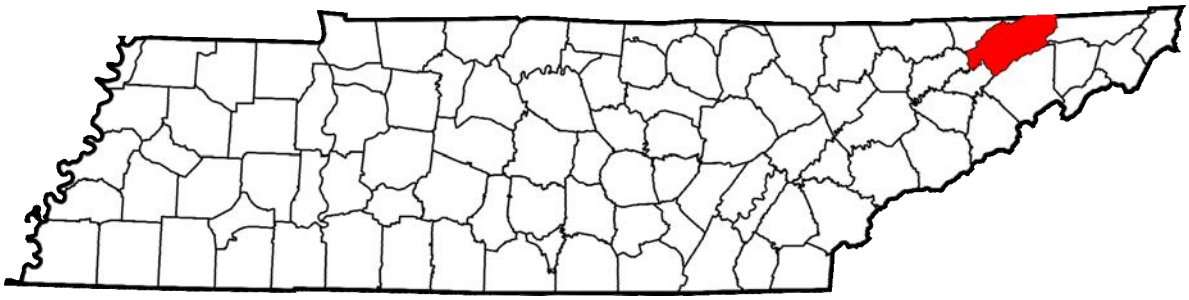
Hawkins County Multi-Jurisdictional Hazard Mitigation Plan



August 3, 2021

Prepared By:

Hawkins County Hazard Mitigation Committee

Hawkins County Emergency Management

Assistance Provided By:

Tennessee Emergency Management Agency
as part of the Tennessee Mitigation Initiative

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 Building Resilient Infrastructure and Communities, Flood Mitigation Assistance, and Hazard Mitigation Grant Programs.

The 2021 Hawkins County Multi-Jurisdictional Hazard Mitigation Plan was created to act as a well-thought-out guide to be used by, and for, the people of Hawkins County. For this plan to be successful, the following jurisdictions participated in the drafting and preparation of the plan update. The participating jurisdictions include:

- Hawkins County (unincorporated)
- Town of Bulls Gap
- City of Church Hill
- Town of Mt. Carmel
- City of Rogersville
- City of Surgoinsville

In reference to federal code title *44 CFR 201*, the plan is required to be submitted to both TEMA (State) and FEMA (Federal) for review to be approved. 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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Section 1: Planning Process

Planning Process

Due to the COVID-19 Pandemic, the initial part of the planning process took place via WebEx having multiple meetings between Hawkins County, Hawkins County Mayor's Office, and representatives from Town of Bulls Gap, City of Church Hill, Town of Mt. Carmel, City of Rogersville, City of Surgoinsville to include agencies representing fire, law enforcement, streets/highways, emergency management, City recorders, CERT, etc. (***See Appendix 1 and 2***). At the January 12, 2021 meeting, the Director of Hawkins County Emergency Management stated he would take the role of leading staff and interested persons in creating the mitigation plan. The tasks undertaken at the meetings by the Hawkins County Hazard Mitigation Committee consisted of getting the public involved in the county's mitigation efforts and soliciting for new mitigation actions/projects. TEMA provided requested technical assistance at the beginning of the process by presenting successful strategies that have been used in updating hazard mitigation plans, facilitating the meeting and guiding the committee on planning requirements; (a service established as part of the Tennessee Mitigation Initiative). Additional activities during these meetings include reviewing past incidents, disasters and data to gain a complete understanding of the hazards faced by Hawkins County and all jurisdictions within. The committee proceeded to rate each hazard to evaluate risk. This rating of each hazard is incorporated into the plan under Risk Assessment. The mitigation goals were established and reviewed. One on one conversations were held with each jurisdiction to ensure appropriate documentation of interested projects along with understanding the needed hazard analyses. Additional meetings were held on January 14, January 15, January 19, January 22 and February 4.

Prior to these meetings, the Hawkins County Emergency Management Director began organizing the county-wide hazard mitigation committee. Realizing that a successful mitigation committee includes a number of 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 included open invitation to elected officials, county and city/town staff, representatives of the jurisdictions, neighboring counties, local businesses, state agencies, private organizations, academia, non-profits, and other noticeable persons. These invites included email, and phone contact by the Hawkins County Emergency Management Director and the Tennessee Emergency Management Agency.

Within this plan, the participating jurisdictions are outlined in the Executive Summary. The Hawkins County Hazard Mitigation Committee for the plan update consists of the following members:

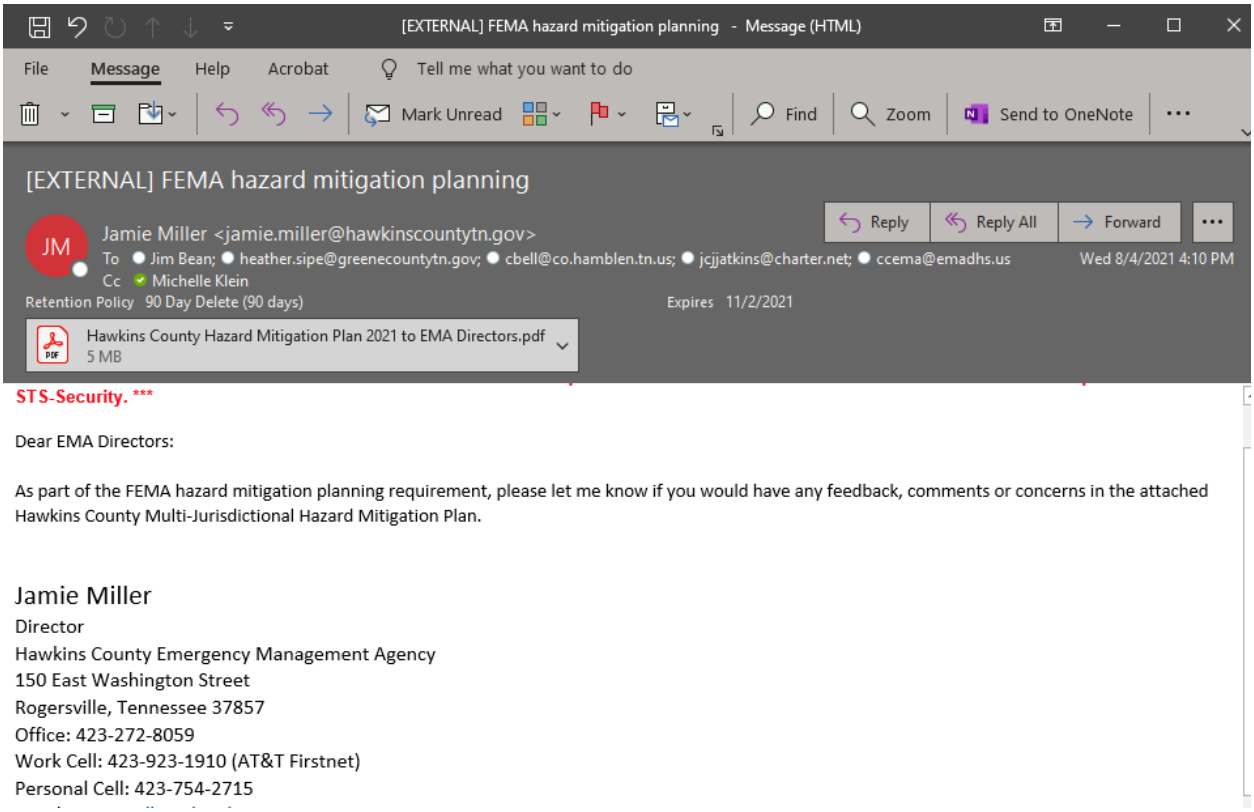
Member	Representation
Jamie Miller (Committee Chair)	Director, Hawkins County EMA
Caleb Sick	Deputy EMA Director, Hawkins County EMA
Randy Price	Hawkins County EMA Operations Officer
Matthew Wilder	GIS Coordinator, Hawkins County 911
Erika Phillips	Coordinated Schools Health Director, Hawkins County Schools
Whitney Good	Hawkins County Mayors Office, Grants
James Hammonds	Town of Surgoinsville Police Chief
Pam Mullins	City Recorder, Town of Surgoinsville
Tony Allen	Chief Deputy, Hawkins County Sheriffs Office
Mark Morley	Rogersville Streets Department
Jason Byington	Fire Chief, Town of Carmel
Luke Wood	Church Hill Fire Department, Fire Chief
Mike Solomon	Town of Bulls Gap, City Administrator
Michelle Klein	Regional Planner, Tennessee Emergency Management Agency

The Hawkins County Hazard Mitigation Committee was deemed 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 development of the plan were broken down into two stages: the brainstorming/drafting stage and the reviewing stage. During the brainstorming/drafting stage the committee identified hazards, evaluated risks, calculated and located each jurisdiction's vulnerable areas, determined the county's mitigation goals/objectives, created and sponsored mitigation projects, and prioritized those mitigation projects. During the review stage the committee evaluated the written drafts of the plan. Also, in this process each jurisdiction reviewed written drafts that specifically addressed aspects of their jurisdiction (i.e., each jurisdiction's individual risks and vulnerabilities).

To encourage public involvement, the Hawkins County Hazard Mitigation Committee advertised the first committee meeting on their Facebook page and in the local newspaper. This notice presents the purpose of the meeting, the time and date of the meeting, how to access the meeting, and stated that all are invited to attend. This meeting provided a great opportunity for the public to comment on the plan during the update drafting stage, to contribute in project proposals, and to participate in project prioritization. ***Appendix 1*** provides a copy of the meeting's attendance sheet and ***Appendix 3*** presents a copy of the public notice for the meeting. No members of the public attended.

The committee evaluated the written 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.

The Hawkins County Emergency Manager sent a request to the surrounding Counties to provide opportunity for review and comment. The below is a screenshot of that request. These Counties are Hancock, Grainger, Hamblen, Greene, Washington and Sullivan.



[EXTERNAL] FEMA hazard mitigation planning - Message (HTML)

File Message Help Acrobat Tell me what you want to do

Mark Unread Find Zoom Send to OneNote

[EXTERNAL] FEMA hazard mitigation planning

JM Jamie Miller <jamie.miller@hawkinscountytn.gov>

Reply Reply All Forward

To Jim Bean; heather.sipe@greenecountytn.gov; cbell@co.hamblen.tn.us; jcjjatkins@charter.net; ccema@emadhs.us Wed 8/4/2021 4:10 PM

Cc Michelle Klein

Retention Policy 90 Day Delete (90 days) Expires 11/2/2021

Hawkins County Hazard Mitigation Plan 2021 to EMA Directors.pdf 5 MB

STS-Security. ***

Dear EMA Directors:

As part of the FEMA hazard mitigation planning requirement, please let me know if you would have any feedback, comments or concerns in the attached Hawkins County Multi-Jurisdictional Hazard Mitigation Plan.

Jamie Miller
Director
Hawkins County Emergency Management Agency
150 East Washington Street
Rogersville, Tennessee 37857
Office: 423-272-8059
Work Cell: 423-923-1910 (AT&T Firstnet)
Personal Cell: 423-754-2715

Upon receiving the "Approval Pending Adoption" designation from FEMA's review, adoption/resolution will be obtained for each participating jurisdiction.

Review of Existing Information

A preliminary review of existing plans, reports, and information was conducted during the initial phase of creating the Hawkins County Multi-Jurisdictional Hazard Mitigation Plan. The primary purpose of reviewing this information was to identifying local hazards, recognizing local risks, and understanding different local vulnerabilities. It is important to note that Hawkins County is a rural community and significant planning efforts for development, etc., are limited. Therefore, inclusion of hazard mitigation concepts is sparse. The following list of sources identifies some of the existing studies that were reviewed:

- FEMA Local Mitigation Planning Handbook
- Hawkins County Emergency Operations Plan
- State of Tennessee Standard Hazard Mitigation Plan
- Tennessee Emergency Management Plan

All the listed plans, studies, and data sources were incorporated into the Hawkins County Multi-Jurisdictional Hazard Mitigation Plan. These sources developed the plan's hazard, risk, and vulnerability assessment sections that in return led to the establishment of meaningful mitigation projects (aka: actions).

Section 2: County Profile

Development Trends

One of the oldest Tennessee counties, Hawkins County was first established as a separate North Carolina county on January 6, 1787, when the state legislature divided Sullivan County, North Carolina. The original county was quite large, extending from the North Fork of the Holston River southwesterly to the "Big Suck" near present-day Chattanooga. Other counties, or parts of counties, later created from Hawkins include Hancock, Grainger, Jefferson, Knox, Hawkins, Meigs, and Hamilton. Prior to its creation by North Carolina, the county was Spencer County, State of Franklin.

Today Hawkins County has a population of over fifty thousand. Church Hill is the largest city, followed by Rogersville, Mount Carmel, Surgoinsville, and Bulls Gap. The principal sources of farm income are beef cattle and burley tobacco. In 1997 the 4,545 farms with tobacco quotas produced an average yield of 2,369 pounds of tobacco per acre, making Hawkins County the second largest producer of burley tobacco in the state. There are over twelve thousand industrial jobs in the county, with AFG Industries, a producer of flat glass, employing nine hundred at its Church Hill plant, and TRW, a motor vehicle parts manufacturer, employing eight hundred in Rogersville. The Hawkins County school system supports twelve elementary schools, three middle schools, three high schools, and an enrichment center. Twelve colleges and universities lie within a seventy-five-mile radius of the county. Personal enrichment and recreational opportunities are readily available. The county supports four public libraries, and the H. B. Stamps Memorial Library offers a special collection of genealogy and local history. Local parks and golf courses provide activities from picnicking and baseball to championship PGA golf. Rogersville hosts an annual three-day festival in October called Heritage Days, and Bulls Gap celebrates Archie Campbell Homecoming Day each Labor Day.

According to a data profile produced by the Tennessee Department of Economic and Community Development in 2018,[20] the top employers in the county are:

#	Employer	# of Employees
1	Hawkins County Board of Education	1,100
2	BAE Systems Inc.	850
3	AGC Flat Glass North America, Inc.	550
4	Barrette Outdoor Living, Inc.	500
5	Cooper-Standard Automotive	450
6	Hutchinson Sealing Systems	370
7	TRW Automotive	335
8	Walmart (Kingsport)	300
9	Sam Dong, Inc.	215
10	Baldor Electric Company	207

According to the U.S. Census Bureau, the county has a total area of 500 square miles (1,300 km2), of which 487 square miles (1,260 km2) is land and 13 square miles (34 km2) (2.5%) is water. Throughout Hawkins County run the secondary ridges of the Great Smoky Mountains. Beautiful overlooks and breath-taking vistas are located throughout the county.

Population

Note: 2019 numbers are estimates

Hawkins County – 56,786 in 2019; 56,833 in 2010
Town of Bulls Gap - 721 in 2019; 738 in 2010
City of Church Hill - 6,663 in 2019; 6,737 in 2010
Town of Mt. Carmel - 5,294 in 2019; 5,429 in 2010
City of Rogersville - 4,412 in 2019; 4,420 in 2010
City of Surgoinsville - 1,766 in 2019; 1,801 in 2010

Future growth

The committee was asked to provide feedback and information on future trends. The specific question asked was, “List the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.”

The committee’s answers are as follows. For Industrial Growth: “Barrette in Bulls Gap has grown, covers several acres. Near railroad. Phipps bend has added some new industrial facilities.” For Commercial Growth: “Biggest commercial growth has been in the Allandale section of the county. Weigel’s, Eastman credit, Taco Bell, outparcels being sold and developed.

A lot of traffic." For Residential Growth: "Some of the lakefront subdivisions are near the 1080 line, and this includes the many new campgrounds on Slate Hill or nearby. Flooding possible. Many new campgrounds within the county. A lot of the campers are actually on TVA land. Not many new subdivisions being developed. St. Clair estates is growing."

Resource Capabilities

	YES	NO
Does your jurisdiction enforce building code ordnances?		**NO**
Does your jurisdiction enforce zoning code ordnances?		**NO**
Is your jurisdiction a member of the National Flood Insurance Program?	**YES**	
Does your jurisdiction have the following resources in place?		
Law enforcement	**YES**	
Full-time fire services		**NO**
Grant writer	**YES**	
Public information officer		**NO**

Expanding & Improving Mitigation Programs

Hawkins county is just now launching this program beginning with this plan. As we found out a few years ago, high water from flash flooding can cause damage just about anywhere in the county. That seems to be our biggest and most common natural disaster here lately, and the occasional straight wind damage.

Section 3: Risk Assessment

Hazard Identification

To begin to assess Hawkins County, and all jurisdictions within, 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 Hawkins County by going through newspaper articles, Hawkins County Emergency Management records, 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 prime concern by the Hawkins County Hazard Mitigation Committee. By focusing on hazards that are a top priority for the committee, it allowed for better committee discussion and awareness. In some cases, sources of data are restricted to the State of Tennessee Hazard Mitigation Plan and state agencies to ensure continuity of reporting into future years. Consideration has been paid to local needs, input and sensitivities to ensure state and federal input doesn't influence the needs or desires, as deemed appropriate by the committee, of this local plan.

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 Hawkins 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** **(b) Saturation**	-Excess overland flow occurs when the rain is falling more rapidly than it infiltrates into the soil. -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 baseflow.
Baseflow	-Rainwater which has percolated to the aquifer can seep into the river channel. This is the slowest process.

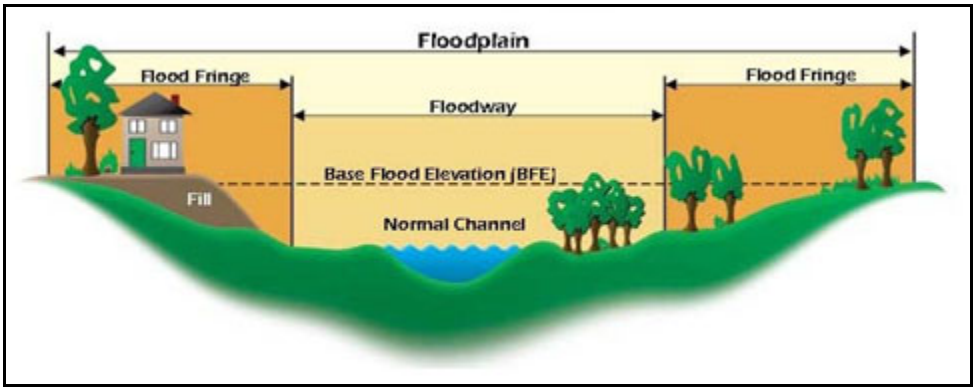
Source: The Field Studies Council

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 Hawkins 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

In Hawkins County, all jurisdictions have 100-year floodplains located within their boundaries and all jurisdictions are susceptible to smaller localized flooding outside of the 100-year floodplains. Areas in the county known to flood more often include:

- Highway 113
- Highway 70
- Highway 66
- Fisher's Creek Road
- Sensabaugh Tunnel
- Caney Valley Road
- Blevins Road
- Choptack Road
- Mountain View Road

*Detailed Flood Insurance Rate Maps (FIRMs) are also included in **Appendix 4**, which shows where FEMA has placed the 100-year and 500-year floodplains for each jurisdiction.*

Hawkins County, and all jurisdictions within, 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 Hawkins County from 1950 to 2020 and a list of each flood's description of impacts imposed on the community. No flood was listed for Hawkins County prior to 1996.

The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the Flooding hazard experienced by Hawkins County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Hawkins County also applies to the school district due to the geographic distribution of the schools throughout the County.

Flood Events in Hawkins County: 1950 to 2020

Location	Date	Deaths	Injuries	Property Damage	Extent/Impact Description
Countywide	1/19/1996	0	0	0	Two to over three inches of rain Friday night into Saturday morning combined with melting snow resulted in flooded roads, homes and farmlands.
Countywide	7/13/1996	0	0	0	Heavy rain from thunderstorms flooded many roads and damaged several residences. A resident of Independence had to be rescued from her home.
Church Hill	5/26/1998	0	0	0	Several roads reported covered by water in and around both Church Hill and Mt. Carmel.
Countywide	7/11/1999	0	0	0	Widespread showers and thunderstorms with heavy rain caused flooding problems throughout much of East Tennessee. In Cocke County, flooding occurred along Knoxville Highway west of Newport and in the fairgrounds. In Blount County, numerous streets and roads were closed. The Abrams Creek Campground in the Cades Cove area of the Great Smoky Mountains National Park was evacuated as a precautionary measure Sunday. The campground was reopened Monday. The bottom two apartments of Atchley Apartments in Maryville had 6 inches of water in them early Monday morning. In Knox County, many cars were stranded in flooded underpasses. In Bledsoe County, the Jack Branch Road bridge along Highway 30 on the Van Buren County line was washed out. Numerous incidents of minor flooding were reported around the remainder of the region. Water began to recede across the region by late afternoon/early evening Monday.
Countywide	7/24/1999	0	0	0	Flooding of many small streams with many roads covered by high water.
Not provided	3/17/2002	0	0	0	Widespread flooding occurred across most of East Tennessee with the hardest hit counties in central East Tennessee including Bledsoe, Meigs, Hawkins, Rhea, Loudon, Blount, Knox, and Sevier Counties. Rainfall totals between five and eight inches were reported in 36 hours. Numerous major rivers flooded including the Clinch, Powell, Sequatchie, and Pigeon Rivers. Total damage estimates were calculated to be over 5 million dollars.

Countywide	3/18/2002	0	0	0	Widespread flooding occurred across most of East Tennessee. Rainfall totals between five and eight inches were reported in 36 hours. Total damage estimates were calculated to be over 5 million dollars.
Not provided	2/14/2003	0	0	18000	Four day rainfall totals of two to eight inches fell across east Tennessee, with the highest amounts occurring across the Cumberland Plateau and adjacent valleys areas. This rainfall combined with a melting snowpack (reports of up to a foot in the higher elevations) to produce widespread flooding of rivers and streams with numerous mudslides also reported (one notable mudslide pushed an apartment complex off its foundation in Knox County). The Powell, Clinch and Holston rivers measured the most significant rises with Claiborne, Rhea and Knox counties reporting the most significant damage.
Countywide	2/16/2003	0	0	0	Blevens road reported to be closed due to flooding.
Not provided	2/21/2003	0	0	0	With the ground already saturated from the previous week's rainfall, three day rainfall totals of one to three inches created some flooding of streams and rivers as well as several mudslides across east Tennessee. Rivers which rose above their flood stages included the South Chickamauga, Clinch, Powell, Holston, Pigeon, French Broad and Sequatchie rivers.
Not provided	4/10/2003	0	0	0	Seven day rainfall totals (4th through the 10th) of three to five inches were reported across central east Tennessee and northeast Tennessee, with one to three inches occurring on the 10th. Several secondary roads across the area were flooded with several rivers experiencing some minor flooding including the Clinch, French Broad, Holston, Pigeon and Powell rivers.
McCloud	6/23/2004	0	0	0	Strahl Road flooded and was closed.
Rogersville	7/1/2006	0	0	0	Flooding across highway 70 in the stiggersville community from heavy thunderstorm rains. Temporarily closed roads. Other easily flooded low spots also affected.
Church Hill	9/25/2009	0	0	0	Flash flooding occurred along highway 11 west from near Church Hill to Mt. Carmel, Tennessee, with several inches of water covering and flowing across highway 11 west.
Rogersville	9/26/2009	0	0	0	Areal flooding occurred along highways 1 and 70 in and near Rogersville, Tennessee. Several inches of water was over the road, with a few areas briefly impassable due to the flooding.

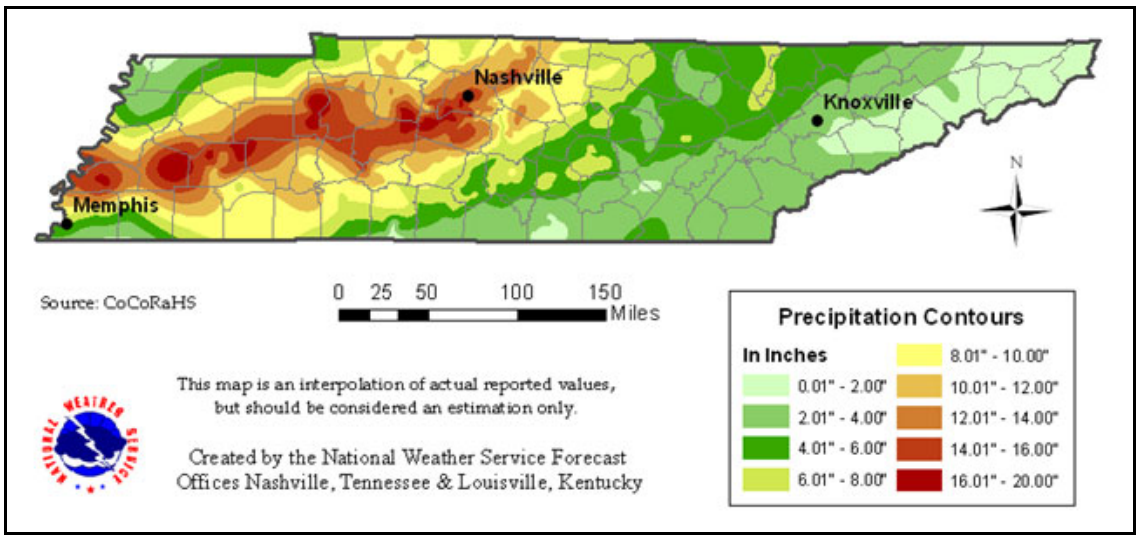
Rogersville	1/16/2013	0	0	10000	Numerous roads impassable. Five roads washed out.
Rogersville	7/14/2015	0	0	1000	One road was washed out.
Rogersville	2/7/2019	0	0	0	Flooding reported throughout the county. Some road washouts. Schools closed for the day.
Blevins	2/7/2019	0	0	1000	Water covering Blevins Road with one vehicle rescue.
Klondike	2/7/2019	0	0	1000	Poor Valley Creek Road impassable. One vehicle rescue.
Church Hill	2/7/2019	0	0	0	Street flooding noted up to the bottom of cars.
St. Clair	2/23/2019	0	0	0	Intersection of Hwy 113 and Melinda Ferry Road flooded.
Blevins	2/6/2020	0	0	0	A flooded creek overflowed onto Blevins Road.
Rogersville	2/6/2020	0	0	0	Approximately 30 roadways were flooded. Two mudslides also reported. No damages reported.

The committee shared their personal experiences of flooding events that have occurred in Hawkins County, and all jurisdictions within. The following is transcribed from their thoughts.

> We have had issues with Arnott Branch here in the Town of Mount Carmel that has required us to use “Water rescue” techniques to make it to residential areas
>
> In 2019, Hawkins County experienced epic, record breaking flooding. Torrential rain lasted two weeks covering roads and causing a landslide in two locations. Traffic and bus routes were diverted due to flooding for several weeks following the initial rain. Schools dealt with leaks in the roofing systems throughout the county. The boilers in the basement at one school were flooded causing HVAC issues that are still problematic.

Small localized flood events are likely to occur at least two to three times every year in Hawkins County. The severity of flooding that may occur in the county is measured by inches of rainfall and by feet of flooding. Based on previous occurrences, in a worst-case scenario it is possible for the extent of a flooding event to exceed 15 inches of rainfall, mudslides and on March 2002, an event caused over $5 million in damages across East Tennessee. As seen with the May 2010 Tennessee Flood Event *(DR-1909)*, it is possible for 20 inches or more of rainfall to amass within two days (see following map).

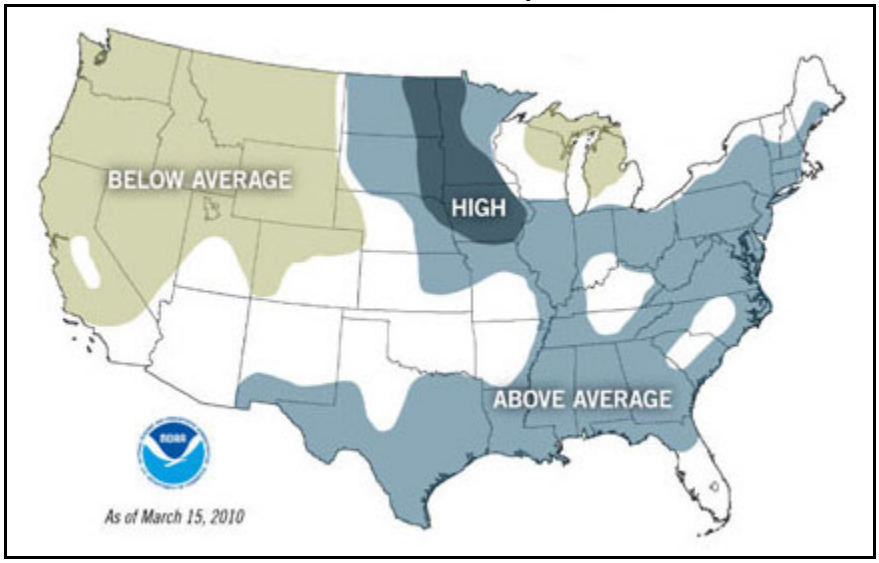
Tennessee May Flood- Precipitation for May 1st & 2nd 2010



Source: National Weather Service

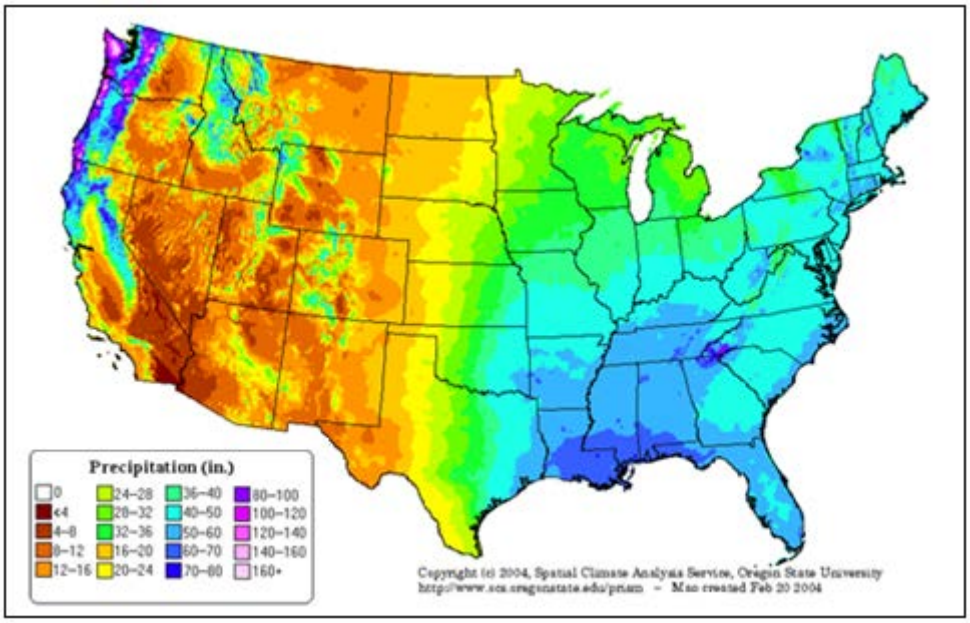
According to a NOAA Flood Risk Map (see map below), the majority of Tennessee was in an "above average" risk of flooding zone during spring 2010. This proposed vulnerability is coupled with the fact that on average Tennessee usually acquires over 50-60 inches of rainfall a year (see following map).

Flood Risk Map



Source: NOAA

Average Annual Precipitation per Year (1971-2000)



Source: Spatial Climate Analysis Service, Oregon State University

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

Jurisdiction	Impacts			Vulnerability
	Human	Property	Business	H+P+B=#; #/3=V
Hawkins County Unincorporated	2	3	1	2
Town of Bulls Gap	2	3	1	2
City of Church Hill	2	3	1	2
Town of Mt. Carmel	2	3	1	2
City of Rogersville	2	3	1	2
City of Surgoinsville	2	3	1	2

Jurisdiction	Vulnerability	Probability	Risk V+P=R
Hawkins County Unincorporated	2	4	6
Town of Bulls Gap	2	4	6
City of Church Hill	2	4	6
Town of Mt. Carmel	2	4	6
City of Rogersville	2	4	6
City of Surgoinsville	2	4	6

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4
Severe	8.5-10

Human	
Risk of injuries and deaths from the hazard	
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	
Amount of residetial property damage associated from the hazard	
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	
Amount of business damage associated from the hazard	
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 indefinitly or relocated
5	A top-10 local employer closed indefinitly

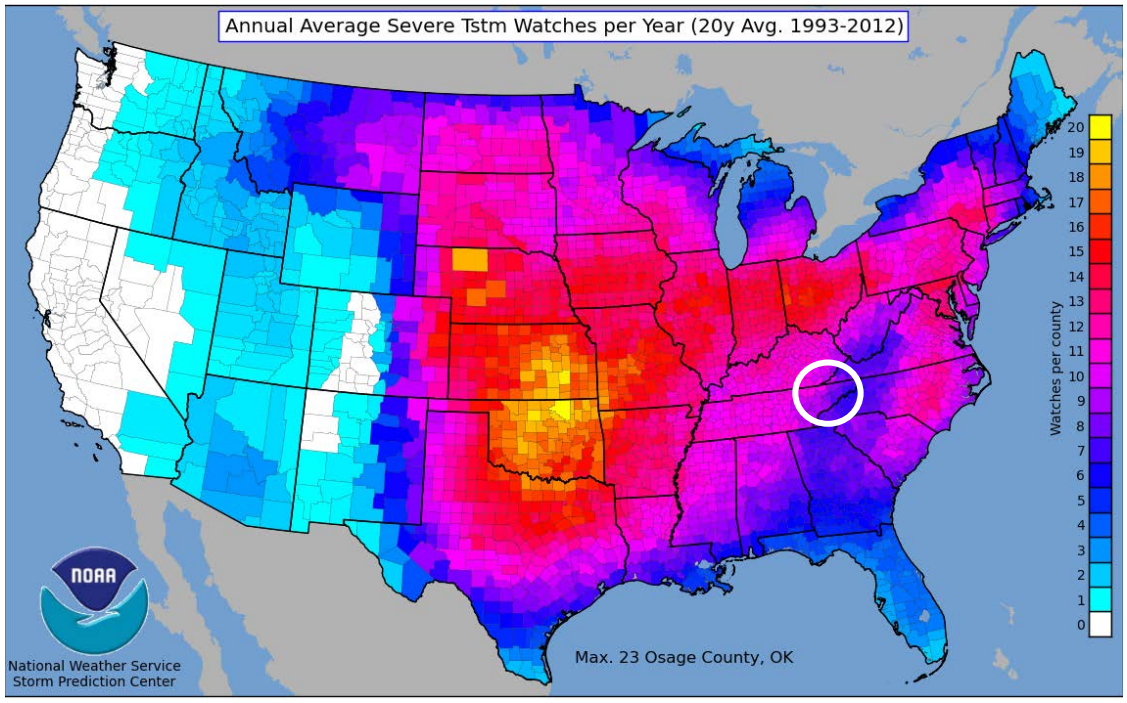
Probability	
Likelihood of the hazard occurring within a given span of years	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

For further information about flooding hazards in Hawkins County, see the HAZUS vulnerability study in ***Appendix 5***.

Tornadoes/Severe Storms

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 ¾ of an inch or greater in diameter, or produce tornadoes. On average, a typical county in Tennessee has about 5 to 10 severe storm watches per year (see map below).

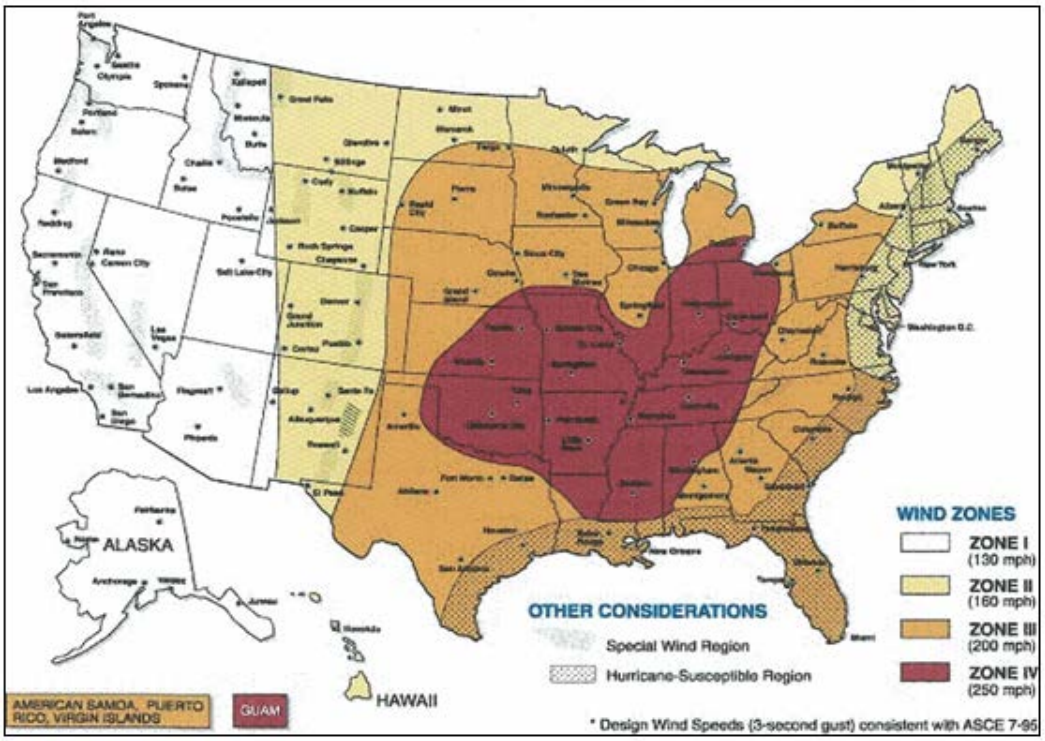
Average Severe Storm Watches Per Year (1993-2012)



Source: NOAA/NWS Storm Prediction Center

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 Hawkins 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

Hawkins County historically has had several tornados in the past. Based on NOAA NCDC data, the following chart provides a list of tornado events occurring in Hawkins County from 1950 to 2020 and a description of impacts. The largest tornado, an EF2, occurred in 1955 injuring 6 people. The damage cost was into hundreds of thousands with many losing their homes and livelihood.

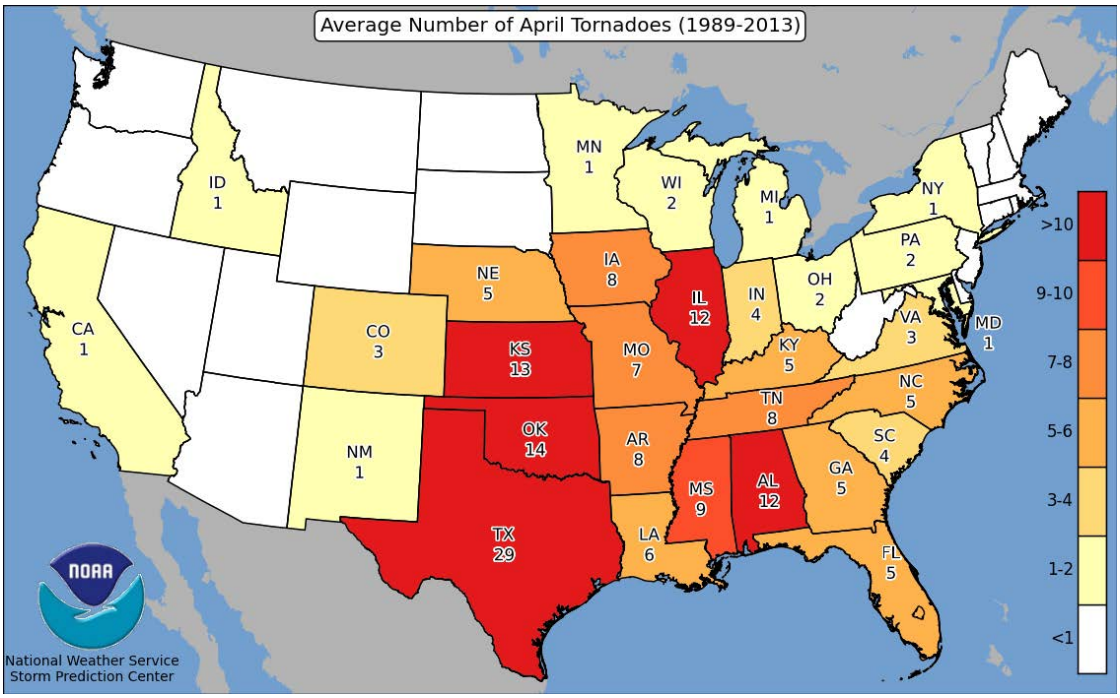
The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the Tornado hazard experienced by Hawkins County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Hawkins County also applies to the school district due to the geographic distribution of the schools throughout the County.

Tornado Events in Hawkins County: 1950 to 2020

Location	Date	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
Not provided	3/5/1955	F2	0	6	250000	
Not provided	4/4/1974	F0	0	0	2500	
Johnson Store	5/26/2004	F1	0	0	30000	An F1 tornado touched down just southwest of the intersection of Bright Road and Mount Pleasant Road. The path was 50 yards long and 2 miles long. In addition to downing several trees, the tornado removed the roof from a house on Mount Pleasant Road.

With only 3 tornados occurring since 1955, the future probability is low. The following map may provide some idea for probability information.

Average Number of Tornadoes Per Year



The severity of tornadoes that may occur in the county is measured using the Enhanced Fujita Scale for tornadoes (see chart below). Based on tornado events in other East Tennessee counties, in a worst-case scenario it is possible for the extent of a tornado to exceed an EF4 ranking.

Fujita Scale/Enhanced Fujita Scale for Tornadoes

Fujita Scale/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	EF0
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 houses; 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

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. Historically, hail events occur about twice a year in Hawkins County. The severity of hail is measured by the diameter of the hail itself, commonly using the TORRO Hail Index (see following chart). Hawkins County's largest hail event is reported at 4.25 inches (107.95 mm which exceeds the highest rating below). In the events listed by the NCDC, there was no documentation of damages or financial impact.

TORRO Hail Index

TORRO Hail Index			
Scale	**Max Diameter**	**Comparisons**	**Typical Impacts**
H0	5-9mm	Pea	No damage.
H1	10-15mm	Mothball	Slight general damage to plants, crops.
H2	16-20mm	Marble	Significant damage to fruit, crops, vegetation.
H3	21-30mm	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	31-40mm	Pigeon's Egg	Widespread glass damage, vehicle bodywork damage.
H5	41-50mm	Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	51-60mm	Hen's Egg	Bodywork of grounded aircraft dented, brick walls pitted.
H7	61-75mm	Tennis Ball	Severe roof damage, risk of serious injuries.
H8	76-90mm	Soft Ball	Severe damage to aircraft bodywork.
H9	91-100mm	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 Hawkins County between 1950 to 2020. The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the Hail hazard experienced by Hawkins County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Hawkins County also applies to the school district due to the geographic distribution of the schools throughout the County.

Hail Events in Hawkins County: 1950 to 2020

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
Rogersville	5/13/1995	0.75	0	0	100	Not provided
Not provided	5/18/1995	1	0	0	500	Several roofs, cars, and satellite dishes were damaged by the hail.
Rogersville	3/16/1996	1	0	0	0	One-inch hail covered the ground east of Rogersville.
Surgoinsville	5/29/1996	0.75	0	0	0	Not provided
W. of Church Hill	4/12/1997	0.75	0	0	0	Not provided
Surgoinsville	1/8/1998	1	0	0	0	Not provided
Rogersville	4/3/1998	0.75	0	0	0	Not provided
Rogersville	5/25/1998	1	0	0	0	Not provided
Rogersville	6/5/1998	0.75	0	0	0	Not provided
Bulls Gap	6/24/1998	1	0	0	0	Not provided
Rogersville	5/13/1999	0.88	0	0	0	Not provided
Surgoinsville	7/24/1999	0.75	0	0	0	Not provided
Rogersville	4/28/2002	0.75	0	0	5000	Dime size hail reported along Stanley Valley road.
Mt. Carmel	7/2/2002	0.75	0	0	0	Dime size hail was reported 2 miles east of Mt. Carmel
Mt. Carmel	5/9/2003	0.75	0	0	0	Penny sized hail was reported at Mt. Carmel.
Surgoinsville	6/2/2004	0.88	0	0	0	Power company employee witnessed nickel size hail for 4 minutes
Church Hill	12/10/2004	0.75	0	0	0	Not provided
Mooresburg	4/22/2005	1	0	0	0	Quarter-size hail.
Church Hill	5/13/2005	0.75	0	0	0	Penny size hail was reported on highway 11W along the Hawkins and Sullivan county line.
Rogersville	12/28/2005	0.75	0	0	0	Not provided
Rogersville	6/4/2006	0.75	0	0	0	Penny-size hail in Rogersville.
Church Hill	6/15/2007	0.88	0	0	0	A spotter reported nickel-size hail at Church Hill.

Surgoinsville	7/16/2007	0.88	0	0	0	Nickel sized hail was reported in Surgoinsville.
Rogersville	8/13/2007	0.75	0	0	0	Sheriffs dispatch reported penny-size hail in Rogersville.
Mooresburg	4/4/2011	0.75	0	0	0	Trained spotter reported dime to penny size hail near Bean Station.
Rogersville	4/4/2011	1	0	0	0	Trained spotter reported thunderstorms produced quarter-size hail was near Rogersville.
Rogersville	4/9/2011	4.25	0	0	0	Law enforcement personnel reported thunderstorms produced softball-size hail in Rogersville.
Church Hill	4/27/2011	1	0	0	0	Law enforcement personnel reported thunderstorms produced quarter-size hail in Church Hill.
Surgoinsville	4/27/2011	1	0	0	0	A trained spotter reported thunderstorms produced quarter-size hail 7 miles east of Surgoinsville.
Rogersville	2/24/2012	1	0	0	0	The 911 call center reported thunderstorms produced quarter-size hail near Rogersville.
Okolona	7/1/2012	1	0	0	0	Quarter size hail was reported six miles northwest of Church Hill.
Mooresburg	7/8/2016	1	0	0	0	Quarter sized hail was reported six miles east of Bean Station at the Davy Crockett Campground.
Alumwell	3/17/2018	1	0	0	0	Quarter size hail was reported six miles south southeast of Kyles Ford.
Striggersville	3/17/2018	1	0	0	0	Quarter size hail was reported three miles north northeast of Rogersville at 119 Devils Nose Road.
Mooresburg	3/17/2018	1.25	0	0	0	Half dollar size hail was reported near Mooresburg.
Church Hill	4/25/2020	0.88	0	0	0	Penny to nickel sized hail was reported four tenths of a mile west of Church Hill.
Galbraith Springs	6/19/2020	1	0	0	0	Nickel size hail was reported.
White Horn	6/19/2020	1.5	0	0	0	Ping pong ball sized hail was reported.

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. Historically, severe storm wind events occur multiple times a year in Hawkins County. The severity of severe storm winds is commonly measured by wind speed (knots or mph). It is not unusual for Hawkins County to experience winds speeds up to 75 knots (86 mph) causing structural damage, power outages and trees down.

The following chart provides severe storm wind event information for Hawkins County between 1950 and 2020. The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the Severe Storm Wind hazard experienced by Hawkins County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Hawkins County also applies to the school district due to the geographic distribution of the schools throughout the County.

Wind Events in Hawkins County: 1950 to 2020

NP = not provided

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Decription
Not provided	3/11/1967	0	0	0	0	Not provided
Not provided	5/10/1969	0	0	0	0	Not provided
Not provided	5/29/1974	0	0	0	0	Not provided
Not provided	8/16/1975	0	0	0	0	Not provided
Not provided	6/6/1977	0	0	0	0	Not provided
Not provided	7/10/1980	0	0	0	0	Not provided
Not provided	7/3/1982	0	0	0	0	Not provided
Not provided	8/11/1983	0	0	0	0	Not provided
Not provided	6/26/1988	0	0	0	0	Not provided
Not provided	6/2/1989	0	0	0	0	Not provided
Not provided	4/9/1991	0	0	0	0	Not provided
Not provided	4/29/1991	0	0	0	0	Not provided
Rogersville	6/20/1994	0	0	1	500000	A store had its roof damaged. One person was injured as their mobile home was flipped over. Five mobile homes were damaged or destroyed. Two barns were damaged and several trees were blown down. Montgomery County Clarksville,20,2030CST,,,0,0,2,0,Thunderstorm Winds A few trees were knocked down.
Church Hill	5/18/1995	0	0	0	5000	A few trees were blown down. Knox County North Knoxville,18,1955CST,,,0,0,.05M,0,Hail (2.75) Several roofs, cars, and satellite dishes were damaged by the hail.
Church Hill	5/18/1995	0	0	0	5000	A few trees were knocked down.
Not provided	5/18/1995	0	0	0	5000	Several trees were knocked down.
Striggersville	6/1/1995	0	0	0	1000	A few large tree limbs were blown down.
Mt. Carmel	6/11/1995	0	0	0	2000	A few trees were blown down.
Guntown	7/9/1995	0	0	0	1000	Some trees were blown down.

St. Clair	7/17/1995	0	0	0	1000	A large tree was blown down.
Kingsport	7/30/1995	0	0	0	10000	Several trees and power lines were blown down. Anderson County Oak Ridge,30,1845CST,,,0,0,5K,0,Thunderstorm Winds Several trees were blown down. Unicoi County Erwin,31,1240CST,,,0,0,2K,0,Thunderstorm Winds A few trees were knocked down on top of some power lines.
Lee Valley	8/1/1995	86	0	0	5000	Several trees knocked down.
Mt Carmel	8/11/1995	0	0	0	15000	Trees down onto a house and powerlines down.
Surgoinsville	4/13/1996	NP	0	0	0	Trees down in the Churchill and Surgoinsville areas
Mt. Carmel	5/21/1996	NP	0	0	0	A few trees were knocked down near Mount Carmel.
South Part	6/24/1996	NP	0	0	25000	Straight line thunderstorm winds damaged a stretch of boat docks and a boat. Several trees were blown down.
Countywide	7/2/1996	NP	0	0	0	Trees were downed on Highways 33 and 37 as well as in the Christian Bend area.
Church Hill	1/5/1997	NP	0	0	0	Several trees downed in and around the Church Hill area. Reported by the sheriff's office.
Rogersville	2/21/1997	NP	0	0	0	Tree down in Rogersville.
Countywide	5/13/1997	NP	0	0	15000	Trees down throughout both counties. Phone lines down in Rogersville in Hawkins county.
Countywide	6/13/1997	NP	0	0	15000	Trees and powerlines down throughout county.
Countywide	6/13/1997	NP	0	0	0	Trees down throughout county.
Mooresburg	2/17/1998	NP	0	0	0	Not provided
Mooresburg	6/13/1998	NP	0	0	10000	Numerous trees down. One tree fell on a house.
Rogersville	6/15/1998	NP	0	0	0	A few trees down in Rogersville and throughout the county.
Rogersville	6/30/1998	NP	0	0	15000	Trees and powerlines down in Rogersville and countywide.
Church Hill	7/19/1998	NP	0	0	0	Trees down around the city.
Rogersville	11/25/1998	NP	0	0	15000	Trees and power lines down throughout the area.
Church Hill	1/18/1999	NP	0	0	0	Trees downed.
Church Hill	6/2/1999	NP	0	0	15000	Trees down.
Rogersville	7/7/1999	NP	0	0	10000	Trees down.

Rogersville	7/7/1999	NP	0	0	15000	Trees and power lines down.
Church Hill	7/24/1999	NP	0	0	11000	Trees down.
Rogersville	7/28/1999	NP	0	0	10000	Trees and power lines down.
Rogersville	8/1/1999	NP	0	0	3000	Trees down.
Church Hill	2/13/2000	NP	0	0	0	Trees down.
Mt. Carmel	2/13/2000	NP	0	0	0	Trees down.
Camelot	5/19/2000	NP	0	0	0	Trees down.
Countywide	5/27/2000	NP	0	0	0	Trees down.
Rogersville	7/14/2000	NP	0	0	0	Trees down.
Persia	8/9/2000	NP	0	0	0	Trees down.
Countywide	8/17/2000	NP	0	0	0	Trees down.
Mooresburg	11/9/2000	NP	0	0	0	Trees down.
Rogersville	11/9/2000	NP	0	0	0	Trees down.
Countywide	5/21/2001	NP	0	0	0	Trees down.
Rogersville	5/21/2001	NP	0	0	0	Several trees down on Highway 113.
Church Hill	7/4/2001	NP	0	0	0	Trees down.
Countywide	7/8/2001	NP	0	0	0	Trees down.
Rogersville	8/19/2001	NP	0	0	0	Trees down.
Countywide	10/24/2001	NP	0	0	0	Trees down.
Rogersville	5/7/2002	NP	0	0	15000	Trees reported down on power lines in Rogersville.
Countywide	5/13/2002	NP	0	0	25000	Trees were reported down countywide and power lines were down in Rogersville.
Rogersville	7/2/2002	NP	0	0	20000	Trees were reported down in Rogersville and Striggersville.
Surgoinsville	7/3/2002	NP	0	0	10000	Trees were reported down at Surgoinsville.
Countywide	7/22/2002	NP	0	0	15000	Several trees were reported down across the county.
Rogersville	7/30/2002	NP	0	0	0	Trees down on Carters Valley Roand and Slate Hill Road
Church Hill	11/10/2002	NP	0	0	25000	Numerous trees and large limbs fell onto South Central Avenue between Main Street and Carters Valley Road.
Countywide	11/10/2002	NP	0	0	15000	Numerous trees were reported down across the county.

Not provided	2/3/2003	40	0	0	1000	Strong winds (with gusts up to 40 mph) associated with a band of showers caused numerous reports of fallen trees and power outages across east Tennessee.
Church Hill	5/17/2003	55	0	0	12000	A few trees were reported down across roads in the vicinity of Church Hill.
Mooresburg	6/11/2003	55	0	0	20000	Numerous trees and power lines were reported down across the county with the greatest coverage occurring in the Mooresburg area.
Countywide	6/11/2003	55	0	0	18000	Several trees and power lines were reported down across the county.
Countywide	6/16/2003	55	0	0	6000	One tree was reported down on highway 70 south of Rogersville and another tree was down on highway 70 north of Clinch Mountain.
Surgoinsville	7/9/2003	60	0	0	0	Several trees reported down by sheriff's office across northern portions of the county north of Surgoinsville.
Rogersville	7/10/2003	60	0	0	0	A couple of trees reported down by highway department near highway 66.
Church Hill	8/17/2003	60	0	0	0	Numerous trees and power lines reported down by sheriff's office.
Rogersville	8/17/2003	60	0	0	0	Numerous trees reported down by 911 dispatch.
Van Hill	9/27/2003	55	0	0	15000	Trees were reported down on power lines.
Mooresburg	5/10/2004	60	0	0	18000	Several trees and power lines were reported down in the Mooresburg area.
Rogersville	5/26/2004	60	0	0	15000	Numerous trees were reported down across the northern part of the county.
Rogersville	5/26/2004	65	0	0	15000	Numerous trees and power lines were reported down across the county.
Rogersville	5/31/2004	60	0	0	15000	A few trees were reported down across the county.
Rogersville	5/31/2004	65	0	0	20000	Several trees and power lines were reported down across the county.
Countywide	7/5/2004	60	0	0	20000	Trees were reported down across the county.
Mooresburg Springs	7/13/2004	60	0	0	12000	Trees and power lines were reported down in the Mooresburg Springs area at around 1245 am EDT on 07/14.
Mooresburg	7/13/2004	60	0	0	12000	Trees and power lines were reported down in Mooresburg around 1250 am EDT on 7/14.
Rogersville	7/13/2004	60	0	0	12000	Trees and power lines were reported down five miles west southwest of Rogersville around 1255 am EDT on 7/14.
Rogersville	7/25/2004	60	0	0	12000	Trees were reported down in Mooresburg and Rogersville.

Mooresburg	4/22/2005	65	0	0	5000	Trees down in Mooresburg, St Clair, Fields Gap and Clinch Valley.
Countywide	5/20/2005	60	0	0	25000	Trees were reported down across the county.
Bulls Gap	6/6/2005	65	0	0	12000	A few trees down in the southern half of the county.
Rogersville	6/14/2005	70	0	0	18000	Several trees and powerlines down countywide.
Church Hill	8/6/2005	60	0	0	15000	Three trees down in Church Hill
Church Hill	8/13/2005	60	0	0	10000	A few trees down.
Countywide	4/7/2006	65	0	0	12000	Numerous trees and powerlines down countywide.
Countywide	4/8/2006	60	0	0	10000	Several trees and powerlines down across the county.
Church Hill	4/19/2006	60	0	0	6000	A few trees down in Church Hill.
Rogersville	5/18/2006	60	0	0	20000	Trees were reported down across the south half of the county.
Church Hill	5/26/2006	60	0	0	18000	Numerous trees were reported down in Church Hill.
Surgoinsville	5/26/2006	60	0	0	6000	Two trees were reported down in Surgoinsville.
Church Hill	5/26/2006	60	0	0	20000	Several trees were reported down in Church Hill.
Bulls Gap	5/26/2006	60	0	0	3000	One tree was reported down in Bulls Gap.
Church Hill	5/26/2006	60	0	0	15000	Several trees were reported down in Church Hill.
Countywide	6/2/2006	60	0	0	10000	A few trees and powerlines down countywide.
Rogersville	6/11/2006	60	0	0	6000	A few trees down on Bear Hollow Road and Old Stage Road near Rogersville.
Church Hill	7/19/2006	60	0	0	30000	Numerous trees were reported down across the entire northeast part of the county.
Mooresburg	7/28/2006	60	0	0	10000	Some trees were reported down in Mooresburg.
Rogersville	7/28/2006	60	0	0	8000	Some trees were reported down in Rogersville.
Mooresburg	7/28/2006	60	0	0	20000	Numerous trees were reported down across the western half of the county.
Mooresburg	8/29/2006	55	0	0	8000	Five trees down in and around Mooresburg.
Rogersville	8/29/2006	55	0	0	10000	Several trees down in and around Rogersville.
Bulls Gap	9/28/2006	60	0	0	30000	Four trees were reported down at Mooresburg and six were downed at Bulls Gap. Also, hail of unknown size accumulated to a depth of one and a half inches at Rogersville.
Not provided	12/1/2006	60	0	0	20000	Numerous trees down countywide.

Not provided	12/1/2006	60	0	0	20000	Numerous trees and powerlines down countywide.
Mooresburg	4/3/2007	50	0	0	10000	A few trees were reported down in the vicinity of Mooresburg.
Mooresburg	6/24/2007	55	0	0	3000	Thunderstorm winds downed a tree onto a powerline in Mooresburg.
Surgoinsville	6/24/2007	55	0	0	3000	Thunderstorm winds downed a tree onto a powerline in Surgoinsville.
Surgoinsville	7/16/2007	55	0	0	0	One tree was reported down in Surgoinsville.
Rogersville	8/2/2007	50	0	0	5000	A HAM radio operator reported several large trees down near the Greene County border.
Bulls Gap	8/13/2007	55	0	0	10000	Sheriffs dispatch reported several trees downed by thunderstorm winds in Bulls Gap.
Church Hill	8/21/2007	55	0	0	15000	The sheriffs office reported numerous trees downed by thunderstorm winds around the Church Hill area.
Rogersville	1/10/2008	50	0	0	0	One tree was reported down in Rogersville.
Christian Bend	1/10/2008	50	0	0	0	One tree was reported down on Christians Bend Road.
Rogersville	5/31/2008	55	0	0	0	Trees and limbs fell onto power lines disrupting power in the region.
Light Mill	6/11/2008	52	0	0	3000	Power company reported a tree and powerlines downed by thunderstorm winds on Beech Creek Road east of Rogersville.
Christian Bend	6/11/2008	52	0	0	5000	Power company reported a tree and powerlines downed by thunderstorm winds on Grassy Creek Road east of Rogersville.
Surgoinsville	6/11/2008	55	0	0	15000	Power company reported several trees and powerlines downed by thunderstorm winds in and around Surgoinsville.
Coran	6/28/2008	52	0	0	5000	Dispatch reported a few trees downed by thunderstorm winds across the southern portions of the county.
Rogersville	7/7/2008	55	0	0	0	Trees were reported down in Rogersville and Surgoinsville.
St. Clair	7/22/2008	55	0	0	0	One tree was reported down on route 113 five miles southwest of Rogersville.
Stony Point	2/11/2009	58	0	0	10000	Law enforcement personnel reported several trees downed by thunderstorm winds between Surgoinsville and Church Hill.
Guntown	6/17/2009	52	0	0	2000	Law enforcement officials reported one tree downed by thunderstorm winds southeast of Rogersville.

McCloud	6/17/2009	52	0	0	2000	Law enforcement officials reported one tree downed by thunderstorm winds southeast of Rogersville.
Rogersville	6/18/2009	60	0	0	20000	The newspaper reported numerous trees and powerlines downed by thunderstorm winds countywide.
Church Hill	7/9/2009	50	0	0	0	Several trees were reported down in Kingsport.
St. Clair	7/9/2009	50	0	0	0	A few trees were reported down six miles southwest of Rogersville in the vicinity of St. Claire.
Rogersville	6/14/2010	52	0	0	3000	Highway department personnel reported 2 trees downed by thunderstorm winds northeast of Rogersville.
Surgoinsville	6/15/2010	60	0	0	12000	Law enforcement personnel reported numerous trees downed by thunderstorm winds across the northeast portions of the county.
Persia	10/25/2010	55	0	0	2000	Amateur radio personnel reported 1 large tree with a 3 foot diameter downed by thunderstorm winds in Persia.
Rogersville	10/25/2010	60	0	0	40000	Emergency management personnel reported multiple trees downed by thunderstorm winds and several mobile homes damaged across the county.
Surgoinsville	3/23/2011	55	0	0	0	One tree was down on Highway 346 in Surgoinsville.
Striggersville	3/23/2011	55	0	0	0	One tree was reported down on Ebbing Flowing Springs Road.
Surgoinsville	4/4/2011	50	0	0	3000	Law enforcement personnel reported 2 trees downed by thunderstorm wind 3 miles northwest of Surgoinsville. One downed on Gravely Road and another on Lone Oak Road.
Surgoinsville	5/10/2011	55	0	0	0	One tree was reported down.
Otes	5/10/2011	55	0	0	0	One tree was reported down on Highway 66.
New Canton	5/10/2011	55	0	0	0	One tree was reported down along Highway 11W.
Galbraith Springs	6/22/2011	50	0	0	3000	Law enforcement personnel reported a couple of trees downed by thunderstorm wind on Lee Valley Road 8 miles east of Bean Station.
Church Hill	9/3/2011	60	0	0	0	Several trees were reported down.
Rogersville	2/22/2012	52	0	0	8000	Law enforcement personnel reported three to four trees downed by thunderstorm wind in Rogersville.

Rogersville	2/24/2012	55	0	0	10000	The 911 call center reported several trees downed by thunderstorm wind near Rogersville.
Church Hill	3/2/2012	55	0	0	0	Several trees were reported down in Church Hill.
Mooresburg	4/26/2012	50	0	0	5000	Law enforcement personnel reported a few trees downed by thunderstorm wind near Mooresburg.
Rogersville	4/26/2012	50	0	0	8000	Law enforcement personnel reported several trees downed by thunderstorm wind in Rogersville.
Bulls Gap	7/1/2012	55	0	0	0	Several trees and power lines were reported down around Bulls Gap.
Surgoinsville	7/5/2012	60	0	0	0	One tree was reported down in Surgoinsville.
Rogersville	7/5/2012	60	0	0	0	Numerous trees were reported down across the county.
Bulls Gap	7/5/2012	60	0	0	0	Numerous trees were reported down countywide including one that fell on a trailer in Bulls Gap.
Church Hill	7/19/2012	50	0	0	0	Several trees were reported down between Church Hill and Rogersville.
Surgoinsville	8/9/2012	50	0	0	5000	Law enforcement personnel reported a few trees downed by thunderstorm wind in Surgoinsville.
Mt. Carmel	5/22/2013	61	0	0	0	Several trees were reported down at Ross Campground in Church Hill.
Frisco	5/22/2013	70	0	0	0	Fifteen to thirty trees were downed, uprooted, or snapped off at the top with minor structural damage in the Dickerson area.
Church Hill	6/13/2013	50	0	0	5000	Law enforcement personnel reported a few trees downed by thunderstorm wind along the Scott Virginia and Hawkins county-line.
Rogersville	6/13/2013	50	0	0	5000	Law enforcement personnel reported a few trees downed by thunderstorm wind across the county.
Surgoinsville	7/10/2013	50	0	0	0	Power lines were reported down in Surgoinsville on Longs Bend Road.
Surgoinsville	7/17/2013	50	0	0	0	Several trees and power lines were reported down on the south side of Surgoinsville.
Spruce Pine	2/21/2014	50	0	0	2000	A trained spotter reported a large tree downed by thunderstorm wind 10 miles south of Sneedville.
Rogersville	2/21/2014	50	0	0	10000	Law enforcement reported sporadic trees downed by thunderstorm wind across the county.
Mt. Carmel	5/27/2014	50	0	0	0	Several trees were reported down at Mount Carmel.

Rogersville	6/10/2014	55	0	0	10000	Law enforcement personnel reported many trees downed by thunderstorms wind countywide.
Church Hill	7/27/2014	60	0	0	0	Several trees and power lines were reported down in Church Hill.
Church Hill	8/21/2014	50	0	0	5000	The public reported a few trees were downed by thunderstorm wind at a residence in Church Hill.
Rogersville	4/19/2015	52	0	0	8000	Dispatch personnel reported a few trees and powerlines downed by thunderstorm wind in Rogersville.
Mt. Carmel	7/13/2015	50	0	0	0	One tree was reported down.
Bulls Gap	5/7/2016	50	0	0	0	Two trees were reported down in the vicinity of Bulls Gap and Mosheim.
Church Hill	5/12/2016	50	0	0	0	One tree was downed.
Mt. Carmel	5/12/2016	50	0	0	0	A few trees were downed.
Church Hill	6/23/2016	50	0	0	0	Two trees were reported down near Church Hill.
Church Hill	7/4/2016	50	0	0	0	One tree was reported down four miles west northwest of Alpha.
Rogersville	7/6/2016	50	0	0	0	Several trees were reported down across much of the county.
Rogersville	7/8/2016	60	0	0	0	Numerous trees were reported down in Rogersville.
Surgoinsville	7/8/2016	50	0	0	0	Numerous trees were reported down in Surgoinsville.
Church Hill	7/8/2016	55	0	0	0	Several trees were reported down in Church Hill.
Church Hill	8/14/2016	50	0	0	0	Two trees were reported down across the northeast part of the county.
Church Hill	8/15/2016	50	0	0	0	A few trees were reported down.
Rogersville	11/30/2016	50	0	0	0	Several trees were reported down across the county.
Church Hill	4/29/2017	50	0	0	0	Two trees were reported down in Church Hill.
Church Hill	3/17/2018	50	0	0	0	Several trees and power lines were reported down between Church Hill and Surgoinsville.
St. Clair	5/31/2018	50	0	0	0	Several trees were reported down.
Striggersville	6/10/2018	50	0	0	0	Two trees were reported down in Central Hawkins county.
Alumwell	11/6/2018	50	0	0	0	A tree was reported down near the intersection of Highway 70 and Clonce Road.
St. Clair	1/4/2019	50	0	0	0	Scattered trees and power lines were reported down throughout the county.

Rogersville	4/14/2019	55	0	0	0	Several trees and power lines were reported down with some roof damage in Rogersville and the surrounding vicinity.
Bulls Gap	5/18/2019	50	0	0	0	A tree was reported down on two vehicles and a home.
Rogersville	5/18/2019	50	0	0	0	Three trees were reported down at mobile home park in Rogersville.
Stony Point	6/21/2019	50	0	0	0	A metal warehouse wall had been ripped open at the Phipps Bend Industrial Park.
Surgoinsville	6/21/2019	55	0	0	0	A tree fell through the roof of a home.
Frisco	6/21/2019	55	0	0	0	Several trees were reported down.
Rogersville	10/31/2019	55	0	0	0	A tree was reported down.
Johnson Store	10/31/2019	60	0	0	0	A tree was reported down.
Click	1/11/2020	60	0	0	0	Widespread wind damage reported between Church Hill and Mount Carmel. Damage location coincides with a bowing radar echo at 645 pm est.
Amis	3/29/2020	61	0	0	0	Numerous trees were downed across the county.
Surgoinsville	5/28/2020	55	0	0	0	A few trees were downed and some outbuildings were damaged.
Zion Hill	7/23/2020	50	0	0	0	Several trees reported down.
Church Hill	7/23/2020	56	0	0	0	Wind was measured by a home weather station.
Church Hill	7/23/2020	50	0	0	0	Trees reported down.
Alumwell	7/25/2020	50	0	0	0	Hawkins County Sheriff dispatch reported multiple trees down down across the county.

The committee shared their personal experiences of severe storm events that have occurred in Hawkins County and the jurisdictions within. The following is transcribed from their thoughts.

> Straight-line winds and hail have been the 2 most prominent weather events that I have had experience with, from operating as IC in the command post to search and rescue in the field.'
>
> 2011 brought significant hail, wind, and tornados to Hawkins County. One hail storm brought racquet ball sized hail, damaging home roofs and cars throughout the county. Trees fell, due to high winds, throughout the county, causing significant damage. Tornados were spotted in the area, though to my recollection, I do not recall whether any made landfall or caused damage.

Hawkins County uses a ranking system to determine each jurisdiction's vulnerability to severe storm events (with a focus on tornadoes). This system is based off simple arithmetic which analysis's potential impacts to determine vulnerabilities and then analyzes the probability of a severe storm event occurring to calculate a risk ranking for each jurisdiction.

Jurisdiction	Impacts			Vulnerability
	Human	Property	Business	H+P+B=#; #/3=V
Hawkins County Unincorporated	1	3	1	1.6
Town of Bulls Gap	1	3	1	1.6
City of Church Hill	1	3	1	1.6
Town of Mt. Carmel	1	3	1	1.6
City of Rogersville	1	3	1	1.6
City of Surgoinsville	1	3	1	1.6

Jurisdiction	Vulnerability	Probability	Risk V+P=R
Hawkins County Unincorporated	1.6	4	5.6
Town of Bulls Gap	1.6	4	5.6
City of Church Hill	1.6	4	5.6
Town of Mt. Carmel	1.6	4	5.6
City of Rogersville	1.6	4	5.6
City of Surgoinsville	1.6	4	5.6

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4

Severe	8.5-10

Human	
Risk of injuries and deaths from the hazard	
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	
Amount of residetial property damage associated from the hazard	
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	
Amount of business damage associated from the hazard	
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 indefinitly or relocated
5	A top-10 local employer closed indefinitly

Probability	
Likelihood of the hazard occurring within a given span of years	
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

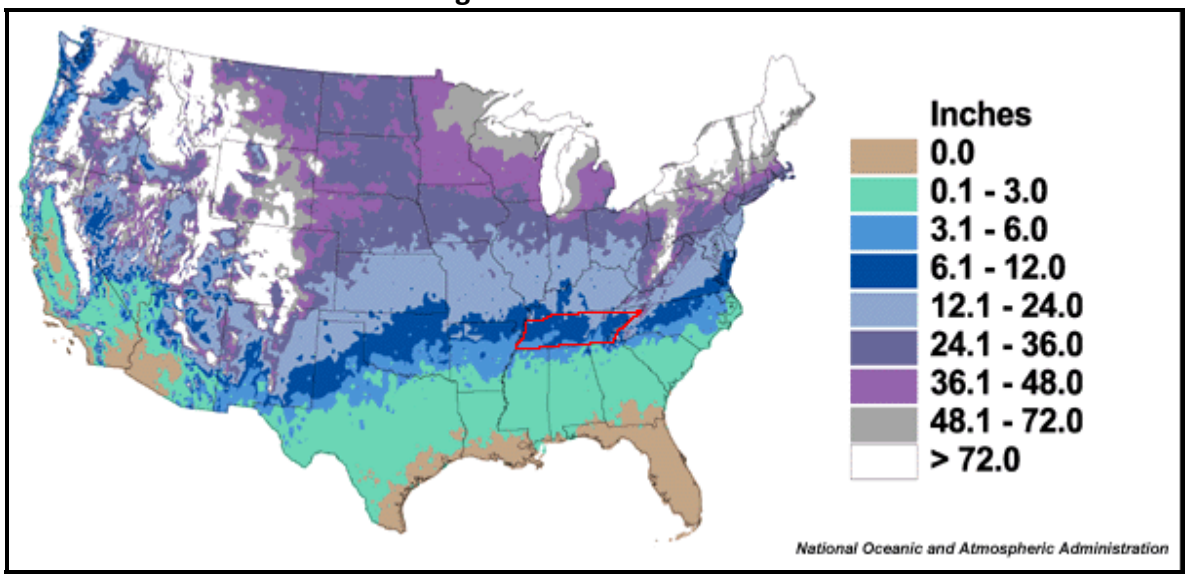
Winter Weather

A freeze occurs when temperatures are below 32 degrees Fahrenheit for a period. 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 Hawkins County, all jurisdictions are vulnerable to freezes and moderate winter storms, but not to the severity level seen in much of the northern U.S.

Based on previous occurrences, Hawkins County can experience multiple winter weather events in one year affecting all jurisdictions within equally.

The severity of winter storms is commonly measured by inches of snowfall. It is possible for snowfall to accumulate up to 3 feet in Hawkins County and/or ice accumulations to cause for hazardous conditions due to its proximity in and around the mountains. The average mean snowfall per year in Hawkins County is between 6 to 12 inches (as seen on the map below).

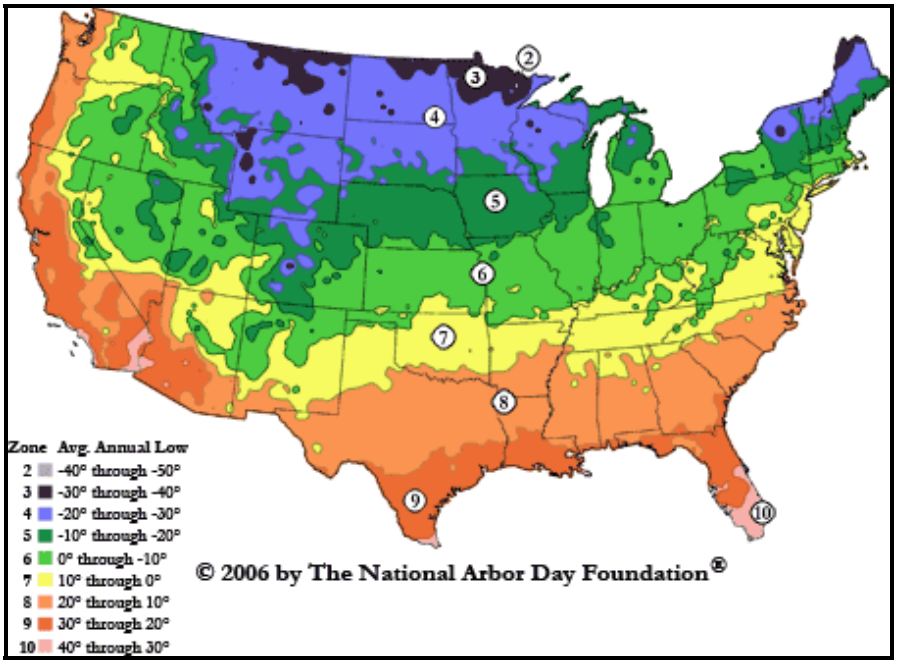
Average Mean Snowfall Per Year



Source: NOAA

Hawkins 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 storm event information for Hawkins County between 1950 and 2019. The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the Winter Weather hazard experienced by Hawkins County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Hawkins County also applies to the school district due to the geographic distribution of the schools throughout the County.

Winter Storm Impacts in Hawkins County: 1950 – 2020

Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
1/6/1996	Winter Storm	0	0	0	A strong low pressure system from the Gulf Coast region brought up to one foot of snow to parts of East Tennessee and between one to three feet of snow to southwest Virginia. Numerous trees and power lines fell. Many roads became impassable shutting down schools and businesses across the area. Numerous auto accidents occurred with three deaths reported from and accident near ppalachian. There were also isolated incidents of collapsed roofs.
1/11/1996	Winter Storm	0	0	0	Heavy snow accumulations of 4 to 8 inches caused numerous power outages and car accidents. Numerous trees fell as well. Schools and businesses were closed.
2/2/1996	Winter Storm	0	0	0	A low pressure trof extended from the Gulf of Mexico to across East Tennessee. This trof brought large amounts of moisture to the Southern Appalachians while a cold air mass moved in from the northwest. Snowfall amounts across the region ranged from 4 inches in Southeast Tennessee to nearly 24 inches in parts of Middle East Tennessee. Numerous minor traffic accidents were reported though no major accidents. 14-16 inches of snow.
12/18/1996	Winter Storm	0	0	0	A strong upper level disturbance brought heavy snow showers to the area resulting in widespread icy roads and hazardous driving conditions. Across northeast Tennessee, amounts were generally between 1 and 2 ½". In Johnson county in northeast Tennessee
1/10/1997	Winter Storm	0	0	0	An arctic cold front and associated upper level disturbance swept through the southern Appalachians. Snowfall amounts were 1-3 inches in southeast Tennessee, 2-4 inches across the northern Cumberland plateau and central east Tennessee, and 3-5 inches in northeast Tennessee.
12/30/1997	Winter Storm	0	0	0	A series of fast-moving upper level disturbances caused heavy snow shower activity across East Tennessee. Amounts were generally 2 to 5"
1/27/1998	Winter Storm	0	0	0	Heavy snow fell throughout most of northeast Tennessee. Most snowfall totals ranged from 5 to 10 inches. The heavy wet snow resulted in numerous power outages in northeast Tennessee, with as many as 100,000 people with out power at one point.

12/22/1998	Ice Storm	0	0	0	The ice storm left minor accumulations of ice in valley locations due to warm ground temperatures. Most of the ice was on trees and bridges. Most roads were only wet. In higher elevations, the ice was much heavier.
1/6/1999	Winter Storm	0	0	0	Generally less than 2 inches of snow fell across East Tennessee, resulting in numerous school closings and traffic accidents.
3/13/1999	Winter Storm	0	0	0	A very wet weather system brought heavy amounts of rain to East Tennessee. Heavy rain began early Saturday morning, changed to heavy snow in some places during the day Saturday, back to rain Saturday night, then finally to snow Sunday night. There were also isolated reports of freezing rain. The snow was confined to northeast Tennessee, generally northeast of Knoxville. Rainfall amounts across much of East Tennessee was 1-2 inches. Snowfall amounts in northeast Tennessee averaged 1-3 inches.
3/26/1999	Winter Storm	0	0	0	A very early spring snowstorm brought a wide range of snowfall amounts to the central valley counties of East Tennessee. Amounts ranged from 1-3 inches in most locations.
1/22/2000	Winter Storm	0	0	0	Generally 2-4 inches of snow fell across central and northeast portions of East Tennessee, with only a few reports of amounts in the 1-2 inch range and 4-5 inch range.
12/2/2000	Winter Storm	0	0	0	Widespread snow fell across East Tennessee. Amounts varied widely. In northeast Tennessee, snowfall amounts averaged 1 to 3 inches, with a few spots in the mountains reporting 2 to 4 inches.
12/18/2000	Winter Storm	0	0	0	Widespread light snow fell across East Tennessee. Amounts in counties in the valley generally ranged from 1 to 2 inches. In the higher mountain elevations, amounts were a bit higher, averaging 2 to 4 inches.
1/1/2001	Winter Storm	0	0	0	A strong upper level disturbance swept through the Tennessee Valley and southern Appalachians bringing a round of light snow to the area. Amounts were generally ½ inch to 2 inches. There were a few isolated reports of 3 inches, mainly near the mountains.
1/20/2001	Winter Storm	0	0	0	Low pressure moved northeast across the southern Appalachians, bringing light snow to the region. A few spots received around 4 inches. Across the remainder of East Tennessee, amounts were under 1 inch.

1/5/2002	Winter Storm	0	0	0	A winter storm brought a wide range of amounts to East Tennessee. eAcross northeast Tennessee, amounts average between a dusting and a half inch. The exceptions in this area were Hancock County with 6-8 inches and Hawkins County with 3-6 inches.
1/16/2003	Winter Storm	0	0	0	A storm system moved from the southern plains across the Tennessee Valley of Alabama into the southern Appalachians bringing snowfall amounts ranging from 2 to 8 inches across eastern Tennessee. The higher accumulations were concentrated across extreme northeast sections of the state.
1/22/2003	Winter Storm	0	0	0	A strong upper level disturbance moved southeast from the northern plains and ppalac states across eastern Tennessee producing significant snowfall amounts. Snowfall amounts ranged from 2 to 5 inches in the lower elevations while higher elevations across the region picked up totals ranging from 5 to 8 inches.
1/9/2004	Winter Storm	0	0	0	A winter storm system moved into the region early in the morning on January 9th producing snowfall amounts ranging from as little as 1 inch to as much as 4 inches of snow across Northeast Tennessee. The most common range of snowfall reported across the counties of Northeast Tennessee was 2-3 inches.
2/26/2004	Heavy Snow	0	0	0	Not provided
1/29/2005	Ice Storm	0	0	0	A low pressure system spread moist air above a cold air mass in place at the surface across East Tennessee creating a mixture of freezing rain and sleet across the lower elevations and a mixture of sleet and snow across the higher terrain. Much of the region ended up with ice accumulation around one quarter inch with some locations measuring as much as one half inch of ice. Trees and power lines were downed across parts of the region due to ice accumulation.
2/11/2006	Heavy Snow	0	0	0	A strong storm system moved across the Tennessee valley and ppalachian region producing 4 to 6 inch snowfall amounts across much of the area.
12/18/2009	Heavy Snow	0	0	0	An area of low pressure tracked into the region from the south combined with cold air resulting in heavy snow across the area. The heaviest snow fell over the higher elevations where 10-12 inches was reported. The valley locations received up to 4 inches of snow.

1/29/2010	Heavy Snow	0	0	0	Heavy snow occurred across east Tennessee, with snowfall amounts ranging from four to eight inches in the lower elevations to ten to fourteen inches across the higher elevations.
12/16/2010	Ice Storm	0	0	20000	A storm system moving through the region produced an initial burst of two to four inches at several locations. As warmer air moved into the region, freezing rain followed the snowfall, resulting in a quarter to half of an inch of icing at most locations.
2/12/2014	Heavy Snow	0	0	0	Heavy snow blanketed the area as strong upper level disturbance combined with deep moisture pulled from the Carolina coast over a 2 day period. The largest snowfall totals were in the mountains where up to 16 inches was reported at Newfound Gap.
2/16/2015	Ice Storm	0	0	0	A winter storm tracked through area on the 16-17th with the atmosphere favorable for both heavy snow and ice accretion. The highest peaks had up to 6 inches of snow while ice accumulations had up to an inch. In addition, cold weather accounted for 3 deaths.
2/26/2015	Heavy Snow	0	0	0	An area of low pressure tracked through the area. Conditions were favorable for snow production. Even the valley had significant snow over the 2 day period.
1/20/2016	Heavy Snow	0	0	0	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5 inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.

1/22/2016	Heavy Snow	0	0	0	A strengthening low pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across the northern Cumberland Plateau, southwest Virginia, and extreme northeast Tennessee was in the form of snow. Temperatures warmed above freezing for a few hours across much of the remainder of the Great Valley as the surface low approached the valley. However, once the pressure center shifted east into the Carolinas, the rain changed to snow. Winter storm warning criteria was met basically north of the Interstate 40 corridor with amounts ranging from around 8 to 12 inches of snow across the northern Cumberland Plateau across northeast Tennessee into Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across Southwest Virginia with about two feet in the High Knob region. Snowfall totals were closer to 4 to 8 inches just south of this heavier band of snow.
1/6/2017	Heavy Snow	0	0	0	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.
12/9/2018	Heavy Snow	0	0	0	A strong low pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.

The committee shared their personal experiences of winter weather events that have occurred in Hawkins County, and all jurisdictions within. The following is transcribed from their thoughts.

> Experience has been across the board with winter weather as well. From Operating as IC in a power outage / multi-incident event to ensure critical need Residents are stocked with supplies.
>
> Winter weather is an issue every year in Hawkins County. The school system routinely uses several allocated snow days for snow and ice events. Occasionally, power is lost.

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

Jurisdiction	Impacts			Vulnerability
	Human	Property	Business	H+P+B=#; #/3=V
Hawkins County Unincorporated	1	1	1	1
Town of Bulls Gap	1	1	1	1
City of Church Hill	1	1	1	1
Town of Mt. Carmel	1	1	1	1
City of Rogersville	1	1	1	1
City of Surgoinsville	1	1	1	1

Jurisdiction	Vulnerability	Probability	Risk V+P=R
Hawkins County Unincorporated	1	4	5
Town of Bulls Gap	1	4	5
City of Church Hill	1	4	5
Town of Mt. Carmel	1	4	5
City of Rogersville	1	4	5
City of Surgoinsville	1	4	5

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4
Severe	8.5-10

Human	
Risk of injuries and deaths from the hazard	
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	
Amount of residetial property damage associated from the hazard	
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	
Amount of business damage associated from the hazard	
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 indefinitly or relocated
5	A top-10 local employer closed indefinitly

Probability	
Likelihood of the hazard occurring within a given span of years	
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

Wildfire

There are very few news reports of Wildfires occurring in Hawkins County. As reported by wjhl.com (https://www.wjhl.com/news/local/wildfire-keeps-fire-crews-busy-in-hawkins-county/), on April 6, 2020, it was reported that a homeowner burning a field caused a wind driven fire up the mountain. The number of acres burned was not reported.

It was reported by Times News (https://www.timesnews.net/news/local-news/get-a-burn-permit-first-recent-hawkins-forest-fires-were-fed-by-high-winds/article_a37c41d4-1c8d-5846-8344-cc4bf21c4906.html), on April 8, 2020, Hawkins County fire crews dealt with two wind driven forest fires in three days citing that the fires could have been prevented if homeowners obtained a burn permit. These fires were particularly difficult due to the delay in calling 911 for help and because the fires spread to a rugged mountain area. The State Forestry division did provide mitigation tips in the news article.

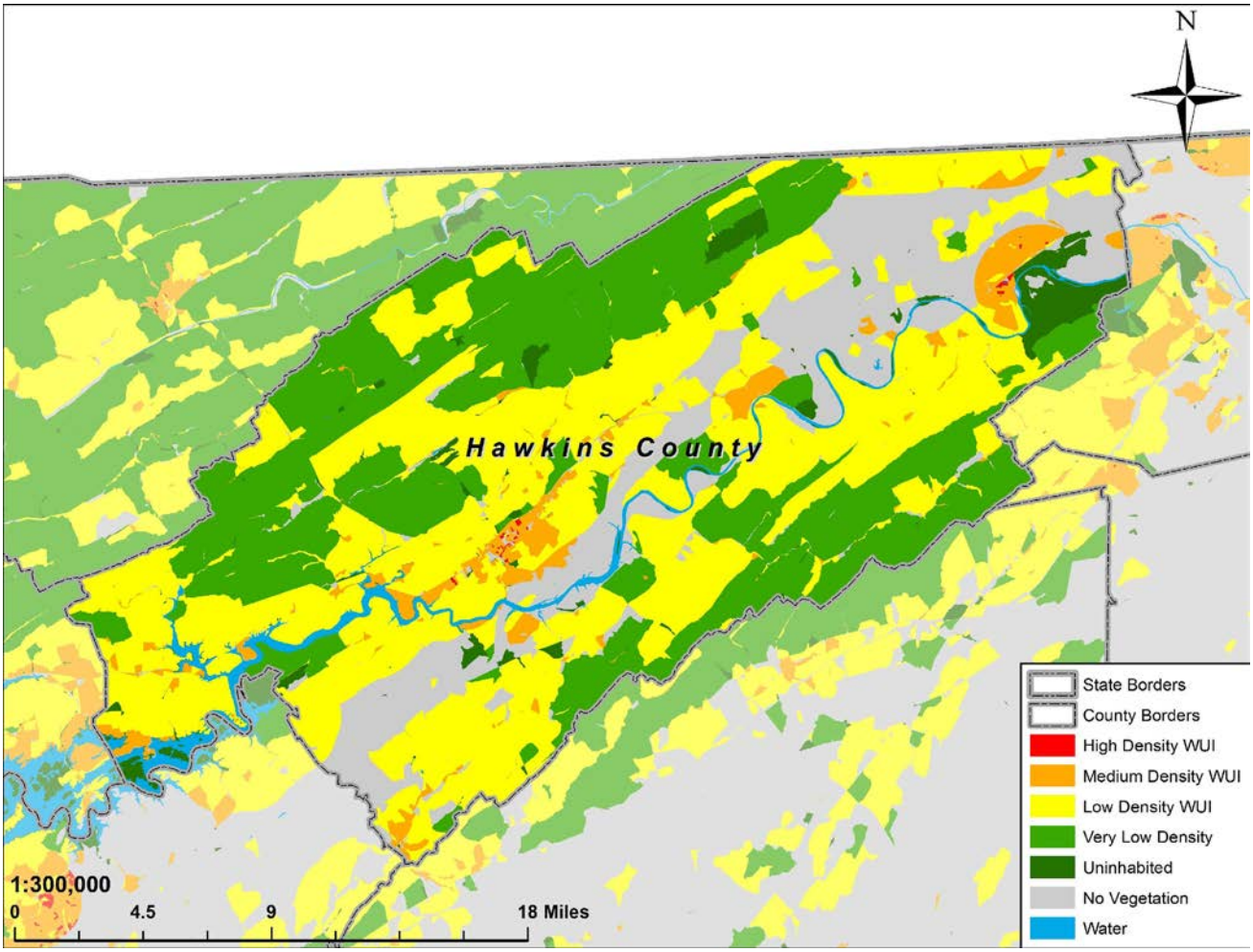
As reported by WCYB news, (https://wcyb.com/news/tennessee-news/update-hawkins-county-wildlfire-ruled-as-arson), on November 10, 2016, a report detailed the arson fire in Hawkins

County burning more than 200 acres. The article also states, “That area monitored by the state has the second-highest number of wildfires still active with eight, according to the data, while year-to-date numbers show 218 fires in East Tennessee are the work of arsonists, charring more than 18,000 acres.”

As reported by firefighternation.com (https://www.firefighternation.com/leadership/forest-fire-destroys-2-200-acres-in-tennessee/#gref), on November 12, 2012, “A forest fire in Hawkins County has destroyed about 2,200 acres west of Rogersville and is still burning. Meanwhile, the fire has uncovered what appears to be a dogfighting and cockfighting operation.”

No additional wildfires were found when research occurred for news outlets.

Many fires occur in grassland areas such as yards and pastures. Below is the Wildland Urban Interface for Hawkins County. Hawkins County has a mixture of every type of vegetation at risk for burning from grassland to mountain terrain.



According to the TN Division of Forestry, debris burning, and arson are the two main causes of wildfires. Generally, there are three major factors that sustain wildfires and allow for predictions of a given area's potential to burn. These factors include:

- Fuel;
- Topography; and
- Weather.

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Man-made structures and other associated combustibles are also to be considered as a fuel source. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for spreading wildfires.

An area's topography (terrain and land slopes) affects its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection and radiation. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes

Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The issue of drought conditions contributes to concerns about wildfire vulnerability.

East Tennessee typically has two fire seasons. The spring fire season, prompted by warming weather, begins about February 15 and ends near May 15th. Fall fire season begins around October 15, when the leaves begin to fall and usually ends December 15th due to shorter, cooler, wetter days. Still, wildland fires occur year-round. A burning permit is required for outdoor burning between October 15th and May 15th.

The committee shared their personal experiences of wildfire events that have occurred in Hawkins County and the jurisdictions within. The following is transcribed from their thoughts.

> I have participated in the extinguishment and mitigation of wildfires of varying sizes.
>
> 2017 was a particularly dry year in Hawkins County. Fires were present on Bays Mountain, which backs up to Hawkins County. Residents could see smoke upon exiting their homes. Fortunately, the fires were contained in a relatively short amount of time, minimizing damage.

Hawkins County is in the East TN District of the TN Division of Forestry. The TN Division of Forestry provides statistics for each region summarizing wildfire events. Due to outside data sources including federal and state land, causing confusion in wildfire data, the TN Division of Forestry will always remain the only source for Counties within the State of Tennessee for information. It is not the responsibility of Hawkins County to mitigate federal or state land. Hopefully, in the future, a more defined dataset can be provided. At this time, this is the only information Hawkins County can obtain that is consistent and confirmed. Below are the statistics for Hawkins County from 2007 to 2016. These statistics also provide extent of the Wildfire Hazard. For Area, the total number of acres for the East TN District is 6,245,119.29. The percentage is calculated by taking the percentage and calculating the total area by percentage within the entire district. Size is calculated by total number of acres divided by total number of fires.

Year	# of Fires Forested	# of Fires Non-Forested	Total	# of Acres Forested	# of Acres Non-Forested	Total	Size	Area
2016	19	4	23	624.4	30.8	655.2	28.5	0.002
2015	6	1	7	8.3	0.1	8.4	1.2	0.000
2014	19	1	20	798.0	19.0	817.0	40.9	0.003
2013	6	2	8	81.2	15.4	96.6	12.1	0.000
2012	6	2	8	2,230.8	20.5	2,251.3	281.4	0.008
2011	6	1	7	40.7	10.1	50.8	7.3	0.000
2010	2	1	3	3.6	3.5	7.1	2.4	0.000
2009	6	2	8	139.1	2.0	141.1	17.6	0.001
2008	9	2	11	1,590.5	1.0	1,591.5	144.7	0.006
2007	19	14	33	1,164.8	167.8	1,332.6	40.4	0.005

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

Jurisdiction	Impacts			Vulnerability
	Human	Property	Business	H+P+B=#; #/3=V
Hawkins County Unincorporated	2	2	1	1.6
Town of Bulls Gap	2	2	1	1.6
City of Church Hill	2	2	1	1.6
Town of Mt. Carmel	2	2	1	1.6
City of Rogersville	2	2	1	1.6
City of Surgoinsville	2	2	1	1.6

Jurisdiction	Vulnerability	Probability	Risk V+P=R
Hawkins County Unincorporated	1.6	5	6.6
Town of Bulls Gap	1.6	5	6.6
City of Church Hill	1.6	5	6.6
Town of Mt. Carmel	1.6	5	6.6
City of Rogersville	1.6	5	6.6
City of Surgoinsville	1.6	5	6.6

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4
Severe	8.5-10

Landslides

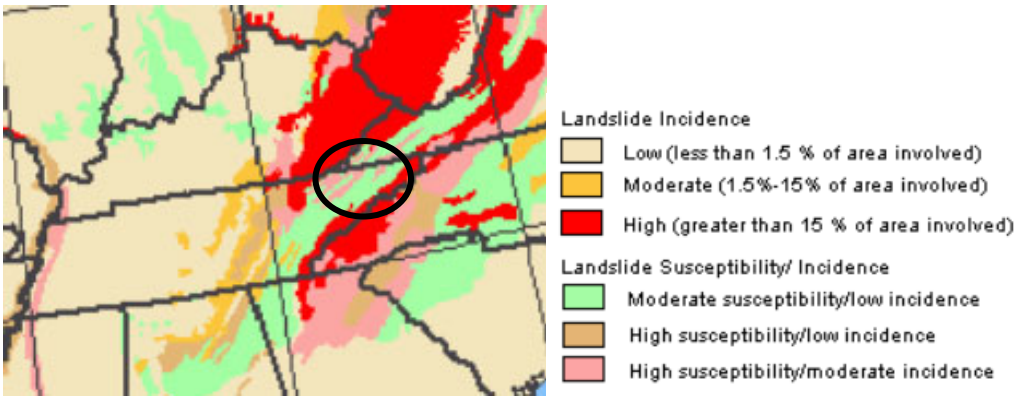
In Eastern Tennessee, the primary way landslides occur is through significant rainfall. Many rainfall-induced landslides transform into debris flows (fast-moving slurries of water, soil, and rock) as they travel down steep slopes, especially those that enter stream channels where they may mix with additional water and sediment.

The topography of East Tennessee lends to the risk of landslides. According to worldatlas.com, varied ranges of the Appalachian Mountain system cover the eastern third of Tennessee, including the Bald, Great Smoky, Holston, Stone, Unaka and Unicoi mountains. Located along its border with North Carolina, Clingmans Dome (at 6,643 ft.) is the state's highest point. In fact, it's the third highest point in the Appalachian Mountain range; only Mt. Mitchell in North Carolina (6,684 ft.), and Mt. Craig (6,647 ft.) in Mt. Mitchell State Park rise higher. To the immediate west of those mountains (stretching south to north) the Appalachian Valley is a series of lower ridges, hills, and very fertile farmland. The Cumberland Plateau, a run of flat hills, valleys and round top mountains, stretches north from Chattanooga to the Kentucky

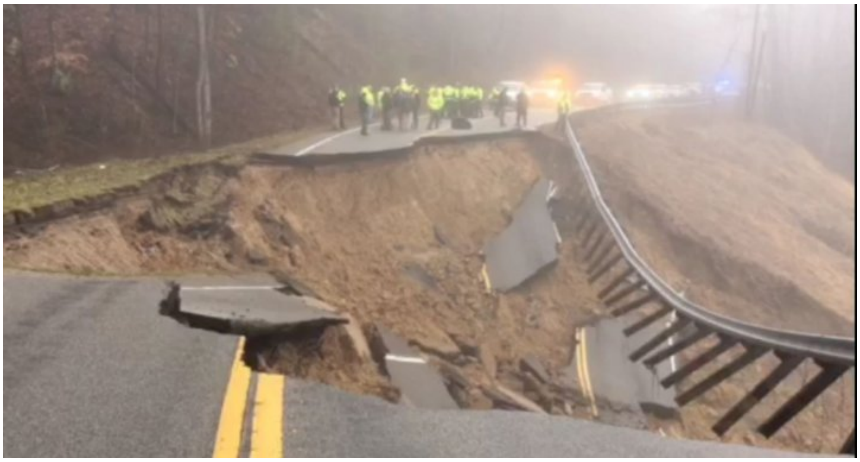
border. Lookout Mountain (1,850 ft.), to the southwest of Chattanooga, provides views of seven states on a clear day.

According to the United States Geological Survey, a landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of "mass wasting," which denotes any down-slope movement of soil and rock under the direct influence of gravity. The term "landslide" encompasses five modes of slope movement: falls, topples, slides, spreads, and flows. These are further subdivided by the type of geologic material (bedrock, debris, or earth). Debris flows (commonly referred to as mudflows or mudslides) and rock falls are examples of common landslide types. Almost every landslide has multiple causes. Slope movement occurs when forces acting down-slope (mainly due to gravity) exceed the strength of the earth materials that compose the slope. Causes include factors that increase the effects of down-slope forces and factors that contribute to low or reduced strength. Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors. Other factors pertinent to East Tennessee is the high risk of Wildfire which is a documented hazard within this plan. Wildfire promotes erosion and can contribute to future landslide potential.

This map shows the distribution of relative landslide incidence and susceptibility across the conterminous United States. Red areas have the highest rates of landslide incidence. Pink areas have high rates of landslide incidence and susceptibility. Map by the United States Geological Survey. The circle represents the area in which Hawkins County is located.



Landslides continue to be a major concern for Hawkins County residents. The flooding event that took place in February 2019 created devastating landslide along State Route Highway 70 where unfortunately a man was killed. The road had catastrophic damages causing it to be closed for months. On occasion, the road is closed to clear away rocks and debris that may fall onto the roadway. Highway 70 is a main thoroughfare for Hawkins County residents and residents in neighboring Counties and Kentucky to get to work and school.



In May 2017, another landslide on State Highway 70 occurred (pictured below). Additional landslides have occurred on Highway 66, and Highway 31in 2019.

The committee provided details on the personal experiences:

> In 2019, a landslide occurred in two places in Hawkins County, on Clinch Mountain. Highways 70 and 66 were both closed for over a year, as TDOT worked to repair the area. One individual was injured and one was killed in the landslide on Highway 70.

Jurisdiction	Impacts			Vulnerability
	Human	Property	Business	H+P+B=#; #/3=V
Hawkins County Unincorporated	3	1	1	1.6
Town of Bulls Gap	2	1	1	1.3
City of Church Hill	2	1	1	1.3
Town of Mt. Carmel	2	1	1	1.3
City of Rogersville	3	1	1	1.6
City of Surgoinsville	2	1	1	1.3

Jurisdiction	Vulnerability	Probability	Risk V+P=R
Hawkins County Unincorporated	1.6	5	6.6
Town of Bulls Gap	1.3	1	2.3
City of Church Hill	1.3	1	2.3
Town of Mt. Carmel	1.3	1	2.3
City of Rogersville	1.6	2	3.6
City of Surgoinsville	1.3	1	2.3

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8

High	6.9-8.4
Severe	8.5-10

Presidential Disaster Declarations

The source of this information came from https://www.fema.gov/disasters. All disasters included in the table below that were provided on this website.

FEMA DR	Date	Hazards			PA	IA
4427	4/17/2019	Flooding	Landslide	Mudslide	yes	no
4211	4/2/2015	Winter Storm	Flooding		yes	no
3095	3/14/1993	Winter Storm			yes	no
3217	9/5/2005	Hurricane Katrina			yes	no
366	5/15/1972	Heavy Rains	Flooding		yes	Yes
1022	4/14/1994	Heavy Rains	Flooding		yes	Yes
1408	4/5/2002	Severe Storms	Flooding		yes	Yes
2348	11/3/2000	Wildfire			yes	no
1215	4/20/1998	Severe Storms	Tornadoes	Flooding	yes	Yes
1197	1/13/1998	Severe Storms	Flooding		yes	no

PA = Public Assistance
IA = Individual Assistance

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 Hawkins County Hazard Mitigation Committee identified the following goals to be the forefront in the overall development of this plan. 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.

Goal 1: Protect the lives and health of citizens from the effects of natural hazards.

Goal 2: Emphasize mitigation planning to decrease vulnerability of existing and new structures.

Goal 3: Encourage public support and commitment to hazard mitigation, by communicating mitigation benefits.

Identification and Prioritization of Mitigation Projects

Hawkins County, and all jurisdictions within, has developed a comprehensive range of mitigation projects. These projects were solicited and identified by the different entities who make up the Hawkins 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, Hawkins County was able to determine when and which projects should be implemented based on available funding and time.

The Hawkins 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, Administrative, 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 benefits.	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 environ. impacts, possibly long-term
		2	Some environ. Impacts, some possibly long-term
		3	Few, if any, environ. 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 Hawkins County Hazard Mitigation Project List.

Hawkins County Project List

The following Project List provides an overview of all the Hawkins County Multi-Jurisdictional Hazard Mitigation Committee projects. This includes potential funding sources, implementation timeframes, the project's responsible agency, and other information. The committee went into extensive discussion surrounding projects that would be beneficial for our community. It is important to note this is the first hazard mitigation plan completed by Hawkins County and all jurisdictions within. Therefore, there was no review of projects in previous plans incorporated into this project listing.

Hazard Mitigated	Project #	Hawkins County (Unincorporated) Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	25	Big Elm Rd. Flood Mitigation	15	Existing	County	HMGP, BRIC, FMA	1-5 years
	24	All hazard building code improvement	14	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA/County	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	1	Clinch School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	2	Cherokee High/ Volunteer High generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	3	Bulls Gap School Generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	4	Surgoinsville Middle School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	5	Hawkins Elementary Severe Weather Building Enhancements	20	Existing	Schools	HMGP, BRIC	1-5 years
	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	24	All hazard building code improvement	14	Existing	EMA	HMGP, BRIC	1-5 years
	23	Harden the 911 and EOC facility	3	Existing	911, EMA	HMGP, BRIC	1-5 years
	21	Generator for 911 repeater site	1	Existing	911	HMGP, BRIC	1-5 years
	22	Sherriff's office generator	1	Existing	Sherriff's office	HMGP, BRIC	1-5 years
Winter Weather	1	Clinch School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	2	Cherokee High/ Volunteer High generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	3	Bulls Gap School Generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	4	Surgoinsville Middle School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years

	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	24	All hazard building code improvement	14	Existing	EMA	HMGP, BRIC	1-5 years
	21	Generator for 911 repeater site	1	Existing	911	HMGP, BRIC	1-5 years
	22	Sherriff's office generator	1	Existing	Sherriff's office	HMGP, BRIC	1-5 years
Wildfires	1	Clinch School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	2	Cherokee High/ Volunteer High generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	3	Bulls Gap School Generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	4	Surgoinsville Middle School generator	21	Existing	Schools	HMGP, BRIC	1-5 years
	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	24	All hazard building code improvement	14	Existing	EMA	HMGP, BRIC	1-5 years
	21	Generator for 911 repeater site	1	Existing	911	HMGP, BRIC	1-5 years
	22	Sheriff's office generator	1	Existing	Sherriff's office	HMGP, BRIC	1-5 years
Landslide	6	Highway 70 Landslide detection	26	Existing	EMA/911	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	24	All hazard building code improvement	14	Existing	EMA	HMGP, BRIC	1-5 years
	19	Impact and engineering study	26	Existing	EMA	HMGP, BRIC	1-5 years
	20	Landslide mitigation	26	Existing	EMA	HMGP, BRIC	1-5 years
	30	AFG Road mudslide	26	Existing	County	HMGP, BRIC	1-5 years

Hazard Mitigated	Project #	Town of Bulls Gap Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA/Town of Bulls Gap	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Winter Weather	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Wildfires	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Landslide	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years

Hazard Mitigated	Project #	City of Church Hill Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	13	Flood gauges for Holston River	4	Existing	City of Church Hill	HMGP, BRIC, FMA	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	12	Holston River flood mitigation	4	Existing	City of Church Hill	HMGP, BRIC, FMA	1-5 years
	26	Church Hill Middle School flood mitigation	15	Existing	Schools	HMGP, BRIC, FMA	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA, City of Church Hill	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years
	9	Public Works building generator	8	Existing	Public Works	HMGP, BRIC	1-5 years
	10	City Building generator and safe room	25	Existing	City of Church Hill	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Winter Weather	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years
	9	Public Works building generator	8	Existing	Public Works	HMGP, BRIC	1-5 years
	10	City Building generator and safe room	25	Existing	City of Church Hill	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Wildfires	8	Fire Stations (2) Generators (also cover City/County bldg., EMS and EOC) - Church Hill and County	8	Existing	FD, EMS, EMA	HMGP, BRIC	1-5 years

	9	Public Works building generator	8	Existing	Public Works	HMGP, BRIC	1-5 years
	10	City Building generator and safe room	25	Existing	City of Church Hill	HMGP, BRIC	1-5 years
	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Landslide	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years

Hazard Mitigated	Project #	Town of Mt. Carmel Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	18	Independence Ave. Creek (Arnold Branch Creek) flood mitigation	4	Existing	Town of Mt. Carmel	HMGP, BRIC, FMA	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA, Town of Mt. Carmel	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	15	Generator power for fire department	8	Existing	FD	HMGP, BRIC	1-5 years
	16	Generator for public works	8	Existing	Public Works	HMGP, BRIC	1-5 years
	17	Generator for City Hall (also houses Town emergency operations center)	8	Existing	Town of Mt. Carmel	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Winter Weather	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	15	Generator power for fire department	8	Existing	FD	HMGP, BRIC	1-5 years
	16	Generator for public works	8	Existing	Public Works	HMGP, BRIC	1-5 years
	17	Generator for City Hall (also houses Town emergency operations center)	8	Existing	Town of Mt. Carmel	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Wildfires	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	15	Generator power for fire department	8	Existing	FD	HMGP, BRIC	1-5 years
	16	Generator for public works	8	Existing	Public Works	HMGP, BRIC	1-5 years
	17	Generator for City Hall (also houses Town emergency operations center)	8	Existing	Town of Mt. Carmel	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
Landslide	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years

Hazard Mitigated	Project #	City of Rogersville Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	28	Church St. Flooding	4	Existing	City of Rogersville	HMGP, BRIC, FMA	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA, City of Rogersville	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	29	Generator for Police and Fire Department building	8	Existing	PD and FD	HMGP, BRIC	1-5 years
Winter Weather	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	29	Generator for Police and Fire Department building	8	Existing	PD and FD	HMGP, BRIC	1-5 years
Wildfires	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	29	Generator for Police and Fire Department building	8	Existing	PD and FD	HMGP, BRIC	
Landslide	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	7	Woodlawn Dr. and Woodlawn Apartments landslide mitigation and detection	26	Existing	City of Rogersville	HMGP, BRIC	1-5 years

Hazard Mitigated	Project #	City of Surgoinsville Action/Project Name	Priority Rank	Addresses New or Existing Buildings/Infra?	Responsible Agency	Possible Funding Source(s)	Timeframe
Flooding	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	31	Purchase repetitive loss properties	15	Existing	EMA, City of Surgoinsville	HMGP, BRIC, FMA	1-5 years
Tornado/Severe Storms (Hail, Wind)	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	27	Generator for Police Headquarters	18	Existing	Police	HMGP, BRIC	1-5 years
Winter Weather	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	27	Generator for Police Headquarters	18	Existing	Police	HMGP, BRIC	1-5 years
Wildfires	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years
	27	Generator for Police Headquarters	18	Existing	Police	HMGP, BRIC	1-5 years
Landslide	14	Public notification system/ an alert system on all hazards	31	Existing	EMA	HMGP, BRIC	1-5 years
	11	Public Education	19	Existing	EMA	HMGP, BRIC	1-5 years

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, Hawkins County unincorporated, Town of Bulls Gap, City of Church Hill, Town of Mt. Carmel, City of Rogersville and the City of Surgoinsville are NFIP participants. FEMA has listed these jurisdictions to have a current effective map date as of July 3, 2006. Below gives an overview of NFIP policy and loss data for Hawkins County.

According to the National Flood Insurance Program, repetitive flood loss is defined as a facility or structure that has experienced two or more insurance claims of at least $1,000 in any given 10 year period since 1978. Within the NFIP, repetitive flood loss properties are usually considered the most vital structures to mitigate. Currently, residential repetitive loss properties are as follows:

- One in Bulls Gap
- One in Church Hill
- One in Hawkins County (unincorporated)
- One in Mt. Carmel
- One in Rogersville
- One in Surgoinsville
- Two in Kingsport

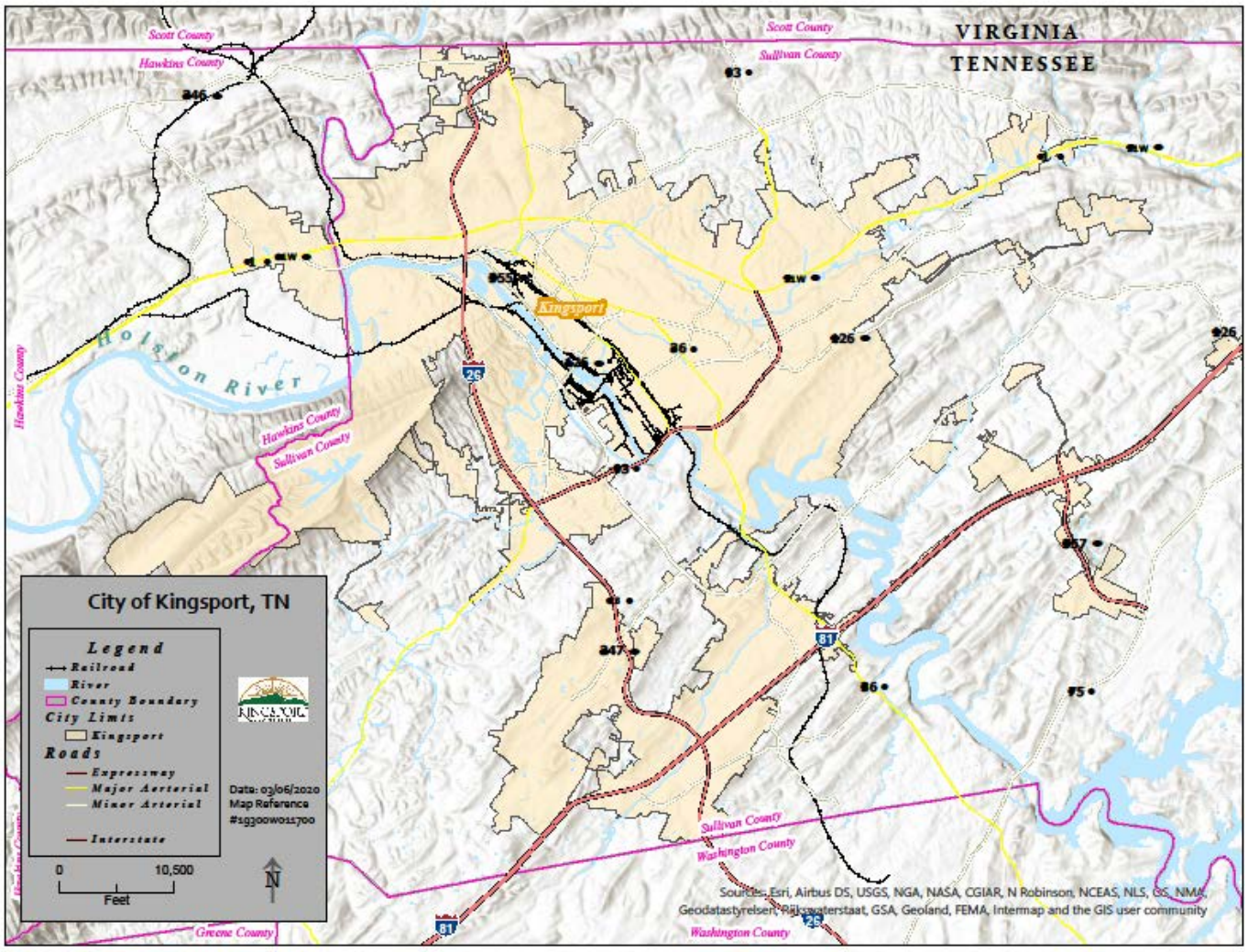
The chart below provides a summary of their NFIP policy and loss data. The first table provides a description of the columns located within the NFIP policy data.

Unfortunately, there are several issues with the NFIP as it pertains to Kingsport. The below outlines these issues and a lengthy attempt was made in 2018/2019 to resolve with no resolution. This information is presented here in case future issues appear surrounding this issue.

The City of Kingsport is located in Sullivan and Hawkins County with the majority of the city located in Sullivan. However, the NFIP Policy information has all of Kingsport listed in Hawkins. The NFIP listing of properties have Kingsport listed in Sullivan, Hawkins and Jefferson Counties.

	DOVER, TOWN OF	4	1,204,000	4,812
	STEWART COUNTY *	47	9,873,400	30,417
SULLIVAN COUNTY	BLUFF CITY, TOWN OF	1	16,500	290
	BRISTOL, CITY OF	60	14,090,300	100,494
	SULLIVAN COUNTY *	139	27,648,500	125,269
SUMNER COUNTY	GALLATIN, CITY OF	239	71,179,300	184,182
	HENDERSONVILLE, CITY OF	397	113,948,800	258,006
	HARDIN COUNTY*	125	25,561,300	76,311
	SALTILLO, TOWN OF	3	348,000	2,806
	SAVANNAH, CITY OF	6	2,281,500	5,231
HAWKINS	KINGSPORT, CITY OF	156	34,162,800	159,760
HAWKINS COUNTY	BULLS GAP, TOWN OF	2	466,500	8,350
	CHURCH HILL,CITY OF	10	2,528,700	9,549
	HAWKINS COUNTY*	19	3,976,200	15,384
	MOUNT CARMEL, TOWN OF	13	1,751,600	14,886
	ROGERSVILLE, CITY OF	12	2,263,000	16,840
	SURGOINSVILLE, CITY OF	1	223,000	2,066
HAYWOOD COUNTY	BROWNSVILLE, CITY OF	87	10,957,000	73,647
	HAYWOOD COUNTY*	19	2,277,400	14,403

Here is a map of the City of Kingsport with Hawkins and Sullivan County lines.



The following page provides details about policies within Sullivan County and all jurisdictions within. The below is a description of each column.

Adjuster Expense	The total amount paid to adjusters for all claims within the community and/or county. It includes all special expenses, allocated loss adjusted expense, and allocated ICC expense.
Building Coverage	Building coverage for a policy or claim (whole dollars)
Building Payments	The total amount paid for all losses for building,
Community Name	The official NFIP name of the community in which the claim or policy exists.
Community Number	The 6 character community ID in which the claim or policy exists.
Contents Coverage	Contents coverage for a policy or claim (whole dollars)
Contents Payments	The total amount paid for all losses for contents
County Name	The official FIPS county name for the claim or policy. It is determined by geocoding of the policy or claim address, rather than the historical method of using the community to look up the county.
Data as of Date	The date of the most recent validated data upon which the report is based.
ICC Coverage	ICC coverage for a policy or claim (whole dollars)
ICC Payments	The total amount paid for all losses for ICC
Number of Losses	The number of losses (claims) reported within that community and/or county.
State	The state in which the policy or claim exists. The value is determined by the geocoded data first, and in the absence of geocoding, by the community state.
Total Policy Count	The total number of policies reported within the community and/or county in force as of the given date. All condo units are counted for each condo master policy.
Total Premium and Policy Fee	The policy premium and associated policy fee for the policies.
WYO or Direct	An indicator of whether the policy or claim is administered by NFIP Direct ("Direct") or a Write-Your-Own Company ("WYO")

Community Name (Number)	County	Direct Premium and FPF	WYO Premium and FPF	Total Premium and FPF	Direct Policy Count	WYO Policy Count	Total Policy Count	Direct Coverage (in Thousands)	WYO Coverage (in Thousands)	Total Coverage (in Thousands)	Direct Losses	WYO Losses	Total Losses	Direct Dollars Paid	WYO Dollars Paid	Total Dollars Paid	Adjuster Expense
BULLS GAP, TOWN OF (470297)	HAWKINS COUNTY	$ -	$ 7,798	$ 7,798	-	2	2	$ -	$ 467	$ 467	-	-		$ -	$ -	$ -	$ -
CHURCH HILL,CITY OF (470268)	HAWKINS COUNTY	$ 723	$ 9,382	$ 10,105	2	6	8	$ 600	$ 1,299	$ 1,899	-	-		$ -	$ -	$ -	$ -
HAWKINS COUNTY* (470085)	HAWKINS COUNTY	$ 5,183	$ 12,487	$ 17,670	6	14	20	$ 1,229	$ 3,777	$ 5,006	3	2	5	$ 9,565	$ 2,415	$ 11,980	$ 2,615
KINGSPORT, CITY OF (470184)	HAWKINS COUNTY	$ 401	$ 8,150	$ 8,551	1	11	12	$ 350	$ 2,795	$ 3,145	-	-		$ -	$ -	$ -	$ -
MOUNT CARMEL, TOWN OF (470311)	HAWKINS COUNTY	$ 4,729	$ 14,106	$ 18,835	4	10	14	$ 439	$ 1,369	$ 1,808	1	4	5	$ -	$ 19,567	$ 19,567	$ 4,325
ROGERSVILLE, CITY OF (470086)	HAWKINS COUNTY	$ 2,464	$ 15,006	$ 17,470	3	9	12	$ 442	$ 1,822	$ 2,263	3	-	3	$ 6,672	$ -	$ 6,672	$ 695
SURGOINSVILLE, CITY OF (470279)	HAWKINS COUNTY	$ 2,318	$ 621	$ 2,939	1	2	3	$ 223	$ 315	$ 538	-	-		$ -	$ -	$ -	$ -
KINGSPORT, CITY OF (470184)	HAWKINS COUNTY	$ 401	$ 8,150	$ 8,551	1	11	12	$ 350	$ 2,795	$ 3,145	-	-		$ -	$ -	$ -	$ -
KINGSPORT, CITY OF (470184)	JEFFERSON COUNTY	$ 399	$ -	$ 399	1	-	1	$ 350	$ -	$ 350	-	-		$ -	$ -	$ -	$ -
KINGSPORT, CITY OF (470184)	SULLIVAN COUNTY	$ 23,278	$124,212	$147,490	25	113	138	$ 4,048	$ 24,154	$ 28,202	26	37	63	$197,467	$343,169	$540,636	$ 39,520

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.

Section 5: Plan Maintenance

Monitoring, Evaluating, and Updating

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

Monitoring activities will involve Hawkins County Emergency Management setting up a committee meeting to be held on an annual basis. Hawkins County Emergency Management 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 critical facilities list, the repetitive loss list, the committee membership list, and the project priority list.

The plan will be formally updated every five years in accordance with 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 HMGP grant funding. For the five-year update, Hawkins County Emergency Management will notify the jurisdictional governments and the Hawkins 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 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 Hawkins 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 Hawkins County Emergency Management.

Five months prior to the plan's expiration date, Hawkins County Emergency Management 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 Hawkins 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 Mechanisms

By incorporating the Hawkins County Multi-Jurisdictional Hazard Mitigation Plan into other planning documents and mechanisms, 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.

The committee discussed incorporating this plan into other plans that exist within the County and all jurisdictions within and due to other jurisdictional priorities and demands (especially during this COVID-19 pandemic), no other plans or options were identified by the members. What you see below is what was discussed and documented. As required, this will be discussed within committee during the next plan update. It is important to note that this is a small rural County. It should not be expected that long term planning is a constant or viable.

Some of the mechanisms that the Hawkins County Multi-Jurisdictional Hazard Mitigation Plan could be incorporated into include:

- Hawkins County Emergency Operations Plan

The process of incorporating the hazard mitigation plan into other plans will begin during the other plan's update cycles. Hawkins County Emergency Management will first review the plans side-by-side, and where deemed necessary, Emergency Management will make 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.

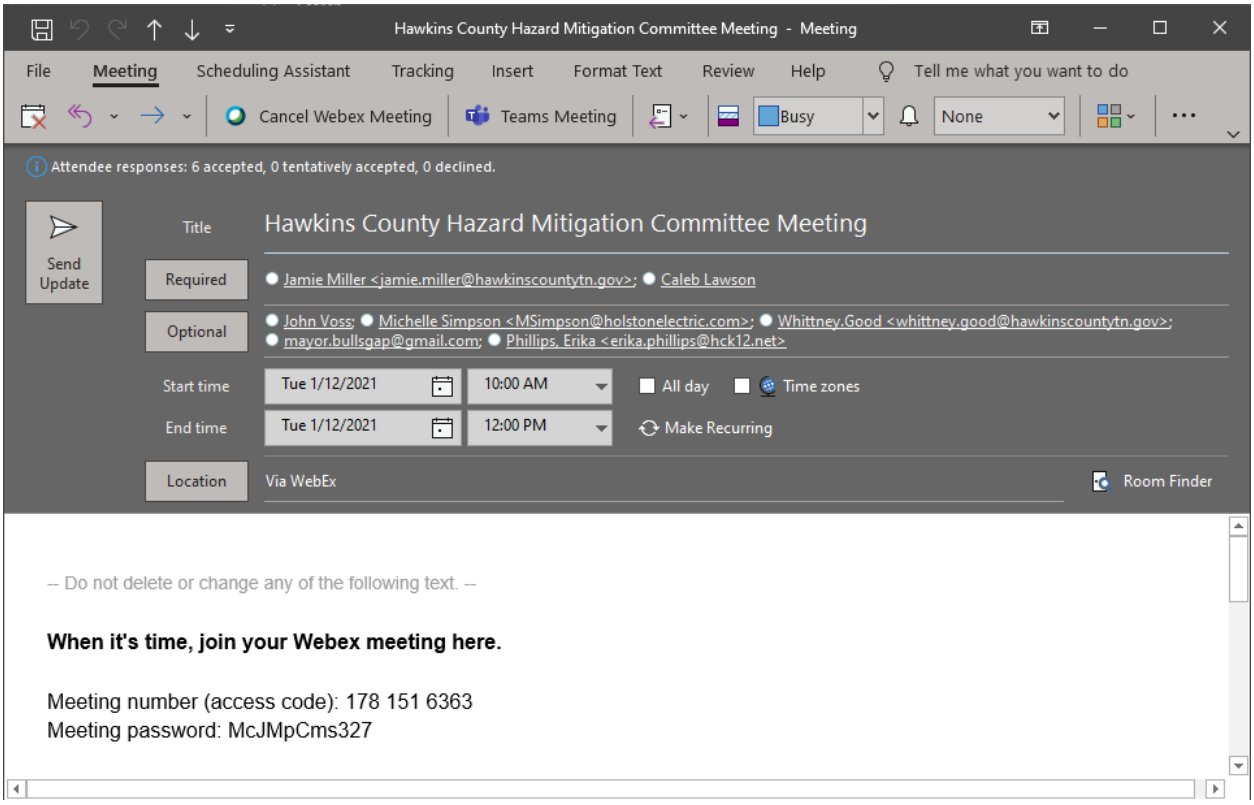
Continued Public Participation

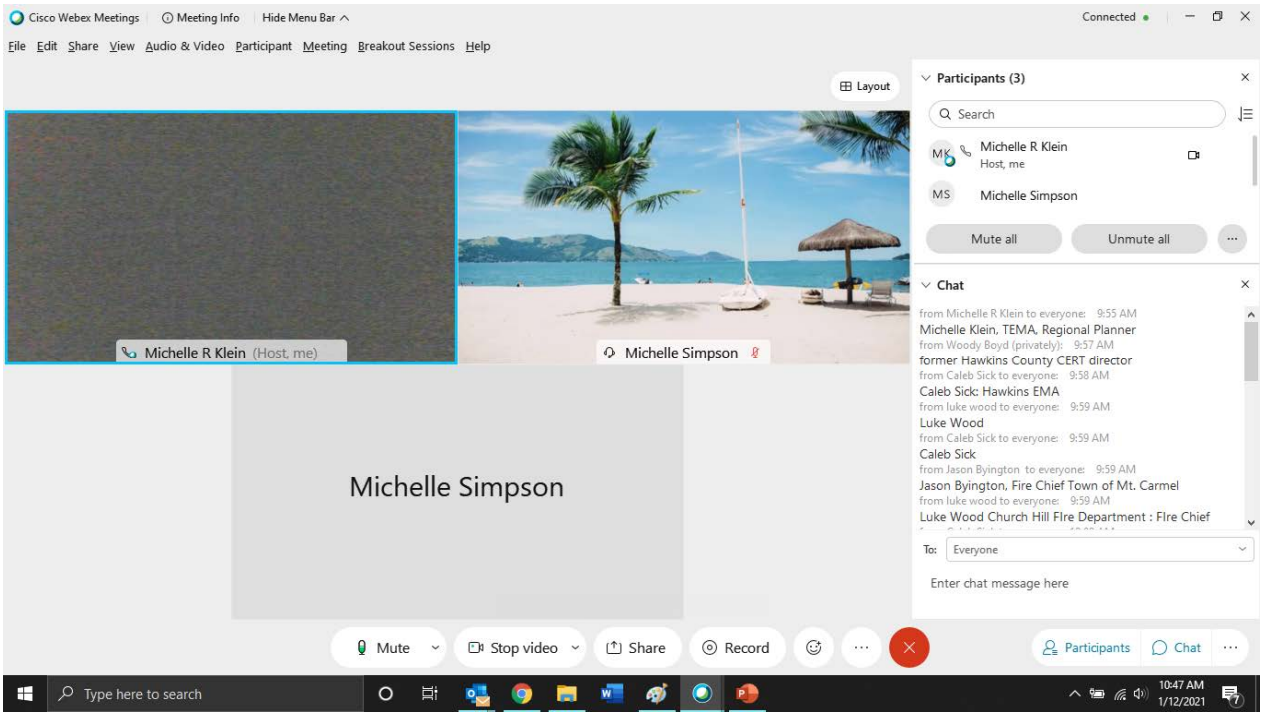
The Hawkins County Mitigation Committee will strive to involve the public in future mitigation activities. This will be accomplished by continuing to post Mitigation Committee Meeting dates in the local newspaper, by attempting to have a public mitigation meeting once a year, by providing public access to copies of the Hawkins County Multi-Jurisdictional 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.

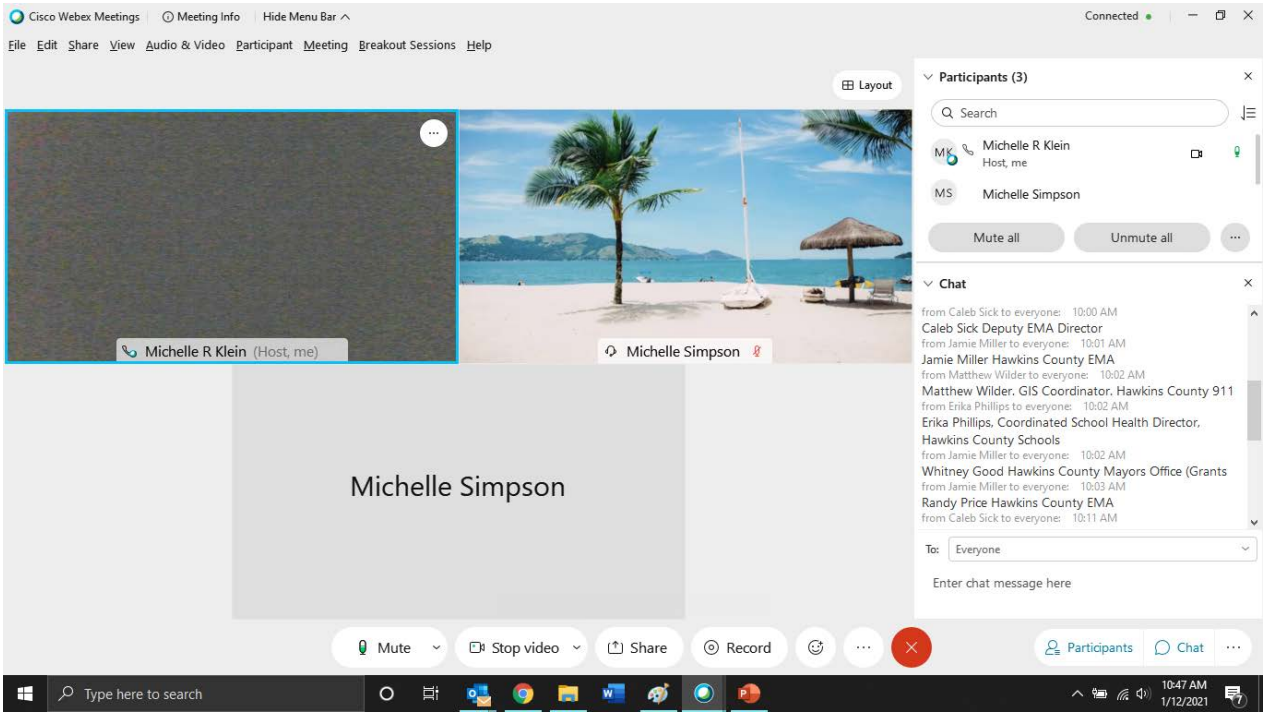
Appendix 1

Attendance Sheet Meeting #1

Since every meeting was held via WebEx, a screenshot was taken of the chat room in order to confirm attendance.




Cisco Webex Meetings
Meeting Info
Hide Menu Bar
Connected
File Edit Share View Audio & Video Participant Meeting Breakout Sessions Help
Layout
Participants (3)
Search
Michelle R Klein
Host, me
Michelle Simpson
Mute all
Unmute all
Chat
from Michelle R Klein to everyone: 9:55 AM
Michelle Klein, TEMA, Regional Planner
from Woody Boyd (privately): 9:57 AM
former Hawkins County CERT director
from Caleb Sick to everyone: 9:58 AM
Caleb Sick: Hawkins EMA
from luke wood to everyone: 9:59 AM
Luke Wood
from Caleb Sick to everyone: 9:59 AM
Caleb Sick
from Jason Byington to everyone: 9:59 AM
Jason Byington, Fire Chief Town of Mt. Carmel
from luke wood to everyone: 9:59 AM
Luke Wood Church Hill Fire Department : Fire Chief
To: Everyone
Enter chat message here
Michelle R Klein (Host, me)
Michelle Simpson
Michelle Simpson
Mute
Stop video
Share
Record
Participants
Chat
Type here to search
10:47 AM
1/12/2021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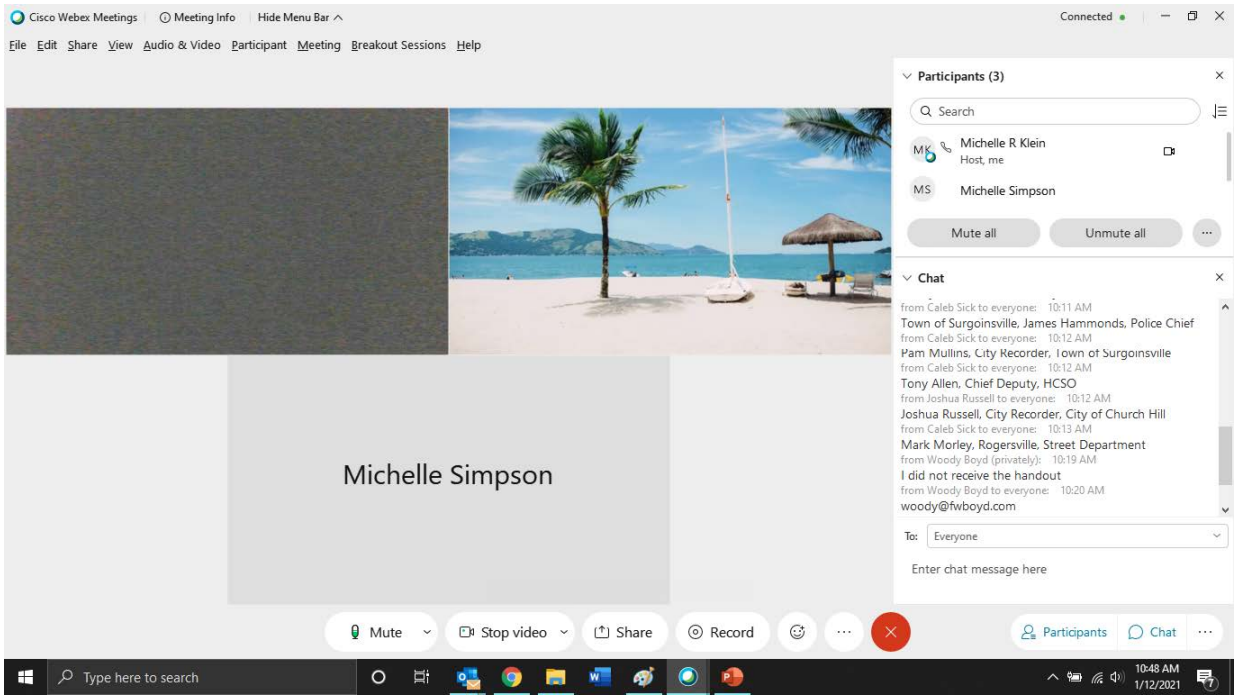
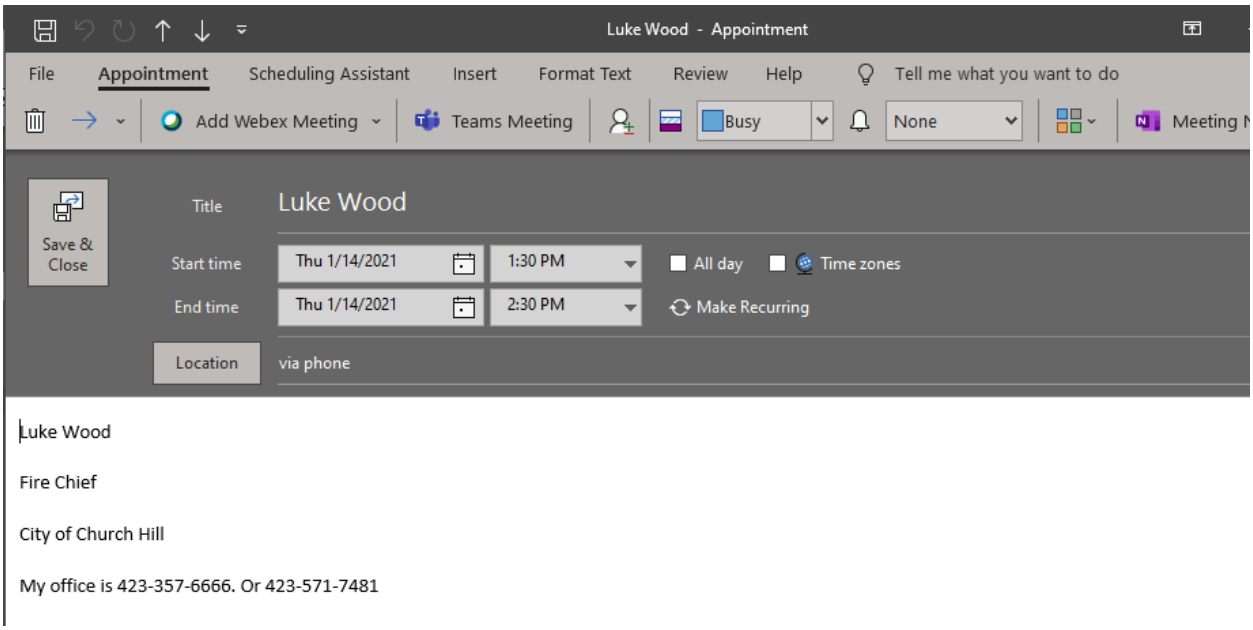
Meeting Info
Hide Menu Bar
Connected
File Edit Share View Audio & Video Participant Meeting Breakout Sessions Help
Layout
Participants (3)
Search
Michelle R Klein
Host, me
Michelle Simpson
Mute all
Unmute all
Chat
from Caleb Sick to everyone: 10:00 AM
Caleb Sick Deputy EMA Director
from Jamie Miller to everyone: 10:01 AM
Jamie Miller Hawkins County EMA
from Matthew Wilder to everyone: 10:02 AM
Matthew Wilder, GIS Coordinator, Hawkins County 911
from Erika Phillips to everyone: 10:02 AM
Erika Phillips, Coordinated School Health Director, Hawkins County Schools
from Jamie Miller to everyone: 10:02 AM
Whitney Good Hawkins County Mayors Office (Grants
from Jamie Miller to everyone: 10:03 AM
Randy Price Hawkins County EMA
from Caleb Sick to everyone: 10:11 AM
To: Everyone
Enter chat message here
Michelle R Klein (Host, me)
Michelle Simpson
Michelle Simpson
Mute
Stop video
Share
Record
Participants
Chat
Type here to search
10:47 AM
1/12/2021

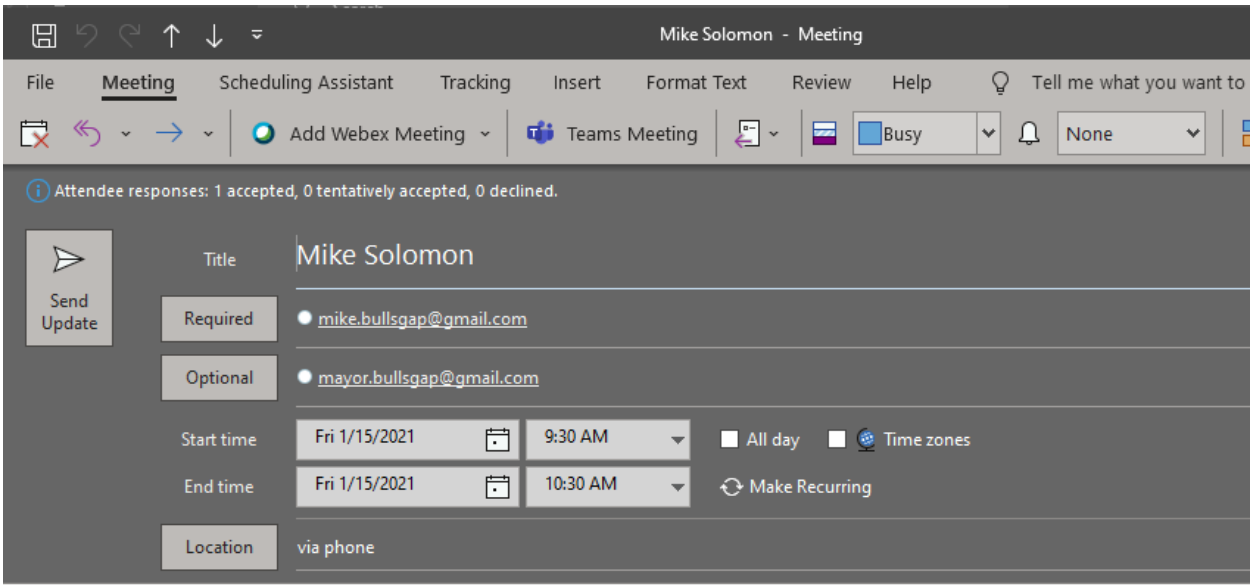

Cisco Webex Meetings
Meeting Info
Hide Menu Bar
Connected
File Edit Share View Audio & Video Participant Meeting Breakout Sessions Help
Participants (3)
Search
Michelle R Klein
Host, me
Michelle Simpson
Mute all
Unmute all
Chat
from Caleb Sick to everyone: 10:11 AM
Town of Surgoinsville, James Hammonds, Police Chief
from Caleb Sick to everyone: 10:12 AM
Pam Mullins, City Recorder, Town of Surgoinsville
from Caleb Sick to everyone: 10:12 AM
Tony Allen, Chief Deputy, HCSO
from Joshua Russell to everyone: 10:12 AM
Joshua Russell, City Recorder, City of Church Hill
from Caleb Sick to everyone: 10:13 AM
Mark Morley, Rogersville, Street Department
from Woody Boyd (privately): 10:19 AM
I did not receive the handout
from Woody Boyd to everyone: 10:20 AM
woody@fwboyd.com
To: Everyone
Enter chat message here
Michelle Simpson
Mute
Stop video
Share
Record
Participants
Chat
Type here to search
10:48 AM
1/12/2021

Appendix 2

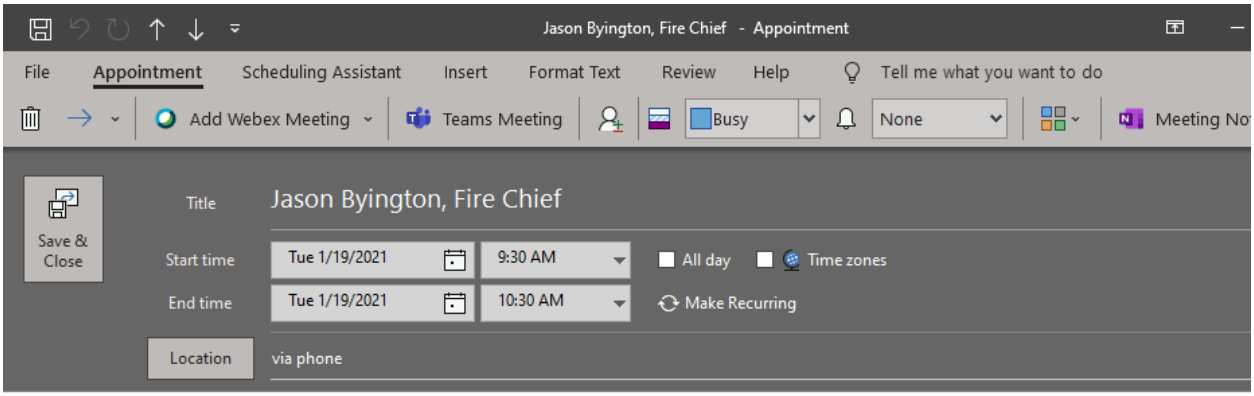
Attendance Sheet Meeting #2

Individual Meetings held with Each Jurisdiction

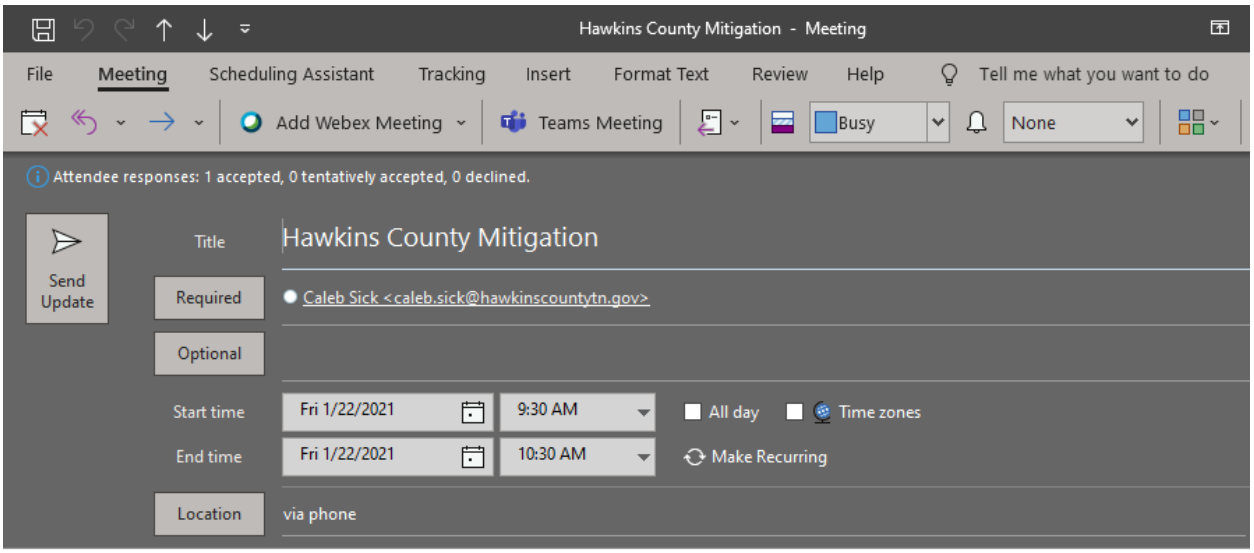


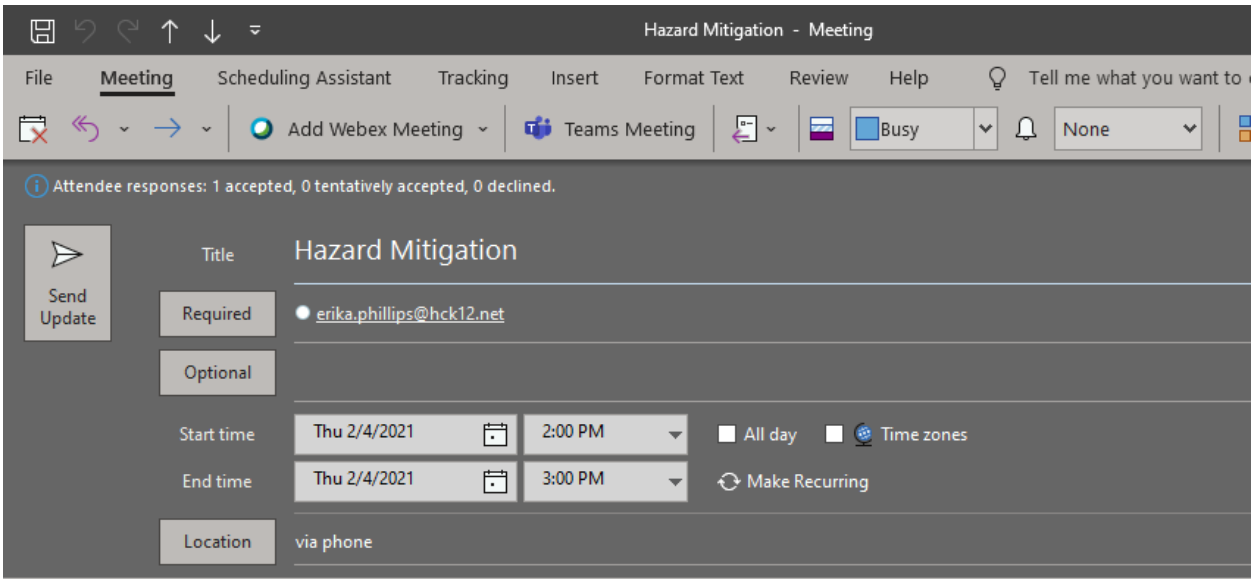


my office # is 423-235-5216,
if necessary my cell is 423-312-4450.
Town of Bulls Gap



423-921-4363 is my cell.





Erika Phillips
Coordinated School Health
Hawkins County Schools
200 North Depot Street
Rogersville, TN 37857
423.272.7629 x 2017

<u>One on One Meeting notes:</u>

Luke Wood – Project Discussion on January 14, 2021
Fire Chief
City of Church Hill

- Generator for 2 fire stations (station 1 would cover city/county building; could possibly combine generator to include PD building across the street); fire station 2 also includes EMS which is also being considered as an EOC
- Public Works building generator
- City Building for senior citizens generator and make safe shelter for tornadic events
- 2 subdivisions in heavy wooded areas; education program for wildfires
- Holston River floods around city limits. Flood gauges.

Mike Solomon on January 15, 2021
my office # is 423-235-5216,
if necessary my cell is 423-312-4450.
Town of Bulls Gap

- Public notification system/ an alert system on all hazards

Jason Byington, Fire Chief on January 19, 2021

Mount Carmel

- Generator power for fire department
- Generator for public works
- Generator for City Hall (also houses Town emergency operations center)
- Public Education
- Independence Ave. creek (Arnott Branch creek) flooding; prevents emergency services from getting to homes; traverses entire town
- ~~Public notification system~~

Hawkins County January 22, 2021
Jamie Miller Hawkins County EMA Director Caleb Sick Hawkins County EMA Ops Leader Randy Price Hawkins County EMA Ops officer Whitney Good Hawkins County Mayors Office Matthew Wilder Hawkins County 911 GIS

- Jamie Miller EMA Director, Caleb
- Detection devices for landslides;
- Impact and engineering study for landslides
- Wide scale landslide mitigation
- Contact Army Corps of Engineers for landslide issues (Michelle)
- Generator for 911 repeater site
- Sheriff's office generator
- Generator for 2 fire stations (station 1 would cover city/county building; could possibly combine generator to include PD building across the street); fire station 2 also includes EMS which is also being considered as an EOC
- Harden the facility for 911 and EOC
- Public Education for all hazards for all communities
- Improve building codes for all hazards
- Big Elm rd flooding

Erika Phillips February 4, 2021
Coordinated School Health
Hawkins County Schools

Generators for the following schools in this order of priority:

- Clinch School
- Cherokee High/ Volunteer High (replace non-functioning generators)
- Bulls Gap School
- Surgoinsville Middle School
- Church Hill Intermediate, Church Hill Middle, Hawkins Elementary, Mooresburg Elementary, Rogersville Middle
-

Flooding:

- Church Hill Middle School basement flooding issues (holds critical equipment).

- Roads most often closed during flooding (prohibiting bus travel) include: Highway 113, Highway 70, Highway 66, Fisher's Creek Road, Sensabaugh Tunnel, Caney Valley Road, Blevins Road, Big Elm Road, Choptack Road, Mountain View Road

Hawkins Elementary window replacement due to high wind impacts.

Mark Morley February 18, 2021
2:00 pm
Rogersville Street Department

- No projects

Chief James Hammonds
Surgoinsville Police Department
February 23, 2021; 10:00 am

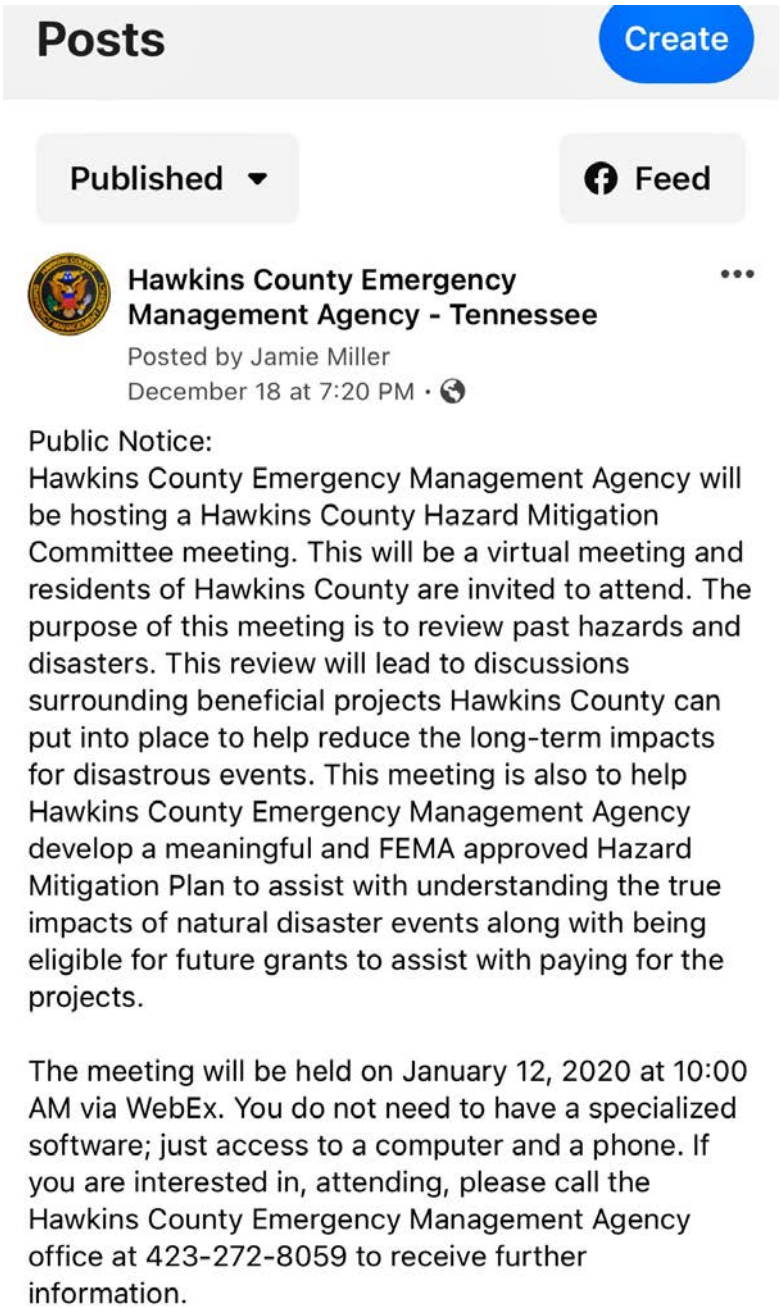
- Generator for Police Headquarters

Nancy Barker
Executive Director
Rogersville/Hawkins County
Chamber of Commerce
April 6, 2021; 10:00 am

- Crockett Springs run the length of downtown; Church St. Flooding – Current activity within the City seems to be working which includes blocking the road. The option to mitigate is always an option for Rogersville.
- Landslide sensors near the Woodlawn Apartments
- Generator for Police and Fire Department building (rogersville)
- TDOT not cleaning out ditches anymore on I-66 within the County with a portion in the City
- Protection for historical buildings
- AFG Road mudslide (County)

Appendix 3

Public Notices



CALENDAR

ROGERSVILLE CITY OFFICES WILL BE CLOSED ON DECEMBER 23RD, 24TH, AND THE 25TH FOR CHRISTMAS. The garbage pickup will be as follows Monday December 21st, Tuesday December 22nd, and Wednesday December 23rd will be picked up on Monday December 21st. The garbage pickup for Thursday December 24th, and Friday December 25th, will be on Tuesday December 22nd.

HAWKINS COUNTY MAYOR'S OFFICE will be closed December 23, 24, & 25.

HAWKINS COUNTY CONVENIENCE CENTERS will be closing at 12 noon on December 24 and closed on December 25 & January 1.

HAWKINS COUNTY RECYCLING CENTER WILL BE CLOSED ON DECEMBER 23, 24, 25, & JANUARY 1.

DECEMBER 30

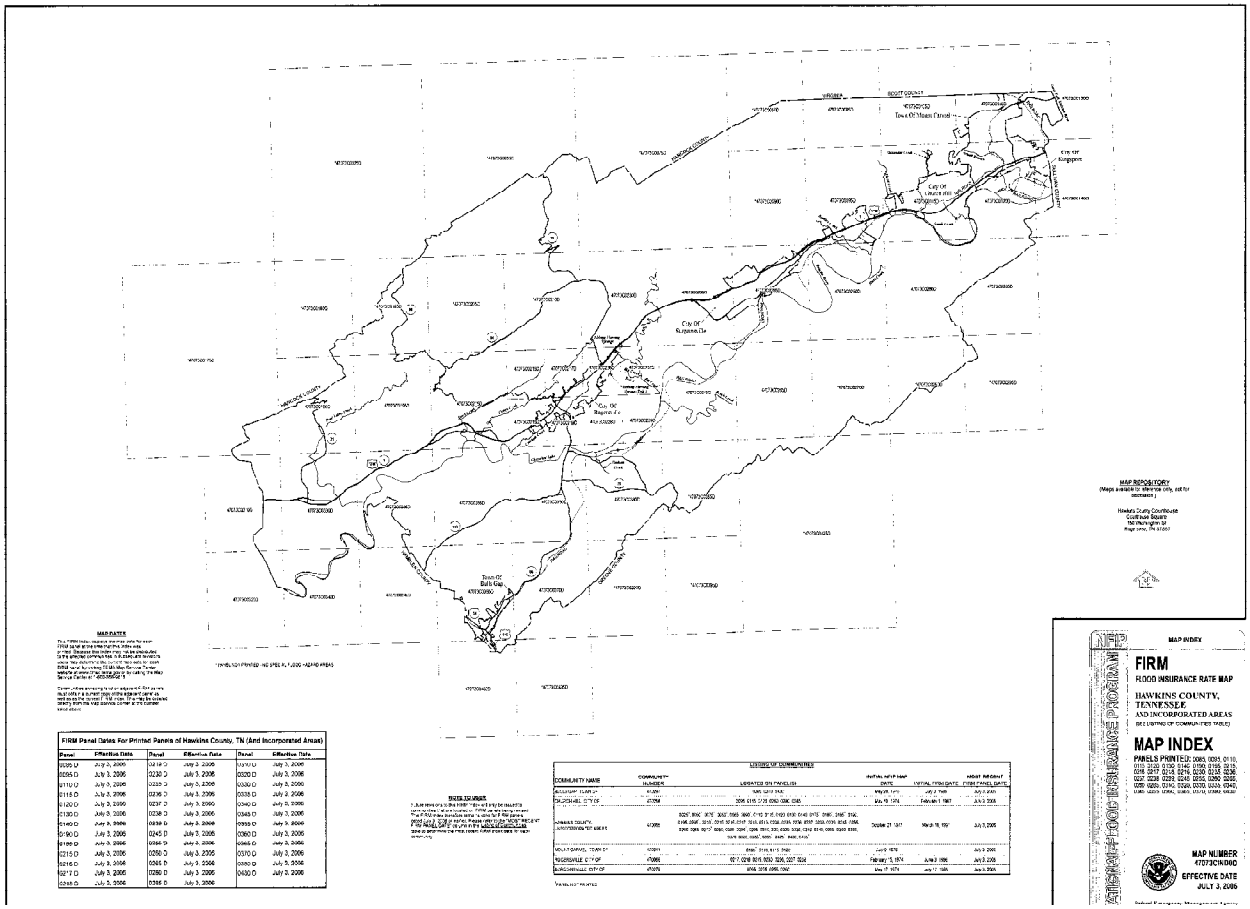
HAWKINS CO. PERSONNEL COMMITTEE MEETING WILL BE HELD AT 2:30 p.m. in the Administration Building

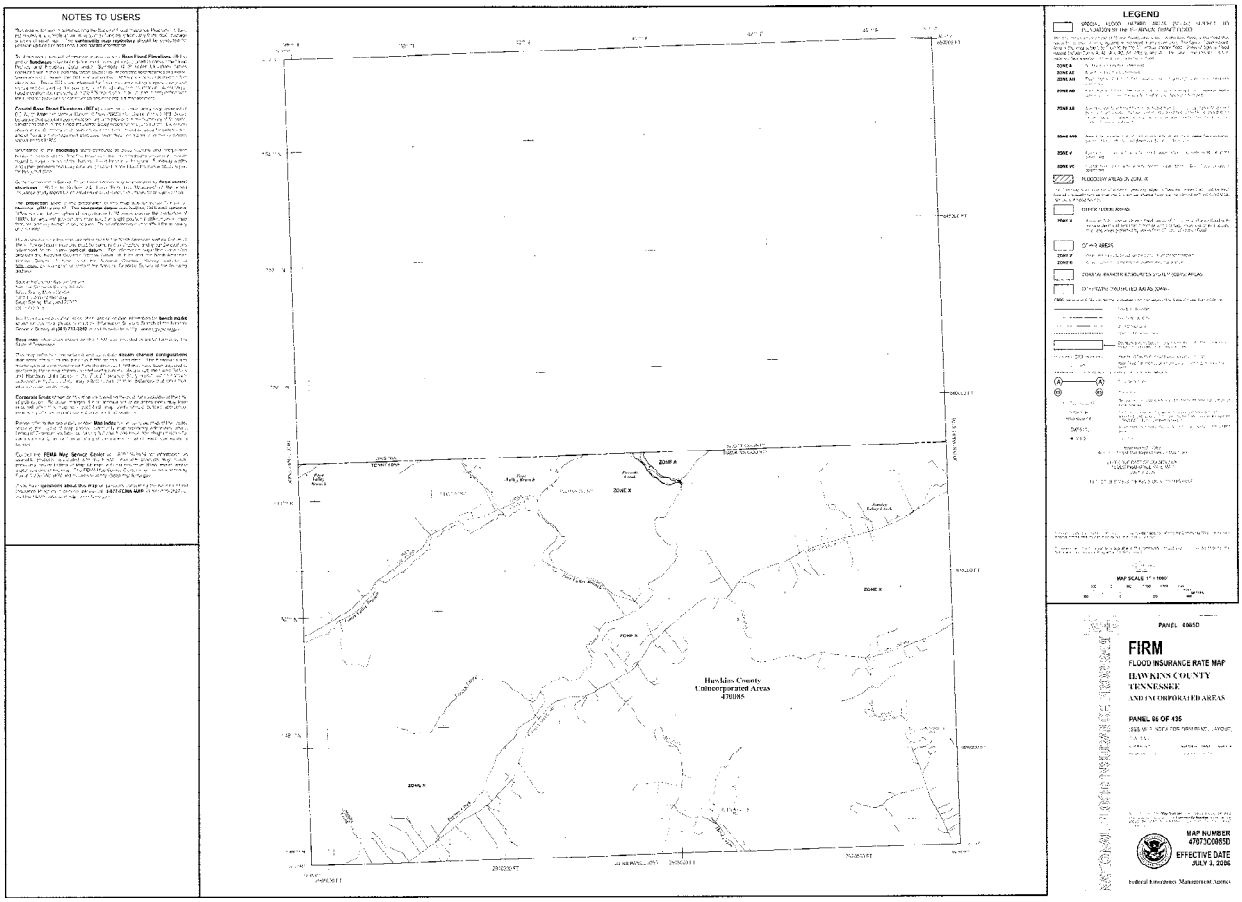
JANUARY 12, 2021

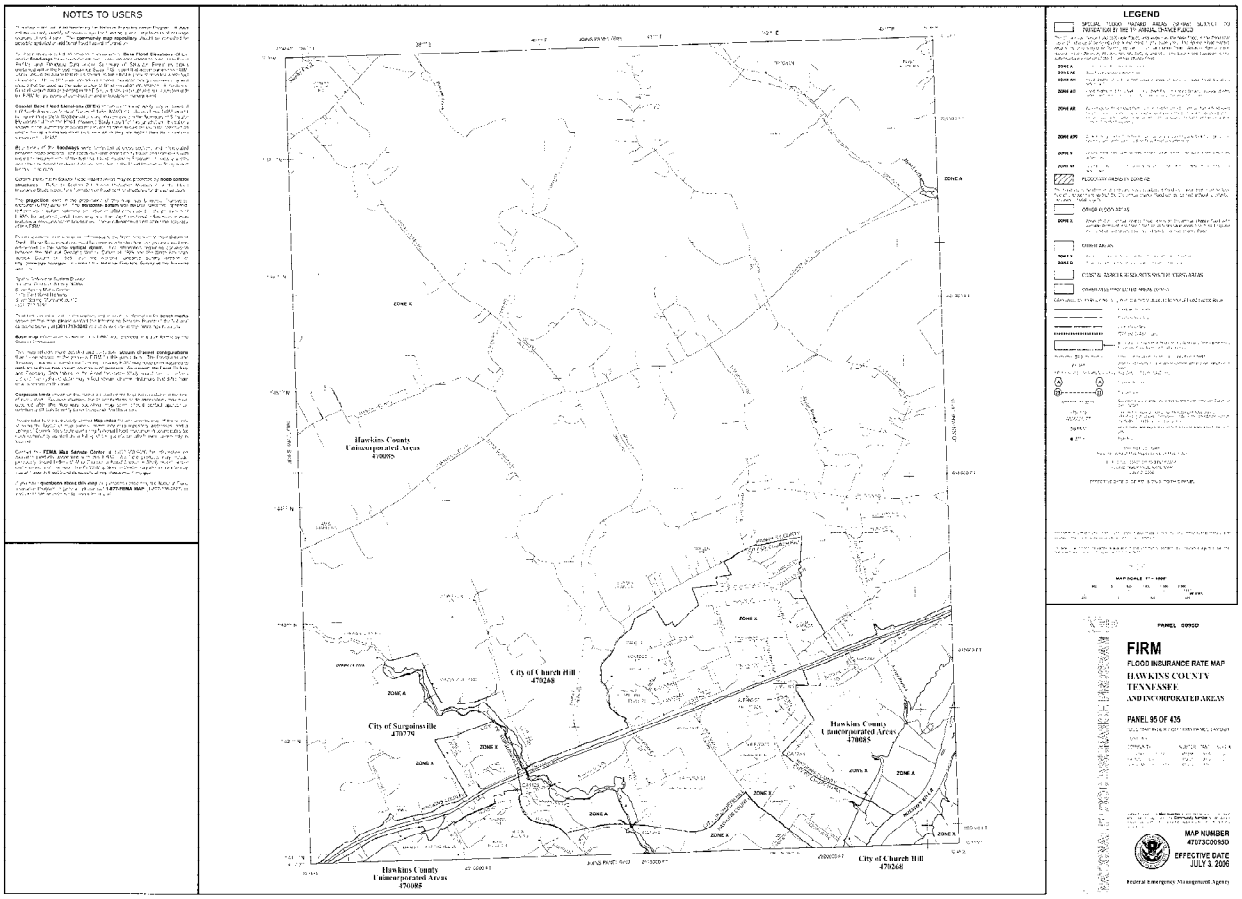
HAWKINS COUNTY EMERGENCY MANAGEMENT AGENCY will be hosting a Hawkins County Hazard Mitigation Committee meeting. This will be a virtual meeting and residents of Hawkins County are invited to attend. The purpose of this meeting is to review past hazards and disasters. This review will lead to discussions surrounding beneficial projects Hawkins County can put into place to help reduce the long-term impacts for disastrous events. This meeting is also to help Hawkins County Emergency Management Agency develop a meaningful and FEMA approved Hazard Mitigation Plan to assist with understanding the true impacts of natural disaster events along with being eligible for future grants to assist with paying for the projects. The meeting will be held on January 12, 2021 at 10:00 AM via WebEx. You do not need to have a specialized software; just access to a computer and a phone. If you are interested in, attending, please call the Hawkins County Emergency Management Agency office at 423-272-8059 to receive further information.

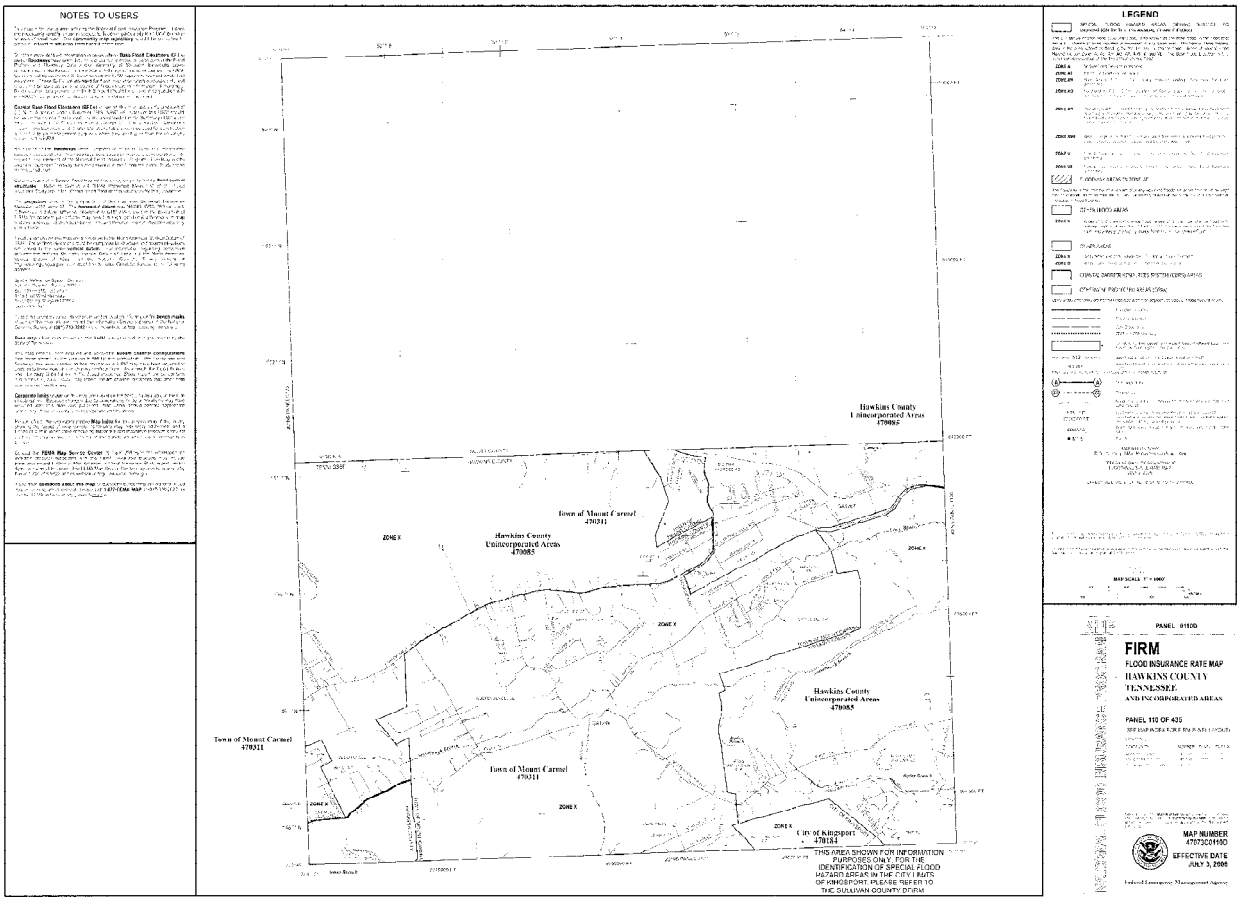
Appendix 4

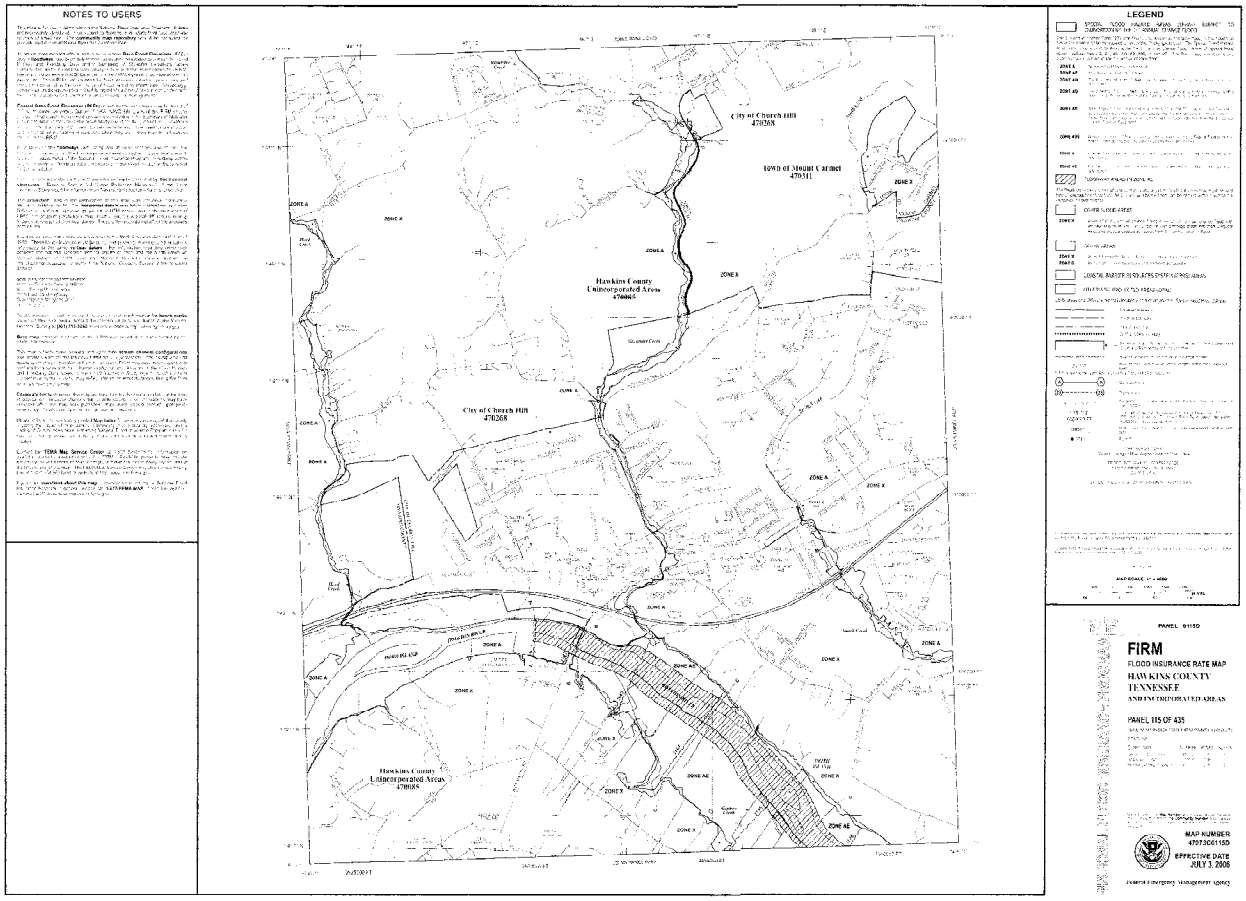
Firm Panels
Flood Insurance Rate Maps for Hawkins County




NOTES TO USERS
LEGEND
ZONE A
ZONE X
Hawkins County
Unincorporated Areas
470189
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 86 OF 435
MAP NUMBER
47073C0086D
EFFECTIVE DATE
JULY 3, 2006


NOTES TO USERS
LEGEND
Hawkins County
Unincorporated Areas
470095
City of Church Hill
470268
City of Surgoinsville
470376
Hawkins County
Unincorporated Areas
470095
City of Church Hill
470268
Hawkins County
Unincorporated Areas
470095
PANEL 0095D
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 95 OF 435
MAP NUMBER
47073C0095D
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency


NOTES TO USERS
LEGEND
Hawkins County
Unincorporated Areas
470085
Town of Mount Carmel
470311
ZONE X
City of Kingsport
470184
THIS AREA SHOWN FOR INFORMATION PURPOSES ONLY. FOR THE IDENTIFICATION OF SPECIAL FLOOD HAZARD AREAS IN THE CITY LIMITS OF KINGSPORT, PLEASE REFER TO THE SULLIVAN COUNTY DFIRM
PANEL 0110D
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 110 OF 435
MAP NUMBER
47073C0110D
EFFECTIVE DATE
JULY 3, 2006


NOTES TO USERS
LEGEND
City of Church Hill
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Town of Mount Carmel
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Hawkins County
Unincorporated Areas
470085
City of Church Hill
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Hawkins County
Unincorporated Areas
470085
PANEL 0115D
FIRM
FLOOD INSURANCE RATE MAP
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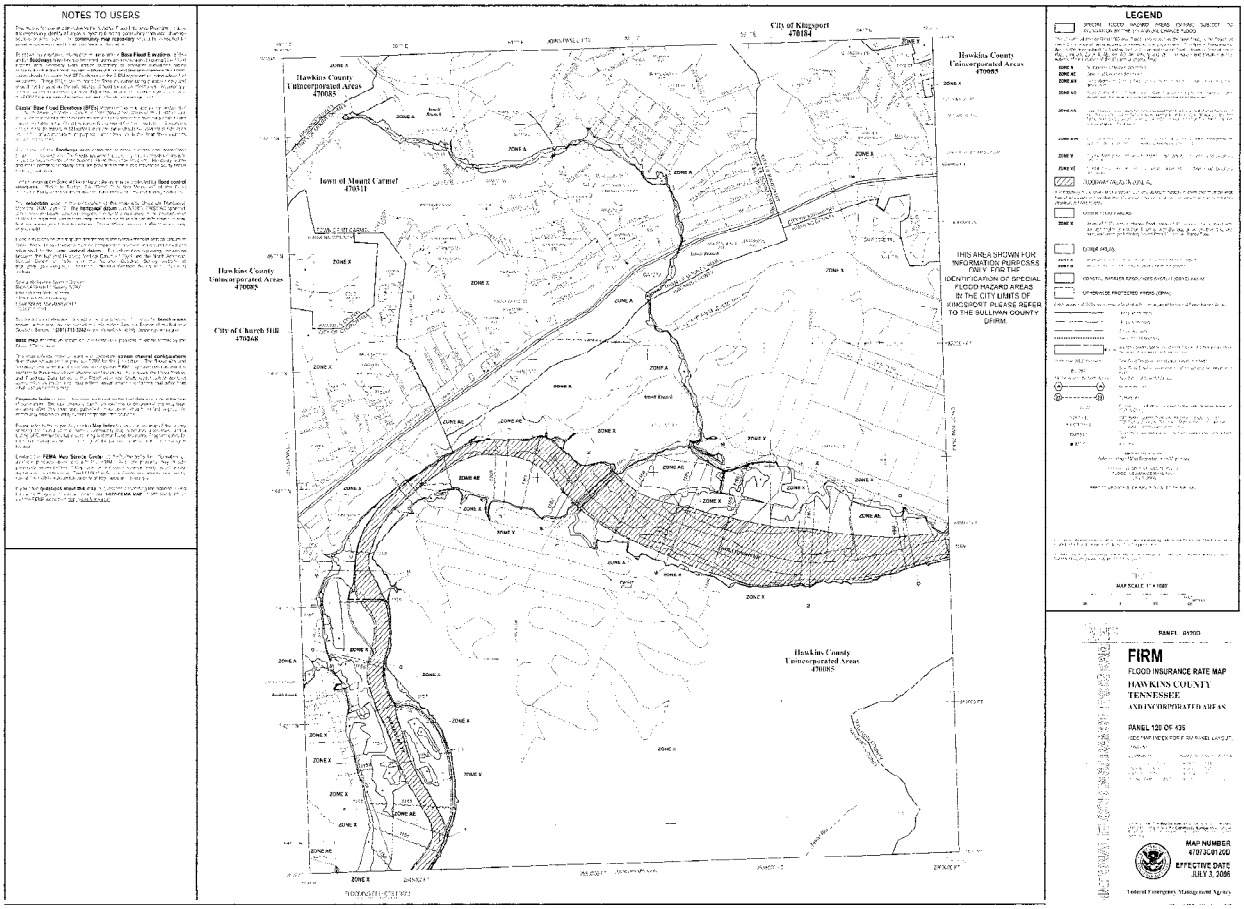
TENNESSEE
AND INCORPORATED AREAS
PANEL 115 OF 435
MAP NUMBER
47073C0115D
EFFECTIVE DATE
JULY 3, 2006


NOTES TO USERS
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Unincorporated Areas
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Town of Mount Carmel
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City of Church Hill
470268
THIS AREA SHOWN FOR INFORMATION PURPOSES ONLY FOR THE IDENTIFICATION OF SPECIAL FLOOD HAZARD AREAS IN THE CITY LIMITS OF KINGSPORT PLEASE REFER TO THE SULLIVAN COUNTY DFIRM.
LEGEND
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
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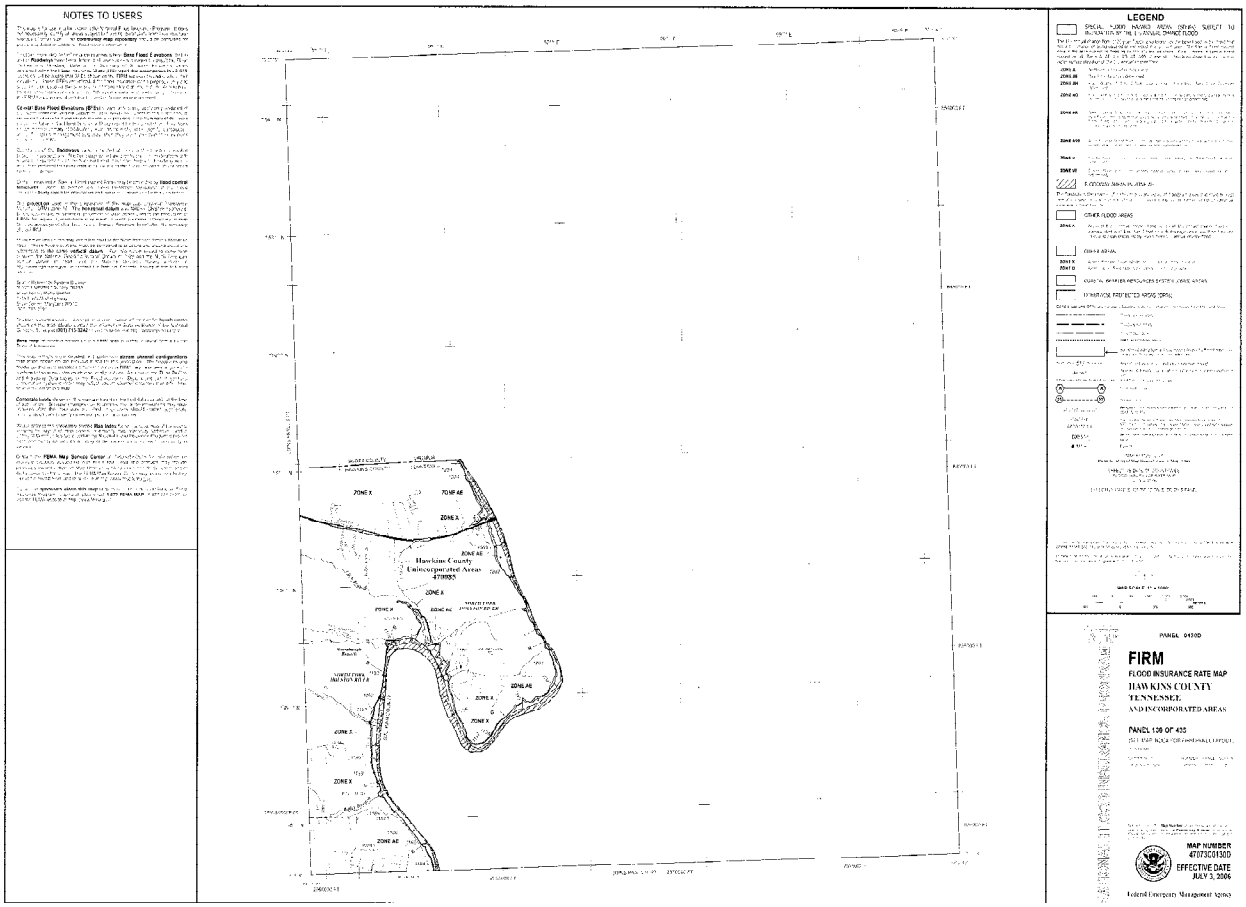
MAP NUMBER
47073C0120C
EFFECTIVE DATE
JULY 3, 2006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Unincorporated Areas
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HAWKINS COUNTY
TENNESSEE
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PANEL 430 OF 450
MAP NUMBER
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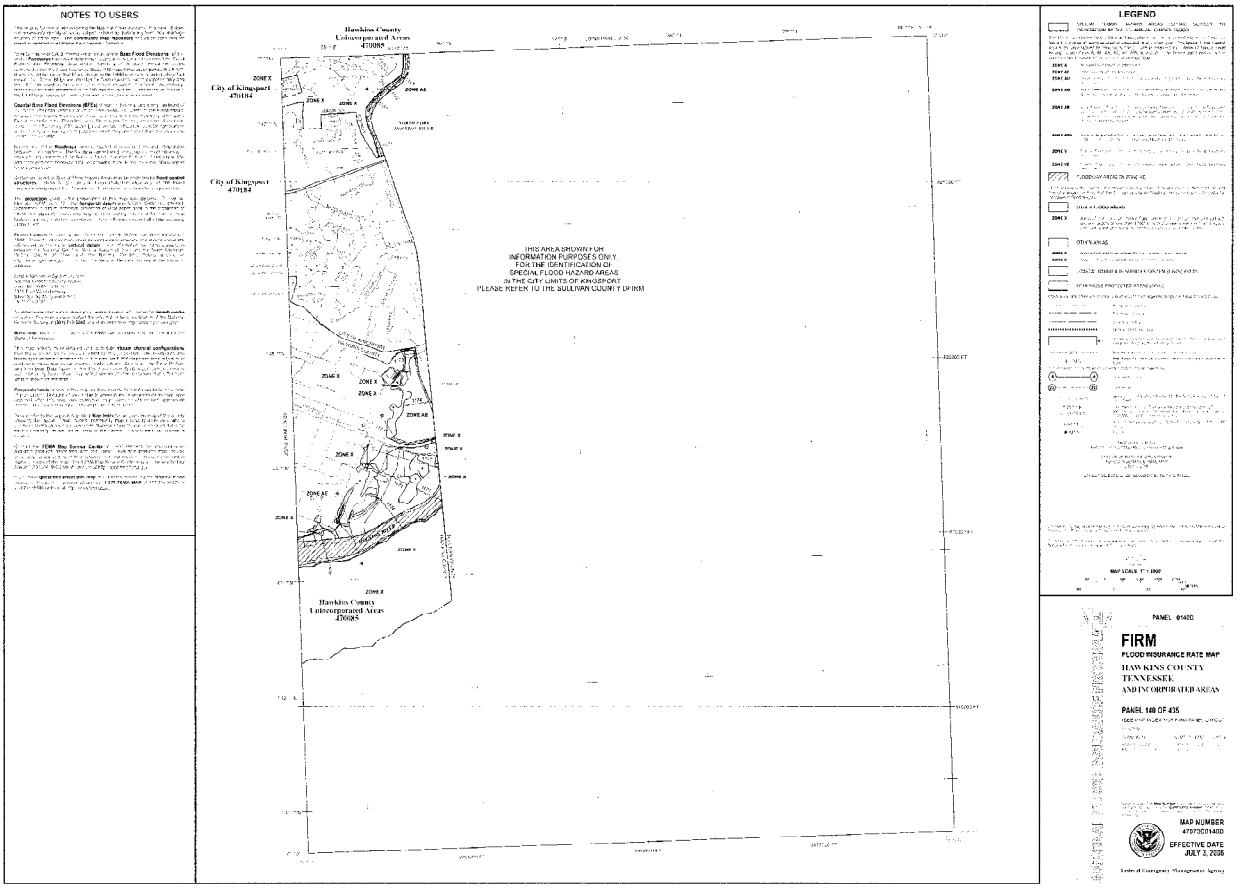
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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City of Kingsport
470184
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ZONE AE
ZONE A
ZONE X
ZONE AE
ZONE X
ZONE AE
ZONE X
ZONE X
THIS AREA SHOWN FOR
INFORMATION PURPOSES ONLY
FOR THE IDENTIFICATION OF
SPECIAL FLOOD HAZARD AREAS
IN THE CITY LIMITS OF KINGSPORT
PLEASE REFER TO THE SULLIVAN COUNTY DFIRM
Hawkins County
Unincorporated Areas
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FLOOD INSURANCE RATE MAP
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TENNESSEE
AND INCORPORATED AREAS
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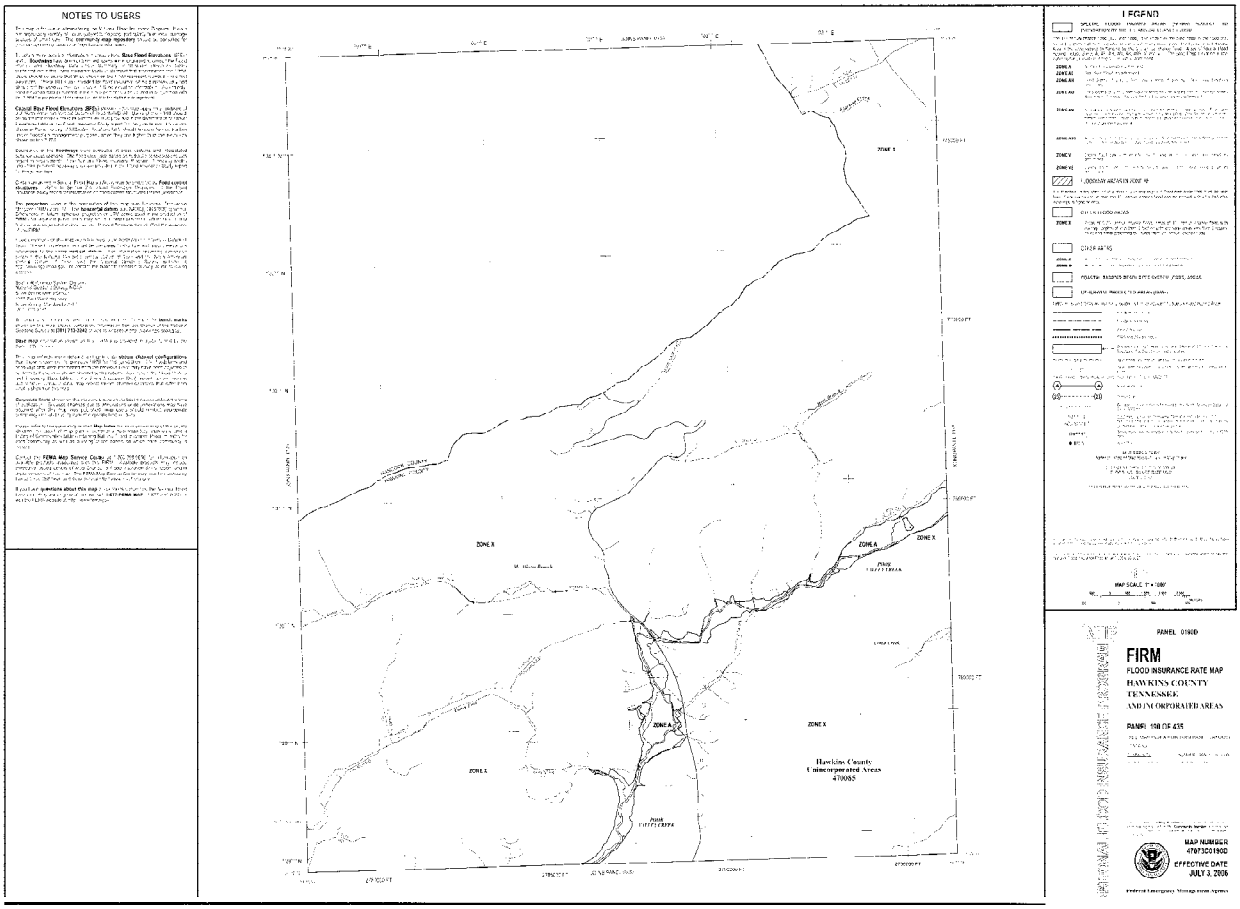
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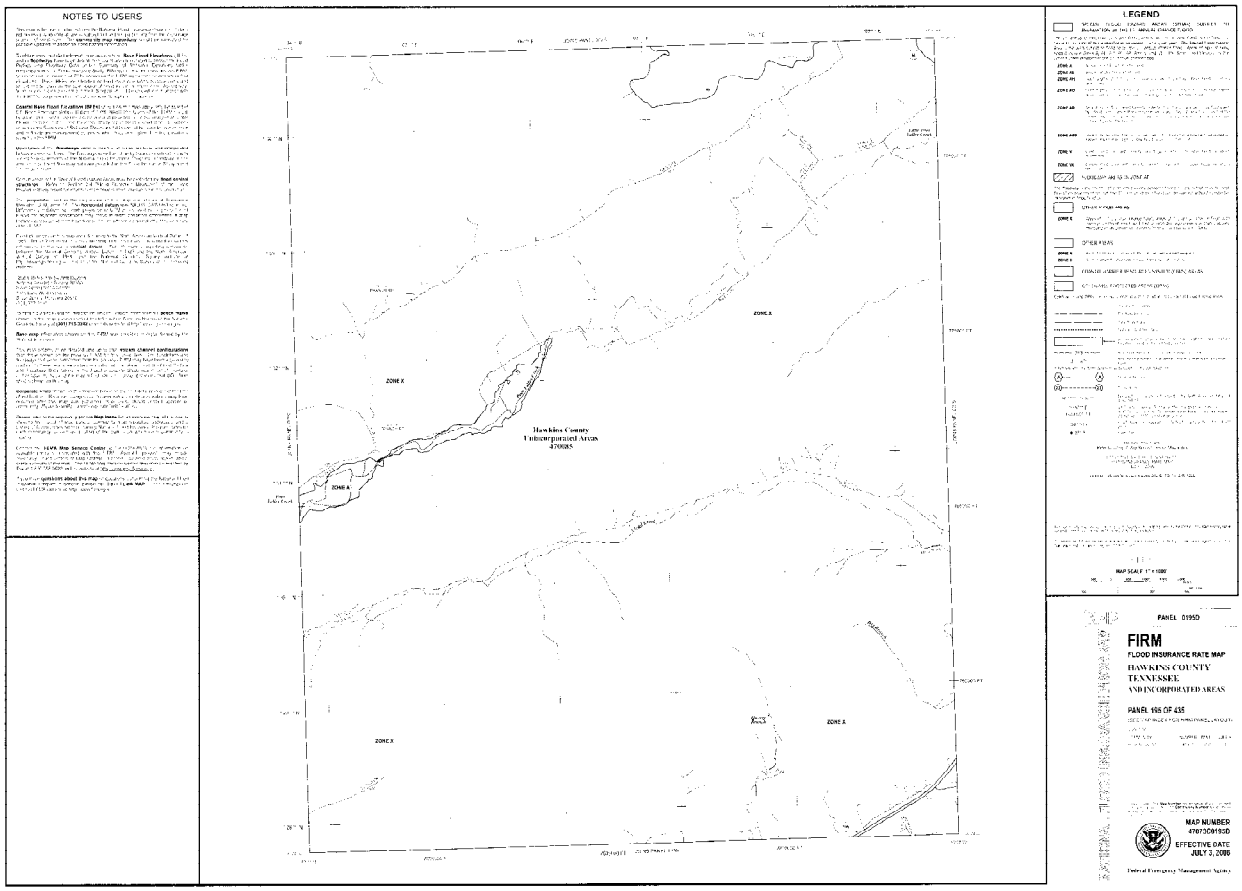
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AND INCORPORATED AREAS
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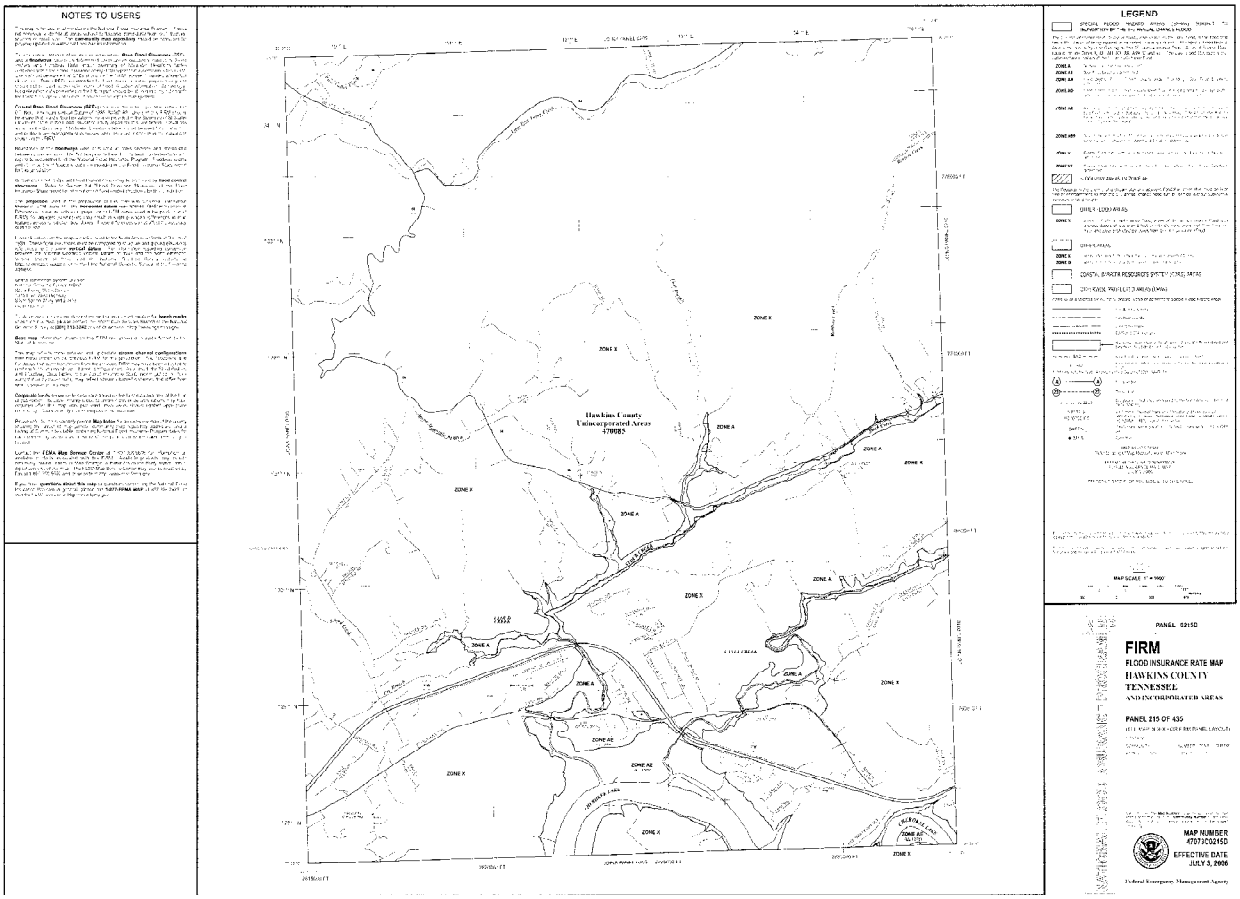
EFFECTIVE DATE
JULY 2, 2009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AND INCORPORATED AREAS
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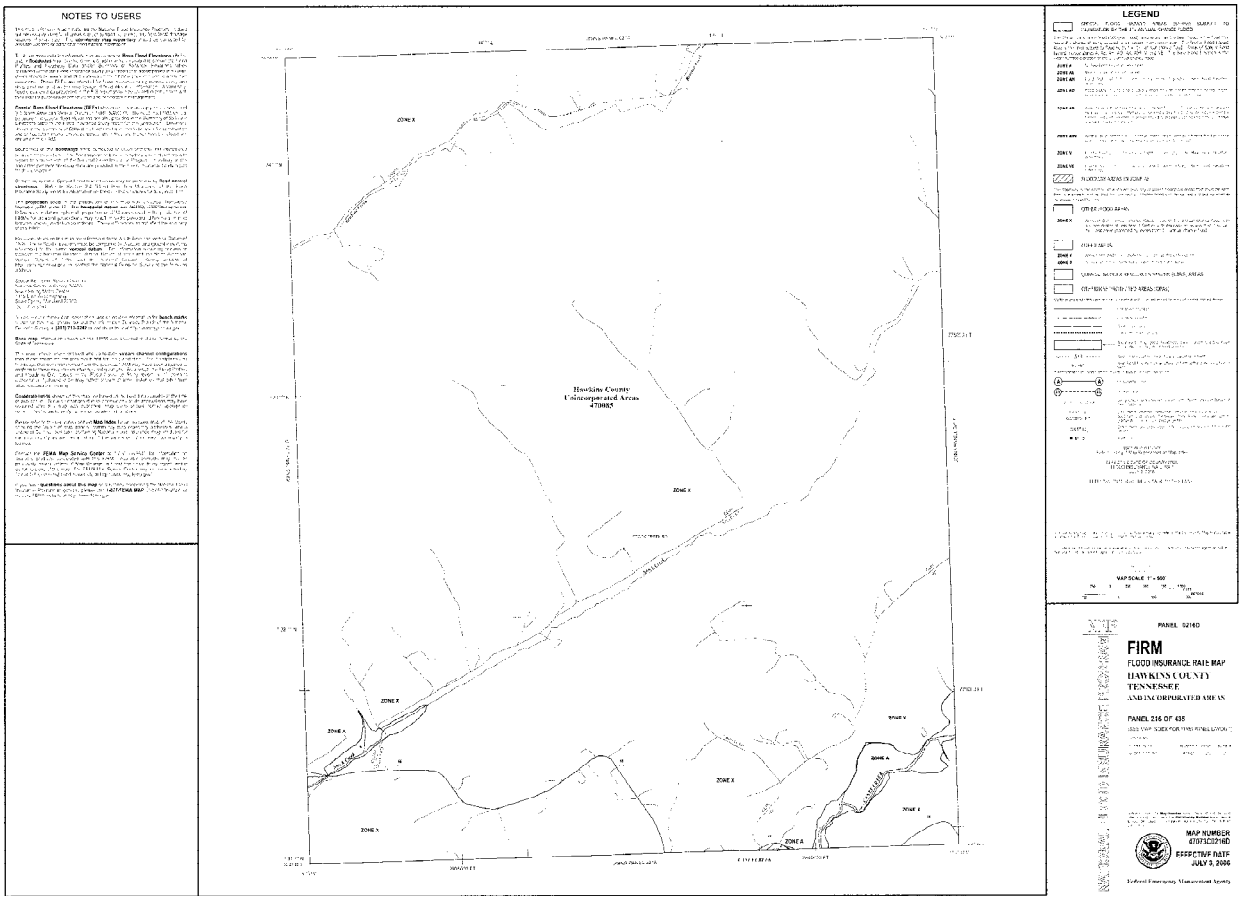
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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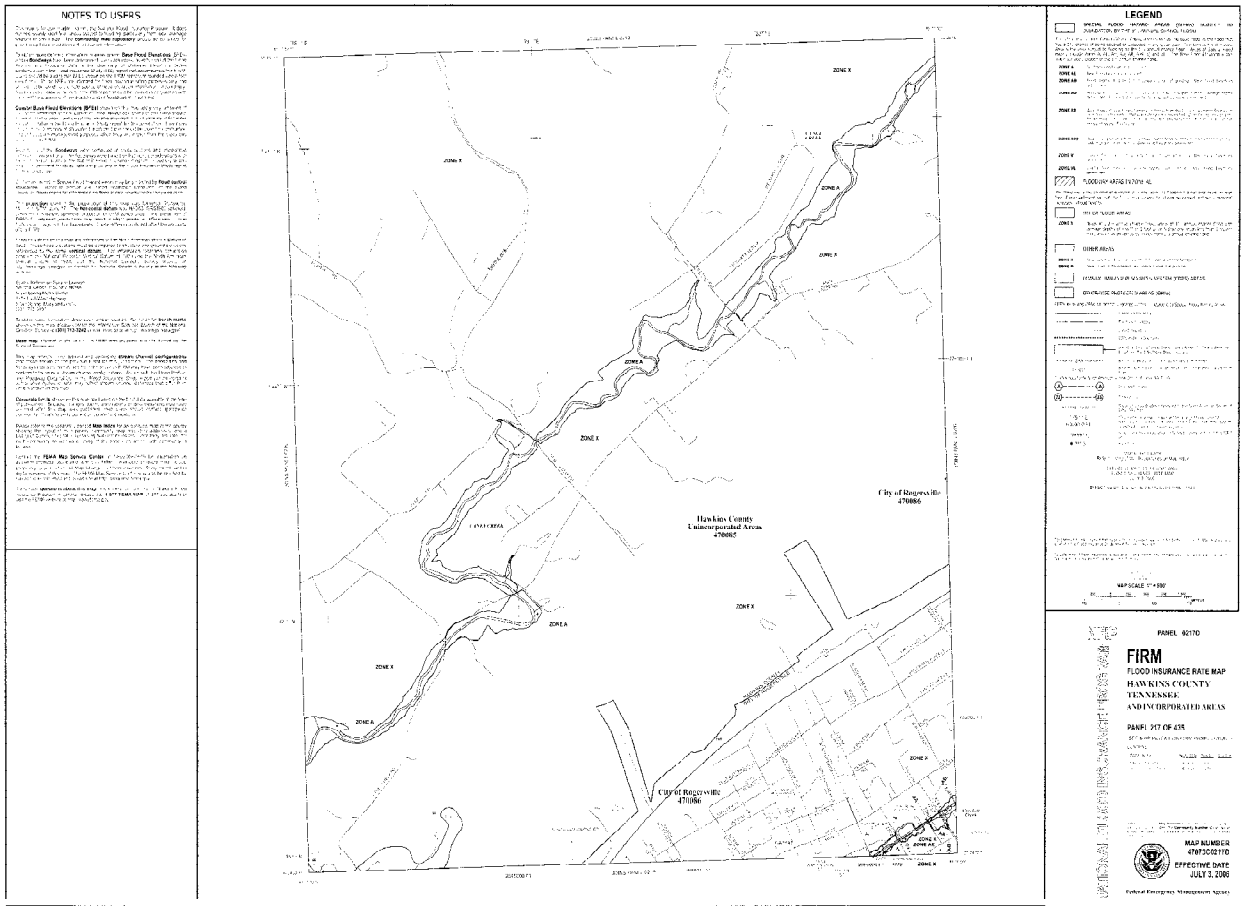
TENNESSEE
AND INCORPORATED AREAS
PANEL 216 OF 435
MAP NUMBER
EFFECTIVE DATE
JULY 3, 2006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City of Rogersville
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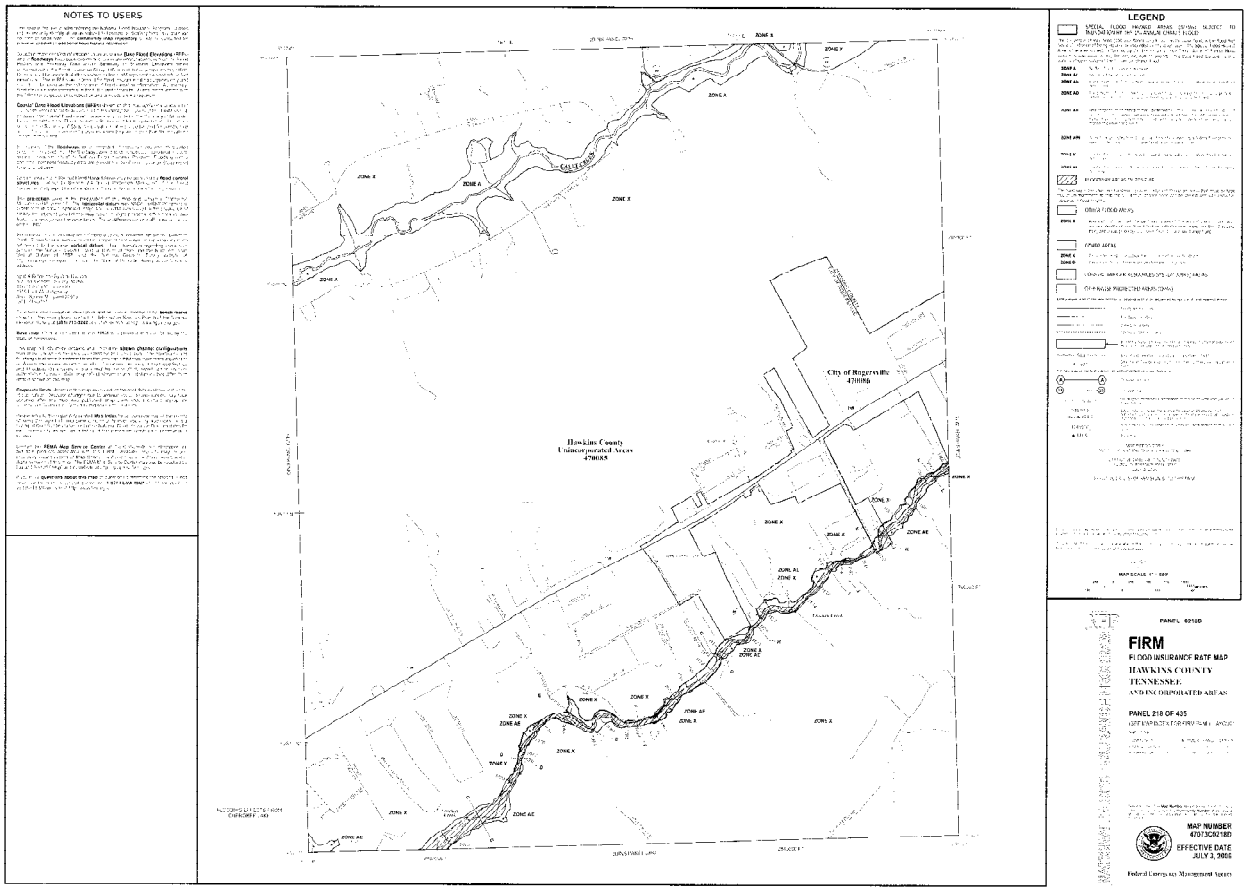
TENNESSEE
AND INCORPORATED AREAS
PANEL 217 OF 439
MAP NUMBER
47073C0217D
EFFECTIVE DATE
JULY 3, 2006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ZONE X
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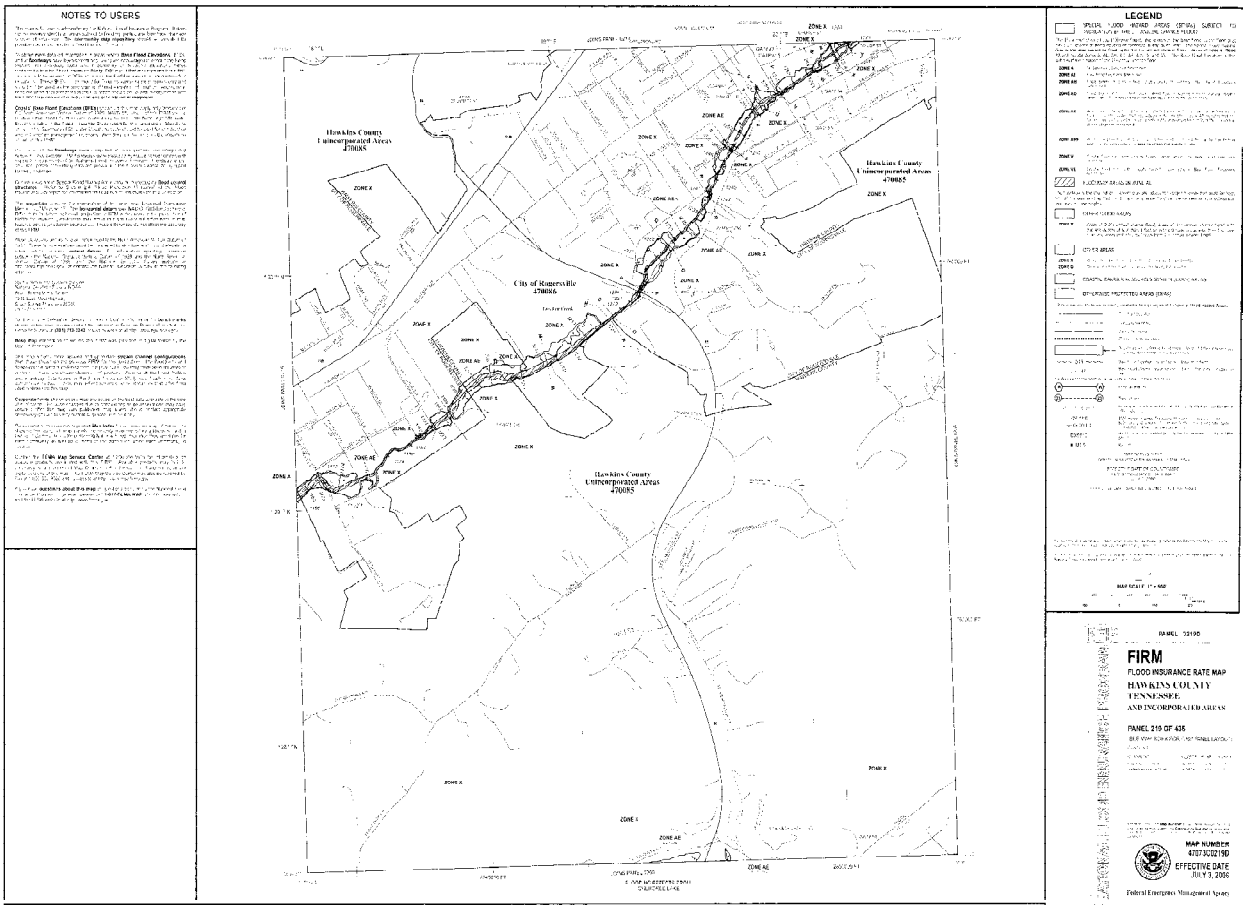
EFFECTIVE DATE
JULY 3, 2008
Federal Emergency Management Agency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Unincorporated Areas
470085
ZONE X
ZONE AE
ZONE A
ZONE AH
ZONE AO
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MAP NUMBER
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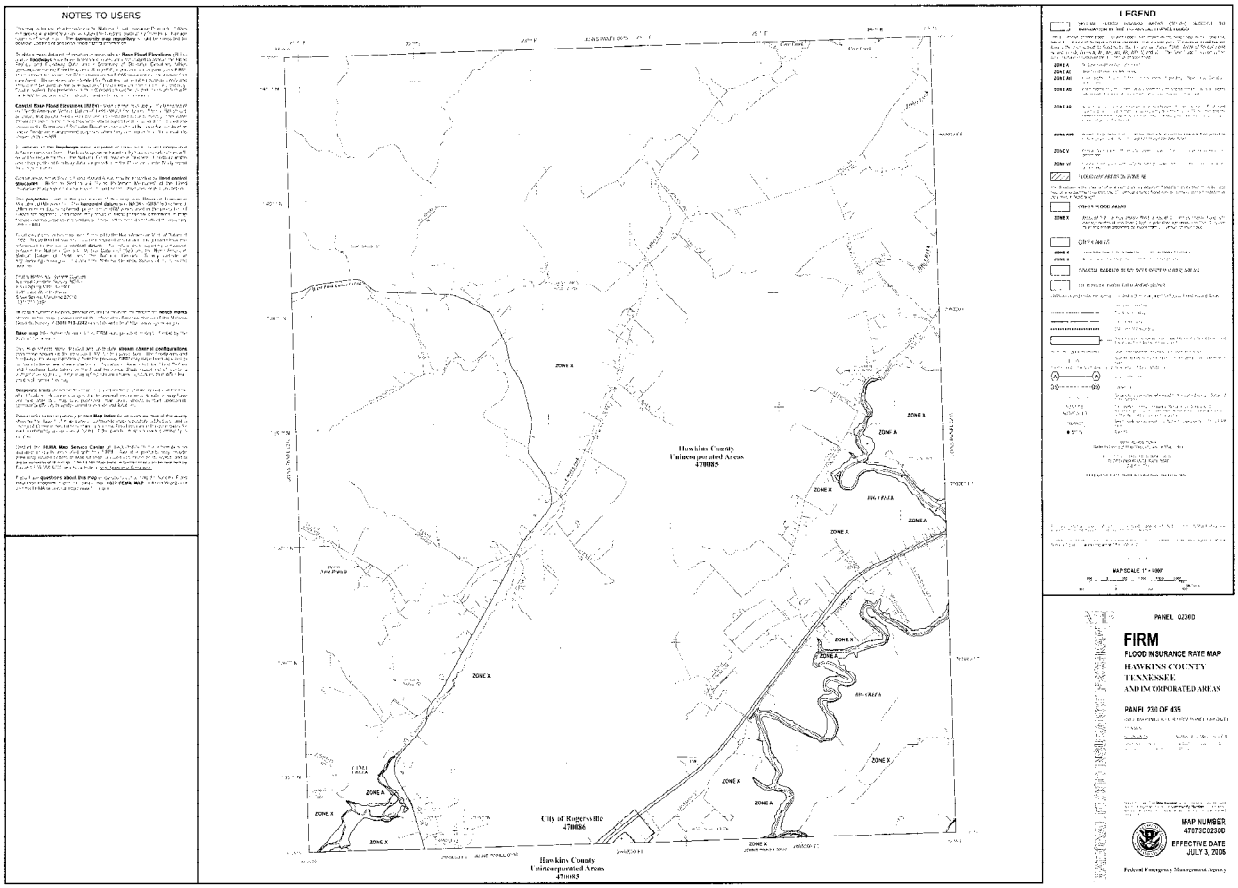
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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Hawkins County
Unincorporated Areas
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ZONE A
PANEL 0230D
FIRM
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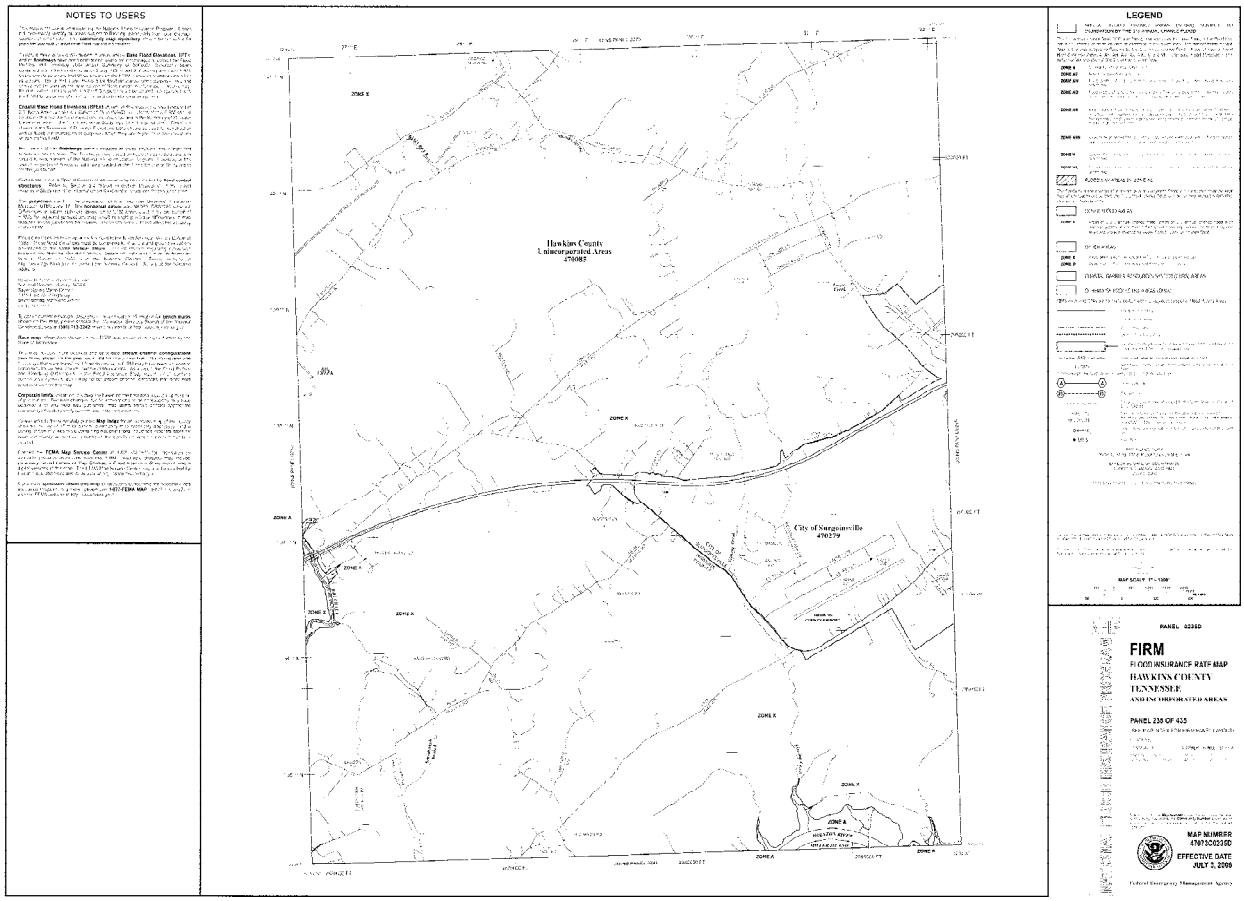
TENNESSEE
AND INCORPORATED AREAS
PANEL 230 OF 455
MAP NUMBER
47073C0230D
EFFECTIVE DATE
JULY 3, 2006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ZONE A
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TENNESSEE
AND INCORPORATED AREAS
PANEL 235 OF 405
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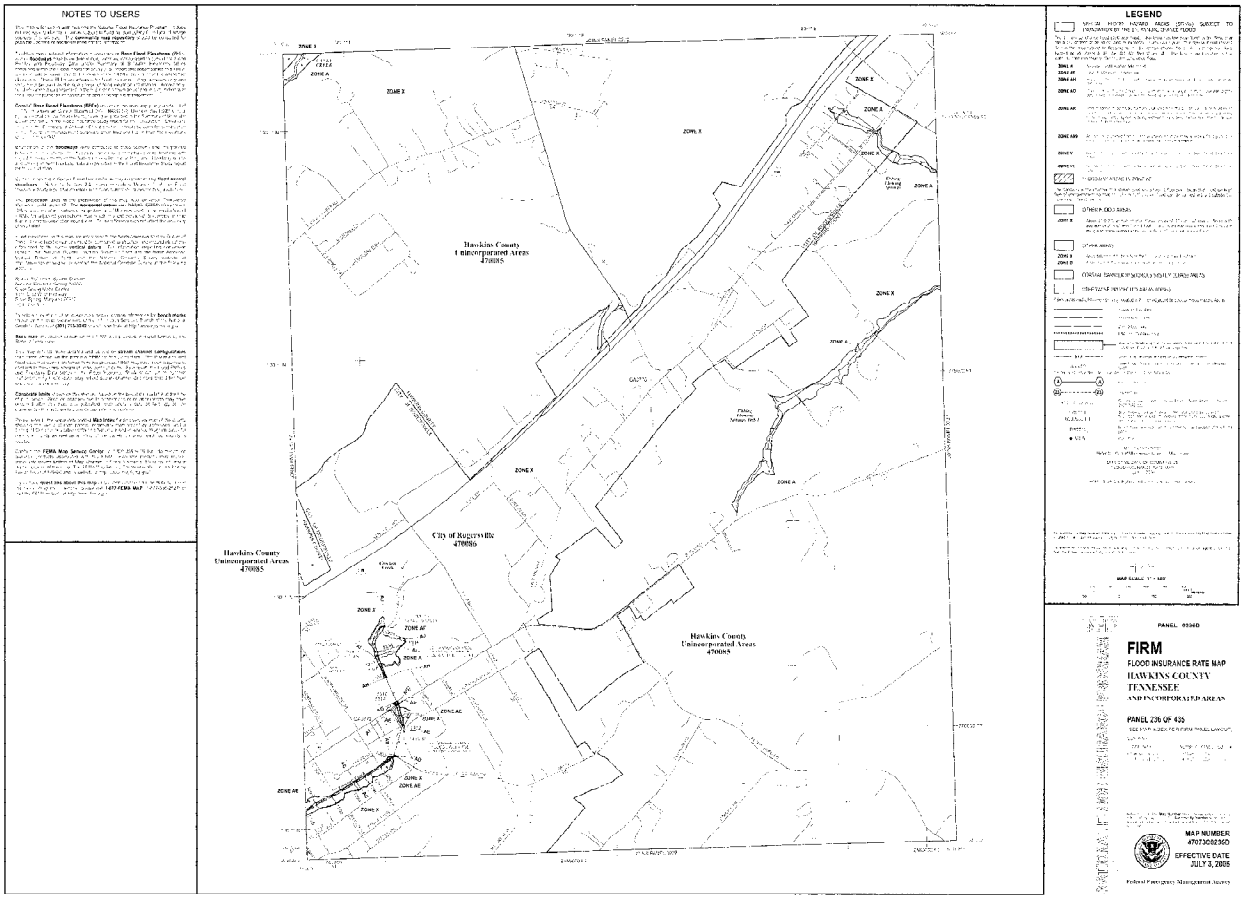
47073C0235D
EFFECTIVE DATE
JULY 3, 2009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Hawkins County
Unincorporated Areas
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Hawkins County
Unincorporated Areas
470085
PANEL 0036D
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TENNESSEE
AND INCORPORATED AREAS
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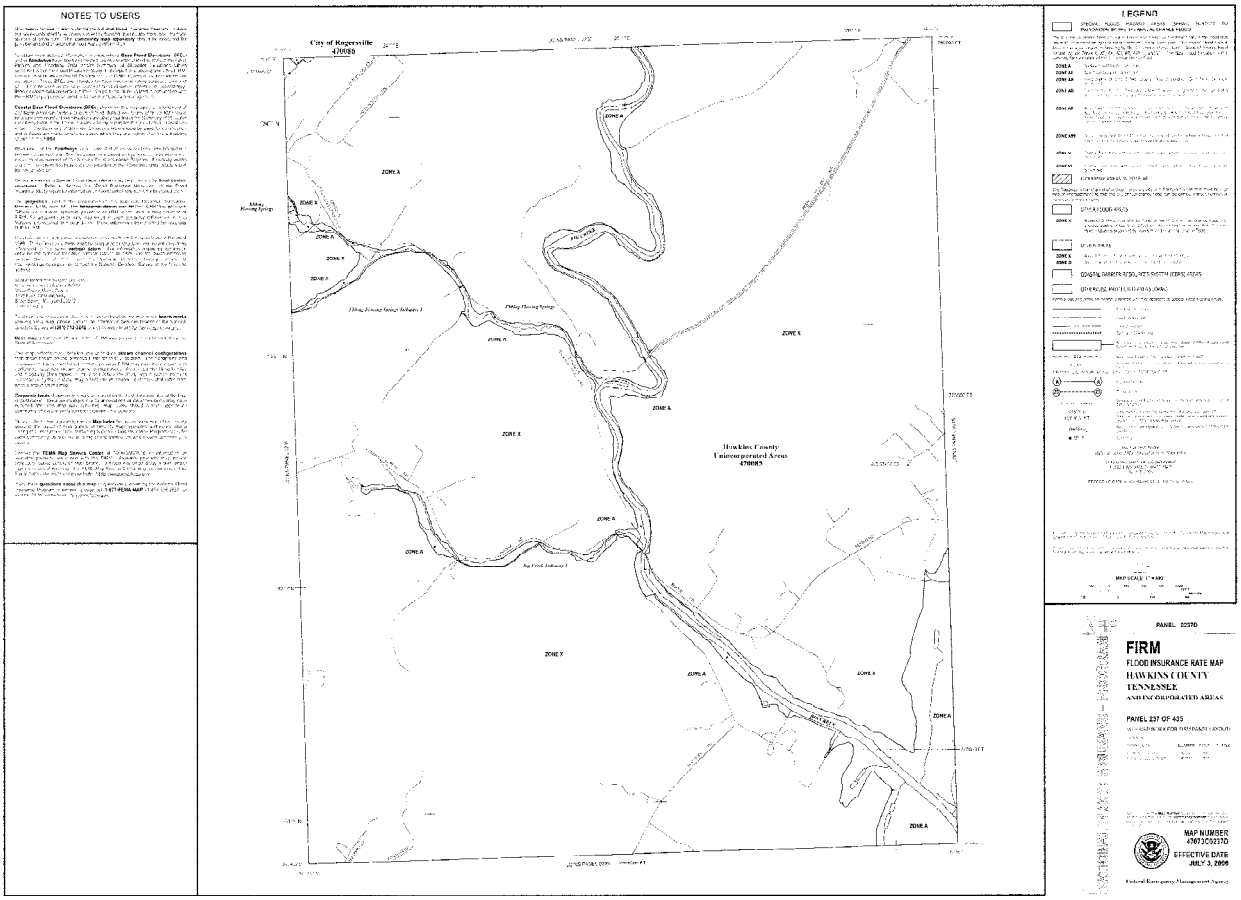
JULY 6, 2005
Federal Emergency Management Agency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AND INCORPORATED AREAS
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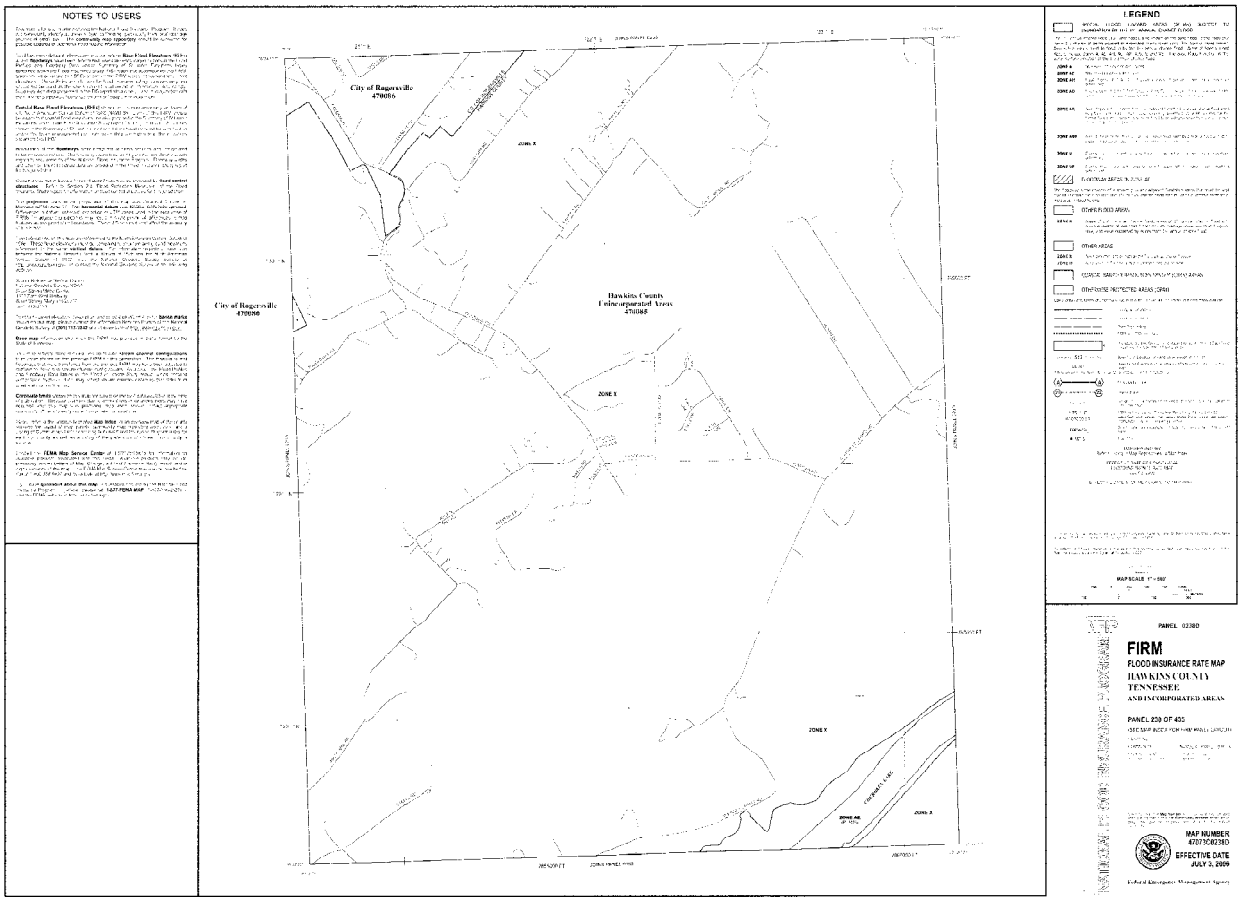
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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TENNESSEE
AND INCORPORATED AREAS
PANEL 280 OF 455
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47073C0280J
EFFECTIVE DATE
JULY 3, 2009


NOTES TO USERS
LEGEND
Hawkins County
Unincorporated Areas
470085
ZONE A
ZONE X
FIRM
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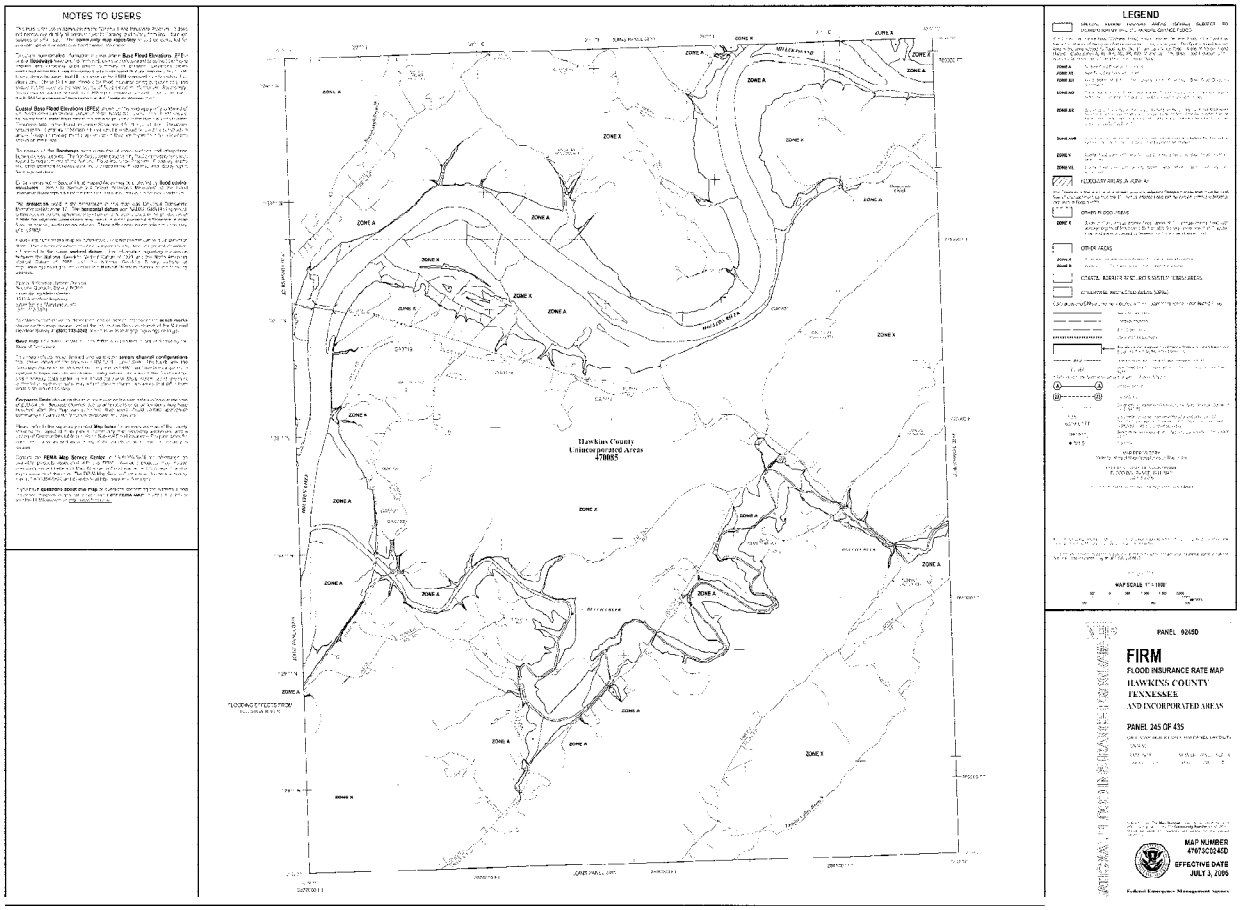
TENNESSEE
AND INCORPORATED AREAS
PANEL 230 OF 435
MAP NUMBER
EFFECTIVE DATE
JULY 3, 2006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AND INCORPORATED AREAS
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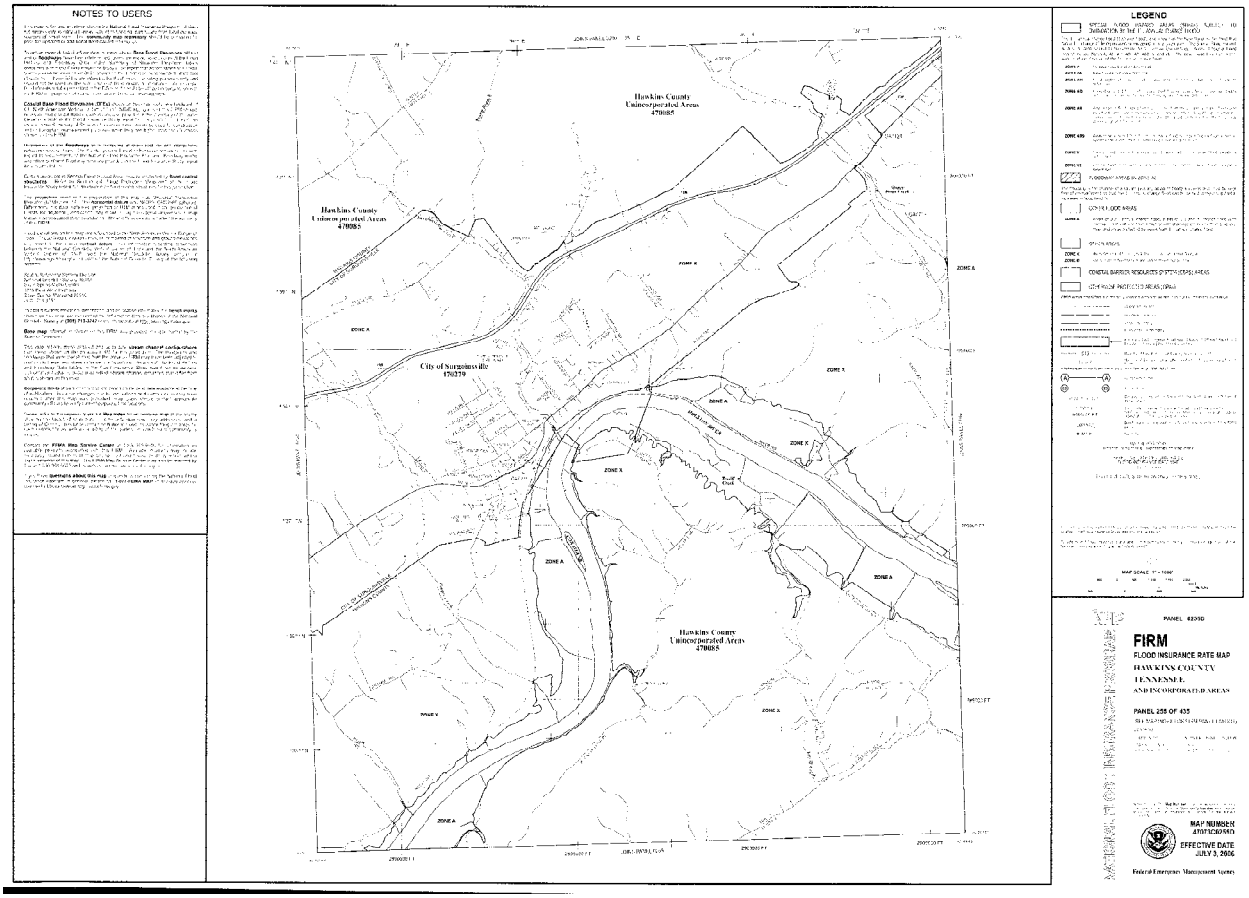
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Unincorporated Areas
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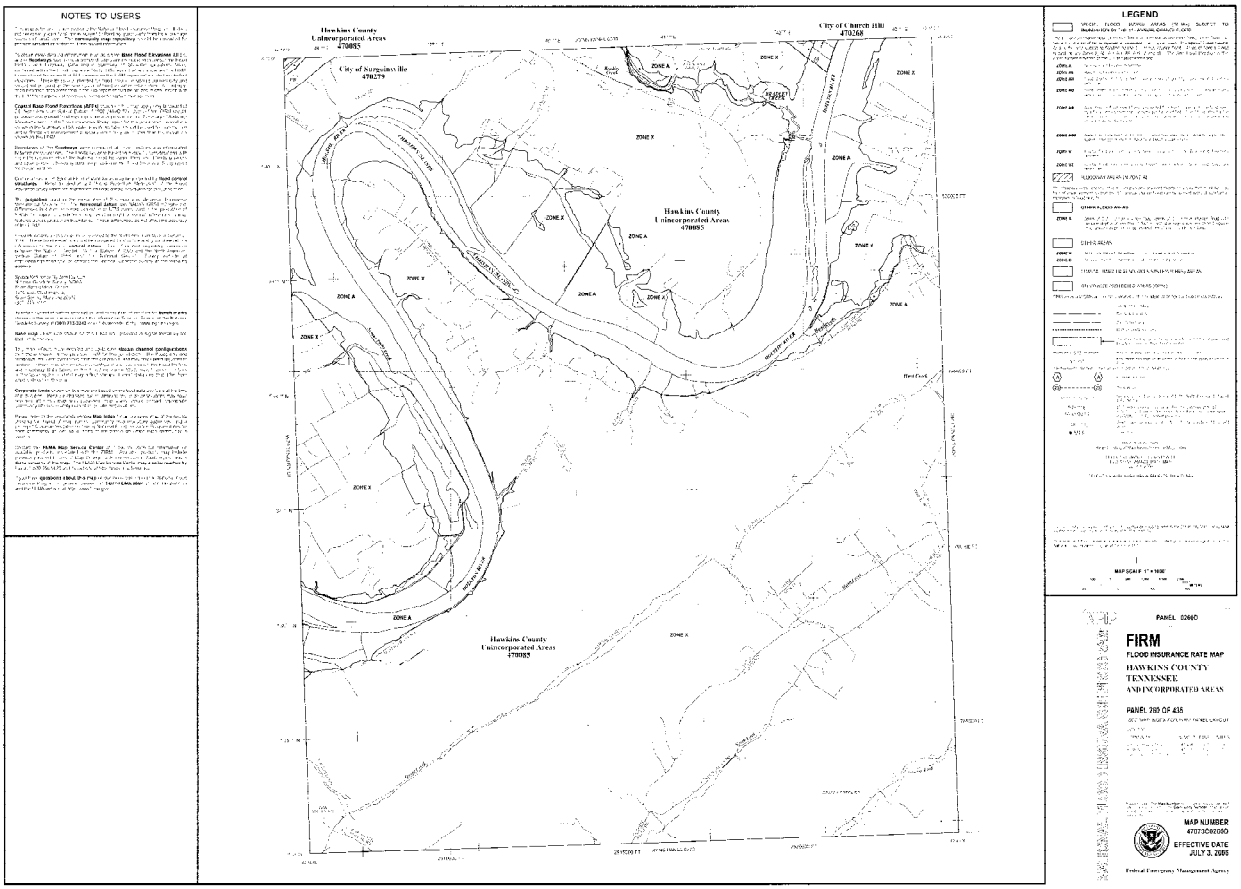
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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Unincorporated Areas
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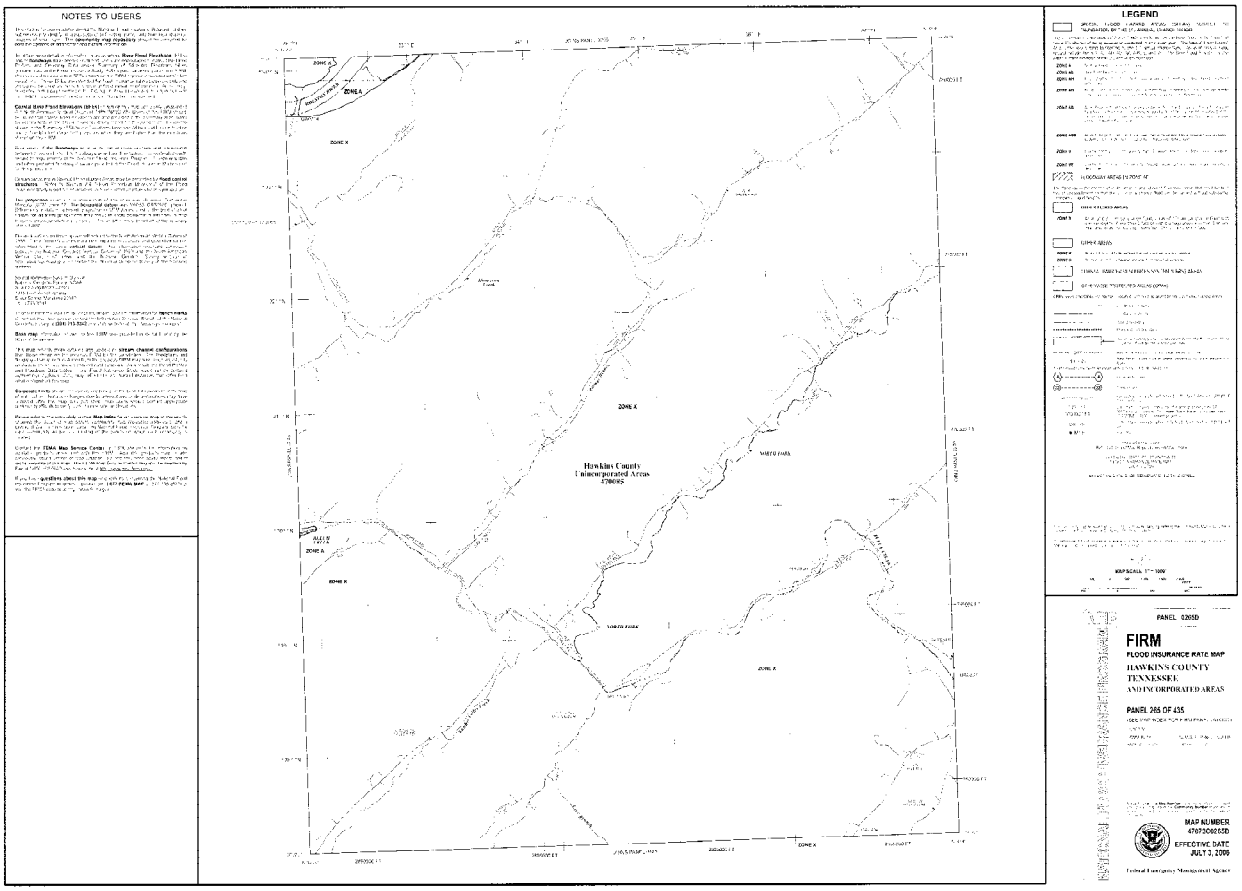
Federal Emergency Management Agency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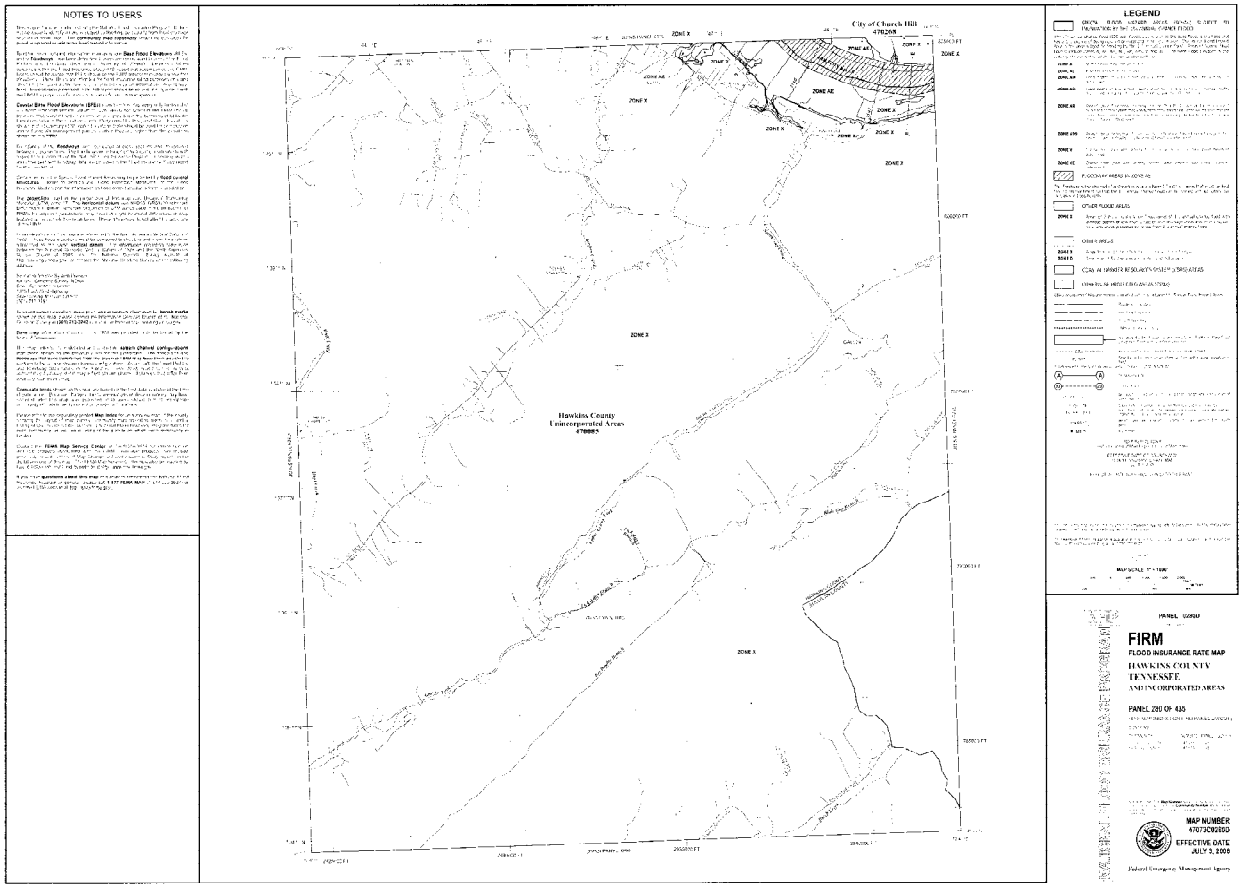
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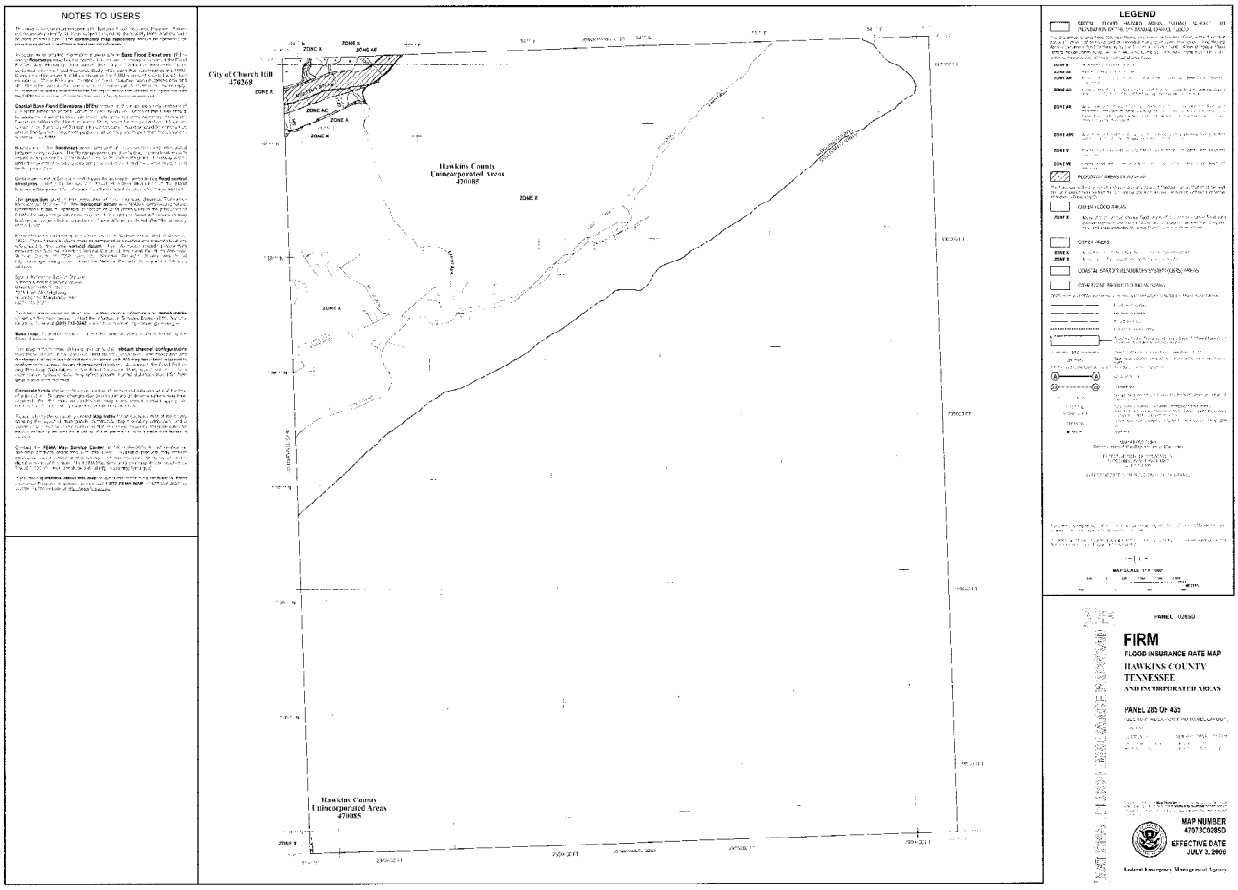
Federal Emergency Management Agency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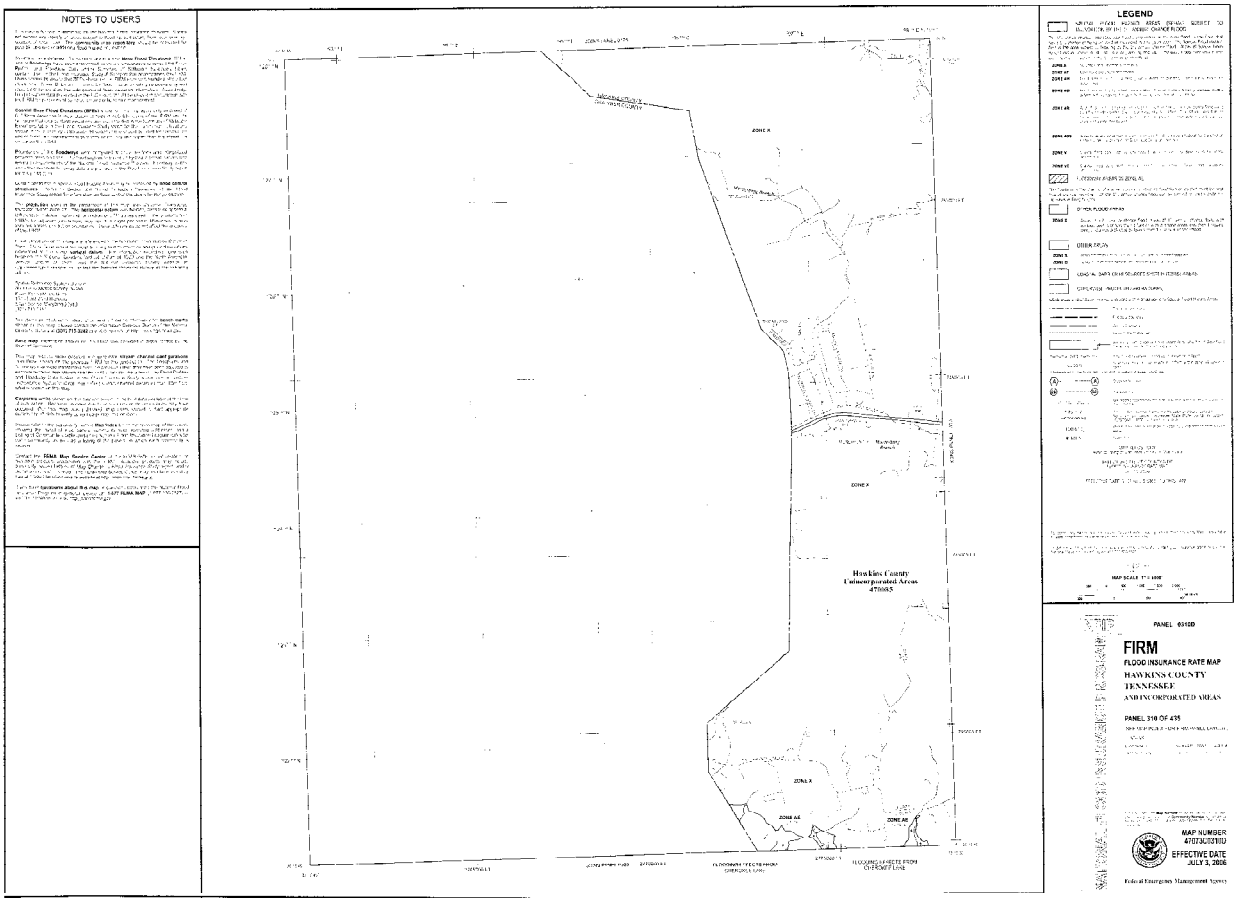
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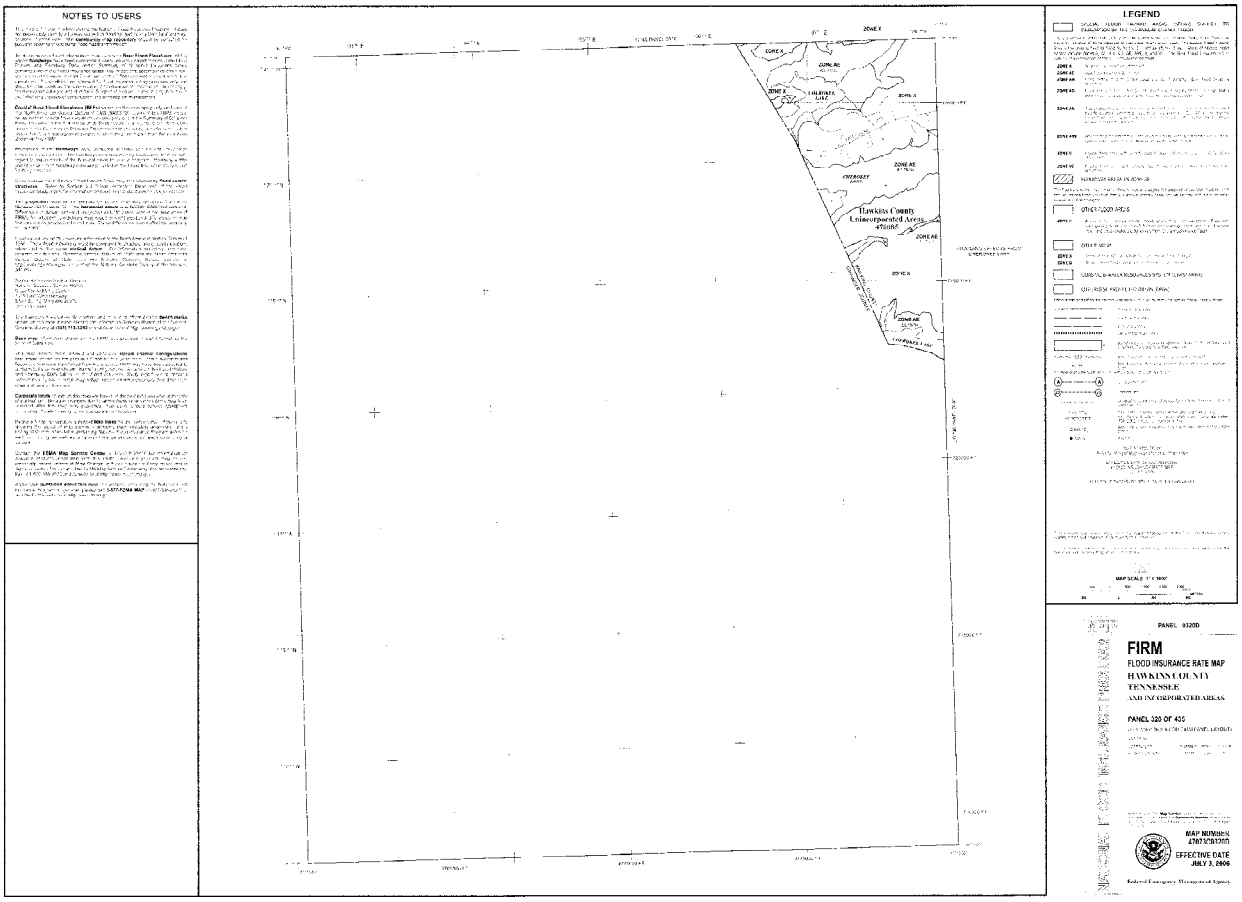
Federal Emergency Management Agency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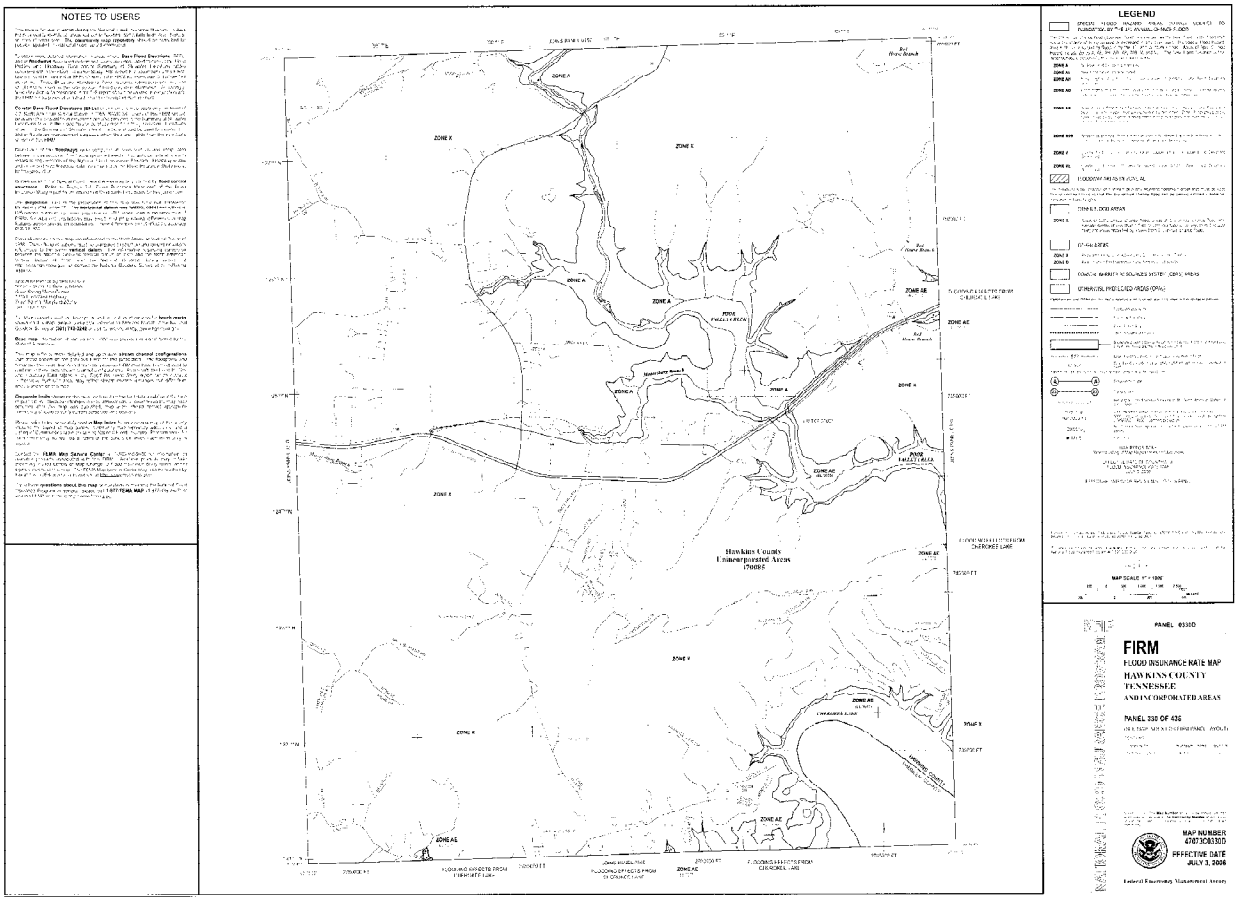
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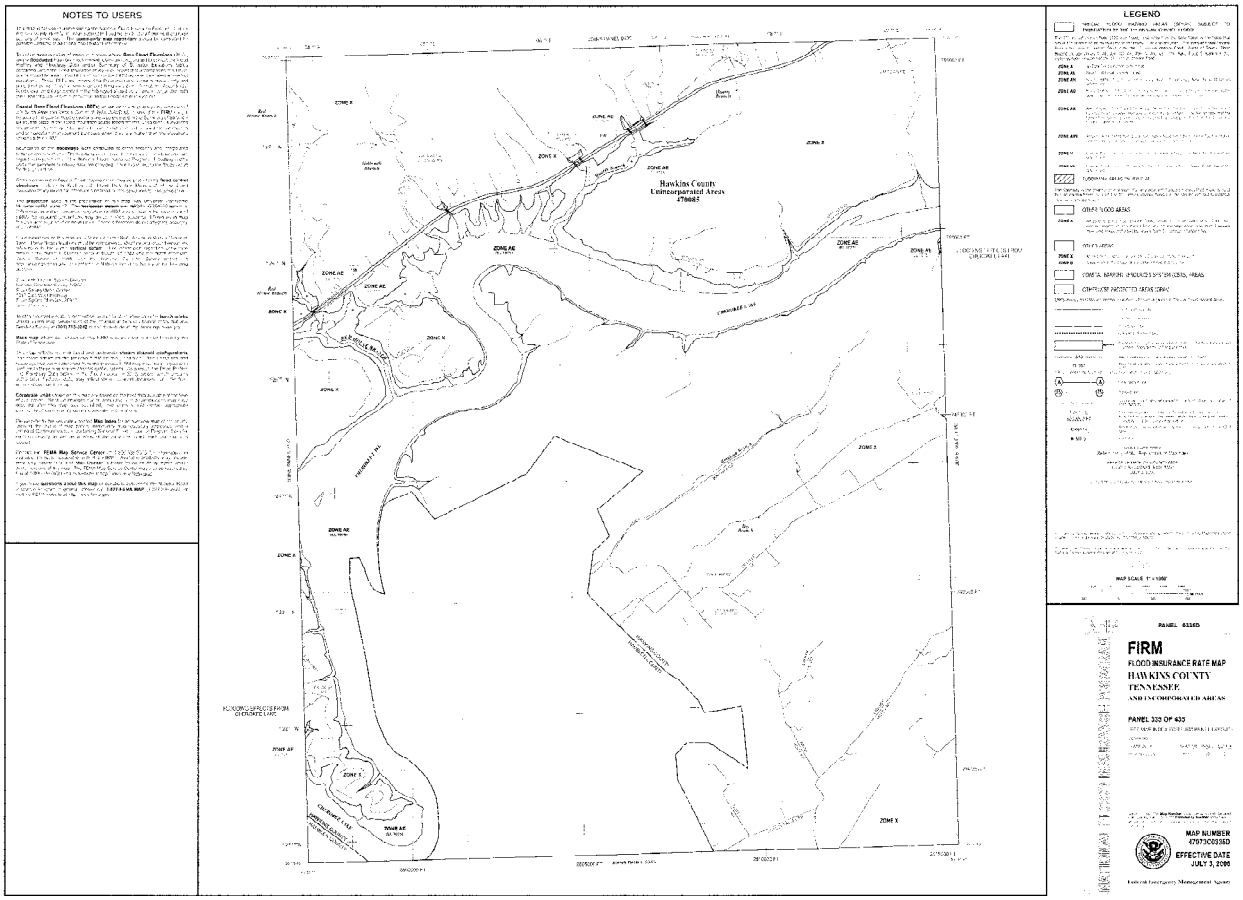
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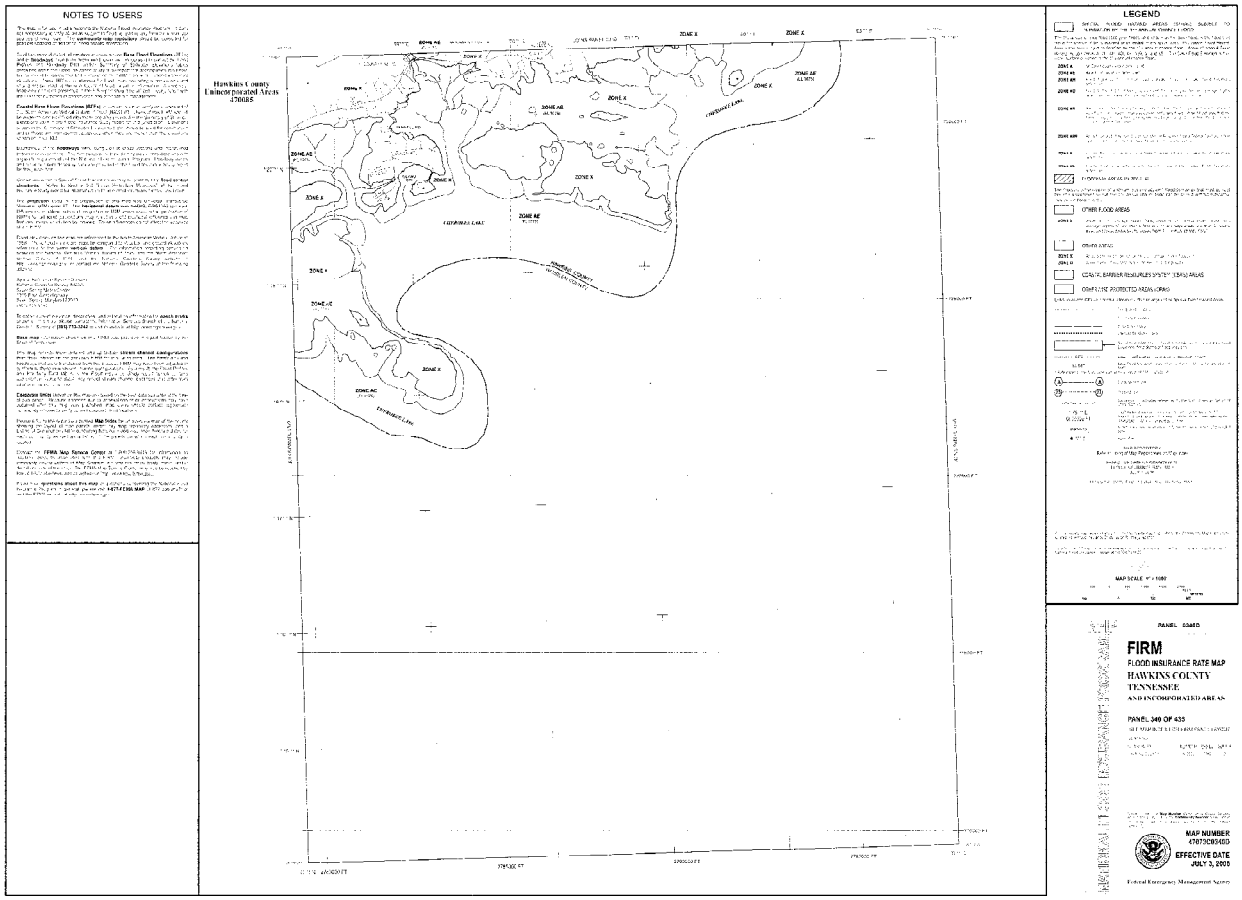
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EFFECTIVE DATE
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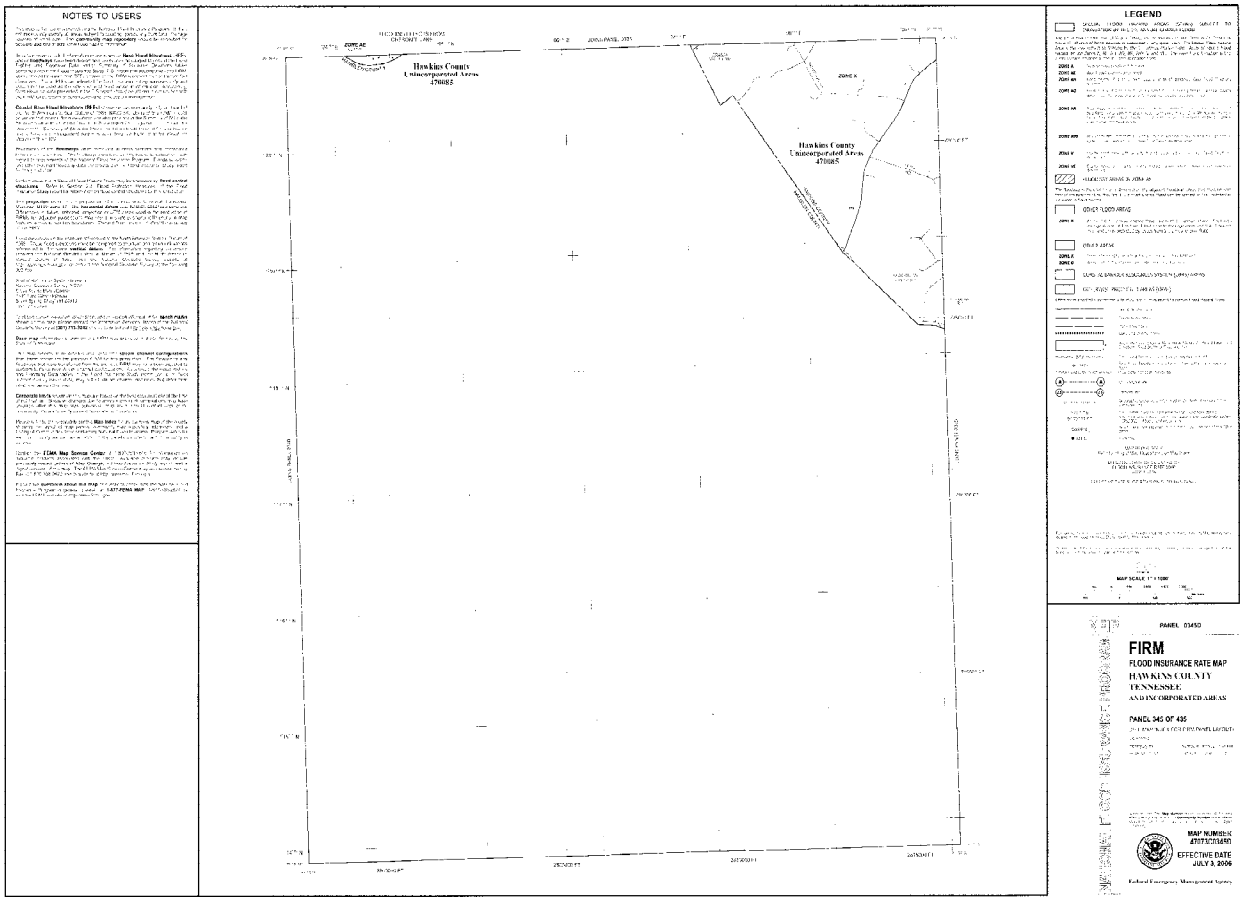
Federal Emergency Management Agency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Unincorporated Areas
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TENNESSEE
AND INCORPORATED AREAS
PANEL 345 OF 495
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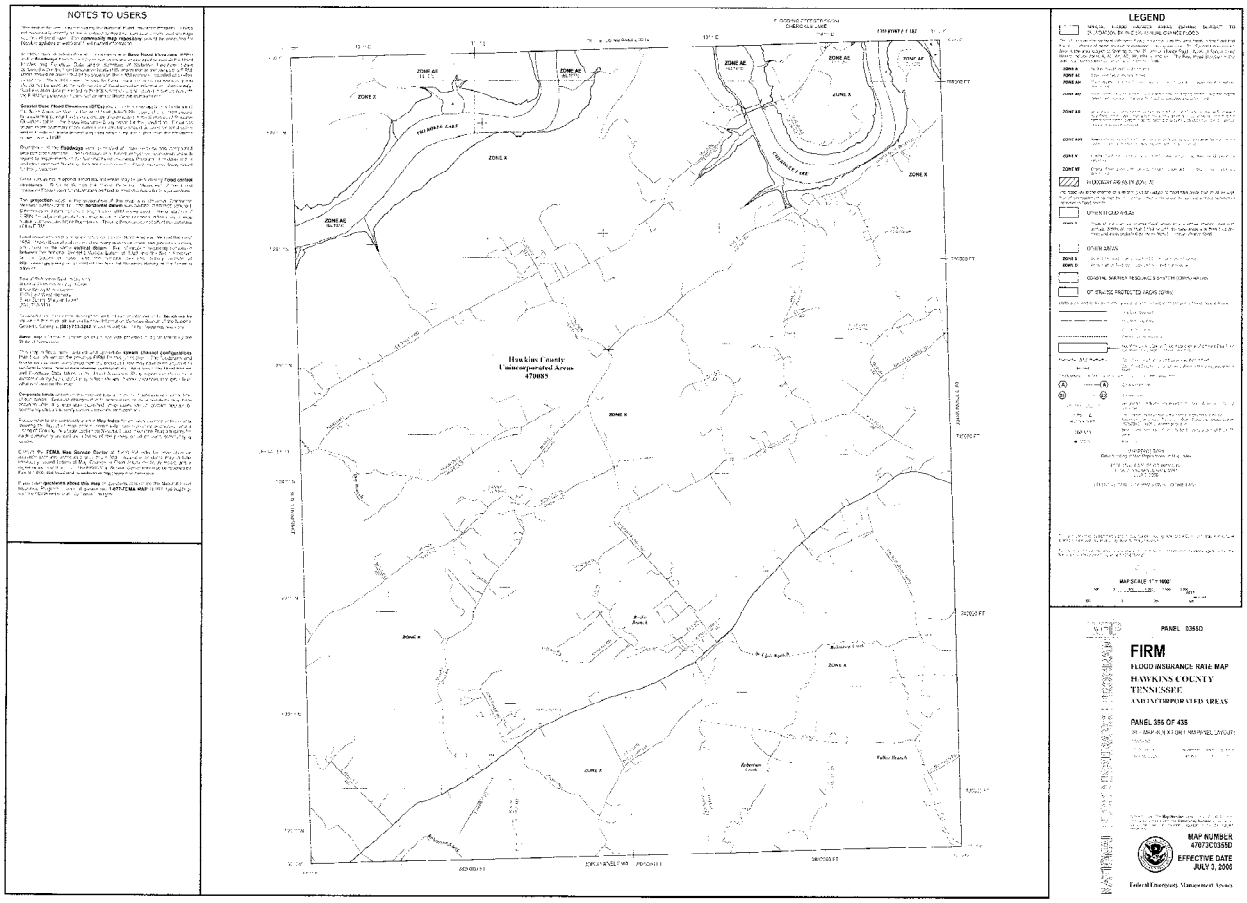
JULY 3, 2006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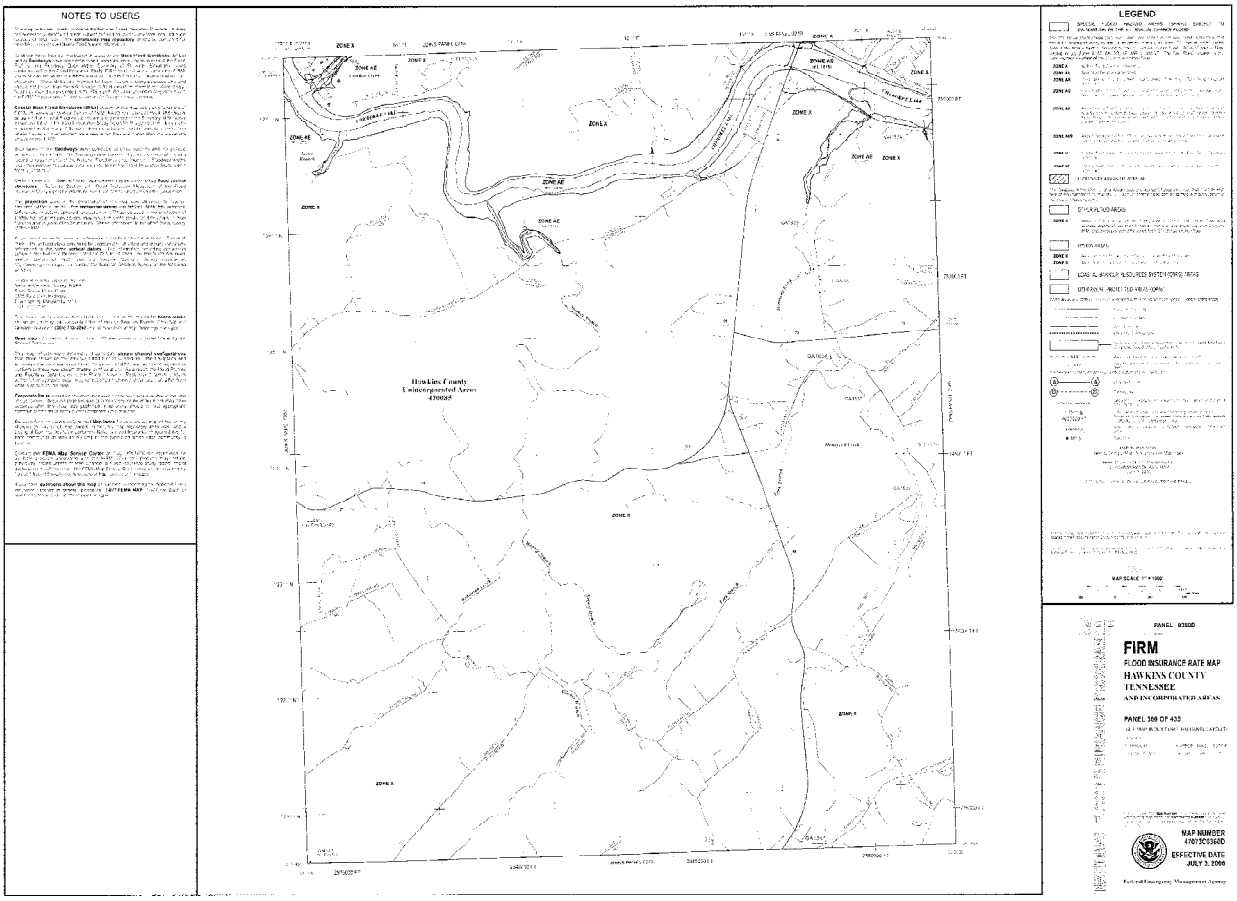
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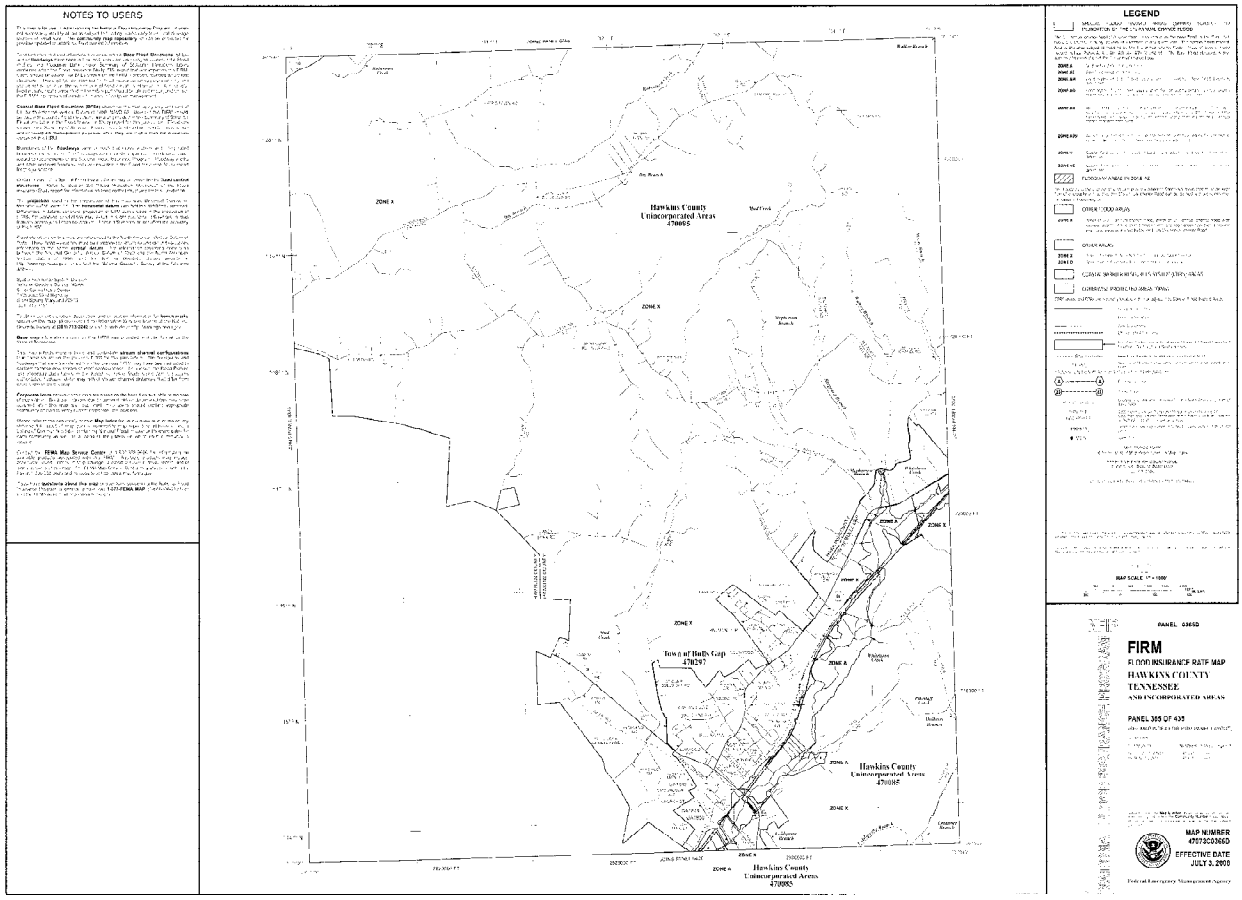
JULY 3, 2006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Hawkins County
Unincorporated Areas
470095
Town of Bulls Gap
470297
Hawkins County
Unincorporated Areas
470095
Hawkins County
Unincorporated Areas
470095
PANEL 0365D
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 365 OF 435
MAP NUMBER
47073C0365D
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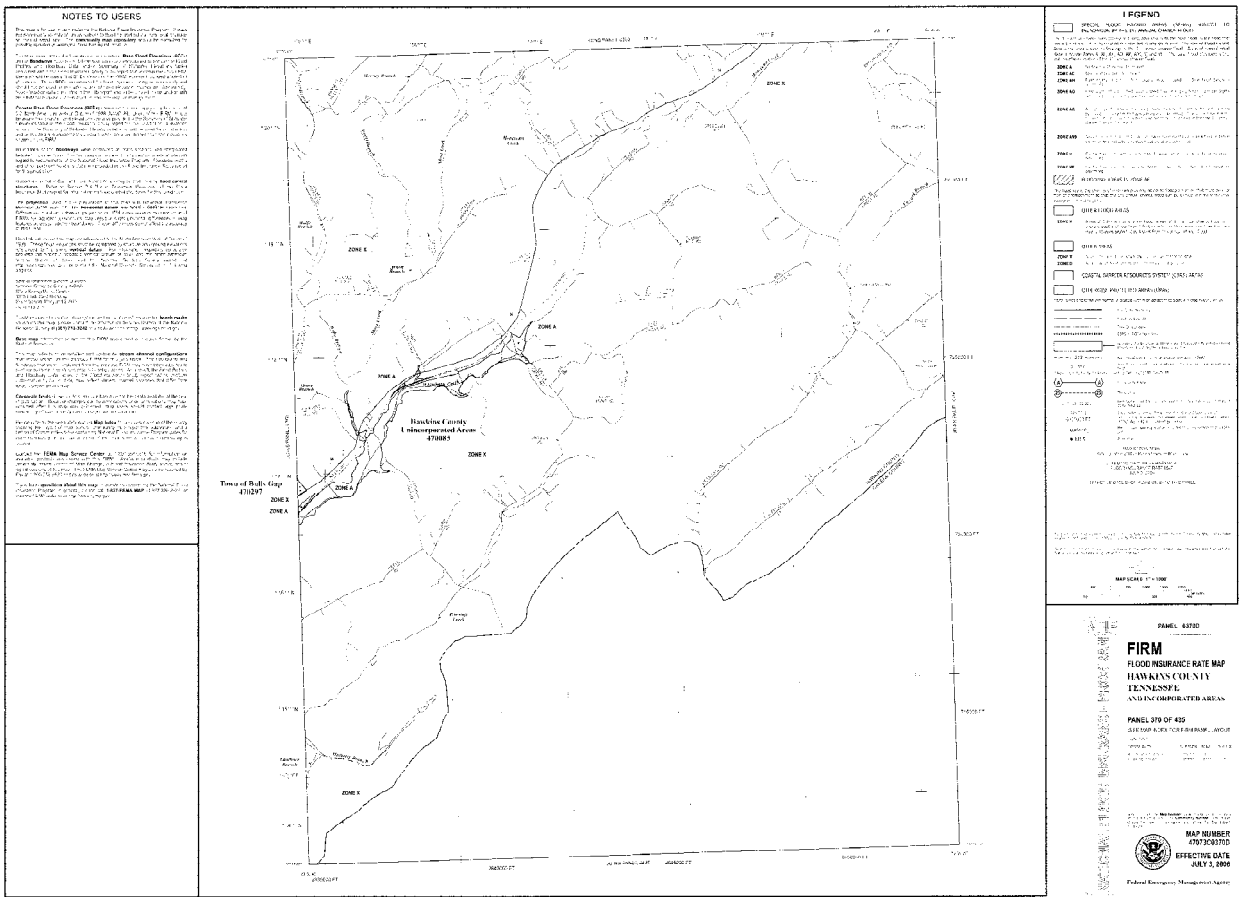
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Unincorporated Areas
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Town of Rolls Gap
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ZONE A
ZONE X
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HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 370 OF 435
MAP NUMBER
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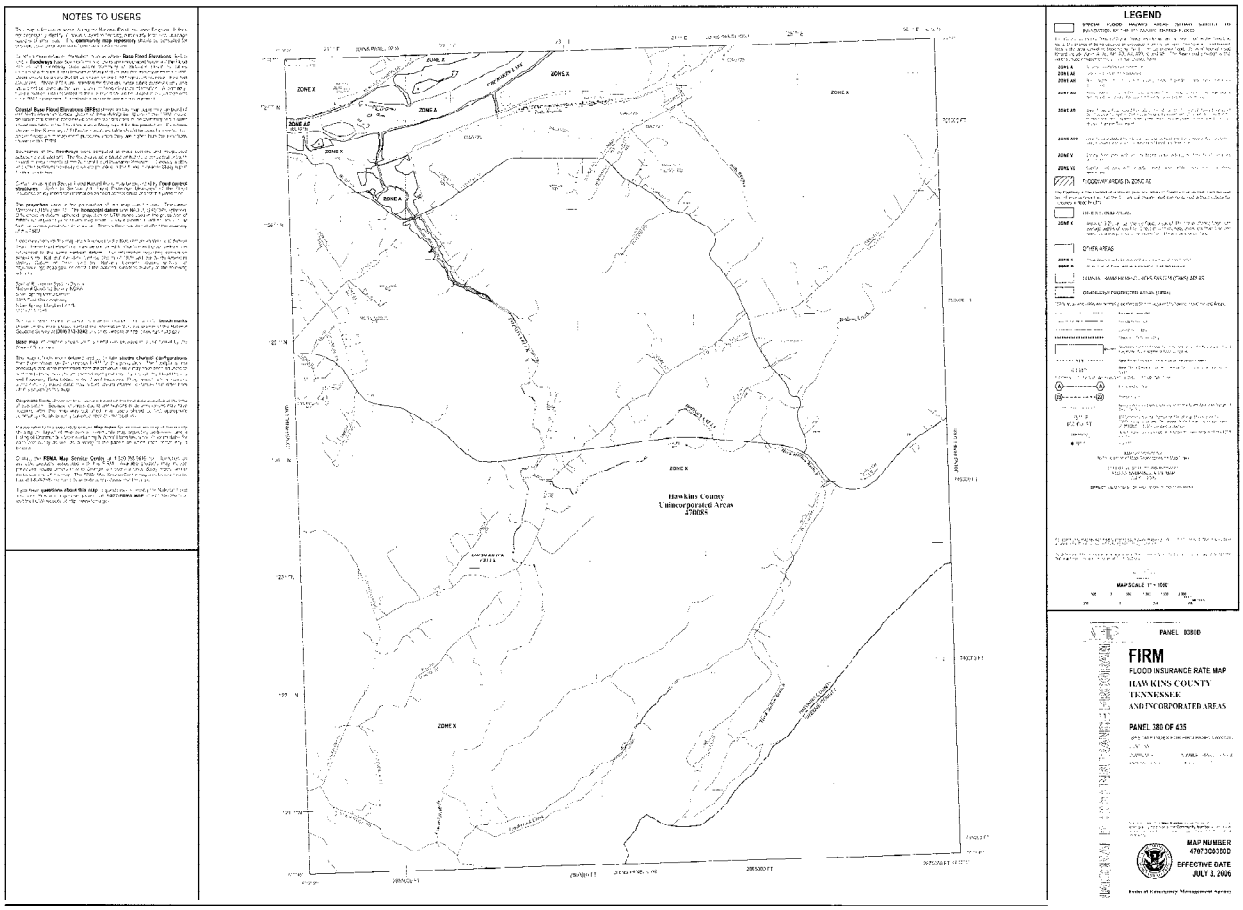
EFFECTIVE DATE
JULY 3, 2006
Federal Emergency Management Agency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ZONE A
ZONE AE
Hawkins County
Unincorporated Areas
470084
PANEL 0380D
FIRM
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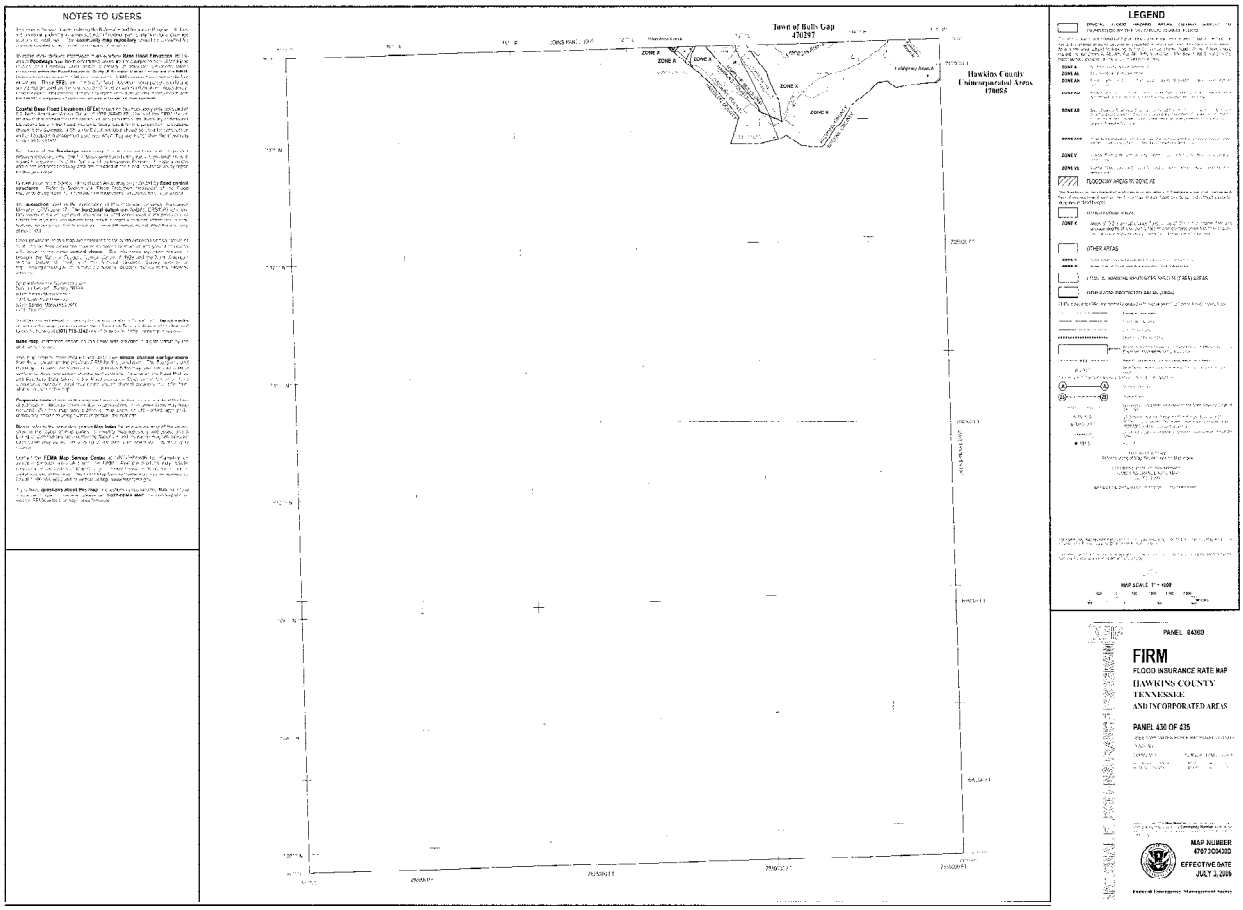
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 380 OF 435
MAP NUMBER
47073C0380D
EFFECTIVE DATE
JULY 3, 2006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LEGEND
Town of Bulls Gap
470297
Hawkins County
Unincorporated Areas
470052
ZONE A
ZONE AE
ZONE X
FLOODWAY AREAS IN ZONE AE
OTHER AREAS
MAP SCALE 1" = 4000'
PANEL 0430D
FIRM
FLOOD INSURANCE RATE MAP
HAWKINS COUNTY
TENNESSEE
AND INCORPORATED AREAS
PANEL 430 OF 435
MAP NUMBER
47073C0430D
EFFECTIVE DATE
JULY 3, 2018
Federal Emergency Management Agency

Hazus: Flood Global Risk Report

Region Name: Hawkins_County

Flood Scenario: Hawkins_County_500yr_Flood

Print Date: Monday, November 23, 2020

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.

FEMA

RiskMAP
Increasing Resilience Together

Table of Contents

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 500 square miles and contains 2,824 census blocks. The region contains over 23 thousand households and has a total population of 56,833 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 26,359 buildings in the region with a total building replacement value (excluding contents) of 4,389 million dollars. Approximately 94.40% of the buildings (and 77.70% of the building value) are associated with residential housing.

General Building Stock

Hazus estimates that there are 26,359 buildings in the region which have an aggregate total replacement value of 4,389 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	3,410,156	77.7%
Commercial	441,218	10.1%
Industrial	318,024	7.2%
Agricultural	15,820	0.4%
Religion	114,996	2.6%
Government	37,597	0.9%
Education	50,976	1.2%
Total	**4,388,787**	**100%**

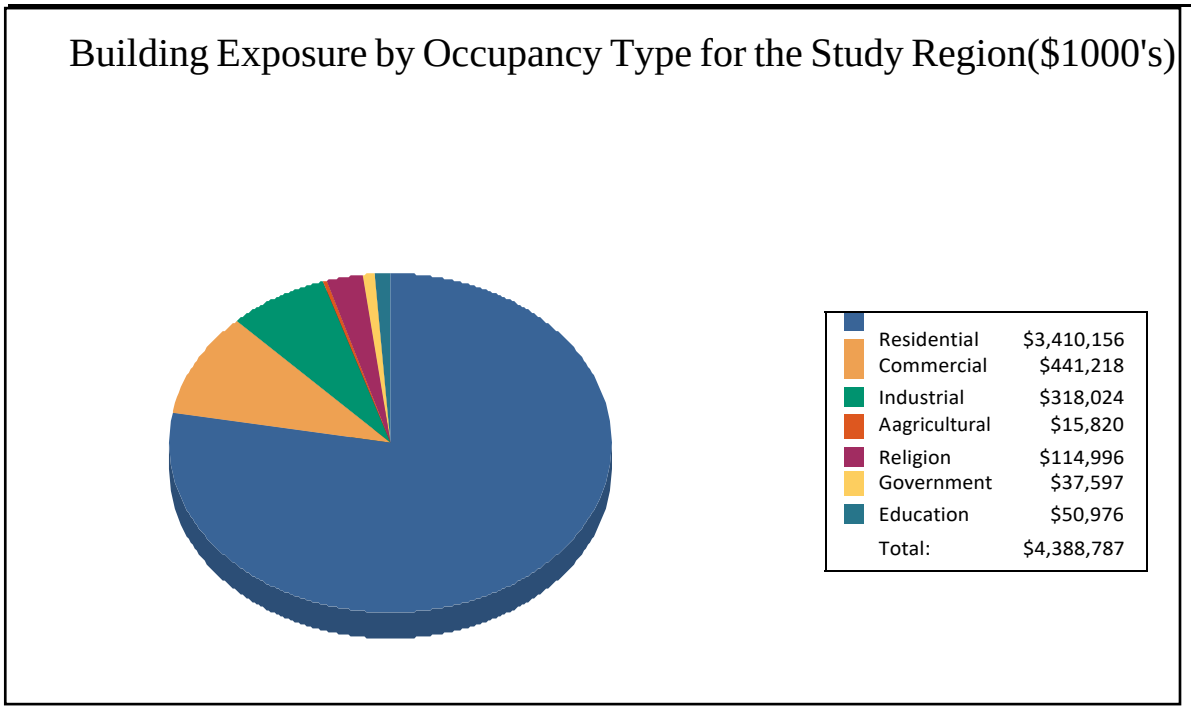
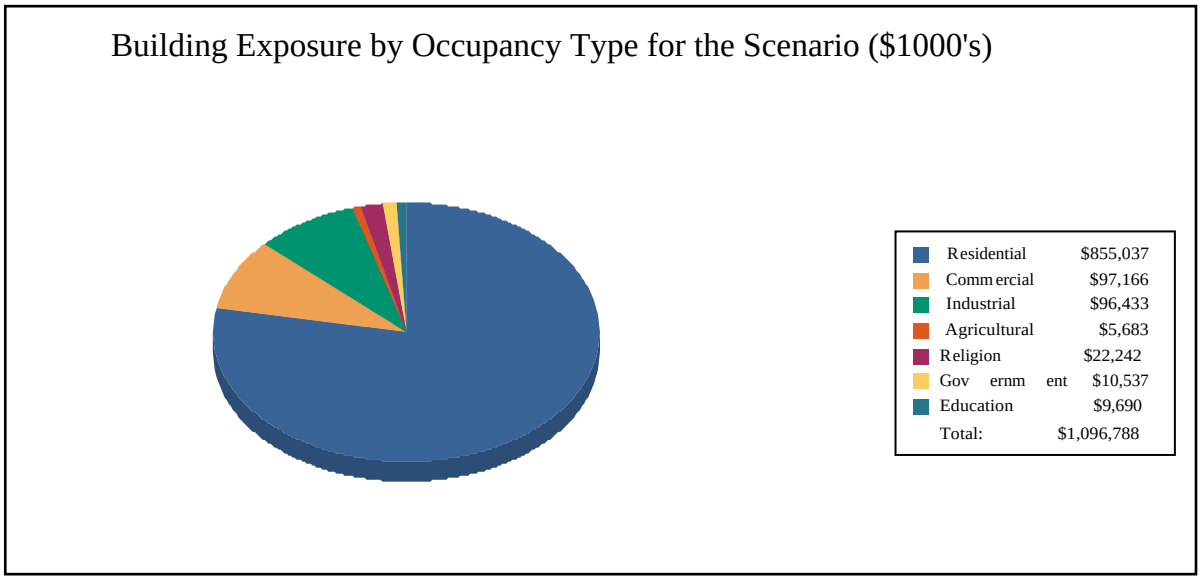


Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	855,037	78.0%
Commercial	97,166	8.9%
Industrial	96,433	8.8%
Agricultural	5,683	0.5%
Religion	22,242	2.0%
Government	10,537	1.0%
Education	9,690	0.9%
Total	**1,096,788**	**100%**



Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 50 beds.
There are 19 schools, 13 fire stations, 7 police stations and 1 emergency operation center.

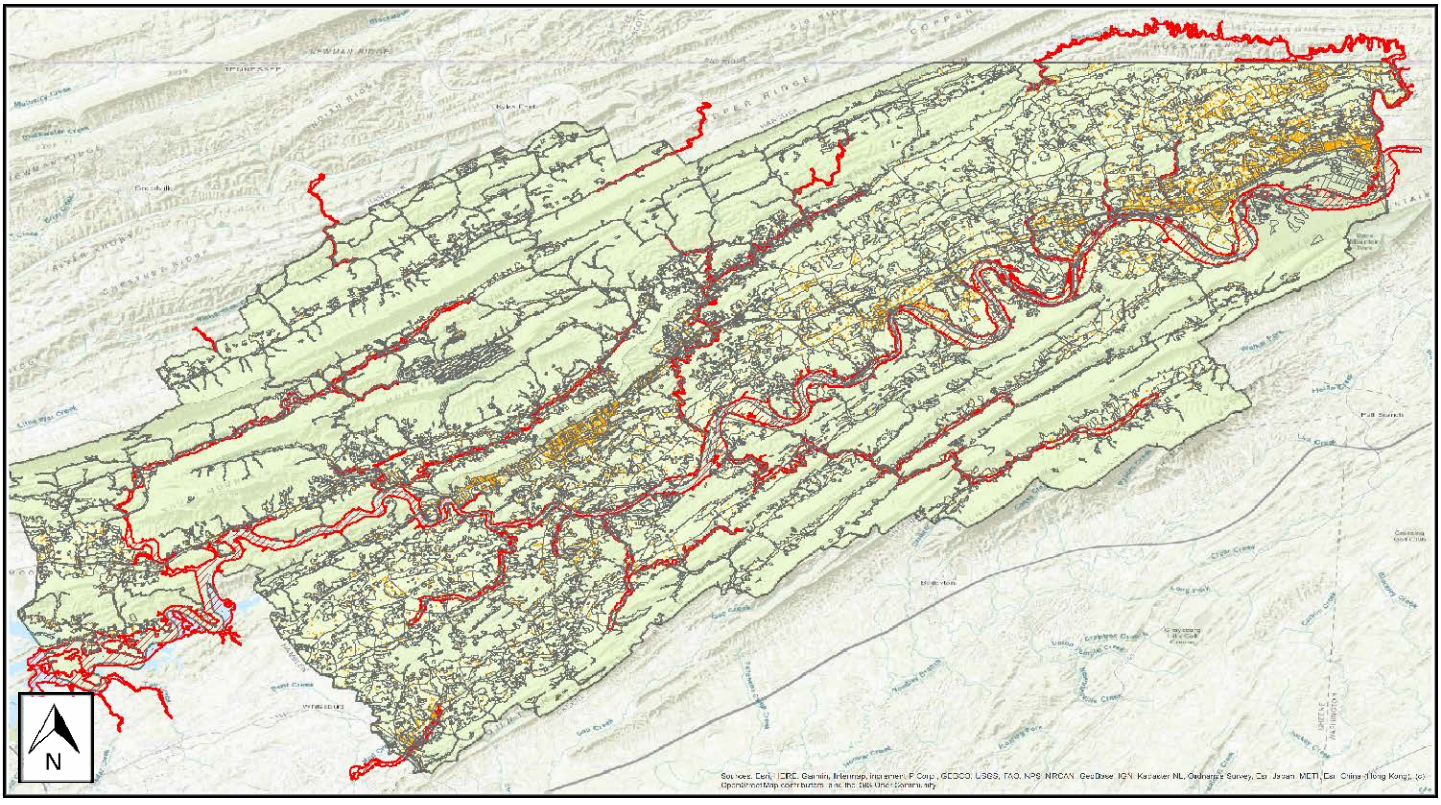
Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	Hawkins_County
Scenario Name:	Hawkins_County_500yr_Flood
Return Period Analyzed:	500
Analysis Options Analyzed:	No What-Ifs

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



Building Damage

General Building Stock Damage

Hazus estimates that about 50 buildings will be at least moderately damaged. This is over 29% of the total number of buildings in the scenario. There are an estimated 31 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

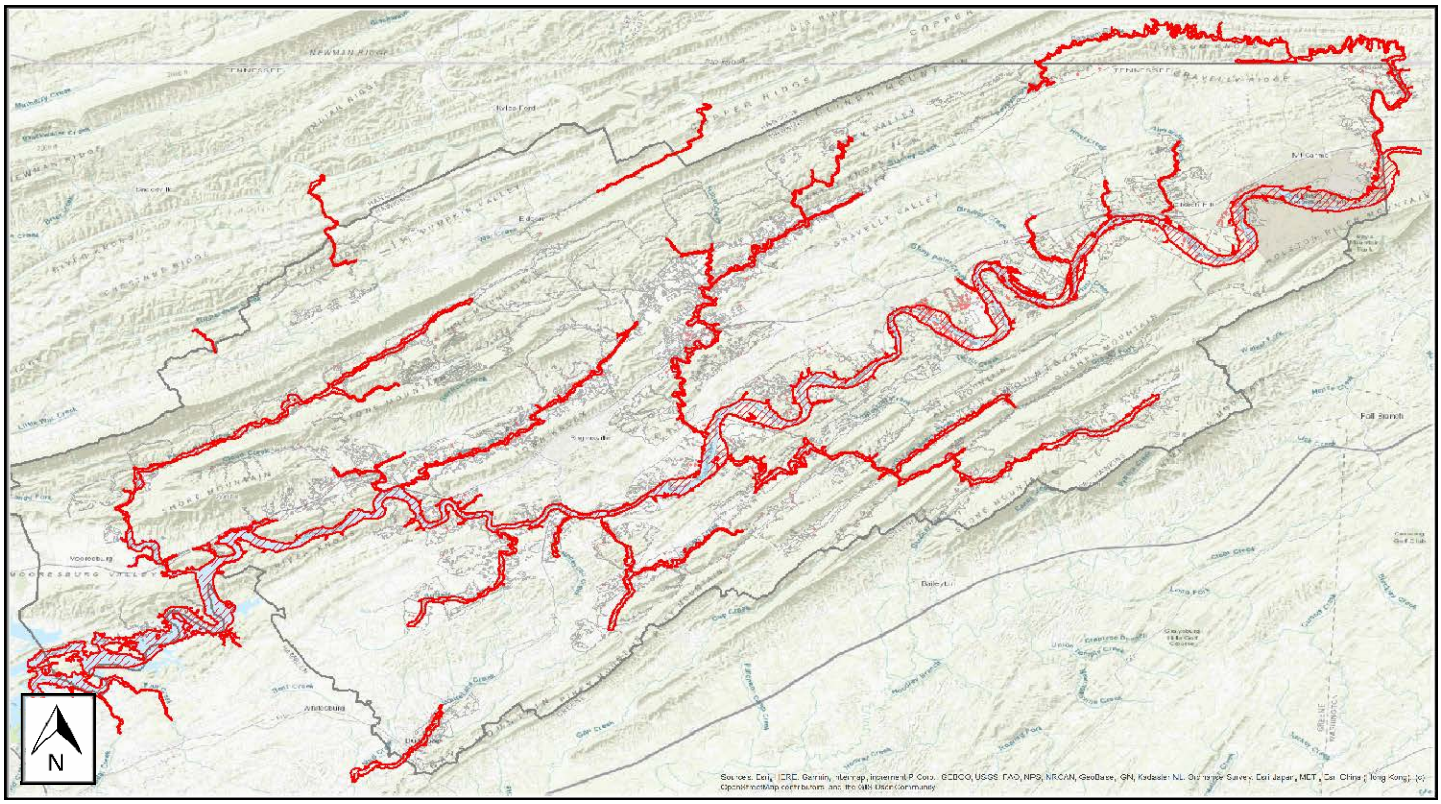


Table 3: Expected Building Damage by Occupancy

	1-10		11-20		21-30		31-40		41-50		>50	
Occupancy	**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	1	100	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	2	4	8	16	4	8	4	8	2	4	31	61
Total	**2**		**8**		**5**		**4**		**2**		**31**	

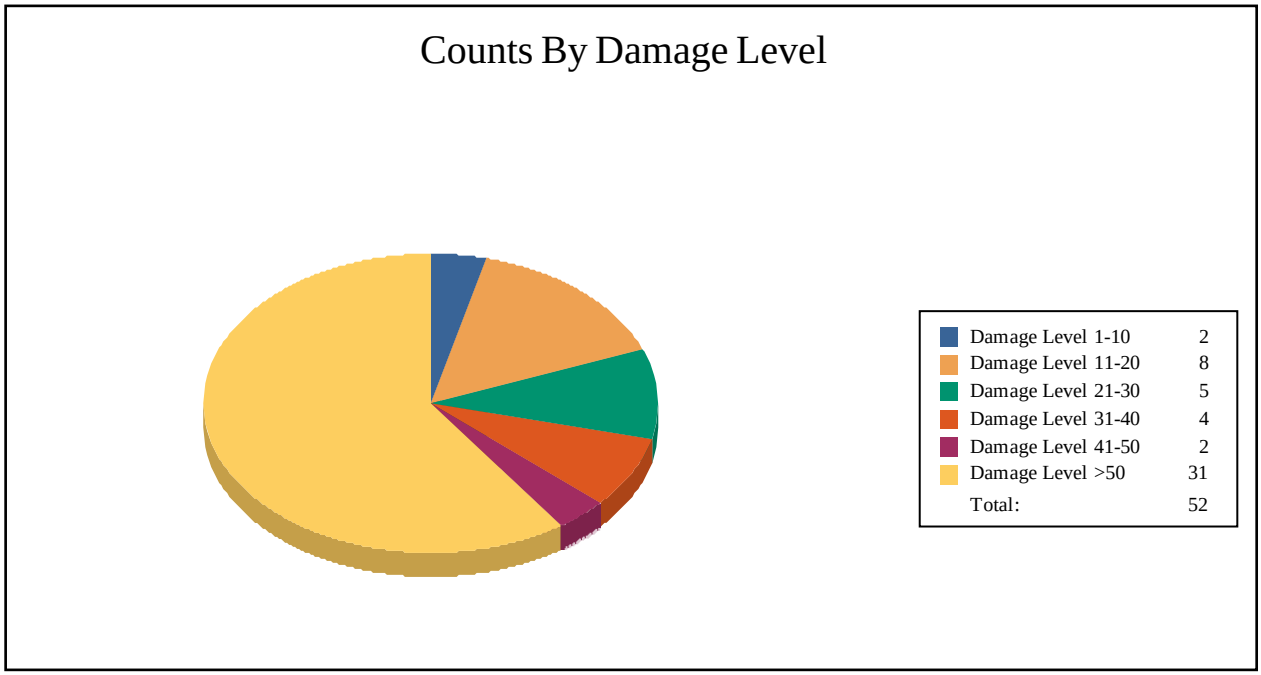


Table 4: Expected Building Damage by Building Type

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
ManufHousing	0	0	0	0	0	0	0	0	0	0	8	100
Masonry	0	0	0	0	0	0	0	0	0	0	0	0
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	2	5	8	19	4	9	4	9	2	5	23	53

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 50 hospital beds available for use. On the day of the scenario flood event, the model estimates that 50 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	L ss of Use
Emergency Operation Centers	1	0	0	0
Fire Stations	13	0	0	0
Hospitals	1	0	0	0
Police Stations	7	0	0	0
Schools	19	0	0	0

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

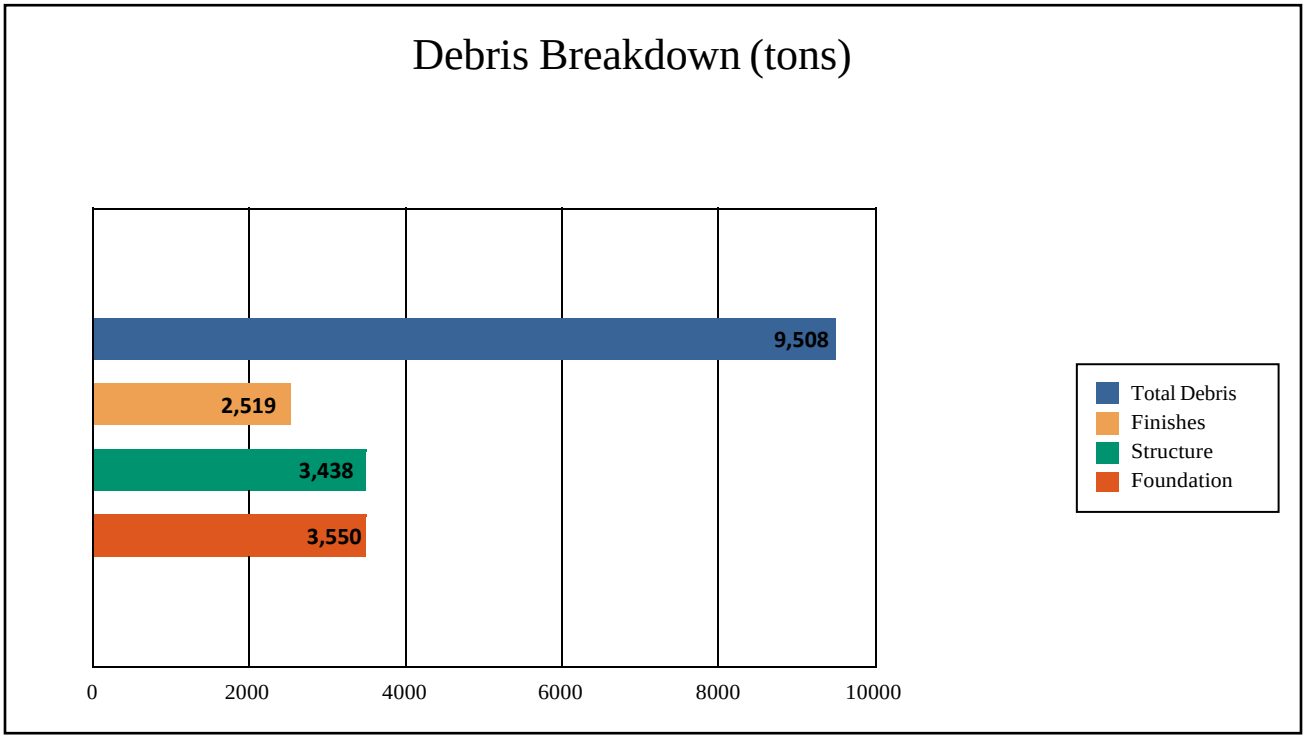
(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(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.

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.

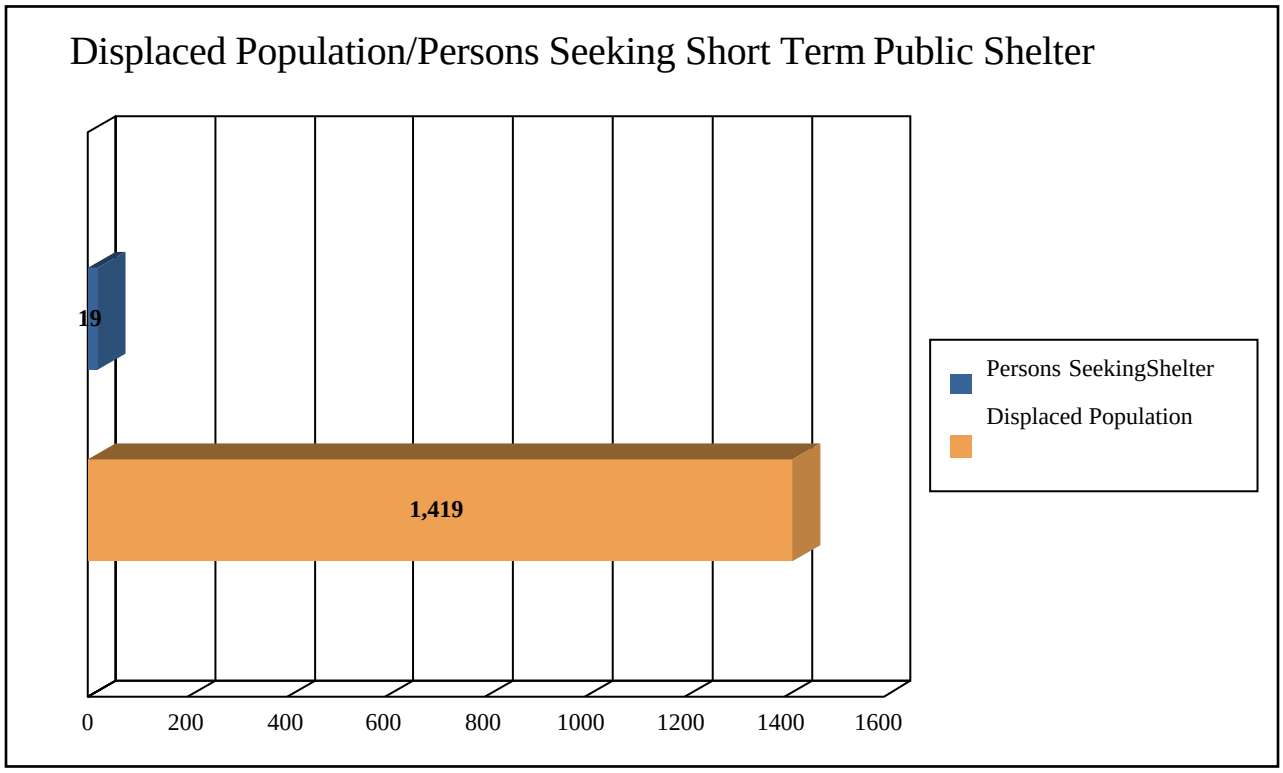


The model estimates that a total of 9,508 tons of debris will be generated. Of the total amount, Finishes comprises 26% of the total, Structure comprises 36% of the total, and Foundation comprises 37%. If the debris tonnage is converted into an estimated number of truckloads, it will require 381 truckloads (@25 tons/truck) to remove the debris generated by the flood.

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 473 households (or 1,419 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 19 people (out of a total population of 56,833) will seek temporary shelter in public shelters.



Economic Loss

The total economic loss estimated for the flood is 105.12 million dollars, which represents 9.58 % of the total replacement value of the scenario buildings.

Building-Related Losses

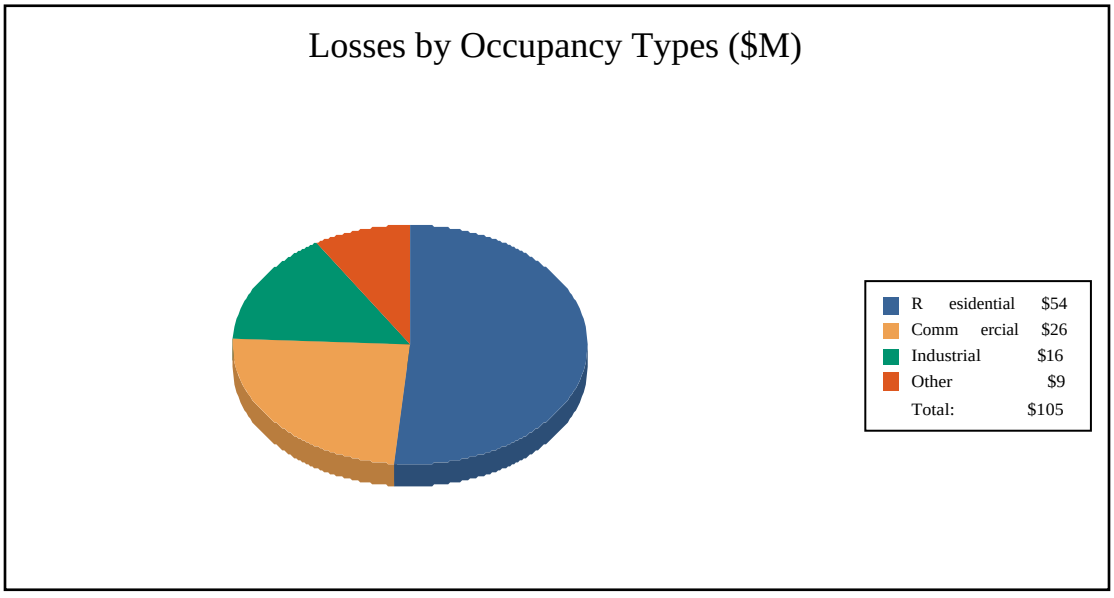
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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 78.30 million dollars. 26% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 51.29% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	31.72	3.80	3.75	0.69	39.96
	Content	15.19	8.81	10.28	2.50	36.78
	Inventory	0.00	0.37	1.17	0.03	1.56
	Subtotal	**46.91**	**12.98**	**15.20**	**3.21**	**78.30**
Business Interruption						
	Income	0.01	4.78	0.15	0.74	5.67
	Relocation	5.46	1.08	0.29	0.04	6.87
	Rental Income	1.53	0.78	0.05	0.00	2.36
	Wage	0.02	6.32	0.24	5.35	11.93
	Subtotal	**7.00**	**12.96**	**0.73**	**6.14**	**26.83**
ALL	**Total**	**53.91**	**25.93**	**15.93**	**9.35**	**105.12**



Appendix A: County Listing for the Region

Tennessee

- Hawkins

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Tennessee				
Hawkins	56,833	3,410,156	978,631	4,388,787
Total	**56,833**	**3,410,156**	**978,631**	**4,388,787**
Total Study Region	**56,833**	**3,410,156**	**978,631**	**4,388,787**