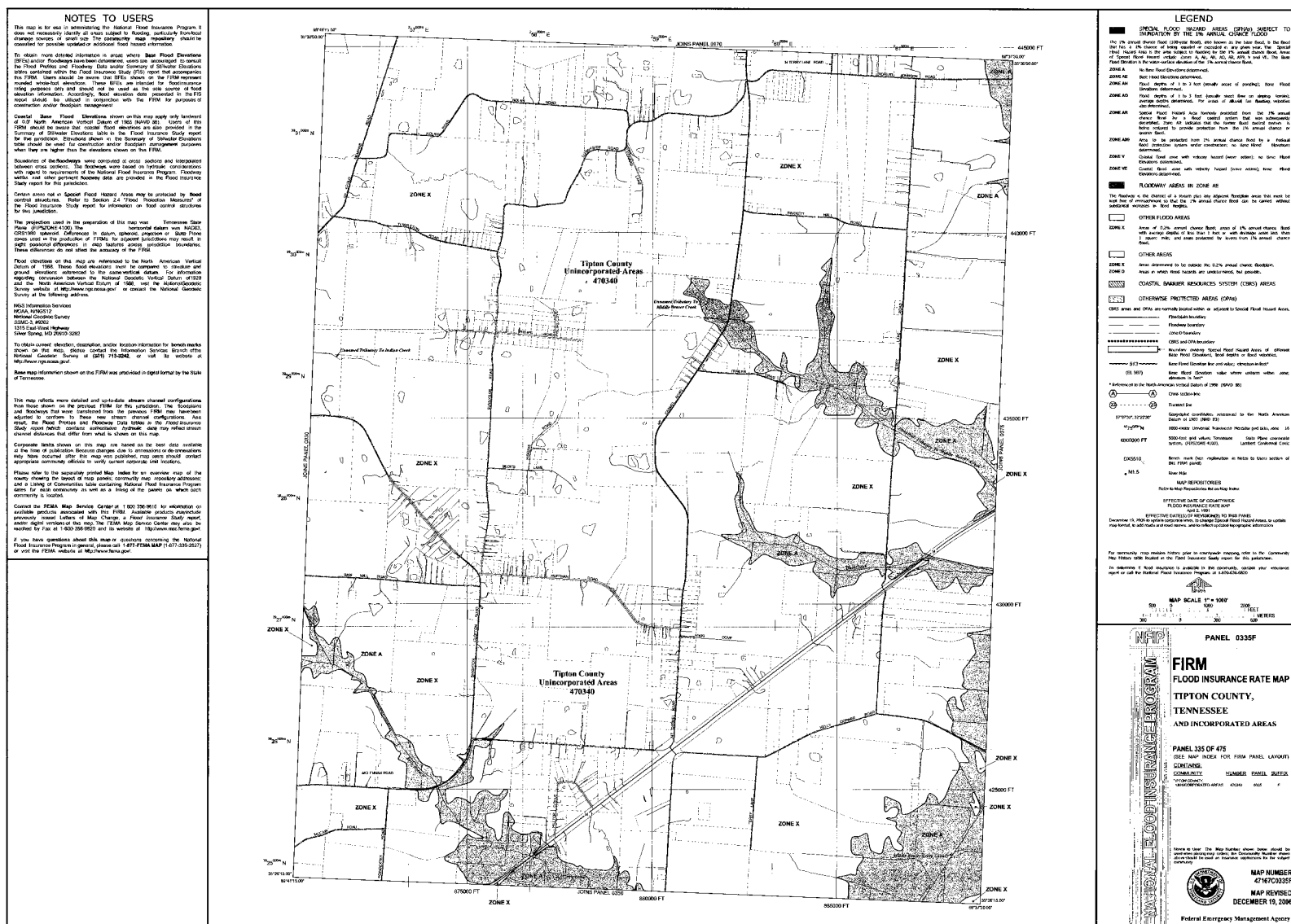


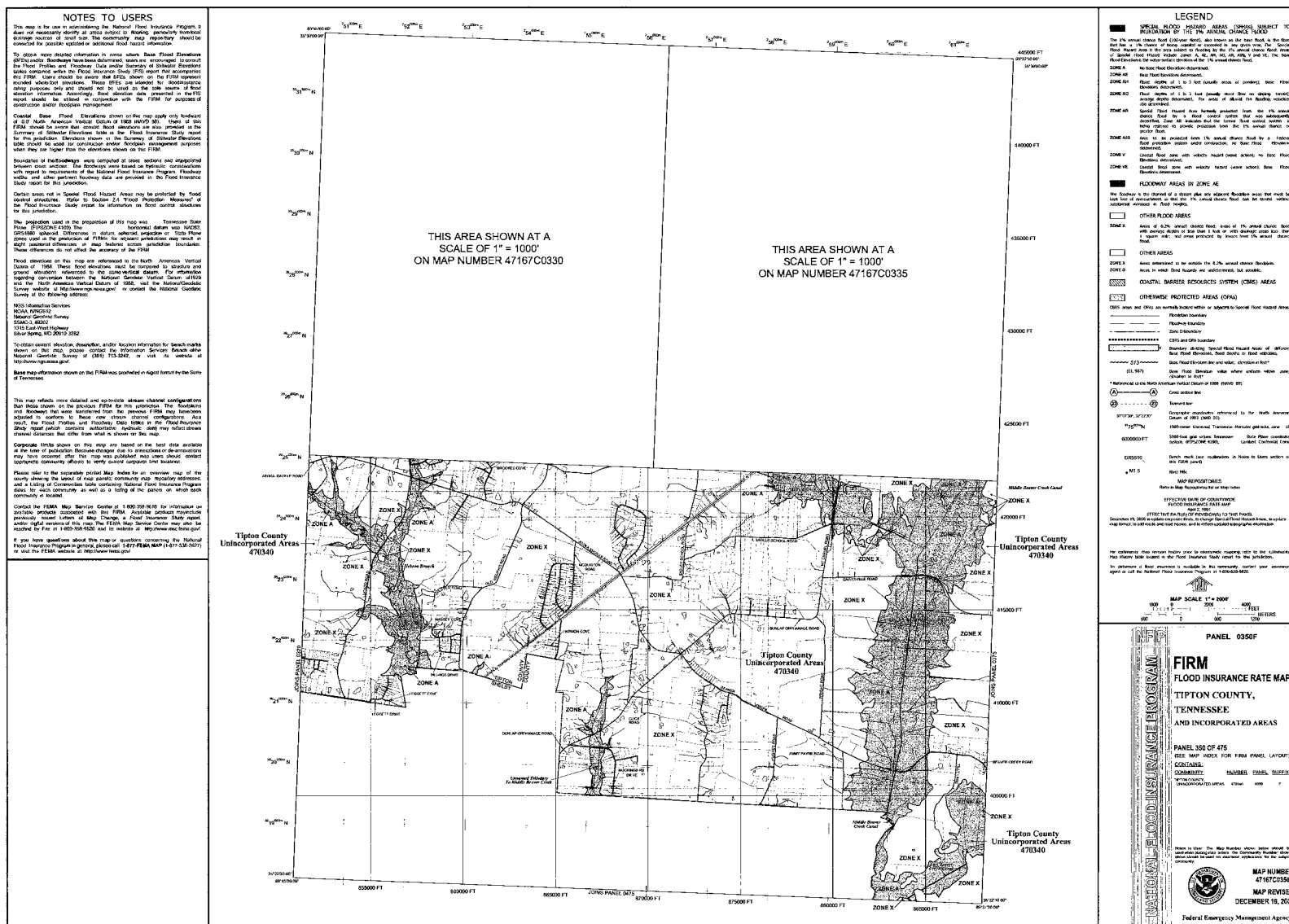


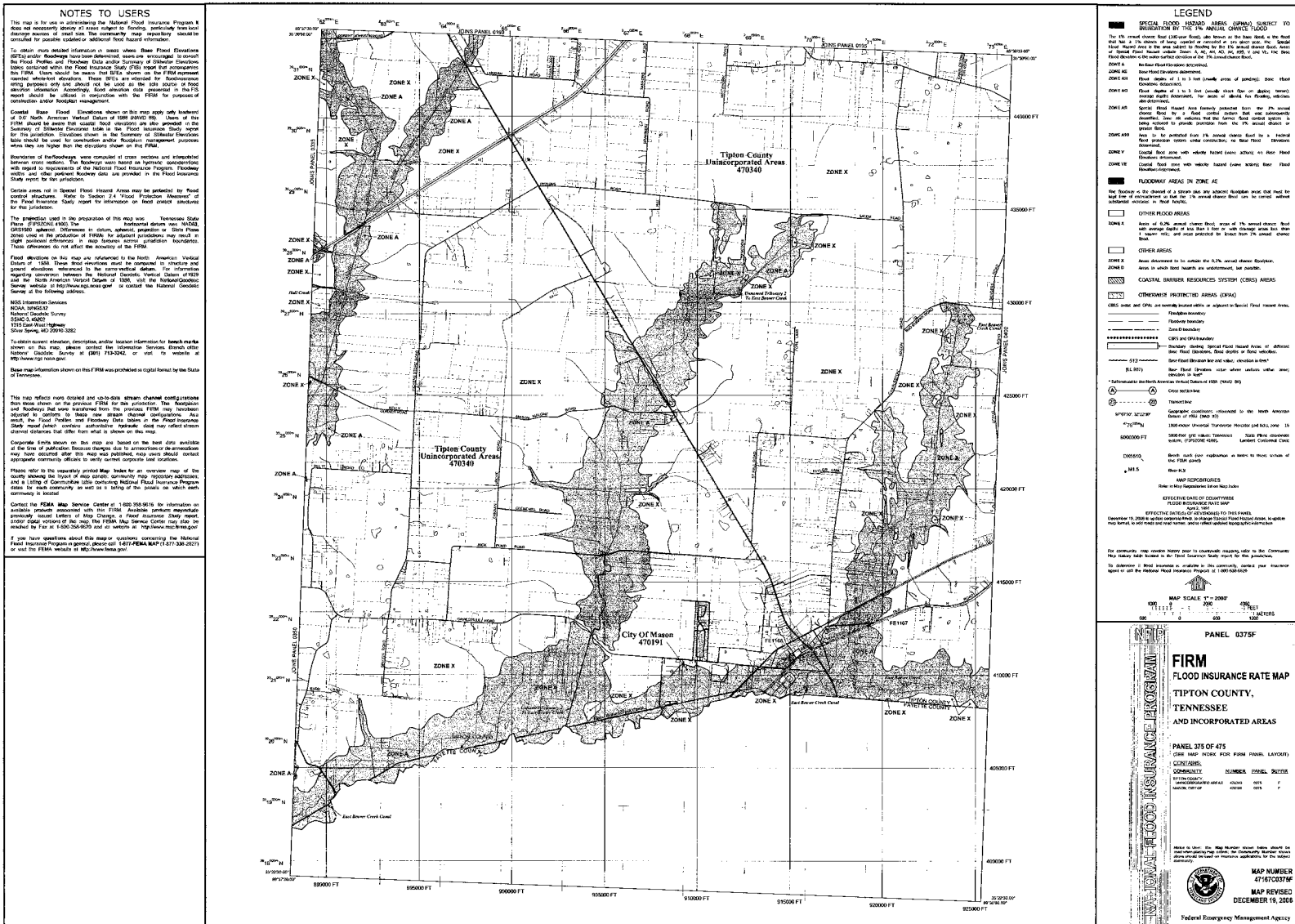


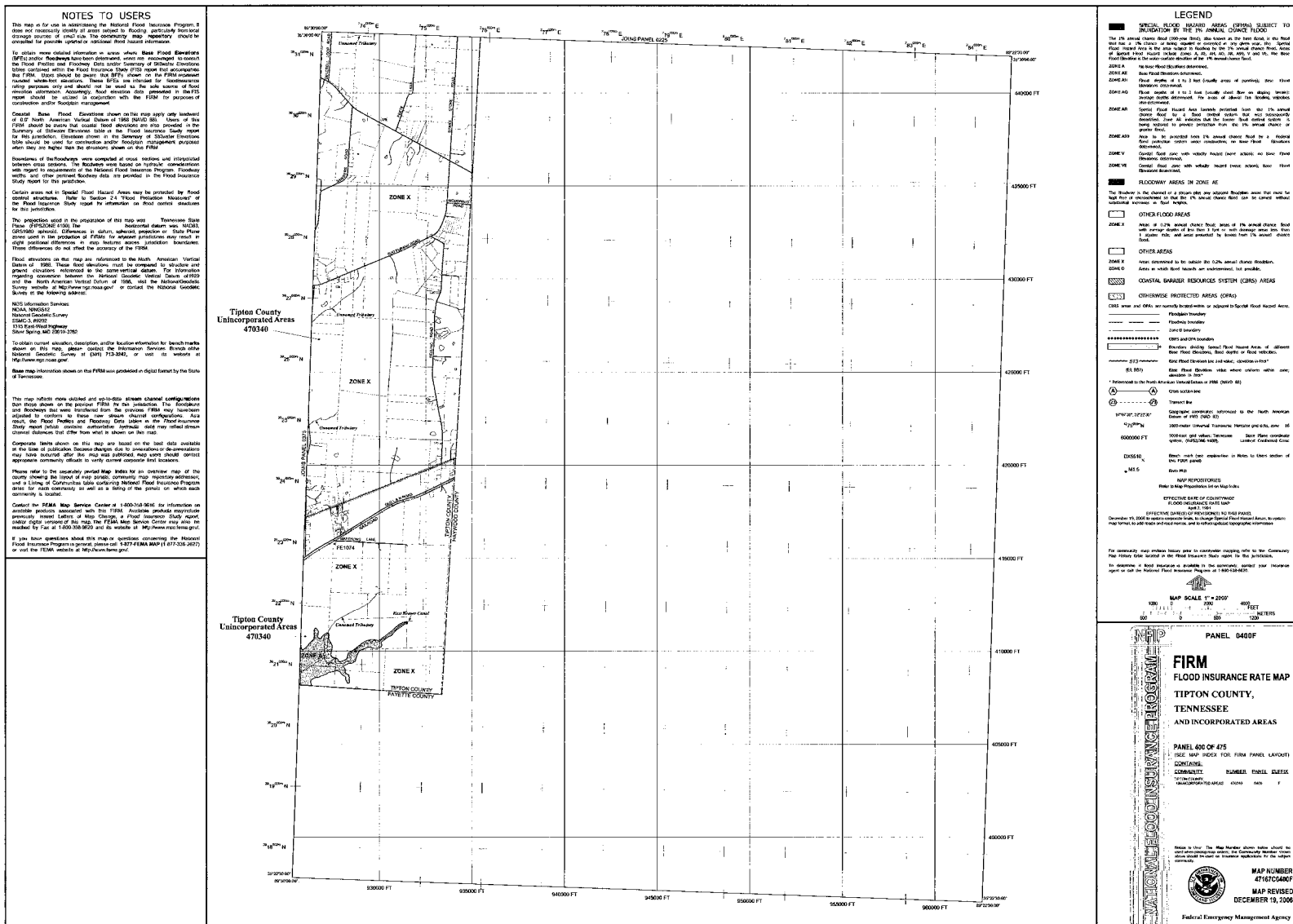


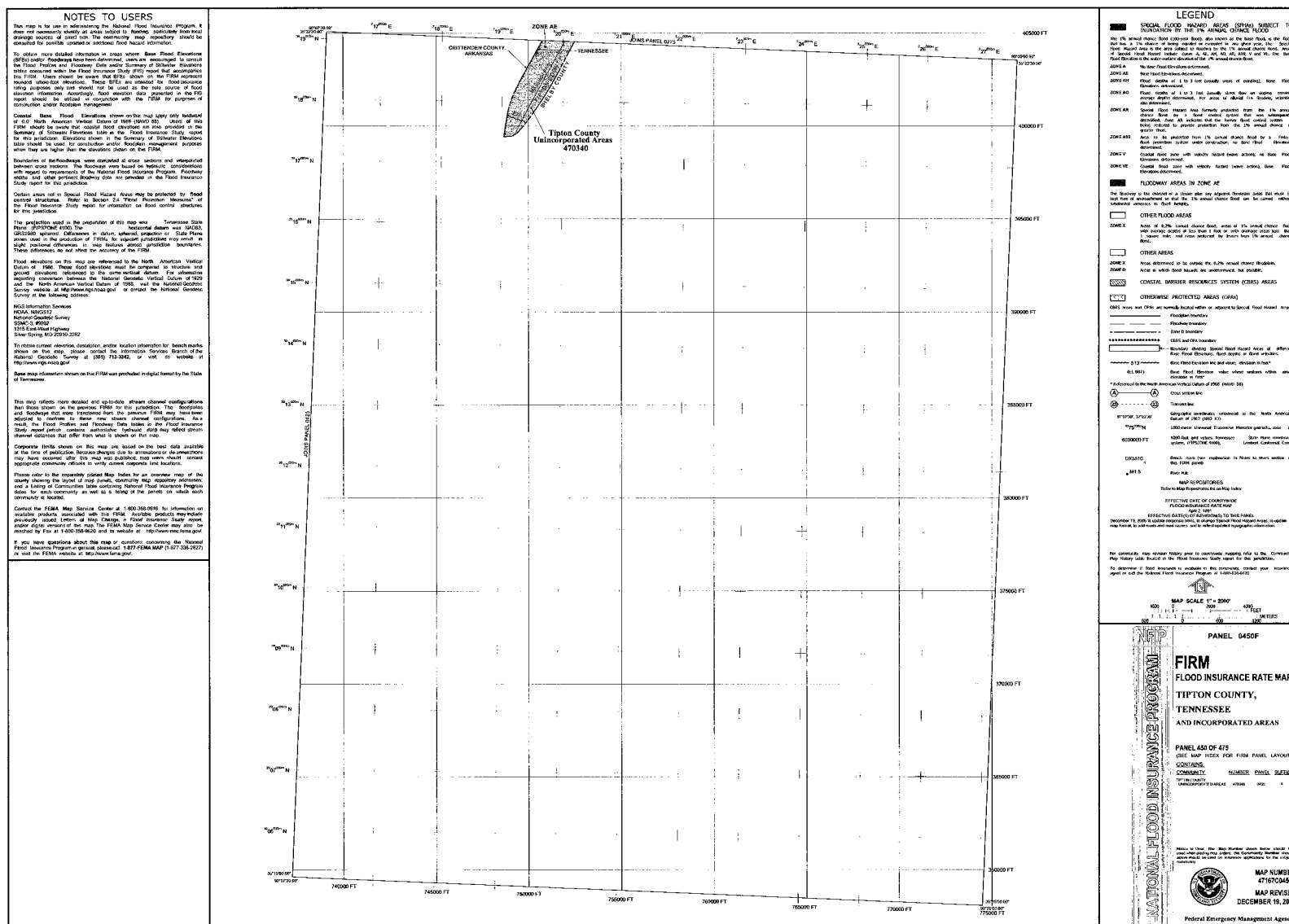






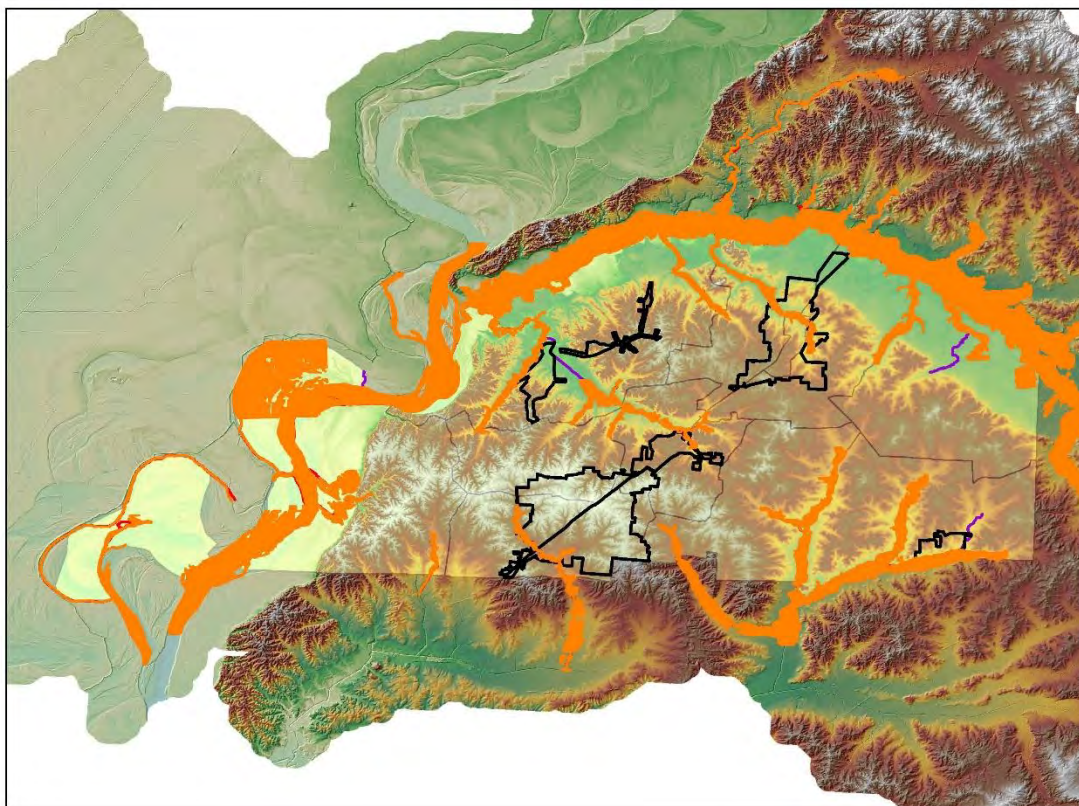






Appendix 5

HAZUS: 500-year Flood Study





Hazus: Flood Global Risk Report

Region Name: Tipton_County

Flood Scenario: Tipton_County_500yr_Flood

Print Date: Wednesday, September 15, 2021

Disclaimer:

This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.



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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Tennessee

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is approximately 473 square miles and contains 1,430 census blocks. The region contains over 22 thousand households and has a total population of 61,081 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 23,488 buildings in the region with a total building replacement value (excluding contents) of 5,123 million dollars. Approximately 94.01% of the buildings (and 81.98% of the building value) are associated with residential housing.



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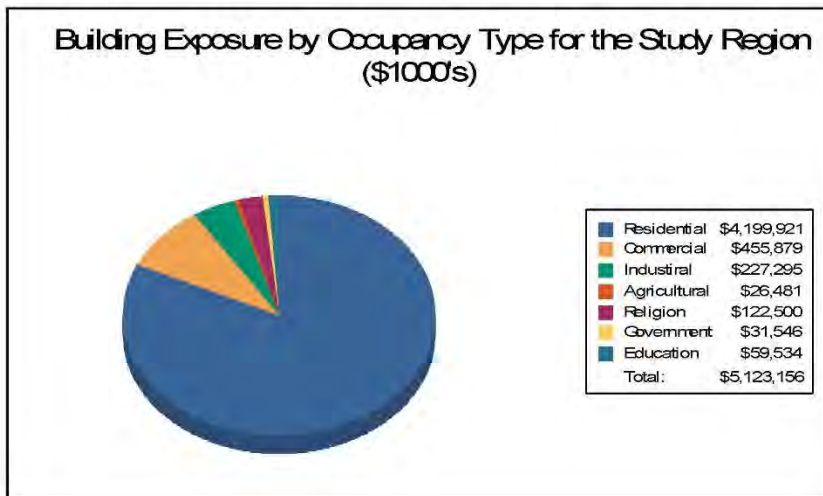
Building Inventory

General Building Stock

Hazus estimates that there are 23,488 buildings in the region which have an aggregate total replacement value of 5,123 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,199,921	82.0%
Commercial	455,879	8.9%
Industrial	227,295	4.4%
Agricultural	26,481	0.5%
Religion	122,500	2.4%
Government	31,546	0.6%
Education	59,534	1.2%
Total	5,123,166	100%



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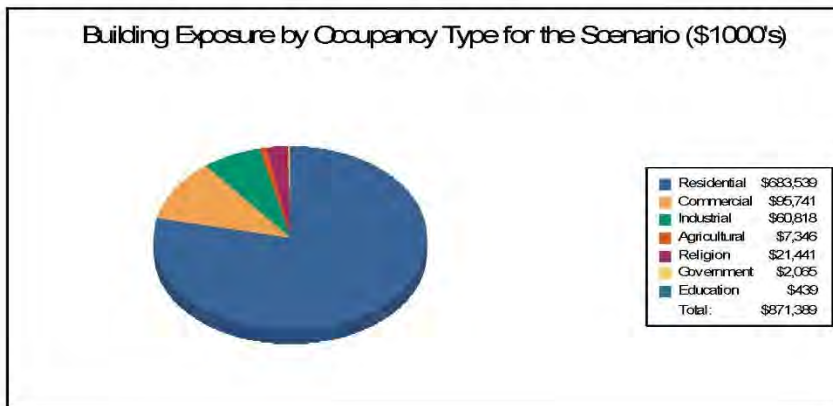
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Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	683,539	78.4%
Commercial	95,741	11.0%
Industrial	60,818	7.0%
Agricultural	7,346	0.8%
Religion	21,441	2.5%
Government	2,065	0.2%
Education	439	0.1%
Total	871,389	100%



Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 70 beds.
There are 14 schools, 9 fire stations, 9 police stations and 1 emergency operation center.



Flood Global Risk Report



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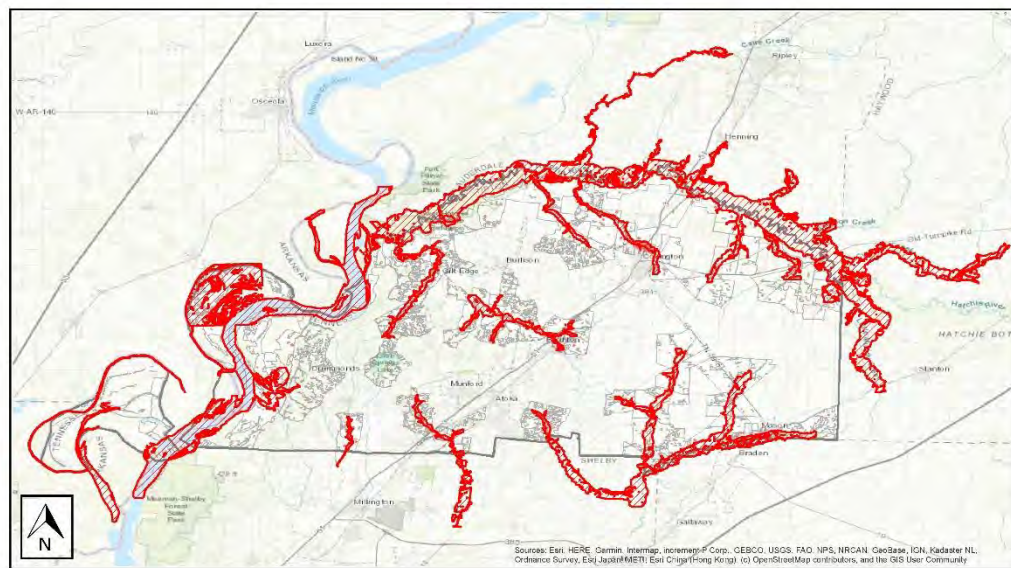


Building Damage

General Building Stock Damage

Hazus estimates that about 24 buildings will be at least moderately damaged. This is over 54% of the total number of buildings in the scenario. There are an estimated 1 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Total Economic Loss (1 dot = \$300K) Overview Map



Flood Global Risk Report

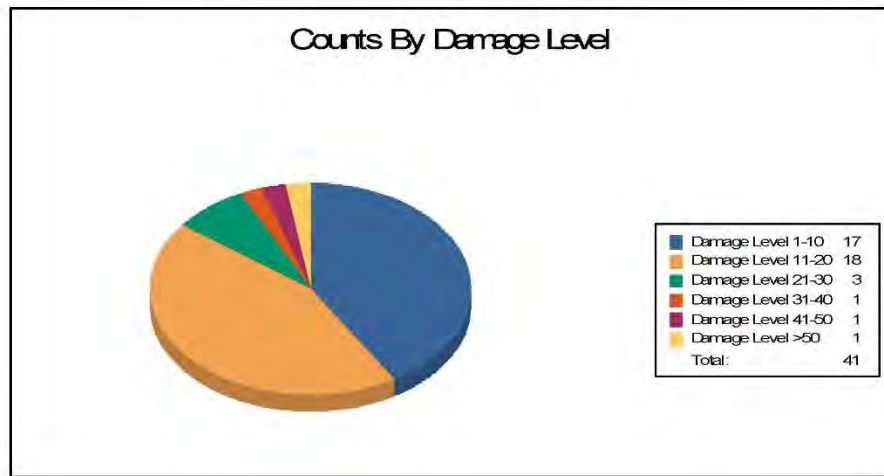


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Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	17	41	18	44	3	7	1	2	1	2	1	2
Total	17		18		3		1		1		1	



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Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0	0	0	0	0	0	0	0	0	0	0
Manuf/Housing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	1	50	1	50	0	0	0	0	0	0	0	0
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	16	41	17	44	3	8	1	3	1	3	1	3



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Essential Facility Damage

Before the flood analyzed in this scenario, the region had 70 hospital beds available for use. On the day of the scenario flood event, the model estimates that 70 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	1	0	0	0
Fire Stations	9	1	0	1
Hospitals	1	0	0	0
Police Stations	9	0	0	0
Schools	14	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



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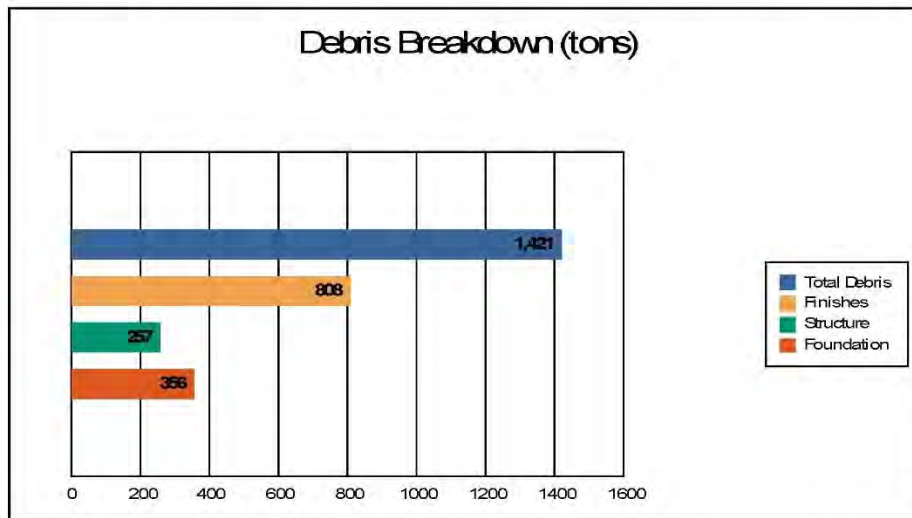
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Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.



The model estimates that a total of 1,421 tons of debris will be generated. Of the total amount, Finishes comprises 57% of the total, Structure comprises 18% of the total, and Foundation comprises 25%. If the debris tonnage is converted into an estimated number of truckloads, it will require 57 truckloads (@25 tons/truck) to remove the debris generated by the flood.



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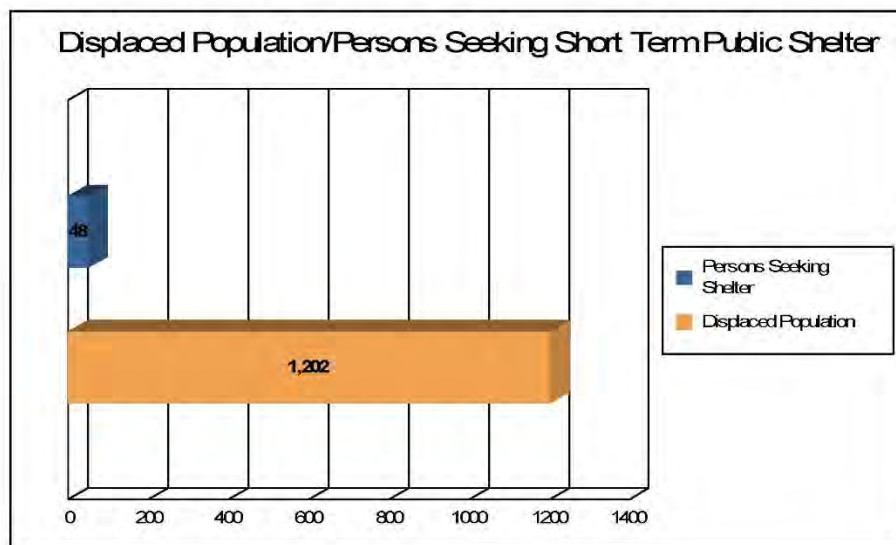
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Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 401 households (or 1,202 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 48 people (out of a total population of 61,081) will seek temporary shelter in public shelters.



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Economic Loss

The total economic loss estimated for the flood is 46.59 million dollars, which represents 5.35 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 26.31 million dollars. 44% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 41.08% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.



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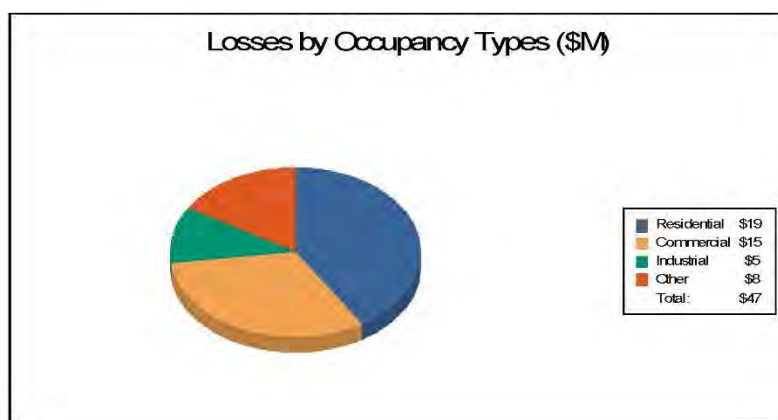
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Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	8.71	1.22	1.43	0.36	11.72
	Content	4.66	4.06	2.73	2.56	14.01
	Inventory	0.00	0.13	0.44	0.01	0.58
	Subtotal	13.37	5.42	4.60	2.92	26.31
Business Interruption						
	Income	0.19	3.75	0.13	0.91	4.98
	Relocation	3.62	1.04	0.14	0.42	5.22
	Rental Income	1.50	0.76	0.02	0.06	2.34
	Wage	0.45	3.76	0.22	3.33	7.75
	Subtotal	5.77	9.31	0.49	4.71	20.29
ALL	Total	19.14	14.73	5.09	7.63	46.59



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Appendix A: County Listing for the Region

- Tennessee
 - Tipton



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Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Tennessee				
Tipton	61,081	4,199,921	923,235	5,123,156
Total	61,081	4,199,921	923,235	5,123,156
Total Study Region	61,081	4,199,921	923,235	5,123,156



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Appendix 6

Ongoing Performance Tasks

1. The EMA will continue to educate the public on preparedness and safety.
2. The EMA will continue to participate in formal campaigns such as **CUSEC's** Earthquake Awareness Week.
3. The EMA will continue to coordinate activities for severe weather awareness week.
4. The EMA will continue to encourage residents to buy flood and earthquake insurance.
5. The utility companies have adopted a program to maintain right of ways. This on-going program will continue to keep power lines free of ground growth and tree limbs that could cause power outages during severe storms.
6. EMA will continue to monitor any flooding conditions that may arise within the county.
7. The EMA will continue working with all agencies to review and update the BEOP and other response plans.
8. The EMA will continue working with those agencies that will provide shelter during times of emergencies.
9. The mitigation committee working with the local media will provide periodic releases dealing with personal disaster plans for the general public, such as maintaining emergency supplies, family contacts, evacuation plans, shelter locations, etc.

Appendix 7

Ordinances

Resolution # 21/12/444

Adopting the Tipton County Hazard Mitigation Plan

Whereas, Tipton County Government recognizes the threat that natural hazards pose to people and property; and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

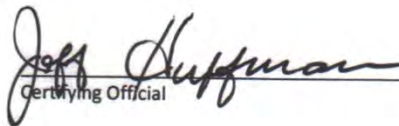
Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

Whereas, Tipton County Government participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that **Tipton County Commission and County Executive,** hereby adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency officials for final review and approval.

Passed: 12/13/2021


Certifying Official

Resolution

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the City of Covington recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

Whereas, the City of Covington participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the City of Covington Board of Mayor and Aldermen, hereby adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency officials for final review and approval.

Resolved this 14th day of December in the year of 2021.



Mayor

ATTEST:



Recorder-Treasurer

RESOLUTION NO. 21-12-02

A RESOLUTION APPROVING AND ADOPTING A HAZARD MITIGATION PLAN FOR TIPTON COUNTY, TENNESSEE.

WHEREAS, the Town of Atoka recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property while saving taxpayer dollars; and

WHEREAS, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Town of Atoka participated in the planning process with other local governmental units within Tipton County to prepare the Hazard Mitigation Plan;

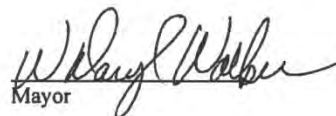
NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE TOWN OF ATOKA, TENNESSEE as follows:

SECTION 1. The Board of Mayor and Aldermen of the Town of Atoka, Tennessee hereby adopts the Tipton County Hazard Mitigation Plan as an official plan.

SECTION 2. The Tipton County Emergency Management Agency will submit the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency for final review and approval on behalf of the participating governmental units in substantively the same form and content as the agreement has been proposed.

SECTION 3. This Resolution takes effect immediately upon its passage and approval, the public welfare requiring it.

PASSED by the Board of Mayor and Aldermen of the Town of Atoka, Tennessee this 14th day of December, 2021.


Mayor

ATTEST:


Town Recorder

RESOLUTION #12232021

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the **Town of Brighton** recognizes the threat that natural hazards pose to people and property; and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and


Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

Whereas, the **Town of Brighton** participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the **Town of Brighton Board of Mayor and Aldermen**, hereby adopts the Tipton County Hazard Mitigation Plan as an official plat; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency officials for final review and approval.

Passed: December 23, 2021


Stephanie Chapman Washam, Mayor


Tammy McKinney, CMFO

Resolution # 2021-1

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the **Town of Burlison** recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for
harm to people and property and save taxpayer dollars; and


Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for
mitigation projects; and

Whereas, the **Town of Burlison** participated jointly in the planning process with the other local units of
government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the **Town of Burlison Board of Mayor and Aldermen**, hereby
adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf
of the participating municipalities the adopted Hazard Mitigation Plan to the Federal
Emergency Management Agency officials for final review and approval.

Passed: 12/14/2021


Certifying Official



Resolution # _____

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the Town of Garland recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for
harm to people and property and save taxpayer dollars; and

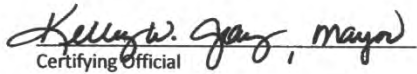
Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for
mitigation projects; and

Whereas, the Town of Garland participated jointly in the planning process with the other local units of
government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the Town of Garland Board of Mayor and Aldermen, hereby
adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf
of the participating municipalities the adopted Hazard Mitigation Plan to the Federal
Emergency Management Agency officials for final review and approval.

Passed: 12/14/2021


Certifying Official

Resolution 12-06-21-01

A resolution adopting the Tipton County Hazard Mitigation Plan

Whereas, the Town of Gilt Edge recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

Whereas, the Town of Gilt Edge participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan;

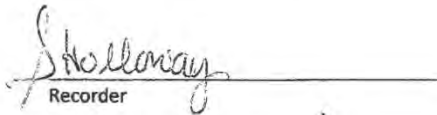
Now, therefore, be it resolved, that the Town of Gilt Edge Board of Mayor and Aldermen, hereby adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency officials for final review and approval.

Passed: 12-6-21



Mayor



Recorder

Resolution # 12132021-1

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the **Town of Mason** recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for
harm to people and property and save taxpayer dollars; and

Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for
mitigation projects; and

Whereas, the **Town of Mason** participated jointly in the planning process with the other local units of
government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the **Town of Mason Board of Mayor and Aldermen**, hereby adopts
the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf
of the participating municipalities the adopted Hazard Mitigation Plan to the Federal
Emergency Management Agency officials for final review and approval.

Passed: Dec. 13, 2021



Certifying Official

RESOLUTION #2021-12-02

Adopting the Tipton County Hazard Mitigation Plan

Whereas, the **City of Munford** recognizes the threat that natural hazards pose to people and property;
and

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for
harm to people and property and save taxpayer dollars; and

Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for
mitigation projects; and

Whereas, the **City of Munford** participated jointly in the planning process with the other local units of
government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the **City of Munford Board of Mayor and Aldermen**, hereby adopts
the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf
of the participating municipalities the adopted Hazard Mitigation Plan to the Federal
Emergency Management Agency officials for final review and approval.

READ and ADOPTED this the 30th day of December, 2021.



Mayor Dwayne Cole



Sherry Yelvington, City Recorder

Resolution Date January 13, 2022

Adopting the Tipton County Hazard Mitigation Plan

Whereas, Tipton County Board of Education recognizes the threat that natural hazards pose to people and property; and

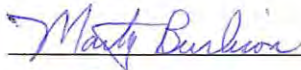
Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

Whereas, an adopted hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

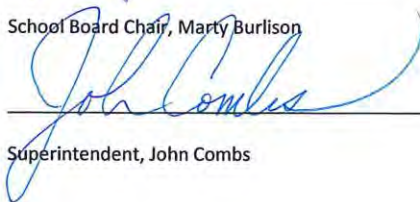
Whereas, Tipton County Board of Education participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan;

Now, therefore, be it resolved, that the Tipton County Board of Education, hereby adopts the Tipton County Hazard Mitigation Plan as an official plan; and

Be it further resolved, that the Tipton County Emergency Management Agency will submit on behalf of the participating municipalities and Tipton County Board of Education the adopted Hazard Mitigation Plan to the Federal Emergency Management Agency officials for final review and approval.



School Board Chair, Marty Burlison



Superintendent, John Combs