

TABLE OF CONTENTS

1.0 INTRODUCTION.....	2
1.1 Documentation of the Planning Process.....	2
1.2 Description of Planning Area.....	4
1.3 Record of Changes.....	5
2.0 RISK ASSESSMENT.....	7
2.1 Identify Hazards.....	7
2.2 Profile Hazards.....	14
2.3 Inventory Assets.....	44
2.4 Estimate Losses.....	86
2.5 Analyze Development Trends.....	102
3.0 REGIONAL HAZARD MITIGATION GOALS.....	102
4.0 PRIORITIZATION OF MITIGATION STRATEGIES.....	103
4.1 Identification and Analysis of Mitigation Actions.....	103
4.2 Implementation of Mitigation Actions.....	115
5.0 PLAN MAINTENANCE PROCESS.....	130
6.0 APPENDICES.....	137
Appendix 1: Hazard Profiles, Loss Calculations, Mapping	
Appendix 2: Planning Process Documentation - Newspaper clippings	
Appendix 3: Region 2 (Cabell, Lincoln, Logan, Mingo, Mason Wayne) Hazus Information	

1.1 DOCUMENTATION OF THE PLANNING PROCESS

§201.6(b) and
201.6(c)(1)

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

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

[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process

Region 2 Planning and Development Council incorporated each of its' six county's approved hazard mitigation plans and added in Hazus Data to create a new Regional Hazard Mitigation Plan for Cabell, Lincoln, Logan, Mason, Mingo and Wayne Counties.

This plan was developed in accordance with Part 201.6 of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. Several resources were used during the development of the plan, including the US Department of Homeland Security's Federal Emergency Management Agency (FEMA) *Mitigation Planning How-To Series*, the governing regulations in the Code of Federal Regulations (CFR), and documents provided by the WV Division of Homeland Security and Emergency Management.

To guide the completion of the plan at the local level, a multi-jurisdictional core planning teams were established. The teams were compromised of key officials with a stake in mitigation, and included the following:

- Mr. Rocky Adkins, Logan County Administrator
- Mr. Bill Weese, Logan County LEPC
- Mr. John M. Hubbard, Mingo County Commissioner
- Mr. Greg Smith, Mingo County Commissioner
- Mr. David L. Baisden, Mingo County Commissioner
- Mayors of Delbarton, Gilbert, Kermit, Matewan and Williamson
- Mr. Lonnie Hannah, Mingo County Sheriff
- Mr. Jerry Mounts, Williamson Fire Department Chief
- Mr. Rick Wellman, Wayne County Commission President
- Mr. Charles Sammons, Wayne County Commissioner
- Mr. Robert Pasley, Wayne County Commissioner
- Mayors of Wayne County Municipalities
- Mr. Randy Fry, Wayne County Permit Officer
- Mason County Commission
- Mason County Sheriff
- Mason County OES
- WV Division of Highways
- WV State Police
- Town of Hartford
- Town of Henderson
- Town of Leon
- Town of Mason
- Town of New Haven
- City of Point Pleasant
- Mr. Steve McComas, Lincoln County Floodplain Administrator
- Mr. Alan Holder, Director of Lincoln County Emergency Medical Services
- Ms. Nellie Adkins, Administrator of West Hamlin
- Mr. Brian Barrett, Mayor of Hamlin
- Mr. Charles McCann, President, Lincoln County Commission
- Members of the Cabell County Commission
- Members of the Village of Barboursville
- Members of the City of Huntington
- Members of the City of Milton

1.1.1 Original Plan Development Process

The *Region II Planning and Development Councils All-Hazard Mitigation Plan* was prepared by following the guidelines provided by FEMA and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM). The program guidelines were taken from the Disaster Mitigation Act of 2000, Section 322 Local Planning. The Region II Planning and Development Council core planning team was formed as an ongoing group of key officials throughout the counties of Cabell, Lincoln, Logan, Mason, Mingo and Wayne; as well as municipalities that have a stake in mitigation..

Local leaders core planning team within the Region II Planning and Development Council's area met a total of nineteen (19) times, including ten (10) additional public meetings for public comment. Individual counties had held public meetings and had little to no participation and yielded no comments on the local plan. Citizens of Cabell, Lincoln, Logan, Mason, Mingo and Wayne counties were interviewed using "Household Natural Hazards Preparedness Questionnaires" to get a sampling of what hazards are concerns to the citizens of each county. The results will not be available for this plan, but will be utilized in the annual update of the plan. The public was involved through newspaper legal notices.

The Region II Planning and Development Council's core planning team consulted the completed county mitigation plans in order to create a fully completed and comprehensive regional mitigation plan including Cabell, Lincoln, Logan, Mason, Mingo and Wayne counties that will be adopted by the regional governments.

1.1.1. First Plan Update Process

The first plan update process was completed in late 2008 and early 2009. The Logan County Office of Emergency Management (LCOEM), the Mason County Office of Emergency Services (MCOES), the Wayne County Floodplains Administration Office, the Mingo County Commission served as the coordinator of the plans development. To complete the work required, a contractor was hired – JH Consulting, LLC of Buckhannon, West Virginia. JH Consulting was responsible for all of the data collection and compilation tasks associated with the update.

The core planning committee met a total of nine (9) times. The primary topics of conversation were to ensure that the consultant's proposed updates were consistent with local expectations. Other items, such as hazard vulnerability, updated risk assessment findings, and mitigation projects were also discussed. The meetings were advertised and open to the public. Although no members of the general public attended, the Offices of Emergency Services planned to release a press statement upon the completion and adoption of revisions. The statement will direct the general public as to where they can find a copy of the plan and encourage them to review and comment on it. Any public comments received can be included in the next formal update of the plan. Additionally, participating agencies intend to follow all public notification requirements when implementing mitigation projects (at the time they are implemented).

1.2 DESCRIPTION OF THE PLANNING AREAS

1.2.1. Region II Planning and Development Council

The counties of Region II Planning and Development Council, (Cabell, Lincoln, Logan, Mason, Mingo and Wayne) were primarily formed in the early 1800's with locations being in the southern and western parts of West Virginia. The temperature varies but has an average of low to mid 50 degrees Fahrenheit with four distinct season changes. The mean annual snowfall range is 20-30 inches. Region II Planning and Development Council has a total land area of 2564 square miles, and of that amount, 2534 square miles of the space is land with around 30 square miles being water. Region II has an average median elevation of 609 feet above sea level. Region II Planning & Development Council contains twenty eight (28) municipalities: Alum Creek, Barboursville, Ceredo, Chapmanville, Delbarton, Fort Gay, Gilbert, Hamlin, Hartford, Harts, Henderson, Huntington, Kenova, Kermit, Leon, Logan, Man, Mason, Matewan, Milton, Mitchell Heights, New Haven, Point Pleasant, Sod, Wayne, West Hamlin, West Logan and Williamson. Region II Planning and Development Council is located in the southwest portion of West Virginia.

HISTORY –Region II Planning and Development Council was formed from parts of Cabell, Giles, Kanawha, and Tazewell counties in the early 1800's by an act of the Virginia Assembly. Region II Planning and Development Council counties were named after Chief Logan from the Mingo Native American Tribe, George Mason who was one of the members of the convention that laid the framework for the U.S. Constitution, General "Mad Anthony" Wayne, Wallace J. Williamson because he owned the land where Williamson now stands.

French explorers were the first to stake claims in Region II. Numerous battles have been fought in and around Region II and claims of property rights have been contested throughout its history. Region II, which holds a significant place in history, began to prosper after the conclusion of the Revolutionary War and started its industrial growth when coal was discovered. Combined with coal and the supplies of timber, gravel, salt and fertile soils, Region II had the necessary makings for strong economic growth. Coal production has since slowed considerably, but with ample reserves it still holds a tremendous value in the area. Various light industries have replaced revenue lost due to the decline of coal production and have bolstered the region's economy. Region II's early economic prosperity was brought on by the abundance of coal in the area but soon demand fell and the population moved west to find employment. Region II does entertain a tourist population throughout the year as there are many attractions both historic and cultural.

DEMOGRAPHICS – As of the census of 2000, Region II Planning and Development Council had 253,715 people; 103,853 households; and 71,382 families residing. The population density was 99 people per square mile (17/km²). There were 116,329 housing units at an average density of 46 per square mile (8/km²). The racial makeup of Region II Planning and Development Council was 96.06% White, 2.35% Black or African American, 0.18% Native American, 0.43% Asian, 0.03% Pacific Islander, 0.12% from other races, and 0.81% from two or more races. 0.71% of the population was Hispanic or Latino of any race.

There were 103,853 households out of which 29.06% had children under the age of 18 living with them, 53.67% were married couples living together, 11.50% had a female householder with no husband present, and 4.21% were non-families. 27.06% of all households were made up of individuals and 11.40% had someone living alone who was 65 years of age or older. The average household size was 2.50 and the average family size was 2.95.

In Region II Planning and Development Council, the population was spread out with 22.10% under the age of 18, 9.30% from 18 to 24, 28.00% from 25 to 44, 26.10% from 45 to 64, and 14.50% who were 65 years of age or older. The median age was 39 years. For every 100 females there were 94.20 males. For every 100 females age 18 and over, there were 91.00 males.

The median income for a household in Region II Planning and Development Council was \$24,603, and the median income for a family was \$29,072. Males had a median income of \$31,515 versus \$20,212 for females. The per capita income for county was \$14,102. About 20.80% of families and 24.10% of the population were below the poverty line, including 34.60% of those under age 18 and 14.40% of those ages 65 or over.

Region 2 Planning and Development Council Hazard Mitigation Plan

CURRENT AND FUTURE LAND USE - Dense residential development is centered in or near the Logan County municipalities due to the availability of developable land. Other residential properties are sparsely located throughout the balance of the county. Commercial development in Logan County is concentrated primarily along US 119. Such large developments as the one at the Logan Interchange off of 119 are examples. Other commercial development is anchored in the downtown areas of the county's municipalities, primarily in the Town of Chapmanville and City of Logan. Mason County enjoys a diversified land use. Areas along the Ohio River are largely industrial. There are several commercial and "light industrial" areas concentrated in the municipalities of Point Pleasant, Mason and New Haven. Sparse commercial development also exists throughout the balance of the county, primarily along roadways. The southern portions of the county contain several agricultural areas, especially along the Kanawha River and US 35. Mingo County has a number of sites available for commercial and light industrial development. The Air Transportation Park, Belo Industrial Park, and the Wood Products Industrial Park are large, fully supported developments within the county. Also helping drive development is the King Coal Highway Project which should help meet the growing demand for adequate transportation routes.

The Logan County Development Authority lists three (3) sites targeted for industrial development: Earl Ray Tomblin Industrial Park, Three Mile Curve and McDonald Airfield. The Tomblin Industrial Park is located in Holden and is comprised of approximately 52 acres. Three Mile Curve is located in Dabney. It is slightly larger than 16 acres. McDonald Airfield is a 66 acre site in Taplin along the Guyandotte River. In Mason county, residential areas are primarily concentrated in and/or near the municipalities. Newer residential development is taking place along the WV 62 corridor near Point Pleasant, Mason and New Haven. Older areas of residential development can also be found in these towns as well as in Hartford, Henderson and Leon. Regarding future land use in Mason County, residential, commercial and agricultural trends are expected to remain much the same, as are industrial trends. The Mason County Development Authority, however, has designated several sites for new or continued industrial development. Most of these industrial areas are located just north of Point Pleasant along WV 62. One is located just south of Gallipolis Ferry along WV 2, and another is located along US 33 in the northern portion of the county near Letart.

UTILITIES – Primary electricity and natural gas providers for Logan County, Mason County, Mingo County, and Wayne County are Appalachian Electric Power (AEP), Mountaineer Gas and Columbia Gas, respectively. Verizon, Frontier and Fibernet provide local and long-distance telephone service. Verizon and other local providers provide Internet service. Cellular service is provided by a host of companies, including Verizon, AT&T, and US Cellular

Chapmanville, Logan, Man, and West Logan as well as the Logan County and Buffalo Creek Public Service Districts (PSDs) provide public water service in Logan County. All boards maintain treatment plants. Together, these systems provide service to most of Logan County; however, some residents are served by private wells. Chapmanville, Logan, and Man as well as the Logan County Public Service Districts also provide wastewater service to the residents. Many residents in the unincorporated areas of the county rely on individual septic systems. In Mason County, Hartford, Mason, New Haven and Point Pleasant provide public water service, as do J2Y Water Association and the Mason County Public Service District (PSD). Wastewater service is provided by 7 Hartford, Mason, New Haven, Point Pleasant and the Mason County PSD. Many residents in the unincorporated areas of the county rely on individual septic systems. The Mingo County Public Service District (PSD) provides public water service to a large area of the county however; many residents in the unincorporated areas of the county rely on individual wells.

1.3 RECORD OF CHANGES

This "Record of Changes" document lists changes made during the 2009 Region II Planning & Development Hazard Mitigation Plan update process. In general, during the initial core planning committee meeting, members discussed items that they wanted to improve. Revisions were made in accordance with updated regulations, input from the County Commissions, Municipalities, the Hazard Mitigation Committees and public involvement.

DESCRIPTION OF REVISIONS:

- General format revised for consistency with DHS/FEMA's final rule
- Research materials were re-organized under Appendix 3: Research Materials to streamline content in the risk assessment and action plan
- A list of core planning team members were added
- Applicable 201.6 language was included as a header
- A description of the plan updating process was added
- Narrative was organized by the jurisdictions participating in the planning process
- Historical hazard information moved to hazard profiles
- Majority of historical discussions removed that were not related to hazard mitigation
- Additional demographic data added
- Included a map showing municipal jurisdictions
- Updated demographic area
- Document created to represent changes made during the 2008 and 2009 updating process
- Listed individuals/agencies interviewed and plans referenced to identify applicable hazards to this section
- Comprehensively listed all hazards, noting which hazards were included/excluded and why
- Explained why some hazards were not considered by this risk assessment
- Included a brief statement justifying the inclusion or exclusion of all hazards
- Removed the following hazards": Hurricane, Utility Failure, and communications Failure
- Added the following hazards: Terrorism and Urban Fire
- Hazard profiles were supplemented and standardized
- Profiles were created for the newly identified hazards
- Hazard Profile information was moved to Appendix 1
- GIS mapping generated to depict susceptibility areas to all considered hazards
- Supplemented the flooding profile based on request from WVDHSEM to include Flood Mitigation Assistance (FMA) planning requirements
- Worked with county assessor to determine general figures for county assets listed on Worksheet #3a
- Re-organized the existing asset inventory into the format (Worksheet #3b) provided DHS/FEMA grouping them into "critical facility", "vulnerable population", "economic asset", "special consideration" and "historical consideration"
- Updated county asset inventory by contacting each asset to collect information
- Included a map detailing the location of county assets
- Included loss estimates for hazards included in the plan
- Calculated loss estimates directly from the figures provided by asset representatives and the county assessor
- Derived potential asset loss percentages based on hazard vulnerability mapping
- Depicted hazard-specific loss estimates on Worksheet #4
- Listed loss estimate totals on a "per hazard" basis in the plan proper for greater usability
- Analyze Development Trends
- Coordinated with appropriate officials to describe heavily-developed areas as well as those areas targeted for development
- Revised timeframes on delayed projects
- Added new mitigation projects to address every hazard considered by the plan
- Added affected jurisdictions, timeframes, cost estimates, potential funding sources, and coordinating agencies under each specific project
- Organized projects listed in section 3.0 by jurisdiction

- Listed hazard-specific information together in this appendix for usability. The profile, loss estimations and susceptibility mapping for each hazard are contained under a tab (denoted by the hazard name)

2.1 IDENTIFY HAZARDS

Several methods of research were utilized to identify the hazards to which Region II Planning & Development Council are susceptible. Reviews of related plans/studies, reviews of local media archives, and interviews with local officials were used to ensure accurate data and events were identified. The following plans were consulted as part of this project:

- Logan County
- Mason County
- *Mingo County All Hazards Mitigation Manual*, Mingo County Commission, 2003
- *Mingo County Emergency Operations Plan*, Mingo County Office of Emergency Services, as amended
- *Wayne County All Hazards Mitigation Manual*, Wayne County Commission, 2003
- *Wayne County Emergency Operations Plan*, Wayne County Office of Emergency Services, as amended
- *Wayne County Municipal Floodplain Management Ordinances*, Wayne County Floodplain Administrator

The following officials were interviewed as part of this project:

- Logan County
- Mason County
- Mr. Jerry Mounts – Williamson FD Chief
- Mr. James Ramey – City of Wayne
- Mr. Randy Fry – Wayne County Floodplain Coordinator
- Representatives from the county's critical facilities were polled to gather facility-specific information as well as their thoughts on their facilities hazards susceptibility.

Description: Flood

Floods are the most common and widespread of all natural disasters in the United States. Of all natural hazards facing West Virginia and Region 2's six county area, floods constitute the greatest threat to property and lives. Some terms that are useful in the discussion of this hazard are defined as follows by FEMA:

Flood – A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from overflow of inland or tidal waters, from unusual and rapid accumulation or runoff of surface waters from any source, or from mudflow.

Flash Flood – A flood event occurring with little or no warning where water levels rise at an extremely rapid rate. Flash floods are characterized by a rapid rise in water level, high velocity, and large amounts of debris. They are capable of tearing out trees, undermining buildings and bridges, and scouring new channels. Major factors affecting flash flooding are the intensity and duration of rainfall, and the steepness of watershed and stream gradients. The amount of watershed vegetation, the natural and artificial flood storage areas, and the configuration of the stream bed and floodplain are also important. West Virginia's topography and development patterns make the state especially vulnerable to flash flooding. Flash floods usually result from intense storms dropping large amounts of rain within a brief period. Antecedent moisture, including saturated or frozen soil conditions, can intensify flash flooding from moderate rainfall events. Flash floods occur with little or no warning and can reach their peak in only a few minutes (FEMA, 2003a).

Floodplain – Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

Floodway – The channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the 1-percent-annual-chance flood without cumulatively increasing the water surface elevation by more than a designated height.

Riverine Flood Hazards - Riverine flooding is the most common type of flood event. Riverine floodplains range from narrow, confined channels in the steep valleys of hilly and mountainous areas, to wide flat areas in the Plains States and low-lying coastal regions. The volume of water in the floodplain is a function of the size of the contributing watershed and topographic characteristics such as watershed shape and slope, and climatic and land-use characteristics. In steep, narrow West Virginia stream valleys flooding usually occurs quickly and for a short duration with rapid and deep flooding. Flooding in large rivers usually results from large-scale weather systems that generate prolonged rainfall over wide areas. Small rivers and streams are susceptible to these weather systems as well as more localized systems that cause intense rainfall over small areas.

Wind/Severe Storms - Wind is the movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in a given area, such as mountains, valleys or large bodies of water. Wind poses a risk to Cabell, Lincoln, Logan, Mason Mingo and Wayne Counties in many forms. Tornadoes, high winds, downbursts, wind erosion, and wind chill can cause harm to people and damage to property and infrastructure. Effects include blowing debris, interruptions in elevated power and communications utilities and intensified effects of winter weather and severe storms.

Thunderstorms - A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm or cold front, or a sea or lake-breeze. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters, or in lines. It is possible for several thunderstorms to affect one location in the course of a few hours. Damage from severe thunderstorms often occurs when a single thunderstorm affects one location for an extended time. Thunderstorms can contribute to an onslaught of other hazards, such as flooding (Section 3.7), strong straight-line winds, tornadoes (Section 3.8b), hail, and lightning, as well as the possibility of lightning initiated fires. Downburst winds, typically associated with thunderstorms, are 'straight-line' winds that are distinguishable from tornado activity by pattern of destruction and debris. Depending on the size, intensity, and location of these events, the destruction to property may be devastating. Downburst winds generally fall into two categories:

- Microburst: covers an area less than 2.5 miles in diameter;
- Macroburst: covers an area at least 2.5 miles in diameter.

A thunderstorm is considered severe by the NWS if it produces one or more of the following:

- Winds of 58 mph or higher;
- Hail $\frac{3}{4}$ inch in diameter (penny size) or larger; or
- Tornadoes

Lightning and Hail - Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.

Tornado Wind - A tornado is "a rapidly rotating vortex or funnel of air extending ground-ward from a cumulonimbus cloud" (FEMA, 1997). They typically spawn from thunderstorms, hurricanes, and wildfires.

Winter Weather - West Virginia and the six-county makeup of Region 2 certainly experiences its share of hazardous winter weather. Winter weather may include heavy snows, damaging ice and extreme cold. A heavy snow is generally defined as having more than 8 inches of accumulation in less than 24 hours. Ice storms result from the accumulation of freezing rain, which is rain that becomes super-cooled and freezes upon impact with cold surfaces. Freezing rain most commonly occurs in a narrow band within a winter storm that is also producing heavy amounts of snow and sleet in other locations. The definition of extreme cold temperature varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." In West Virginia, extreme cold usually involves temperatures below zero degrees Fahrenheit. Excessive cold may accompany winter storms, linger after the winter storm event, and occur without storm activity.

Drought (and extreme heat) - Drought is a normal, recurrent feature of climate that can be defined in different ways. There are four methods to define the severity of drought: meteorological, hydrological, agricultural, and socioeconomic. Meteorological drought refers to a reduction in the normal rainfall for a given geographic area. This needs to be area-specific, as the average rainfall can vary greatly in different areas. Hydrological drought is based on the amount of surface and groundwater relative to normal levels. Agricultural drought deals with the amount of moisture in soils available for plants. The last, socioeconomic drought, measures the impact that any or all of the first three have on people and businesses.

Wildfires & Structural Fires - This hazard is defined as a highly destructive, uncontrolled fire or any instance of uncontrolled burning. Although a fire may have components of both, fires are generally categorized as one of two types: wildfire or a non-wilderness structural fire. A wildfire is an uncontrolled burning in woodlands, grasslands, or brush lands. These commonly burn in excess of 50 acres. A non-wilderness fire is uncontrolled burning in residential or commercial development.

Landslides - Landslides are the downward movement of large volumes of surface materials under gravitational influences. The term landslide includes mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and earth flows. The type of movement and type of material in motion generally classifies the landslides. Types of movement include: rotational, translational, block, falls, topples, debris flows, debris avalanche, earth flow, creep and lateral spreads. The types of materials in motion generally consist of fractured or weathered bedrock and loose or unconsolidated soils. A combination of two or more of the principle flow types is referred to as a complex movement. Landslide susceptible terrain includes:

- Mountainous terrain with very steep slopes
- Areas of moderate relief suffering severe land degradation
- Areas of heavy precipitation events
- Areas covered with thick layers of finely grained soil deposits
- Areas subject to earthquake shaking

Land Subsidence (Karst) - Generally, land subsidence can be described as the loss of surface elevation due to the removal of subsurface support. This can range from broad regional lowering of surface land to localized collapse. The term subsidence is commonly used to imply a gradual sinking, but it also can refer to an instantaneous or catastrophic collapse. Land subsidence is vertical earth movement resulting from increased stresses in the soil mass, or loss of shallow soil support. Subsidence can be described as rapid, caused by undermining or failure of the underlying strata, or slow, caused by consolidation. Rapid subsidence, generally referred to as sinkholes, result from small subsurface voids enlarging over time until the thickness of soil/rock at the roof is insufficient to support the applied loads, including its own weight. When the loads exceed the strength of the roof, the roof collapses into the subsurface void forming a sinkhole.⁷ Rapid subsidence frequently occurs in areas of abandoned mines (Section 3.15), and karst areas underlain by carbonate rocks (limestone and dolomite) Karst is a landscape with topographic depressions caused by the dissolution of carbonate rocks (limestone and dolomite) by moving groundwater.

Dam Failure - The West Virginia Dam Control and Safety Act, establishes regulations for dams in the State. Under the regulations dams are defined as an artificial barrier or obstruction, including any works appurtenant to it and any reservoir created by it, which is or will be placed, constructed, enlarged, altered or repaired so that it does or will impound or divert water. Dams are barriers constructed to impound water for storage, flood control, power generation and/or stream navigation. Dams also are constructed to impound hydraulically transported industrial waste including spoil or mine processing waste, or coal combustions waste of fly ash, the structures can vary greatly in size based on the purpose and area topography.

Region 2 Planning and Development Council
Hazard Mitigation Plan

The following chart (Figure 2.1.1) illustrates the hazards to which the county and its municipalities are susceptible. The intent of this chart is to justify the inclusion of these hazards in the plan; more detailed information about how they affect the area within the county can be found in the hazard profiles.

Figure 2.1.1

HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
Avalanche	USGS Topographic Maps NOAA Internet research indicates that some of the jurisdictions are not susceptible to this hazard.	The general contour of the land in the region is mountainous, but they are not steep enough to cause avalanche activity. Further, the amount of snowfall the county receives is insufficient for any kind of avalanche.
Coastal Erosion	MapQuest Geographical research indicates that these jurisdictions are not susceptible to this hazard due to location.	Coastal erosion is not a significant risk as the region is more than 450 miles from the Atlantic Ocean.
Coastal Storm	Geographical research indicates that these jurisdictions are not susceptible to this hazard due to location. See also "Thunderstorm/Lightning"	Coastal storms are not a threat to the region as the region is more than 450 miles from the Atlantic Ocean. The only hazard associated with this hazard that is experienced by the region is rain, which is address elsewhere.
Dam Failure	WVDEP WV GIS Technical Center Website WVDEP Environmental Website USACE – Huntington District Website	A dam failure may result in loss of life and property. Logan County contains several dam facilities. 1972's Buffalo Creek Disaster serves as an example of a catastrophic dam failure. Two (2) lock and dam facilities lie along the Ohio River are located in Mason County. Additional Lock and dam facilities lie along the Ohio River upstream of Mason County.
Debris Flow	Research indicates that the region is not susceptible to this hazard. See also "Land Subsidence"	See "Land Subsidence"
Drought	NCDC Event Records USDA Census of Agriculture (2007)	41 Droughts have been recorded by the NCDC over the past 5 years.
Earthquake	USGS Internet Search FEMA	USGS rates the region as having a 3 to 12%g Peak Ground Acceleration (PGA) FEMA states the areas with 4 to 6%g PGAs have relatively low risks of earthquakes, but earthquakes should still be considered a natural hazard. There are no historical records of earthquakes in the region.
Expansive Soils	Research of the USGS soil Survey indicates that these jurisdictions are not susceptible to this hazard. See also "Land Subsidence"	See "Land Subsidence"

Region 2 Planning and Development Council
Hazard Mitigation Plan

Extreme Heat	<p>Research indicates that these jurisdictions are not susceptible to this hazard.</p> <p>NCDC history</p>	<p>Temperatures' in the region seldom exceed 100 degrees.</p> <p>If the temperature meets or exceeds 100 degrees, it has not been hot enough for the amount</p>
Flooding	<p>Public Comment</p> <p>NCDC Event Records</p> <p>FIRMs</p> <p>FEMA Repetitive Loss List</p>	<p>The region has experienced 86 flooding events since 1994, resulting in deaths and millions of dollars in damage.</p> <p>Local officials have identified floods as the highest priority natural hazard in the region.</p>
Hailstorm	<p>NCDC Event Records</p>	<p>The region has experienced over 150 hail events since 1983.</p> <p>The entire region is at moderate risk of hailstorms.</p>
Hazardous Material Incident	<p>2009 Commodity Flow Study</p> <p>State Emergency Response Commission</p> <p>Public Comment</p> <p>WVDOT Website</p> <p>HAZUS Database</p>	<p>The region sees transports of materials in most USDOT hazard classes.</p> <p>The region contains many facilities that report chemicals via the SARA Title III Legislation.</p> <p>The region has hazardous materials transported on roadways daily.</p>
Hurricane	<p>See also "Thunderstorm"</p> <p>Geographic research indicates that these jurisdictions are not susceptible to this hazard</p>	<p>The region does not experience the hurricane conditions of extremely high winds, rains, and hail. In some instances, the region may be affected by rainfall brought about by the remnants of a hurricane, which are addressed elsewhere.</p> <p>Some counties in the region were involved in a federal emergency declaration for West Virginia's role in housing Hurricane Katrina evacuees.</p>
Land Subsidence	<p>USGS Soil Survey</p> <p>Nationalatlast.gov</p> <p>USDA NRCS Soil Survey</p> <p>Internet research</p> <p>Searches of local media archives</p> <p>Interviews with local officials</p>	<p>According to the USGS, the region is located in "high risk" area.</p> <p>Local homes are slowly destroyed by landslide and slippage conditions.</p> <p>Dangerous conditions exist also for pedestrians and other property.</p>
Landslide	<p>See "Land Subsidence"</p>	<p>See "Land Subsidence"</p>
Terrorism	<p>FEMA Website</p> <p>Internet research</p>	<p>The region does contain facilities that may increase the risk of domestic terrorism.</p> <p>Terrorism will be discussed generally in this plan due to its sensitive nature coupled with the fact that this plan will become public.</p>
Thunderstorm/Lightning	<p>NCDC Event Records</p> <p>Searches of local media archives</p>	<p>The region has experienced over 300 severe thunderstorms-wind events since 1968.</p> <p>Based on historical evidence, it is assumed that the region is equally at risk from severe thunderstorms.</p>

Region 2 Planning and Development Council
Hazard Mitigation Plan

Tsunami	MapQuest Geographical research via the internet indicates that these jurisdictions are not susceptible to this hazard.	The Atlantic Ocean is approximately 450 miles from the region. The Appalachian Mountains will most likely protect the area from a tsunami affecting the US east coast.
Urban Fire	Public Comment Local Media Archives	The region does contain dense municipal areas, in which a fire could start and rapidly spread, causing death or serious injury. Representatives of community assets indicated a concern for fire events.
Volcano	USGS Internet research indicates that these jurisdictions are not susceptible to this hazard	No volcanoes exist on the East Coast
Wildfire	NCDC Event Records WFAS-MAPS National Fire Interagency Center WV Division of Forestry	The region contains heavily wooded as well as agricultural areas that could be susceptible to wild land fires.
Wind Storm/Tornado	National Weather Service NCDC Event Records Public Response Internet Research	According to the NCDC database, there have been numerous high wind events since 1968. Also according to the NCDC, there have been a few tornadoes in the region. Risks from high winds are equally distributed throughout the region.
Winter Storm	NCDC Event Records Internet Research Interviews with local officials Public Response	The NCDC database lists numerous winter storm, snow and ice events throughout the region, some of which have resulted in death.

MULTI-JURISDICTIONAL REQUIREMENTS

§201.6(c)(2)(iii) For multi-jurisdictional plans, the risk assessment must access each jurisdiction's risks when they vary from the risks facing the entire planning area.

While it is true that the municipalities can be said to be susceptible to the above hazards by virtue of their location in the region, it stresses that it may be more or less susceptible to these hazards than each other and the balance of the counties in the region. The following chart (Figure 2.1.2) determines if they are equally (=), more (>), or less (<) susceptible to these hazards than the balance of the region. (Only those hazards affecting the region are listed below.)

2.2 PROFILE HAZARDS

§201.6(c)(2)(i) The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Throughout Region 2 PDC's six-county area, flooding is the primary hazard that citizens and jurisdictions face. History indicates that flooding occurs more often than any other hazard in the region. Beyond flooding, the region also faces the potential hazards of dam failure, drought, hail storms, among other less relevant potential hazards.

Several hazards affect the region, as noted in the previous section. However, those hazards may not affect the region in ways that residents and planners may typically think. This section references detailed descriptions of how the identified hazards affect the region and the municipalities therein.

Refer to Appendix 1 of this plan for detailed hazard profiles (including scholarly discussion of the hazard and historical occurrences), extensive asset inventory and loss estimate data, and Geographical Information System (GIS)-based mapping that predicts low, moderate, and high susceptibility areas.

Hazard	Dam Failure	Drought	Earthquake	Flooding	Hailstorm	Hazmat Incident	Land Subsidence	Terrorism	Thunderstorm	Urban Fire	Wildfire	Wind	Winter Storm
Hartford	=	=	=	=	=	=	=	=	=	=	=	=	=
Henderson	=	=	=	>	=	=	=	=	=	=	=	=	=
Leon	<	=	=	=	=	=	=	=	=	=	=	=	=
Mason	=	=	=	=	=	>	=	=	=	=	=	=	=
New Haven	=	=	=	>	=	>	=	=	=	=	=	=	=
Pt. Pleasant	=	=	=	>	=	>	=	=	=	=	=	=	=
Williamson	=	=	=	=	>	>	>	=	=	>	<	=	=
Delbarton	=	=	=	>	=	>	=	=	=	>	<	=	=
Gilbert	=	=	=	>	=	=	=	=	=	=	>	=	=
Kermit	=	=	=	=	=	=	=	=	=	=	<	=	=
Matewan	=	=	=	>	=	=	=	=	=	=	<	=	=
Chapmanville	=	=	=	>	=	=	=	=	=	>	=	=	=
Logan	=	=	=	>	=	=	=	=	=	>	=	=	=
Man	=	=	=	>	=	>	=	=	=	>	=	=	=
Mitchell Heights	=	=	=	=	=	=	=	=	=	=	=	=	=
West Logan	=	=	=	=	=	=	=	=	=	=	=	=	=
Ceredo	=	=	=	<	=	>	=	<	=	=	=	=	=

Region 2 Planning and Development Council
Hazard Mitigation Plan

Hazard	Dam Failure	Drought	Earthquake	Flooding	Hailstorm	Hazmat Incident	Land Subsidence	Terrorism	Thunderstorm	Urban Fire	Wildfire	Wind	Winter Storm
Fort Gay	=	=	=	>	=	=	>	=	=	>	=	=	=
Kenova	=	=	=	=	=	>	=	>	=	=	=	=	=
Wayne	=	=	=	=	=	=	=	=	=	=	>	=	=
Hamlin	<	=	=	>	=	>	>	=	=	>	<	=	=
West Hamlin	<	=	=	>	=	>	>	=	=	>	<	=	=
Barboursville	=	=	=	>	=	>	=	=	=	>	=	=	=
Huntington	=	=	=	>	=	>	=	>	=	>	=	=	=
Milton	=	=	=	>	=	>	=	=	=	>	=	=	=
Cabell County	=	=	=	>	=	>	=	>	=	>	=	=	=
Lincoln County	<	=	=	>	=	>	>	=	=	>	=	=	=
Logan County	=	=	=	>	=	=	=	=	=	>	=	=	=
Mason County	=	=	=	>	=	>	=	=	=	=	=	=	=
Mingo County	=	=	=	>	=	>	=	=	=	>	=	=	=
Wayne County	=	=	=	>	=	>	=	=	=	=	=	=	=

	Flood	Wind/Storm	Tornado	Winter Weather	Drought	Wildfire	Landslide	Dam Failure	Structure Fires
Cabell	High	Medium	Low	Medium	Medium	Medium	Medium	Low	Medium
Lincoln	High	Medium	Low	Medium	Medium	High	Medium	Low	Medium
Logan	High	Medium	Low	Medium	Medium	High	Medium	Low	Medium
Mason	High	Medium	Low	Medium	Medium	High	Medium	Low	Medium
Mingo	High	Medium	Low	Medium	Medium	High	Medium	Low	Medium
Wayne	High	Medium	Low	Medium	Medium	High	Medium	Low	Medium



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

October 20, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable Brian Billings
Mayor's Office – Point Pleasant, WV
400 Viand Street
Point Pleasant, West Virginia 25550

Dear Mayor Billings:

The Routine Continuing Eligibility Inspection of the Point Pleasant, WV, Local Flood Protection Project was conducted on July 21, 2011, by Mr. Willy Call of your organization, and our representatives, Mr. David Humphreys and Mr. Charles Barry. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

- a. Vegetation greater than 2 inches in diameter needs to be removed within the 15-foot limit of the toe of the levee and floodwall.
- b. Closure structure trial erections have not been performed in accordance with the Operation & Maintenance manual. All closures need to be exercised in accordance with the O&M Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. These inspections are required to be conducted and the results need to be provided to the Huntington District prior to the next continuing eligibility inspection.

d. No maintenance records exist for the toe drainage system and/or relief wells. The toe drain needs to be inspected when the pipes and culverts are inspected. No documentation of the required pump testing of the relief wells.

e. Operations, maintenance, inspection, and training records are not present at the pumpstation and were not provided during the inspection. Records need to be properly documented and supplied to the Huntington District prior to next year's continuing eligibility inspection.

Also, please reference the Point Pleasant, WV LPP, Periodic Inspection Report No. 3, dated April 2010. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. I understand extenuating circumstances may exist that have prevented you from completing necessary repairs; however public safety is the Corps' number one priority and will remain our primary focus. In order to prevent being removed from the USACE Rehabilitation Inspection Program, please provide to us a plan and schedule to correct the deficiencies documented in the 2010 Periodic Inspection (PI) and the 2011 Continuing Eligibility Inspection (CEI) reports within 60 days of the date of this letter. Your plan should be comprehensive and provide a timeframe for correcting all deficiencies (rated unacceptable) within two years from the date of this letter. We will review your plan to ensure your levee system will maximize benefits in effort to ensure public safety. Your plan will be monitored by the Huntington District levee safety staff and should address deficiencies in a prioritized fashion in effort to optimize system wide risk reduction. Open communication is encouraged during the implementation and execution of your levee system improvement plan. I

encourage you to contact my staff and provide updates and progress reports. Your level of commitment and ability to adhere to your submitted plan will be verified and documented during annual continuing eligibility inspections.

If significant progress is not made, or if you fail to submit and implement a plan and schedule to correct the deficiencies noted above (prior to the next continuing eligibility inspection), the Point Pleasant levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project. I am furnishing a copy of this letter along with the detailed inspection report to the Mason County Emergency Management; West Virginia Division of Homeland Security & Emergency Management; and FEMA Region III.

Sincerely,



John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Huntington District Levee Safety Officer

Enclosure



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

September 22, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable Kim Wolfe
Mayor's Office – Huntington, West Virginia
Post Office Box 1659
Huntington, West Virginia 25717

Dear Mayor Wolfe:

The Routine Continuing Eligibility Inspection (RCEI) of the Downtown Segment of the Huntington, WV, Local Flood Protection Project was conducted on June 3, 2011, by Mr. Steve Riggs of your organization, and our representatives, Mr. Steven Spagna and Mr. William Weekley. The findings from the RCEI of the Guyandotte Segment of the Huntington, WV, LPP was previously provided to your office on July 7, 2001. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable condition** due to the following issues:

a. Vegetation greater than 2 inches in diameter needs to be removed within the 15-foot limit of the toe of the levee and floodwall.

b. Closure structure trial erections have not been performed in accordance with the Operation & Maintenance manual. All closures need to be exercised in accordance with the O&M Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event. Several closure structures are permanently erected using materials intended for temporary closure.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. These inspections are required to be conducted and the results need to be provided to the Huntington District prior to the next continuing eligibility inspection.

d. Megger testing on pump motors and critical power cables has not been conducted within the past two years. Megger testing results shall be provided to the District prior to the next continuing eligibility inspection.

e. No maintenance records exist for the toe drainage system. The toe drain needs to be inspected when the pipes and culverts are inspected.

f. Unauthorized encroachments or inappropriate activities noted are likely to impact the integrity of the Project.

g. Operations, maintenance, inspection, and training records are not present at the pumpstation and were not provided during the inspection. Records need to be properly documented and supplied to the Huntington District prior to next year's continuing eligibility inspection.

Also, please reference the Huntington, WV LPP, Periodic Inspection Report No. 3, dated November 2009. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. **If significant progress is not made on the maintenance deficiencies listed above, in addition to the deficiencies documented in the Periodic Inspection No. 3 Addendum, the Huntington levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.**

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project.

I am furnishing a copy of this letter along with the detailed inspection report to the Cabell County Emergency Management; West Virginia Division of Homeland Security & Emergency Management; and FEMA Region III.

Sincerely,

Encl

John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Huntington District Levee Safety Officer



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

July 7, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable Kim Wolfe
Mayor of Huntington
Post Office Box 1659
Huntington, West Virginia 25717

Dear Mayor Wolfe:

The Routine Continuing Eligibility Inspection of the Guyandotte segment of the Huntington, WV, Local Flood Protection Project was conducted on June 3, 2011, by Mr. Steve Riggs of your organization, and our representatives, Mr. Steven Spagna and Mr. William Weekley. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

a. Vegetation greater than 2 inches in diameter needs to be removed within the 15-foot limit of the toe of the levee and floodwall.

b. Closure structure trial erections have not been performed in accordance with the O&M manual. All closures need to be exercised in accordance with the Operation and Maintenance Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. This is required to be conducted and results need to be supplied to the Huntington District prior to the next inspection.

d. No maintenance records exist for the toe drainage system. The toe drain needs to be inspected when the pipes and culverts are inspected.

e. Operations, maintenance, inspection, and training records are not present at the pumpstation and were not provided during the inspection. Records need to be properly documented and supplied to the Huntington District prior to next year's continuing eligibility inspection.

f. Pump Station No. 2 was not operational because of the electrical system. New contacts are needed and the starter needs to be serviced, arcing was visible when Mr. Riggs attempted to start the pumps.

Also, please reference the Huntington, WV LPP, Periodic Inspection Report No. 3, dated November 2009. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.


A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. **If significant progress is not made on the maintenance deficiencies listed above, in addition to the deficiencies documented in the Periodic Inspection No. 3 Addendum, the Guyandotte levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.**

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project.

I am furnishing a copy of this letter along with the detailed inspection report to the Cabell County Emergency Management; West Virginia Division of Emergency Management; and FEMA Region III.

Sincerely,

A handwritten signature in black ink, appearing to read "John Jaeger". The signature is fluid and cursive, with the first and last names being the most prominent.

John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Levee Safety Officer

Encl



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

July 7, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable Ott Adkins
Mayor of Ceredo
City Building
Post Office Box 691
Ceredo, West Virginia 25507

Dear Mayor Adkins:

The Routine Continuing Eligibility Inspection of the Ceredo segment of the Ceredo-Kenova, WV, Local Flood Protection Project was conducted on March 29, 2011, by Mr. Marvin Jordan of your organization, and our representatives, Mr. Steven Spagna and Mr. William Weekley. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

a. All vegetation greater than 2 inches in diameter is required to be removed within the 15-foot limit of the toe of the levee and floodwall.

b. Closure structure trial erections have not been performed in accordance with the O&M manual. All closures need to be exercised in accordance with the Operation and Maintenance Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. This is required to be conducted and results need to be supplied to the Huntington District prior to the next continuing eligibility inspection.

d. No maintenance records exist for the toe drainage system. The toe drain needs to be inspected when the pipes and culverts are inspected.

e. Some floodwall monolith joints have separated. Open joints need to be sealed to protect the water stops.

f. Jordan Branch interior drainage discharge culvert needs repaired. Please contact our office when you schedule the dewatering of the Jordan Branch culvert this summer.

g. Sluice gate No. 9 is not in operating condition and needs to be repaired. Adopt maintenance schedule for the sluice gate to ensure reliability. In the interim a plan needs to be submitted to the Huntington District on how the city intends to operate this feature during future flood events.

h. Megger testing not conducted within the past two years. Megger tests shall be provided to the District prior to the next continuing eligibility inspection.

Also, please reference the Ceredo and Kenova LPP, Periodic Inspection Report No. 3, dated March 2010. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. **If significant progress is not made on the maintenance deficiencies listed above, in addition to the deficiencies documented in the Periodic Inspection No. 3 Addendum, the Ceredo/Kenova levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.**

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project.

I am furnishing a copy of this letter along with the detailed inspection report to the Wayne County Emergency Management; West Virginia Division of Emergency Management; and FEMA Region III.

Sincerely,



John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Levee Safety Officer

Encl



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

July 6, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable Ric Griffith
Mayor of Kenova
Post Office Box 268
Kenova, West Virginia 25530

Dear Mayor Griffith:

The Routine Continuing Eligibility Inspection of the Kenova segment of the Ceredo-Kenova, WV, Local Flood Protection Project was conducted on March 30, 2011, by Mr. Mark Osburn of your organization, and our representatives, Mr. Steven Spagna and Mr. William Weekley. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

- a. All vegetation greater than 2 inches in diameter is required to be removed within the 15-foot limit of the toe of the levee and floodwall.
- b. Closure structure trial erections have not been performed in accordance with the O&M manual. All closures need to be exercised in accordance with the Operation and Maintenance Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. This is required to be conducted and results need to be supplied to the Huntington District prior to the next continuing eligibility inspection.

d. No maintenance records exist for the toe drainage system. The toe drain needs to be inspected when the pipes and culverts are inspected.

e. Megger testing not conducted within the past two years. Megger tests shall be provided to the District prior to the next continuing eligibility inspection.

Also, please reference the Ceredo and Kenova LPP, Periodic Inspection Report No. 3, dated March 2010. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. **If significant progress is not made on the maintenance deficiencies listed above, in addition to the deficiencies documented in the Periodic Inspection No. 3 Addendum, the Ceredo/Kenova levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.**

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project.

I am furnishing a copy of this letter along with the detailed inspection report to the Wayne County Emergency Management; West Virginia Division of Emergency Management; and FEMA Region III.

Sincerely,



John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Levee Safety Officer

Encl



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

January 23, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable John Mark Hubbard
Mingo County Commission
75 East Second Avenue
Room 308
Williamson, West Virginia 25661

Dear Commissioner Hubbard:

The Routine Continuing Eligibility Inspection of the Williamson, West Virginia, Local Flood Protection Project was conducted on September 27, 2011, by Mr. Tom Felix representing the sponsor, and our representatives; Mr. William Weekley and Mr. David Humphreys. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine continuing eligibility for the Rehabilitation Inspection Program (RIP) under the authority of Public Law 84-99. As long as your project remains in the RIP program we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following items that were rated U (Unacceptable). Also, please reference the Williamson, WV LPP, Periodic Inspection Report No. 3, dated December 2009 which has previously identified items rated unacceptable.

a. Vegetation greater than 2 inches in diameter needs to be removed within the 15-foot limit of the toe of the levee and floodwall.

b. Closure structures exhibit rusting along the gate and cranks. This project requires a program of corrosion abatement and coating rejuvenation is in place. Metals exposed to the weather should be coated periodically and any debris should be removed from the gates.

A minimally acceptable project rating indicates there are maintenance items associated with the project rated as unacceptable. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable or unacceptable and an engineering determination concluded that the unacceptable rated items would not prevent the system from performing as intended during the next flood event.

I am enclosing a copy of the detailed inspection report which contains the maintenance items that need to be addressed. I understand extenuating circumstances may exist that have prevented you from completing necessary repairs; however public safety is the Corps' number one priority and will remain our primary focus.

Please provide to us a plan and schedule to correct the U-rated inspection items documented in the 2010 Periodic Inspection (PI) and the 2011 Continuing Eligibility Inspection (CEI) reports within 60 days of the date of this letter. Your plan should be comprehensive and provide a timeframe for correcting all U-rated inspection items within two years from the date of this letter. We will review your plan to ensure your levee system will maximize benefits in effort to ensure public safety. Your plan will be monitored by the Huntington District levee safety staff and should address U-rated items in a prioritized fashion in effort to optimize system wide risk reduction. Open communication is encouraged during the implementation and execution of your levee system improvement plan. I encourage you to contact my staff and provide updates and progress reports. Your level of commitment and ability to adhere to your submitted plan will be verified and documented during annual continuing eligibility inspections.

If significant progress is not made or if you fail to submit a plan and schedule to correct the U-rated inspection items noted above within the time limits provided, the Williamson, WV, levee system will be ineligible for rehabilitation assistance from the USACE Rehabilitation Inspection Program.

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project. I am furnishing a copy of this letter along with the detailed inspection report to the Mingo County Emergency Management Agency; West Virginia Division of Homeland Security & Emergency Management; and FEMA Region III.

Sincerely,

A handwritten signature in blue ink, appearing to read "John J. Jaeger".

John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Huntington District Levee Safety Officer

Enclosure



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lrh.usace.army.mil/>

November <http://www.lrh.usace.army.mil/>

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable John Mark Hubbard
Mingo County Commission
75 East Second Avenue
Room 308
Williamson, West Virginia 25661

Dear Commissioner Hubbard:

The Routine Continuing Eligibility Inspection of the West Williamson, WV, Local Flood Protection Project was conducted on September 27, 2011, by Mr. Tom Felix representing the local interest, and our representatives, Mr. William Weekley and Mr. David Humphreys. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

- a. Closure structures in poor condition, parts missing or corroded. There may not be sufficient warning time to repair or replace equipment during a flooding event.
- b. Differential settlement of the concrete floodwall. There are areas of tilting, sliding, or settlement that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop is unacceptable.

c. Pipes/culverts have not been inspected visually or by video within the last 5 years. These inspections are required to be conducted and the results need to be provided to the Huntington District prior to the next continuing eligibility inspection.

Also, please reference the West Williamson, WV LPP, Periodic Inspection Report No. 1, dated October 2009. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable project rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

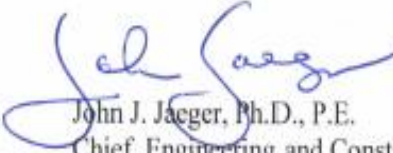
I am enclosing a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. I understand extenuating circumstances may exist that have prevented you from completing necessary repairs; however public safety is the Corps' number one priority and will remain our primary focus. In order to prevent being removed from the USACE Rehabilitation Inspection Program, please provide to us a plan and schedule to correct the deficiencies documented in the 2010 Periodic Inspection (PI) and the 2011 Continuing Eligibility Inspection (CEI) reports within 60 days of the date of this letter. Your plan should be comprehensive and provide a timeframe for correcting all deficiencies rated unacceptable. We will review your plan to ensure your levee system will maximize benefits in effort to ensure public safety. Your plan will be monitored by the Huntington District levee safety staff and should address deficiencies in a prioritized fashion in effort to optimize system wide risk reduction. Open communication is encouraged during the implementation and execution of your levee system improvement plan. I encourage you to contact my staff and provide updates and progress reports. Your level of commitment and ability to adhere to your submitted plan will be verified and documented during annual continuing eligibility inspections.

If significant progress is not made, or if you fail to submit and implement a plan and schedule to correct the deficiencies noted above (prior to the next continuing eligibility inspection), the West Williamson levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-

399-5805 if you have any questions regarding this letter or your project. I am furnishing a copy of this letter along with the detailed inspection report to the Mingo County Emergency Management; West Virginia Division of Homeland Security & Emergency Management; and FEMA Region III.

Sincerely,



John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Huntington District Levee Safety Officer

Enclosure



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON
CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON WV 25701
<http://www.lh.usace.army.mil/>

November 4, 2011

Engineering and Construction Division
Geotechnical Engineering Branch
Dam and Levee Safety Section

Honorable John Mark Hubbard
Mingo County Commission
75 East Second Avenue
Room 308
Williamson, West Virginia 25661

Dear Commissioner Hubbard:

The Routine Continuing Eligibility Inspection of the Matewan, West Virginia, Local Flood Protection Project was conducted on September 29, 2011, by Mr. Jason Allen of your organization, and our representatives, Mr. William Weekley and Mr. David Humphreys. As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, these routine inspections are intended to verify proper maintenance, owner preparedness, and component operation.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage; preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should ensure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Inspection Program (RIP) under authority of PL 84-99 for Federal and non-Federal systems. As long as your project remains in either an acceptable or minimally acceptable condition we will schedule continuing eligibility inspections annually. This inspection revealed the project to be in a **minimally acceptable** condition due to the following issues:

- a. Vegetation greater than 2 inches in diameter needs to be removed within the 15-foot limit of the toe of the levee and floodwall.
- b. Obstructions, vegetation, debris, or sediment have impaired the flow capacity of the Warm Hollow Pressure Conduit. Sediment and debris removal required for both; the approach and outlet end.

c. Closure structure trial erections have not been performed in accordance with the Operation & Maintenance manual. All closures need to be exercised in accordance with the O&M Manual. Exercising closures ensures these structures and their associated components are prepared for service during the next flood event.

d. Unauthorized encroachments must be addressed. Encroachments can inhibit operations, maintenance and emergency surveillance of the floodwall and levee, also, encroachments can have a negatively impact to integrity of the floodwall.

e. Pipes/culverts have not been inspected visually or by video within the last 5 years. These inspections are required to be conducted and the results need to be provided to the Huntington District prior to the next continuing eligibility inspection.

f. Major deficiencies were identified that may significantly reduce pumping operations. Pumps were not operated due to electrical problems and natural gas and diesel engines could not be started.

Also, please reference the Matewan, WV LPP, Periodic Inspection Report No. 1, dated November 2009. The Periodic Inspection report has identified items rated "unacceptable" which require correction. The sponsor should ensure these corrections and the ones noted above are performed in an expedient manner. Continuing eligibility in the RIP program will require these deficiencies be corrected within two years of the date of the addendum contained within the PI report.

A minimally acceptable rating indicates there are maintenance deficiencies associated with the project. The assessments of individual components rated during the inspection were based on criteria provided in the inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the unacceptable items would not prevent the system from performing as intended during the next flood event.

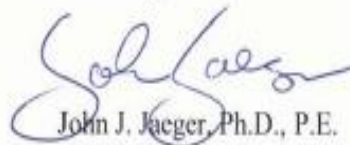
Enclosed is a copy of the detailed inspection report which contains additional maintenance items that need to be addressed. I understand extenuating circumstances may exist that have prevented you from completing necessary repairs; however public safety is the Corps' number one priority and will remain our primary focus. In order to prevent being removed from the USACE Rehabilitation Inspection Program, please provide to us a plan and schedule to correct the deficiencies documented in the 2009 Periodic Inspection (PI) and the 2011 Continuing Eligibility Inspection (CEI) reports within 60 days of the date of this letter. Your plan should be comprehensive and provide a timeframe for correcting all deficiencies (rated unacceptable) within two years from the date of this letter. We will review your plan to ensure

your levee system will maximize benefits in effort to ensure public safety. Your plan will be monitored by the Huntington District levee safety staff and should address deficiencies in a prioritized fashion in effort to optimize system wide risk reduction. Open communication is encouraged during the implementation and execution of your levee system improvement plan. I encourage you to contact my staff and provide updates and progress reports. Your level of commitment and ability to adhere to your submitted plan will be verified and documented during annual continuing eligibility inspections.

If significant progress is not made, or if you fail to submit and implement a plan and schedule to correct the deficiencies noted above (prior to the next continuing eligibility inspection), the Matewan levee system will be ineligible for rehabilitation assistance and will be removed from the USACE Rehabilitation Inspection Program.

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions regarding this letter or your project. I am furnishing a copy of this letter along with the detailed inspection report to the Mingo County Emergency Management; West Virginia Division of Homeland Security & Emergency Management; and FEMA Region III.

Sincerely,



John J. Jaeger, Ph.D., P.E.
Chief, Engineering and Construction Division
Huntington District Levee Safety Officer

Enclosure:



US Army Corps
of Engineers
Huntington District

PAL Status by Congressional District

KY District 4			Total Length in District (miles): 7.61	
4 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating
<u>Ashland, KY, LPP</u>	2.71	Boyd	PAL request letter from FEMA Region IV sent Feb. 1, 2012. 2 years, 90 days to comply. Sponsors required to submit certification data by about May 2014.	May 10, 2011 Minimally Acceptable
<u>Catlettsburg, KY, LPP</u>	1.96	Boyd	PAL request letter from FEMA Region IV sent Feb. 1, 2012. 2 years, 90 days to comply. Sponsors required to submit certification data by about May 2014.	August 4, 2011 Minimally Acceptable
<u>Maysville, KY, LPP</u>	2.67	Mason	PAL expires December 2013.	April 6, 2011 Minimally Acceptable
<u>Russell, KY, LBPP</u>	0.27	Greenup	1% protection not provided. Certification not required.	May 9, 2011 Minimally Acceptable
KY District 5			Total Length in District (miles): 1.16	
4 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating
<u>Pikeville, KY, LPP</u>	0.2	Pike	FEMA certification completed by county. Levees accredited by FEMA.	August 18, 2011 Minimally Acceptable
<u>Prestonsburg, KY, LBPP</u>	0.05	Floyd	1% protection not provided. Certification not required.	June 7, 2011 Minimally Acceptable
<u>SOUTH WILLIAMSON, KY SEC 202 LPP</u>	0.5	Pike	FEMA certification completed by county. Levees accredited by FEMA.	September 16, 2011 Minimally Acceptable

<u>Appalachian Regional Hospital LPP</u>	0.41	Pike	FEMA certification completed by county. Levees accredited by FEMA.	September 16, 2011	Minimally Acceptable
--	------	------	--	--------------------	----------------------

OH District 15		Total Length in District (miles): 7.25			
1 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating	
<u>West Columbus, OH, LPP</u>	7.25	Franklin	Levee accredited by FEMA.	September 14, 2011	Minimally Acceptable

OH District 16		Total Length in District (miles): 3.05			
1 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating	
<u>Massillon, OH, LPP</u>	3.05	Stark	PAL period expired. De-accreditation meeting held by FEMA with sponsor. Any map revisions (consequences) on hold while FEMA undertakes public review of revised Levee Analysis and Mapping Procedure (LAMP) (more here: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm)	Not Available	

OH District 18		Total Length in District (miles): 4.1			
3 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating	
<u>Roseville, OH, LPP</u>	1.02	Perry and Muskingum	PAL period expired. De-accreditation meeting held by FEMA with sponsor. Any map revisions (consequences) on hold while FEMA undertakes public review of revised Levee Analysis and Mapping Procedure (LAMP) (more here: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm)	July 13, 2011	

Region 2 Planning and Development Council
Hazard Mitigation Plan

<u>Chillicothe, OH, LPP</u>	2.05	Ross	PAL period expired. De-accreditation meeting held by FEMA with sponsor. Any map revisions (consequences) on hold while FEMA undertakes public review of revised Levee Analysis and Mapping Procedure (LAMP) (more here: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm)	July 20, 2011 Minimally Acceptable
<u>Newark, OH, LPP</u>	1.03	Licking	1% protection not provided. Certification not required.	April 27, 2011 Minimally Acceptable

OH District 2			Total Length in District (miles):	8
2 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating

<u>Portsmouth, OH, LPP</u>	4.5	Scioto	PAL period expired. De-accreditation meeting held by FEMA with sponsor. Any map revisions (consequences) on hold while FEMA undertakes public review of revised Levee Analysis and Mapping Procedure (LAMP) (more here: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm)	December 16, 2011 Minimally Acceptable
<u>New Boston, OH, LPP</u>	3.5	Scioto	PAL period expired. De-accreditation meeting held by FEMA with sponsor. Any map revisions (consequences) on hold while FEMA undertakes public review of revised Levee Analysis and Mapping Procedure (LAMP) (more here: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm)	December 16, 2011 Minimally Acceptable

OH District 6			Total Length in District (miles):	6.88
1 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating

<u>Ironton, OH, LPP</u>	6.88	Lawrence	Unrequired at this time. FEMA RISKMap not working in that county yet.	August 30, 2011 Minimally Acceptable
-------------------------	------	----------	---	--------------------------------------

WV District 1			Total Length in District (miles): 3.79	
1 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating

<u>Parkersburg, WV, LPP</u>	3.79	Wood	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	July 27, 2011 Minimally Acceptable
-----------------------------	------	------	---	------------------------------------

WV District 2			Total Length in District (miles): 2.29	
1 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating

<u>Point Pleasant, WV, LPP</u>	2.29	Mason	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	July 21, 2011 Minimally Acceptable
--------------------------------	------	-------	---	------------------------------------

WV District 3			Total Length in District (miles): 18.23	
6 Project(s)	Length (mi.)	County	PAL Status Comment	Inspection Date and USACE Rating

<u>Ceredo, WV, LPP</u>	2.13	Wayne	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	March 29, 2011 Minimally Acceptable
------------------------	------	-------	---	-------------------------------------

<u>Kenova, WV, LPP</u>	2.14	Wayne	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	March 30, 2011 Minimally Acceptable
------------------------	------	-------	---	-------------------------------------

<u>Huntington, WV, LPP</u>	11.53	Cabell	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	June 3, 2011 Minimally Acceptable
----------------------------	-------	--------	---	-----------------------------------

<u>WILLIAMSON, WV SEC 202 LPP</u>	0.76	Mingo	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	September 28, 2011 Minimally Acceptable
-----------------------------------	------	-------	---	---

<u>MATEWAN, WV SEC 202 LPP</u>	0.5	Mingo	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	September 29, 2011 Minimally Acceptable
<u>WEST WILLIAMSON, WV SEC 202 LPP</u>	1.17	Mingo	PAL request letters issued to WV projects during Jul/Aug 2011. 2 years, 90 days to comply. Sponsors required to submit certification data by late 2013.	September 27, 2011 Minimally Acceptable

Projects:	24
Total Huntington District (mi.):	62.36

2.3 INVENTORY ASSETS

This risk assessment identifies “at-risk” community assets such as critical facilities, critical infrastructure, historical properties, commercial/industrial facilities, etc. “Assets” contribute directly to the quality of life in the community as well as ensure its continued operation. As such, government facilities are often listed, as are water/wastewater and transportation infrastructure. “Assets” can also be irreplaceable items within the community, such as historical structures or even vulnerable populations (including the elderly or youths).

METHODOLOGY

Inventorying assets first involves determining what in the community can be affected by a hazard event. The hazard profiles contained in Appendix 1 each contain a “Worksheet #3a” that lists, in broad terms, the types of assets that are susceptible to the hazards identified in 2.1: Identify Hazards. Worksheet #3a (SOURCE: FEMA 386-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*) lists the total number and value of all structures and people in identified hazard zones by the following types: residential, commercial, industrial, agricultural, religious/non-profit, government, education and utilities.

The core planning committee maintains a specific list of community assets as part of this plan. These assets are grouped into the following categories.

- *Critical Facilities:* Government facilities, water/wastewater facilities, dams, emergency services facilities, medical facilities (hospitals/clinics), military facilities, and the transportation infrastructure.
- *Vulnerable Populations:* Schools, nursing homes, and senior centers.
- *Economic Assets:* Large commercial/industrial facilities or large employers (not covered in other categories)
- *Special Considerations:* Residences, community outreach facilities, post offices, and libraries.
- *Historical Considerations:* Areas/structures listed on the National Register of Historic Places.

Region 2 Planning and Development Council
Hazard Mitigation Plan

While inventorying assets, much information can be gathered that will assist in the upcoming loss estimations. Each specific asset is listed with its size, replacement value (structure only), contents value, function use or value (annual operating budget), displacement cost (\$ per day), and occupancy. These values are utilized to compute loss estimates, which is why it is critical to carefully consider all the facilities that are listed in the asset inventory.

- *Size:* County assessor data or by directly contacting the facility.
- *Replacement Value:* County assessor data or by directly contacting the facility.
- *Contents Value:* Directly contacting the facility.
- *Displacement Costs:* Function Use or Value divided by 365.
- *Occupancy:* Directly contacting the facility.

ASSET INVENTORY

The above information for the complete asset inventory is listed on Figure 2.3.1 below. Figure 2.3.1 is a replica of Worksheet #3b from the *State and Local Mitigation Planning How-To Guide: Understanding Your Risks* (FEMA 386-2). Following is a key for the acronyms found in figure 2.3.1.

- *EMS:* Emergency Medical Services
- *ES:* Elementary School
- *HS:* High School
- *MS:* Middle School
- *PO:* Post Office
- *VFD:* Volunteer Fire Department

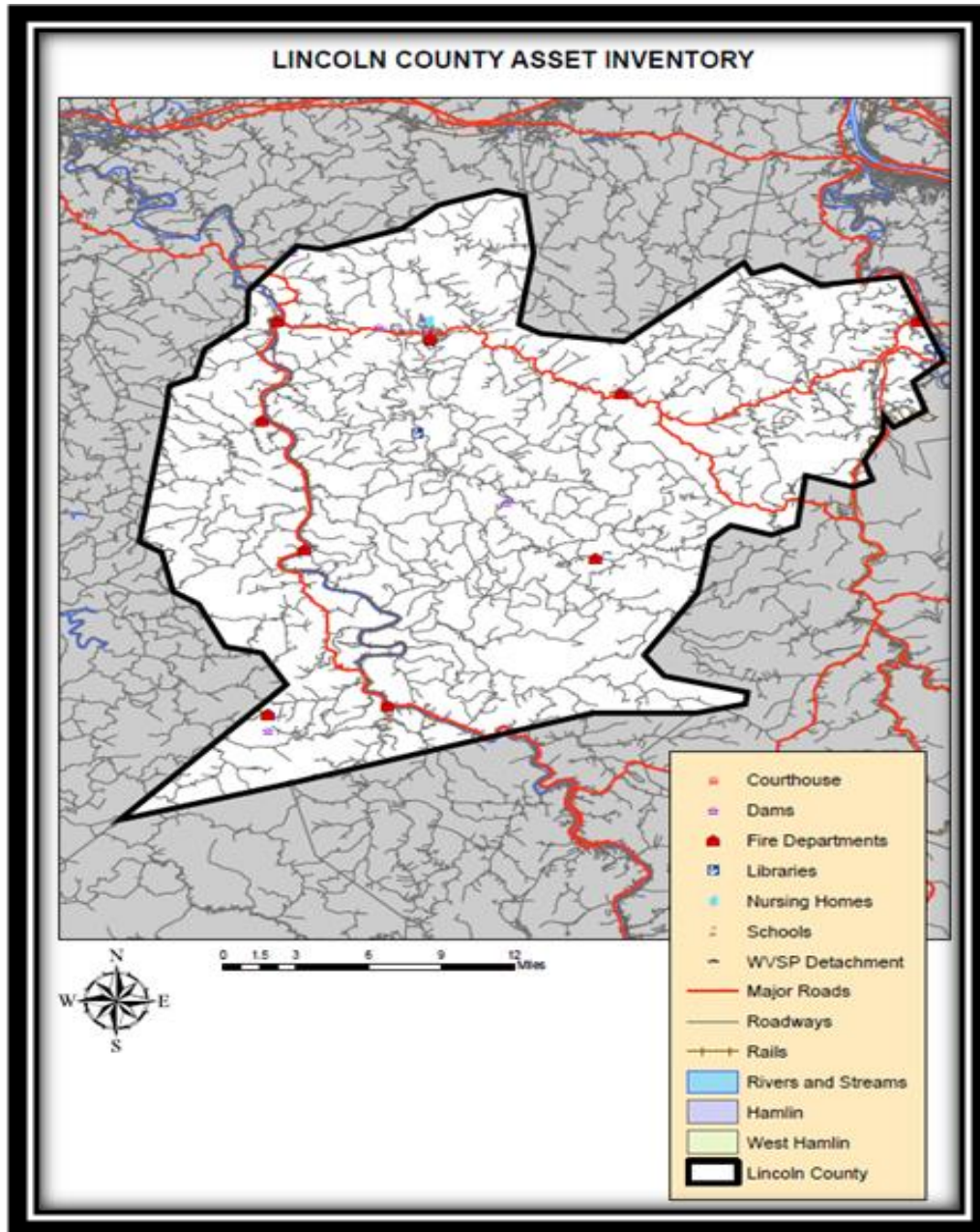
The following tables represent the assets located within Region II Planning & Development Council's Counties.

Lincoln County Asset Inventory

Name of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Conditions Historic/Other Considerations	Size of Bldg (sq ft)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
1st Nat Bank Old Bldg			x							
Triplett's Shoe Store			x							
US Post Office				x						
Ferrellsburg Elem School		x								
Cold Beer Tavern			x							
Harts Med Cntr	x									
Ferrellsburg Annex		x								
Thacker's Tavern			x							
Youth Center				x						
Vol Fire Dept	x									
Adkins Rest		x								

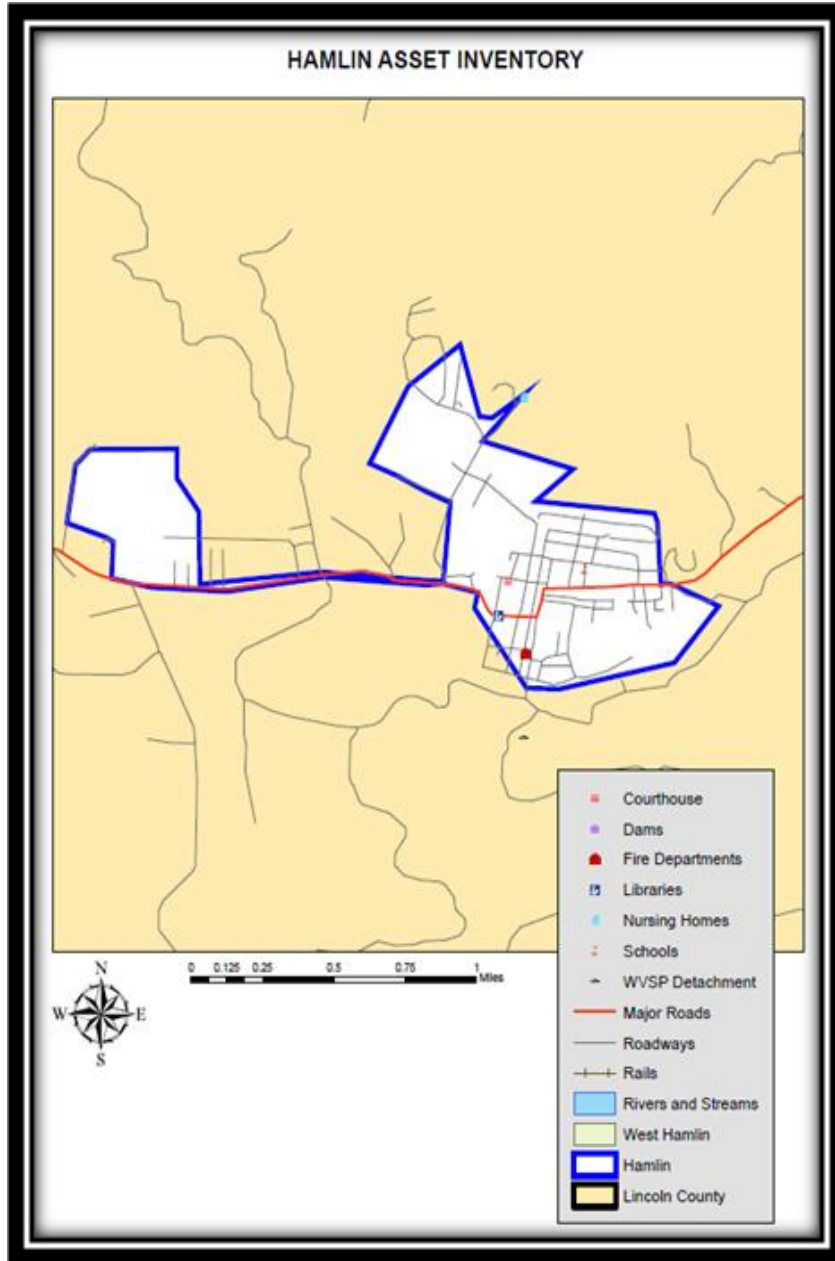
Region 2 Planning and Development Council
Hazard Mitigation Plan

Home																			
Oddfellow Bldg				x															
A. N. Henson Bldg			x																
Sharon's Kut & Kurl			x																
Save-Co Drugs			x																
Lin Primary Care Center	x																		
Ellis Furniture			x																
Lower Mud PreSch		x																	
Rustic Inn			x																
McCorkle Elem			x																
US Post Office				x															
Midkiff Radio & TV			x																
Goode's Truck Stop			x																
US Post Office				x															
Bethel Bapt Church				x															
Lincoln Natl Bank			x																
Lincoln Star Rest			x																
Branchland Elem		x																	
McMellon Furniture			x																
Templetons			x																
Griffithville Spec Ed		x																	
Griffithville Elem		x																	
Osbourne Co Inc. Bldg # 2			x																
Osbourne Co Inc. Bldg # 1			x																
McNiel Fence Co			x																
Jans Drive Inn			x																
Palomino Club			x																
American Legion Post				x															



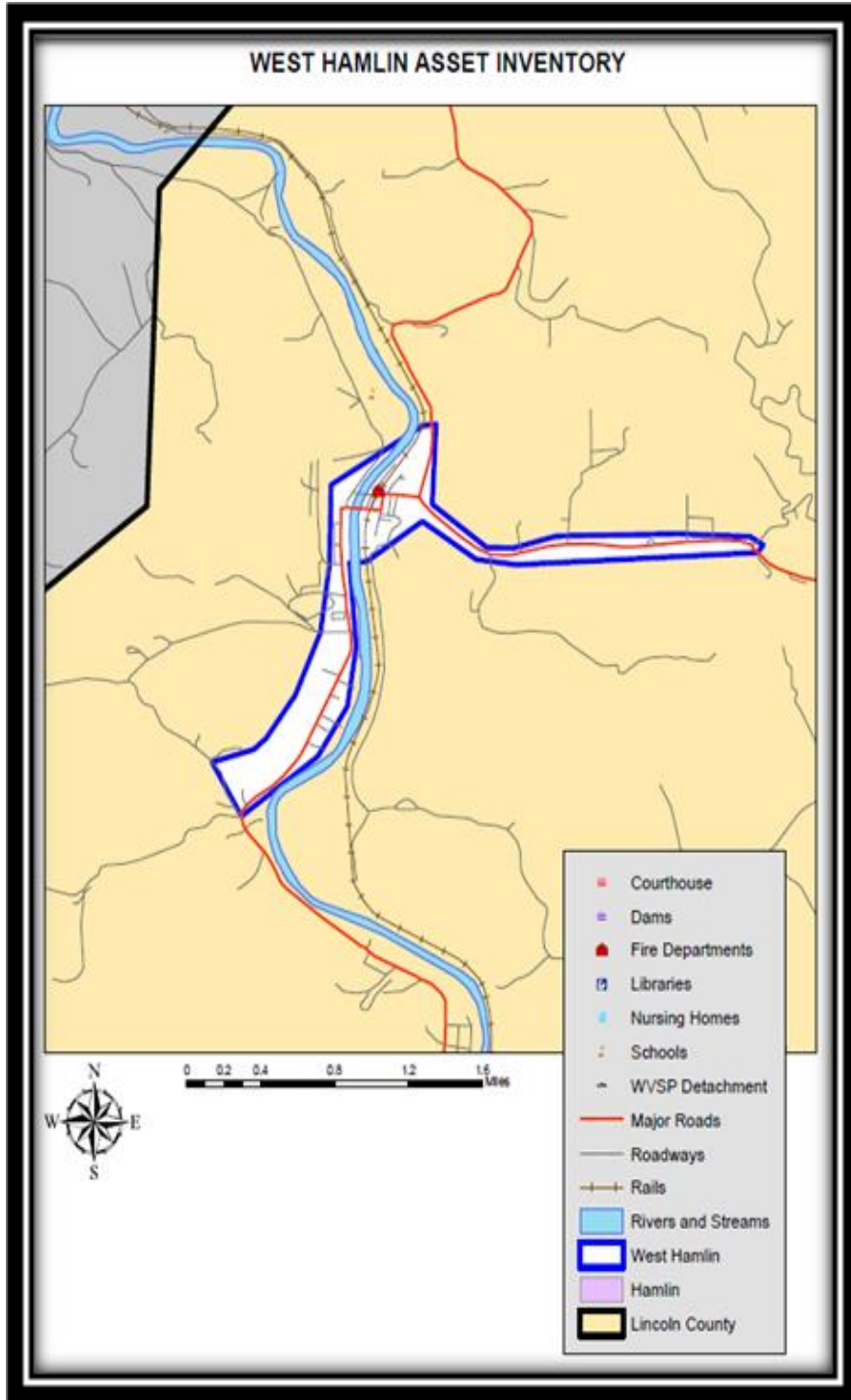
Hamlin Asset Inventory

Name of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Conditions	Historic/Other Considerations	Size of Bldg (sq ft)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Thackers Tavern			x								
Youth Center				x							
Vol Fire Dept	x										
Adkins Rest Home		x									
Oddfellow Bldg			x								
A N Henson Bldg			x								
Save-CO Drugs			x								
Lin Primary Care Cnt	x										
Rustic Inn			x								
Lincoln Natl Bank			x								
American Legion Post				x							



West Hamlin Asset Inventory

Name of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Conditions	Historic/Other Considerations	Size of Bldg (sq ft)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
1st Natl bank Old Bldg			x								
Triplets Shoe Store			x								
U.S. Post Office				x							
Ellis Furniture			x								



Logan County Asset Inventory

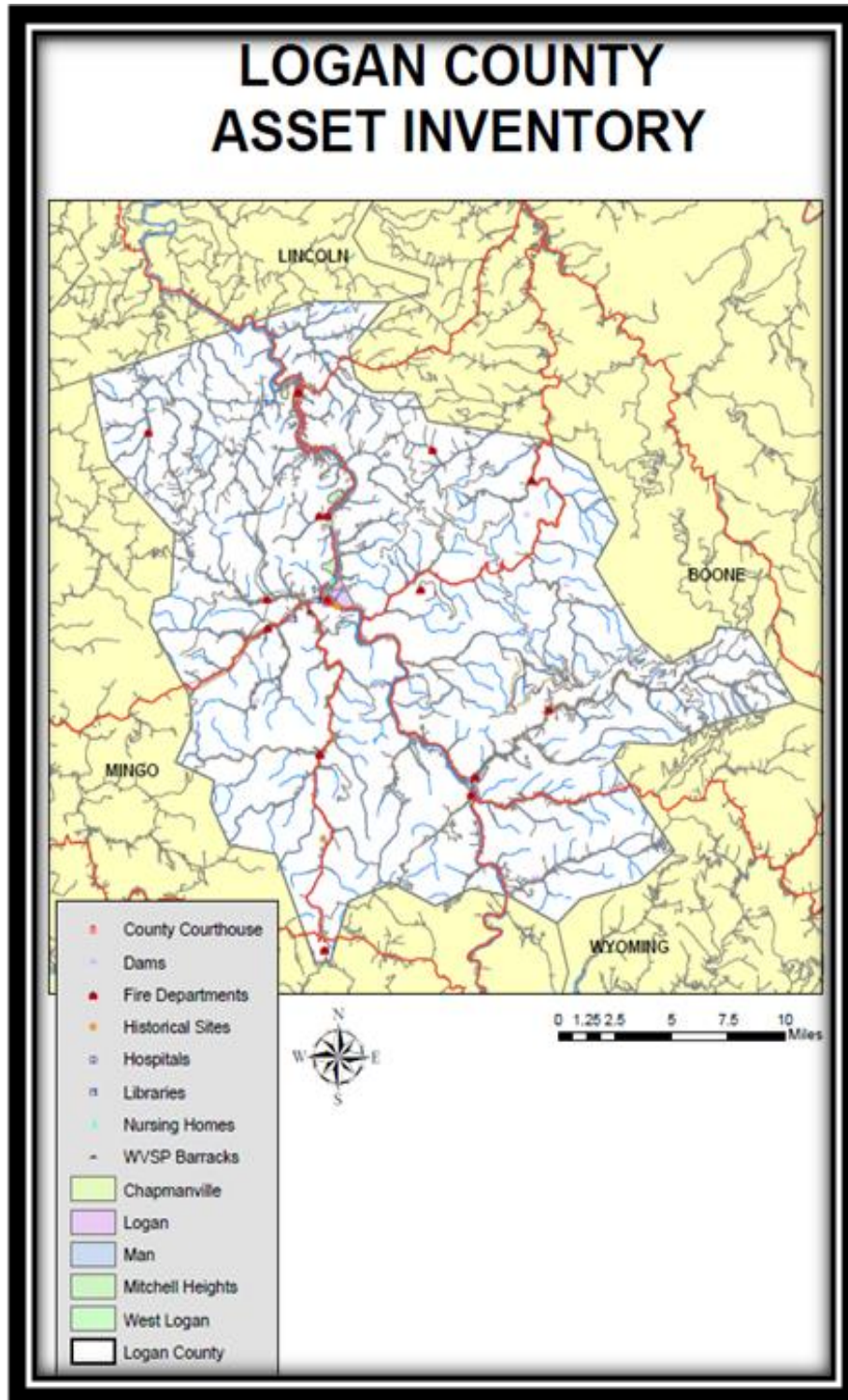
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
	X										
Alex Energy Inc.			X								
Apogee Coal Co.			X								
Appalachian Fuels LLC			X								
Aracoma Coal Inc.			X								
Bridges	X										
Buffalo Creek VFD	X										
Buffalo ES		X									
Chafin House					X						
Chapmanville East ES		X									
Chapmanville MS		X									
Chapmanville Regional HS		X									
Chapmanville VFD	X										
Chief Logan Lodge				X							
Cora VFD	X										

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
	X										
Crooked Creek Resource Center		X									
Hatfield Cemetery					X						
Henlawson VFD	X										
Holden ES		X									
Hugh Dingess ES		X									
Justice ES		X									
Lake VFD	X										
LEASA	X										
Logan County #2 VFD	X										
Logan County Airport				X							
Logan County BOE	X										
Logan County Courthouse	X					70,000	\$14,787,734	\$758,478,000	\$9,632,288	\$9,951	50
Logan County S.O.	X										
Logan EOC/911 Center	X										
Logan ES		X									
Logan FD	X										
Logan General Hospital		X									
Logan HS		X									
Logan MS		X									

Region 2 Planning and Development Council
Hazard Mitigation Plan

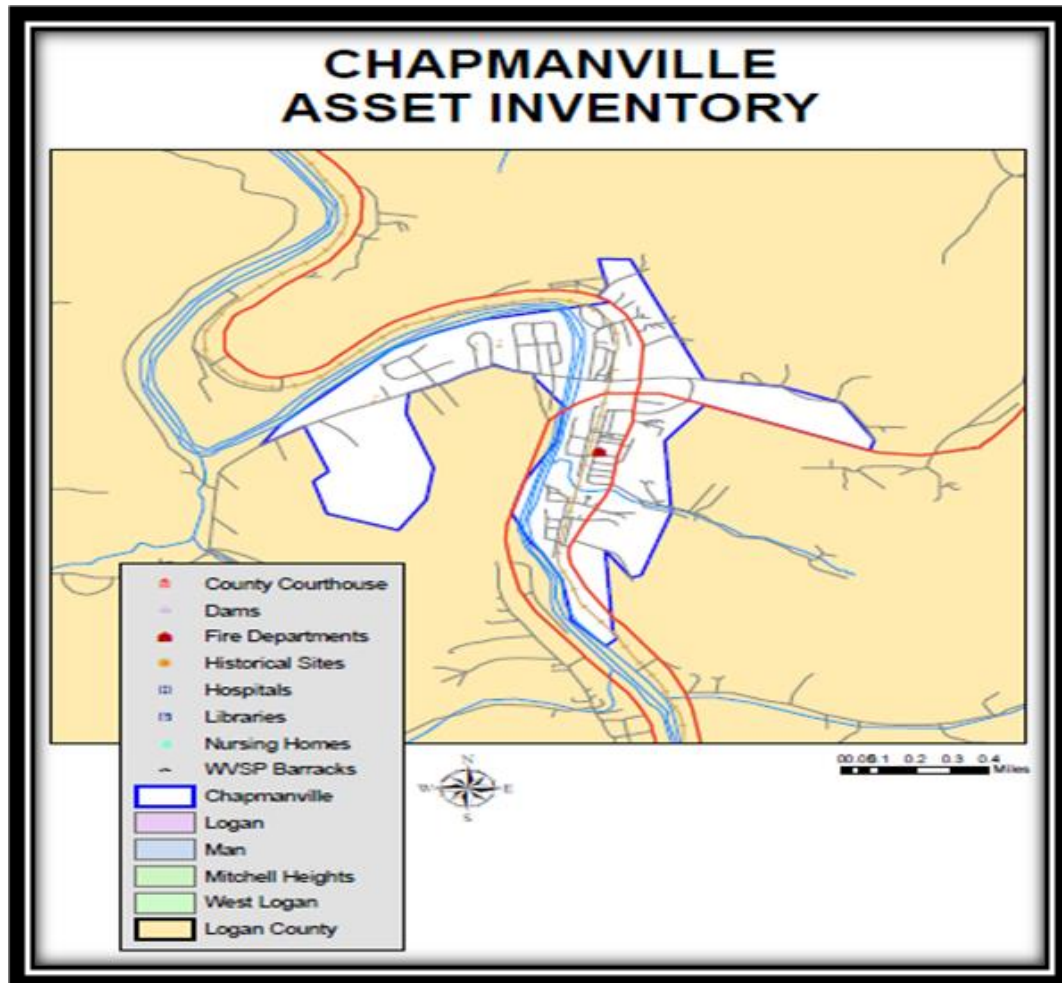
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Logan PD	X	X	X	X						
Main Harts Creek				X						
Main Island Creek VFD	X									
Man ES		X								
Man HS		X								
Man MS		X								
Man PD	X									
Omar ES		X								
Residential Roads	X			X		\$1,086,437,500				
RR Willis Vocational Tech Center		X								
Sharples VFD	X									
South Man ES		X								
Southern WV Community College				X						
Town of Man VFD	X									
Town of West Logan PD	X									
Verdunville ES		X								
Verdunville VFD	X									
Wal-Mart Logan			X							
West Chapmanville ES		X								

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
WVSP Logan	X									



Chapmanville Asset Inventory

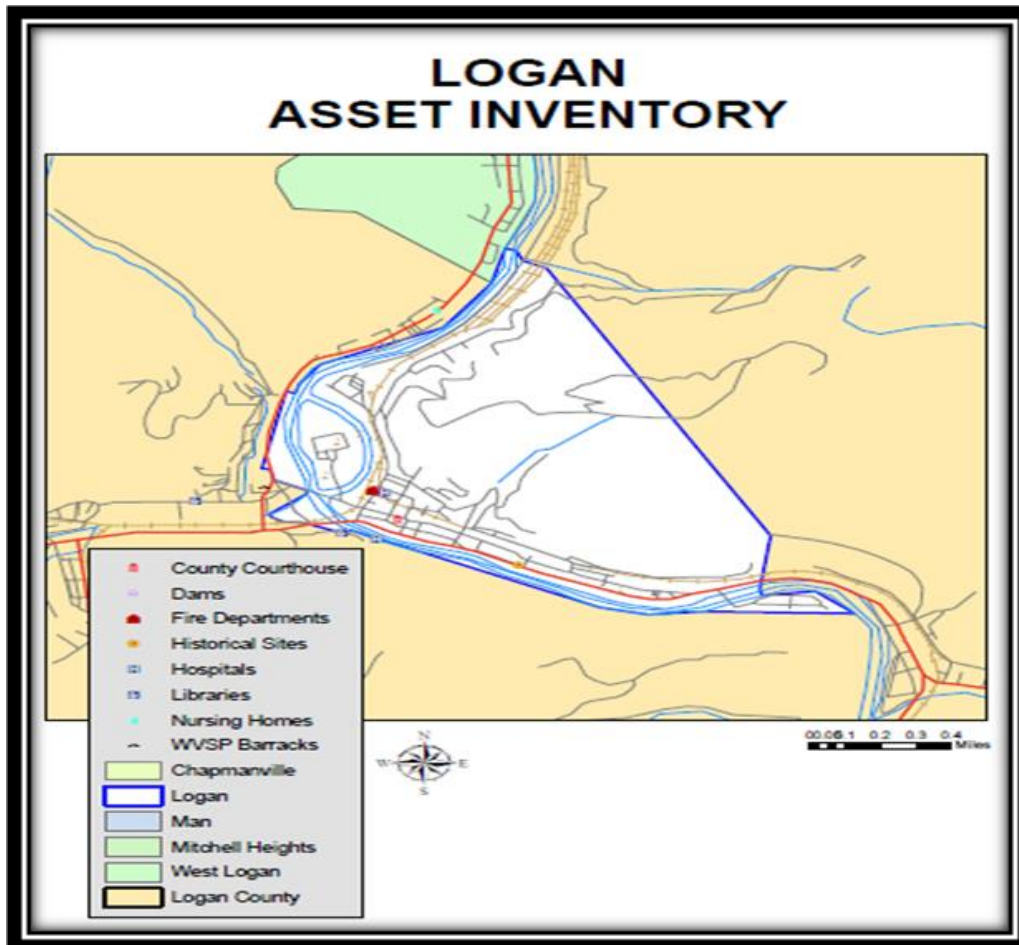
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Chapmanville East ES	X	X	X	X	X						
Chapmanville MS		X									
Chapmanville Regional HS		X									
Chapmanville VFD	X										
Residential Roads	X			X			\$41,125,000				
West Chapmanville ES		X									



Logan Asset Inventory

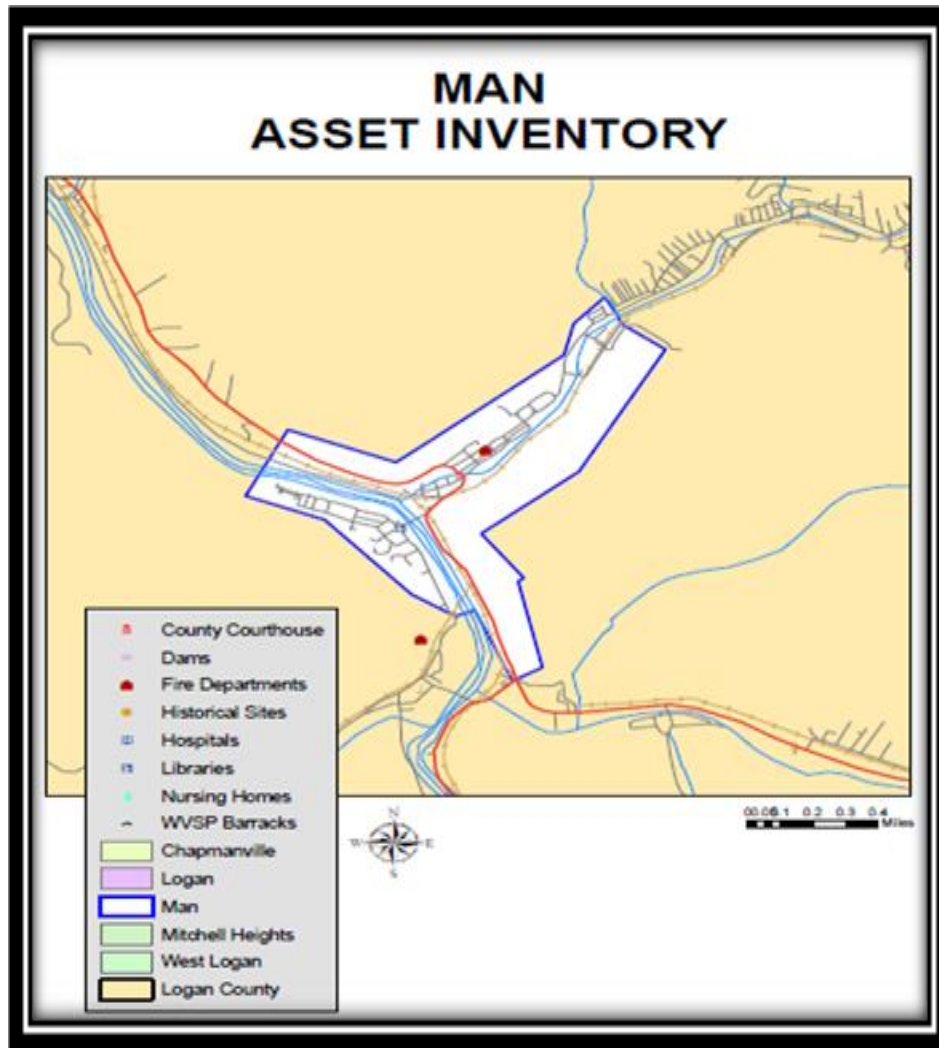
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Appalachian Fuels LLC	X	X	X								
Chaffin House					X						
Justice ES		X									
LEASA	X										
Logan County BOE	X										
Logan County Courthouse	X					70,000	\$14,787,734	\$758,478,000	\$9,632,288	\$9,951	50
Logan County S.O.	X										
Logan EOC/911 Center	X										
Logan ES		X									
Logan FD	X										
Logan HS		X									
Logan MS		X									
Logan PD	X										
Residential Roads				X			\$47,812,500				
RR Willie	X										
Vocational Tech Center		X									
Southern WV Community College				X							

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
WWSP Logan	X										



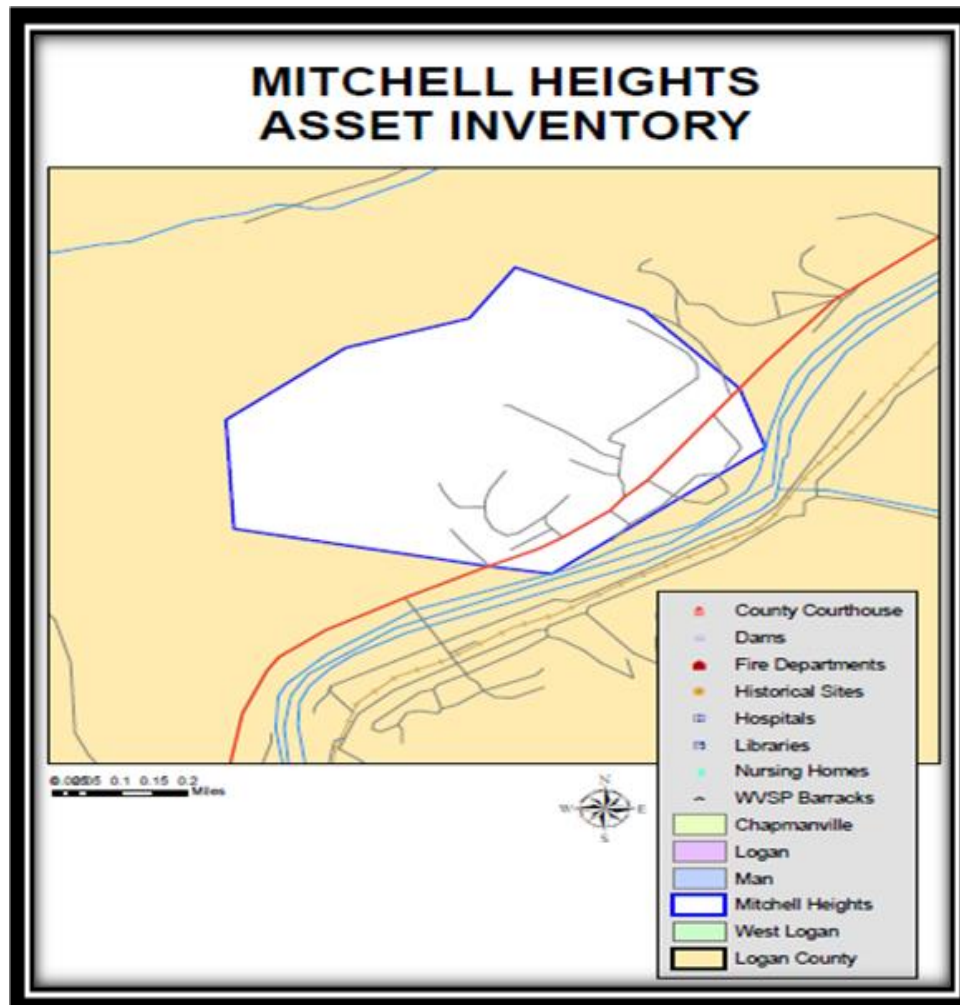
Man Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Man HS		X									
Man PD	X										
Residential				X			\$22,667,500				
Roads	X										
South Man ES		X									
Town of Man VFD	X										



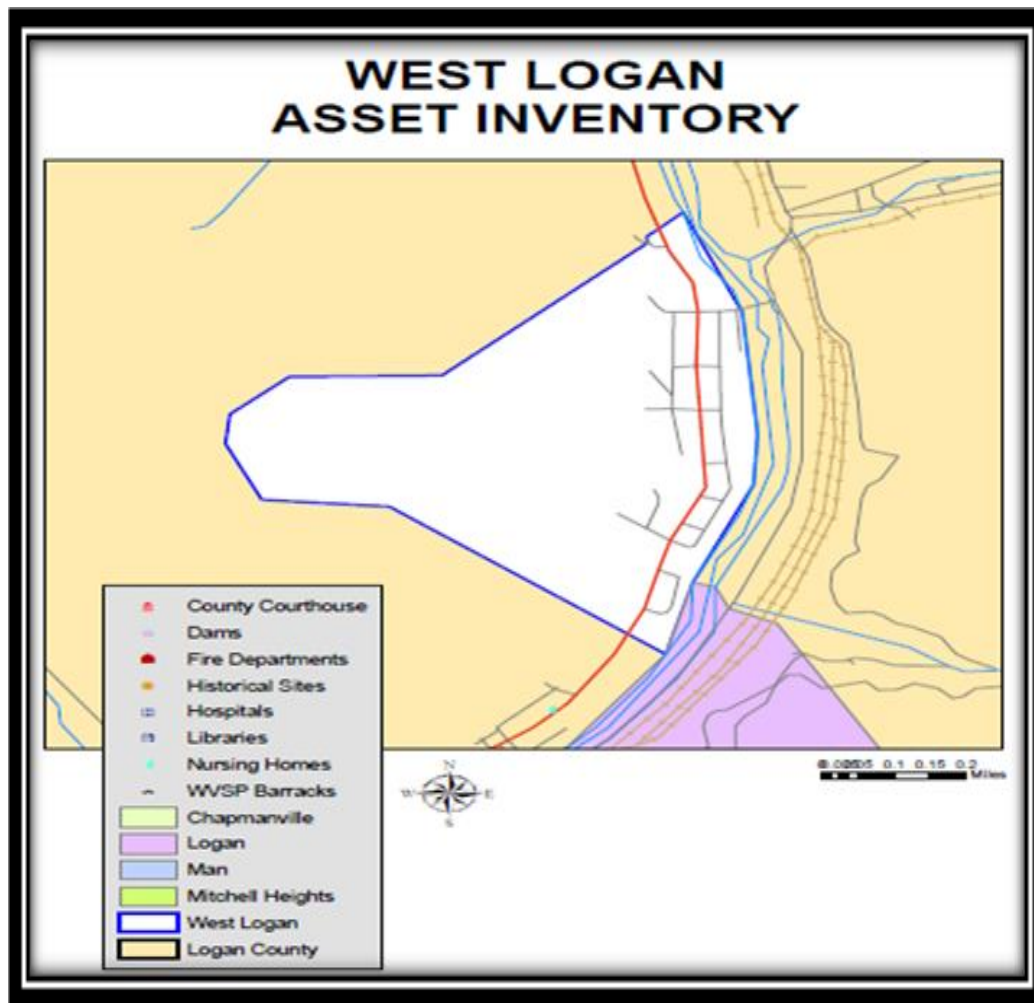
Mitchell Heights Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Residential	X	X	X	X	X		\$6,187,500				
Roads	X										



West Logan Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Logan General Hospital	X	X	X	X	X						
Residential				X			\$14,250,000				
Roads	X										
Town of West Logan PD	X										



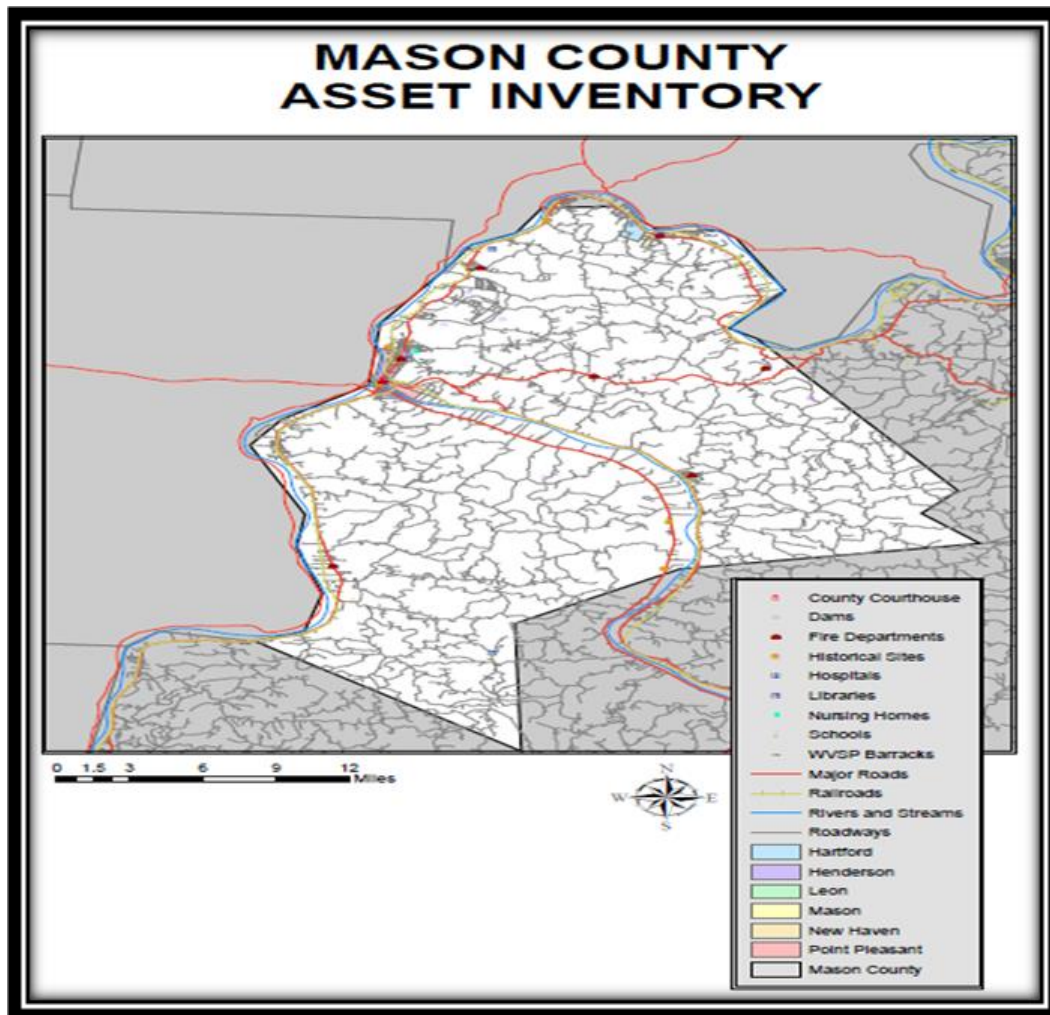
Mason County Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
AEP	X	X	X	X	X					\$0	
Ashton ES		X								\$0	
Beale ES		X								\$0	
Bridges	X									\$0	
Christ Academy		X								\$0	
Couch Artrip House					X					\$0	
Dams	X									\$0	
Eastham House					X					\$0	
Elm Grove					X					\$0	
Flatrock VFD	X									\$0	
Foster Wheeler Zack, Inc.			X							\$0	
Gold Houses, The					X					\$0	
Hannah HS		X								\$0	
Hannah Public Library				X						\$0	
Hartford Town Hall	X									\$0	
Henderson Town Hall	X									\$0	
Lakin Correctional Institution		X				199,800	\$44,624,000	\$105,200,000	\$8,000,000	\$21,918	576
Lakin State Hospital		X								\$0	
Leon ES		X								\$0	
Leon Town Hall	X									\$0	
Leon VFD	X									\$0	
Lewis-Capehart-Roseberry House					X					\$0	
M&G Polymers USA			X							\$0	
Maplewood					X					\$0	

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Mason City Building	X									\$0	
Mason Co. 911 Center	X									\$0	
Mason Co. Career Center		X								\$0	
Mason Co. Public Library				X						\$0	
Mason Co. Schools	X									\$0	
Mason Co. Sheriff	X									\$0	
Mason County Courthouse	X									\$0	
Mason Emer. Ambulance Authority	X					4,044	\$385,000	\$35,000	\$200,000	\$548	
Mason PD	X									\$0	
Mason VFD	X									\$0	
McCausland, Gen. John House					X					\$0	
New Haven ES		X								\$0	
New Haven PD	X									\$0	
New Haven Public Library				X						\$0	
New Haven Town Hall	X									\$0	
New Haven VFD	X									\$0	
Pleasant Valley Hospital	X									\$0	
Pleasant Valley Nursing & Rehab Center		X								\$0	
Powell-Redmond House					X					\$0	

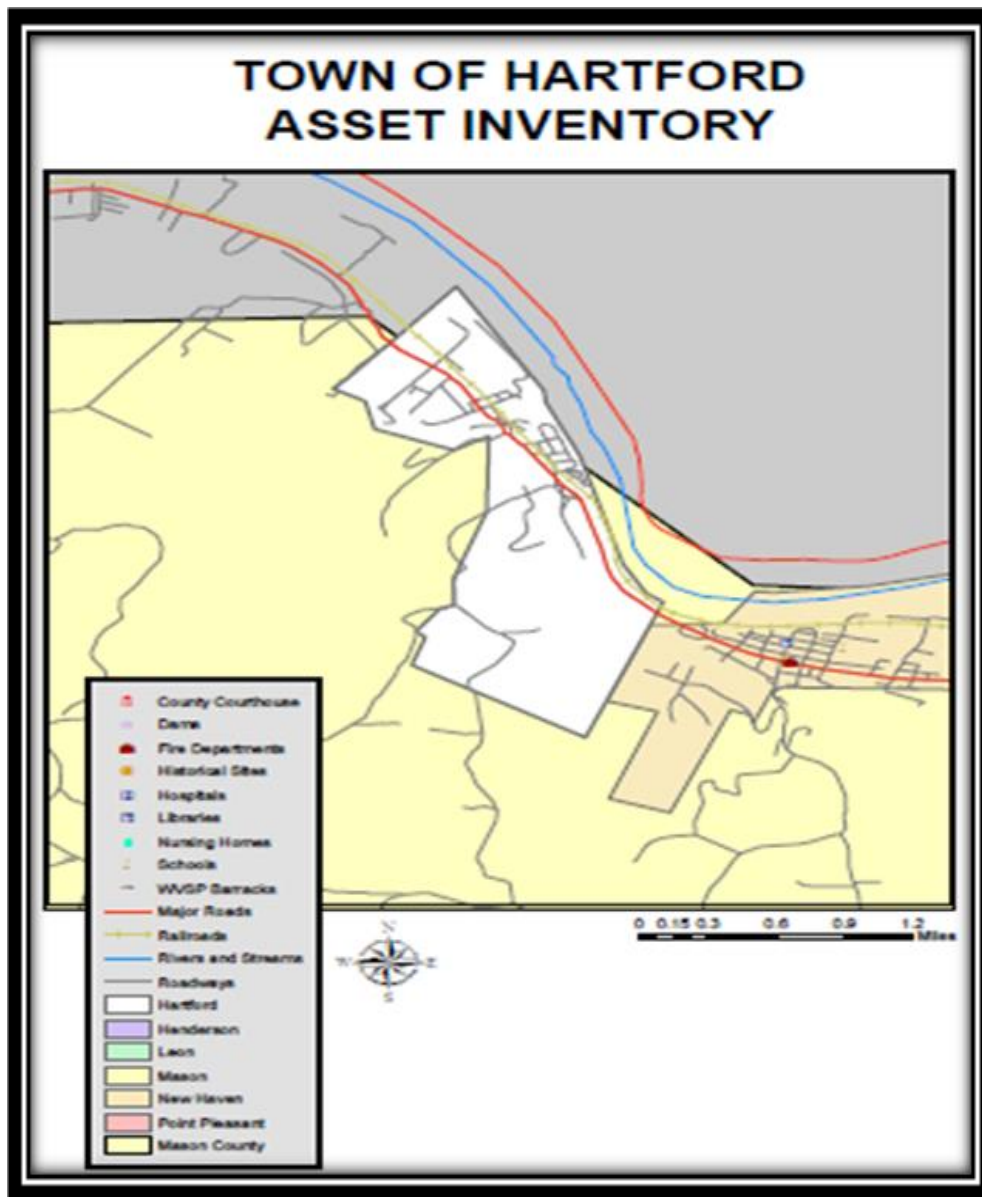
Region 2 Planning and Development Council
Hazard Mitigation Plan

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Pt. Pleasant Battleground	X	X	X	X	X					\$0	
Pt. Pleasant Historic District					X					\$0	
Pt. Pleasant HS		X								\$0	
Pt. Pleasant Intermediate School		X								\$0	
Pt. Pleasant PD	X									\$0	
Pt. Pleasant Primary School		X								\$0	
Pt. Pleasant VFD	X									\$0	
Racine Lock & Dam Residential Roads				X			\$808,737,300			\$0	
Robert C. Byrd Lock & Dam				X						\$0	
Roosevelt ES		X								\$0	
Shumaker-Lewis House					X					\$0	
Smithland Farm					X					\$0	
Valley VFD	X									\$0	
Wahama HS		X								\$0	
Wal Mart			X							\$0	
Wesleyan Holiness Academy		X								\$0	
WVSP	X					2,000	\$750,000	\$150,000	\$350,000	\$959	6



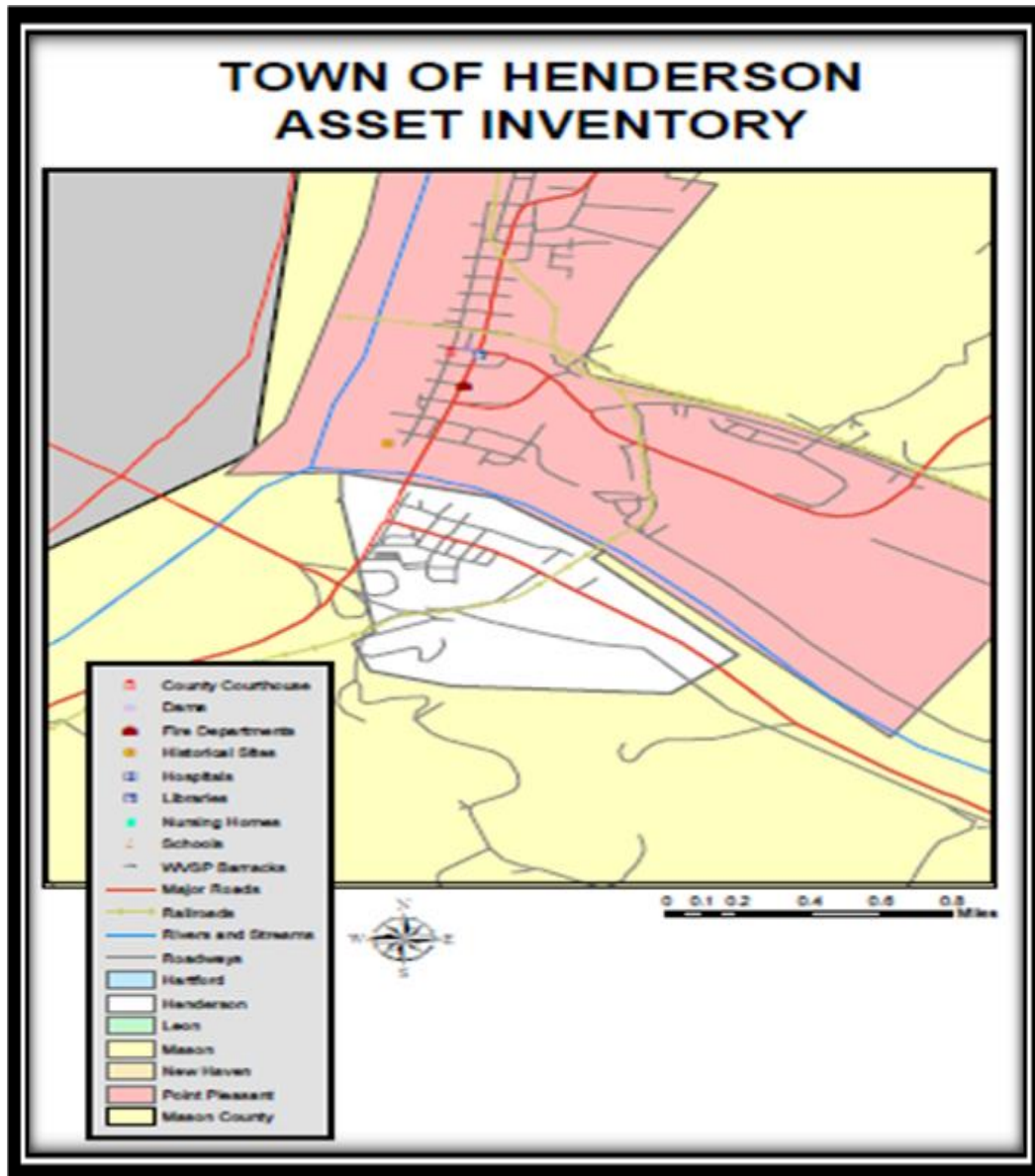
Hartford Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Hartford Town Hall	X										
Residential				X			\$14,051,500				
Roads	X										



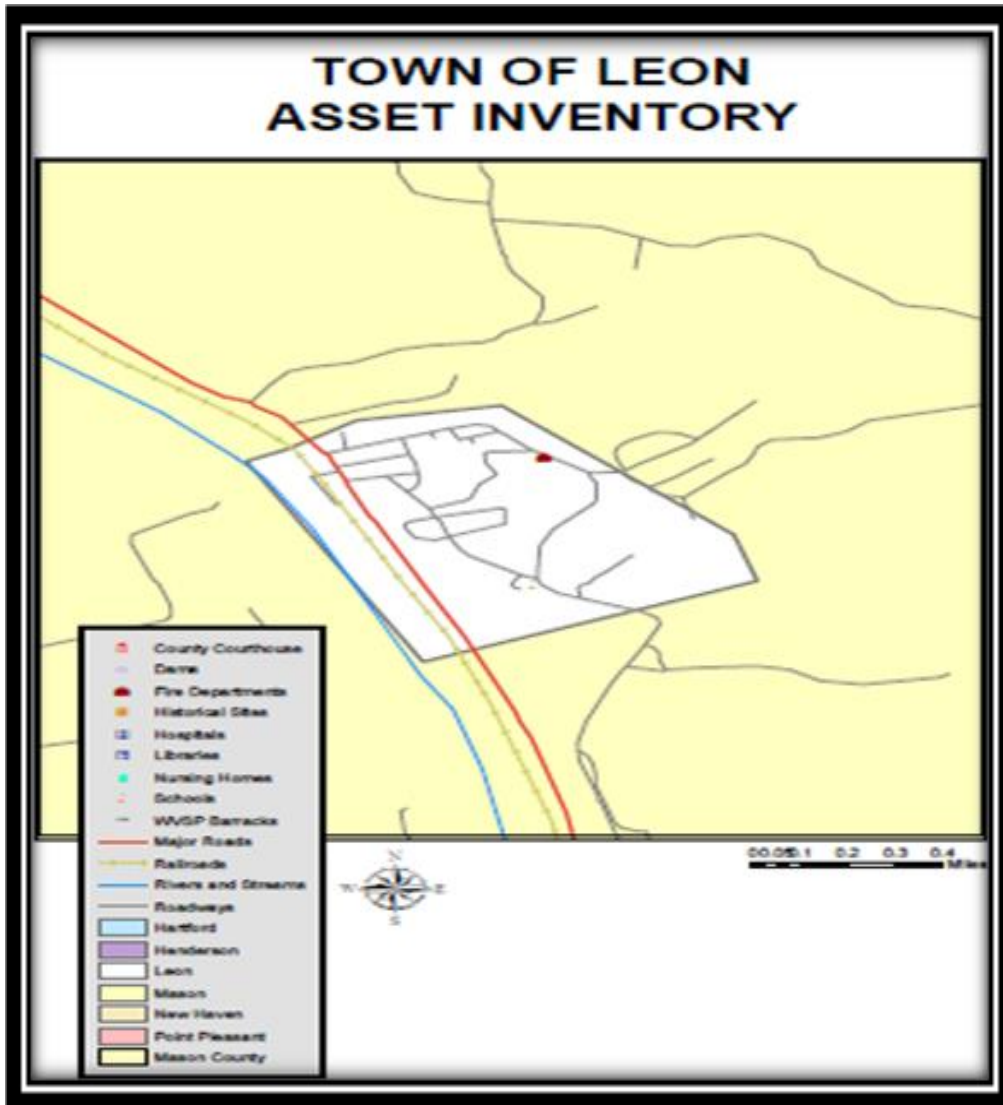
Henderson Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Henderson Town Hall	X										
Residential				X			\$9,699,900				
Roads	X										



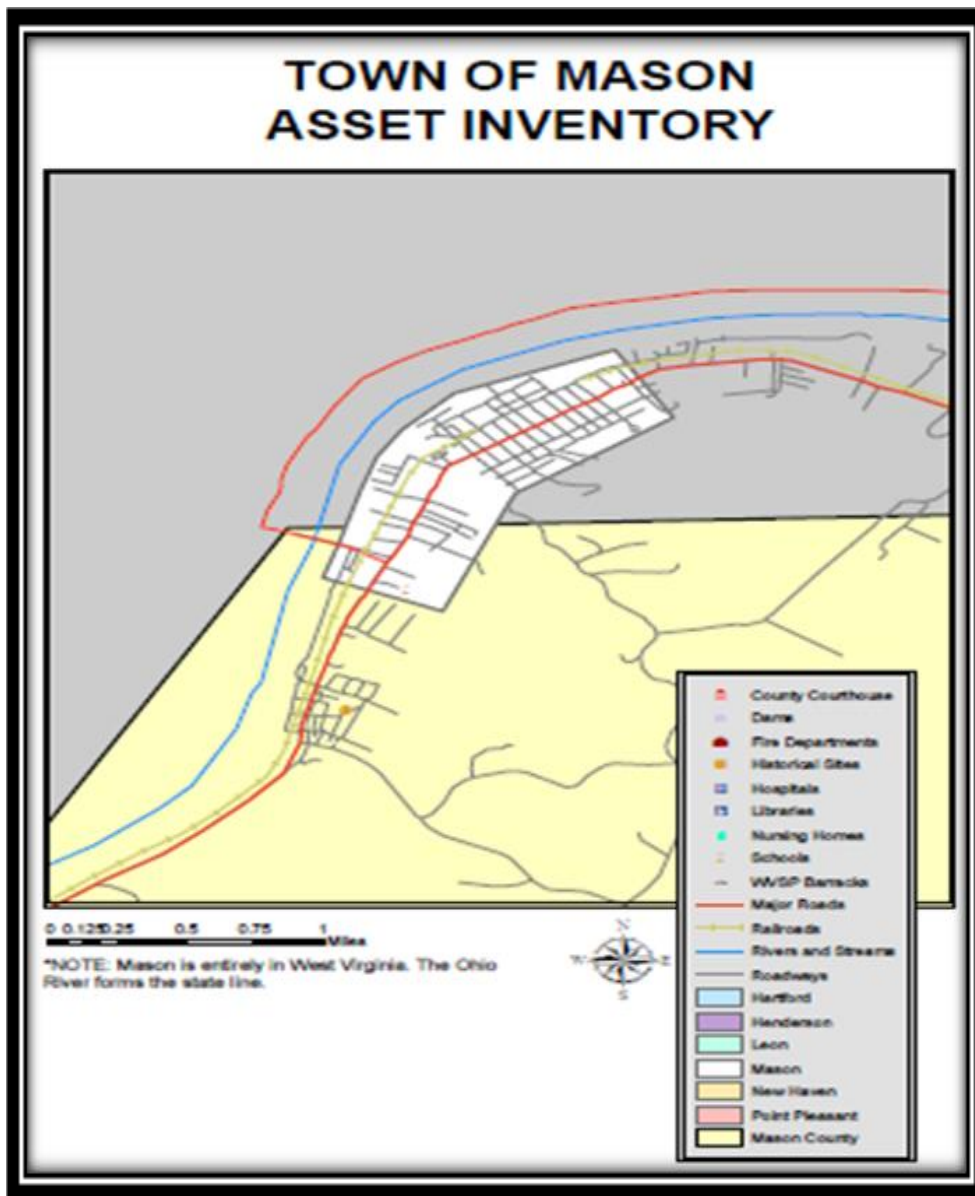
Leon Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Leon ES		X									
Leon Town Hall	X										
Leon VFD	X										
Residential				X			\$4,752,300				
Roads	X										



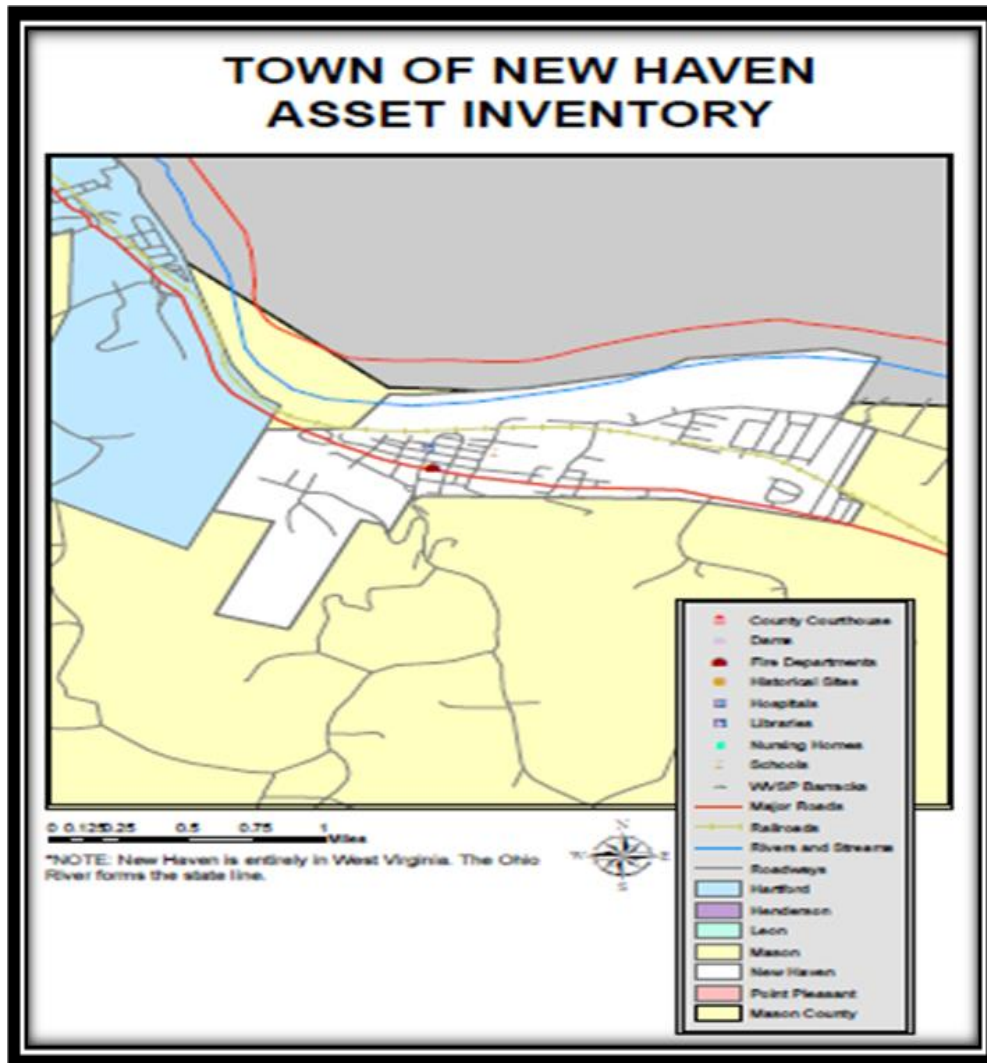
Mason Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (n)
Bridges	X										
Gold Houses, The					X						
Mason City Building	X										
Mason PD	X										
Mason VHS	X										
Residential Roads				X			\$34,828,500				
Shumaker-Lewis House					X						
Wahama HS		X									



New Haven Asset Inventory

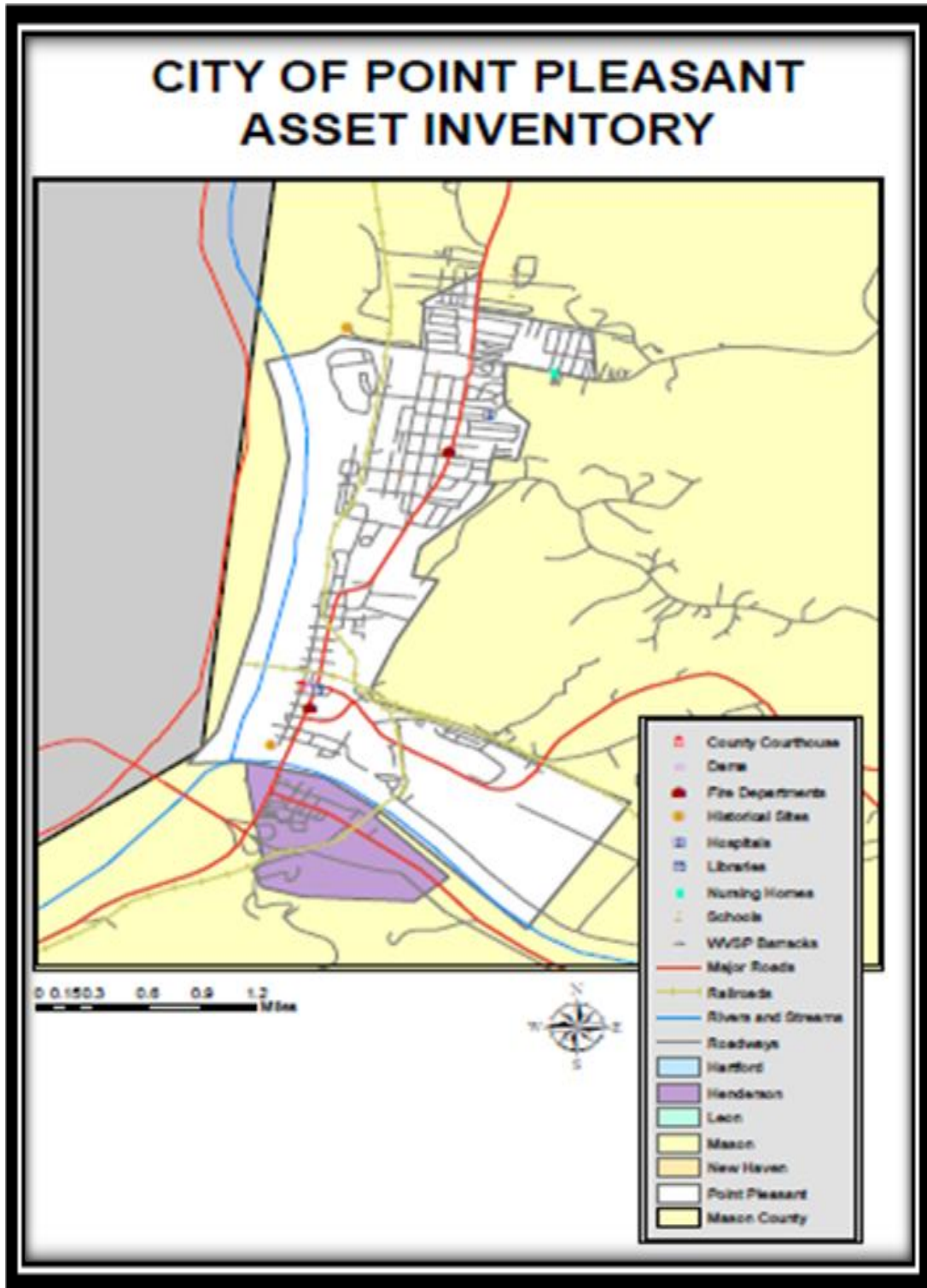
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
New Haven ES		X									
New Haven PD	X										
Public Library				X							
Town Hall	X										
VFD	X										
Residential				X			\$47,902,800				
Roads	X										



Region 2 Planning and Development Council
Hazard Mitigation Plan

Point Pleasant Asset Inventory

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Bridges	X										
Christ Academy		X									
Eastham Houses					X						
Lewis-Capehart Roseberry House					X						
Mason Co. Public Lib.				X							
Mason Co. Schools	X										
Mason Co. Sheriff	X										
Mason Co Courthouse	X										
Pleasant Valley Hosp	X										
Pleasant Valley Nursing & Rehab Center		X									
Pt. Pleasant Battleground					X						
Pt. Pleasant Historic District					X						
Pt. Pleasant Intermediate School		X									
Pt. Pleasant PD	X										
Pt. Pleasant Primary School		X									
Pt. Pleasant VFD	X										
Residential				X			\$150,578,300				
Roads	X										
Wal Mart			X								
Wesleyan Holiness Academy		X									
WVSP	X					2,000	\$750,000	\$150,000	\$350,000		0

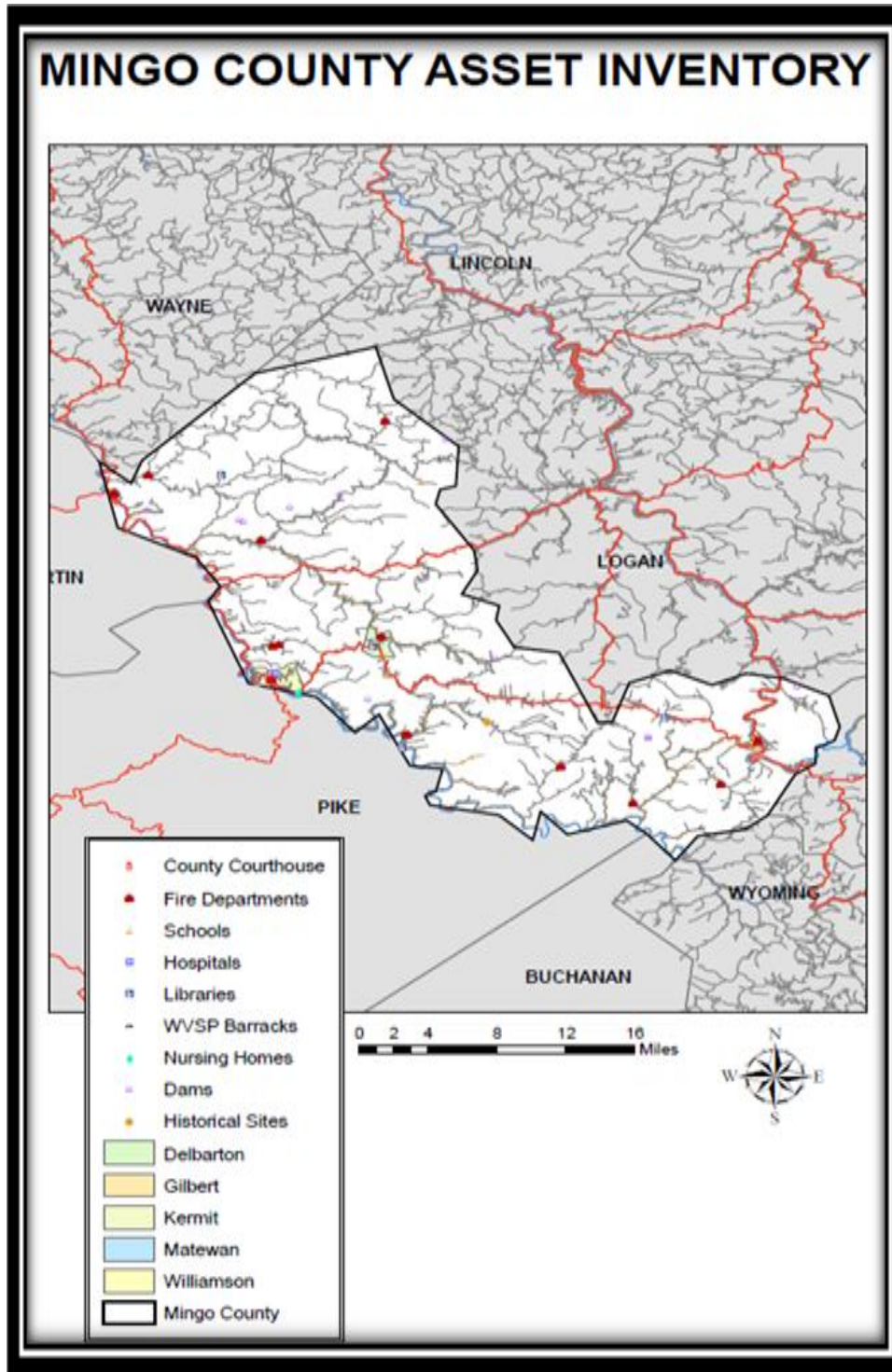


Mingo County Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
	X	X	X	X	X						
Appalachian Precision Hardwood Floor			X								
Baisden VFD	X										
Beech Creek VFD	X										
Bridges	X		X								
Burch ES		X									
Burch HS											
Chattaway VFD	X										
Coal House					X						
Delbarton VFD	X										
Delbarton PD	X										
Dingess Grade School		X									
Eastfork VFD	X										
Gilbert ES		X									
Gilbert HS		X									
Gilbert PD	X										
Gilbert VFD	X										
Hatfield Cemetary					X						
Kermit K-8		X									
Kermit PD	X										
Kermit VFD	X										
Laurel CreekCo. Inc.			X								

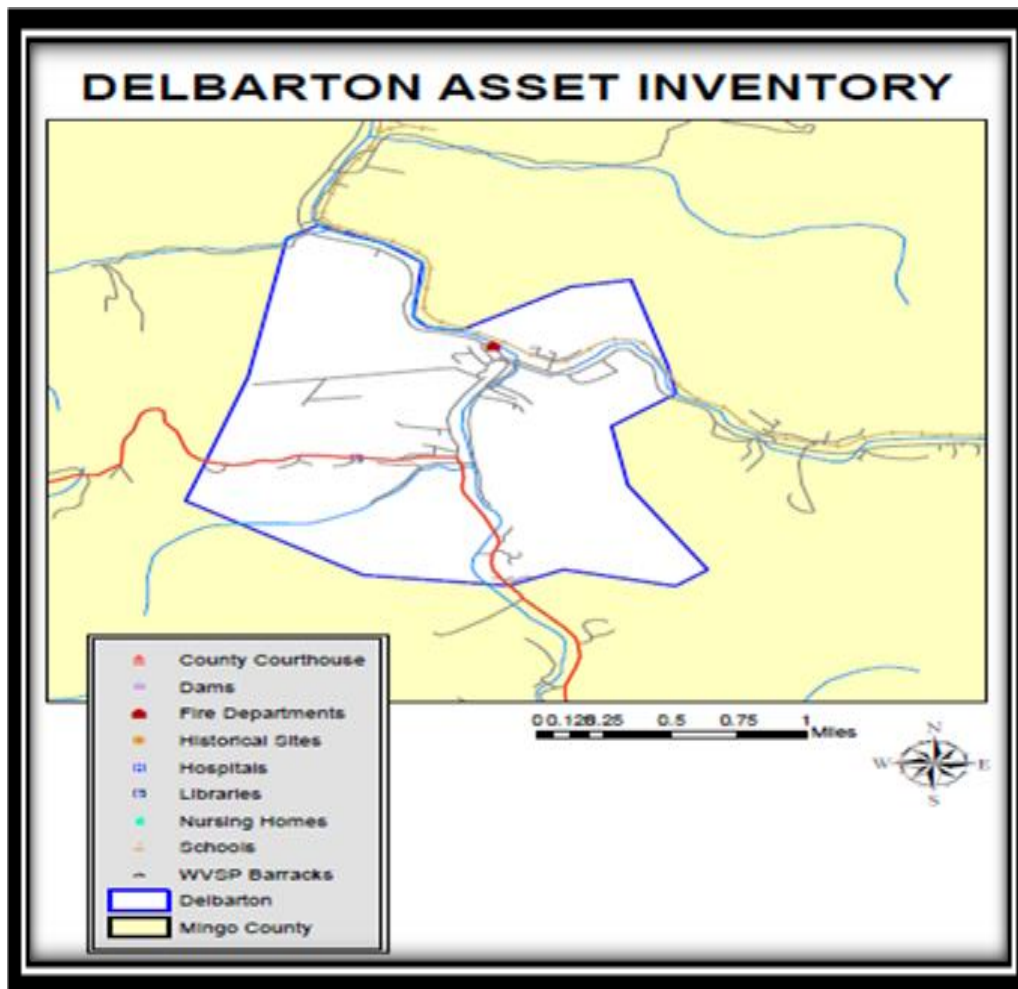
Mingo County Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
	X	X	X	X	X						
Lenore K-8		X									
Lenore VFD	X										
Matewan ES		X									
Matewan HS		X									
Matewan Historic District					X						
Matewan MS		X									
Mingo BOE		X	X								
Mingo Career & Tech Center		X									
Mingo Logan Coal Company			X								
Mingo SO	X										
Mountaineer Hotel					X						
Mohawk Flooring			X								
Phoenix Coal Mac, Inc			X								
Premium Energy, Inc	X		X								
R.T. Price House					X						
Railroads	X		X								
Residences		X									
Riverside ES		X									
Roadways	X		X								
Rockhouse Creek Dev. Corp.			X								
Elven C. Smith House					X						
Spartan Mining Co.			X								
Stafford EMS	X										
Stat Ambulance Service	X										
Appalachian Enterprise Security Serv. Inc.			X			2,400	170,000	80,000	4,400,000	12,054	30
Tug Valley HS		X									
Weatherford Fracturing Inc.			X								
Wharcliffe VFD	X										
Williamson FD	X					8,250	2,000,000.00	5,000,000.00	350,000.00	95,080.04	600
Williamson HS		X									
Williamson Memorial Hospital	X	X	X								
Williamson MS		X									
Williamson PD	X										
WV State Police	X										



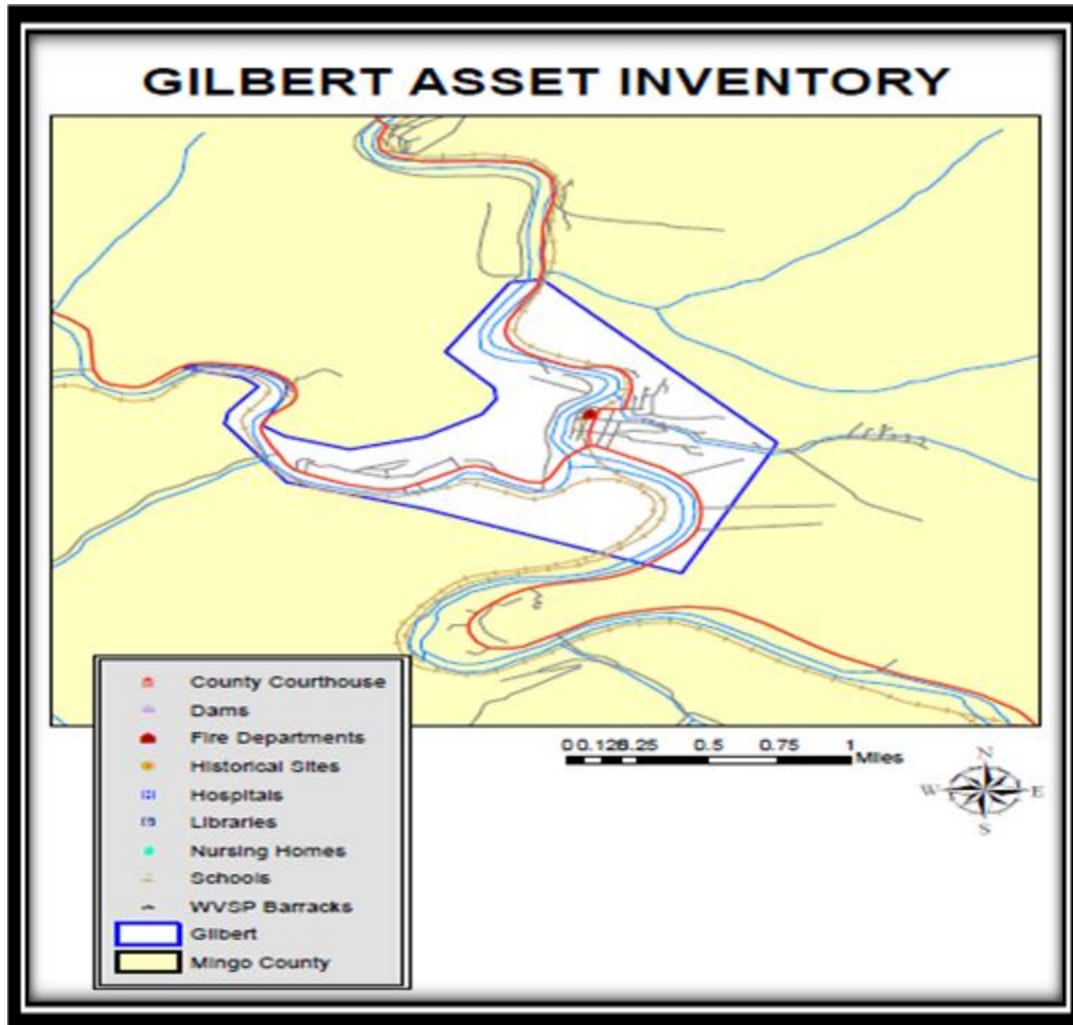
Delbarton Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
City Hall	X		X								
Delbarton VFD	X										
Delbarton PD	X										
Railroads	X		X								
Residences		X									
Roadways	X		X								



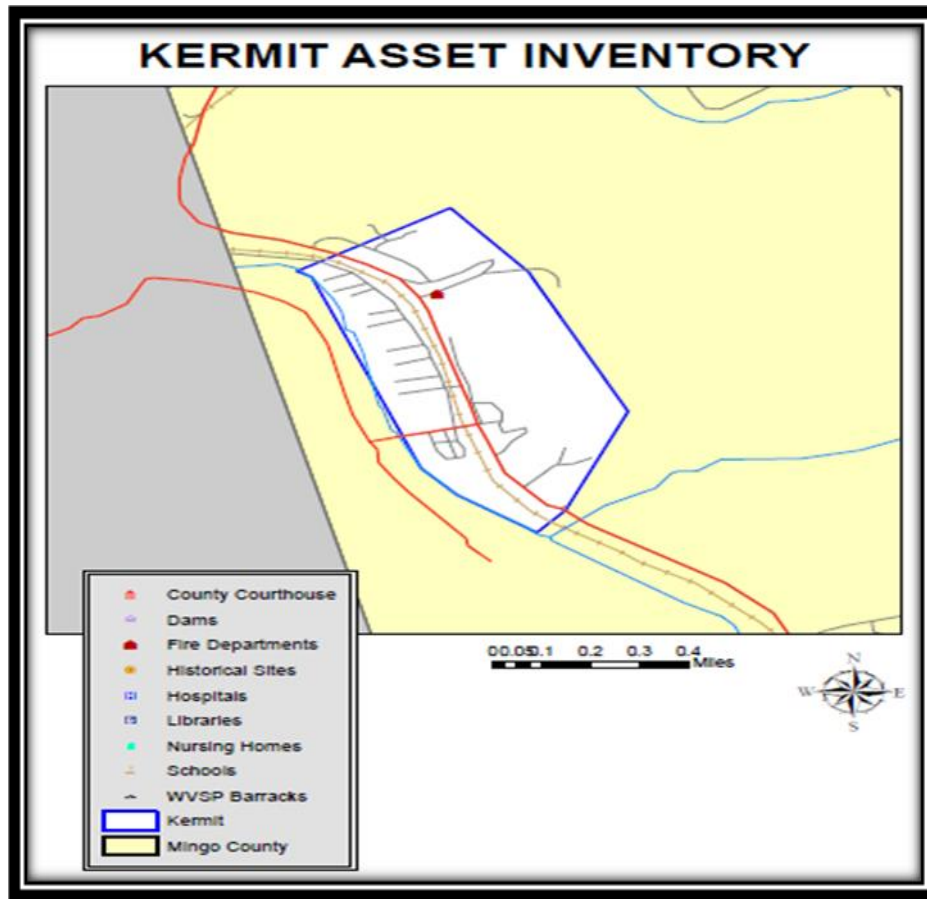
Gilbert Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
City Hall	X	X	X	X	X						
Gilbert ES		X									
Gilbert HS		X									
Gilbert PD	X										
Gilbert VFD	X										
Railroads	X		X								
Residences		X									
Roadways	X		X								



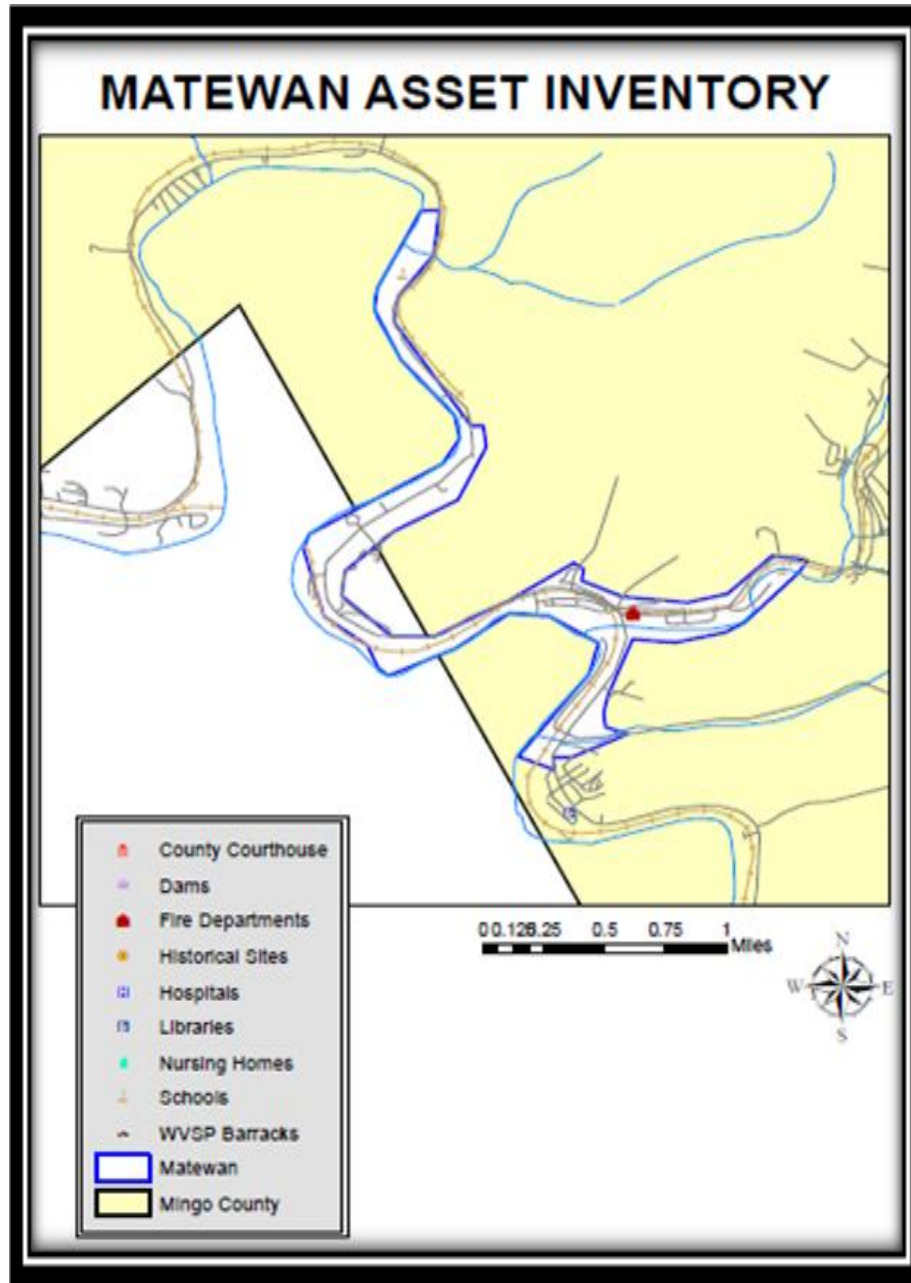
Kermit Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
City Hall	X		X								
Kermit K-8		X									
Kermit PD	X										
Kermit VFD	X										
Railroads	X		X								
Residences		X									
Roadways	X		X								



Matewan Assets

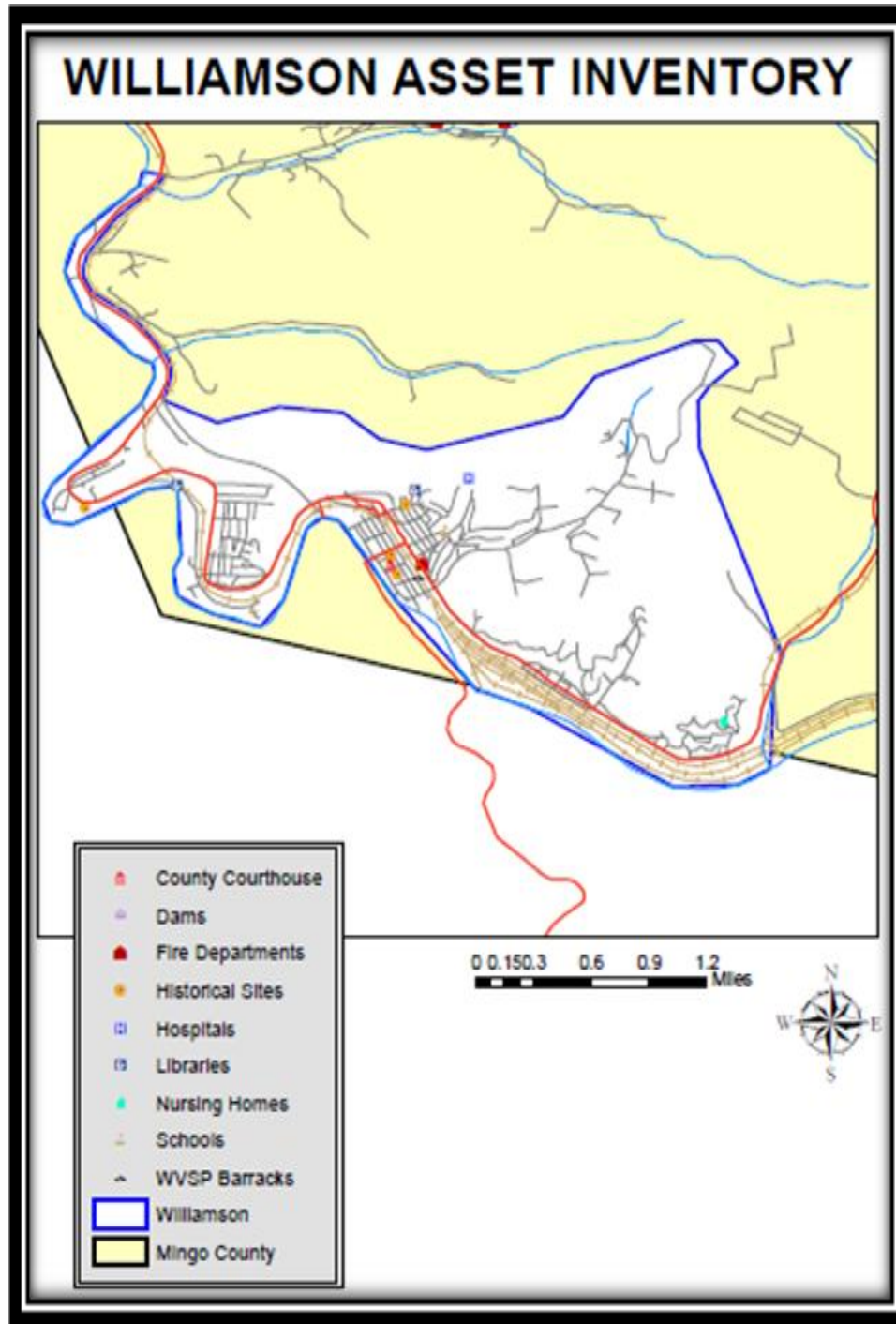
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
City Hall	X	X	X								
Matewan ES		X	X								
Matewan HS		X									
Matewan Historic District					X						
Matewan MS		X									
Railroads	X		X								
Residences		X									
Roadways	X		X								



Williamson Assets

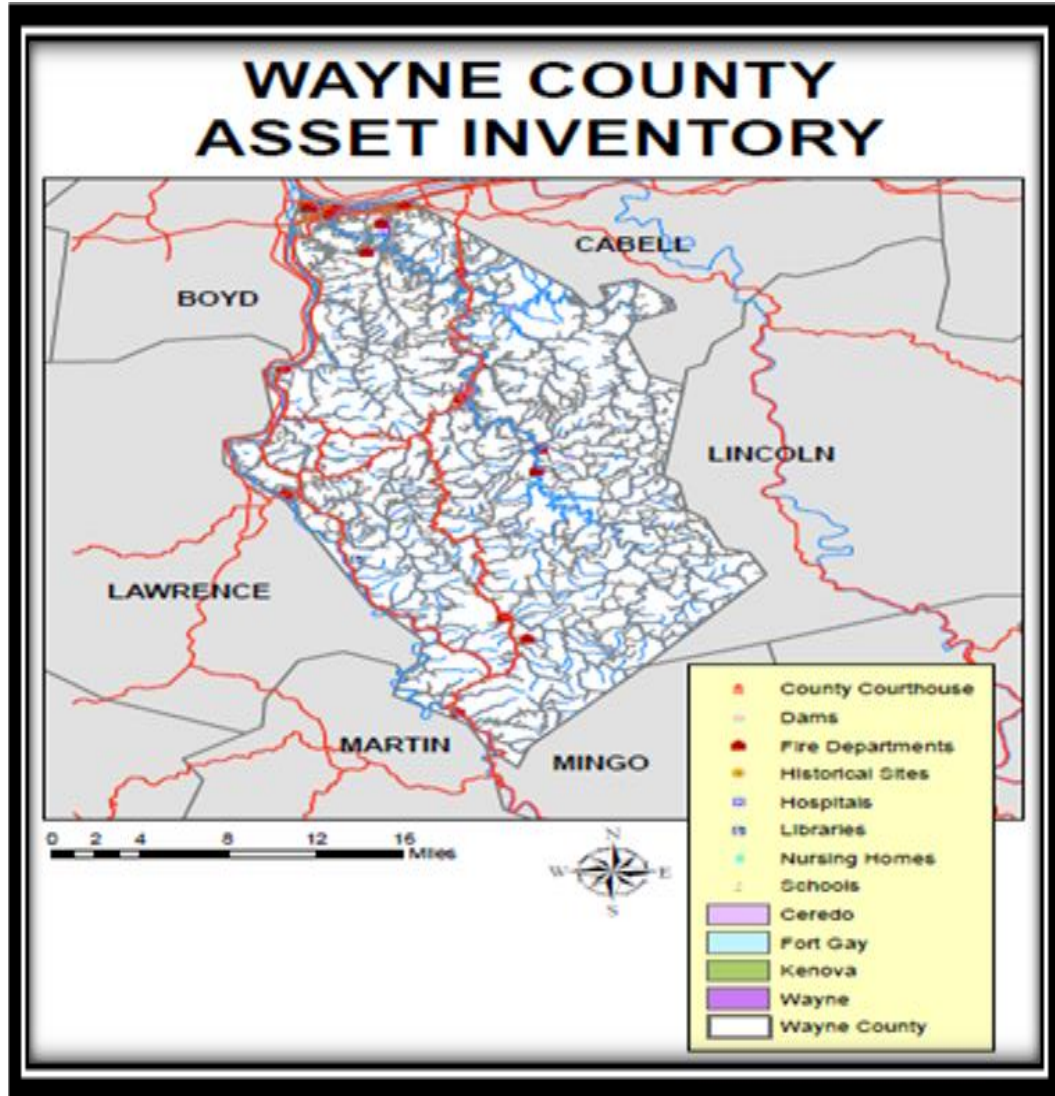
Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (p)
	X	X	X	X						
Appalachian Precision			X							
Hardwood Floor City Hall	X		X							
Coal House				X						
Laurel Creek Co. Inc.			X							
Mingo BOE		X	X							
Mingo Career & Tech Center		X								
Mingo Logan Coal Company			X							
Mingo SO	X									
Mountaineer Hotel				X						
Mohawk Flooring			X							
Phoenix Coal Mfg. Inc.			X							
Premium Energy, Inc.	X		X							
R.T. Price House				X						
Rockhouse Creek Dev. Corp.			X							

Eiven C. Smith House				X						
Spartan Mining Co.			X							
Stafford EMS	X									
Stat Ambulance Service	X									
Appalachian Enterprise Security Serv. Inc.			X		2,400	170,000	80,000	4,400,000	12,054	30
Tug Valley HS		X								
Weatherford Fracturing Inc.			X							
Williamson FD	X				8,250	2,000,000.00	5,000,000.00	350,000.00	95,080.04	600
Williamson HS		X								
Williamson Memorial Hospital	X	X	X							
Williamson MS		X								
Williamson PD	X									
WV State Police	X									



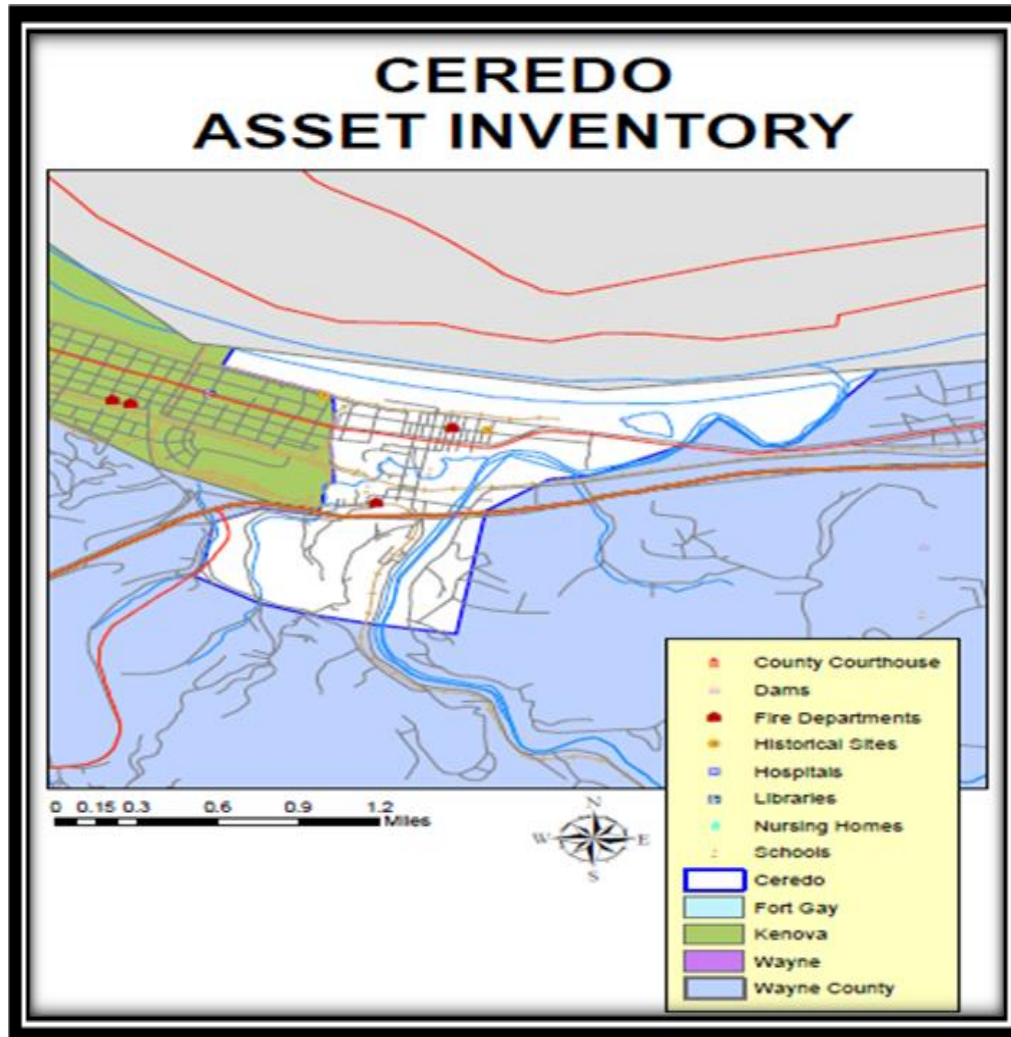
Wayne County Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
American National Rubber Co.			X								
Argus Energy WV, LLC.	X		X								
Aristech Chemical Corp. Bridges	X		X								
Buffalo ES		X									
Buffalo MS		X				57,330	4,225,755.00				
Camp Mad Anthony Wayne					X						
Ceredo ES		X									
Ceredo-Kenova MS		X				41,730	3,217,862.00				
Ceredo PD	X										
Ceredo VFD/EMS	X										
Crum ES		X									
Crum MS		X				39,066	3,352,267.00				
County Courthouse	X		X								
Dunlow ES		X									
Dunlow VFD/EMS	X										
East Lynn ES		X				35,600	2,580,359.00				
East Lynn VFD	X										
Fort Gay ES		X				15,100	3,205,730.00				
Fort Gay MS		X				45,531	3,376,056.00				
Fort Gay VFD	X										
Genoa ES		X				17,600	1,267,869.00				
Kanawha River Terminals, Inc.			X								
Kellog ES		X				43,525	6,580,222.00				
Kenova ES		X				54,525	4,321,984.00				
Kenova FD	X										
Kenova PD	X										
Kenova VFD	X					4,000	350,000.00	1,000,000.00	250,000.00	683.93	200
Lavalette ES		X				43660	2,914,024.00				
Lavalette VFD	X										
Joseph S. Miller House					X						
Prichard ES		X				26805	1,933,642.00				
Prichard VFD/EMS	X										
ZD Ramsdell House					X						
Railways	X		X								
Residences		X									
Roads	X		X								
Rockspring Development, Inc.			X								
Spring Valley HS		X				35,300	21,365,000.00				
Tolsia HS		X				117,700	8,788,991.00				
Veteran's Admin Hosp.	X	X			X						
Vinson MS		X				99,164	6,749,624.00				
Wal-mart Inc.			X								
Wayne County BOE	X	X									
Wayne County Commision	X	X									
Wayne County Commission Service Org, Inc.			X								
Wayne County ES		X				50,000	6,500,000.00				
Wayne County HS		X				144,688	9,535,702.00				
Wayne County MS		X				67,546	4,989,221.00				
Wayne County Sheriff	X										
Wayne PD	X										
Wayne VFD	X										
Wildcat Branch Petroglyphs					X						
Adiistrative annex 1						1225	106,638.00				
Adiistrative Annex 2						6480	547,481.00				
Bus Garage						12,688	1,060,102.00				
Crockett Elementary						3,000	300,000.00				
Radio Tower							10,000.00				



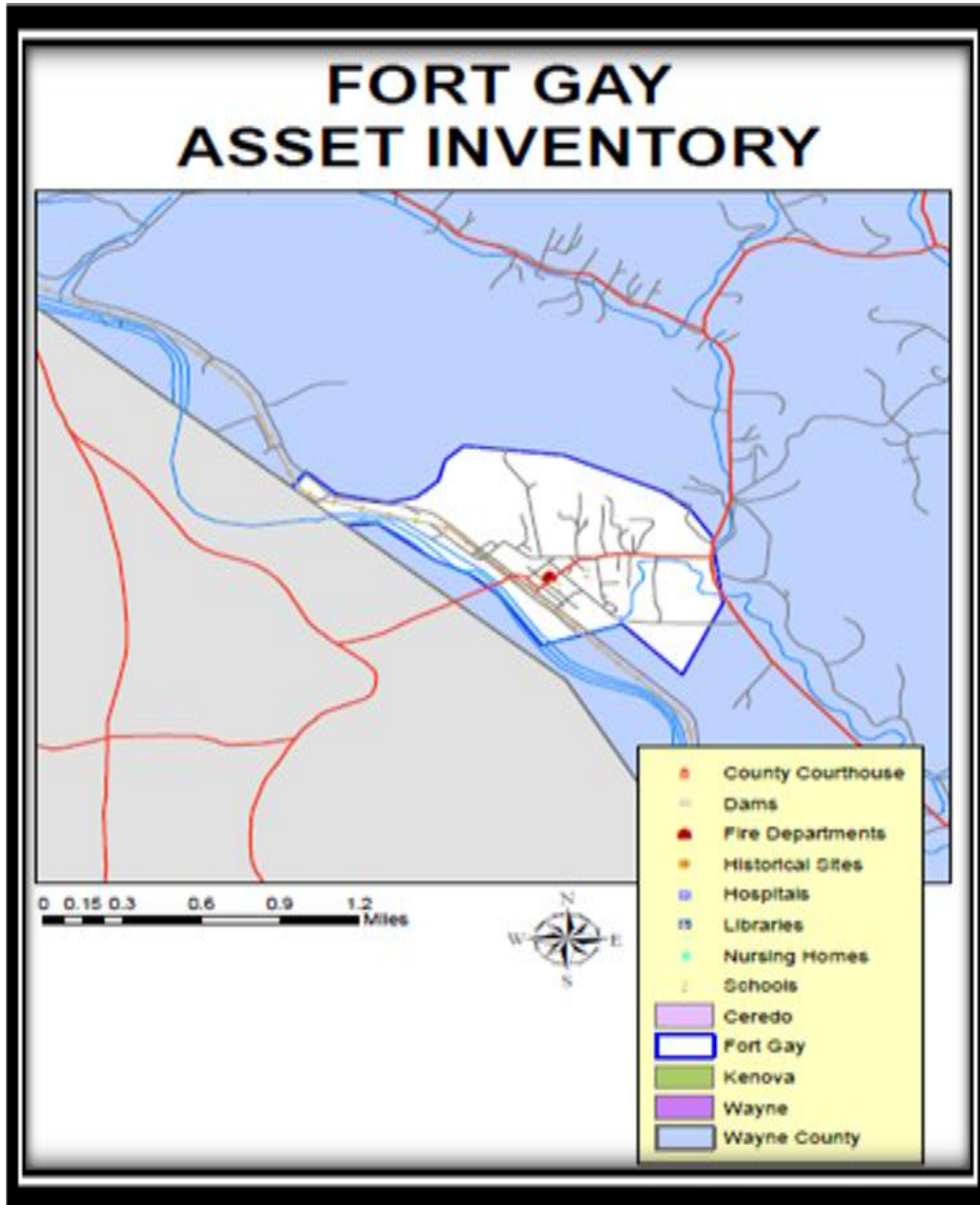
Ceredo Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
Ceredo ES	X	X	X	X	X						
Ceredo-Kenova MS		X				41,730	3,217,862.00				
Ceredo HS	X										
Ceredo VFD/EMS	X										
Railways	X		X								
Residences		X									
Roads	X		X								



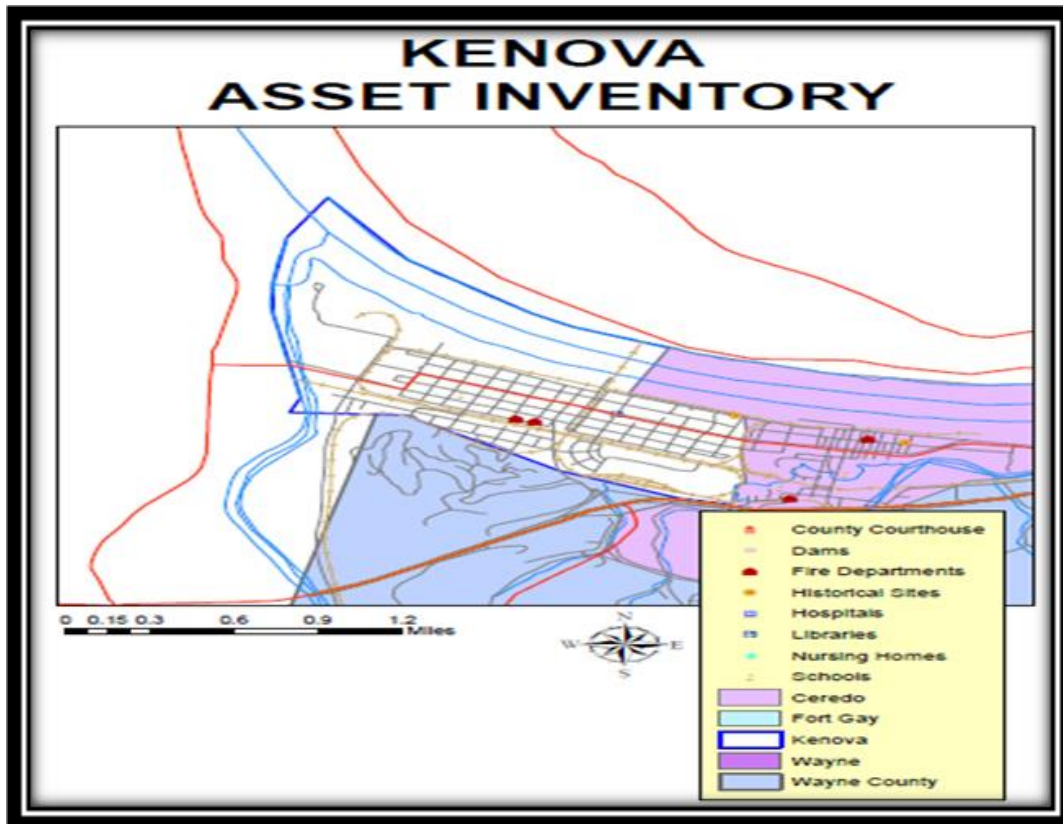
Fort Gay Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
Fort Gay ES	X	X	X	X	X	15,100	3,205,730.00				
Fort Gay MS		X				45,531	3,376,056.00				
Fort Gay VFD	X										
Railways	X		X								
Residences		X									
Roads	X		X								



Kenova Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (#)
	X	X	X	X						
Kenova ES	X	X			54,525	4,321,984.00				
Kenova FD	X									
Kenova PD	X									
Kenova VFC	X				4,000	350,000.00	1,000,000.00	250,000.00	68393	200
Railways	X		X							
Residences		X								
Roads	X		X							



Wayne Assets

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$)	Occupancy or Capacity (\$)
County Courthouse	X		X								
Railways	X		X								
Residences		X									
Roads	X		X								
Wal-mart Inc.			X								
Wayne County BOE	X	X									
Wayne County Commission	X	X									
Wayne County Commission Service Org, Inc.			X								
Wayne County ES		X				50,000	6,500,000.00				
Wayne County HS		X				144,688	9,535,702.00				
Wayne County MS		X				67,546	4,989,221.00				
Wayne County Sheriff	X										
Wayne PD	X										
Wayne VFD	X										
Administrative annex 1						1225	106,638.00				
Administrative Annex 2						6480	547,481.00				
Bus Garage						12,688	1,060,102.00				



2.4 ESTIMATE LOSSES

Estimating the losses that may arise from a hazard event both educates local officials as to how to prioritize mitigation projects and speeds up the recovery process. Those community assets at risk of sustaining hazard-related losses will likely be higher priorities to protect with mitigation projects. Also, when disaster strikes, loss estimation data can be provided to recovery and damage assessment teams to help in categorizing the losses sustained and assistance needed.

The following figures are *loss estimates* and are only intended to guide the development and prioritization of mitigation strategies. These figures should not replace official damage assessments. Further, the figures are subject to change based on inflation, facility upgrades/additions, staff increases/reductions, etc.

METHODOLOGY

Loss estimates are derived from Worksheet #3a from FEMA 286-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*. This worksheet contains space for the total number of structures and the total value of structures. For each (the number and the value), a percentage in hazard-prone areas is identified. The values corresponding to the percentage in hazard areas correspond to the loss estimates for each category: residential, commercial, industrial, agricultural, religious/non-profit, government, education and utilities.

Two methods are used to determine the percent of assets in the hazard areas. First, historical hazard event research often contains estimates of losses in a variety of categories, some of which correspond with the categories used in this plan. During the hazard identification research for this project, planners noted loss totals from large incidents. Dollar amounts computed on Worksheet #3a are compared to those from historical events.

Secondly, the hazard profiling stage of this risk assessment guides planners through the development of a map that graphically depicts hazard areas. Planners can then gauge percentages by cross-referencing the map. (For instance, hazard areas comprise certain estimated percentages of land area in the county.) For those hazards whereby an equal risk is shown on the map, planners relied more heavily on the historical data. Where variance is shown in the map, a more equal reliance on historical data and mapping has been used.

ESTIMATE LOSSES

Cabell County

Watershed Approach To Evaluate The Cabell County Floodplains

<u>Watershed</u>	<u>Watershed Acres</u>	<u>Floodplain Acres</u>	<u>Structural Damages¹</u>
Lower Mud River	89,850	5,307	\$ 72,977,256
Guyandotte River D. Drains	61,000	912	\$ 24,259,792
Big Sandy River D. Drains	44,500	1,131	\$ 13,266,175
Guyan Creek	30,268	840	\$ 1,116,323
Ohio River Direct Drains	20,600	238	\$ 7,701,182
Fourpole Creek	9350	348	\$ 3,834,449

Methodology

This data was collected by the National Resource Conservation Service (NRCS) in 1991 and updated in November of 2002. This is part of the WV Statewide Flood Protection Task Force initiative.

Cabell County (Cont.)

Statistical Data
Structures in Regulatory Floodplain

<u>Structure Type</u>	<u>Quantity</u>	<u>Dollar Value</u>
Churches	12	\$ 1,020,000.
Commercial	627	\$ 80,632,200.
Institutional	1	\$ 523,600.
Residential	2921	\$ 102,235,000.
School	4	\$ 1,032,000.

Methodology

The Corps of Engineers has just completed a study of structures in the regulatory floodplain of all counties in West Virginia that have a FEMA Q3 floodplain digital mapping layer. Cabell is one of only 24 counties in West Virginia that have this data. The corps used a specialty software that can recognize building footprints with the Q3 overlaid on top of the DOQQ's for Cabell County. These are provided with the aerial mapping for Cabell.

Cabell Flood Risk Locations

<u>ID NUMBER</u>	<u>MUNICIPALITY</u>	<u>LATTITUDE</u>	<u>LONGITUDE</u>	<u>LOCATION</u>
1				Guyan River Rd - Merritt Ck Rd
<u>PROBLEM</u>				
Road flooding; Temporarily closes road				
<u>ACTION</u>				
<u>ERFD_MAP</u>				
07-A				

<u>ID NUMBER</u>	<u>MUNICIPALITY</u>	<u>LATTITUDE</u>	<u>LONGITUDE</u>	<u>LOCATION</u>
2				Booten Creek - Four H Camp Rd
<u>PROBLEM</u>				
Flash flooding closes road				
<u>ACTION</u>				
<u>ERFD_MAP</u>				
06-D				

<u>ID NUMBER</u>	<u>MUNICIPALITY</u>	<u>LATTITUDE</u>	<u>LONGITUDE</u>	<u>LOCATION</u>
3				Gym Factory - Little Seven Mile
<u>PROBLEM</u>				
Road flooding				
<u>ACTION</u>				
<u>ERFD_MAP</u>				
07-A				

Region 2 Planning and Development Council
Hazard Mitigation Plan

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
4				Wildcat Rd
PROBLEM				
Water backup settles for a while				
ACTION				
GRID_MAP				
07-A				

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
5				Howells Mill Road- River Park Rd
PROBLEM				
Backwater from Mud River floods houses and causes road blockage				
ACTION				
GRID_MAP				
07-B				

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
6				Grant Garden - Interstate 64
PROBLEM				
Backwater - standing water				
ACTION				
GRID_MAP				
07-B				

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
7				Yates Crossing - Prichard Rd
PROBLEM				
Flooding - standing water				
ACTION				
GRID_MAP				
07-B				

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
8				Low Head Dam
PROBLEM				
Dam hazard - backwater - DNR responsible				
ACTION				
GRID_MAP				
07-B				

ID_NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
9				Saunders Creek
PROBLEM				
Flooding - backwater				
ACTION				
GRID_MAP				
08-A				

Region 2 Planning and Development Council
Hazard Mitigation Plan

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
10				Georgia Ave
PROBLEM				
Flooding - backwater				
ACTION				
GRID_MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
11				Prichard Rd & Lower Creek & Newmans Branch
PROBLEM				
Flooding - backwater				
ACTION				
GRID_MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
12				Johns Creek
PROBLEM				
Flash flooding of houses				
ACTION				
GRID_MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
13				Newmans Branch - Mill Creek
PROBLEM				
Creek flooding - backwater				
ACTION				
GRID_MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
14				Darnell Rd
PROBLEM				
Flash flooding - backwater				
ACTION				
GRID_MAP				
06-D				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
15				Indian Fork Creek - James River Rd
PROBLEM				
Flash flooding closes road - Road is built for creek bed				
ACTION				
GRID_MAP				
08-D				

Region 2 Planning and Development Council
Hazard Mitigation Plan

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
16				Indian fork Creek - Morris Memorial Rd
PROBLEM				
Flooding from creek and backwater from Mud River				
ACTION				
GRID MAP				
08-B				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
17				Rock Camp Rd - Mud River - Indian Fork Creek
PROBLEM				
Flea Market elevation too low - backwater				
ACTION				
GRID MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
18				Milton
PROBLEM				
Erosion from flooding				
ACTION				
GRID MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
19				Border James River Turnpike - Lincoln Co line
PROBLEM				
Flash flooding and standing backwater				
ACTION				
GRID MAP				
08-C				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
20				Dry Creek Rd
PROBLEM				
Backwater from Mud River - low lying road				
ACTION				
GRID MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
21				Charleys Ck Rd, E Mud River Rd, Balls Gap
PROBLEM				
Flash flooding and backwater closes roads				
ACTION				
GRID MAP				
08-C				

Region 2 Planning and Development Council
Hazard Mitigation Plan

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
22				Glenwood Road - Mill Creek
PROBLEM				
Flash flooding				
ACTION				
GRID MAP				
08-A				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
23				Kilgore Creek Road
PROBLEM				
Kilgore Creek blocks road				
ACTION				
GRID MAP				
08-B				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
24				where 2 Mile Ck meets Mud River & 2 Mile Road
PROBLEM				
Flooding				
ACTION				
GRID MAP				
08-C				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
25				Ada Court
PROBLEM				
Flash flooding - backwater				
ACTION				
GRID MAP				
08-B				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
26				Charleys Creek Rd & Balls Gap Rd
PROBLEM				
Flash flooding - backwater				
ACTION				
GRID MAP				
08-D				

ID NUMBER	MUNICIPALITY	LATITUDE	LONGITUDE	LOCATION
0				Holiday Park
PROBLEM				
Flash Flooding - backwater -road blockage				
ACTION				
GRID MAP				

Cabell County Dams

ID NUMBER	DAM NAME	OWNER	CLASS	COUNTYNAME
0	CULLODEN WATER SUPPLY DAM	CULLODEN PSD	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
	INDIAN FORK	MILTON	4 SRC	1963
DAM_LENGTH	DAM_HEIGHT	STRUCT_HGT	HYDR_HGT	
	300	25	0	21
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
	0	68	54	13
DRAIN_AREA	HAZARD_EAP	SPILL_TYPE	SPILL_WDTH	VOLUME
	0 H N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.413333	-82.059722 54011
NAT_ID	COMMENT	ID		
WV01101	RE	WV000092		

ID NUMBER	DAM NAME	OWNER	CLASS	COUNTYNAME
1	HATFIELD FARM LAKE	RAYMOND G. CYRUS	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
	GUYANDOTTE RIVER	BARBOURSVILLE	3 R	1955
DAM_LENGTH	DAM_HEIGHT	STRUCT_HGT	HYDR_HGT	
	210	28	0	28
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
	1974	35	29	3
DRAIN_AREA	HAZARD_EAP	SPILL_TYPE	SPILL_WDTH	VOLUME
	0 H N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.383333	-82.229167 54011
NAT_ID	COMMENT	ID		
WV01105	RE	WV000151		

ID NUMBER	DAM NAME	OWNER	CLASS	COUNTYNAME
2	LAKE OF EDEN	WILLIAM T. WORKMA	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
	GOOSE RUN	BARBOURSVILLE	1 R	1971
DAM_LENGTH	DAM_HEIGHT	STRUCT_HGT	HYDR_HGT	
	600	25	0	24
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
	0	20	17	3
DRAIN_AREA	HAZARD_EAP	SPILL_TYPE	SPILL_WDTH	VOLUME
	0 H N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.408611	-82.2625 54011
NAT_ID	COMMENT	ID		
WV01102	RE	WV000190		

ID NUMBER	DAM NAME	OWNER	CLASS	COUNTYNAME
3	LAKEVIEW DAM	FINANCE & INSURAN	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
	TR TOM CREEK	MARTHA	4 R	1965
DAM_LENGTH	DAM_HEIGHT	STRUCT_HGT	HYDR_HGT	
	265	34	0	26
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
	978	53	35	2
DRAIN_AREA	HAZARD_EAP	SPILL_TYPE	SPILL_WDTH	VOLUME
	0 H Y			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.3925	-82.253056 54011
NAT_ID	COMMENT	ID		
WV01104	RE	WV000197		

Region 2 Planning and Development Council
Hazard Mitigation Plan

ID_NUMBER	DAM_NAME	OWNER	CLASS	COUNTYNAME
4	MELODY T RANCH LAKE	TIMOTHY NICHOLS	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
TR MUD RV OF GU RV	BARBOURSVILLE		5 R	1962
DAM_LENGTH	DAM_HEIGHT	STRUCT_BET	HYDR_BET	
190		34	0	32
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
0		51	42	4
DRAIN_AREA	HAZARD EAP	SPILL_TYPE	SPILL_WIDTH	VOLUME
	0 S N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.428611	-82.252778 54011
NAT_ID	COMMENT	ID		
WV01103	RE	WV000237		

ID_NUMBER	DAM_NAME	OWNER	CLASS	COUNTYNAME
5	PERRY MOUNTAIN LAKE	VIRGINIA PERRY	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
TRI OF TYLER CREEK	SALT ROCK		3 R	1958
DAM_LENGTH	DAM_HEIGHT	STRUCT_BET	HYDR_BET	
272		12	0	0
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
0		11	8	2
DRAIN_AREA	HAZARD EAP	SPILL_TYPE	SPILL_WIDTH	VOLUME
	0 S N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.333333	-82.186667 54011
NAT_ID	COMMENT	ID		
WV01106	RE	WV000341		

ID_NUMBER	DAM_NAME	OWNER	CLASS	COUNTYNAME
6	TROUT LAKE	CITY OF BARBOURSV	HPDR	Cabell
RIVER	NEAR_CITY	DIST_CITY	PURPOSE	YEAR_COMP
TR GUYANDOTTE RV	BARBOURSVILLE		0 R	1991
DAM_LENGTH	DAM_HEIGHT	STRUCT_BET	HYDR_BET	
3390		32	0	14
MAX_DISCH	MAX_STOR	NORM_STOR	SURF_AREA	
0		190	100	15
DRAIN_AREA	HAZARD EAP	SPILL_TYPE	SPILL_WIDTH	VOLUME
	0 L N			0
COST	PRIMARY_SR	LAT	LONG	COUNTY
	0 WV		38.386667	-82.305 54011
NAT_ID	COMMENT	ID		
WV01107	RE	WV000465		

Lincoln County

Hazard-Specific Loss Estimates

Category	Number of Structures	Value of Structures	Number of People
DAM FAILURE			
Residential	1,313	\$47,263,320	2,910
Commercial	82	\$32,981,518	291
Industrial	0	\$0	74
Agricultural	6	\$0	2
Religious/Non-Profit	5	\$488,000	244
Government	2	\$5,876,641	173
Education	1	\$8,600,000	43
Utilities	2	\$20,813,669	17
DROUGHT			
Residential	303	\$10,906,920	672
Commercial	3	\$867,935	9
Industrial	0	\$1,233,357	58
Agricultural	215	\$28,931,156	68
Religious/Non-Profit	2	\$244,000	122
Government	1	\$4,972,542	95
Education	0	\$0	0
Utilities	4	\$15,767,931	29
FLOODING			
Residential	1,111	\$43,627,680	2,462
Commercial	13	\$5,784,883	47
Industrial	0	\$8,633,499	81
Agricultural	28	\$340,000	9
Religious/Non-Profit	7	\$500,000	366
Government	0	\$1,239,617	26
Education	7	\$13,490,641	254
Utilities	2	\$3,120,000	154
HAILSTORM			
Residential	202	\$7,271,280	448
Commercial	8	\$2,603,804	28
Industrial	0	\$596,705	25
Agricultural	2	\$289,312	1
Religious/Non-Profit	1	\$61,000	31
Government	0	\$2,260,247	43
Education	1	\$3,870,000	35
Utilities	1	\$6,307,172	12
HAZMAT INCIDENT			
Residential	707	\$25,449,480	1,567
Commercial	132	\$43,396,734	470
Industrial	3	\$17,901,153	742
Agricultural	32	\$4,339,673	10
Religious/Non-Profit	5	\$488,000	244
Government	3	\$13,109,430	251
Education	3	\$11,180,000	101
Utilities	4	\$19,552,234	36
LAND SUBSIDENCE			
Residential	7,271	\$261,766,080	16,118
Commercial	53	\$17,358,694	188
Industrial	0	\$2,983,526	124
Agricultural	19	\$2,603,804	6
Religious/Non-Profit	40	\$4,026,000	2,013
Government	2	\$9,945,085	191
Education	1	\$4,730,000	43
Utilities	11	\$50,457,378	93
TERRORISM			
Residential	2,323	\$83,619,720	5,149
Commercial	143	\$46,868,473	508
Industrial	1	\$6,165,953	255
Agricultural	15	\$2,025,181	5
Religious/Non-Profit	27	\$2,684,000	1,342
Government	4	\$22,150,416	425
Education	4	\$17,200,000	155
Utilities	9	\$40,996,620	75
THUNDERSTORM			
Residential	2,727	\$98,162,280	6,044
Commercial	153	\$50,340,211	545
Industrial	1	\$9,547,282	396
Agricultural	4	\$578,623	1
Religious/Non-Profit	34	\$3,355,000	1,678
Government	5	\$27,122,959	520
Education	4	\$17,200,000	155
Utilities	3	\$12,614,345	23

Region 2 Planning and Development Council
Hazard Mitigation Plan

Category	Number of Structures	Value of Structures	Number of People
URBAN FIRE			
Residential	2,020	\$72,712,800	4,477
Commercial	177	\$58,151,624	630
Industrial	1	\$6,961,560	288
Agricultural	17	\$2,314,492	5
Religious/Non-Profit	29	\$2,928,000	1,484
Government	5	\$23,958,813	460
Education	4	\$17,200,000	155
Utilities	7	\$31,535,862	58
WILDFIRE			
Residential	6,867	\$247,223,520	15,222
Commercial	87	\$28,641,844	310
Industrial	1	\$4,176,936	173
Agricultural	198	\$26,816,664	63
Religious/Non-Profit	32	\$3,172,000	1,586
Government	4	\$21,246,318	407
Education	6	\$25,800,000	232
Utilities	1	\$5,045,738	9
WIND			
Residential	7,069	\$254,494,800	15,670
Commercial	172	\$56,415,754	611
Industrial	2	\$12,331,905	511
Agricultural	54	\$7,232,789	17
Religious/Non-Profit	23	\$2,257,000	1,129
Government	5	\$23,958,813	460
Education	4	\$17,200,000	155
Utilities	7	\$31,535,862	58
WINTER STORM			
Residential	7,776	\$279,944,280	17,237
Commercial	111	\$36,453,257	395
Industrial	1	\$8,751,675	383
Agricultural	32	\$4,339,673	10
Religious/Non-Profit	7	\$732,000	366
Government	5	\$24,862,712	477
Education	8	\$34,400,000	310
Utilities	4	\$17,680,082	32

Logan County

Hazard-Specific Loss Estimates

Category	Number of Structures	Value of Structures	Number of People
DAM FAILURE			
Residential	5,850	\$369,388,750	12,114
Commercial	100	\$73,416,822	649
Industrial	3	\$43,125,965	393
Agricultural	20	\$128,736,140	30
Religious/Non-Profit	28	\$4,162,500	1,388
Government	1	\$20,792,876	180
Education	3	\$12,000,000	248
Utilities	2	\$16,998,825	95
DROUGHT			
Residential	17,383	\$0	35,629
Commercial	746	\$0	4,995
Industrial	19	\$0	2,457
Agricultural	34	\$0	50
Religious/Non-Profit	75	\$0	3,750
Government	11	\$0	2,005
Education	19	\$0	1,550
Utilities	10	\$0	474
EARTHQUAKE			
Residential	17,383	\$0	35,629
Commercial	746	\$0	4,995
Industrial	19	\$0	2,457
Agricultural	34	\$0	50
Religious/Non-Profit	75	\$0	3,750
Government	11	\$0	2,005
Education	19	\$0	1,550
Utilities	10	\$0	474

Region 2 Planning and Development Council
Hazard Mitigation Plan

Category	Number of Structures	Value of Structures	Number of People
FLOODING			
Residential	3,500	\$217,287,500	7,126
Commercial	250	\$192,013,226	1,698
Industrial	5	\$70,079,693	639
Agricultural	25	\$161,465,667	37
Religious/Non-Profit	18	\$2,700,000	900
Government	4	\$83,171,504	722
Education	1	\$3,750,000	78
Utilities	5	\$42,497,062	237
HAILSTORM			
Residential	17,383	\$108,644	35,629
Commercial	746	\$56,474	4,995
Industrial	19	\$26,954	2,457
Agricultural	34	\$21,820	50
Religious/Non-Profit	75	\$1,125	3,750
Government	11	\$23,103	2,005
Education	19	\$7,500	1,550
Utilities	10	\$8,499	474
HAZARDOUS MATERIAL INCIDENT			
Residential	1,000	\$65,186,250	2,138
Commercial	500	\$378,379,004	3,347
Industrial	17	\$239,888,181	2,187
Agricultural	5	\$32,729,527	8
Religious/Non-Profit	20	\$3,037,500	1,013
Government	5	\$103,964,380	902
Education	3	\$12,000,000	248
Utilities	5	\$42,497,062	237
LAND SUBSIDENCE			
Residential	17,383	\$21,728,750	35,629
Commercial	746	\$11,294,896	4,995
Industrial	19	\$5,390,746	2,457
Agricultural	34	\$4,363,937	50
Religious/Non-Profit	75	\$225,000	3,750
Government	11	\$4,620,639	2,005
Education	19	\$1,500,000	1,550
Utilities	10	\$1,699,882	474
TERRORISM			
Residential	7,650	\$478,032,500	15,677
Commercial	450	\$338,846,869	2,997
Industrial	7	\$99,728,794	909
Agricultural	2	\$13,091,811	3
Religious/Non-Profit	20	\$3,037,500	1,013
Government	6	\$127,067,576	1,103
Education	6	\$24,000,000	496
Utilities	3	\$25,498,237	142

Category	Number of Structures	Value of Structures	Number of People
THUNDERSTORM			
Residential	17,383	\$5,432,188	35,629
Commercial	746	\$2,823,724	4,995
Industrial	19	\$1,347,686	2,457
Agricultural	34	\$1,090,984	50
Religious/Non-Profit	75	\$56,250	3,750
Government	11	\$1,155,160	2,005
Education	19	\$375,000	1,550
Utilities	10	\$424,971	474
URBAN FIRE			
Residential	10,000	\$630,133,750	20,665
Commercial	600	\$451,795,825	3,996
Industrial	5	\$70,079,693	639
Agricultural	0	\$0	0
Religious/Non-Profit	35	\$5,287,500	1,763
Government	11	\$231,031,956	2,005
Education	6	\$24,000,000	496
Utilities	3	\$25,498,237	142
WILDFIRE			
Residential	7,500	\$467,168,125	15,320
Commercial	75	\$56,474,478	500
Industrial	10	\$142,854,759	1,302
Agricultural	25	\$161,465,667	37
Religious/Non-Profit	25	\$3,712,500	1,238
Government	0	\$0	0
Education	5	\$19,500,000	403
Utilities	7	\$59,495,886	3,318
WIND			
Residential	17,383	\$21,728,750	35,629
Commercial	746	\$11,294,896	4,995
Industrial	19	\$5,390,746	2,457
Agricultural	34	\$4,363,937	50
Religious/Non-Profit	75	\$225,000	3,750
Government	11	\$4,620,639	2,005
Education	19	\$1,500,000	1,550
Utilities	10	\$1,699,882	474
WINTER STORM			
Residential	17,383	\$16,296,563	35,629
Commercial	746	\$8,471,172	4,995
Industrial	19	\$4,043,059	2,457
Agricultural	34	\$3,272,953	50
Religious/Non-Profit	75	\$168,750	3,750
Government	11	\$3,465,479	2,005
Education	19	\$1,125,000	1,550
Utilities	10	\$1,274,912	474

Mason County

Hazard-Specific Loss Estimates

Category	Number of Structures	Value of Structures	Number of People
DAM FAILURE			
Residential	6,212	\$404,368,650	12,839
Commercial	260	\$65,221,226	2,131
Industrial	23	\$31,678,881	1,036
Agricultural	47	\$1,863,364	66
Religious/Non-Profit	32	\$4,860,000	1,620
Government	6	\$40,954,789	1,350
Education	11	\$84,925,000	815
Utilities	8	\$302,437,253	158
DROUGHT			
Residential	12,423	\$0	25,678
Commercial	346	\$0	2,841
Industrial	25	\$0	1,151
Agricultural	946	\$0	1,310
Religious/Non-Profit	72	\$0	3,600
Government	7	\$0	1,570
Education	14	\$0	1,032
Utilities	10	\$0	197
EARTHQUAKE			
Residential	12,423	\$0	25,678
Commercial	346	\$0	2,841
Industrial	25	\$0	1,151
Agricultural	946	\$0	1,310
Religious/Non-Profit	72	\$0	3,600
Government	7	\$0	1,570
Education	14	\$0	1,032
Utilities	10	\$0	197
FLOODING			
Residential	2,500	\$161,747,460	5,136
Commercial	150	\$37,393,503	1,222
Industrial	3	\$4,223,851	138
Agricultural	500	\$19,751,654	694
Religious/Non-Profit	15	\$2,268,000	756
Government	0	\$0	0
Education	0	\$0	0
Utilities	8	\$302,437,253	158
HAILSTORM			
Residential	12,423	\$80,874	25,678
Commercial	346	\$8,696	2,841
Industrial	25	\$3,520	1,151
Agricultural	946	\$3,727	1,310
Religious/Non-Profit	72	\$1,080	3,600
Government	7	\$4,762	1,570
Education	14	\$10,750	1,032
Utilities	10	\$37,805	197
HAZARDOUS MATERIAL INCIDENT			
Residential	2,500	\$161,747,460	5,136
Commercial	150	\$52,176,981	1,222
Industrial	3	\$26,399,068	138
Agricultural	500	\$19,751,654	694
Religious/Non-Profit	15	\$540,000	756
Government	0	\$0	0
Education	0	\$0	0
Utilities	8	\$283,534,925	158
LAND SUBSIDENCE			
Residential	12,423	\$10,109,216	25,678
Commercial	346	\$1,087,020	2,840
Industrial	25	\$439,984	1,151
Agricultural	946	\$465,841	1,310
Religious/Non-Profit	72	\$135,000	3,600
Government	7	\$595,273	1,570
Education	14	\$1,343,750	1,032
Utilities	10	\$4,725,582	197
TERRORISM			
Residential	1,250	\$80,873,730	2,568
Commercial	100	\$25,218,874	824
Industrial	20	\$28,159,006	921
Agricultural	50	\$1,863,364	66
Religious/Non-Profit	30	\$4,536,000	1,512
Government	6	\$40,954,789	1,350
Education	10	\$76,325,000	733
Utilities	5	\$189,023,283	99

Region 2 Planning and Development Council
Hazard Mitigation Plan

Category	Number of Structures	Value of Structures	Number of People
THUNDERSTORM			
Residential	12,423	\$8,087,373	25,678
Commercial	346	\$869,616	2,841
Industrial	25	\$351,988	1,151
Agricultural	946	\$372,673	1,310
Religious/Non-Profit	72	\$108,000	3,600
Government	7	\$476,218	1,570
Education	14	\$1,075,000	1,032
Utilities	10	\$3,780,466	197
URBAN FIRE			
Residential	4,087	\$266,883,309	8,474
Commercial	275	\$68,699,692	2,244
Industrial	12	\$16,895,403	552
Agricultural	25	\$1,118,018	39
Religious/Non-Profit	24	\$3,564,000	1,188
Government	7	\$47,621,848	1,570
Education	8	\$61,275,000	588
Utilities	3	\$113,413,970	59
WILDFIRE			
Residential	8,336	\$541,853,991	17,204
Commercial	71	\$18,261,943	597
Industrial	13	\$18,303,354	599
Agricultural	921	\$36,149,254	1,271
Religious/Non-Profit	48	\$7,236,000	2,412
Government	0	\$0	0
Education	6	\$46,225,000	444
Utilities	7	\$264,632,596	138
WIND			
Residential	12,423	\$16,174,746	25,678
Commercial	346	\$1,739,233	2,841
Industrial	25	\$703,975	1,151
Agricultural	946	\$745,345	1,310
Religious/Non-Profit	72	\$216,000	3,600
Government	7	\$952,437	1,570
Education	14	\$2,150,000	1,032
Utilities	10	\$7,560,931	197
WINTER STORM			
Residential	12,423	\$12,131,060	25,678
Commercial	346	\$1,304,425	2,841
Industrial	25	\$527,981	1,151
Agricultural	946	\$559,009	1,310
Religious/Non-Profit	72	\$162,000	3,600
Government	7	\$714,328	1,570
Education	14	\$1,612,500	1,032
Utilities	10	\$5,670,698	197

Mingo County

Hazard-Specific Loss Estimates

Category	Number of Structures	Value of Structures	Number of People
DAM FAILURE			
Residential	2,000	\$73,329,165	4,065
Commercial	189	\$32,442,524	967
Industrial	1	\$4,427,966	132
Agricultural	8	\$1,315,237	1
Religious/Non-Profit	3	\$459,000	153
Government	1	\$7,891,425	233
Education	2	\$10,462,500	88
Utilities	2	\$47,124,721	531
DROUGHT			
Residential	2,934	\$107,549,442	5,962
Commercial	77	\$13,152,374	392
Industrial	2	\$11,512,712	343
Agricultural	155	\$26,304,749	22
Religious/Non-Profit	9	\$1,377,000	459
Government	1	\$8,768,250	259
Education	1	\$5,231,250	44
Utilities	3	\$51,837,193	584
EARTHQUAKE			
Residential	0	\$0	0
Commercial	0	\$0	0
Industrial	0	\$0	0
Agricultural	0	\$0	0
Religious/Non-Profit	0	\$0	0
Government	0	\$0	0
Education	0	\$0	0
Utilities	0	\$0	0

Region 2 Planning and Development Council
Hazard Mitigation Plan

Category	Number of Structures	Value of Structures	Number of People
FLOODING			
Residential	5,867	\$215,098,884	11,924
Commercial	107	\$18,413,324	549
Industrial	3	\$13,283,898	395
Agricultural	13	\$2,192,062	2
Religious/Non-Profit	5	\$688,500	230
Government	2	\$10,960,312	324
Education	2	\$11,508,750	97
Utilities	1	\$15,708,240	177
HAILSTORM			
Residential	1,200	\$43,997,499	2,439
Commercial	36	\$6,137,775	183
Industrial	1	\$4,427,966	132
Agricultural	10	\$1,753,650	1
Religious/Non-Profit	3	\$459,000	153
Government	1	\$3,507,300	104
Education	1	\$7,323,750	62
Utilities	0	\$4,712,472	53
HAZARDOUS MATERIAL INCIDENT			
Residential	2,000	\$73,329,165	4,065
Commercial	307	\$52,609,498	1,568
Industrial	9	\$48,707,627	1,450
Agricultural	26	\$4,384,125	4
Religious/Non-Profit	10	\$1,530,000	510
Government	3	\$17,536,499	518
Education	6	\$36,618,750	309
Utilities	5	\$102,103,561	1,150
LAND SUBSIDENCE			
Residential	1,867	\$68,440,554	3,794
Commercial	51	\$8,768,250	261
Industrial	2	\$9,741,525	290
Agricultural	18	\$3,068,887	3
Religious/Non-Profit	6	\$918,000	306
Government	2	\$11,837,137	350
Education	5	\$26,156,250	221
Utilities	3	\$62,832,961	708
TERRORISM			
Residential	667	\$24,443,055	1,355
Commercial	358	\$61,377,747	1,830
Industrial	11	\$57,563,559	1,713
Agricultural	26	\$4,384,125	4
Religious/Non-Profit	18	\$2,677,500	893
Government	4	\$24,112,686	713
Education	5	\$31,387,500	265
Utilities	4	\$70,687,081	796

Category	Number of Structures	Value of Structures	Number of People
THUNDERSTORM – LIGHTNING			
Residential	5,067	\$185,767,218	10,298
Commercial	179	\$30,688,874	915
Industrial	4	\$22,139,830	659
Agricultural	80	\$13,590,787	11
Religious/Non-Profit	18	\$2,677,500	893
Government	1	\$8,768,250	259
Education	3	\$16,740,000	141
Utilities	2	\$43,983,073	495
URBAN FIRE			
Residential	2,400	\$87,994,998	4,878
Commercial	312	\$53,486,323	1,595
Industrial	10	\$51,364,406	1,529
Agricultural	18	\$3,068,887	3
Religious/Non-Profit	15	\$2,218,500	740
Government	3	\$19,728,562	583
Education	6	\$33,480,000	283
Utilities	4	\$83,253,673	938
WILDFIRE			
Residential	667	\$24,443,055	1,355
Commercial	15	\$2,630,475	78
Industrial	0	\$1,771,186	53
Agricultural	181	\$30,688,874	26
Religious/Non-Profit	5	\$765,000	255
Government	0	\$1,315,237	39
Education	2	\$12,555,000	106
Utilities	1	\$14,137,416	159
WIND (SEVERE) – TORNADO			
Residential	933	\$34,220,277	1,897
Commercial	15	\$2,630,475	78
Industrial	1	\$4,427,966	132
Agricultural	23	\$3,945,712	3
Religious/Non-Profit	4	\$612,000	204
Government	1	\$4,384,125	130
Education	1	\$7,323,750	62
Utilities	0	\$4,712,472	53
WINTER STORM (SEVERE)			
Residential	8,801	\$322,648,326	17,886
Commercial	189	\$32,442,524	967
Industrial	5	\$26,567,796	791
Agricultural	44	\$7,453,012	6
Religious/Non-Profit	13	\$1,912,500	638
Government	2	\$12,713,962	376
Education	10	\$55,451,250	469
Utilities	1	\$14,137,416	159

Wayne County

Hazard-Specific Loss Estimates

Category	Number of Structures	Value of Structures	Number of People
DAM FAILURE			
Residential	2,527	\$96,418,109	5,414
Commercial	80	\$23,378,281	1,251
Industrial	0	\$0	0
Agricultural	0	\$0	0
Religious/Non-Profit	7	\$1,080,000	360
Government	2	\$16,115,030	396
Education	4	\$19,040,862	147
Utilities	3	\$60,579,337	85
DROUGHT			
Residential	583	\$22,250,333	1,249
Commercial	2	\$615,218	33
Industrial	0	\$1,233,357	18
Agricultural	151	\$18,798,326	130
Religious/Non-Profit	4	\$540,000	180
Government	1	\$13,635,795	335
Education	0	\$0	0
Utilities	2	\$45,893,437	65
EARTHQUAKE			
Residential	0	\$0	0
Commercial	0	\$0	0
Industrial	0	\$0	0
Agricultural	0	\$0	0
Religious/Non-Profit	0	\$0	0
Government	0	\$0	0
Education	0	\$0	0
Utilities	0	\$0	0

Region 2 Planning and Development Council
Hazard Mitigation Plan

Category	Number of Structures	Value of Structures	Number of People
FLOODING			
Residential	2,332	\$89,001,331	4,998
Commercial	4	\$5,784,883	66
Industrial	1	\$8,633,499	126
Agricultural	0	\$340,000	0
Religious/Non-Profit	3	\$500,000	135
Government	0	\$1,239,617	30
Education	0	\$13,490,641	7
Utilities	0	\$3,120,000	13
HAILSTORM			
Residential	389	\$20,668,219	833
Commercial	6	\$8,677,324	99
Industrial	0	\$3,700,071	54
Agricultural	2	\$895,279	1
Religious/Non-Profit	1	\$195,000	45
Government	1	\$6,198,089	152
Education	2	\$12,141,577	66
Utilities	1	\$804,480	26
HAZARDOUS MATERIAL INCIDENT			
Residential	1,361	\$51,917,443	2,915
Commercial	106	\$30,760,897	1,647
Industrial	14	\$111,002,130	1,615
Agricultural	23	\$2,819,749	20
Religious/Non-Profit	7	\$1,080,000	360
Government	3	\$35,948,913	884
Education	6	\$24,753,120	191
Utilities	2	\$56,907,862	80
LAND SUBSIDENCE			
Residential	13,994	\$534,007,987	29,986
Commercial	42	\$12,304,359	659
Industrial	2	\$5,126,816	269
Agricultural	14	\$1,691,849	12
Religious/Non-Profit	59	\$8,910,000	2,970
Government	3	\$27,271,589	670
Education	2	\$10,472,474	81
Utilities	6	\$146,858,999	206
TERRORISM			
Residential	4,470	\$170,585,885	9,579
Commercial	114	\$33,221,768	1,778
Industrial	5	\$10,595,420	556
Agricultural	11	\$1,315,883	9
Religious/Non-Profit	40	\$5,940,000	1,980
Government	6	\$60,741,267	1,493
Education	9	\$38,081,723	293
Utilities	5	\$119,322,937	168

Category	Number of Structures	Value of Structures	Number of People
THUNDERSTORM – LIGHTNING			
Residential	3,887	\$148,335,552	8,329
Commercial	141	\$41,219,601	2,206
Industrial	6	\$11,962,571	628
Agricultural	12	\$1,503,866	10
Religious/Non-Profit	43	\$6,480,000	2,160
Government	6	\$65,699,738	1,615
Education	9	\$38,081,723	293
Utilities	4	\$91,786,875	129
URBAN FIRE			
Residential	5,248	\$200,252,995	11,245
Commercial	122	\$41,219,601	1,910
Industrial	8	\$59,201,136	861
Agricultural	3	\$1,503,866	3
Religious/Non-Profit	50	\$6,480,000	2,475
Government	7	\$74,377,062	1,828
Education	9	\$38,081,723	293
Utilities	2	\$36,714,750	52
WILDFIRE			
Residential	13,216	\$504,340,877	28,320
Commercial	70	\$20,302,192	1,087
Industrial	3	\$25,900,497	377
Agricultural	139	\$17,294,480	120
Religious/Non-Profit	47	\$7,020,000	2,340
Government	6	\$58,262,032	1,432
Education	13	\$57,122,585	440
Utilities	1	\$14,685,900	21
WIND (SEVERE) – TORNADO			
Residential	13,605	\$519,174,432	29,153
Commercial	137	\$39,989,165	2,140
Industrial	10	\$21,190,840	1,112
Agricultural	38	\$4,699,582	33
Religious/Non-Profit	33	\$4,995,000	1,655
Government	6	\$65,699,738	1,615
Education	9	\$38,081,723	293
Utilities	4	\$91,786,875	129
WINTER STORM (SEVERE)			
Residential	14,966	\$571,091,875	32,068
Commercial	89	\$25,839,153	1,383
Industrial	7	\$15,038,661	789
Agricultural	23	\$2,819,749	20
Religious/Non-Profit	11	\$1,620,000	540
Government	7	\$68,178,974	1,676
Education	18	\$76,163,446	586
Utilities	2	\$51,400,650	72

Further, the hazard mitigation planning committee has agreed to refine the loss estimates on a more facility-by-facility basis. Such an estimate will be built directly from the asset inventory developed under section 2.3 of this document (i.e. Figure 2.3.1). Information gleaned from this analysis will be included in the future to this plan.

2.5 ANALYZE DEVELOPMENT TRENDS

Region II Planning & Development Council is made up of 6 counties; Lincoln County is located in the southeast area of Region 2 and has no development mitigation plans occurring currently. Mingo County is located in the southwestern portion of Region 2. Wayne County is located in western portion of Region 2 and has no mitigation development plans currently. Logan County is located in the south eastern part of Region 2, Mason County is located in the north western portion of Region 2, and Cabell County is centrally located in Region 2's area. The counties municipalities are located along the primary US routes and take advantage of these locations to the extent possible. Land uses in Region II Planning & Development Council conform to the following: Agricultural, Commercial, Industrial, Park/Open Land, Residential and Specialized Land Use Designations.

3.0 REGIONAL HAZARD MITIGATION GOALS

Regional Goals:

1. Lessen flood relate losses throughout region.
2. Reduce the negative effects of severe winter storms throughout the region.
3. Reduce the negative effects of severe thunderstorms throughout the region
4. Reduce damage from severe wind and tornadoes throughout the region.
5. Lessen the effects of landslides throughout the region.
6. Lessen hail damage throughout the region.
7. Reduce the negative effects of drought throughout the region.
8. Protect the population and forests from wildfire throughout the region.
9. Reduce the negative effects of land subsidence.
10. Reduce the negative effects of landslides throughout the region.
11. Reduce the negative effects of utility failures throughout the region.
12. Protect the general public from the risk of a bomb threat throughout the region.
13. Reduce the negative effects of a communication failure throughout the region.
14. Protect the general public from hazardous material incidents throughout the region.
15. Protect the general public from dam failures throughout the region.
16. Education.

Several Hazard mitigation projects have been developed by core planning committees. These projects are hereby listed with the jurisdictions they will benefit, as well as a timeframe for completion, funding sources and cost estimate, and coordinating agency to oversee their implementation. These projects address many of the hazards identified in the preceding risk assessment. Many of these strategies (such as the development of information displays) also address multiple hazards.

4.1 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

§201.6(c)(3)(ii)

[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Mitigation Actions fall into Six (6) General Categories:

- Prevention**—measures such as planning and zoning, open space preservation, land development regulations, building codes, storm water management
- Property Protection**—measures such as acquisition, relocation, storm shutters, rebuilding, barriers, flood proofing, insurance, and structural retrofits for high winds
- Public Education and Awareness**—measures such as outreach projects, real estate disclosure, hazard information centers, technical assistance
- Natural Resource Protection**—measures such as erosion and sediment control, stream corridor protection, vegetative management and wetlands preservation
- Emergency Services**—measures such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance
- Structural Projects** —measures such as seawalls, bulkheads, retaining walls, channel modifications, storm sewers, and retrofitting buildings and elevated roadways

As discussed in Section 3.0, Region 2 Planning and Development Council's County core planning committee has developed an extensive list of mitigation projects. Section 3.0 presents those projects determined by committee members and local government representatives (and reviewed by the general public) to be the most beneficial to hazard mitigation in each county.

NFIP PARTICIPATION

It should be noted that all six regional counties and all municipalities within Region 2 participate in and are in good standing with the National Flood Insurance Program (NFIP). All communities have ordinances in place requiring certification of compliance with respect to flood hazard areas.

Flood Insurance studies are done and are used as part of the NFIP to help assist local planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

Violations with said compliance are also addressed within each individual community. For information regarding community floodplain ordinances and violation penalties, contact the community of interest. Information regarding statewide emergency management and the Community Rating System may be obtained from the West Virginia Division of Homeland Security and Emergency Management (www.wvdhsem.org).

Cabell County

Cabell County will use the Regional Plan as their updated plan.

The Cabell County Multi-Jurisdictional Hazard Mitigation Plan and Identified Hazard Mitigation Program Strategies establish the framework within which the post disaster and day-to-day mitigation activities of the community may be carried out on a prioritized and community-wide basis.

The Plan is based upon the experience of the region through the input of the Multi-Jurisdictional Hazard Mitigation Steering Committee, the Cabell County Office of Emergency Services, the Cabell County Emergency Response Center E-911 and the cities of Barboursville, Milton and Huntington's Public Works Departments.

The Plan recognizes the varied conditions that exist throughout all of Cabell County. No single mitigation strategy will effectively meet the needs of all of the communities. However, by embracing the coordinated approach, and objectives contained in this plan, Cabell County can take significant strides toward the efficient and effective use of its resources to resolve and mitigate the communities identified hazards.

One of the most important accomplishments of the Cabell County Multi-Jurisdictional Hazard Mitigation Steering Committee was the process itself, where the participants shared information, resources, and methodologies – community-wide, for the benefit of reducing or eliminating risk to Critical Areas.

Future Actions: *(No Changes Were Made to this Section.)*

Cabell County Commission, City of Huntington, Village of Barboursville, and the City of Milton will review and adopt the Cabell County Multi-jurisdictional Hazard Mitigation Plan and Strategy recommendations.

1. The Cabell County Commission, Mayor's of the cities of Huntington, Milton and Barboursville will support the recommendations of the Cabell County

Hazard Mitigation Planning Committee for implementation and coordination on a county-wide basis.

2. The Cabell County Commission, City of Huntington, Village of Barboursville and the City of Milton will review and adopt, the work of the Cabell County Multi-jurisdictional Hazard Mitigation Steering Committee.
3. The Cabell County Commission, City of Huntington, Village of Barboursville, and the City of Milton shall review the semi-annual progress reports on the implementation of the adopted Cabell County Multi-jurisdictional Hazard Mitigation Plan strategies brought forth by the Cabell County Multi-jurisdictional Hazard Mitigation Planning Committee.
4. Meet annually with the Cabell County Multi-jurisdictional Hazard Mitigation Planning Committee to review the progress of the Hazard Mitigation program and bring forth community input on new strategies.
5. Coordinate with the West Virginia Office of Emergency Services and support the efforts to promote and identify resources and grant money for implementation of the recommended Hazard Mitigation Strategies.

Long Term Goals and Strategies: *(No Changes Were Made to this Section.)*

Goal 1: Eliminate or reduce the long-term risk to human life and property from identified hazards.

Goal 2: Aid both the private and public sectors in understanding the risks they may be exposed to and finding mitigation strategies to reduce those risks.

Goal 3: Avoid risk of exposure to identified hazards.

Goal 4: Minimize the impacts of those risks when they cannot be avoided.

Goal 5: Mitigate the impacts of damage as a result of identified hazards.

Goal 6: Accomplish mitigation strategies in such a way that negative environ-

Cabell County:

Flood Strategy: Acquisition of structures impacted by flooding.

The Towns, Cities and County governments that make up the Region 2 Regional Hazard Mitigation Plan have included the following Identifiable Action Items for each jurisdiction requesting FEMA approval of the plan:

Within the Regional Jurisdictions:

- 1. Flooding Strategy:** Review and create a floodplain planning, management and over-site program to assure compliance with the National Flood Insurance Program (NFIP) community-wide. The lead agencies for this strategy would be the Cabell County Commission, County and City Planning Commissions, and the Public Work's Departments.
 - Distribute National Flood Insurance Program (NFIP) information in utility bills on an annual basis prior to flood season. The program lead for this strategy would require the National Flood Insurance Program to coordinate with the local utility companies to provide and distribute the information. The local floodplain administrators would serve as the points of contact and coordination with the NFIP.
 - Distribute NFIP information through the Assessor's Office with the tax statements each year. This would require coordination with the Assessor's Office, Data Processing and the local floodplain administrators.
 - Develop a plan to maintain an available supply of safety and emergency preparedness supplies. Lead agencies responsible for coordinating supplies and resource information on availability of supplies would be the CCOES, CCERC-911, local Red Cross, Public Works Departments, and the local floodplain administrators. The lead agency for sandbags would be the Public Works Departments.
 - Streamline environmental compliance requirements for pre-flood prevention activities. The lead agencies would be the Cabell County Commission, City and County Planning Offices, CCOES, CCERC-911, Public Works Departments, Development Offices, US Army Corps of Engineers, and the USDA Soil Conservation Office.
- 2. Flood Strategy:** Pursue FEMA Disaster Mitigation Grants which include mitigation measures for the private sector for multi-hazard risks. The lead agencies would be CCOES, CCERC-911, local floodplain administrators, Public Works Departments, and Planning offices.
- 3. Flood Strategy:** Provide a community-wide service to anchor mobile homes for qualifying citizens and encourage private individuals to anchor their own mobile homes. The lead agencies would be the Cabell County Commission, City and County Planning Departments, and local floodplain administrators.
- 4. Flood Strategy:** Familiarize the community with the risk of "convergence zone" type of flooding. A Convergence Zone is caused when low atmospheric pressure combines with severe weather causing overflow and watershed backup. The lead agencies could be the Public Works Departments, local floodplain administrators, and City and County Planning Offices.
- 5. Flood Strategy:** Encourage businesses and citizens in historic flood areas to elevate their structures and valuables out of harms way.

The following list details the projects that will benefit each jurisdiction in Lincoln County and the county as a whole. Lincoln County and jurisdictions in Lincoln County have the following number of projects apiece:

- Lincoln County: 27 projects
- Town of Hamlin: 1 project
- Town of West Hamlin: 1 project

Lincoln County

Project 1.2.1: Continue to coordinate with the WVDOH to conduct culvert inspections throughout the county **Regional Goal 1**

Project 1.3.1: Update the countywide permitting process which requires residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. **Regional Goal 1**

Project 1.3.2: Enforce municipal building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain. **Regional Goal 1**

Project 1.3.3: Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains. **Regional Goal 1**

Project 1.3.4: Continue to apply for funding for projects that will increase the county's CRS. **Regional Goal 1**

Project 1.3.5: Coordinate to promote buying flood insurance. **Regional Goal 1**

Project 1.4.1: Update the countywide permitting process which requires residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. **Regional Goal 1**

Project 1.5.1: Continue to update database of structures and apply for funding to remove remaining structures. **Regional Goal 1**

Project 1.6.1: Continue to seek funding to raise roadways located within the 100 year floodplain. **Regional Goal 1**

Project 2.1.1: Continue to coordinate with the West Virginia DOH to create more contracts for emergency snow removal **Regional Goal 2**

Project 3.1.1: Update and re-distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. **Regional Goal 3**

Project 4.1.1: Utilize the county WARN capabilities to provide earlier warning to county residents of impending hailstorms. **Regional Goal 6**

Project 5.1.1: Coordinate with the National Weather Service in Charleston, WV and utilize the county WARN to alert residents of impending severe wind or tornado conditions. **Regional Goal 4**

Project 5.2.1: Provide information in public locations such as libraries. **Regional Goal 15**

Project 6.1.1: Promote DEP storm water management permitting, at the municipal level, that regulates any land disturbance and development over one acre to provide for land stabilization through storm water management techniques. **Regional Goal 10**

Project 6.1.2: Continue to work with the Department of Forestry to coordinate efforts to promote re-seeding after lumber extraction projects. **Regional Goal 8**

Project 6.2.1: Develop a GIS based database that will help identify the areas of potential land subsidence. Have this mapping product available for the Lincoln County All Hazard Map. This can be utilized to protect against improper development. **Regional Goal 9**

Project 7.1.1: Coordinate with local public service districts to complete an interconnect between PSD's. **Regional Goal 13**

Project 8.1.1: Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **Regional Goal 8 and 16**

Project 9.1.1: Develop a database of at risk citizens with health problems (ex: oxygen requirements) that need electricity. Coordinate with American Electric Power Company to service these at risk citizens first after a power outage. **Regional Goal 11**

Project 9.2.1: Develop a network of emergency shelters throughout the county that are strategically located to reach the majority of citizens and are adequately stocked with supplies and encourage these shelter locations to obtain generator power for all hazards. Midway Elementary, Hamlin School, Guyan Valley School, and West Hamlin Volunteer Fire Department should have generators and supplies. **Regional Goal 14**

Project 10.1.1: Seek funding to coordinate with qualified Ham operators to assist in disasters. Make certain that wireless communication is operational for hazard events. Continue to monitor telephone companies for backup generators. **Regional Goal 13**

Project 11.1.1: Continue to make the public aware of how to prepare for a bomb threat and who to contact if there is a threat by developing and distributing an informational brochure to all governmental, state, and critical facilities describing the proper policies and procedures to be conducted in the event of a bomb threat. **Regional Goal 16**

Project 11.2.1: Continue to train emergency responders on how to handle bomb threats. **Regional Goal 16**

Region 2 Planning and Development Council
Hazard Mitigation Plan

Project 12.1.1: Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county. **Regional Goal 14**

Project 12.1.2: Continue to coordinate with local officials and representatives from organizations holding tier II permits to produce a more detailed plan on how to handle spills and evacuation procedures. **Regional Goal 14**

Project 12.1.3: Continue to train first responders in dealing with Hazmat events. **Regional Goal 16**

Project 13.1.1: Develop a partnership with appropriate parties that are stakeholders in the monitoring and general condition of dams throughout Lincoln County. Provide technical and manpower support to evaluate the status of these dams and report to the Core Planning Team on a yearly basis. Better Early Warning System needed for potential Dam Failures. Special monitoring program for the R.D. Bailey Dam and the Upper Mud River # 2A Dam near Palermo. **Regional Goal 15**

Town of Hamlin

Project 1.1.1: Update the plan to monitor and clean storm water drainage systems within municipalities. **Regional Goal 1**

Town of West Hamlin

Project 1.1.2: Flood-proof West Hamlin Water and Waste Water plants to reduce repetitive losses **Regional Goal 1**

The following list details the projects that will benefit each jurisdiction in Logan County and the county as a whole. Logan County and jurisdictions in Logan County have the following number of projects apiece:

- Logan County: 26 projects
- Town of Chapmanville: 16 projects
- City of Logan: 18 projects
- Town of Man: 18 projects
- Town of Mitchell Heights: 14 projects
- Town of West Logan: 18 projects

All Jurisdictions

Project 3.1.1: Develop an informational brochure explaining the potential for earthquakes as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes. **R.G. 16**

Project 4.3.1: Continue to offer training and public information to residents and businesses to explain the benefits of floodplain development regulations, flood insurance, etc. **RG 16**

Project 5.1.1: Build partnerships with media providers to ensure the dissemination of early warning information. **RG 13**

Project 8.1.1: Undertake public awareness campaigns (specifically targeting schools and other critical facilities) to detail how to properly report bomb and other threats of violence. **RG 12 and 16**

Project 9.1.1: Coordinate with the National Weather Service (NWS) in Charleston, West Virginia to warn residents of impending severe thunderstorm conditions. **RG 3**

Project 10.1.1: Continue to apply for grants to supplement and upgrade the equipment capabilities of local fire departments. **RG8**

Project 12.1.1: Provide information on what to do if severe winds or a tornado occur in Logan County. Consider placing this information in public libraries to ensure on-going distribution to the general public. **RG 4**

Project 14.1.1: Periodically update the county asset inventory list, complete with information such as replacement values, contents values, and annual operating budgets. This information can be used to calculate loss estimates. **RG 16**

Project 14.1.2: As asset information is collected, calculate more accurate loss estimates utilizing the "master" spreadsheet contained on the CD copy of this plan. **RG 16**

Project 14.2.1: Maintain a database of residents with health problems (e.g. oxygen requirements) that require electricity. **RG 11**

Project 14.3.1: Continue to work with the Central WV Chapter of the American Red Cross to ensure a sheltering capability in the county. **RG 14**

Logan County

Strategy: Acquisition of non-repetitive loss and repetitive loss properties due to flooding.

Project 1.1.1: Coordinate with agencies monitoring dam facilities in Logan County and share information with appropriate public officials. **RG 15**

Project 1.1.2: Maintain a small library of dam safety plans submitted by private-sector owners of dams (e.g. coal companies). **RG 15**

Project 2.1.1: Continue efforts to extend public water service into rural areas. **RG 7**

Project 4.3.2: Coordinate with such agencies as the US Army Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **RG 1**

Project 4.4.1: Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **RG 1**

Project 4.4.2: Continue to pursue completion of the Cherry Tree project. **RG 1**

Project 4.4.3: Coordinate with state and federal agencies as well as engineering consultants to support the design of roadways at a minimum of the 100-year base flood elevation. **RG 1**

Project 6.1.1: Work with local contacts at facilities that use/store hazardous materials (and file Tier II reports with the LEPC) to develop plans to address any gaps that may exist between facility response plans and the county EOP. **RG 14**

Project 7.1.1: Instate countywide building codes and other general planning regulations (including land use planning), which will regulate the number of buildings and the materials used in buildings that are constructed in slide-prone areas. **RG 5**

Project 7.1.2: Work with the WV Division of Forestry to promote reseeded after lumber extraction projects. **RG 9**

Project 8.1.2: Support local or agency projects to supplement equipment and other capabilities through grant programs. **RG 16**

Project 11.1.1: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **RG 8 AND 16**

Project 13.1.1: Coordinate with the WVDOH to create more contracts for snow removal. **RG 2**

Project 14.2.2: Coordinate with American Electric Power (AEP), Mountaineer Gas, and other utility providers to ensure that service can be maintained to critical facilities and at-risk residents. **RG 11**

Project 14.2.3: Continue to coordinate with HAM operators to ensure a back-up communications capability during emergencies. **RG 13**

Town of Chapmanville

Project 4.1.1: Identify storm water “back-up” areas and determine costs to correct those problems. **RG 1**

Project 4.2.1: Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **RG 1**

Project 4.3.2: Coordinate with such agencies as the US Army Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **RG 1**

Project 4.4.1: Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **RG 1**

Project 12.2.1: Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **RG 4**

City of Logan

Project 1.1.1: Coordinate with agencies monitoring dam facilities in Logan County and share information with appropriate public officials. **RG 15**

Region 2 Planning and Development Council
Hazard Mitigation Plan

Project 1.1.2: Maintain a small library of dam safety plans submitted by private-sector owners of dams (e.g. coal companies). **RG 15**

Project 4.1.1: Identify storm water “back-up” areas and determine costs to correct those problems. **RG 1**

Project 4.2.1: Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **RG 1**

Project 4.3.2: Coordinate with such agencies as the US Army

Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **RG 1**

Project 4.4.1: Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **RG 1**

Project 12.2.1: Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **RG 4**

Town of Man

Project 1.1.1: Coordinate with agencies monitoring dam facilities in Logan County and share information with appropriate public officials. **RG 15**

Project 1.1.2: Maintain a small library of dam safety plans submitted by private-sector owners of dams (e.g. coal companies). **RG 15**

Project 4.1.1: Identify storm water “back-up” areas and determine costs to correct those problems. **RG 1**

Project 4.2.1: Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **RG 1**

Project 4.3.2: Coordinate with such agencies as the US Army Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **RG 1**

Project 4.4.1: Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **RG 1**

Project 12.2.1: Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **RG 4**

Town of Mitchell Heights

Project 4.1.1: Identify storm water “back-up” areas and determine costs to correct those problems. **RG 1**

Project 4.2.1: Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **RG 1**

Project 12.2.1: Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **RG 4**

Town of West Logan

Project 1.1.1: Coordinate with agencies monitoring dam facilities in Logan County and share information with appropriate public officials. **RG 15**

Project 1.1.2: Maintain a small library of dam safety plans submitted by private-sector owners of dams (e.g. coal companies). **RG 15**

Project 4.1.1: Identify storm water “back-up” areas and determine costs to correct those problems. **RG 1**

Project 4.2.1: Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **RG 1**

Project 4.3.2: Coordinate with such agencies as the US Army Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **RG 1**

Project 4.4.1: Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **RG 1**

Project 12.2.1: Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **RG 4**

The following list details the projects that will benefit each jurisdiction in Mason County. Jurisdictions in Mason County have the following number of projects apiece.

- Mason County: 25 projects
- Town of Hartford: 23 projects
- Town of Henderson: 25 projects
- Town of Leon: 23 projects
- Town of Mason: 23 projects
- Town of New Haven: 24 projects
- City of Pt. Pleasant: 24 projects

ALL JURISDICTIONS

Project 1.1.1: Work with the US Army Corps of Engineers to ensure that dams along the Ohio River are inspected periodically and facilitate information sharing so that local responders are prepared to assist in an incident involving one of the lock/dam facilities. **RG 15**

Project 3.1.1: Include earthquake hazard information in periodic public information campaigns. **RG 16**

Project 4.2.2: Support local government efforts to maintain compliance with the NFIP. **RG 1**

Project 4.3.1: Coordinate with the WVDOH to clear culverts that are causing flash flooding problems. **RG 1**

Project 4.3.2: Continue to train public officials as to the benefit of flood mitigation. **RG 1**

Project 4.3.3: Cooperate with state and federal efforts to update flood mapping (otherwise known as the DFIRM project). **RG 1**

Project 4.3.5: Partner with appropriate agencies to support the 100-year based flood elevation design of critical roadways. **RG 1**

Project 5.1.1: Include hailstorm hazard information in periodic public information campaigns. **RG 16**

Project 6.1.1: Compile a commodity flow study to determine what materials are flowing through Mason County. **RG 14**

Project 6.1.2: Coordinate with organizations filing Tier II reports to ensure information sharing and collaborative efforts to strengthen capabilities to respond to hazmat incidents. **RG 14**

Project 8.1.1: Identify areas and/or facilities that could be the target of domestic (or international) terrorism. Keep these lists secure.

RG 12

Project 9.1.1: Include thunderstorm hazard information in periodic public information campaigns. **RG 16**

Project 10.1.1: Encourage fire departments to apply for grants to add to equipment inventories and other capabilities. **RG 8**

Project 11.1.1: Include wildfire hazard information in periodic public information campaigns. Further, consider participating in Smokey the Bear and other public information efforts. **RG 16**

Project 12.1.1: Include wind hazard information in periodic public information campaigns. **RG 16**

Project 13.1.1: Inventory snow removal capabilities in local resource lists, to include coordinating with the WVDOH regarding snow removal contracts. **RG 2**

Project 14.1.1: Coordinate with AEP to maintain rights of way to protect power lines from downed tree limbs. **RG 11**

Project 14.2.1: Develop a database of at-risk citizens with health problems (e.g. oxygen requirements, etc.) that need electricity. Coordinate with AEP to ensure that power is restored to them as quickly as possible. **RG 11**

Project 14.3.1: Coordinate with the local chapter of the American Red Cross to maintain updated lists of potential shelters in Mason County. **RG 14**

Project 14.3.2: Continue to develop partnerships with local amateur radio operators to create a backup communications capability for local response operations. **RG 13**

Project 14.3.3: Work with the Mason County Board of Education to place caller ID on all phones in school facilities. **RG 13**

Project 14.3.4: Encourage the WVDOH to install signage throughout the county to denote hazard-prone areas (e.g. fog areas, busy intersections, etc.). **RG 14**

Mason County

Project 2.1.1: Support the efforts of local water providers to extend service into areas not currently served by a public water distribution system. **RG 7**

Project 4.3.4: Undertake buyout projects for repetitive and non repetitive loss properties in flood-prone areas. **RG 1**

Project 7.1.1: Coordinate with the WV Division of Forestry to promote re-seeding after lumber extraction projects. **RG 9**

Town of Hartford

Project 4.1.1: Identify areas in which storm water backs up – primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Town of Henderson

Project 4.1.1: Identify areas in which storm water backs up – primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Project 4.2.1: Support the Town of Henderson’s identified Storm water management needs. **RG 3**

Project 4.3.4: Undertake buyout projects for repetitive and non repetitive loss properties in flood-prone areas. **RG 1**

Town of Leon

Project 4.1.1: Identify areas in which storm water backs up – primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Town of Mason

Project 4.1.1: Identify areas in which storm water backs up – primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Town of New Haven

Project 4.1.1: Identify areas in which storm water backs up – primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Project 4.3.4: Undertake buyout projects for repetitive and nonrepetitive loss properties in flood-prone areas. **RG 1**

City of Pt. Pleasant

Project 4.1.1: Identify areas in which stormwater backs up –primarily in municipalities – and determine the costs of corrective actions. **RG 3**

Project 4.3.4: Undertake buyout projects for repetitive and nonrepetitive loss properties in flood-prone areas. **RG 1**

The following list details the projects that will benefit each jurisdiction in Mingo County.

Mingo County

Project 1.3.4: Continue to utilize and enforce local Floodplain Management Ordinance **RG 1**

Project 1.3.5: Enforce the countywide permitting process that will require residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. **RG 1**

Project 1.4.1: Provide information to the leaders in Mingo County about federal and state agency’s pro-active programs in order to promote a safer Mingo County. **RG 16**

Project 1.6.1: Work with the WVDOH to design road construction to elevate at risk roadways. **RG 1**

Project 3.1.2: Continue monitoring and maintenance of the “Early Warning System”. **RG 4**

Project 4.1.1: Use the WARN system in place to alert residents of possible high wind/tornado conditions. **RG 4**

Project 4.2.1: Enforce county-wide building codes that model the statewide 90-mph wind load rating. **RG 4**

Region 2 Planning and Development Council
Hazard Mitigation Plan

Project 5.1.1: Countywide building permits, which will regulate land disturbances over one acre to include storm water management. Mitigate projects to address landslides throughout the county **RG 3**

Project 6.1.1: Maximize use of WARN system **RG 4**

Project 7.1.1: Continue expansion of Public Service Districts water supplied areas. **RG 7**

Project 8.1.1: Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **RG 8**

Project 9.1.1: Implement plans to address identified areas in Mingo County that need improvement and protection if possible. **RG 9**

Project 9.1.2: Work with Pocahontas Land Management to clean up affected areas. **RG 9**

Project 9.1.3: Begin development of ordinances for industries within the county starting any new development of land areas. **RG 9**

Project 10.1.1: Provide information to the citizens of Mingo County identifying where shelter is provided during extended utility outages. **RG 11**

Project 11.1.1: Continue to train HAM operators for emergency operations. Continue development of communication infrastructure. (i.e Cellular towers and digital radio network) **RG 13**

Project 12.1.1: Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat. **RG 12**

Project 13.1.1: Make the public aware of hazardous materials and what they can do if they spill, and evacuation plans for citizens of Mingo County. Continue to support training for First Responders. **RG 14**

Project 13.1.2: Continue to maintain mutual aid agreements with Logan and Boone Counties. **RG 13**

Project 14.1.1: Continue to coordinate the monitoring and testing of dams in Mingo County with the Core Planning Team, so the local governments and the county commission can be informed as to the safety status of these dams. **RG 15**

Project 1.1.1: Develop a plan to monitor and clean storm water drainage systems within municipalities. **RG 3**

Project 1.3.2: Maintain enforcement of building codes (municipalities) and educate citizens about hazards. **RG 16**

Project 2.1.1: Maintain agreements with surrounding counties for help with snow removal. **RG 2**

Project 2.2.2: Identify possible funding source for purchase of county snow clearing/removal equipment. **RG 2**

Project 1.3.3: Promote the purchasing of flood insurance through public education of where flood prone areas are located. **RG 1**

Project 5.1.2: Identify worst areas within municipalities and develop plans for structural enhancements or property buyouts. **RG 1**

Town of Delbarton

Project 1.3.1: Continue to provide training, technical assistance, education, and outreach opportunities for Mingo County, its municipalities and its citizenry in support of the National Flood Insurance Program and their local floodplain ordinances and floodplain management responsibilities. **RG 16**

Town of Gilbert

Project 1.5.1: Apply awarded funding and remove structures through Federal buyout programs. **RG 1**

Town of Kermit

Project 1.2.1: Continue coordinating with the WVDOH to conduct culvert inspections/cleaning throughout the county. Protect bridges and roadways from flooding hazards **RG 1**

Town of Matewan

Project 3.1.1: Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. **RG 3**

City of Williamson

Project 1.6.2: Implement road and walkway improvement plans for areas at higher risk of collapse. **RG 16**

Project 1.7.1: Prioritize replacement/reinforcement of at risk structures such as retaining walls within the county. **RG 16**

The following list details the projects that will benefit each jurisdiction in Wayne County.

Wayne County

Flood Strategy: Acquisition of structures impacted by floods.

- Project 1.3.4:* Continue to utilize and enforce local Floodplain Management Ordinance **RG 1**
- Project 1.3.5:* Enforce the countywide permitting process that will require residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. **RG 1**
- Project 1.4.1:* Provide information to the leaders in Wayne County about federal and state agency's pro-active programs in order to promote a safer Wayne County. **RG 16**
- Project 1.6.1:* Work with the WVDOH to design road construction to elevate at risk roadways. **RG 1**
- Project 3.1.2:* Continue monitoring and maintenance of the "Early Warning System". **RG 4**
- Project 4.1.1:* Use the WARN system in place to alert residents of possible high wind/tornado conditions. **RG 4**
- Project 4.2.1:* Enforce county-wide building codes that model the statewide 90-mph wind load rating. **RG 4**
- Project 5.1.1:* Countywide building permits, which will regulate land disturbances over one acre to include storm water management. Mitigate projects to address landslides throughout the county **RG 2**
- Project 6.1.1:* Maximize use of WARN system **RG 4**
- Project 7.1.1:* Continue expansion of Public Service Districts water supplied areas. **RG 7**
- Project 8.1.1:* Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **RG 16 & 8**
- Project 9.1.1:* Implement plans to address identified areas in Wayne County that need improvement and protection if possible. **RG 9**
- Project 10.1.1:* Provide information to the citizens of Wayne County identifying where shelter is provided during extended utility outages. **RG 11**
- Project 11.1.1:* Continue to train HAM operators for emergency operations. Continue development of communication infrastructure. (i.e Cellular towers and digital radio network) **RG 13**
- Project 12.1.1:* Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat. **RG 12 & 16**
- Project 13.1.1:* Make the public aware of hazardous materials and what they can do if they spill, and evacuation plans for citizens of Wayne County. Continue to support training for First Responders. **RG 14 & 16**
- Project 13.1.2:* Continue to maintain mutual aid agreements with Logan and Boone Counties. **RG 13**
- Project 14.1.1:* Continue to develop a partnership with appropriate parties that are stakeholders in the monitoring and general condition of dams throughout Wayne County. Provide technical and manpower support to evaluate the status of these dams and report to the Core Planning Team on a yearly basis. Better Early Warning System needed for potential Dam Failures. Special monitoring program for the Beech Fork Dam and the East Lynn Dam. **RG 15**

All Jurisdictions

- Project 1.1.1:* Develop a plan to monitor and clean storm water drainage systems within municipalities. **RG 3**
- Project 1.3.2:* Maintain enforcement of building codes (municipalities) and educate citizens about hazards. **RG 16**
- Project 2.1.1:* Maintain agreements with surrounding counties for help with snow removal. **RG 2**
- Project 2.2.2:* Identify possible funding source for purchase of county snow clearing/removal equipment. **RG 2**
- Project 1.3.3:* Promote the purchasing of flood insurance through public education of where flood prone areas are located. **RG 1**
- Project 5.1.2:* Identify worst areas within municipalities and develop plans for structural enhancements or property buyouts. **RG 1**

City of Ceredo

- Project 1.3.1:* Continue to provide training, technical assistance, education, and outreach opportunities for Wayne County, its municipalities and its citizenry in support of the National Flood Insurance Program and their local floodplain ordinances and floodplain management responsibilities. **RG 1 & 16**

Town of Fort Gay

Project 1.5.1: Apply awarded funding and remove structures through Federal buyout programs. **RG 1**

City of Kenova

Project 1.2.1: Continue coordinating with the WVDOH to conduct culvert inspections/cleaning throughout the county. Protect bridges and roadways from flooding hazards **RG 1**

Town of Wayne

Project 3.1.1: Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. **RG 3 & 16**

4.2 IMPLEMENTATION OF MITIGATION ACTIONS

§201.6(c)(3)(iii)

[The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This section identifies the priority for implementing the projects identified in Section 4.1. Each project is listed with a coordinating agency in Section 4.1 that should be responsible for the overall implementation of the project. Project coordinators may include but are not limited to: OES, County Commissions, Floodplain Office, County Planning Office, PSDs, WVDNR-Forestry, and the Emergency Response Agencies.

The projects generated by the core planning teams were grouped into categories based on shared characteristics. These categories were ranked on such criteria as ease of implementation; cost effectiveness; social, political and economic impacts; and overall positive impact. Each received a score of Low, Moderate, or High with the projects under the category of the High score received the highest priority of ranking.

ALL OF THE PROJECTS WILL BE EVALUATED TO DETERMINE THAT THEY WILL HAVE A FAVORABLE COST BENEFIT TO THE COMMUNITY.

The mitigation strategies chosen for inclusion in the original Hazard Mitigation Plans are those options that will potentially yield the most favorable benefit-to-cost ratio. Strategies such as public education have tremendous potential for reducing or eliminating the effects of natural hazards on the local communities. The strategies listed are those that have been equally identified as the highest priority and that will be the most aggressively pursued. Prioritization for strategies were completed by the county/municipal officials and are based on the goals and objectives of the county or respective town/city. The strategies listed are indicative of probable solutions to minimizing the threat(s) imposed on the communities and have therefore been assigned high priority and included for descriptive in the Plan.

Each county and municipality has a coordinator to oversee the evaluation of projects in their respective communities.

Regional Funding: Although funding has not yet been procured to accomplish all of the goals of the Plan, it will become an expected regularity to search for funding sources via the internet, Federal Register, and state or private sources. Possible funding sources include, but are not limited to: HUD SCBG, FEMA Pre-disaster Mitigation, U.S. Army Corps of Engineers, Appalachian Regional Commission, WV Development Office, and the WV Infrastructure and Jobs Development Council. At least once every six months searches will be conducted and progress will be monitored accordingly by each of the counties and or town/cities with the Plan. Funding may include grants as well as local funding in coordination with State and Federal funds as they become available.

Cabell County

The Cabell County Commission, City of Huntington, Village of Barboursville and the City of Milton will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations.

Project timetables are between the range of 1 to 15 years as funding becomes available.

Cabell County Priorities

Educate the public about mitigation and its purpose.

Educate the public how to react to natural disaster.

Mitigate specific areas of the Town of Milton.

Mitigate specific areas of the Village of Barboursville.

Mitigate specific areas of the City of Huntington.

Mitigate specific areas of Cabell County.

Projects will be implemented as funding becomes available.

(No Changes Were Made to this Section. These are lower priority strategies and recommendations which are located in this section.)

Category I: Flood Hazard Mitigation Strategies

- 1. Flooding Strategy:** Review and create a floodplain planning, management and over-site program to assure compliance with the National Flood Insurance Program (NFIP) community-wide. The lead agencies for this strategy would be the Cabell County Commission, County and City Planning Commissions, and the Public Work's Departments.
 - Distribute National Flood Insurance Program (NFIP) information in utility bills on an annual basis prior to flood season. The program lead for this strategy would require the National Flood Insurance Program to coordinate with the local utility companies to provide and distribute the information. The local floodplain administrators would serve as the points of contact and coordination with the NFIP.
 - Distribute NFIP information through the Assessor's Office with the tax statements each year. This would require coordination with the Assessor's Office, Data Processing and the local floodplain administrators.
 - Develop a plan to maintain an available supply of safety and emergency preparedness supplies. Lead agencies responsible for coordinating supplies and resource information on availability of supplies would be the CCOES, CCERC-911, local Red Cross, Public Works Departments, and the local floodplain administrators. The lead agency for sandbags would be the Public Works Departments.

- Streamline environmental compliance requirements for pre-flood prevention activities. The lead agencies would be the Cabell County Commission, City and County Planning Offices, CCOES, CCERC-911, Public Works Departments, Development Offices, US Army Corps of Engineers, and the USDA Soil Conservation Office.
2. **Flood Strategy:** Pursue FEMA Disaster Mitigation Grants which include mitigation measures for the private sector for multi-hazard risks. The lead agencies would be CCOES, CCERC-911, local floodplain administrators, Public Works Departments, and Planning offices.
 3. **Flood Strategy:** Provide a community-wide service to anchor mobile homes for qualifying citizens and encourage private individuals to anchor their own mobile homes. The lead agencies would be the Cabell County Commission, City and County Planning Departments, and local floodplain administrators.
 4. **Flood Strategy:** Familiarize the community with the risk of “convergence zone” type of flooding. A Convergence Zone is caused when low atmospheric pressure combines with severe weather causing overflow and watershed backup. The lead agencies could be the Public Works Departments, local floodplain administrators, and City and County Planning Offices.
 5. **Flood Strategy:** Encourage businesses and citizens in historic flood areas to elevate their structures and valuables out of harms way.

Category II: Severe Storm Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category III: Land Shift Mitigation Strategies: *(No Changes Were Made to this Section.)*

1. **Land Shift General Strategy:** Identify and implement community-wide erosion control measures.
 - Utilize Public Access Television to include programming on how to define the problem and how to mitigate and live with the effects of erosion.
 - The lead agencies would be the health districts, CCOES, CCERC-911, the city and county Planning Departments, Public Works Departments, DNR, Department of Highways, the US Army Corps of Engineers and USDA Soil Conservation Office.

Category IV: Winter Storms Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category V: Drought Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category VI: Tornadoes Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category VII: Earthquake Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category VIII: Wildfire Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category IX: Water Drainage Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

Category XII: Multi-Hazard Mitigation Strategies: *(No Changes Were Made to this Section.)*

No Further Strategies

- 1. Multi-Hazard Mitigation Strategies:** Expand real estate disclosure to include all hazards. Research into this issue to be conducted by the cities Public Works Departments, city and county Planning Departments.
- 2. Multi-Hazard Mitigation Strategies:** Examine the feasibility of implementing building codes requiring underground utilities for new development where possible. The lead agencies would be the Cabell County Commission, city and county Planning Departments, the cities Public Works Departments, city and county floodplain administrators, and local utility companies.

Category XIII: Law and Regulatory Issues Strategies: *(No Changes Were Made to this Section.)*

- 1. Law and Regulatory Strategies:** Explore mitigation and civil issues for opportunities or promote hazard mitigation in the public and private sector. The lead agencies would be the Cabell County Commission, city and county Planning Departments, Public Works Departments, and city and county floodplain administrators.
- 2. Law and Regulatory Strategies:** Pursue recovery recommendations for Federal Emergency Management Agency (FEMA) to allow the Federal Highway Authority to administer both the on and off road system disaster repair recovery program. The recommended lead agencies would be the cities Public Works Departments.

Summary:

The Cabell County Multi-Jurisdictional Hazard Mitigation Plan and Identified Hazard Mitigation Program Strategies establish the framework within which the post disaster and day-to-day mitigation activities of the community may be carried out on a prioritized and community-wide basis.

The Plan is based upon the experience of the region through the input of the Multi-Jurisdictional Hazard Mitigation Steering Committee, the Cabell County Office of Emergency Services, the Cabell County Emergency Response Center E-911 and the cities of Barboursville, Milton and Huntington's Public Works Departments.

The Plan recognizes the varied conditions that exist throughout all of Cabell County. No single mitigation strategy will effectively meet the needs of all of the communities. However, by embracing the coordinated approach, and objectives contained in this plan, Cabell County can take significant strides toward the efficient and effective use of its resources to resolve and mitigate the communities identified hazards.

One of the most important accomplishments of the Cabell County Multi-Jurisdictional Hazard Mitigation Steering Committee was the process itself, where the participants shared information, resources, and methodologies – community-wide, for the benefit of reducing or eliminating risk to Critical Areas.

Future Actions: *(No Changes Were Made to this Section.)*

Cabell County Commission, City of Huntington, Village of Barboursville, and the City of Milton will review and adopt the Cabell County Multi-jurisdictional Hazard Mitigation Plan and Strategy recommendations.

- 1. The Cabell County Commission, Mayor's of the cities of Huntington, Milton and Barboursville will support the recommendations of the Cabell County**

Hazard Mitigation Planning Committee for implementation and coordination on a county-wide basis.

- 2. The Cabell County Commission, City of Huntington, Village of Barboursville and the City of Milton will review and adopt, the work of the Cabell County Multi-jurisdictional Hazard Mitigation Steering Committee.**
- 3. The Cabell County Commission, City of Huntington, Village of Barboursville, and the City of Milton shall review the semi-annual progress reports on the implementation of the adopted Cabell County Multi-jurisdictional Hazard Mitigation Plan strategies brought forth by the Cabell County Multi-jurisdictional Hazard Mitigation Planning Committee.**
- 4. Meet annually with the Cabell County Multi-jurisdictional Hazard Mitigation Planning Committee to review the progress of the Hazard Mitigation program and bring forth community input on new strategies.**
- 5. Coordinate with the West Virginia Office of Emergency Services and support the efforts to promote and identify resources and grant money for implementation of the recommended Hazard Mitigation Strategies.**

The Lincoln County Commission, Town of Hamlin and Town of West Hamlin will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations.
Project timetables are between the range of 1 to 15 years as funding becomes available.

Lincoln County

- Goal 1: Reduce the negative effects of flooding in Lincoln County.
- Goal 2: Reduce the negative effects of severe winter storms in Lincoln County.
- Goal 3: Reduce the negative effects of severe thunderstorms in Lincoln County.
- Goal 4: Lessen hail damage in Lincoln County.
- Goal 5: Reduce damage from severe wind and tornadoes in Lincoln County.
- Goal 6: Lessen the effects of land subsidence in Lincoln County.
- Goal 7: Reduce the negative effects of drought and loss of public water stations in Lincoln County.
- Goal 8: Protect Lincoln County populations and forests from wildfires.
- Goal 9: Protect Lincoln County's population from utility failure.
- Goal 10: Reduce the negative effects of a communications failure in Lincoln County.
- Goal 11: Protect Lincoln County's population from bomb threats.
- Goal 12: Protect the general public in Lincoln County from hazardous materials incidents.
- Goal 13: Protect the general public in Lincoln County from dam failures.
- Goal 14: General mitigation strategies for Lincoln County.

Projects

- 1.1.1 Update the plan to monitor and clean storm water drainage systems within municipalities. High**
- 1.1.2 Flood-proof West Hamlin Water and Waste Water plants to reduce repetitive losses Priority High**
- 1.2.1 Continue to coordinate with the WVDOH to conduct culvert inspections throughout the county High**
- 1.3.1 Update the countywide permitting process which requires residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. Priority High**
- 1.3.2 Enforce municipal building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain. Priority Med.**
- 1.3.3 Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains. Priority High**
- 1.3.4 Continue to apply for funding for projects that will increase the county's CRS. High**

- 1.3.5 Coordinate to promote buying flood insurance. **High**
- 1.4.1 Continue to update database of structures / apply for funding to remove remaining structures. **Med.**
- 1.5.1 Continue to seek funding to raise roadways located within the 100 year floodplain. **Med.**
- 2.1.1 Continue to coordinate with the West Virginia DOH to create more contracts for emergency snow removal **Low**
- 3.1.1 Update and re-distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. **Low**
- 4.1.1 Utilize the county WARN capabilities to provide earlier warning to county residents of impending hailstorms. **Med.**
- 5.1.1 Coordinate with the National Weather Service in Charleston, WV and utilize the county WARN to alert residents of impending severe wind or tornado conditions. **High**
- 5.2.1 Provide information in public locations such as libraries. **High**
- 6.1.1 Promote DEP storm water management permitting, at the municipal level, that regulates any land disturbance and development over one acre to provide for land stabilization through storm water management techniques. **Med.**
- 6.1.2 Continue to work with the Department of Forestry to coordinate efforts to promote re-seeding after lumber extraction projects. **Low**
- 6.2.1 Develop a GIS based database that will help identify the areas of potential land subsidence. Have this mapping product available for the Lincoln County All Hazard Map. This can be utilized to protect against improper development. **Low**
- 7.1.1 Coordinate with local public service districts to complete an inter-connect between PSD's. **High**
- 8.1.1 Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **High**
- 9.1.1 Develop a database of at risk citizens with health problems (ex: oxygen requirements) that need electricity. Coordinate with American Electric Power Company to service these at risk citizens first after a power outage. **Med.**
- 9.2.1 Develop a network of emergency shelters throughout the county that are strategically located to reach the majority of citizens and are adequately stocked with supplies and encourage these shelter locations to obtain generator power for all hazards. Midway Elementary, Hamlin School, Guyan Valley School, and West Hamlin Volunteer Fire Department should have generators and supplies. **High**
- 10.1.1 Seek funding to coordinate with qualified Ham operators to assist in disasters. Make certain that wireless communication is operational for hazard events. Continue to monitor telephone companies for back up generators. **Med.**
- 11.1.1 Continue to make the public aware of how to prepare for a bomb threat and who to contact if there is a threat by developing and distributing an informational brochure to all governmental, state, and critical facilities describing the proper policies and procedures to be conducted in the event of a bomb threat. **Med.**
- 11.2.1 Continue to train emergency responders on how to handle bomb threats. **High**
- 12.1.1 Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county. **High**
- 12.1.2 Continue to coordinate with local officials and representatives from organizations holding tier II permits to produce a more detailed plan on how to handle spills and evacuation procedures. **Low**
- 12.1.3 Continue to train first responders in dealing with Hazmat events. **High**
- 13.1.1 Develop a partnership with appropriate parties that are stakeholders in the monitoring and general condition of dams throughout Lincoln County. Provide technical and manpower support to evaluate the status of these dams and report to the Core Planning Team on a yearly basis. Better Early Warning System needed for potential Dam Failures. Special monitoring program for the R.D. Bailey Dam and the Upper Mud River # 2A Dam near Palermo. **High**
- 14.1.1 Update county and municipal asset lists. **High**

Logan County

The Logan County Commission, Chapmanville, City of Logan, Town of Man, Mitchell Heights, and West Logan will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations.

Project timetables are between the range of 1 to 15 years as funding becomes available.

- Goal 1: Protect the general public in Logan County from dam failures.
- Goal 2: Reduce the negative effects of droughts.
- Goal 3: Ensure the population is aware of the earthquake risk in Logan County.
- Goal 4: Reduce the negative effects of flooding.
- Goal 5: Lessen potential damage from hailstorms.
- Goal 6: Lessen the potential impacts from a hazardous material incident.
- Goal 7: Reduce the damage from land subsidence in Logan County.
- Goal 8: Lessen the potential for domestic and international terrorism throughout the county.
- Goal 9: Reduce the potential damage from thunderstorms.
- Goal 10: Lessen the risk from urban fires.
- Goal 11: Reduce the risk from wildfires.
- Goal 12: Lessen the potential damage from severe wind, including tornados.
- Goal 13: Reduce the potential damage from winter storms.
- Goal 14: Mitigate miscellaneous hazards, as necessary.

Projects

- 1.1.1 Coordinate with agencies monitoring dam facilities in Logan County and share information with appropriate public officials. **Low**
- 1.1.2 Maintain a small library of dam safety plans submitted by private-sector owners of dams (e.g. coal companies). **Mod**
- 2.1.1 Continue efforts to extend public water service into rural areas. **High**
- 3.1.1 Develop an informational brochure explaining the potential for earthquakes as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes. **Low**
- 4.1.1 Identify storm water "back-up" areas and determine costs to correct those problems. **Low**
- 4.2.1 Coordinate with the WVDOH to arrange for periodic culvert cleanings. If necessary, work with WVDOH to prioritize culvert replacements based on flood mitigation. **Mod**
- 4.3.1 Continue to offer training and public information to residents and businesses to explain the benefits of floodplain development regulations, flood insurance, etc. **Low**
- 4.3.2 Coordinate with such agencies as the US Army Corps of Engineers, USDA Natural Resource Conservation Service, etc. to develop a regular stream cleaning schedule. **High**
- 4.4.1 Continue to apply for Hazard Mitigation Grant Program (HMGP) funds, when available, for acquisition or elevation of repetitive loss properties. **High**
- 4.4.2 Continue to pursue completion of the Cherry Tree project. **High**
- 4.4.3 Coordinate with state and federal agencies as well as engineering consultants to support the design of roadways at a minimum of the 100-year base flood elevation. **Low**
- 5.1.1 Build partnerships with media providers to ensure the dissemination of early warning information. **Mod**
- 6.1.1 Work with local contacts at facilities that use/store hazardous materials (and file Tier II reports with the LEPC) to develop plans to address any gaps that may exist between facility response plans and the county EOP. **Mod**
- 7.1.1 Instate countywide building codes and other general planning regulations (including land use planning), which will regulate the number of buildings and the materials used in buildings that are constructed in slide-prone areas. **Low**
- 7.1.2 Work with the WV Division of Forestry to promote reseeded after lumber extraction projects. **Low**
- 8.1.1 Undertake public awareness campaigns (specifically targeting schools and other critical facilities) to detail how to properly report bomb and other threats of violence. **Low**
- 8.1.2 Support local or agency projects to supplement equipment and other capabilities through grant programs. **Mod**
- 9.1.1 Coordinate with the National Weather Service (NWS) in Charleston, West Virginia to warn residents of impending severe thunderstorm conditions. **Mod**

- 10.1.1 Continue to apply for grants to supplement and upgrade the equipment capabilities of local fire departments. **Mod**
- 11.1.1 Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **Low**
- 12.1.1 Provide information on what to do if severe winds or a tornado occur in Logan County. Consider placing this information in public libraries to ensure on-going distribution to the general public. **Low**
- 12.2.1 Promote any new construction and/or roof remodeling projects to withstand 90 mile per hour wind loads (per building permitting processes). **Low**
- 13.1.1 Coordinate with the WVDOH to create more contracts for snow removal. **Low**
- 14.1.1 Periodically update the county asset inventory list, complete with information such as replacement values, contents values, and annual operating budgets. This information can be used to calculate loss estimates. **Mod**
- 14.1.2 As asset information is collected, calculate more accurate loss estimates utilizing the “master” spreadsheet contained on the CD copy of this plan. **Mod**
- 14.2.1 Maintain a database of residents with health problems (e.g. oxygen requirements) that require electricity. **Low**
- 14.2.2 Coordinate with American Electric Power (AEP), Mountaineer Gas, and other utility providers to ensure that service can be maintained to critical facilities and at-risk residents. **Low**
- 14.2.3 Continue to coordinate with HAM operators to ensure a back-up communications capability during emergencies. **Low**
- 14.3.1 Continue to work with the Central WV Chapter of the American Red Cross to ensure a sheltering capability in the county. **Low**

Mason County

The Mason County Commission, Town of Mason, Hartford, Henderson, Leon, New Haven and Point Pleasant will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations. Project timetables are between the range of 1 to 15 years as funding becomes available.

- Goal 1: Identify the potential losses that could result from a dam failure.
- Goal 2: Lessen the negative effects of droughts.
- Goal 3: Ensure that the public is aware of the earthquake risk.
- Goal 4: Lessen damage resulting from flooding.
- Goal 5: Lessen the negative effects of hailstorms.
- Goal 6: Lessen damage resulting from hazardous material incidents.
- Goal 7: Lessen damage resulting from land subsidence.
- Goal 8: Identify the risk of and lessen the potential for terrorist incidents.
- Goal 9: Lessen the negative effects of severe thunderstorms.
- Goal 10: Lessen damage resulting from fires in urban areas.
- Goal 11: Lessen the probability for wildland fires.
- Goal 12: Lessen damage resulting from high winds.
- Goal 13: Lessen damage resulting from severe winter storms.
- Goal 14: Address miscellaneous other hazards.

Projects

- 1.1.1 Work with the US Army Corps of Engineers to ensure that dams along the Ohio River are inspected periodically and facilitate information sharing so that local responders are prepared to assist in an incident involving one of the lock/dam facilities. **Low**
- 2.1.1 Support the efforts of local water providers to extend service into areas not currently served by a public water distribution system. **Low**
- 3.1.1 Include earthquake hazard information in periodic public information campaigns. **Low**
- 4.1.1 Identify areas in which stormwater backs up – primarily in municipalities – and determine the costs of corrective actions. **Low**
- 4.2.1 Support the Town of Henderson's identified stormwater management needs **Med.**
- 4.2.2 Support local government efforts to maintain compliance with the NFIP. **Med.**
- 4.3.1 Coordinate with the WVDOH to clear culverts that are causing flash flooding problems. **Low**
- 4.3.2 Continue to train public officials as to the benefit of flood mitigation. **Low**
- 4.3.3 Cooperate with state and federal efforts to update flood mapping (otherwise known as the DFIRM project). **Med.**
- 4.3.4 Undertake buyout projects for repetitive and non-repetitive loss properties in flood-prone areas. **High**
- 4.3.5 Partner with appropriate agencies to support the 100-year based flood elevation design of critical roadways. **Med.**
- 5.1.1 Include hailstorm hazard information in periodic public information campaigns. **Med.**
- 6.1.1 Compile a commodity flow study to determine what materials are flowing through Mason County. **High**
- 6.1.2 Coordinate with organizations filing Tier II reports to ensure information sharing and collaborative efforts to strengthen capabilities to respond to hazmat incidents. **Low**
- 7.1.1 Coordinate with the WV Division of Forestry to promote reseeded after lumber extraction projects. **Low**
- 8.1.1 Identify areas and/or facilities that could be the target of domestic (or international) terrorism. Keep these lists secure. **Low**
- 9.1.1 Include thunderstorm hazard information in periodic public information campaigns. **Med.**
- 10.1.1 Encourage fire departments to apply for grants to add to equipment inventories and other capabilities. **Med.**
- 11.1.1 Include wildfire hazard information in periodic public information campaigns. Further, consider participating in Smokey the Bear and other public information efforts. **Med.**
- 12.1.1 Include wind hazard information in periodic public information campaigns. **Med.**
- 13.1.1 Inventory snow removal capabilities in local resource lists, to include coordinating with the WVDOH regarding snow removal contracts. **Low**
- 14.1.1 Coordinate with AEP to maintain rights of way to protect power lines from downed tree limbs. **Low**
- 14.2.1 Develop a database of at-risk citizens with health problems (e.g. oxygen requirements, etc.) that need electricity. Coordinate with AEP to ensure that power is restored to them as quickly. **Low**
- 14.3.1 Coordinate with the local chapter of the American Red Cross to maintain updated lists of potential shelters in Mason County. **Low**
- 14.3.2 Continue to develop partnerships with local amateur radio operators to create a backup communications capability for local response operations. **Med.**
- 14.3.3 Work with the Mason County Board of Education to place caller ID on all phones in school facilities. **Low**
- 14.3.4 Encourage the WVDOH to install signage throughout the county to denote hazard-prone areas (e.g. fog areas, busy intersections, etc.). **High**

Mingo County

The Mingo County Commission, Delbarton, Gilbert, Kermit, Williamson and Matewan will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations.
Project timetables are between the range of 1 to 15 years as funding becomes available.

Goal 1: Lessen flood-related losses.

Goal 2: Reduce the negative effects of severe winter storms in Mingo County.

Goal 3: Reduce the negative effects of severe thunderstorms in Mingo County.

- Goal 4: Reduce damage from severe wind and tornadoes in Mingo County.
- Goal 5: Lessen the effects of landslides in Mingo County.
- Goal 6: Lessen hail damage in Mingo County.
- Goal 7: Reduce the negative effects of drought in Mingo County.
- Goal 8: Protect Mingo County's populations and forests from wildfires.
- Goal 9: Reduce the negative effects of land subsidence in Mingo County.
- Goal 10: Reduce the negative effects of utility failures in Mingo County.
- Goal 11: Reduce the negative effects of a communications failure in Mingo County.
- Goal 12: Protect Mingo County's population from bomb threats.
- Goal 13: Protect general public in Mingo County from hazardous materials incidents.
- Goal 14: Protect the general public in Mingo County from dam failures.

Project

Number Mitigation Project Priority

- 1.1.1 Develop a plan to monitor and clean storm water drainage systems within municipalities. **High**
- 1.2.1 Continue coordinating with the WVDOH to conduct culvert inspections/cleaning throughout the county. Protect bridges and roadways from flooding hazards. **High**
- 1.3.1 Continue to provide training, technical assistance, education, and outreach opportunities for Mingo County, its municipalities and its citizenry in support of the National Flood Insurance Program and their local floodplain ordinances and floodplain management responsibilities. **High**
- 1.3.2 Maintain enforcement of building codes (municipalities) and educate citizens about hazards. **High**
- 1.3.3 Promote the purchasing of flood insurance through public education of where flood prone areas are located. **High**
- 1.3.4 Continue to utilize and enforce local Floodplain Management Ordinance. **High**
- 1.3.5 Enforce the countywide permitting process that will require residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. **High**
- 1.4.1 Provide information to the leaders in Mingo County about federal and state agency's pro-active programs in order to promote a safer Mingo County. **High**
- 1.5.1 Apply awarded funding and remove structures through Federal buyout programs. **High**
- 1.6.1 Work with the WVDOH to design road construction to elevate at risk roadways. **High**
- 1.6.2 Implement road and walkway improvement plans for areas at higher risk of collapse. **High**
- 1.7.1 Prioritize replacement/reinforcement of at risk structures such as retaining walls within the county. **High**
- 2.1.1 Maintain agreements with surrounding counties for help with snow removal. **High**
- 2.2.2 Identify possible funding source for purchase of county snow clearing/removal equipment. **Med.**
- 3.1.1 Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. **Med.**
- 3.1.2 Continue monitoring and maintenance of the "Early Warning System". **High**
- 4.1.1 Use the WARN system in place to alert residents of possible high wind/tornado conditions. **High**
- 4.2.1 Enforce county-wide building codes that model the statewide 90-mph wind load rating. **High**
- 5.1.1 Countywide building permits, which will regulate land disturbances over one acre to include storm water management. Mitigate projects to address landslides throughout the county. **High**
- 5.1.2 Identify worst areas within municipalities and develop plans for structural enhancements or property buyouts. **High**
- 6.1.1 Maximize use of WARN system. **High**
- 7.1.1 Continue expansion of Public Service Districts water supplied areas. **High**
- 8.1.1 Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. **High**
- 9.1.1 Implement plans to address identified areas in Mingo County that need improvement and/or protection if possible. **High**

9.1.2 Work with Pocahontas Land Management to clean up affected areas. **High**

9.1.3 Begin development of ordinances for industries within the county starting any new development of land areas. **High**

10.1.1 Provide information to the citizens of Mingo County identifying where shelter is provided during extended utility outages. **High**

11.1.1 Continue to train HAM operators for emergency operations. Continue development of communication infrastructure. (i.e Cellular towers and digital radio network) **High**

12.1.1 Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat. **High**

13.1.1 Make the public aware of hazardous materials and what they can do if they spill, and evacuation plans for citizens of Mingo County. Continue to support training for First Responders. **High**

13.1.2 Continue to maintain mutual aid agreements with Logan and Boone Counties. **High**

14.1.1 Continue to coordinate the monitoring and testing of dams in Mingo County with the Core Planning Team, so the local governments and the county commission can be informed as to the safety status of these dams. **High**

Wayne County

The Wayne County Commission, Town of Fort Gay, City of Ceredo and City of Kenova will review and adopt the Regional Hazard Mitigation Plan and Strategy recommendations.

Project timetables are between the range of 1 to 15 years as funding becomes available.

Goal 1: Lessen flood-related losses.

Goal 2: Reduce the negative effects of severe winter storms in Wayne County.

Goal 3: Reduce the negative effects of severe thunderstorms in Wayne County.

Goal 4: Reduce damage from severe wind and tornadoes in Wayne County.

Goal 5: Lessen the effects of landslides in Wayne County.

Goal 6: Lessen hail damage in Wayne County.

Goal 7: Reduce the negative effects of drought in Wayne County.

Goal 8: Protect Wayne County's populations and forests from wildfires.

Goal 9: Reduce the negative effects of land subsidence in Wayne County.

Goal 10: Reduce the negative effects of utility failures in Wayne County.

Goal 11: Reduce the negative effects of a communications failure in Wayne County.

Goal 12: Protect Wayne County's population from bomb threats.

Goal 13: Protect general public in Wayne County from hazardous materials incidents.

Goal 14: Protect the general public in Wayne County from dam failures.

Number Mitigation Project Priority

1.1.1 Develop a plan to monitor and clean storm water drainage systems within municipalities. High

1.2.1 Continue coordinating with the WVDOH to conduct culvert inspections/cleaning throughout the county. Protect bridges and roadways from flooding hazards. High

1.3.1 Continue to provide training, technical assistance, education, and outreach opportunities for Wayne County, its municipalities and its citizenry in support of the National Flood Insurance Program and their local floodplain ordinances and floodplain management responsibilities. High

1.3.2 Maintain enforcement of building codes (municipalities) and educate citizens about hazards. High

1.3.3 Promote the purchasing of flood insurance through public education of where flood prone areas are located. High

1.3.4 Continue to utilize and enforce local Floodplain Management Ordinance. High

1.3.5 Enforce the countywide permitting process that will require residents and/or developers to file a permit with the county before beginning any new construction as a means of regulating floodplain development. High

Region 2 Planning and Development Council
Hazard Mitigation Plan

- 1.4.1 Provide information to the leaders in Wayne County about federal and state agency's pro-active programs in order to promote a safer Wayne County. High
- 1.5.1 Apply awarded funding and remove structures through Federal buyout programs. High
- 1.6.1 Work with the WVDOH to design road construction to elevate at risk roadways. High
- 2.1.1 Maintain agreements with surrounding counties for help with snow removal. High
- 2.2.2 Identify possible funding source for purchase of county snow clearing/removal equipment. Med.
- 3.1.1 Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm. Med.
- 3.1.2 Continue monitoring and maintenance of the "Early Warning System". High
- 4.1.1 Use the WARN system in place to alert residents of possible high wind/tornado conditions. High
- 4.2.1 Enforce county-wide building codes that model the statewide 90-mph wind load rating. High
- 5.1.1 Countywide building permits, which will regulate land disturbances over one acre to include storm water management. Mitigate projects to address landslides throughout the county. High
- 5.1.2 Identify worst areas within municipalities and develop plans for structural enhancements or property buyouts. High
- 6.1.1 Maximize use of WARN system. High
- 7.1.1 Continue expansion of Public Service Districts water supplied areas. High
- 8.1.1 Continue distributing information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. High
- 9.1.1 Implement plans to address identified areas in Wayne County that need improvement and/or protection if possible. High
- 10.1.1 Provide information to the citizens of Wayne County identifying where shelter is provided during extended utility outages. High
- 11.1.1 Continue to train HAM operators for emergency operations. Continue development of communication infrastructure. (i.e Cellular towers and digital radio network) High
- 12.1.1 Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat. High
- 13.1.1 Make the public aware of hazardous materials and what they can do if they spill, and evacuation plans for citizens of Wayne County. Continue to support training for First Responders. High
- 13.1.2 Continue to maintain mutual aid agreements with Logan and Boone Counties. High
- 14.1.1 Continue to coordinate the monitoring and testing of dams in Wayne County with the Core Planning Team, so the local governments and the county commission can be informed as to the safety status of these dams. High

Throughout the Region, mitigation actions have been identified as completed, deleted, or deferred actions.

Project	Status
Identify storm water back up areas, find funding. (All municipalities, business and residential districts.	Ongoing throughout Region
Flood proof Water and Wastewater Plants	Ongoing throughout Region
Have WVDOH determine funding requirements and seek funding to clear out block culverts and determine which culverts need to be re-designed to meet increased flood hazard demands. Coordinate inspections of bridges and roadways in the SFHA that are at risk. Develop a plan to protect this vital infrastructure.	Ongoing throughout Region
Elevate mechanicals near wastewater plants in Wayne and Mingo Counties	Completed

Develop a database of all at risk structures in floodway and floodplain and get homeowners and business information on the importance of purchasing flood insurance and flood proofing techniques to protect their home and business.	Ongoing throughout Region
Develop an ongoing program of mitigation training for public officials and private business, as well as citizens of the Region. This training will include inspectors, builders, developers, surveyors, and community CEO's.	Ongoing throughout Region
Review, update, comply and enforce the Counties and their municipalities Floodplain Management Ordinances.	Completed; Ongoing
Support the training and use of HAZUS for pre-determining loss estimations of hazard occurrences.	Ongoing throughout Region. Completed in Logan and Lincoln Counties
Develop a database of at risk structures that have had repetitive loss or substantial damage. Seek funding to acquire these properties to get them out of harms ways.	Completed; ongoing throughout Region
Promote any new construction and or roof remodeling must withstand 90 miles per hour wind load building code.	Completed; ongoing
Provide information on what to do if severe winds or a tornado should occur in the Region.	On going.
Promote WVDEP storm water management permitting at the municipal level, that regulates any land disturbance and development over one acre to provide for land stabilization through storm water management techniques.	On going in Logan County
Partner to develop an early warning system for multi-hazards with federal, state, and local agencies and organizations. Promote "Early Alerting System" with cable companies and all radio frequencies including scanners.	Ongoing throughout the Region. Completed in Mason County
Find funding for caller ID for all schools in the Region.	Deleted from the list in Mingo, Logan and Wayne Counties due to a decision that this project was not necessary or beneficial. Completed in Lincoln County

5.0 PLAN MAINTENANCE PROCESS

§201.6(c)(4)(i)

[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

§201.6(c)(4)(ii) *[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

§201.6(c)(4)(iii) *[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.*

MONITORING, EVALUATING, AND UPDATING THE PLAN

The jurisdictions adopting this plan have established a method for the systematic and periodic review of this document. The plan will be reviewed at a minimum of every five (5) years (or following major disaster events) to gauge its effectiveness in predicting hazard

susceptibility areas, update the asset inventory, and update the timelines assigned to mitigation projects. During the review process, the following factors should be reviewed (similarly to the way in which these items were addressed during the original development of the plan).

- Ease of Implementation:** How smoothly has implementing the project (or similar types of projects) been? Have programs been readily available to assist in funding the implementation of the project (or similar types of projects)?
- Cost Effectiveness:** Have sufficient funding sources been available to implement the project at a cost manageable by the local government? Have the costs of implementing the project been significantly less than the cumulative future costs potentially incurred by an un-corrected situation?
- Social Impacts:** Has the public perceived that the project has positively lessened hazard-related losses? Has implementing the project adversely affected any segment of the population?
- Political Impacts:** Has implementing a particular project (or type of project) been delayed due to the political consequences of its implementation?
- Economic Impacts:** Has the cost/benefit ratio of implementing the project been acceptable? Has implementing a project adversely affected a particular segment of the local economy?
- Overall Positive Impacts:** Have local leaders generally agreed that implementing a particular project was beneficial to the community?

Custodial agencies for each of Region 2 Planning and Development Council's six counties include: The Lincoln County Office of Emergency Management; The Logan County Office of Emergency Management; The Mason County Office of Emergency Services; The Mingo County Office of Emergency Services; The Wayne County Office of Emergency Services; and The Cabell County Office of Emergency Services. As such, the OEM will update the action plan components of this plan (i.e. mitigation projects) as and if necessary. During future review processes, the OEM will thus provide information critical to the success of the update.

In general, local policies have not hindered hazard mitigation efforts. The jurisdictions participating in this planning process have used a variety of funding to complete mitigation projects in the past, including the Hazard Mitigation Grant Program (HMGP), Homeland Security Grant Program (HSGP), Emergency Management Performance Grant (EMPG), Community Development Block Grant (CDBG), and local funding. Local government policies and programs have supported the use of this funding and, thus, the implementation of mitigation projects. Further, all participating government jurisdictions have demonstrated a capability to successfully implement and administer mitigation projects.

The monitoring of this plan also includes methods for ensuring that projects are successfully implemented and contribute to the achievement of the mitigation goals outlined in Section 3.0. All of the individual projects listed in this plan are accompanied by a series of potential funding sources. Many of these funding sources employ stringent project administration requirements (including performance measures and close-out procedures), all of which will be followed by the jurisdiction affected by the implementation of the project. Adherence to these requirements will ensure the successful implementation of projects funded by such programs. For projects funded locally, existing purchasing policies will be followed, including competitive bidding, maintenance of invoice copies, regular departmental budget reviews, etc. All files associated with purchasing at the local level are maintained. This procedure has been successful while implementing mitigation projects since the original development of this plan and will continue to be followed.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

The members of the core planning team are leaders within the communities and agencies that they represent. They are often involved in the overall community, economic development, and capital improvements planning efforts of their jurisdictions.

As members of the mitigation planning team, these individuals will carry mitigation concepts into other planning areas. **For example, parts of the Regional Hazard Mitigation Plan can be submitted for inclusion into the Regional Comprehensive Economic Development Strategy (CEDS) report. This may include risk assessments as well as mitigation strategies.**

among other areas of the Regional HMP. The CEDS report is updated yearly within a prepared 5-year plan report. This report is prepared and submitted by the Regional Planning and Development Council with input from the thirty-one (31) Town, City and County members located with the six-county region. Once the CEDS report is submitted and approved, it can be located on the Region 2 Planning and Development Council website for public viewing.

Cabell County:

The Cabell County Commission shall be the lead agency in coordinating the efforts of the Cabell County Multi-Jurisdictional Hazard Mitigation Plan, as well as, the Cabell County Multi-Jurisdictional Hazard Mitigation Steering Committee, which consists of members from the Village of Barboursville, City of Huntington, and the City of Milton.

Steering Committee Representatives:

- 1. Cabell County Commissioners**
- 2. City of Huntington – Mayor and City Council**
- 3. Village of Barboursville – Mayor and City Council**
- 4. City of Milton – Mayor and City Council**
- 5. Cabell County Office of Emergency Services (CCOES)**
- 6. Cabell County E-911**
- 7. Cabell County Office of Grants, Planning & Permits**
- 8. City of Barboursville Public Works Department**
- 9. City of Huntington Planning Department**
- 10. City of Milton Public Works Department**

In Lincoln County, its participating municipalities maintain floodplain ordinances. Both the county and the municipalities have floodplain coordinators to oversee and enforce regulations. The Lincoln County OEM incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The Lincoln County Emergency Operations Plan works to primarily address the negative effects of natural, technological, and man-made hazards. Logan County's primary emergency manager, the LCOEM has been instrumentally involved in the development of this plan. The LCOEM incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The LCOEM operations plan works to primarily address the negative effects of natural, technological, and man-made hazards. Further, the LCOEM built a continuity of operations plan off of the hazards that are perceived to be risks (most of which are identified by this update). The continuity project is another example of the LCOEM's commitment to mitigation and lessening losses (continuity projects may lessen economic losses). Further, the LCOEM invited the Local Emergency Planning Committee (LEPC) to participate in this planning process to ensure that planning efforts are consistent with the LEPC's. The Logan County Commission's administrator is also the executive director of the county Economic Development Authority (EDA). The county administrator participated in this planning process and was able to provide insight as to how a variety of hazards affect the sites targeted for economic development. For example, the McDonald Airfield site is located along the Guyandotte River and *could* be susceptible to flooding. As a result, the EDA plans to work with potential tenants to ensure that their assets are protected. Southern WV Community and Technical College has historically been a partner during local emergency planning efforts. For example, the campus has agreed to serve as an alternate site for some county government operations should the recently developed continuity of operations plan need to be activated.

In Mason County, all jurisdictions in the county are participants in the National Flood Insurance Program. Participation shows these communities' commitment to flood mitigation efforts. Such projects as the floodwall in Point Pleasant are examples. All have been participants since the late 1970s; as such, local policies and flood mitigation policies have grown compatible over the years. As such, each community has a National Flood Insurance Program (NFIP) Coordinator as well as floodplain development ordinances. These ordinances are other examples of mitigation efforts reflected in existing local government mechanisms. The members of the

Region 2 Planning and Development Council Hazard Mitigation Plan

core planning team are leaders within the communities and agencies that they represent. They are often involved in the overall community, economic development, and capital improvements planning efforts of their jurisdictions. As members of the mitigation planning team, these individuals will carry mitigation concepts into other planning areas. The MCOES prepares for emergencies based on the four (4) phases of emergency management: mitigation, preparedness, response, and recovery. This plan obviously falls under the "mitigation" category. However, the MCOES incorporates mitigation principles into its emergency operations preparedness planning (in an effort to predetermine the hazards to which responders may respond). The MCOES' operations plan works to primarily address the negative effects of natural, technological, and manmade hazards. The Mason County Development Authority continues actively working to bring commercial and industrial development to Mason County. It has identified several sites throughout the county that are suitable to development. As part of the planning process, this document will be shared with development authority representatives.

Members of the Mingo County core planning team work closely with the county OES, flood plain management officials, and emergency response agencies within the county. Coordination of existing planning documents is done extensively to ensure they work efficiently together on the whole. Emergency Operations Plans, Continuity of Operations Plans, and the Hazard Mitigation Plan all have an integrated role in disaster preparedness. Hazard Mitigation Plans play a role in the county EOP by providing the risk assessment in the county and giving emergency planners the basis for a comprehensive EOP. Both HMP's and EOP's also reflect in the COOP by providing county government agencies an overview of the vulnerabilities and/or risks they may face while continuing to provide needed services. The Mingo County Office of Emergency Services (OES) is extensively involved in hazard mitigation throughout Mingo County and the municipalities therein. The OES incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The OES's operations plan works to primarily address the negative effects of natural, technological, and man-made hazards. The OES will also consider mitigation objectives when planning for early warning and notification (as per mitigation strategies listed in this plan). Economic Development Authorities coordinate with floodplain management officials as well to promote better planning and to eliminate building new businesses in areas of high risk to flooding. Other identified risks are also analyzed and development is planned to account for these risks.

Wayne County members of the core planning team work closely with the county OES, flood plain management officials, and emergency response agencies within the county. Coordination of existing planning documents is done extensively to ensure they work efficiently together on the whole. Emergency Operations Plans, Continuity of Operations Plans, and the Hazard Mitigation Plan all have an integrated role in disaster preparedness. Hazard Mitigation Plans play a role in the county EOP by providing the risk assessment in the county and giving emergency planners the basis for a comprehensive EOP. Both HMP's and EOP's also reflect in the COOP by providing county government agencies an overview of the vulnerabilities and/or risks they may face while continuing to provide needed services. The Wayne County Office of Emergency Services (OES) is extensively involved in hazard mitigation throughout Wayne County and the municipalities therein. The OES incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The OES's operations plan works to primarily address the negative effects of natural, technological, and man-made hazards. The OES will also consider mitigation objectives when planning for early warning and notification (as per mitigation strategies listed in this plan). Economic Development Authorities coordinate with floodplain management officials as well to promote better planning and to eliminate building new businesses in areas of high risk to flooding. Other identified risks are also analyzed and development is planned to account for these risks.

CONTINUED PUBLIC INVOLVEMENT

All adopting jurisdictions maintain copies of this plan. Citizens will be able to review the plan and provide comments at any time from these locations. Citizens may also access the plan through their County OEM or OES agencies. Following the completion of the planning process, a newspaper advertisement will be published inviting the public to review the plans at the above locations or at Region 2 Planning and Development's website. These copies will be accompanied by a "Public Participation Form" so that comments can be recorded and included in future updating processes.

Region 2 Planning and Development Council
Hazard Mitigation Plan

This plan is updated at a minimum of every five (5) years. The updating process will begin with the core planning committee and also involve the general public. The planning committee will meet as often as is necessary during a review year to revise, add, or remove mitigation projects. The final committee meeting will be properly advertised and open to the public to provide the public with an opportunity to comment on the proposed changes.

APPENDIX 1: HAZARD PROFILES, LOSS CALCULATIONS, AND MAPPING

Throughout Region 2 PDC's six-county area, flooding is the primary hazard that citizens and jurisdictions face. History indicates that flooding occurs more often than any other hazard in the region. Beyond flooding, the region also faces the potential hazards of dam failure, drought, hail storms, among other less relevant potential hazards.

This appendix contains hazard-specific information created as a result of the comprehensive risk assessment that was completed as part of this project. The appendix is organized alphabetically by hazard name. Each hazard-labeled tab contains a detailed hazard profile, matrices to calculate loss estimations, and mapping that graphically depicts low, moderate, and high susceptibility areas for the hazard in question.

Loss estimates were calculated for all jurisdictions. In some instances, however, a municipal jurisdiction could be more or less susceptible than the balance of the county to a particular hazard. Where this was the case, a separate map and a summary of losses (Worksheet #3a. from the FEMA guide 386-2) were created for that specific jurisdiction.

2.2 PROFILE HAZARDS

2.2.1. Dam Failure

RESEARCH

- West Virginia Dept. of
Env. Protection,
Environmental
Enforcement Website
<http://www.wvdep.org/item.cfm?ssid=13&ss1id=191>
- Interviews with Local Officials

HAZARD EFFECTS

Dam failure is often the result of prolonged rainfall or flooding or, during prolonged dry periods, erosion. The primary hazard surrounding dam failure is the swift, unpredictable flooding of those areas immediately downstream. While general inundation areas can be determined, it is often impossible to know exactly how and where water held back by a dam will flow during a rapid failure of the dam. Generally, there are three (3) types of dam failures: hydraulic, seepage, and structural.

- Hydraulic Failure* – Hydraulic failures result from the uncontrolled flow of water over the dam, around and adjacent to the dam, and the erosive action of water on the dam and its foundation. Earthen dams are particularly vulnerable to hydraulic failure since earth erodes at relatively small velocities.

- Seepage Failure* – All dams exhibit some seepage that must be controlled in velocity and amount. Seepage occurs both through the dam and the foundation.

A dam failure is when downstream flooding occurs as the result of the complete or partial inundation of an impoundment. If uncontrolled, seepage can erode material from the foundation of an earthen dam to form a conduit through which water can pass. This passing of water often leads to a complete failure of the structure, known as piping.

- Structural Failure* – Structural failures involve the rupture of the dam and/or its foundation. This is particularly a hazard for large dams and for dams built of low strength materials such as silts, slag, fly ash, etc. Dam failures generally result from a complex interrelationship of several failure modes. Uncontrolled seepage may weaken the soils and lead to a structural failure.

Region 2 Planning and Development Council Hazard Mitigation Plan

Structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may lead to structural or piping failures. The West Virginia Department of Environmental Protection (WVDEP) classifies dams into four (4) categories, including the following:

Class 1 (High Hazard) – Dams located where failure may cause loss of human life or major damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or where a high risk highway may be affected or damaged.

□ *Class 2 (Significant Hazard)* – Dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, important public utilities, main railroads, or cause major damage to unoccupied buildings, or where a low risk highway may be affected or damaged. Loss of human life from a failure of a Class 2 dam is unlikely.

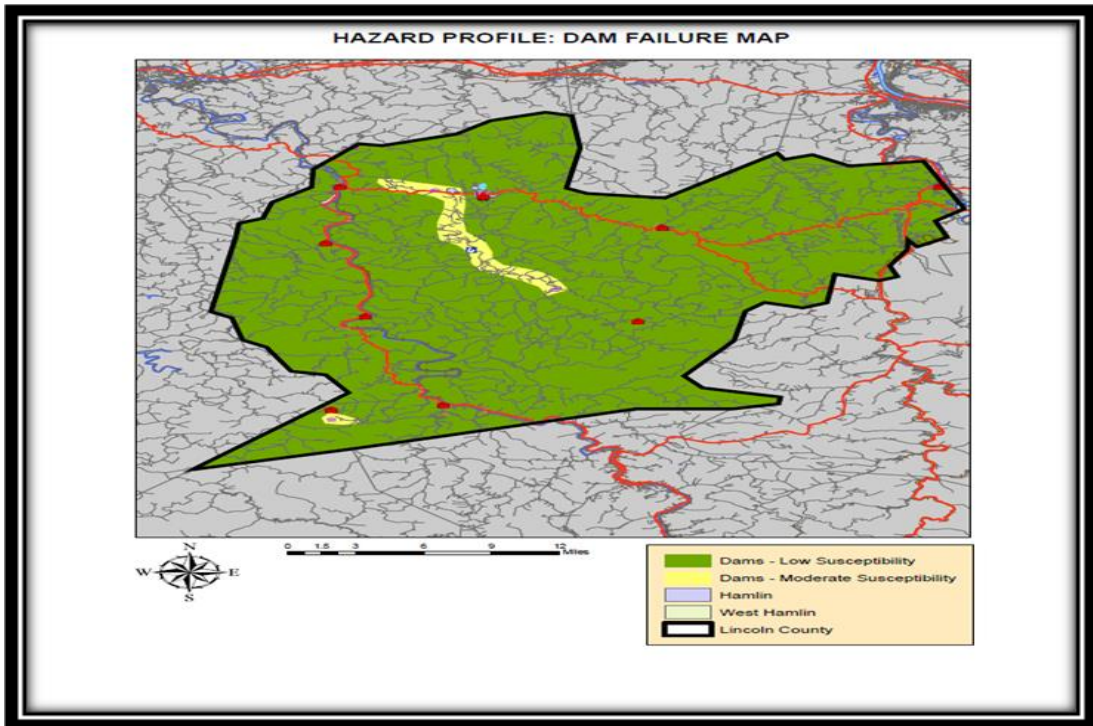
□ *Class 3 (Low Hazard)* – Dams located in rural or agricultural areas where failure may cause minor damage to non-residential and normally unoccupied buildings, or rural or agricultural land. Failure of a Class 3 dam would cause only a loss of the dam itself and a loss of property use, such as use of related roads, with little additional damage to adjacent property.

□ *Class 4 (Negligible Hazard)* – Dams where failure is expected to have no potential for loss of human life, no potential for property damage, and no potential for significant harm to the environment.

Dam failures generally result from a complex interrelationship of several failure modes. Uncontrolled seepage may weaken the soils and lead to a structural failure. Structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may lead to structural or piping failures.

Cabell County, West Virginia had 291 events reported between 1/01/1950 and 7/31/2008. This included hazards consisting in part of 38 reported floods (probability of future events: Frequent); 34 reported high winds in excess of 50 mph (probability of future events: Frequent) ; 41 reported hail storms (probability of future events: Frequent); 27 reported winter storms (probability of future events: Frequent); 1 reported tornado, Category F1 (probability of future event: Infrequent).

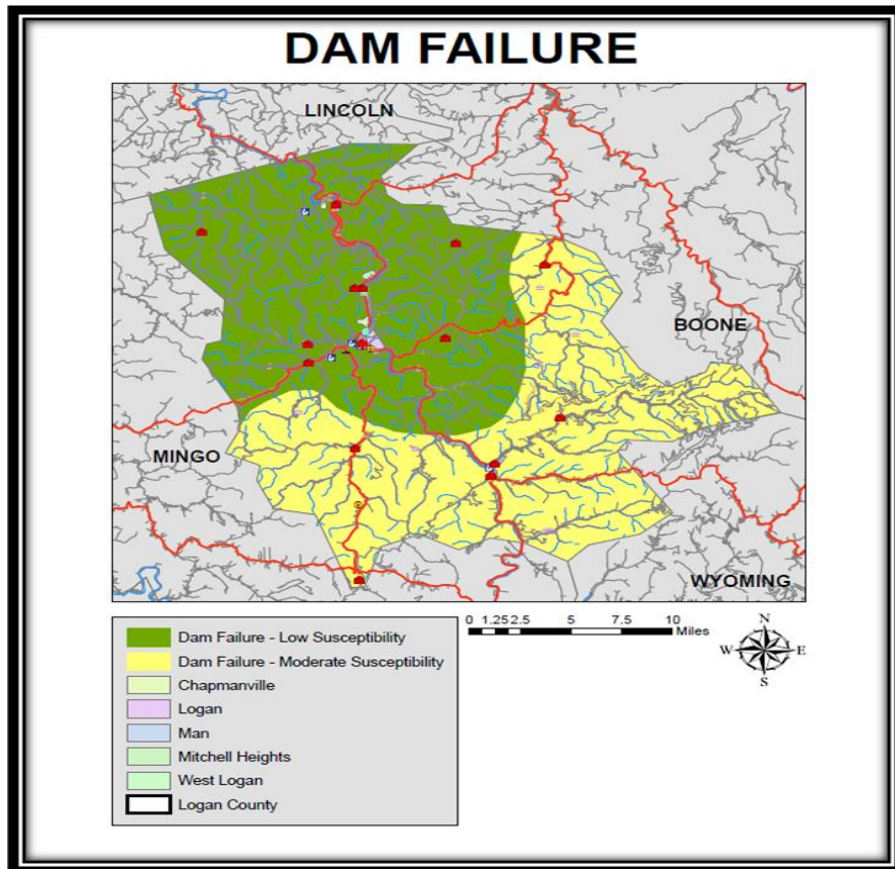
Lincoln County is home to several dams impounding farm ponds. These facilities are located sporadically throughout the county and are largely unregulated. While significant loss of life or property damage would not be expected from the failure of one of these facilities, it may result in minor flooding.



Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	10,099	1,313	13	\$363,564,000	\$47,263,320	13	22,386	2,910	13
<i>Commercial</i>	264	82	31	\$86,793,468	\$26,905,975	31	940	291	31
<i>Industrial</i>	3	0	9	\$19,890,170	\$1,790,115	9	824	74	9
<i>Agricultural</i>	215	6	3	\$28,931,156	\$867,935	3	68	2	3
<i>Religious/Non-Profit</i>	61	5	8	\$6,100,000	\$488,000	8	3,050	244	8
<i>Government</i>	9	2	20	\$45,204,931	\$9,040,986	20	867	173	20
<i>Education</i>	10	1	11	\$43,000,000	\$4,730,000	11	387	43	11
<i>Utilities</i>	14	2	15	\$63,071,723	\$9,460,758	15	116	17	15
Total	10,675	1,411	13	\$656,555,448	\$100,547,090	15	28,638	3,755	13

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Period of Occurrence:	At any time
Number of Events to Date:	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	30 days or more

Of particular concern in Logan County is the presence of coal field dams. Despite its decline in overall prominence, Logan County still sees a significant amount of mining activity. Many of these mines construct dams to retain sediment ponds, serve as slurry impoundments, and many other reasons. In fact, Logan County is home to one of the worst dam failure disasters in history – the Buffalo Creek Disaster – which took the lives of 125 people and injured 1,121. Nearly 4,000 people were left homeless after 507 houses were destroyed. Presently, many coal companies share safety plans and inspection reports with local emergency officials. Despite the heightened vigilance, failures of these types of dams are still very much a hazard in the southeastern portions of Logan County.

Hazard: Dam Failure									
Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	12,423	6,212	50%	\$808,737,300.00	\$404,368,650	50%	25,678	12,839	50%
<i>Commercial</i>	346	260	75%	\$86,961,635.00	\$65,221,226	75%	2,841	2,131	75%
<i>Industrial</i>	25	23	90%	\$35,198,757.00	\$31,678,881	90%	1,151	1,036	90%
<i>Agricultural</i>	946	47	5%	\$37,267,272.00	\$1,863,364	5%	1,310	66	5%
<i>Religious/Non-Profit</i>	72	32	45%	\$10,800,000.00	\$4,860,000	45%	3,600	1,620	45%
<i>Government</i>	7	6	86%	\$47,621,848.00	\$40,954,789	86%	1,570	1,350	86%
<i>Education</i>	14	11	79%	\$107,500,000.00	\$84,925,000	79%	1,032	815	79%
<i>Utilities</i>	10	8	80%	\$378,046,566.00	\$302,437,253	80%	197	158	80%
Total	13,843	6,598	48%	\$1,512,133,378.00	\$936,309,163	62%	37,379	20,014	54%

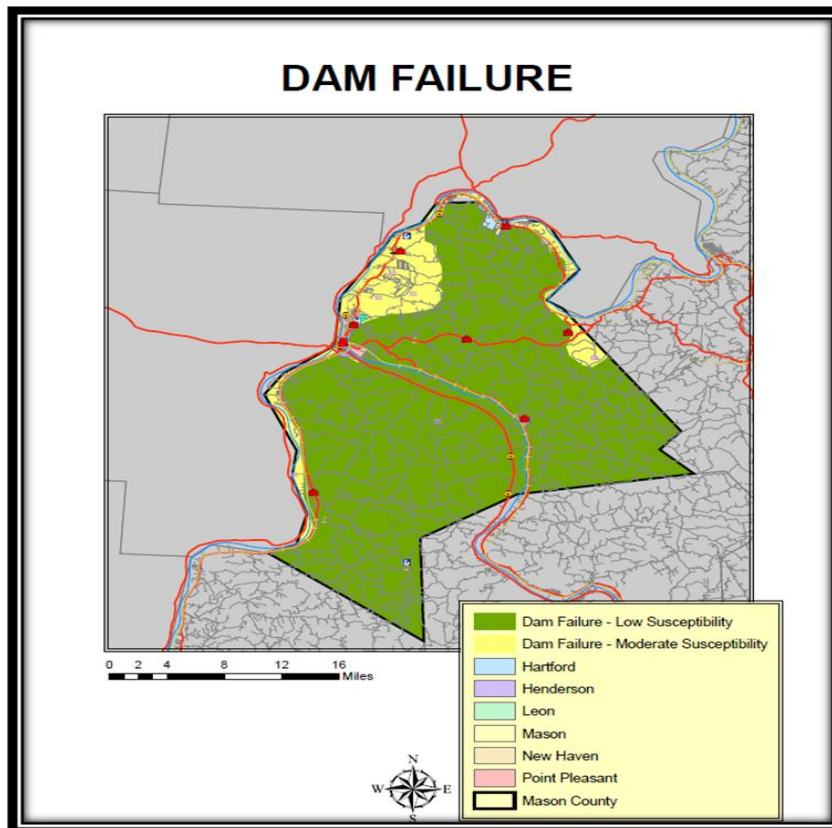
	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	_____
2. Do you know whether your critical facilities will be operational after a hazard event?	X	_____
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	_____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	_____
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	_____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	_____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	_____	X

Period of Occurrence:	At any time
Number of Events to Date:	1
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	30 days or more

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	17,383	5,850	34	\$1,086,437,500	\$369,388,750	34	35,629	12,114	34
Commercial	746	100	13	\$564,744,781	\$73,416,822	13	4,995	649	13
Industrial	19	3	16	\$269,537,282	\$43,125,965	16	2,457	393	16
Agricultural	34	20	59	\$218,196,847	\$128,736,140	59	50	30	59
Religious/Non-Profit	75	28	37	\$11,250,000	\$4,162,500	37	3,750	1,388	37
Government	11	1	9	\$231,031,956	\$20,792,876	9	2,005	180	9
Education	19	3	16	\$75,000,000	\$12,000,000	16	1,550	248	16
Utilities	10	2	20	\$84,994,123	\$16,998,825	20	474	95	20
Total	18,297	6,007	33	\$2,541,192,490	\$668,621,877	26	50,910	15,097	30

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



Mason County, located along the Ohio River, is subject to a failure of the navigational locks and dams along the river. The Robert C. Byrd Lock and Dam, officially located in Gallipolis Ferry, impounds water just below the Kanawha River confluence. Also, the Racine Lock and Dam is located in the northern portion of the county at Letart. The Willow Island Lock and Dam, located upstream from Mason County's communities, may also affect the county. A failure of facilities on the Ohio River would primarily disrupt economic commerce along the river. Some flooding could occur in downstream communities, however. Mason County is also the home to several dams impounding farm ponds. These facilities are located sporadically throughout the county and are largely unregulated. While significant loss of life or property damage would not be expected from the failure of one of these facilities, it may result in minor flooding.

Period of Occurrence:	At any time
Number of Events to Date:	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	30 days or more

In Mingo County, the WVDEP maintains information on 1 dam facility which is classified as a Class 1 dam. Laurel Lake Dam near Lenore holds a 29 acre lake in the Laurel Lake Wildlife Management Area. The following graphic illustrates the only listed/monitored dam facility in Mingo County.

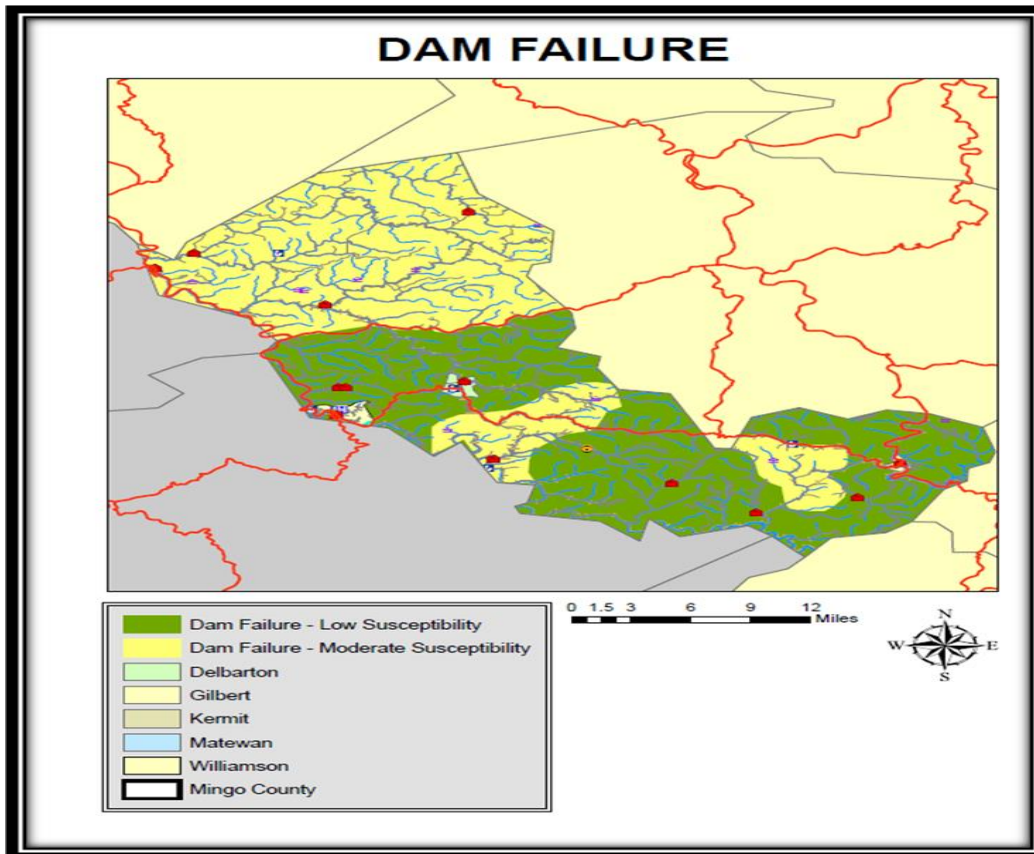
Dam Name	Hazard Class	Owner	Downstream Town
Laurel Lake	1	WVDNR	Lenore

*** Unknown hazard class w/ assumed hazard class presented (per WVDEP)**

The West Virginia Department of Natural Resources (WVDNR) frequently monitors the largest dam structure in the county. According to the WVDNR, which maintains the *Monitoring and Emergency Action Plan and Maintenance Plan* for the Laurel Lake Dam, there are no known problems with that structure. If this dam were to fail, the primary affected areas would be within the state park. Mingo County has not experienced a significant dam failure so a determination of susceptible areas based on past events is not possible.

ANTICIPATED VULNERABILITIES/MAPPING

If a dam failure were to occur, it would only affect a small segment of the county. Mingo County has a low risk of a significant dam failure. See the “Dam Failure” map for a graphical representation of the areas that are anticipated to be affected if one of the major dams in the county were to fail. The map depicts high, moderate, and low susceptibility areas.



Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	13,335	2,000	15	\$488,861,100	\$73,329,165	15	27,100	4,065	15
Commercial	511	189	37	\$87,682,496	\$32,442,524	37	2,614	967	37
Industrial	17	1	5	\$88,559,321	\$4,427,966	5	2,636	132	5
Agricultural	258	8	3	\$43,841,248	\$1,315,237	3	37	1	3
Religious/Non-Profit	51	3	6	\$7,650,000	\$459,000	6	2,550	153	6
Government	7	1	18	\$43,841,248	\$7,891,425	18	1,296	233	18
Education	18	2	10	\$104,625,000	\$10,462,500	10	884	88	10
Utilities	8	2	30	\$157,082,402	\$47,124,721	30	1,768	531	30
Total	14,205	2,206	16	\$1,022,142,815	\$177,452,537	17	38,886	6,170	16

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The WVDEP maintains information on 3 dam facilities in Wayne County. All 3 are classified as a Class 1 dams. Right Fork-Camp Creek FW, Asbury Lake Dam, and Class Three Dam are the listed and monitored structures. The following graphic illustrates the only listed/monitored dam facilities in Wayne County.

Dam Name	Hazard Class	DownstreamTown
Right Fork – Camp Creek FW Dam	1	Unincorporated Communities
Asbury Lake Dam	1	Unincorporated Communities
Class Three	1	Unincorporated Communities

Fortunately, Wayne County has not experienced any significant dam failure so a determination of susceptible areas based on past events is not possible. However, the above vulnerabilities are based on areas along the watersheds of the impounded streams.

ANTICIPATED VULNERABILITIES/MAPPING

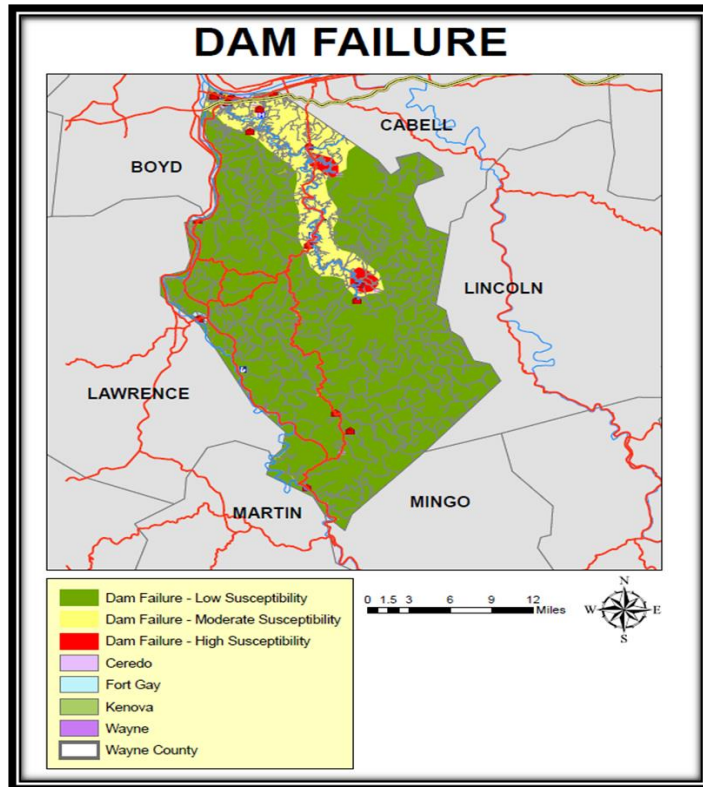
If a dam failure were to occur, it would only affect a small segment of the county. Wayne County has a low risk of a significant dam failure. See the “Dam Failure” map for a graphical representation of the areas that are anticipated to be affected if one of the major dams in the county were to fail. The map depicts high, moderate, and low susceptibility areas.

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	19,436	2,527	13	\$741,677,760	\$96,418,109	13	41,647	5,414	13
Commercial	211	80	38	\$61,521,793	\$23,378,281	38	3,293	1,251	38
Industrial	16	0	0	\$34,178,774	\$0	0	1,794	0	0
Agricultural	151	0	0	\$18,798,326	\$0	0	130	0	0
Religious/Non-Profit	90	7	8	\$13,500,000	\$1,080,000	8	4,500	360	8
Government	12	2	13	\$123,961,770	\$16,115,030	13	3,047	396	13
Education	22	4	20	\$95,204,308	\$19,040,862	20	733	147	20
Utilities	8	3	33	\$183,573,749	\$60,579,337	33	258	85	33
Total	19,946	2,623	13	\$1,272,416,480	\$216,611,619	17	55,402	7,653	14

- | | | |
|---|-------------------------------------|-------------------------------------|
| | Yes | No |
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Period of Occurrence:	At any time
Number of Events to Date:	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	30 days or more



2.2 PROFILE HAZARDS

2.2.2. Drought

RESEARCH

- NCDC Event Records
- USDA Census of Agriculture (2007)

HAZARD EFFECTS

Droughts are defined according to meteorological, hydrological, and agricultural criteria. Any significant deficit of precipitation is categorized as meteorological. Hydrological drought is apparent in noticeably reduced river and stream flow and critically low groundwater tables. Agricultural drought indicates an extended dry period that results in crop stress and harvest reduction. The Palmer Drought Severity Index (PDSI) is widely used throughout the United States as a measure of drought and to track moisture conditions. The PDSI is defined as “an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically expected or climatically appropriate moisture supply”. The range of the PDSI is from - 4.0 (extremely dry) to +4.0 (excessively wet), with the central half (-2.0 to +2.0) representing normal or near normal conditions.

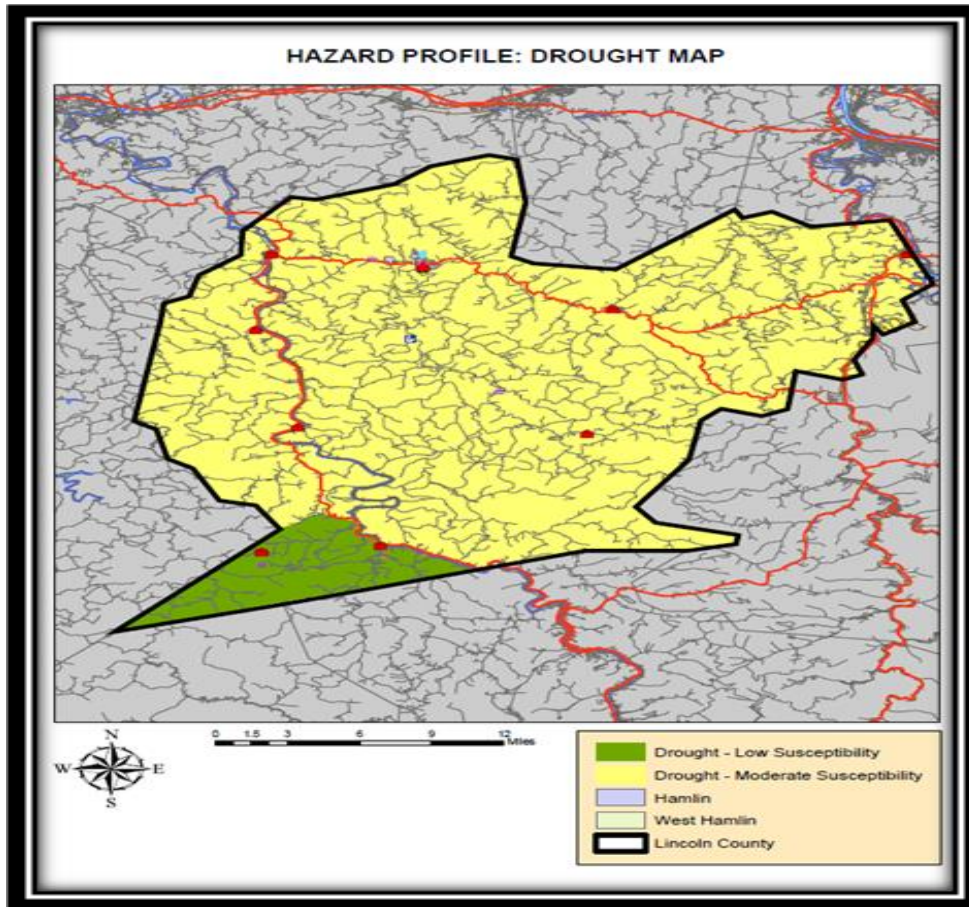
A drought in Lincoln County could affect the majority of the county’s residents. Droughts greatly reduce the county’s public water supplies and also may cause privately owned wells to either run dry or extremely low, thus reducing the quality and quantity of water available to residents. If a drought occurs in Lincoln County, it not only affects residents’ water supply, but it also could impact those whose primary income is in some way based on agriculture. During the last decade Lincoln County has suffered from moderate periods of drought. The NCDC reports that thirteen (13) events have occurred thus placing the county at a moderate risk for drought. According to USDA’s 2002 Census of Agriculture, Lincoln County contains 215 working farms with an average size of over 150 acres. Droughts can be very costly to those whose income is based in agriculture.

Region 2 Planning and Development Council
Hazard Mitigation Plan

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (1998 – 2009):	13
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

Hazard: Drought									
Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	10,099	303	3	\$363,564,000	\$10,906,920	3	22,386	672	3
<i>Commercial</i>	264	3	1	\$86,793,468	\$867,935	1	940	9	1
<i>Industrial</i>	3	0	7	\$19,890,170	\$1,392,312	7	824	58	7
<i>Agricultural</i>	215	215	100	\$28,931,156	\$28,931,156	100	68	68	100
<i>Religious/Non-Profit</i>	61	2	4	\$6,100,000	\$244,000	4	3,050	122	4
<i>Government</i>	9	1	11	\$45,204,931	\$4,972,542	11	867	95	11
<i>Education</i>	10	0	0	\$43,000,000	\$0	0	387	0	0
<i>Utilities</i>	14	4	25	\$63,071,723	\$15,767,931	25	116	29	25
Total	10,675	528	5	\$656,555,448	\$63,082,796	10	28,638	1,053	4

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	_____
2. Do you know whether your critical facilities will be operational after a hazard event?	X	_____
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	_____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	_____
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	_____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	_____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	_____	X

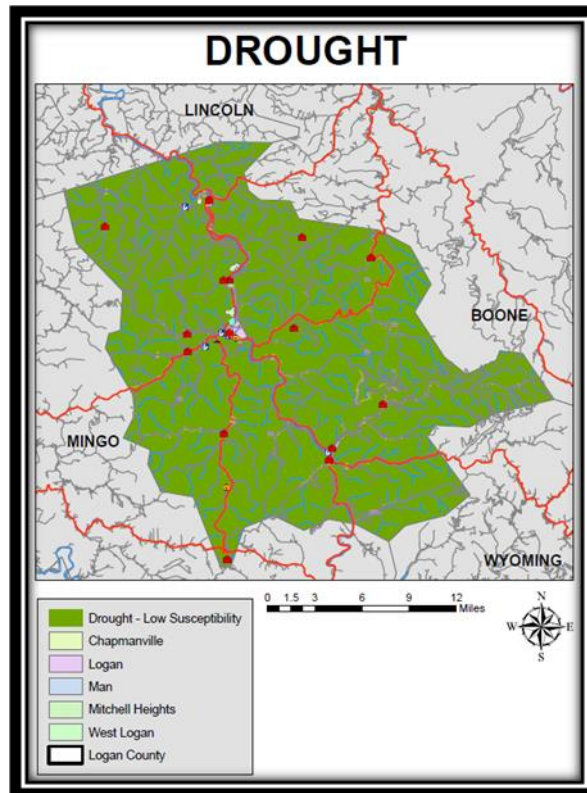


Logan County contains several public water systems. Prolonged droughts could affect water levels and thus affect intake at treatment plants. Not only are the majority of the county's residents served by this water, but the majority of the county's commercial and industrial facilities are also served by it. Long droughts could affect the quality of life in the county as well as the local economy. If a drought occurs in Logan County, it not only affects residents' water supply, but it also could impact those whose primary income is in some way based on agriculture. According to USDA's 2007 Census of Agriculture, Logan County contains 34 working farms. In 2002, agriculture accounted for approximately a \$287,000 market value of production.

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (1999 – 2008):	10
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	17,383	17,383	100	\$1,086,437,500	\$0	0	35,629	35,629	100
<i>Commercial</i>	746	746	100	\$564,744,781	\$0	0	4,995	4,995	100
<i>Industrial</i>	19	19	100	\$269,537,282	\$0	0	2,457	2,457	100
<i>Agricultural</i>	34	34	100	\$218,196,847	\$0	0	50	50	100
<i>Religious/Non-Profit</i>	75	75	100	\$11,250,000	\$0	0	3,750	3,750	100
<i>Government</i>	11	11	100	\$231,031,956	\$0	0	2,005	2,005	100
<i>Education</i>	19	19	100	\$75,000,000	\$0	0	1,550	1,550	100
<i>Utilities</i>	10	10	100	\$84,994,123	\$0	0	474	474	100
Total	18,297	18,297	100	\$2,541,192,490	\$0	0	50,910	50,910	100

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



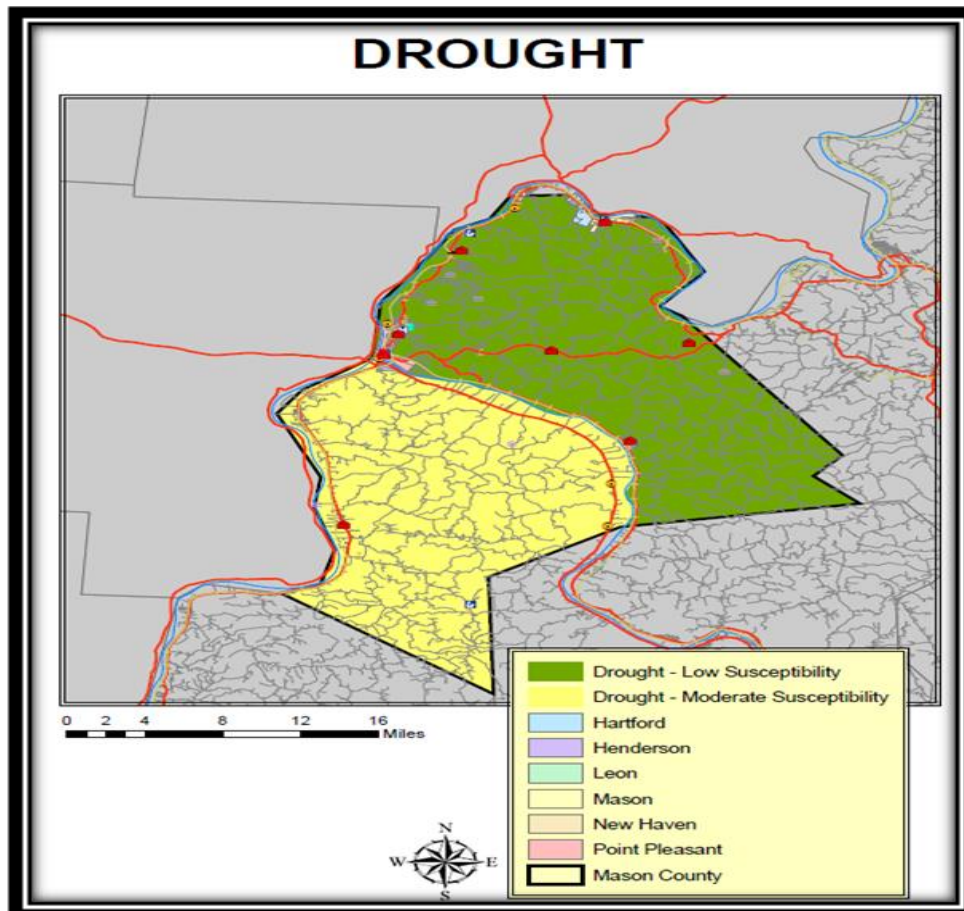
A drought in Mason County could affect the majority of the county's residents. Some residents are still served by private water wells, which can run dry during drought conditions. Further, those served by public water distribution systems could see water supplies diminish or be subject to boil water advisories as water runs low near intake points. If a drought occurs in Mason County, it not only affects residents' water supply, but it also could impact those whose primary income is in some way based on agriculture. According to USDA's 2007 Census of Agriculture, Mason County contains 946 working farms. Mason County's farms average just over \$19,000 per year in production market value (for a total value of \$18,765,000).

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (1995 – 2009):	14
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	12,423	12,423	100%	\$808,737,300.00	\$0	0%	25,678	25,678	100%
<i>Commercial</i>	346	346	100%	\$86,961,635.00	\$0	0%	2,841	2,841	100%
<i>Industrial</i>	25	25	100%	\$35,198,757.00	\$0	0%	1,151	1,151	100%
<i>Agricultural</i>	946	946	100%	\$37,267,272.00	\$0	0%	1,310	1,310	100%
<i>Religious/Non-Profit</i>	72	72	100%	\$10,800,000.00	\$0	0%	3,600	3,600	100%
<i>Government</i>	7	7	100%	\$47,621,848.00	\$0	0%	1,570	1,570	100%
<i>Education</i>	14	14	100%	\$107,500,000.00	\$0	0%	1,032	1,032	100%
<i>Utilities</i>	10	10	100%	\$378,046,566.00	\$0	0%	197	197	100%
Total	13,843	13,843	100%	\$1,512,133,378.00	\$0	0%	37,379	37,379	100%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



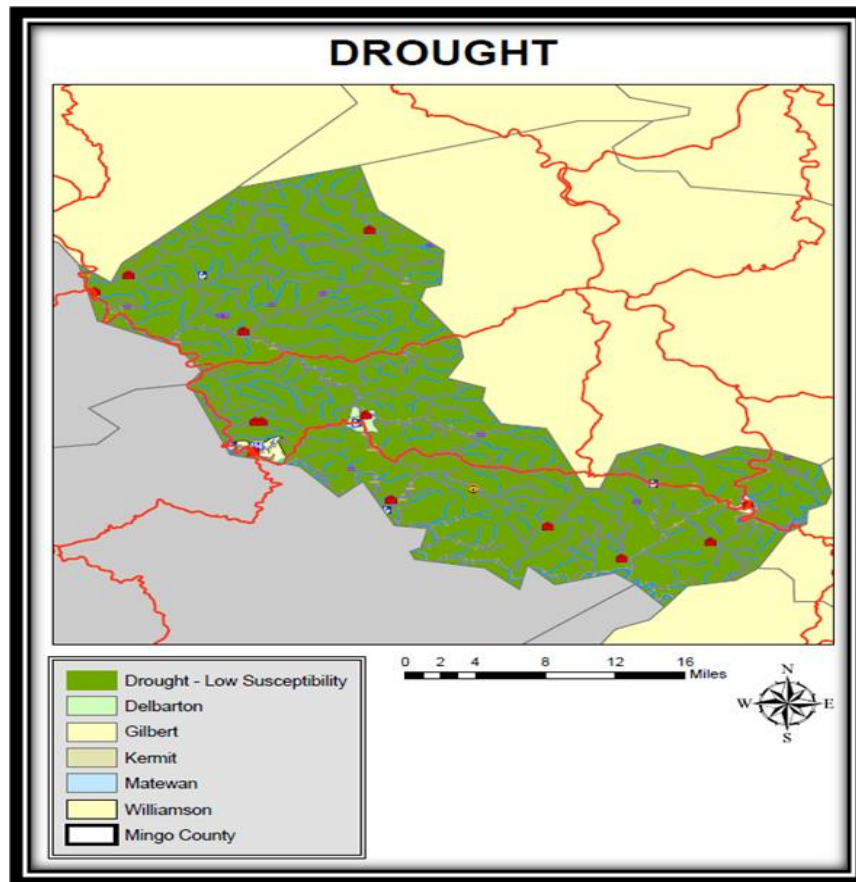
A drought in Mingo County affects the majority of the county’s residents. Mingo County is comprised of mostly forested areas with some residents relying on rain for crops and farms and also their water supply. The municipalities that have water boards which supply residents with water can also be impacted by droughts that decrease the availability of public water supplies. Mingo County residents also rely on rivers, creeks, and underground springs to provide water for crops and farm animals. If a drought occurs in Mingo County, it not only affects residents’ private water supply, but it also could impact those whose primary income is in some way based on agriculture. During the drought of 1990, all 55 counties in West Virginia were named a federal drought disaster area. West Virginia farmers lost approximately \$100 million to the drought. Many families across the state were forced to sell all farm animals or quit farming and find another means of income.

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (1998 – 2008):	11
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	13,335	2,934	22	\$488,861,100	\$107,549,442	22	27,100	5,962	22
<i>Commercial</i>	511	77	15	\$87,682,496	\$13,152,374	15	2,614	392	15
<i>Industrial</i>	17	2	13	\$88,559,321	\$11,512,712	13	2,636	343	13
<i>Agricultural</i>	258	155	60	\$43,841,248	\$26,304,749	60	37	22	60
<i>Religious/Non-Profit</i>	51	9	18	\$7,650,000	\$1,377,000	18	2,550	459	18
<i>Government</i>	7	1	20	\$43,841,248	\$8,768,250	20	1,296	259	20
<i>Education</i>	18	1	5	\$104,625,000	\$5,231,250	5	884	44	5
<i>Utilities</i>	8	3	33	\$157,082,402	\$51,837,193	33	1,769	584	33
Total	14,205	3,181	22	\$1,022,142,815	\$225,732,969	22	38,886	8,065	25

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



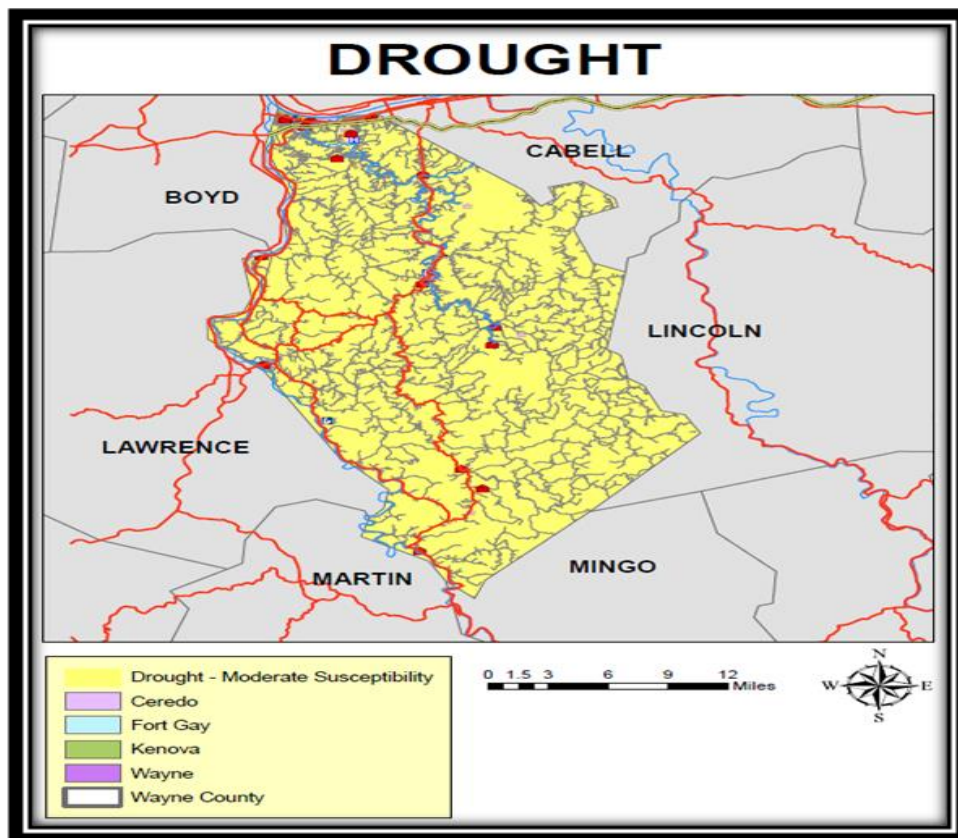
A drought in Wayne County affects the majority of the county's residents. Wayne County is comprised of mostly forested areas with some residents relying on rain for crops and farms and also their water supply. The municipalities that have water boards which supply residents with water can also be impacted by droughts that decrease the availability of public water supplies. Wayne County residents also rely on rivers, creeks, and underground springs to provide water for crops and farm animals. If a drought occurs in Wayne County, it not only affects residents' private water supply, but it also could impact those whose primary income is in some way based on agriculture. Although Wayne County has not reported any losses during the period studied, prolonged periods of drought can be detrimental to the county.

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (2003 – 2008):	6
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	19,436	583	3	\$741,677,760	\$22,250,333	3	41,647	1,249	3
<i>Commercial</i>	211	2	1	\$61,521,793	\$615,218	1	3,293	33	1
<i>Industrial</i>	16	0	1	\$34,178,774	\$1,233,357	4	1,794	18	1
<i>Agricultural</i>	151	151	100	\$18,798,326	\$18,798,326	100	130	130	100
<i>Religious/Non-Profit</i>	90	4	4	\$13,500,000	\$540,000	4	4,500	180	4
<i>Government</i>	12	1	11	\$123,961,770	\$13,635,795	11	3,047	335	11
<i>Education</i>	22	0	0	\$95,204,308	\$0	0	733	0	0
<i>Utilities</i>	8	2	25	\$183,573,749	\$45,893,437	25	258	65	25
Total	19,946	743	4	\$1,272,416,480	\$102,966,466	8	55,402	2,010	4

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



2.2 PROFILE HAZARDS

2.2.3. Flooding

RESEARCH

- Public Comment
- NCDC Event Records
- FIRMs
- FEMA Repetitive Loss List
- Searches of local media archives

Flooding is defined as a general temporary condition of partial or complete inundation of normally dry land areas from: overflow of inland or tidal waters; unusual and rapid accumulation of runoff of surface water from any source; mudflows; or the sudden collapse of shoreline land. A flash flood is a rapid flooding of low-lying areas, rivers, and streams that is caused by intense rainfall and is often associated with thunderstorms.

HAZARD EFFECTS

REPETITIVE LOSS PROPERTIES

Cabell County: Has three severe repetitive loss structures – One (1) located in rural Cabell County in Culloden and Two (2) located in Milton, West Virginia. Each of the local Municipal governments in Cabell County are participants in the National Flood Insurance Program (NFIP). The NFIP Coordinator maintains the jurisdiction's floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).

NFIP. The three basic components of the NFIP include: 1 – Floodplain identification and mapping risk, 2 – Responsible floodplain management, and, 3 – flood insurance.

Floodplain Identification and Mapping:

Cabell County maintains:

- 1. a current copy of the D-Firms established June 16, 2005 and a current FIS***
- 2. Letters of Map Amendment and/or Change***
- 3. Provides Assistance with local floodplain determinations***

a. (Example: a lady comes into the Office of Grants, Planning & Permits for Cabell County, West Virginia. She has a letter in her hand from a bank stating that her property is in a floodplain and she is being required to carry flood insurance for the life of the

loan. She asks the county floodplain administrator for assistance to rectify the situation. The county floodplain manager, access the county flood maps available at www.maps.cabellassessor.com. The county floodplain administrator searches the D-firms which are attached to tax parcels. Once the maps are downloaded, the floodplain administrator compares them to the paper firms and accesses the Flood Hazard Determination tool located at www.mapwv.gov/flood. By comparing the maps, and determining the location of the structure, the floodplain administrator sends a letter to the lender stating that the property in question appears to be in or out of the floodplain, whichever the case may be, and that usually satisfy's the lender. In a case where it is too close to call, the floodplain administrator recommends to the property owner that they obtain an Elevation Certificate and present it to the lender. If the property is located in the floodplain, and the people are getting ready to build, instructions are given to them as to how to proceed. This information can also be accessed at www.cabellcounty.org. Once on the web-site, the individual calling the office is guided how to proceed to obtain the necessary instructions for building in a flood hazard area. They are instructed to click on Commission, to scroll down and click on ordinances and permits, and to open the two documents dealing with floodplain information and to download a permit application.

b. Sometimes people have questions on how to have their property removed from the SFHA. In that case, the floodplain administrator provides them with an informational packet that contains instructions and an application for a (LOMA, LOMR-F or a CLOMA or CLOMR-F based on their circumstances.) Once the paperwork has been completed, the application is submitted to FEMA and notification is sent back to the county floodplain administrator who maintains a file of all the Letters of Map Amendment.

- c. From time to time, , residents call in to determine how to place fill on their property. If the property is in a floodplain, instructions, and a copy of the county floodplain ordinance is provided with guidelines for obtaining a fill permit. These instructions can also be found on-line at www.cabellcounty.org and follows the same procedure as in paragraph 3 above. However, if the person is planning to place fill in an area that is close to a floodway, the floodplain administrator requests that a HEC analysis be completed prior to issuing a fill permit. If the HEC analysis shows zero rise to the BFE in the floodway, then a permit would be issued, otherwise a permit is not issued. The floodplain administrator would then advise the person doing the fill, that once completed and with the proper documentation, the property could be removed from the SFHA through a LOMR-F.**
- d. Occasionally, a resident will call that is having trouble with a neighbor who is working in the floodplain. The floodplain administrator secures whatever information they can from the resident, i.e. name of individual doing the fill, or other development, the location of the development taking place, etc. The floodplain administrator then sends the Compliance officer for Cabell County to the job site, to check things out. This usually works, however, when it doesn't, the floodplain administrator contacts the person and if the person doing the development doesn't comply, a letter is sent advising them they have 15 days to bring the development into compliance with the local floodplain ordinance. This works 99.9% of the time.**
- e. When Cabell County was in the process of updating their original firm maps to D-firms, the floodplain administrator worked with the Cabell County Assessor's office to overlay the new D-Firms over the existing firm maps. This allowed the office to identify the properties that were brought into the SFHA. A multitude (approximately 500) letters were mailed to the residents/property owners/business owners advising them that their property was being brought into the SFHA and how to proceed to obtain flood insurance. The floodplain administrator worked with the**

NFIP Continued

- residents, answered their questions, and referred them to other agencies for information. Two – three meetings were held, advertisements were placed in the local newspaper advising of the time and date. This was called the Cabell County Project Outreach.**
- f. The Cabell County Floodplain Administrator works with lenders, insurance agencies, residents, businesses, developers, to lend assistance in determining if the locations they have questions about are in a Special Flood Hazard Area (SFHA). Occasionally, the Cabell County Floodplain Administrator will be asked to speak at various functions with regard to floodplain issues throughout Cabell County and to the Special Flood Hazard Areas and how to build structures in those areas so that they are in compliance with the county floodplain ordinance.**
- g. The Cabell County Floodplain Administrator – after a declared disaster, compiles information for the submission of a Hazard Mitigation Grant Application, processes the application, and administers the project as the project coordinator. The Cabell County Floodplain Information keeps information on the severity of the event, the number of structures that were damaged, and the number of structures that have been mitigated.**
- h. The Floodplain Administrator – wears many hats, and performs many duties associated with the day to day activities for development in Cabell County. The goal is effective, enforceable floodplain management to reduce the loss of life, property, and possessions.**
- i. The Cabell County Floodplain Administrator maintains brochures, handouts, booklets, pamphlets, and other information vital to the maintenance of the floodplain and to the residents.**

NFIP Continued

- j. Working with the Cabell County Assessor's office, the Cabell County Floodplain Administrator has calculated that there are currently 2,023 properties located in the flood prone areas of Cabell County.***

Floodplain Management:

- 1. Cabell County amended and adopted a compliant floodplain ordinance on September 6, 2007***
- 2. Cabell County and the Cities of Huntington, Milton and Barboursville Issue permits for all proposed development in the SFHA. For Example in rural Cabell County, West Virginia from January 2005 – December 2009 approximately 59 permits were issued for new construction, 11 permits for commercial development, 19 fill permits, 8 remodel permits and 10 demolition permits.***
- 3. Obtain, review and utilize any Base Flood Elevation and floodway data, and require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres***
- 4. Identify measures to keep all new and substantially improved construction reasonable safe from flooding to or above the BFD, including anchoring, using flood resistant materials, designing or locating utilities and service facilities to prevent water damage***
- 5. Document and maintain records of elevation data that document the lowest floor elevation for new or substantially improved structures***
- 6. Require a 1' freeboard***
- 7. Require HEC analysis for properties who wish to build in the designated floodway***

Flood Insurance:

- 1. Educate community members about the availability and value of flood insurance***
 - 2. Inform community property owners about changes to the D-Firm that would impact their flood insurance rates***
-
- 3. Provide general assistance to community members relating to insurance issues***

Region 2 Planning and Development Council
Hazard Mitigation Plan

Cabell County WV Repetitive Loss Structures Data

State Name	Community Name	Comm Nbr	Prop Locat	Mitigated?	Insured?	City	State	Prior City	Prior State	Dt of Loss	Occupancy	Zone	Firm	Dt of Loss	Zone	Firm	Dt of Loss	Occupancy
WEST VIRGINIA	CABELL COUNTY*	54018	0024885	NO	NO	SALT ROCK	WV			08/23/1979	SINGLE FMLY	EMG	N	12/11/1978	EMG			
WEST VIRGINIA	CABELL COUNTY*	54018	0083212	NO	YES	MILTON	WV	MILTON	WV	08/18/2003	NON RESIDENT	A	N	03/01/1997	A	N	07/31/1996	NON RESIDENT
WEST VIRGINIA	CABELL COUNTY*	54018	0123734	NO	SDF	CULLODEN	WV			08/30/2006	SINGLE FMLY	X	N	06/21/2004	X	N	05/28/2004	SINGLE FMLY
WEST VIRGINIA	CABELL COUNTY*	54018	0127533	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	A	N	02/18/2003	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0127377	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	X	N	03/01/1997	AE	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0125429	NO	YES	MILTON	WV			11/11/2003	SINGLE FMLY	A	N	03/01/1997	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0039779	NO	NO	BARBOURSVILLE	WV			07/12/1980	SINGLE FMLY	EMG	N	06/23/1979	EMG	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0117794	NO	NO	HUNTINGTON	WV			03/29/2002	SINGLE FMLY	A	N	02/18/2000	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0122933	NO	NO	MILTON	WV	MILTON	WV	11/13/2003	SINGLE FMLY	AE	N	02/17/2003	AE	N	03/03/1997	SINGLE FMLY
WEST VIRGINIA	CABELL COUNTY*	54018	0024912	NO	YES	MILTON	WV	MILTON	WV	03/01/1997	SINGLE FMLY	AE	N	12/10/1978			01/27/1978	SINGLE FMLY
WEST VIRGINIA	CABELL COUNTY*	54018	0054883	NO	NO	MILTON	WV	MILTON	WV	12/01/1990	SINGLE FMLY	AE	N	02/18/1989	AE	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0206492	NO	NO	MILTON	WV	MILTON	WV	07/19/1998	SINGLE FMLY	AE	N	06/23/1996	AE	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0084547	NO	NO	MILTON	WV	MILTON	WV	11/13/2003	SINGLE FMLY	A	N	02/18/2003	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0125730	NO	YES	MILTON	WV	MILTON	WV	11/13/2003	SINGLE FMLY	A	N	02/18/2003	A	N	03/02/1997	SINGLE FMLY
WEST VIRGINIA	CABELL COUNTY*	54018	0128566	NO	NO	MILTON	WV	MILTON WV	WV	11/14/2003	SINGLE FMLY	AE	N	03/01/1997	AE	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0127182	NO	NO	MILTON	WV	MILTON	WV	11/13/2003	SINGLE FMLY	AE	Y	03/02/1997	AE	Y		
WEST VIRGINIA	CABELL COUNTY*	54018	0128428	NO	NO	HUNTINGTON	WV			08/18/2003	SINGLE FMLY	AE	N	03/02/1997	AE	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0128587	NO	YES	MILTON	WV	MILTON WV	WV	11/13/2003	SINGLE FMLY	A	N	03/01/1997	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0122794	NO	YES	CHA	WV			11/13/2003	SINGLE FMLY	AE	N	02/17/2003	AE	N	03/03/1997	SINGLE FMLY
WEST VIRGINIA	CABELL COUNTY*	54018	0025070	NO	NO	HUNTINGTON	WV	HUNTINGTON	WV	03/01/1979	NON RESIDENT	EMG	N	12/09/1978	EMG			
WEST VIRGINIA	CABELL COUNTY*	54018	0128988	NO	YES	HUNTINGTON	WV			09/18/2004	SINGLE FMLY	A	N	02/18/2000	A	N		
WEST VIRGINIA	CABELL COUNTY*	54018	0117948	NO	YES	HUNTINGTON	WV			09/18/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N	02/18/2000	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0134780	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0117711	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N	02/18/2000	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0108014	NO	SDF	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N	02/18/2000	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0120787	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0132818	NO	YES	HUNTINGTON	WV			09/18/2004	SINGLE FMLY	AE	N	02/18/2000	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0118138	NO	NO	HUNTINGTON	WV			03/20/2002	SINGLE FMLY	AE	N	02/18/2000	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0107794	NO	NO	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N	02/18/2000	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0117787	NO	NO	HUNTINGTON	WV			03/20/2002	SINGLE FMLY	X	N	02/18/2000	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0121158	NO	SDF	HUNTINGTON	WV	HUNTINGTON	WV	03/18/2002	SINGLE FMLY	X	N	02/18/2000	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0135211	NO	NO	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0122858	NO	YES	TALCOTT	WV	TALCOTT	WV	02/23/2003	SINGLE FMLY	X	N	01/20/1996	B	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0117757	NO	NO	HUNTINGTON	WV			03/20/2002	SINGLE FMLY	AE	N	05/17/1995	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0117782	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N	02/18/2000	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0138187	NO	YES	HUNTINGTON	WV			09/08/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0108015	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	AE	N	02/18/2000	AE	N	05/28/1990	SINGLE FMLY
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0119585	NO	NO	HUNTINGTON	WV			03/20/2002	SINGLE FMLY	AE	N	02/18/2000	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0107899	NO	YES	HUNTINGTON	WV			02/18/2000	SINGLE FMLY	AE	N	05/28/1990	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0133498	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	X	N	03/02/2002	X	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0138090	NO	YES	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N		
WEST VIRGINIA	HUNTINGTON, CITY OF	54018	0134853	NO	NO	HUNTINGTON	WV			09/17/2004	SINGLE FMLY	AE	N	03/02/2002	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0128793	NO	YES	MILTON	WV	MILTON	WV	09/17/2004	SINGLE FMLY	X	N	11/13/2003	X	N	03/03/1997	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0127282	NO	NO	CULLODEN	WV	CULLODEN	WV	11/13/2003	SINGLE FMLY	AE	N	03/18/2003	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0127051	NO	NO	MILTON	WV			11/18/2003	SINGLE FMLY	AE	N	03/01/1997	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0091089	NO	NO	MILTON	WV	MILTON WV	WV	02/17/2003	SINGLE FMLY	AE	N	03/01/1997	AE	N	12/09/1978	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0091071	NO	NO	MILTON	WV			11/20/2003	SINGLE FMLY	AE	N	03/01/1997	AE	N	12/09/1978	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0122898	NO	YES	MILTON	WV	MILTON	WV	11/13/2003	NON RESIDENT	AE	N	02/18/2003	AE	N	03/01/1997	NON RESIDENT
WEST VIRGINIA	MILTON, CITY OF	54019	0091072	NO	SDF	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/15/2003	AE	N	03/02/1997	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0091070	NO	SDF	MILTON	WV	MILTON	WV	11/13/2003	SINGLE FMLY	AE	N	02/15/2003	AE	N	03/02/1997	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0122893	NO	NO	MILTON	WV			02/18/2003	NON RESIDENT	AE	N	03/01/1997	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0091073	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/18/2003	AE	N	03/02/1997	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0123343	NO	YES	MILTON	WV			11/13/2003	NON RESIDENT	X	N	02/17/2003	X	N	03/02/1997	NON RESIDENT
WEST VIRGINIA	MILTON, CITY OF	54019	0128901	NO	NO	MILTON	WV			11/13/2003	NON RESIDENT	AE	N	03/01/1997	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0090333	NO	YES	MILTON	WV			11/12/2003	NON RESIDENT	AE	N	03/01/1997	AE	N	12/09/1978	NON RESIDENT
WEST VIRGINIA	MILTON, CITY OF	54019	0090334	NO	YES	MILTON	WV			11/12/2003	NON RESIDENT	AE	N	03/01/1997	AE	N	12/09/1978	NON RESIDENT
WEST VIRGINIA	MILTON, CITY OF	54019	0127291	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/15/2003	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0128739	NO	NO	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/15/2003	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0128123	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/17/2003	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0116983	NO	YES	MILTON	WV	MILTON	WV	05/18/2003	SINGLE FMLY	X	N	07/28/2001	X	N	07/18/1988	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0123254	NO	YES	MILTON	WV			05/18/2003	SINGLE FMLY	AE	N	07/18/1988	AE	N		
WEST VIRGINIA	MILTON, CITY OF	54019	0122835	NO	YES	MILTON	WV			11/13/2003	SINGLE FMLY	AE	N	02/15/2003	AE	N	03/01/1997	SINGLE FMLY
WEST VIRGINIA	MILTON, CITY OF	54019	0128586	NO	NO	MILTON	WV			11/13/2003	ASSMD CONDO	X	N	02/18/2003	X	N		

Period of Occurrence:	Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (1998 – 2009):	18
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

Identification of floodplain areas within the county and its municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP).

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

Lincoln County has a history of flooding. In the past 10 years six (6) deaths and over \$45 million in damages to property have been reported. Municipalities are generally located in proximity to areas that experience flooding due to the terrain and amount of streams and rivers in those areas.

Significant flooding has forced the county to use mitigation actions such as relocations and property buyouts. Lincoln County has been successful in lowering the damage costs tremendously by applying for grant-funded projects. Other areas outside of municipalities still need to be addressed as they are still vulnerable.

In terms of repeated flooding problems, Lincoln County and its municipalities have the following numbers of properties listed by the Federal Emergency Management Agency (FEMA) as “repetitive loss properties”.

- Lincoln County: 20 total properties
- Single Family: 16
- Non-resident: 4
- Hamlin: 2 total properties

- Single Family: 2

Both local municipal governments in Lincoln County are participants in the National Flood Insurance Program (NFIP). These jurisdictions have participated since:

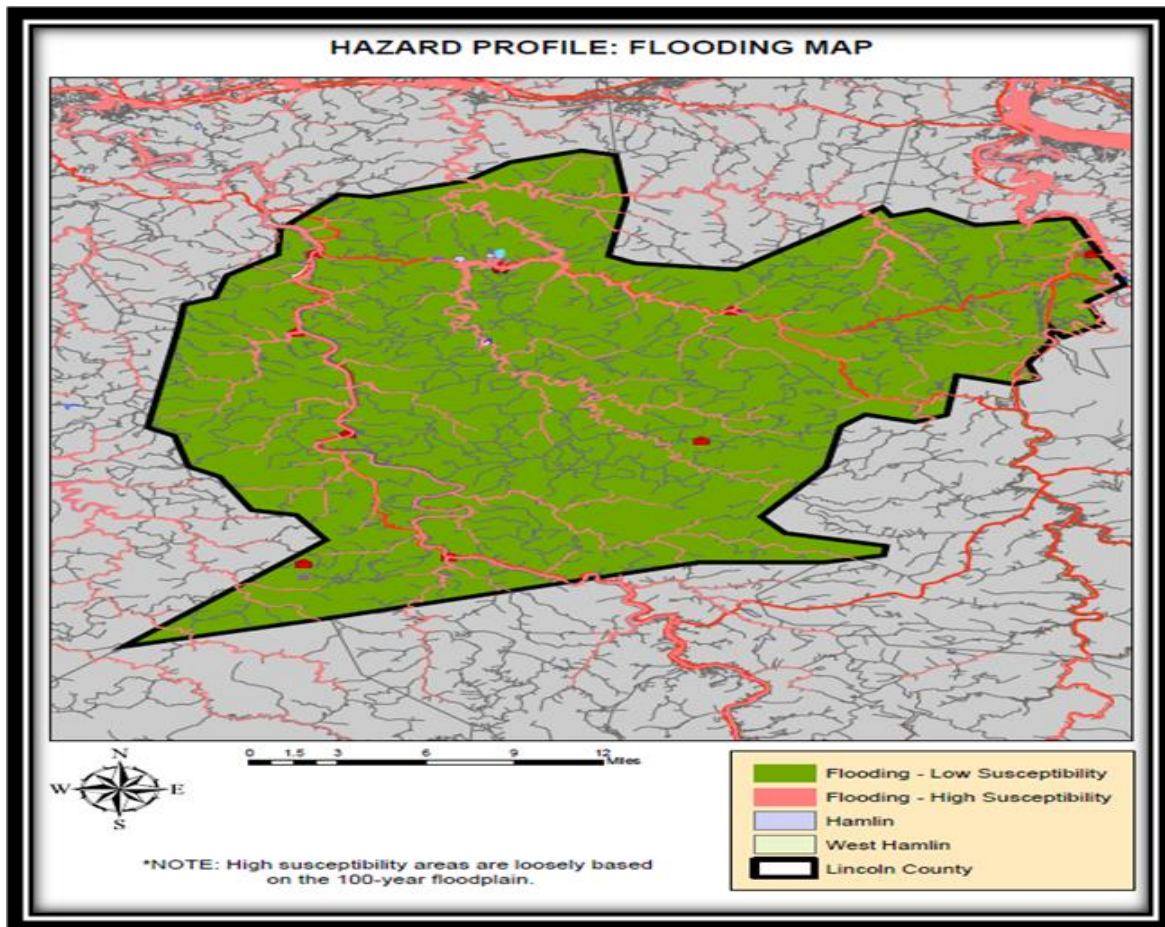
- Lincoln County: September 18, 1987
- Town of Hamlin: September 4, 1987
- Town of West Hamlin: September 4, 1987

Each jurisdiction has designated an “NFIP Coordinator”. The NFIP Coordinator maintains the jurisdiction’s floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	10,099	1,212	12	\$363,564,000	\$43,627,680	12	22,386	2,666	12
<i>Commercial</i>	264	5	2	\$86,793,468	\$1,735,869	2	940	19	2
<i>Industrial</i>	3	0	7	\$19,890,170	\$1,392,312	7	824	58	7
<i>Agricultural</i>	215	0	0	\$28,931,156	\$0	0	68	0	0
<i>Religious/Non-Profit</i>	61	2	3	\$6,100,000	\$183,000	3	3,050	92	3
<i>Government</i>	9	0	1	\$45,204,931	\$452,049	1	867	9	1
<i>Education</i>	10	0	1	\$43,000,000	\$430,000	1	387	4	1
<i>Utilities</i>	14	1	5	\$63,071,723	\$3,153,586	5	116	6	5
Total	10,675	1,220	24	\$656,555,448	\$50,974,497	24	28,638	2,873	10

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Logan County:

Flooding is arguably the highest priority hazard in Logan County. Logan County is very susceptible to flooding largely due to the physical geography of the county, which includes several rivers and creeks as well as varied topography. The worst floods usually occur when a river overflows its banks. Periodic floods occur naturally on most rivers, forming an area known as a “floodplain”. With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood. Identification of floodplain areas within the county and its municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP).

Period of Occurrence:	Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (1996 – 2008):	25
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

According to the NCDC database, Logan County has experienced 25 floods since 1996. Those floods have caused over \$40 million in damage and have been blamed for as many as five (5) deaths. Floods in 2002, 2003, and 2004 were particularly devastating, accounting for nearly \$22 million dollars of the total damage since 1996.

REPETITIVE LOSS PROPERTIES

In terms of repeated flooding problems, Logan County and its municipalities have the following numbers of properties listed by the Federal Emergency Management Agency (FEMA) as “repetitive loss properties”.

- Logan County: 228 total properties
- 2-4 Family – 6
- Assmd Condo – 16
- Non-Residential – 112
- Other Residential – 5
- Single Family – 108
- Unknown – 1
- Chapmanville: 1 total property (non-residential)
- Logan: 3 total properties
- Single Family – 2
- Non-Residential – 1
- Man: 1 total property (single family)
- West Logan: 2 total properties (one [1] each non-residential and single family)

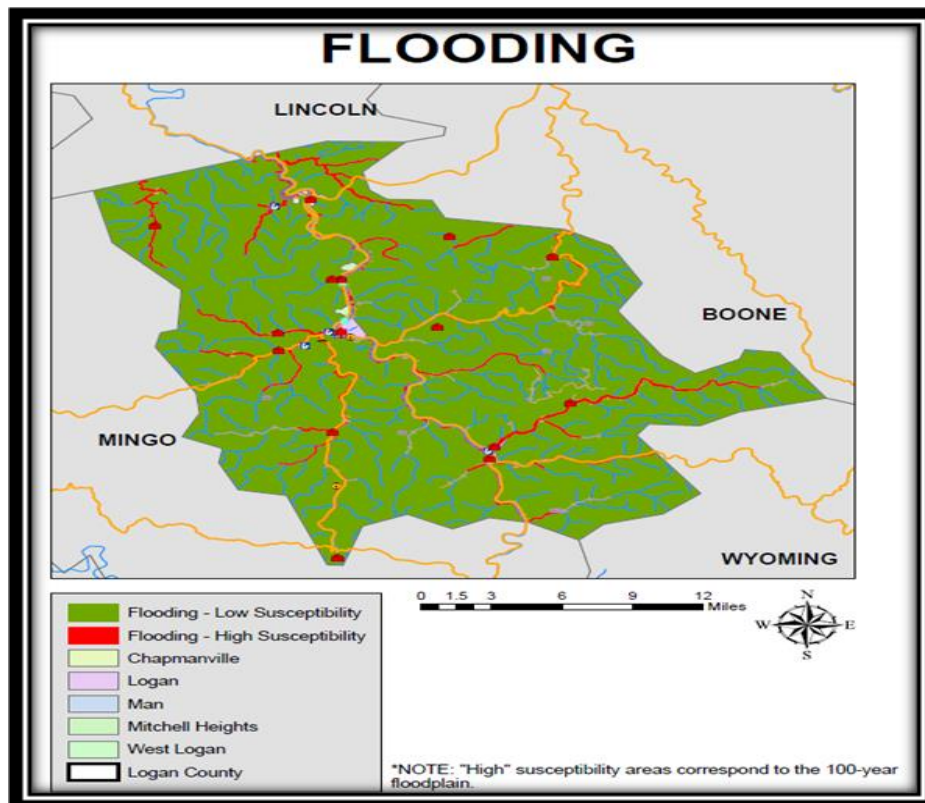
All six (6) governments in Logan County are participants in the National Flood Insurance Program (NFIP). These jurisdictions have participated since:

Logan County: April 1972, Town of Chapmanville: August 1971, City of Logan: July 1971, Town of Man: September 1971, Town of Mitchell Heights: August 1971, Town of West Logan: June 1972.

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	17,383	3,500	20	\$1,086,437,500	\$217,287,500	20	35,629	7,126	20
Commercial	746	250	34	\$564,744,781	\$192,013,226	34	4,995	1,698	34
Industrial	19	5	26	\$269,537,282	\$70,079,693	26	2,457	639	26
Agricultural	34	25	74	\$218,196,847	\$161,465,667	74	50	37	74
Religious/Non-Profit	75	18	24	\$11,250,000	\$2,700,000	24	3,750	900	24
Government	11	4	36	\$231,031,956	\$83,171,504	36	2,005	722	36
Education	19	1	5	\$75,000,000	\$3,750,000	5	1,550	78	5
Utilities	10	5	50	\$84,994,123	\$42,497,062	50	474	237	50
Total	18,297	3,808	21	\$2,541,192,490	\$772,964,652	30	50,910	11,436	22

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Mason County:

Flooding is arguably the highest priority hazard in Mason County. Mason County is very susceptible to flooding largely due to the physical geography of the county, which includes several rivers and creeks as well as varied topography. The worst floods usually occur when a river overflows its banks. Periodic floods occur naturally on most rivers, forming an area known as a “floodplain”. With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood. Identification of floodplain areas within the county and its municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP).

Period of Occurrence:	Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (1994 – 2009):	29
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

According to the NCDC Event Record database, Mason County has experienced 29 flooding events since 1994. One (1) death and one (1) injury have been attributed to these events, as has a total monetary loss of nearly \$15.8 million. With the exception of two (2) of these events (February 1994 and March 2004), all of these floods have resulted in at least \$2,000 in damage. Other floods have resulted in significant damage. An event in March of 1997 resulted in \$300,000 damage in Mason County alone. Other events, such as the one in September of 2004, were listed as causing \$9.5 million in damage, only some of which was in Mason County. Data such as this leads to the determination that flooding is a significant hazard in Mason County. Sentiment from local officials supports such an assertion. Additional evidence includes the completion of previous mitigation projects (e.g. the Pt. Pleasant floodwall). Flooding appears primarily concentrated in areas identified by Flood Insurance Rate Maps (FIRMs). Some municipal areas, though, may be subject to flash flooding as heavy rains temporarily overwhelm stormwater management systems.

REPETITIVE LOSS PROPERTIES

In terms of repeated flooding problems, Mason County and its municipalities have the following numbers of properties listed by the Federal Emergency Management Agency (FEMA) as “repetitive loss properties”.

- Mason County: 7 total properties
- 2-4 Family: 1
- Non-Residential: 4
- Single Family: 2
- Henderson: 2 total properties (one [1] each: single family, assumed condo)
- New Haven: 1 single family structure
- Point Pleasant: 3 total properties
- Non-Residential: 1
- Single Family: 2

All local governments in Mason County are participants in the National Flood Insurance Program (NFIP). These jurisdictions have participated since:

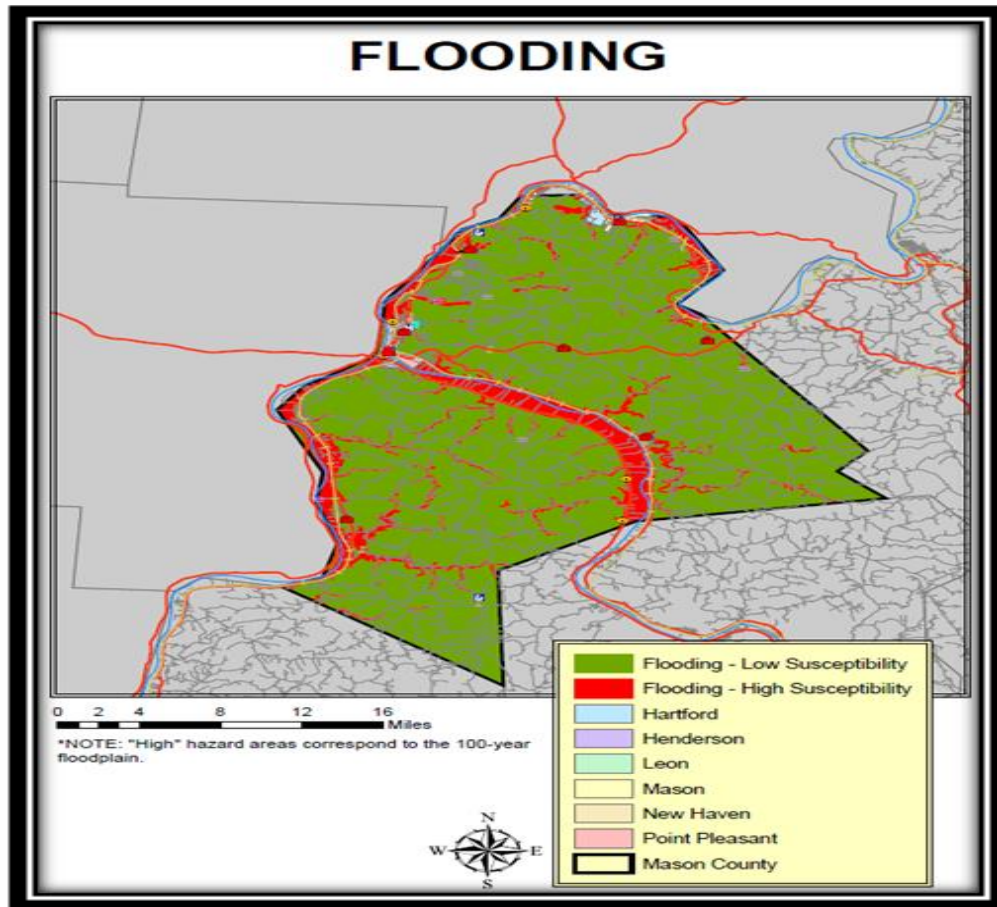
Mason County: January, 1980; Town of Hartford: February, 1978; Town of Henderson: May, 1978; Town of Leon: August, 1978; Town of Mason: February, 1978; Town of New Haven: July, 1978; City of Point Pleasant: May, 1978

Each jurisdiction has designated an “NFIP Coordinator”. The NFIP Coordinator maintains the jurisdiction’s floodplain ordinance and ensures that development is

compliant with that ordinance (and, consequently, the NFIP).

Hazard: Flooding									
Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	12,423	2,500	20%	\$808,737,300.00	\$161,747,460	20%	25,678	5,136	20%
<i>Commercial</i>	346	150	43%	\$86,961,635.00	\$37,393,503	43%	2,841	1,222	43%
<i>Industrial</i>	25	3	12%	\$35,198,757.00	\$4,223,851	12%	1,151	138	12%
<i>Agricultural</i>	946	500	53%	\$37,267,272.00	\$19,751,654	53%	1,310	694	53%
<i>Religious/Non-Profit</i>	72	15	21%	\$10,800,000.00	\$2,268,000	21%	3,600	756	21%
<i>Government</i>	7	0	0%	\$47,621,848.00	\$0	0%	1,570	0	0%
<i>Education</i>	14	0	0%	\$107,500,000.00	\$0	0%	1,032	0	0%
<i>Utilities</i>	10	8	80%	\$378,046,566.00	\$302,437,253	80%	197	158	80%
Total	13,843	3,176	23%	\$1,512,133,378.00	\$527,821,721	35%	37,379	8,103	22%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Do you know whether your critical facilities will be operational after a hazard event?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is there enough data to determine which assets are subject to the greatest potential damages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Mingo County

HAZARD EFFECTS

Flooding is arguably the highest priority natural hazard in Mingo County. Mingo County is very susceptible to flooding largely due to the physical geography of the county, which includes several rivers and creeks as well as varied topography. The worst floods usually occur when a river overflows its banks. Periodic floods occur naturally on most rivers, forming an area known as a floodplain. With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood. Identification of floodplain areas within the county and the incorporated municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP). GIS maps developed for this project display the location of all major water bodies in the county and delineate the 100-year floodplain boundaries. These are areas that have a one (1) percent chance of equaling or exceeding the recorded base flood elevation during any year.

Period of Occurrence:	Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (1998 – 2008):	18
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

Mingo County has a long history of flooding. Eighteen (18) floods have been reported to the National Climatic Data Center (NCDC) since 1998. Collectively, these floods have caused three (3) deaths. Flooding has accounted for in excess of \$34 million in damage over the past decade. Major floods occurred in 2002, 2003, and 2004. Smaller but significant floods causing significant damage have occurred as recently as 2007. Several areas in Mingo County have repeated flooding problems. The City of Williamson is now protected by the flood wall, but structures outside the wall are threatened by frequent flooding due to the proximity to the Tug Fork River. Delbarton, also close to the Tug Fork River, suffers from repeated flood damages as well.

REPETITIVE LOSS PROPERTIES

In terms of repeated flooding problems, the following are listed by the Federal Emergency Management Agency (FEMA) as “repetitive loss properties” in Mingo County

and the City of Williamson. Repetitive loss properties are shown graphically on the mapping contained in this section. Mingo County has 67 repetitive loss properties total spread throughout the municipalities and unincorporated areas. A large majority, 46, are single family structures, 13 are non-resident structures, 5 condos, and 3 2-4 family structures.

All five (5) local governments in Mingo County are participants in the National Flood Insurance Program (NFIP). These jurisdictions have participated since:
Barbour County: December 1980; Town of Delbarton: March 1977; Town of Gilbert: May 1977;
Town of Kermit: March 1978; Town of Matewan: February 1970; City of Williamson: January 1981
Each jurisdiction has designated an "NFIP Coordinator". The NFIP Coordinator maintains the jurisdiction's floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).

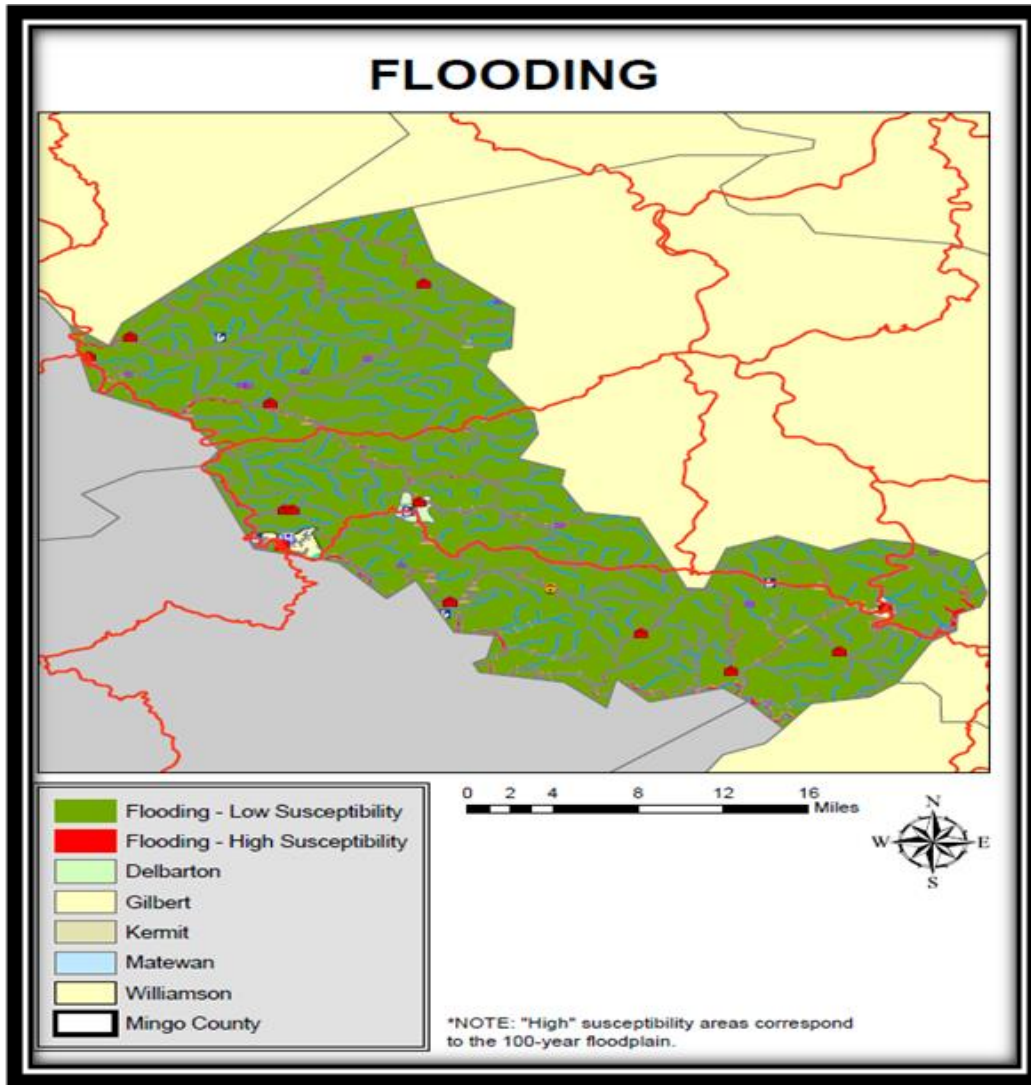
ANTICIPATED VULNERABILITIES/MAPPING

Mingo County is at high risk for floods due to the amount of rivers and creeks and the topography of the county. History has shown that many floods have taken place very recently. Refer to the flood maps for a graphical representation of the areas that are anticipated to be affected by flooding conditions. The map also shows the location of repetitive loss properties.

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	13,335	5,867	44	\$488,861,100	\$215,098,884	44	27,100	11,924	44
<i>Commercial</i>	511	107	21	\$87,682,496	\$18,413,324	21	2,614	549	21
<i>Industrial</i>	17	3	15	\$88,559,321	\$13,283,898	15	2,636	395	15
<i>Agricultural</i>	258	13	5	\$43,841,248	\$2,192,062	5	37	2	5
<i>Religious/Non-Profit</i>	51	5	9	\$7,650,000	\$688,500	9	2,550	230	9
<i>Government</i>	7	2	25	\$43,841,248	\$10,960,312	25	1,296	324	25
<i>Education</i>	18	2	11	\$104,625,000	\$11,508,750	11	884	97	11
<i>Utilities</i>	8	1	10	\$157,082,402	\$15,708,240	10	1,769	177	10
Total	14,205	5,999	42	\$1,022,142,815	\$287,853,971	28	38,886	13,698	35

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



Wayne County

HAZARD EFFECTS

Flooding is arguably the highest priority natural hazard in Wayne County. Wayne County is very susceptible to flooding largely due to the physical geography of the county, which includes several rivers and creeks as well as varied topography. The worst floods usually occur when a river overflows its banks. Periodic floods occur naturally on most rivers, forming an area known as a floodplain. With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood. Identification of floodplain areas within the county and the incorporated municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP). GIS maps developed for this project display the location of all major water bodies in the county and delineate the 100-year floodplain boundaries. These are areas that have a one (1) percent chance of equaling or exceeding the recorded base flood elevation during any year.

Period of Occurrence:	Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (2003 – 2008):	14
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

Wayne County has a long history of flooding. Fourteen (14) floods have been reported to the National Climatic Data Center (NCDC) since 2003. Collectively in Wayne and surrounding counties, these floods have caused six (6) deaths. Flooding has accounted for in excess of \$47 million in damage over the past five (5) years. Major floods occurred in 2005 and 2006. Smaller but significant floods causing significant damage have occurred as recently as 2006.

REPETITIVE LOSS PROPERTIES

In terms of repeated flooding problems, the following are listed by the Federal Emergency Management Agency (FEMA) as “repetitive loss properties” in Wayne County. Further, repetitive loss properties are shown graphically on the mapping contained in this section.

There are 26 repetitive loss properties listed in Wayne County 23 of which are single family properties. The county listing includes 2 assumed condo properties and 1 non-resident property.

All 4 local governments in Wayne County are participants in the National Flood Insurance Program (NFIP). These jurisdictions have participated since the following dates:

Wayne County: September 1987; City of Ceredo: May 1989; Town of Fort Gay: January 1979

City of Kenova: May 1989; Town of Wayne: September 1987

Each jurisdiction has designated an “NFIP Coordinator”. The NFIP Coordinator maintains the jurisdiction’s floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).

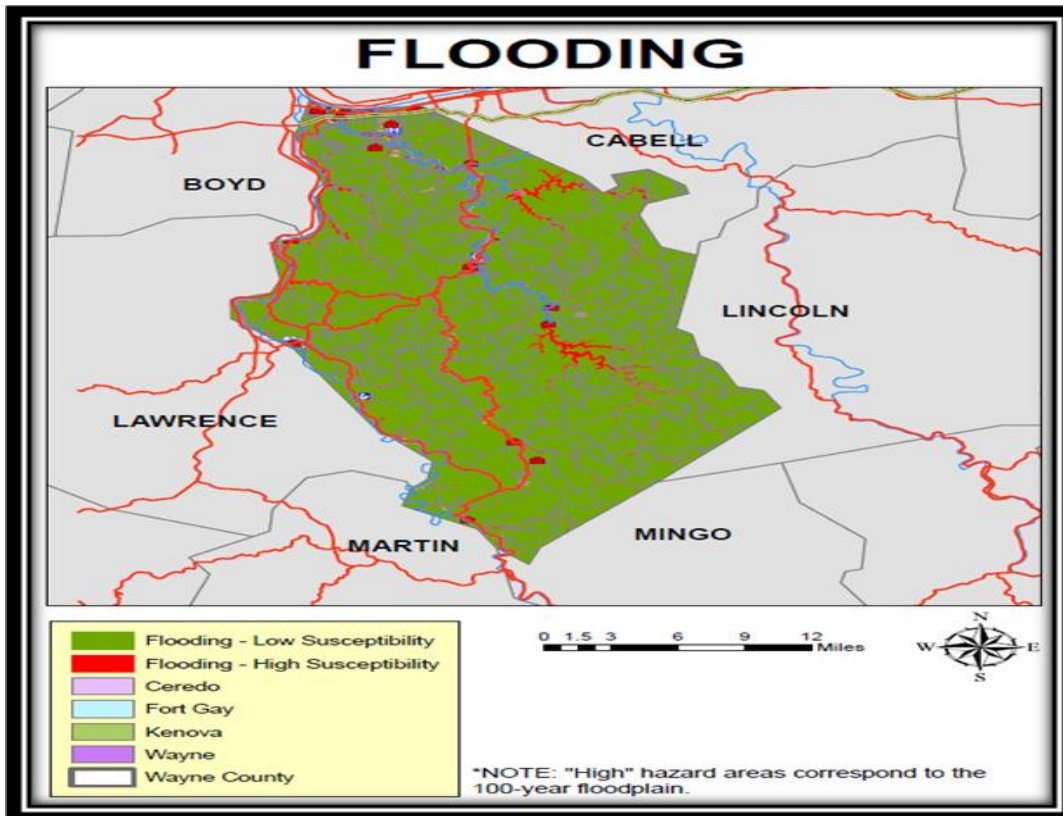
ANTICIPATED VULNERABILITIES/MAPPING

Wayne County is at high risk for floods due to the amount of rivers and creeks and the topography of the county. History has shown that many floods have taken place very recently. Refer to the flood maps for a graphical representation of the areas that are anticipated to be affected by flooding conditions. The map also shows the location of repetitive loss properties.

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	19,436	2,332	12	\$741,677,760	\$89,001,331	12	41,647	4,998	12
Commercial	211	4	2	\$61,521,793	\$5,784,883	2	3,293	66	2
Industrial	16	1	7	\$34,178,774	\$8,633,499	7	1,794	126	7
Agricultural	151	0	0	\$18,798,326	\$340,000	2	130	0	0
Religious/Non-Profit	90	3	3	\$13,500,000	\$500,000	4	4,500	135	3
Government	12	0	1	\$123,961,770	\$1,239,617	1	3,047	30	1
Education	22	0	1	\$95,204,308	\$13,490,641	1	733	7	1
Utilities	8	0	5	\$183,573,749	\$3,120,000	2	258	13	5
Total	19,946	2,341	12	\$1,272,416,480	\$122,109,971	10	55,402	5,375	10

- | | | |
|---|-------------------------------------|-------------------------------------|
| | Yes | No |
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



2.2.4. Hailstorm

RESEARCH

- Interviews with Local Officials
- NCDC Event Records

HAZARD EFFECTS

When hail occurs, it can cause damage by battering crops, structures, automobiles, and transportation systems. When hailstorms are large, especially when combined with high winds, damage can be somewhat extensive. Hailstorms are more common in elevated areas, such as the mountains, than tropical areas since locations such as mountains are closer to the bottom of thunderstorms. In mountainous areas, the falling hail has less time to melt before touching the ground.

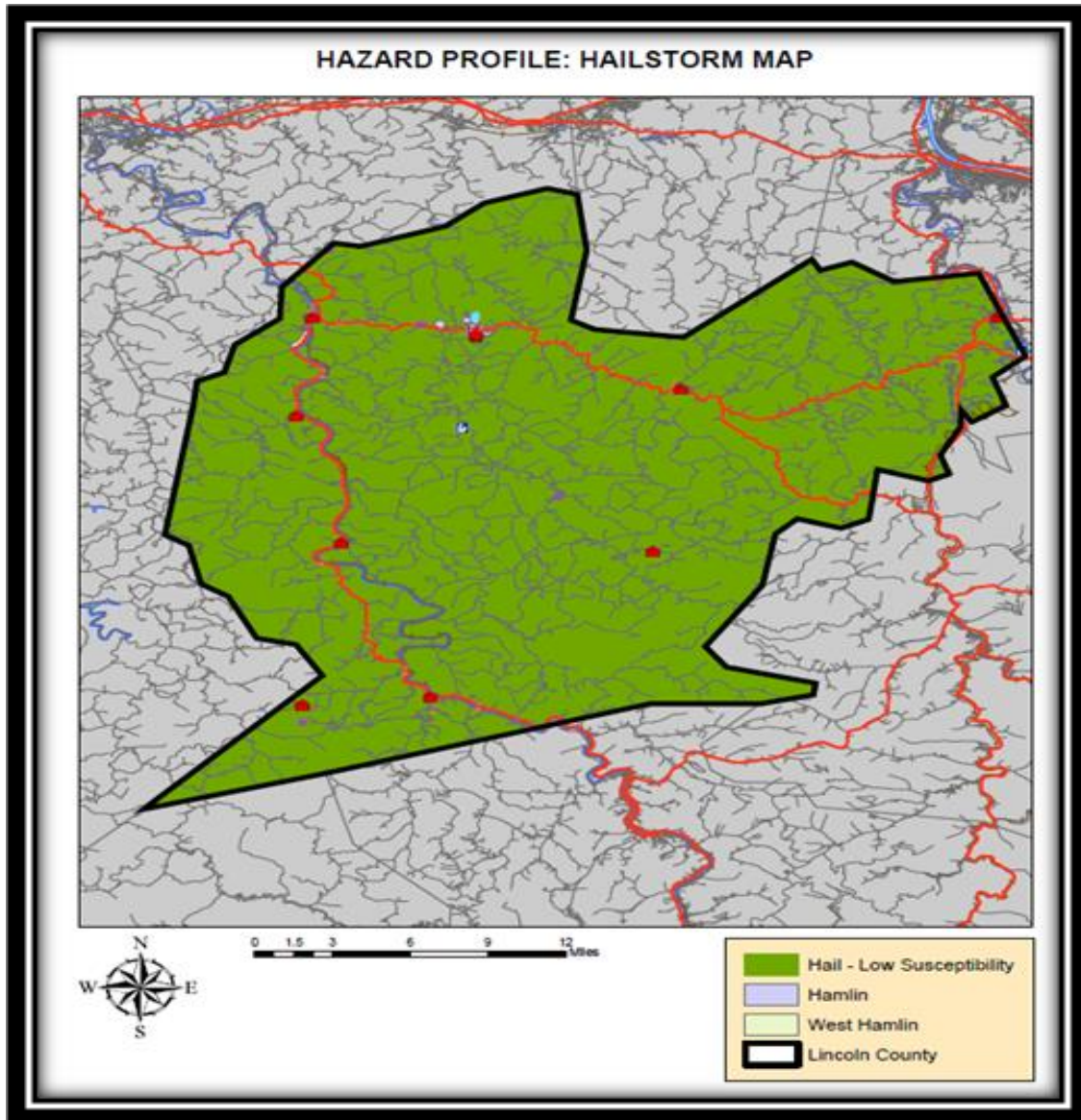
Lincoln County

Lincoln County is susceptible to hailstorms due to its varied topography. According to the National Climatic Data Center (NCDC), Lincoln County has experienced a total of 31 hailstorms in the past 30 years. Most hailstorms are not severe and Lincoln County has experienced only one hailstorm that caused any reported property or other damage during the past decade. Damages amounted to \$5,000 in a storm during June of 1998. The nineteen (19) reported storms contained hail ranging from 0.75-1.75 inches in diameter. Damage to community assets from hailstorms usually comes in the form of broken windows, damaged HVAC systems, destroyed landscaping, etc. Hail rarely does enough damage to close an asset or keep employees from reporting to work.

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	10,099	202	2	\$363,564,000	\$7,271,280	2	22,386	448	2
<i>Commercial</i>	264	8	3	\$86,793,468	\$2,603,804	3	940	28	3
<i>Industrial</i>	3	0	3	\$19,890,170	\$596,705	3	824	25	3
<i>Agricultural</i>	215	2	1	\$28,931,156	\$289,312	1	68	1	1
<i>Religious/Non-Profit</i>	61	1	1	\$6,100,000	\$61,000	1	3,050	31	1
<i>Government</i>	9	0	5	\$45,204,931	\$2,260,247	5	867	43	5
<i>Education</i>	10	1	9	\$43,000,000	\$3,870,000	9	387	35	9
<i>Utilities</i>	14	1	10	\$63,071,723	\$6,307,172	10	116	12	10
Total	10,675	216	2	\$656,555,448	\$23,259,520	4	28,638	622	2

- | | Yes | No |
|---|-----|----|
| 1. Do you know where your greatest damages may occur in your hazard areas? | X | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | X | |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | X | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | X | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | X | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | X | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | X |



Logan County

Logan County is susceptible to hailstorms due to its location in the mountainous portions of West Virginia. According to the National Climatic Data Center (NCDC), Logan County

experiences hailstorm relatively frequently. Most hailstorms are not severe. In total, all 37 hailstorms caused a combined \$70,000 in damage. These reported storms contained hail ranging from 0.75” to 1.75” diameter. Damage to community assets from hailstorms usually comes in the form of broken windows, damaged HVAC systems, destroyed landscaping, etc. Hail rarely does enough damage to close an asset or keep employees from reporting to work.

Period of Occurrence:	At any time
Number of Events to Date (1977 – 2008):	37
Probability of Event:	Likely – Usually associated with severe thunderstorms
Warning Time:	Minutes to hours
Potential Impacts:	Large hail can minimally damage property (facilities) as well as crops
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Minimal

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	17,383	17,383	100	\$1,086,437,500	\$108,644	0.01	35,629	35,629	100
<i>Commercial</i>	746	746	100	\$664,744,781	\$66,474	0.01	4,995	4,995	100
<i>Industrial</i>	19	19	100	\$269,537,282	\$26,954	0.01	2,457	2,457	100
<i>Agricultural</i>	34	34	100	\$218,196,847	\$21,820	0.01	50	50	100
<i>Religious/Non-Profit</i>	75	75	100	\$11,250,000	\$1,125	0.01	3,750	3,750	100
<i>Government</i>	11	11	100	\$231,031,956	\$23,103	0.01	2,005	2,005	100
<i>Education</i>	19	19	100	\$75,000,000	\$7,500	0.01	1,550	1,550	100
<i>Utilities</i>	10	10	100	\$84,994,123	\$8,499	0.01	474	474	100
Total	18,297	18,297	100	\$2,541,192,460	\$254,119	0.01	50,910	50,910	100

- | | Yes | No |
|---|-----|----|
| 1. Do you know where your greatest damages may occur in your hazard areas? | X | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | X | |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | X | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | X | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | X | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | X | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | X |



Mason County

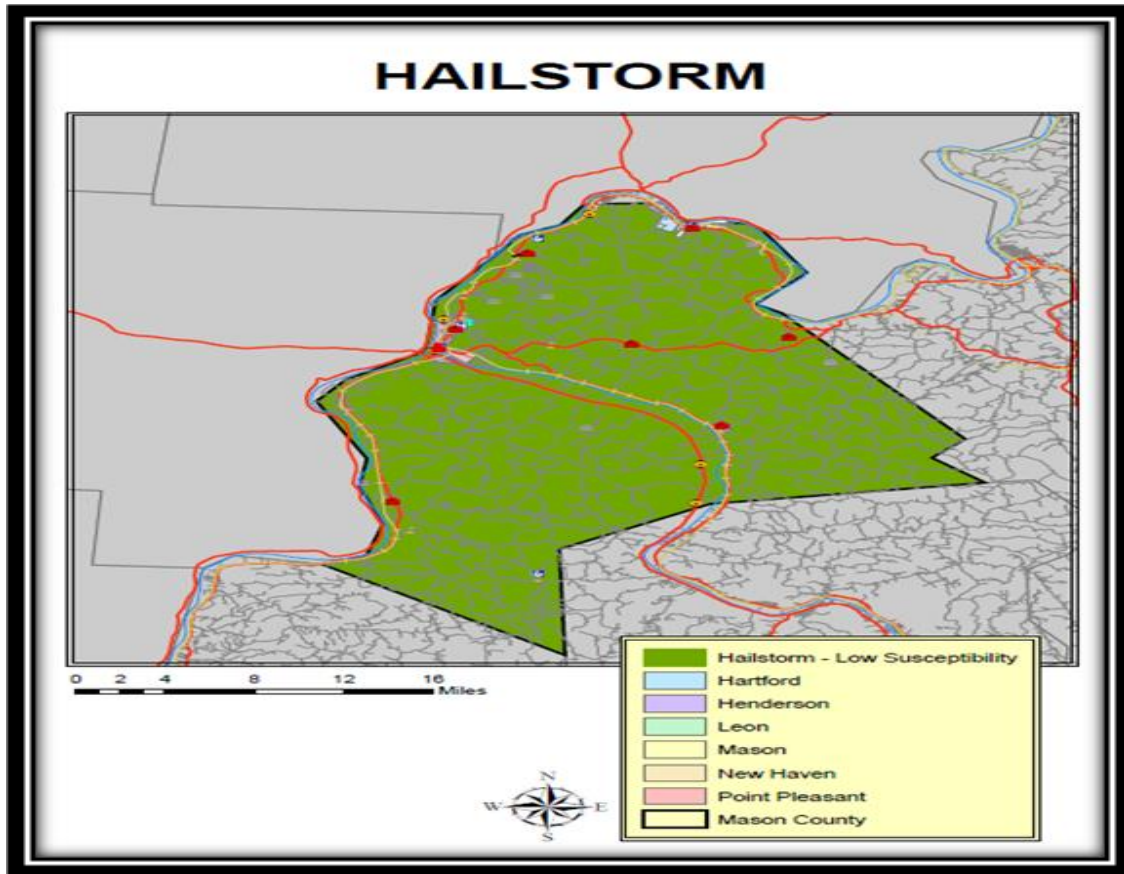
Mason County is susceptible to hailstorms due to its proximity to the mountainous portions of West Virginia. According to the National Climatic Data Center (NCDC), Mason County experiences hailstorm relatively frequently. Most hailstorms are not severe and Mason County has not experienced a hailstorm that caused any reported property or other damage during the past decade. These reported storms contained hail ranging from 0.02" to 2" in diameter. Damage to community assets from hailstorms usually comes in the form of broken windows, damaged HVAC systems, destroyed landscaping, etc. Hail rarely does enough damage to close an asset or keep employees from reporting to work.

Period of Occurrence:	At any time
Number of Events to Date (1983 – 2009):	33
Probability of Event:	Likely – Usually associated with severe thunderstorms
Warning Time:	Minutes to hours
Potential Impacts:	Large hail can minimally damage property (facilities) as well as crops
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Minimal

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	12,423	12,423	100%	\$808,737,300.00	\$80,874	0.01%	25,678	25,678	100%
<i>Commercial</i>	346	346	100%	\$86,961,635.00	\$8,898	0.01%	2,841	2,841	100%
<i>Industrial</i>	25	25	100%	\$35,198,757.00	\$3,520	0.01%	1,151	1,151	100%
<i>Agricultural</i>	946	946	100%	\$37,267,272.00	\$3,727	0.01%	1,310	1,310	100%
<i>Religious/Non-Profit</i>	72	72	100%	\$10,800,000.00	\$1,080	0.01%	3,600	3,600	100%
<i>Government</i>	7	7	100%	\$47,621,848.00	\$4,762	0.01%	1,570	1,570	100%
<i>Education</i>	14	14	100%	\$107,500,000.00	\$10,750	0.01%	1,032	1,032	100%
<i>Utilities</i>	10	10	100%	\$378,046,566.00	\$37,805	0.01%	197	197	100%
Total	13,843	13,843	100%	\$1,512,133,378.00	\$151,213	0.01%	37,379	37,379	100%

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



Mingo County

Mingo County is susceptible to hailstorms due to its proximity to the mountainous portions of West Virginia. According to the National Climatic Data Center (NCDC), Mingo County experiences hailstorm relatively frequently. Most hailstorms are not severe and Mingo County has not experienced a hailstorm that caused any reported property or other damage during the past decade. These reported storms contained hail ranging from 0.75 inches to 1.75 inches in diameter. Damage to community assets from hailstorms usually comes in the form of broken windows, damaged HVAC systems, destroyed landscaping, etc. Hail rarely does enough damage to close an asset or keep employees from reporting to work.

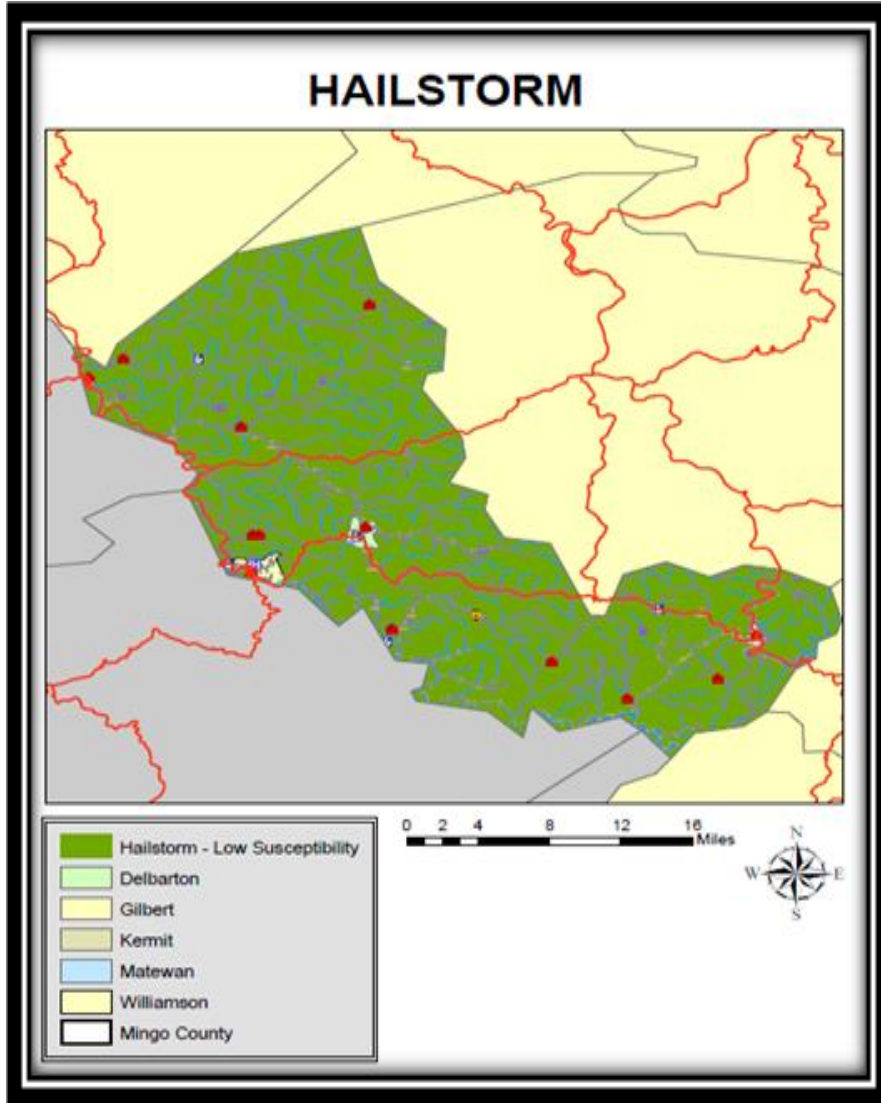
ANTICIPATED VULNERABILITIES/MAPPING

When a hail storm occurs, it can affect the entire county and is not targeted to one particular area. As such, all of Mingo County is equally at risk from hailstorms.

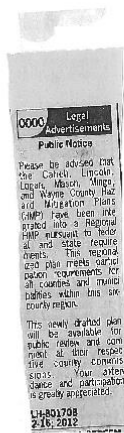
Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
<i>Residential</i>	13,335	1,200	9	\$488,861,100	\$43,997,499	9	27,100	2,439	9
<i>Commercial</i>	511	36	7	\$87,882,498	\$8,137,775	7	2,614	183	7
<i>Industrial</i>	17	1	5	\$88,559,321	\$4,427,988	5	2,636	132	5
<i>Agricultural</i>	258	10	4	\$43,841,248	\$1,753,650	4	37	1	4
<i>Religious/Non-Profit</i>	51	3	6	\$7,650,000	\$459,000	6	2,550	153	6
<i>Government</i>	7	1	8	\$43,841,248	\$3,507,300	8	1,296	104	8
<i>Education</i>	18	1	7	\$104,625,000	\$7,323,750	7	884	62	7
<i>Utilities</i>	8	0	3	\$157,082,402	\$4,712,472	3	1,786	53	3
Total	14,205	1,252	9	\$1,022,142,815	\$72,319,412	7	38,886	3,127	8

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Do you know where your greatest damages may occur in your hazard areas? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



APPENDIX 2



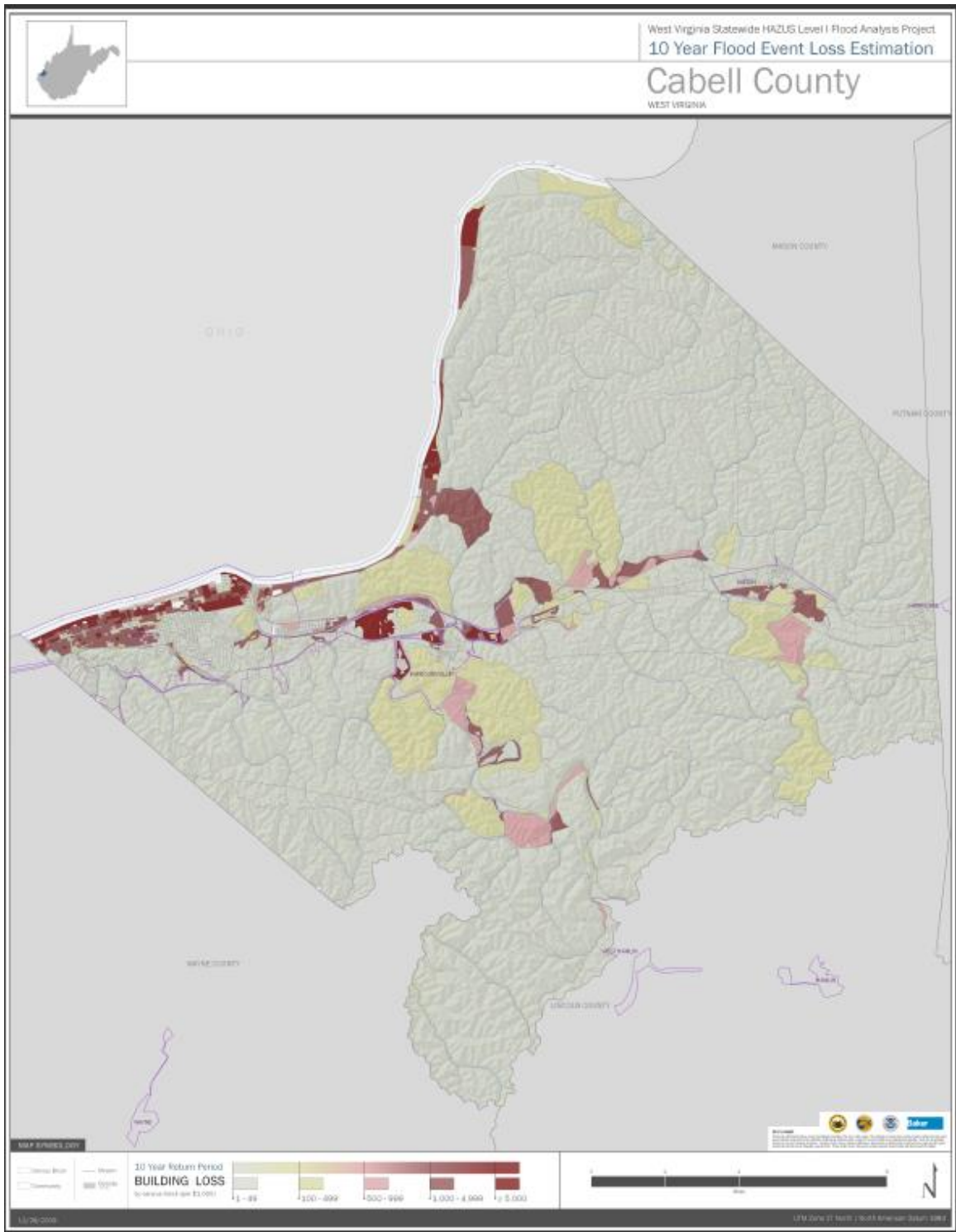
(Above ad reads as follows)

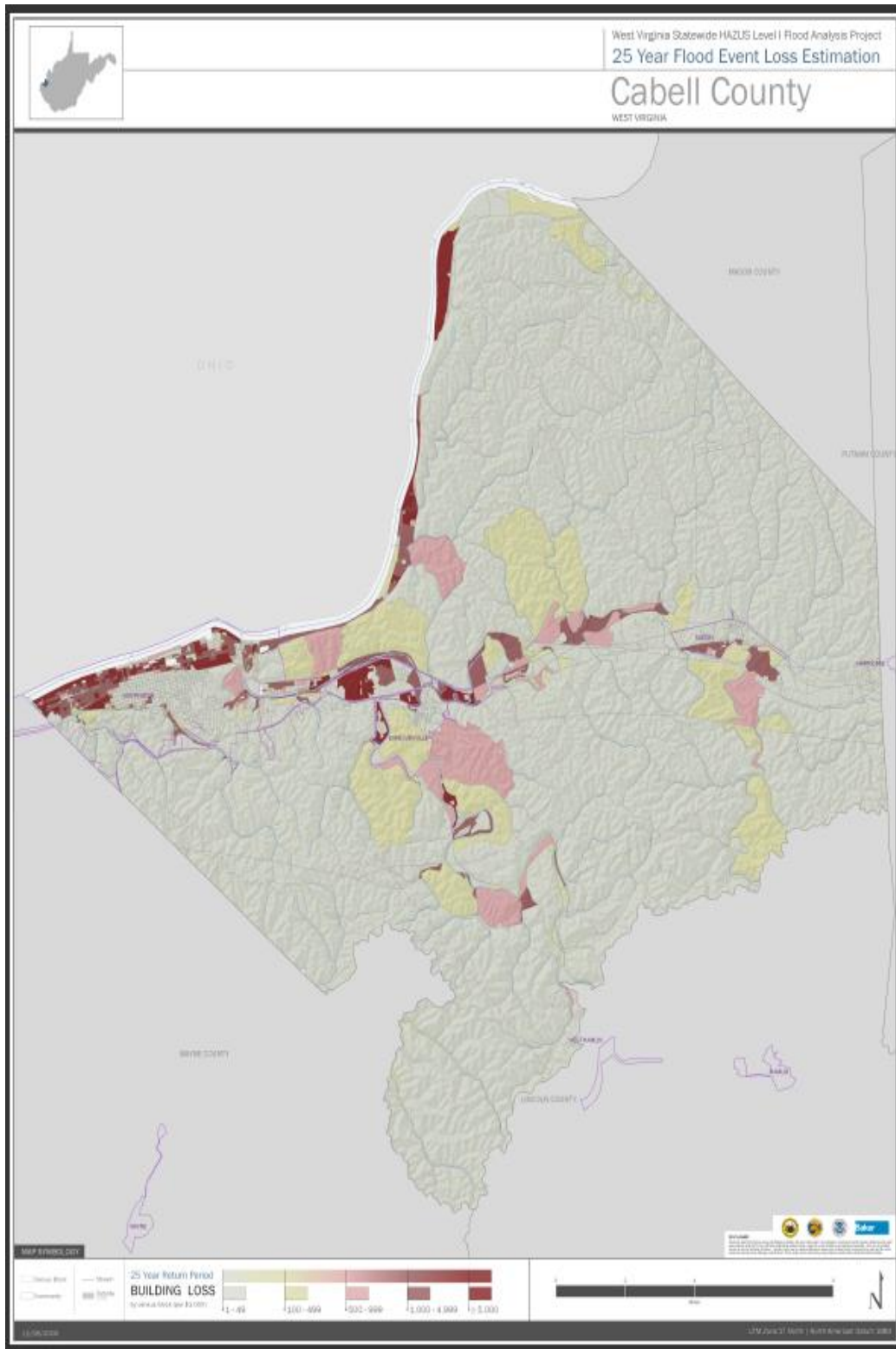
Public Notice

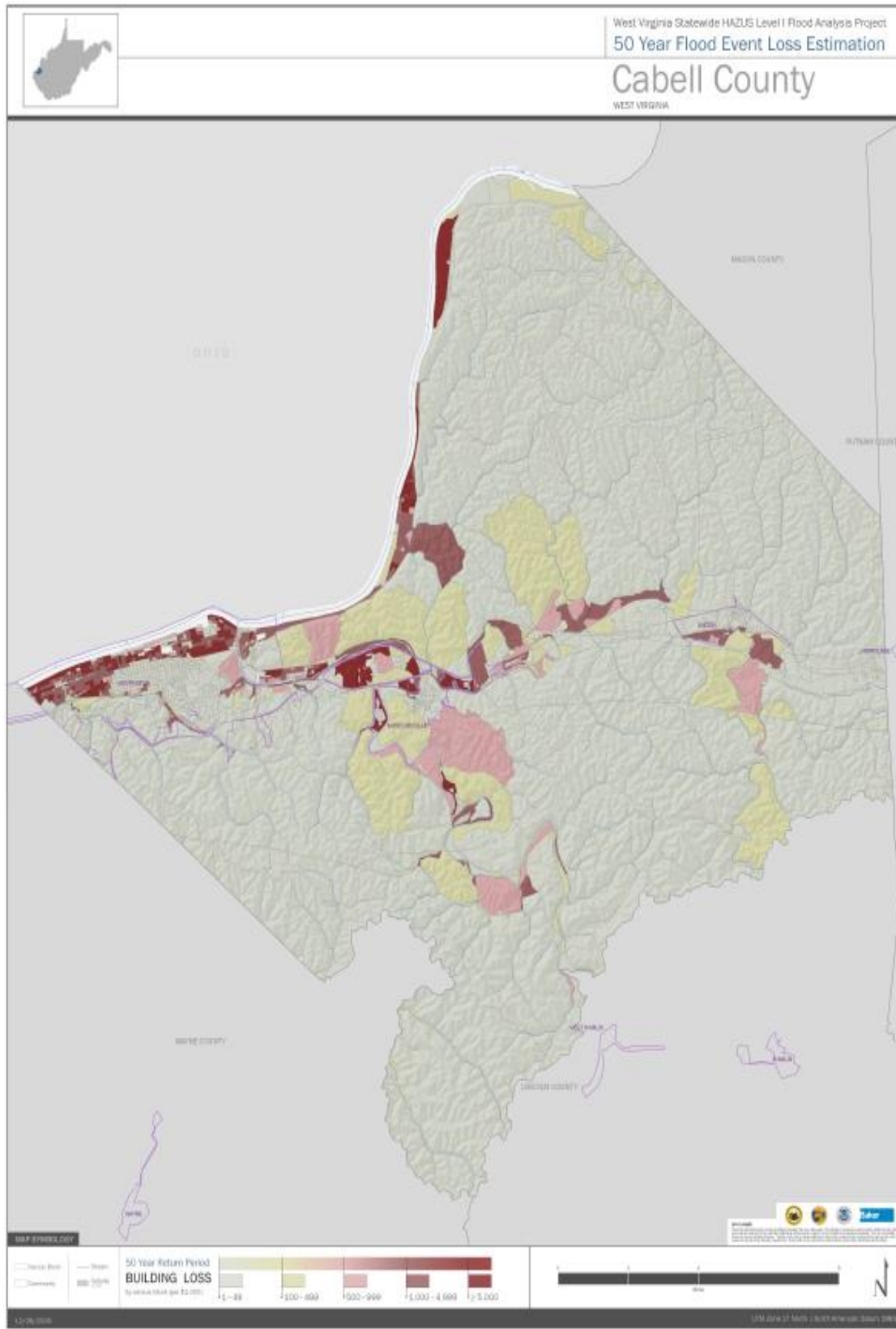
“Please be advised that the Cabell, Lincoln, Logan, Mason, Mingo, and Wayne County Hazard Mitigation Plans (HMP) have been integrated into a Regional HMP pursuant to federal and state requirements. This regionalized plan meets participation requirements for all counties and municipalities within this six-county region.

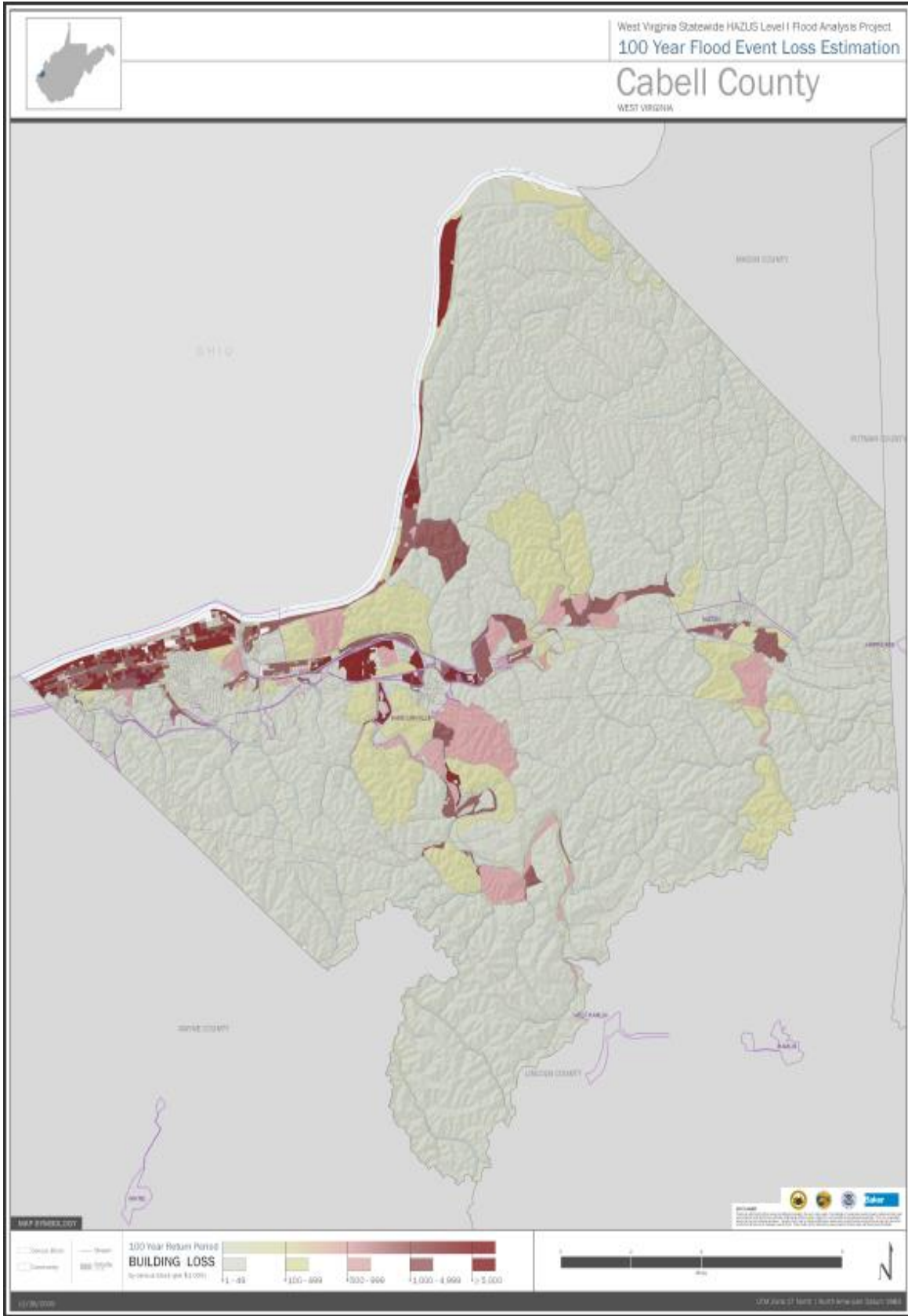
This newly drafted plan will be available for public review and comment at their respective county commissions. Your attendance and participation is greatly appreciated.”

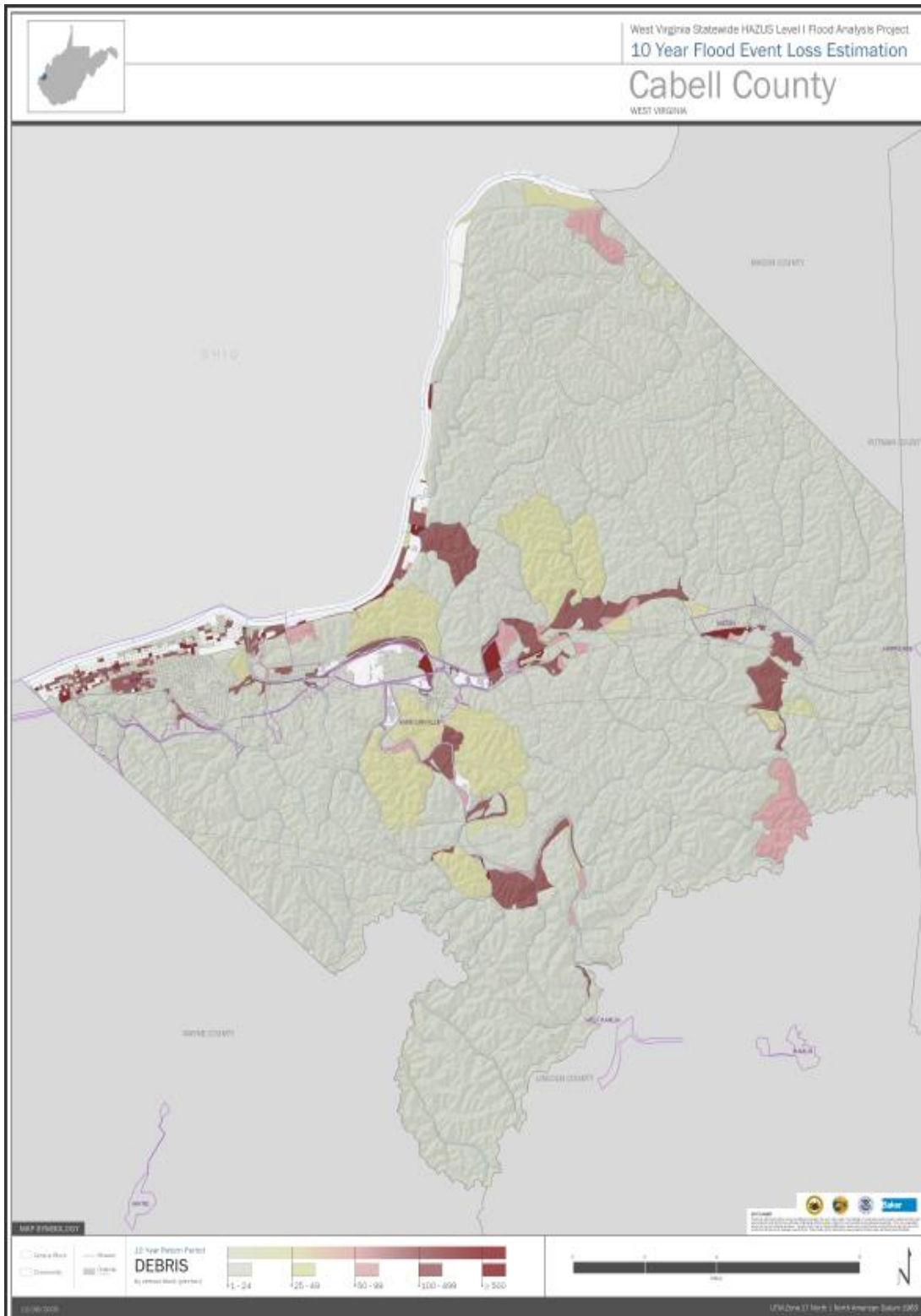
APPENDIX 3 – HAZUS DATA

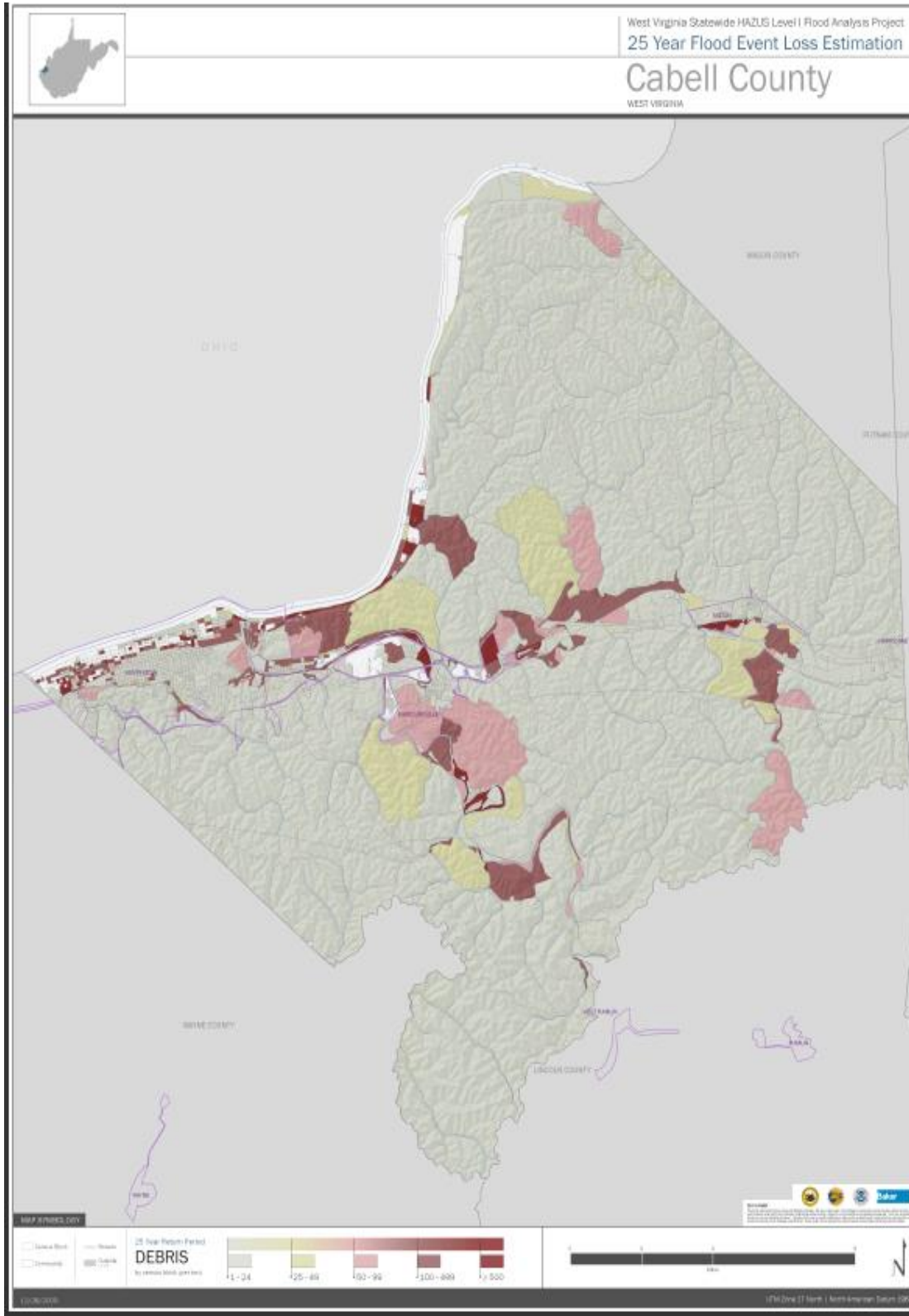


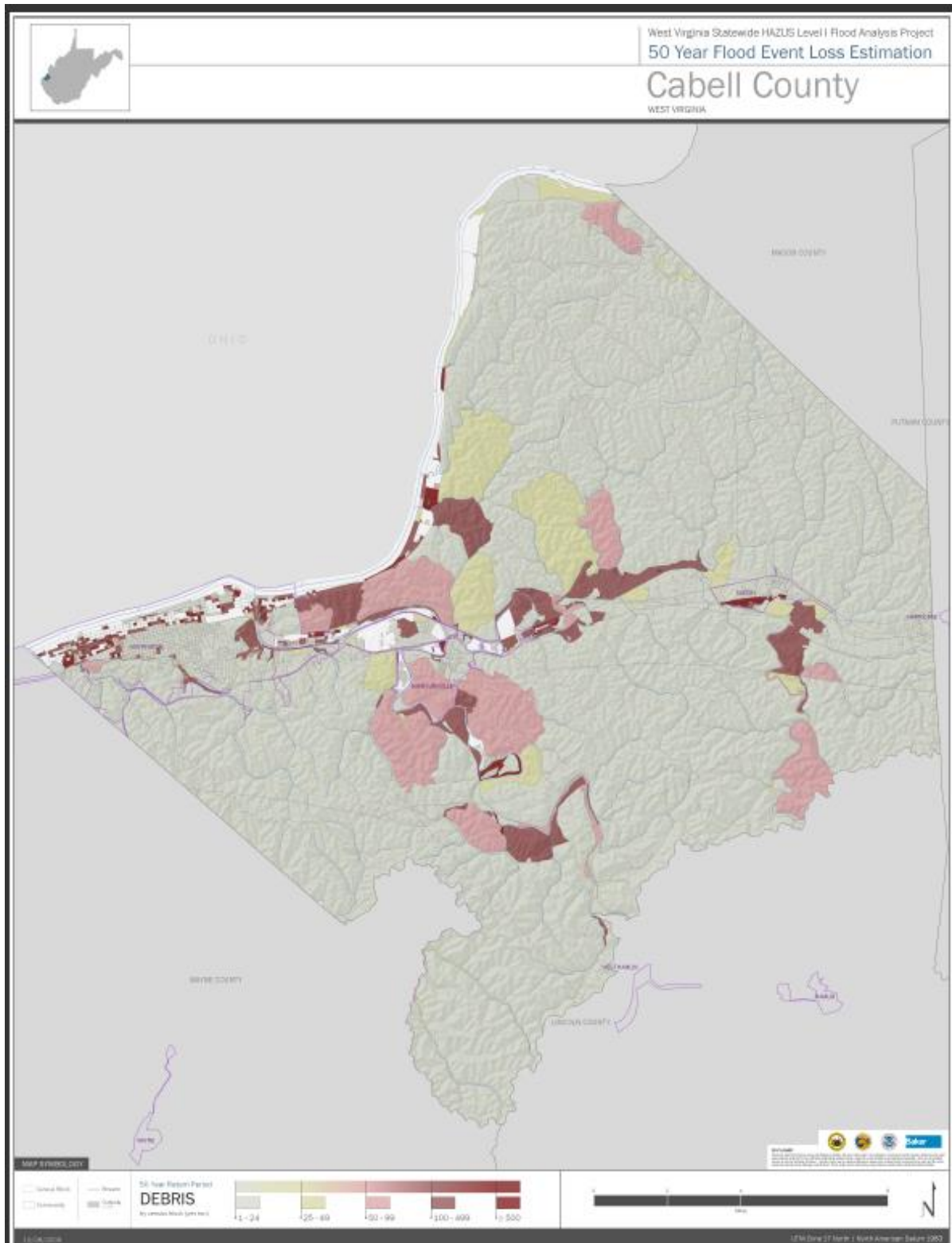


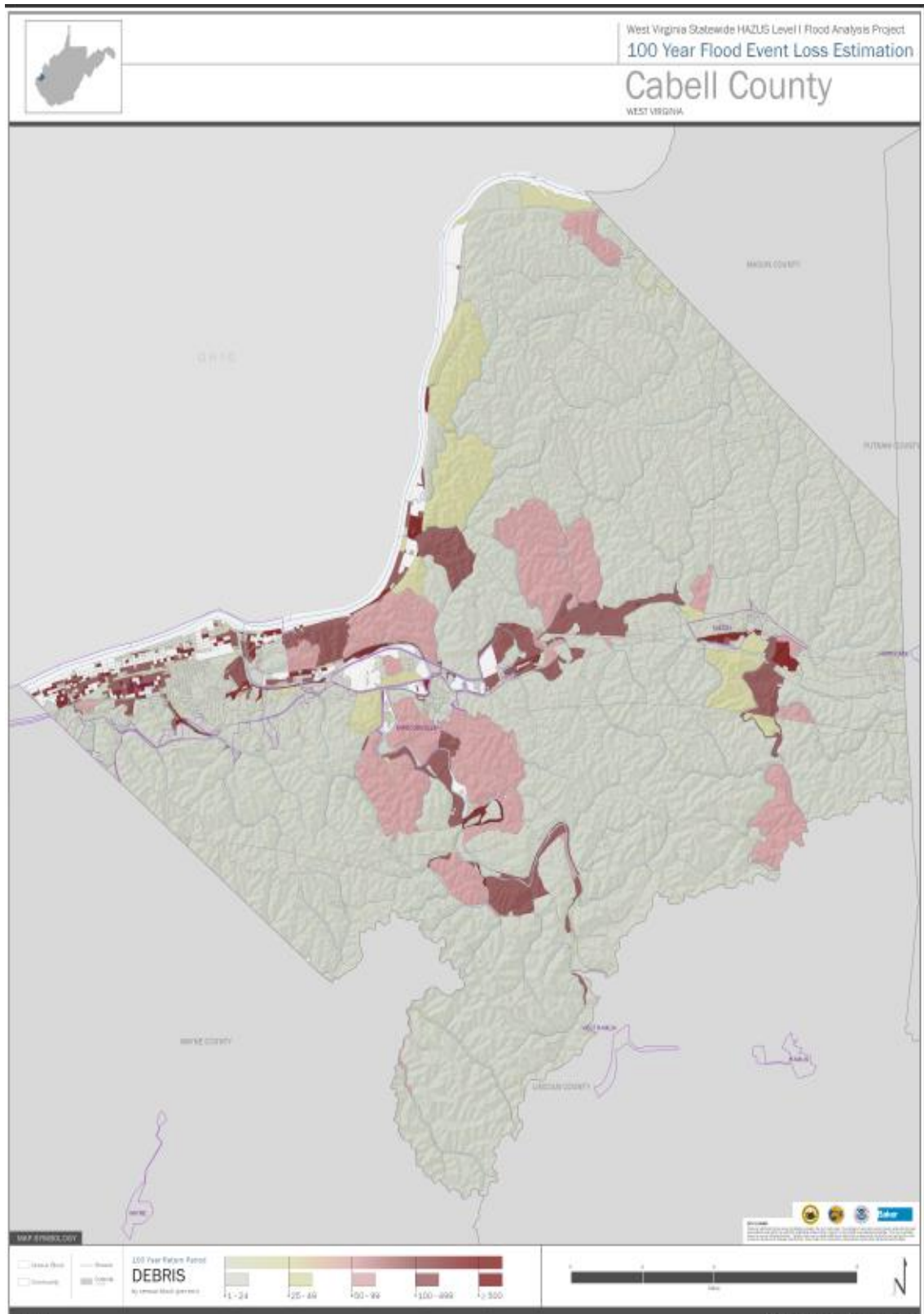


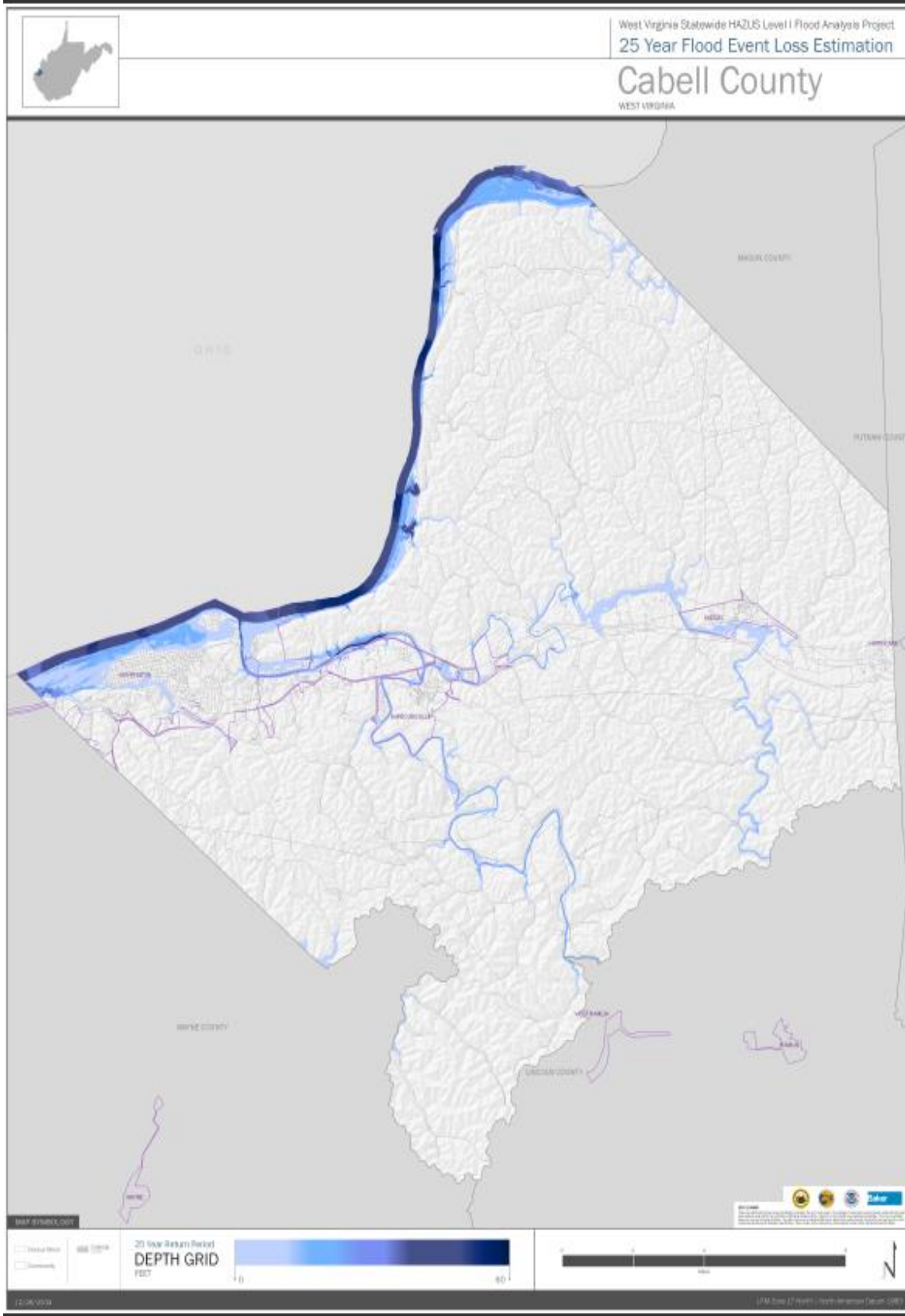


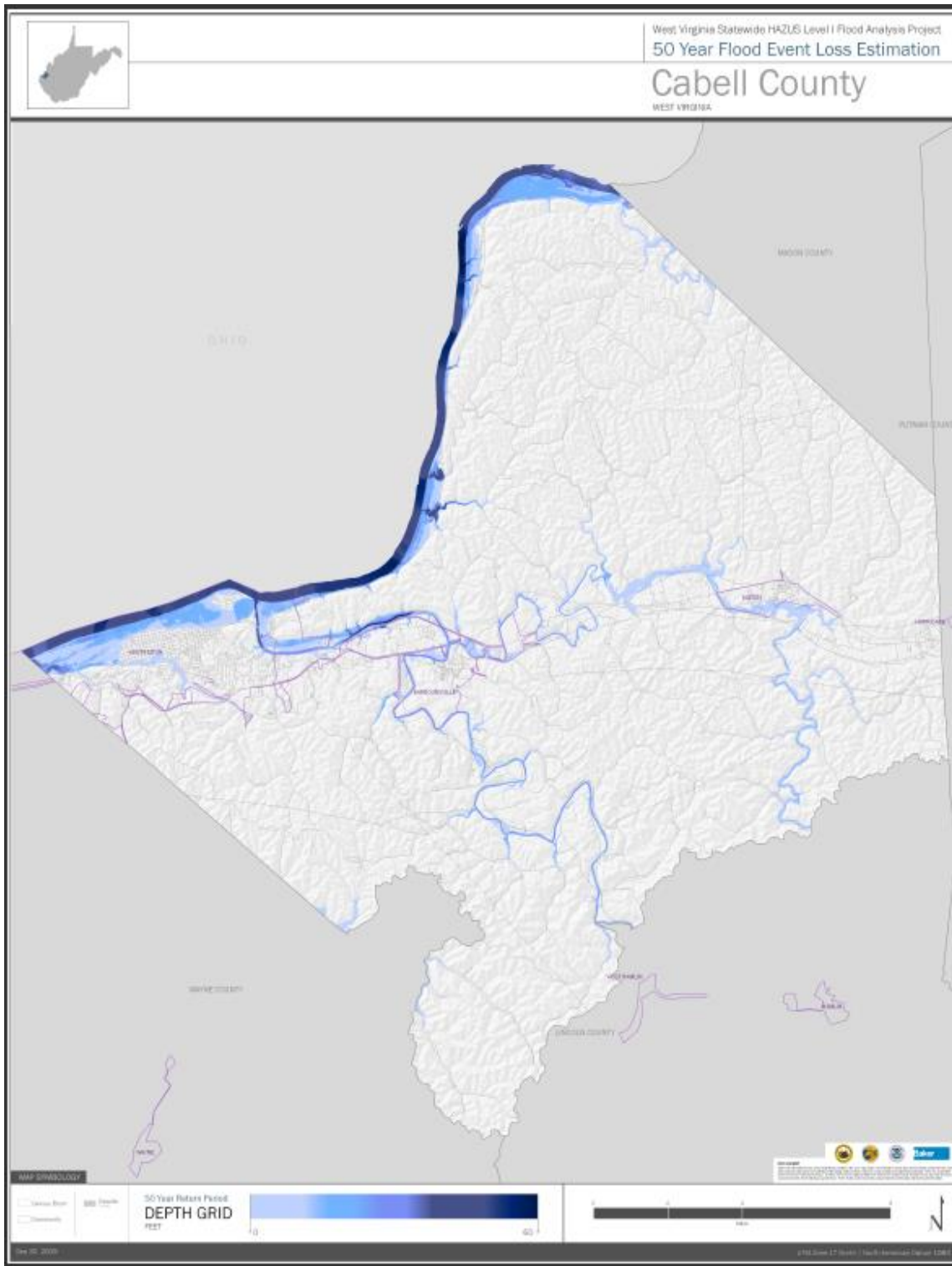


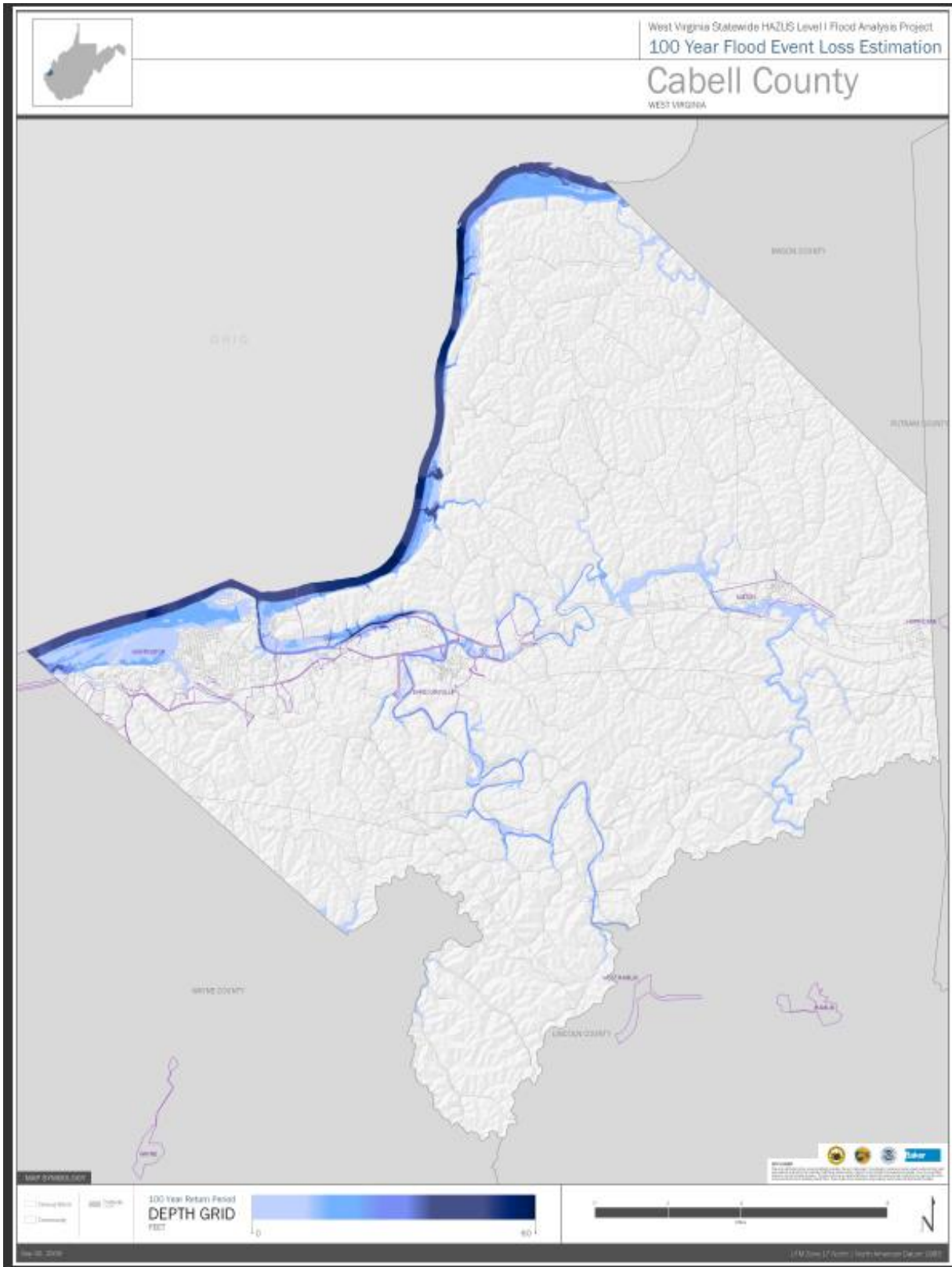


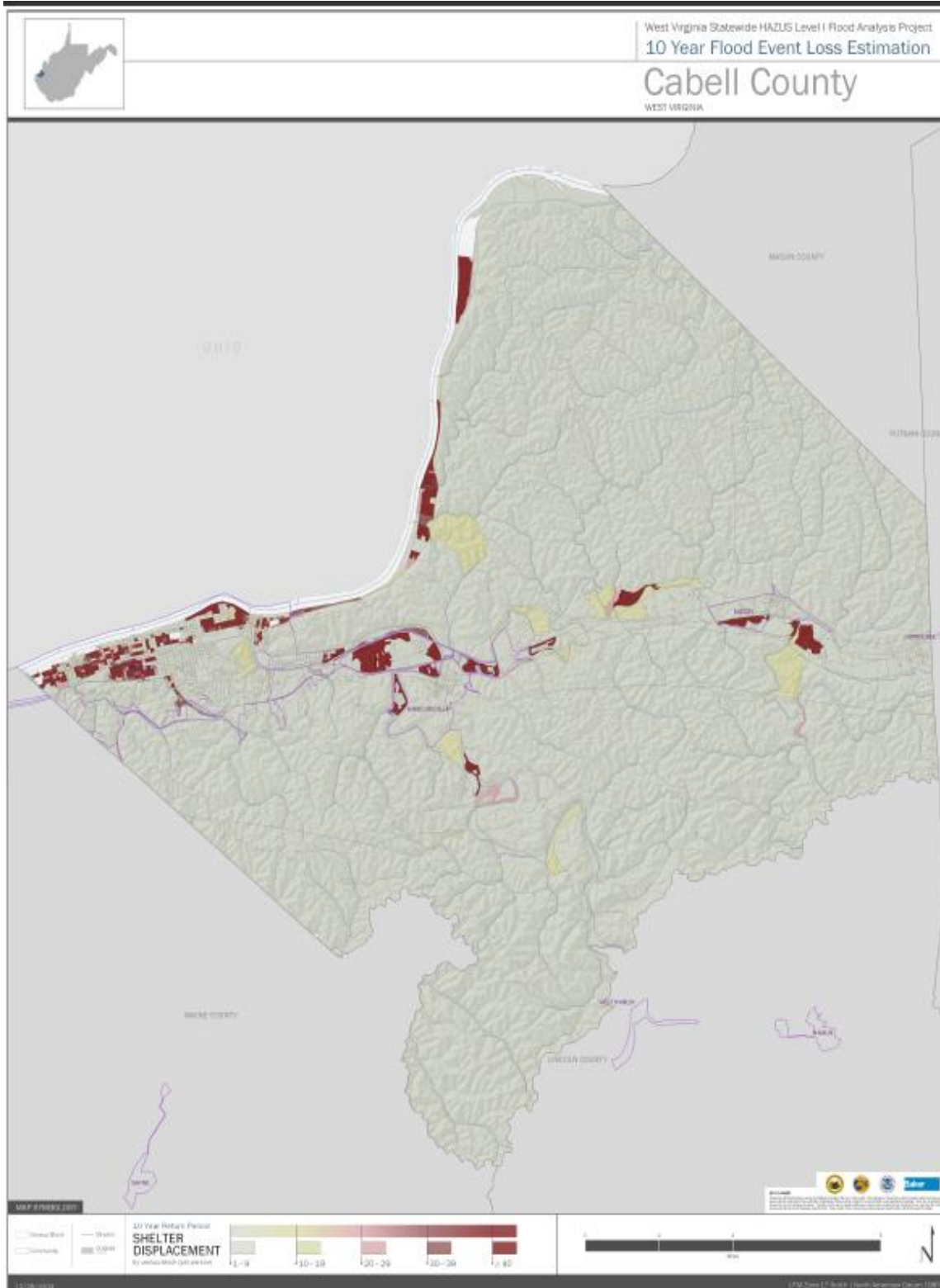


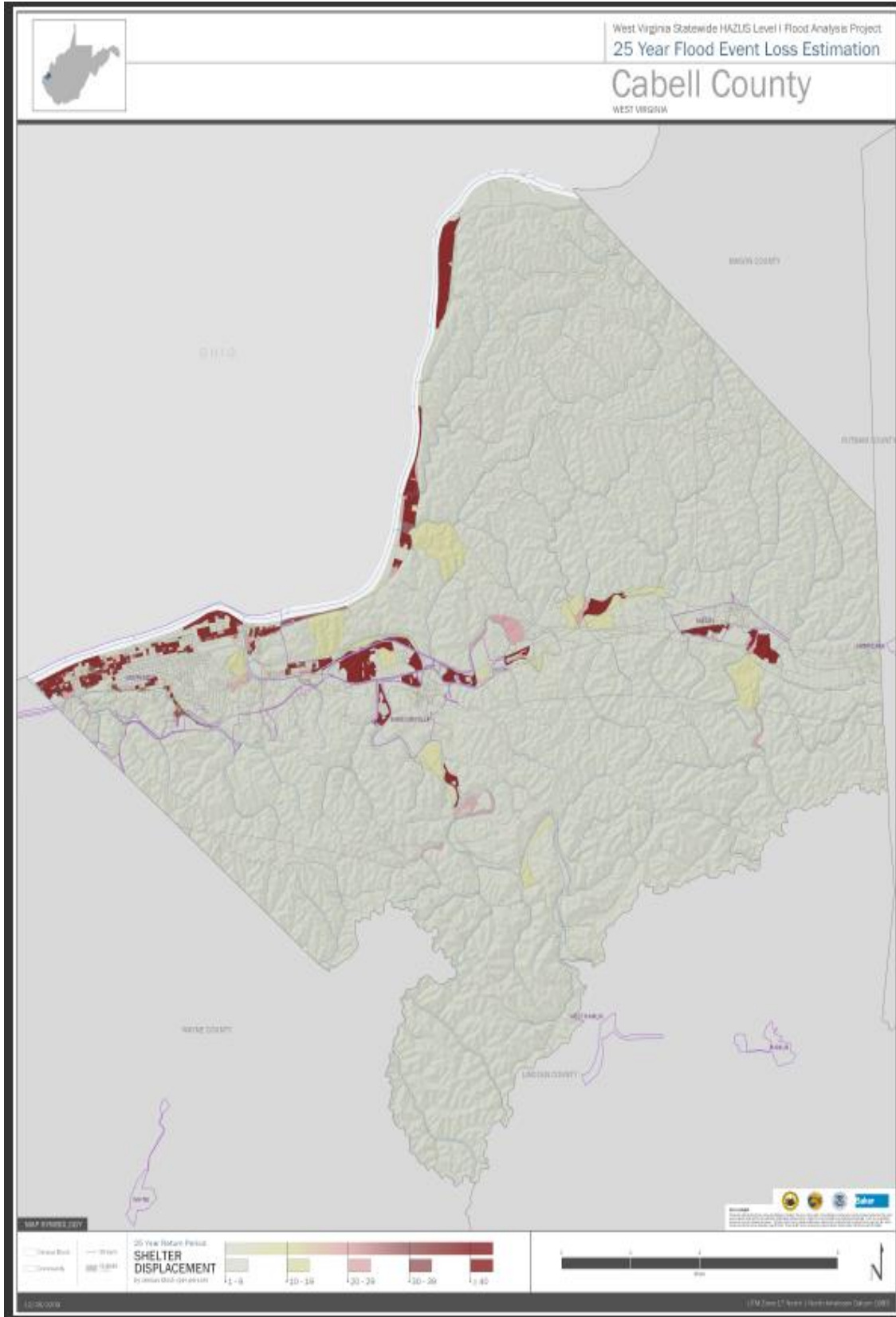


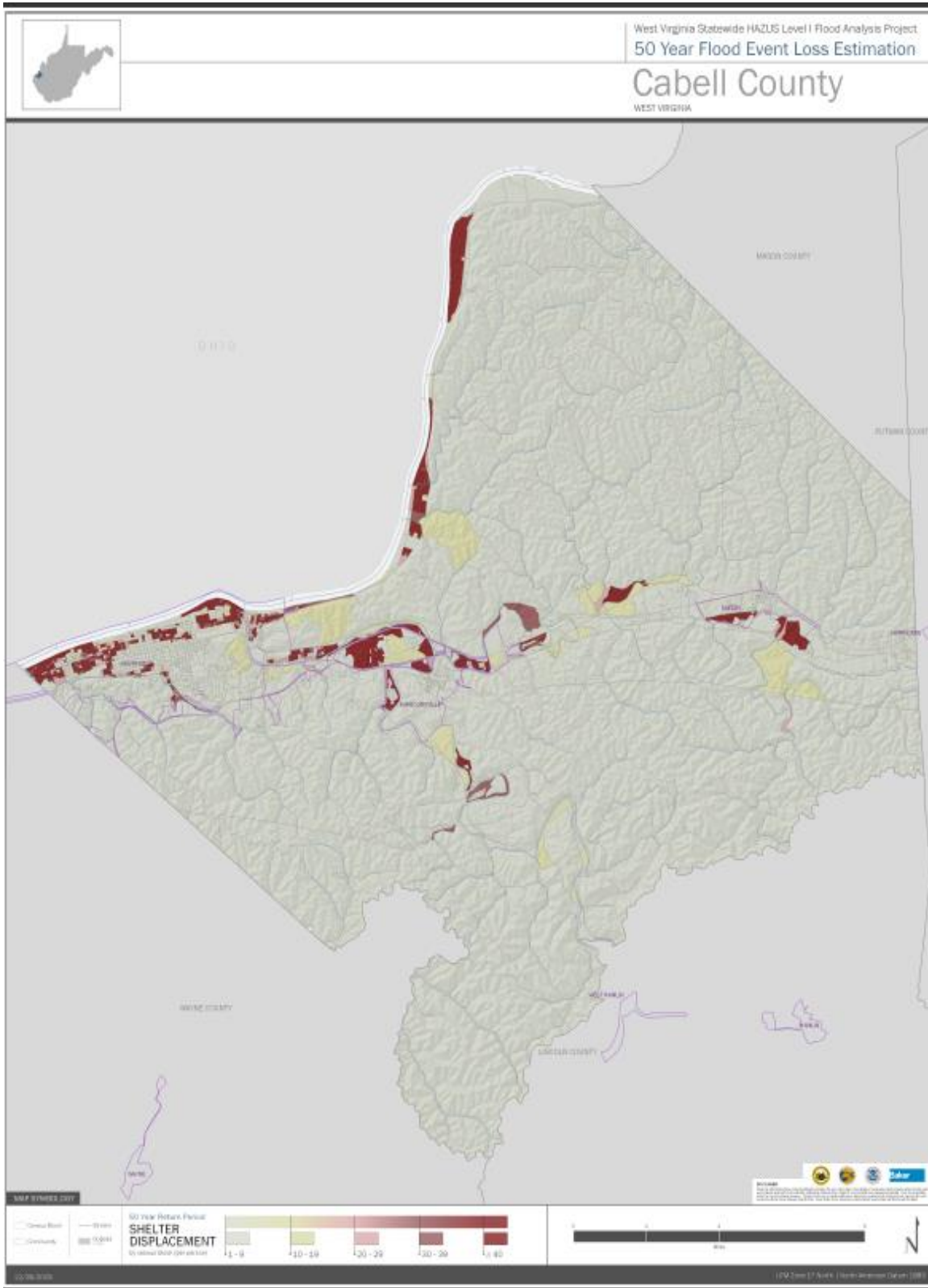


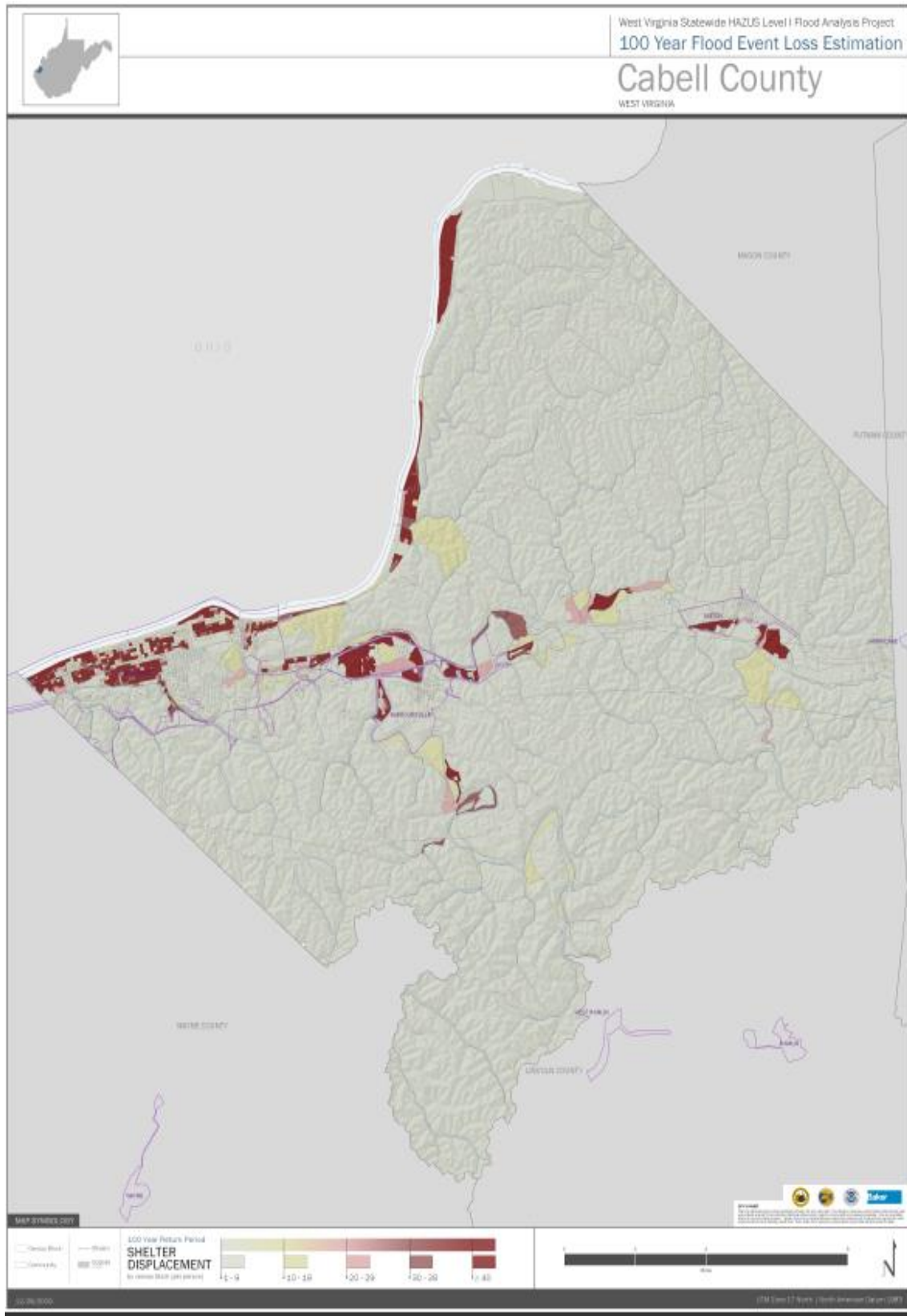


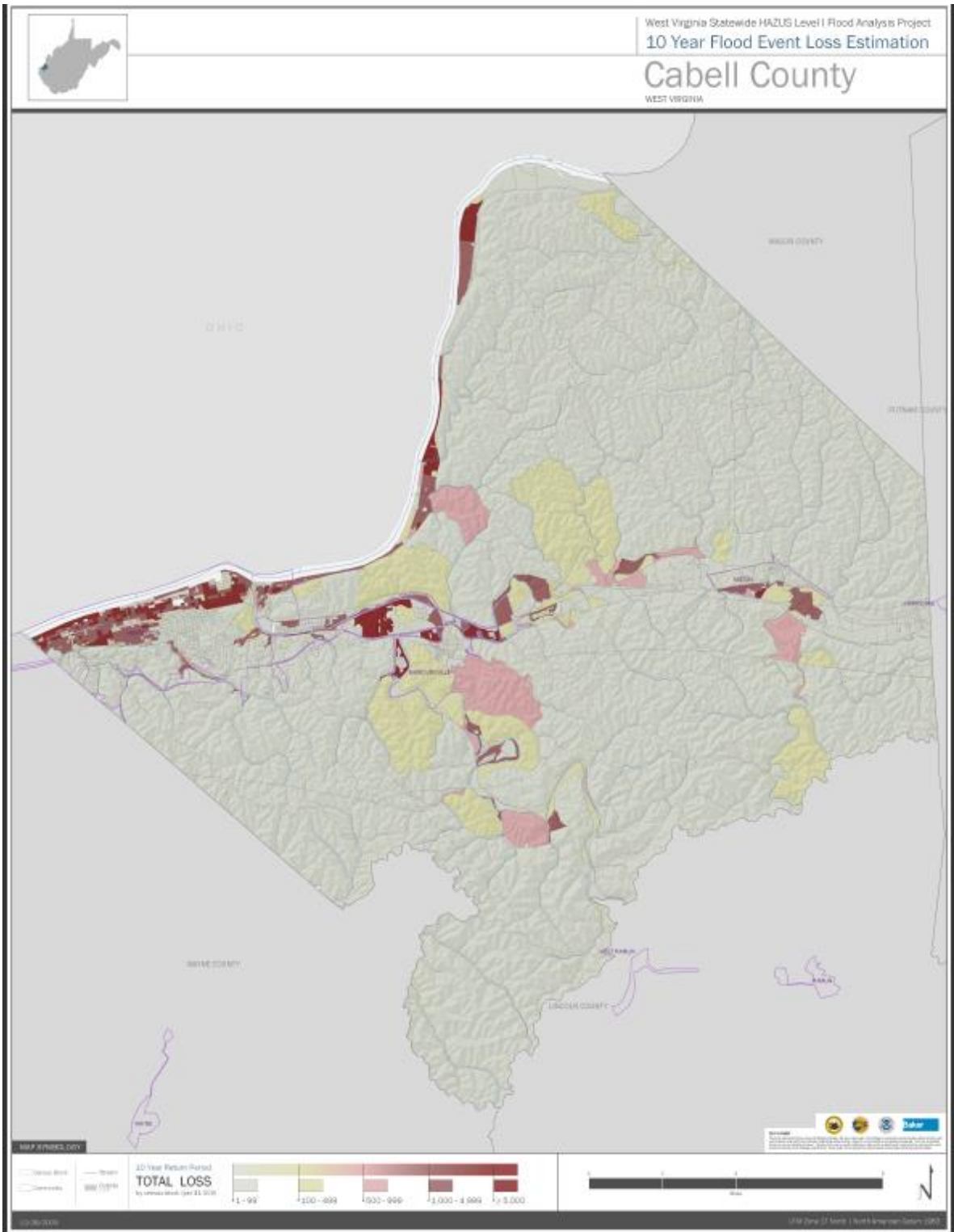


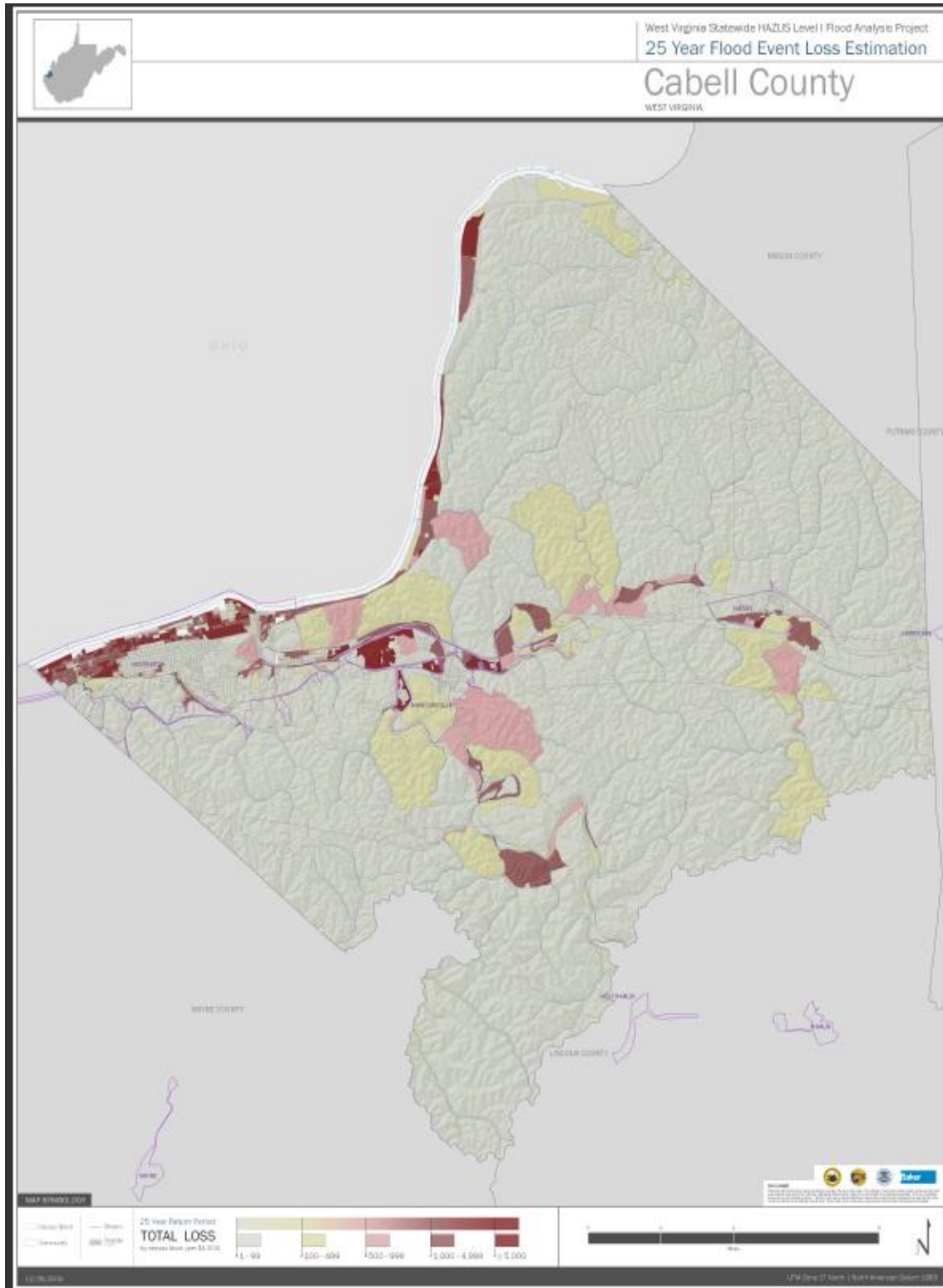


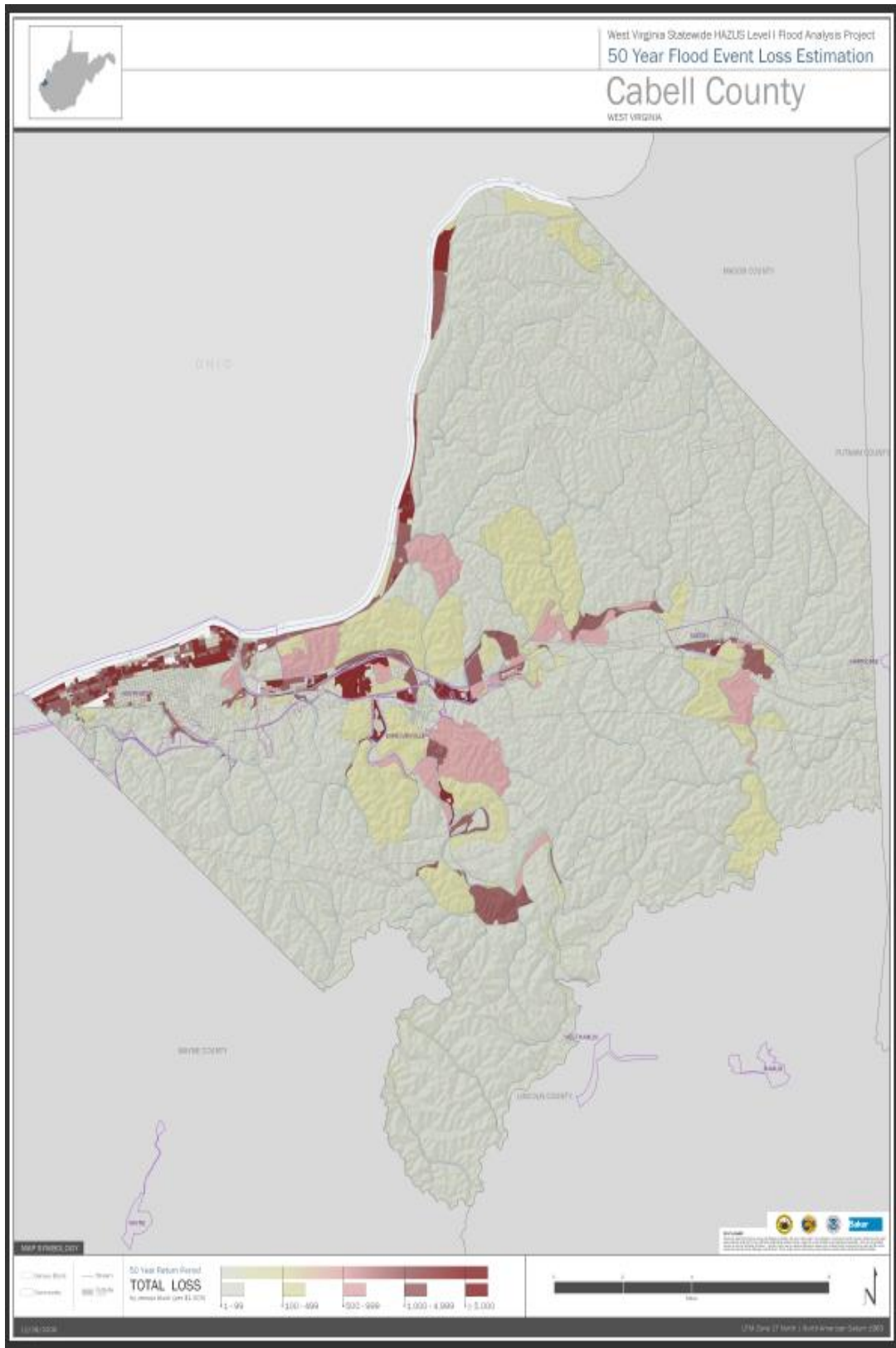


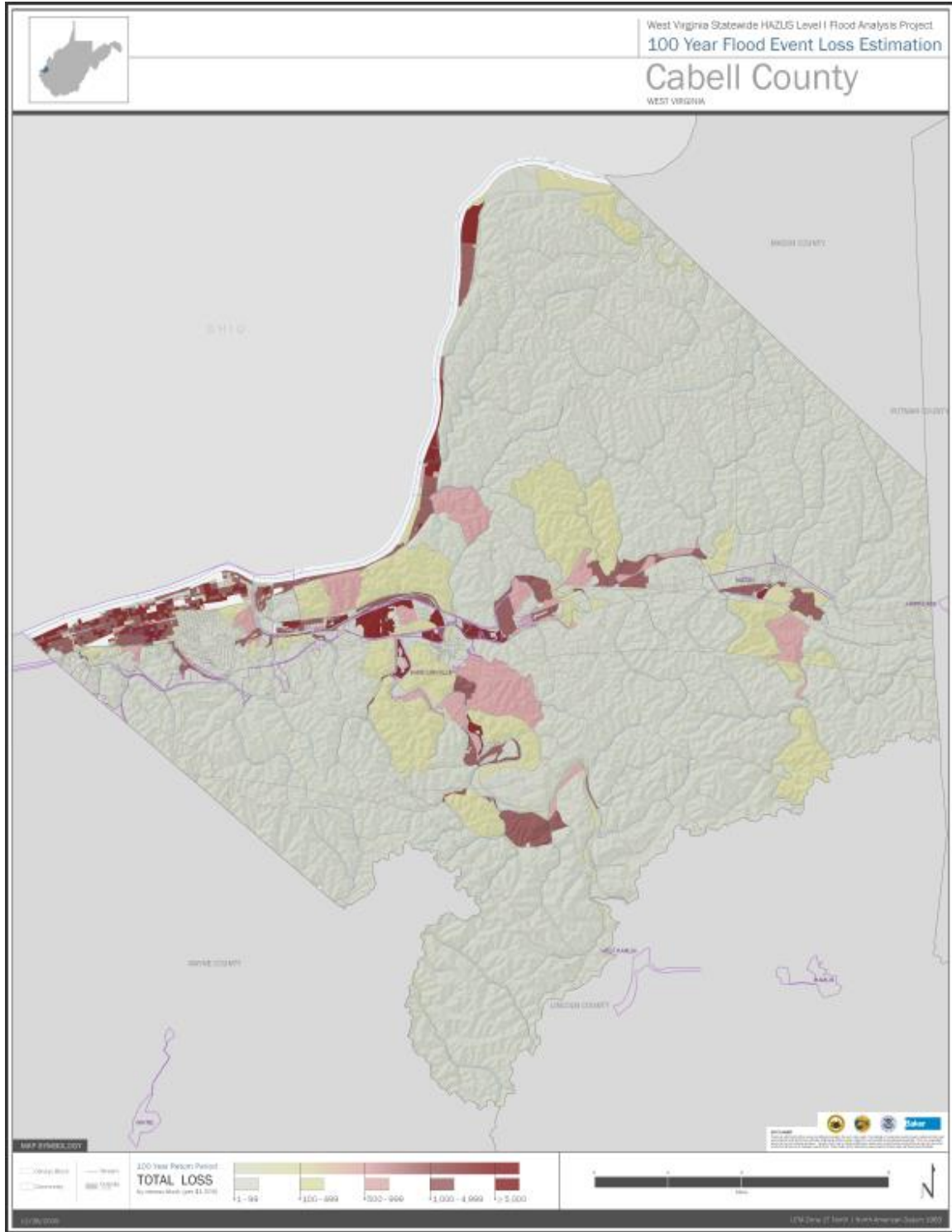












Building Inventory

General Building Stock

HAZUS estimates that there are 44,709 buildings in the region which have an aggregate total replacement value of 9,425 million (2006 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	6,836,588	72.5%
Commercial	1,598,605	17.0%
Industrial	578,888	6.1%
Agricultural	16,272	0.2%
Religion	174,323	1.8%
Government	70,318	0.7%
Education	149,982	1.6%
Total	9,424,976	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,552,497	67.2%
Commercial	1,004,974	19.0%
Industrial	457,244	8.6%
Agricultural	9,215	0.2%
Religion	103,592	2.0%
Government	51,274	1.0%
Education	111,208	2.1%
Total	5,290,004	100.00%

Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 951 beds. There are 40 schools, 3 fire stations, 6 police stations and no emergency operation centers.

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

Study Region Name: Cabell County
 Scenario Name: 10-YR
 Return Period Analyzed: 10
 Analysis Options Analyzed: 0

Building Damage

General Building Stock Damage

HAZUS estimates that about 5,227 buildings will be at least moderately damaged. This is over 19% of the total number of buildings in the study case. There are an estimated 1,049 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	00.00
Commercial	3	2.80	27	25.23	9	8.41	18	16.82	24	22.43	26	24.30
Education	0	0.00	0	0.00	1	20.00	1	20.00	2	40.00	1	20.00
Government	0	0.00	2	10.53	0	0.00	1	5.26	0	0.00	16	84.21
Industrial	0	0.00	5	13.89	1	2.78	3	8.33	6	16.67	21	58.33
Religion	0	0.00	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	123	2.43	967	19.12	603	11.92	2,381	47.07	984	19.45
Total	3		161		978		626		2,413		1,049	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	1	8.33	0	0.00	4	33.33	3	25.00	4	33.33
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	129	100.00
Masonry	0	0.00	38	2.72	275	19.66	177	12.65	677	48.39	232	16.58
Steel	3	2.91	19	18.45	5	4.85	12	11.65	22	21.36	42	40.78
Wood	0	0.00	97	2.72	694	19.49	429	12.05	1,706	47.91	635	17.83

Essential Facility Damage

Before the flood analyzed in this study case, the region had 1,902 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	1	1	0
Hospitals	5	1	0	0
Police Stations	6	2	2	0
Schools	40	12	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.

Analysis has not been performed for this scenario.

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 7,917 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 21,531 people (out of a total population of 96,784) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 2,335.02 million dollars, which represents 42.24 % 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 2,290.28 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 43.82% 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	609.70	247.81	73.36	70.66	1,001.53
	Content	411.20	487.12	151.69	199.41	1,249.43
	Inventory	0.00	14.50	34.24	0.58	39.32
	Subtotal	1,020.90	749.43	249.30	270.66	2,290.28
Business Interruption						
	Income	0.14	2.98	0.05	0.41	3.59
	Relocation	1.02	0.99	0.05	0.05	2.12
	Rental Income	0.71	0.58	0.01	0.01	1.41
	Wage	0.33	3.25	0.05	17.49	21.11
	Subtotal	2.19	7.80	0.17	17.96	28.22
ALL	Total	1,023.09	757.23	249.47	288.61	2,318.60

Region Name: Cabell County
Flood Scenario: 25-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 44,709 buildings in the region which have an aggregate total replacement value of 9,425 million (2006 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	6,836,588	72.5%
Commercial	1,598,605	17.0%
Industrial	578,888	6.1%
Agricultural	16,272	0.2%
Religion	174,323	1.8%
Government	70,318	0.7%
Education	149,982	1.6%
Total	9,424,976	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,592,185	67.7%
Commercial	996,282	18.8%
Industrial	446,006	8.4%
Agricultural	9,175	0.2%
Religion	98,377	1.9%
Government	47,928	0.9%
Education	112,391	2.1%
Total	5,302,345	100.00%

Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 951 beds. There are 40 schools, 3 fire stations, 6 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 4,812 buildings will be at least moderately damaged. This is over 16% of the total number of buildings in the study case. There are an estimated 1,239 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	2	2.25	28	31.46	15	16.85	6	6.74	7	7.87	31	34.83
Education	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	3	75.00
Government	0	0.00	1	5.88	0	0.00	0	0.00	0	0.00	16	94.12
Industrial	3	5.88	9	17.65	7	13.73	4	7.84	12	23.53	16	31.37
Religion	0	0.00	5	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	76	1.63	731	15.72	515	11.07	2,156	46.36	1,173	25.22
Total	5		120		753		525		2,175		1,239	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	3	23.08	0	0.00	1	7.69	3	23.08	6	46.15
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	170	100.00
Masonry	1	0.08	21	1.64	210	16.42	154	12.04	611	47.77	282	22.05
Steel	4	4.04	20	20.20	13	13.13	6	6.06	14	14.14	42	42.42
Wood	0	0.00	67	2.08	527	16.34	361	11.19	1,540	47.74	731	22.66

Essential Facility Damage

Before the flood analyzed in this study case, the region had 1,902 hospital beds available for use. On the day of the scenario flood event, the model estimates that 145 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	0	1	0
Hospitals	5	1	0	1
Police Stations	6	0	3	0
Schools	40	10	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.

Analysis has not been performed for this scenario.

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 7,383 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 19,689 people (out of a total population of 96,784) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 2,280.19 million dollars, which represents 41.25 % 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 2,241.21 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 41.64% 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	573.34	225.97	108.04	72.58	979.93
	Content	374.02	431.39	228.94	179.84	1,214.18
	Inventory	0.00	14.43	32.12	0.55	47.10
	Subtotal	947.36	671.79	369.08	252.97	2,241.21
Business Interruption						
	Income	0.12	2.46	0.16	0.34	3.08
	Relocation	0.97	0.85	0.11	0.05	1.97
	Rental Income	0.64	0.60	0.03	0.01	1.28
	Wage	0.27	2.82	0.11	15.17	18.37
	Subtotal	2.00	6.73	0.41	15.56	24.70
ALL	Total	949.36	678.52	369.49	268.53	2,265.91

HAZUS-MH: Flood Event Report

Region Name: Cabell County
Flood Scenario: 50-Yr
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 44,709 buildings in the region which have an aggregate total replacement value of 9,425 million (2006 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	6,836,568	72.5%
Commercial	1,898,605	17.0%
Industrial	578,868	6.1%
Agricultural	16,272	0.2%
Religion	174,323	1.8%
Government	70,318	0.7%
Education	149,962	1.6%
Total	9,424,976	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,718,182	67.9%
Commercial	1,030,239	18.8%
Industrial	450,642	8.2%
Agricultural	9,344	0.2%
Religion	103,271	1.9%
Government	47,928	0.9%
Education	112,391	2.1%
Total	5,471,997	100.00%

Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 951 beds. There are 40 schools, 3 fire stations, 6 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 5,599 buildings will be at least moderately damaged. This is over 13% of the total number of buildings in the study case. There are an estimated 1,790 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	00.00
Commercial	1	1.10	24	26.37	15	16.48	2	2.20	10	10.99	39	42.86
Education	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	3	75.00
Government	0	0.00	1	5.56	0	0.00	0	0.00	0	0.00	17	94.44
Industrial	0	0.00	1	2.13	3	6.38	0	0.00	27	57.45	16	34.04
Religion	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
Residential	0	0.00	83	1.53	695	12.78	430	7.91	2,516	46.28	1,713	31.51
Total	1		111		713		432		2,553		1,790	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	2	15.38	0	0.00	1	7.69	4	30.77	6	46.15
Manuf-Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	202	100.00
Masonry	0	0.00	24	1.64	192	13.12	117	8.00	707	48.33	423	28.91
Steel	1	1.02	14	14.29	9	9.18	1	1.02	24	24.49	49	50.00
Wood	0	0.00	67	1.77	507	13.38	312	8.23	1,809	47.74	1,094	28.87

Essential Facility Damage

Before the flood analyzed in this study case, the region had 1,902 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	0	1	0
Hospitals	5	0	1	0
Police Stations	6	0	3	0
Schools	40	11	2	2

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.

Analysis has not been performed for this scenario.

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 8,171 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 21,982 people (out of a total population of 96,784) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 2,619.77 million dollars, which represents 47.39 % 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 2,577.37 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 42.29% 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	675.97	261.55	136.19	82.83	1,156.55
	Content	429.57	476.19	271.41	191.27	1,368.44
	Inventory	0.00	15.48	36.33	0.58	52.39
	Subtotal	1,106.64	763.22	443.93	274.68	2,677.37
Business Interruption						
	Income	0.12	2.70	0.19	0.38	3.40
	Relocation	1.15	0.91	0.13	0.05	2.24
	Rental Income	0.72	0.66	0.03	0.01	1.42
	Wage	0.29	3.11	0.13	16.07	19.60
	Subtotal	2.28	7.38	0.45	16.51	26.66
All	Total	1,107.82	760.60	444.41	281.19	2,604.02

HAZUS-MH: Flood Event Report

Region Name: Cabell County
Flood Scenario: 100-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 44,709 buildings in the region which have an aggregate total replacement value of \$425 million (2006 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	6,836,588	72.5%
Commercial	1,598,605	17.0%
Industrial	578,888	6.1%
Agricultural	16,272	0.2%
Religion	174,323	1.8%
Government	70,318	0.7%
Education	149,982	1.6%
Total	9,424,976	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,112,991	68.0%
Commercial	1,172,171	19.4%
Industrial	470,744	7.8%
Agricultural	9,849	0.2%
Religion	113,003	1.9%
Government	52,555	0.9%
Education	115,225	1.9%
Total	6,046,648	100.00%

Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 951 beds. There are 40 schools, 3 fire stations, 6 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 7,201 buildings will be at least moderately damaged. This is over 13% of the total number of buildings in the study case. There are an estimated 2,192 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	00.00
Commercial	4	3.08	32	24.62	16	12.31	7	5.38	8	6.15	63	48.46
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	00.00
Government	0	0.00	3	13.64	0	0.00	0	0.00	0	0.00	19	86.36
Industrial	0	0.00	3	5.08	5	8.47	3	5.08	33	55.93	15	25.42
Religion	0	0.00	8	88.89	0	0.00	0	0.00	0	0.00	1	11.11
Residential	0	0.00	78	1.12	839	12.02	693	9.93	3,281	47.01	2,089	29.93
Total	4		124		860		703		3,322		2,192	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	1	7.69	0	0.00	0	0.00	3	23.08	9	69.23
Manufact-Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	235	100.00
Masonry	0	0.00	26	1.36	233	12.17	196	10.24	925	48.33	534	27.90
Steel	3	2.40	21	16.80	11	8.80	5	4.00	28	22.40	57	45.60
Wood	0	0.00	63	1.30	611	12.59	497	10.24	2,352	48.46	1,330	27.41

Essential Facility Damage

Before the flood analyzed in this study case, the region had 1,902 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	1	1	0
Hospitals	5	2	0	1
Police Stations	6	1	3	0
Schools	40	16	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 828,286 tons of debris will be generated. Of the total amount, Finishes comprises 19% of the total, Structure comprises 45% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 33,131 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 10,199 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 27,914 people (out of a total population of 96,784) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 3,337.01 million dollars, which represents 60.37 % of the total replacement value of the scenario buildings.

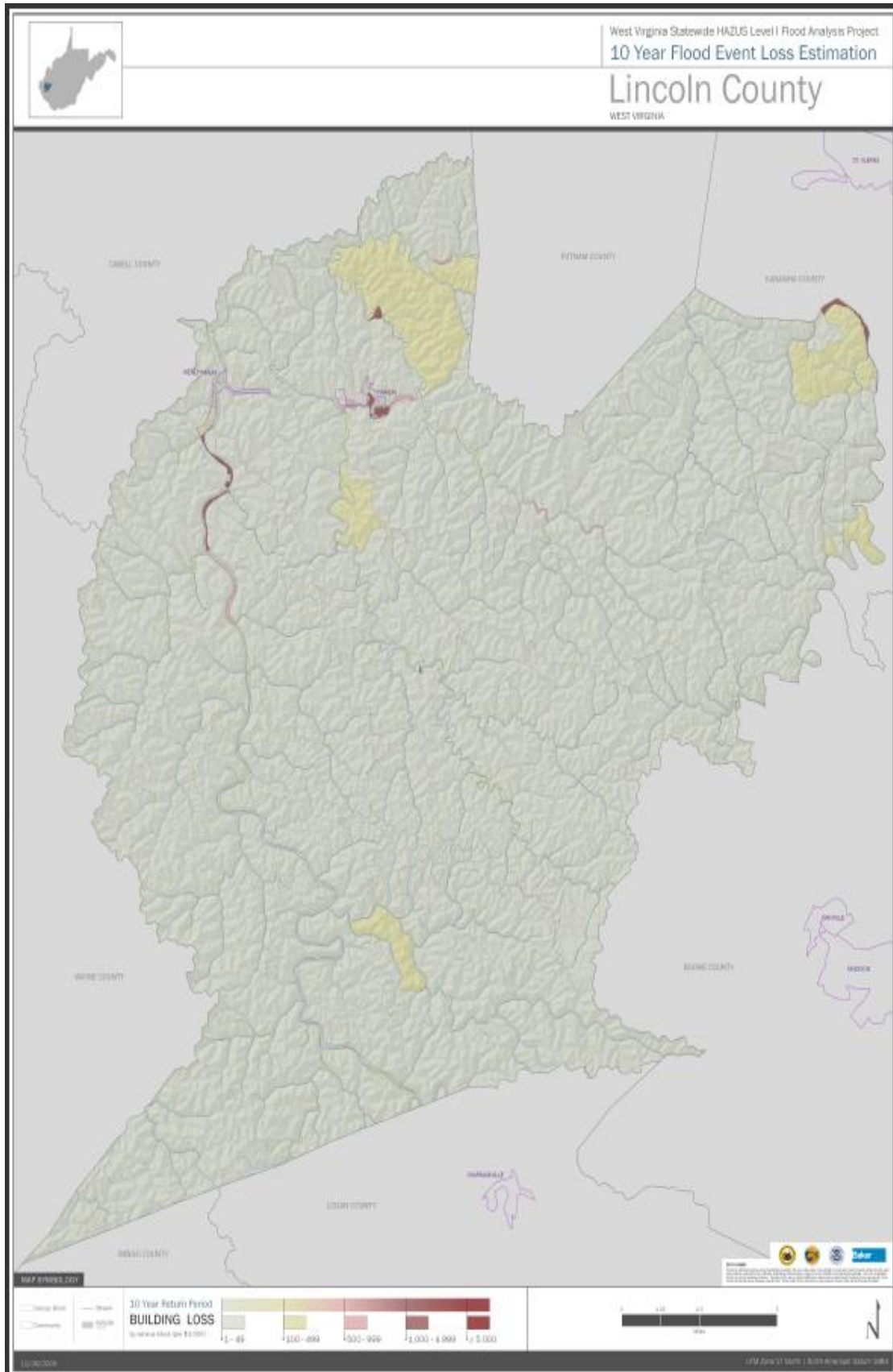
Building-Related Losses

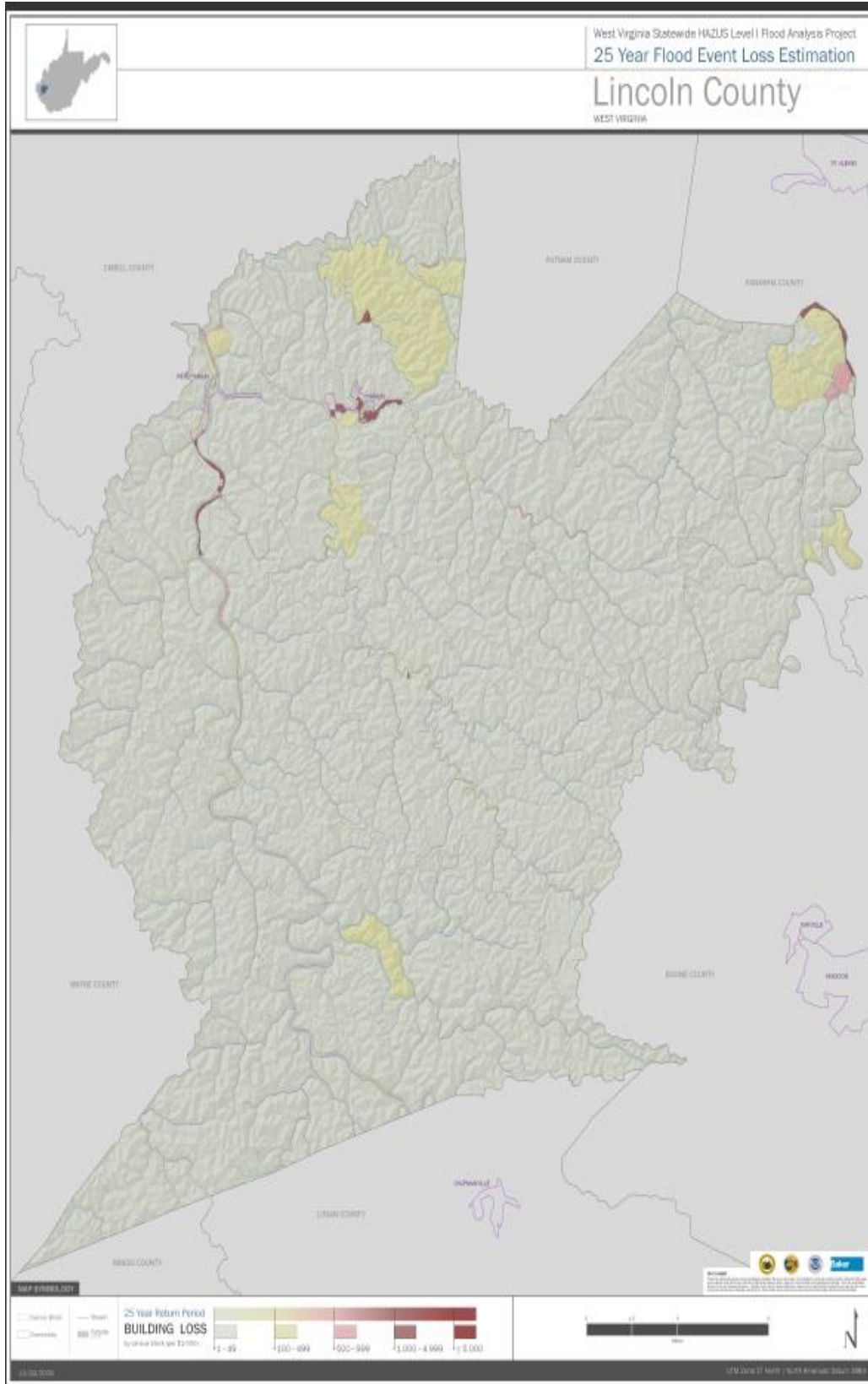
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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.

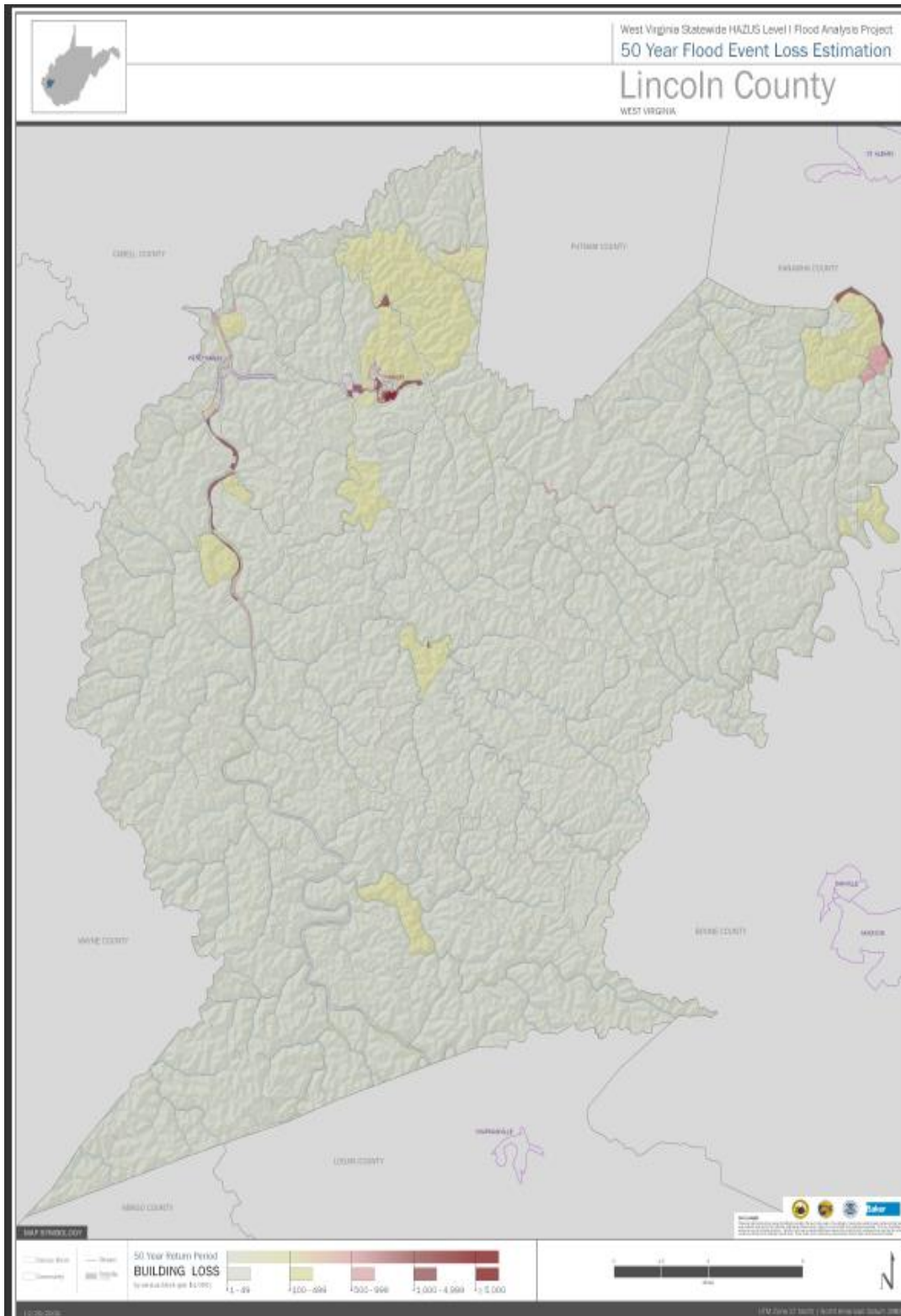
The total building-related losses were 3,284.50 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 44.34% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

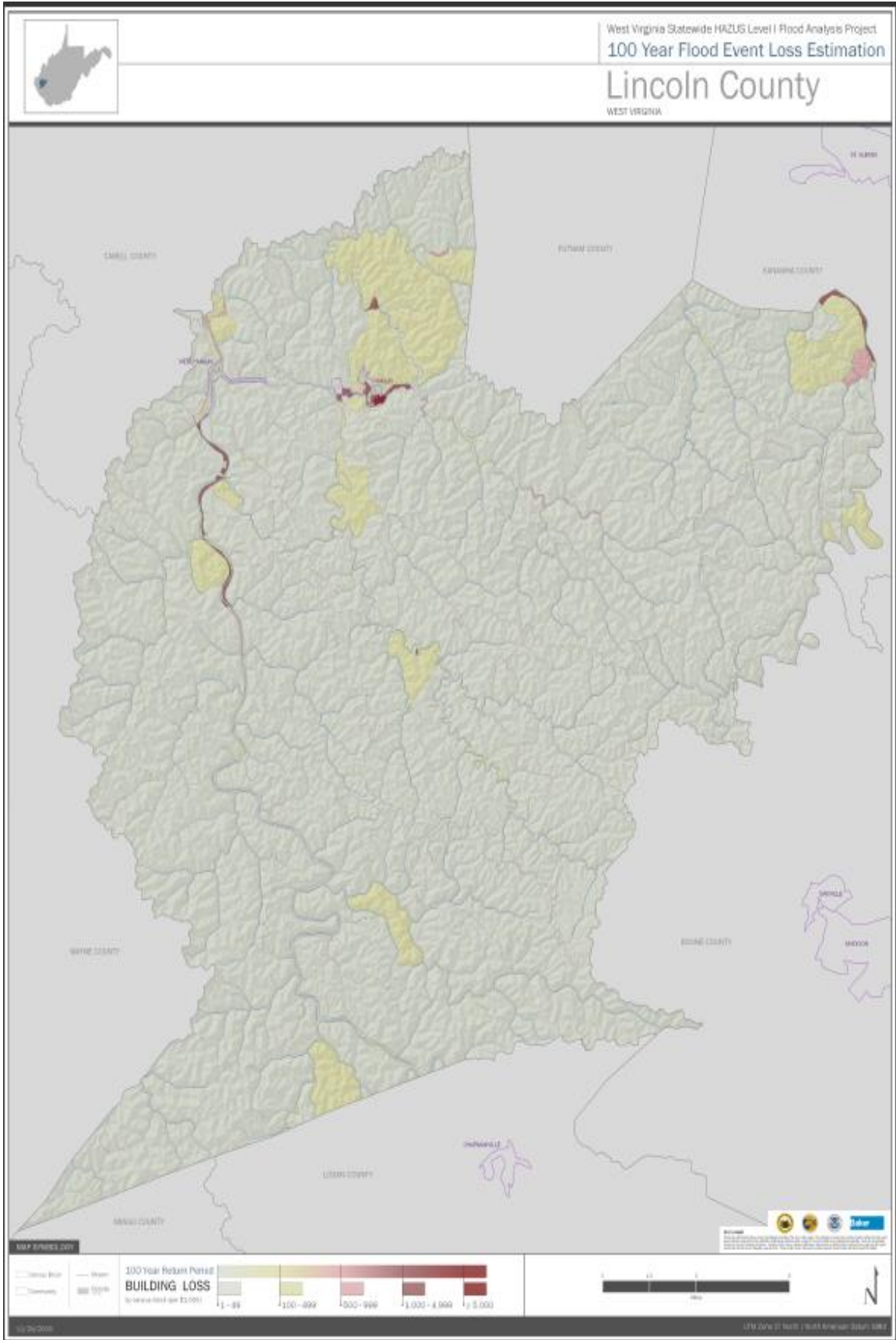
Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

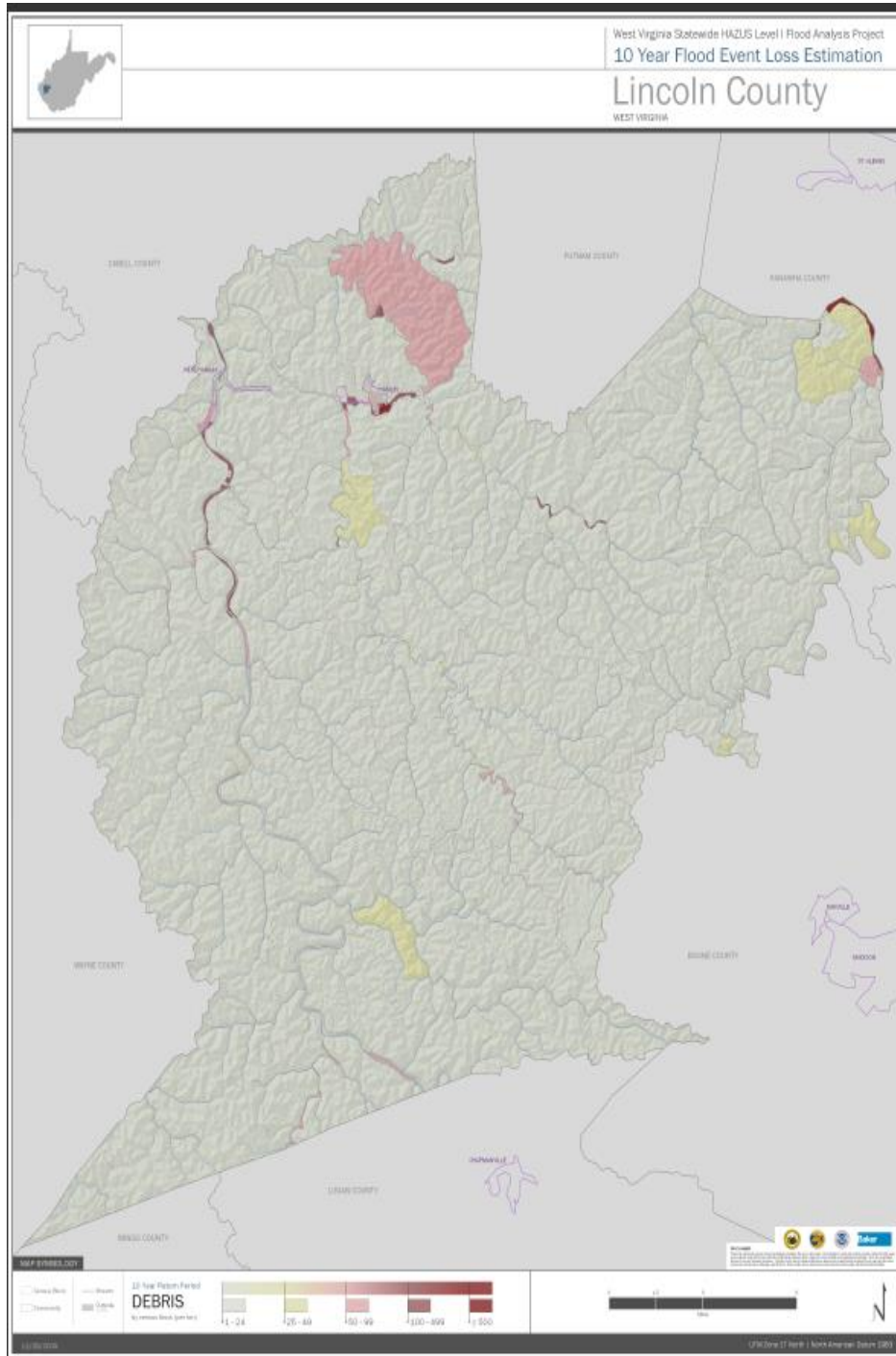
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	909.92	343.44	155.33	97.10	1,505.79
	Content	566.75	612.99	309.11	229.48	1,718.33
	Inventory	0.00	18.94	40.76	0.68	60.38
	Subtotal	1,476.67	976.37	606.20	327.26	3,284.60
Business Interruption						
	Income	0.14	3.58	0.20	0.49	4.41
	Relocation	1.44	1.21	0.13	0.06	2.85
	Rental Income	0.93	0.84	0.04	0.01	1.81
	Wage	0.33	3.99	0.14	19.12	23.59
	Subtotal	2.84	9.62	0.51	19.68	32.65
All	Total	1,479.51	985.99	606.72	346.94	3,319.16

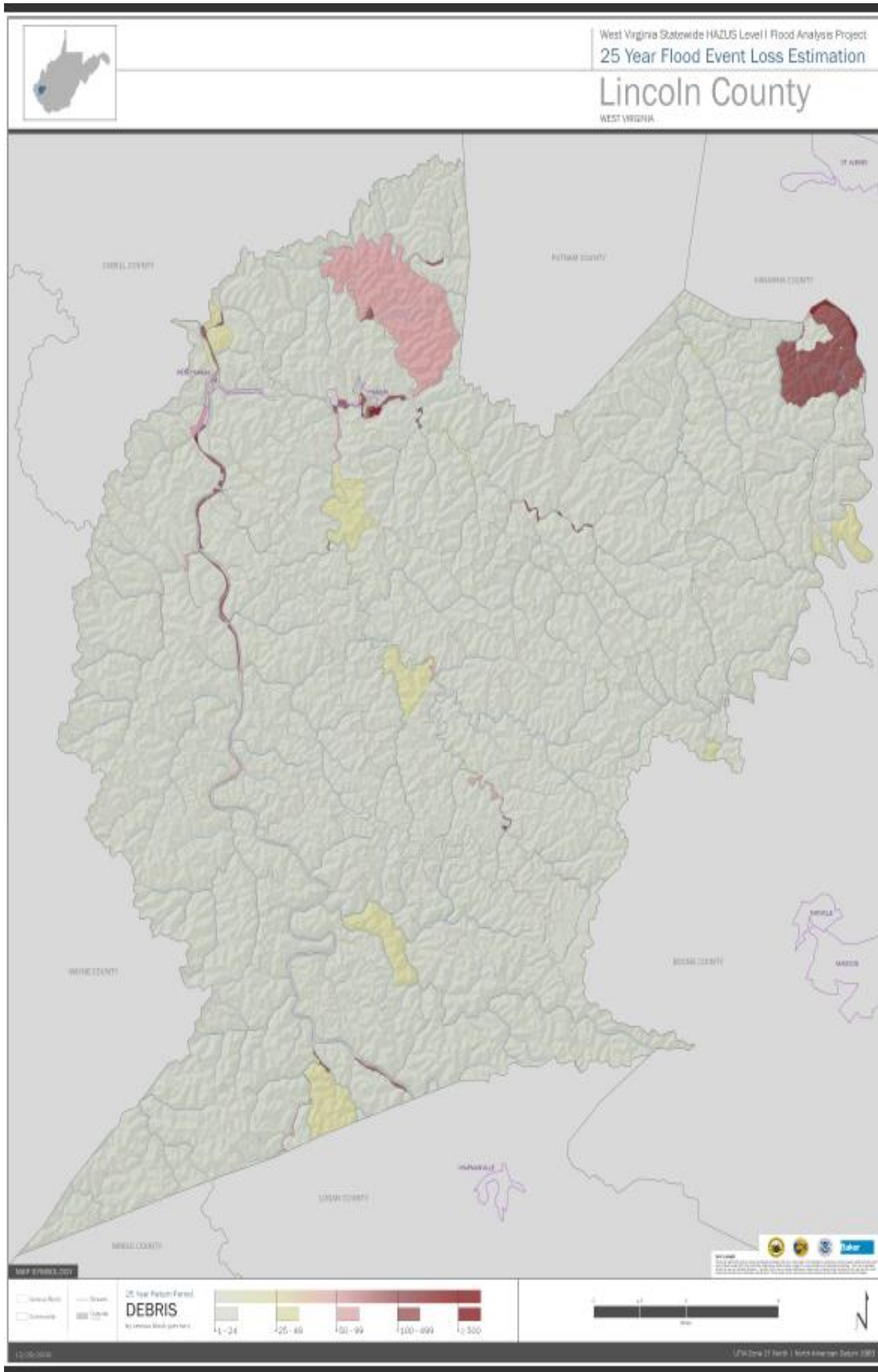


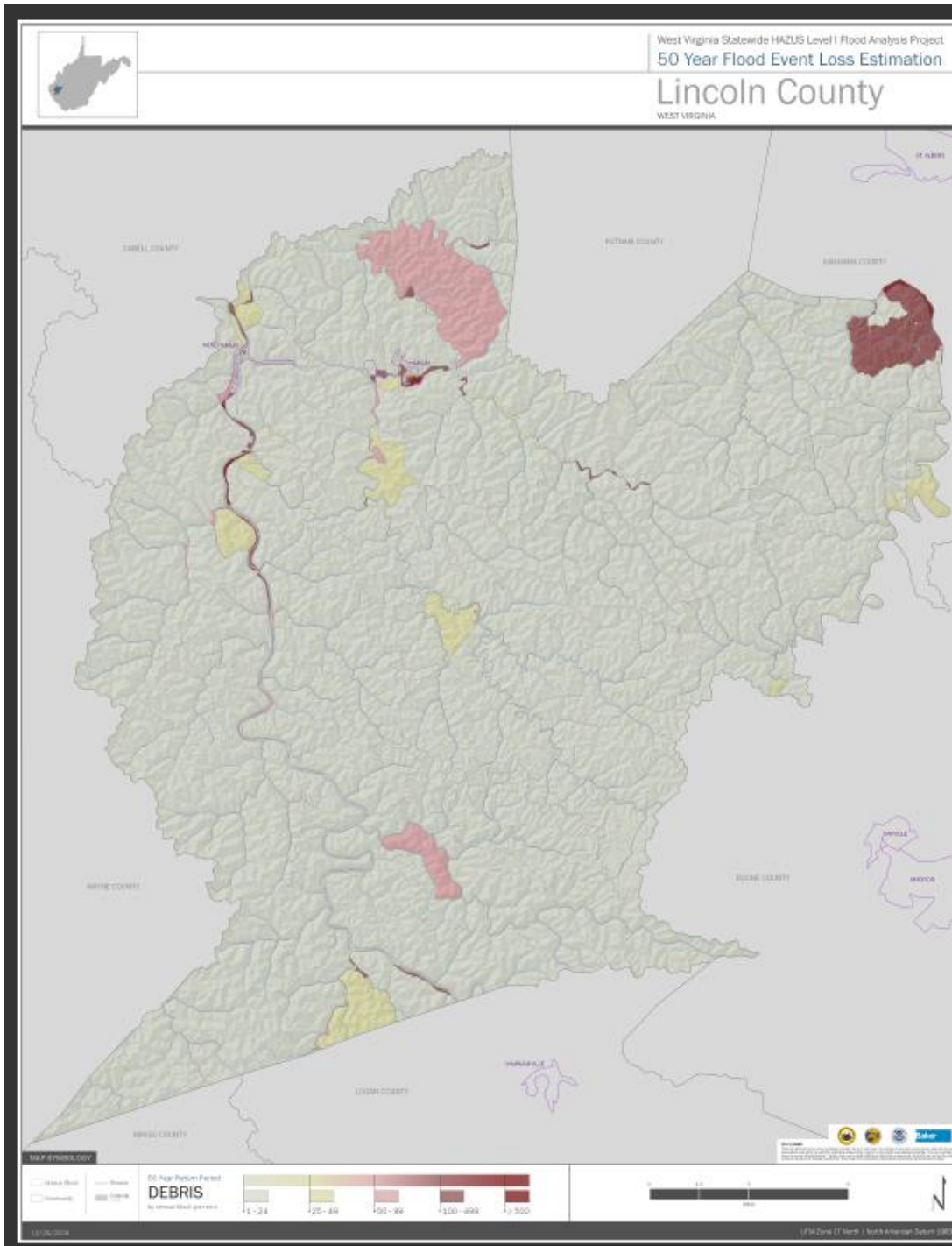


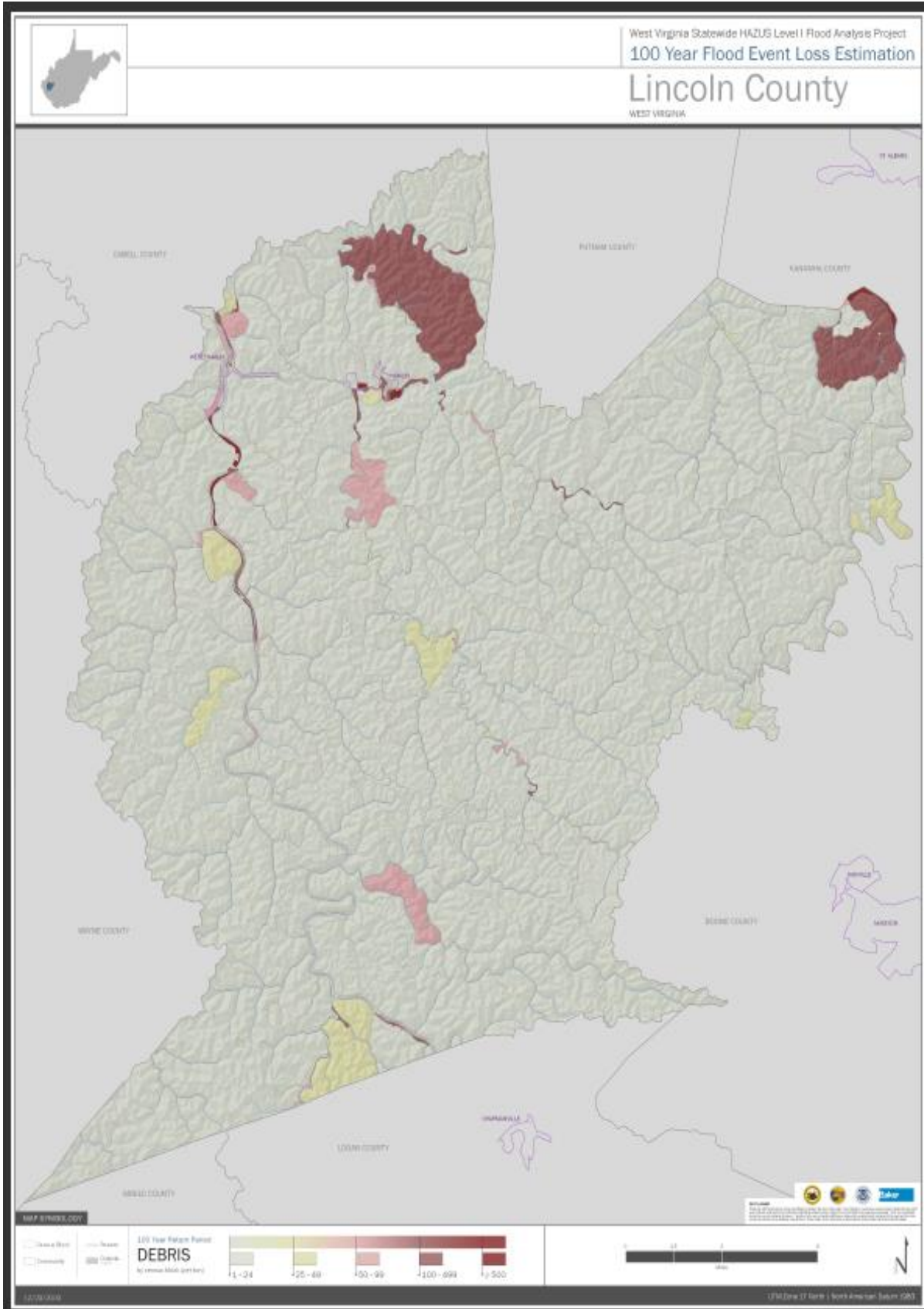


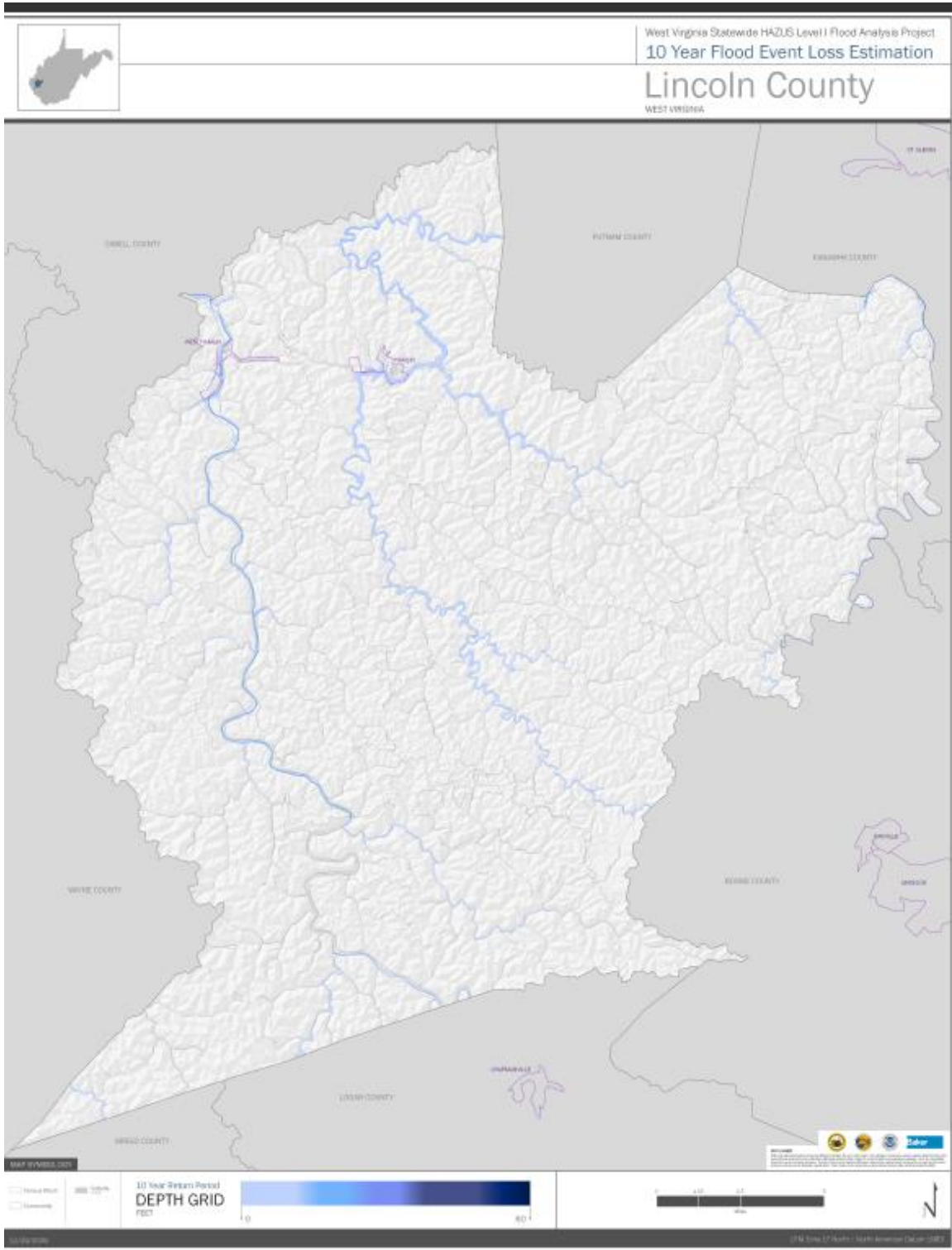


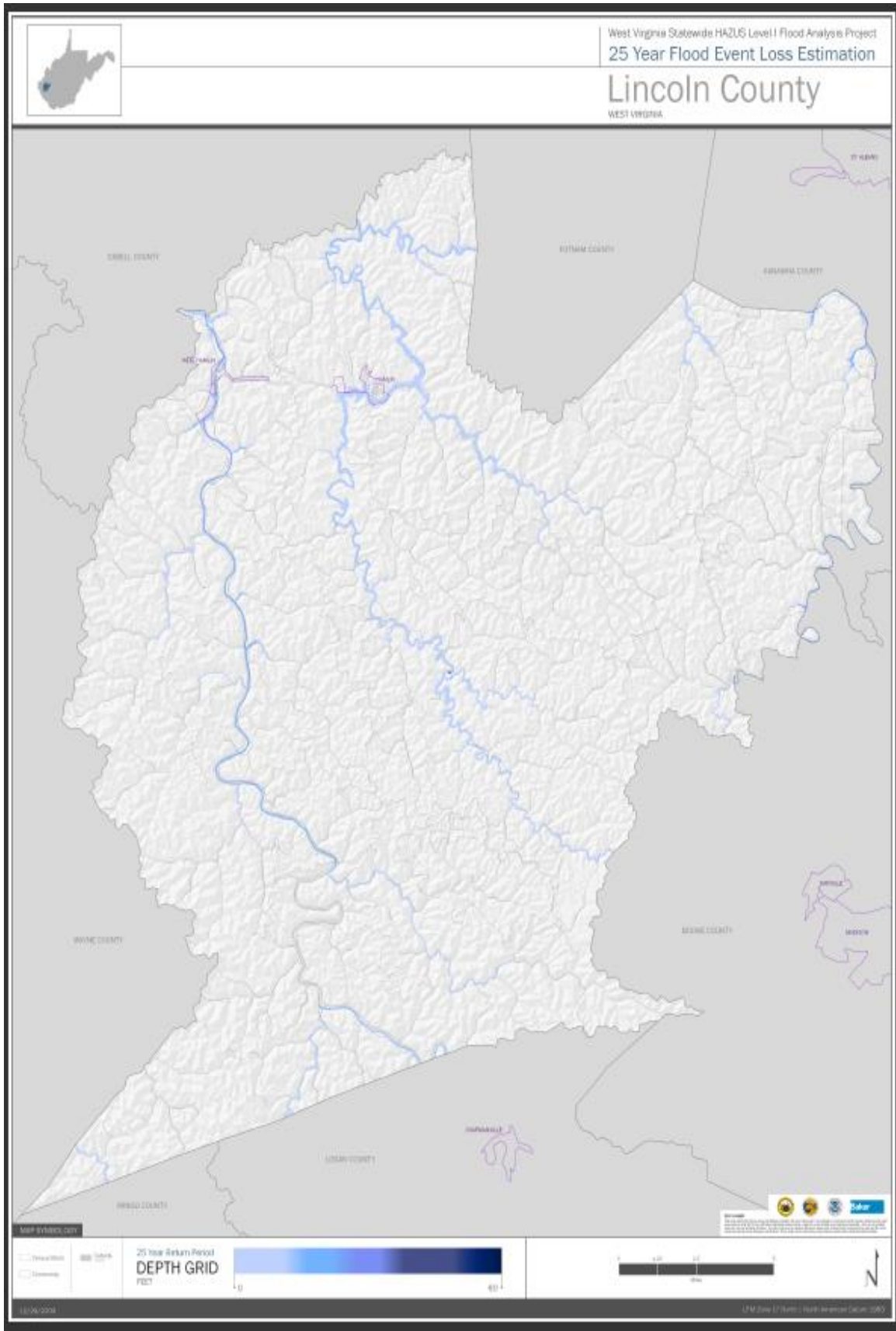


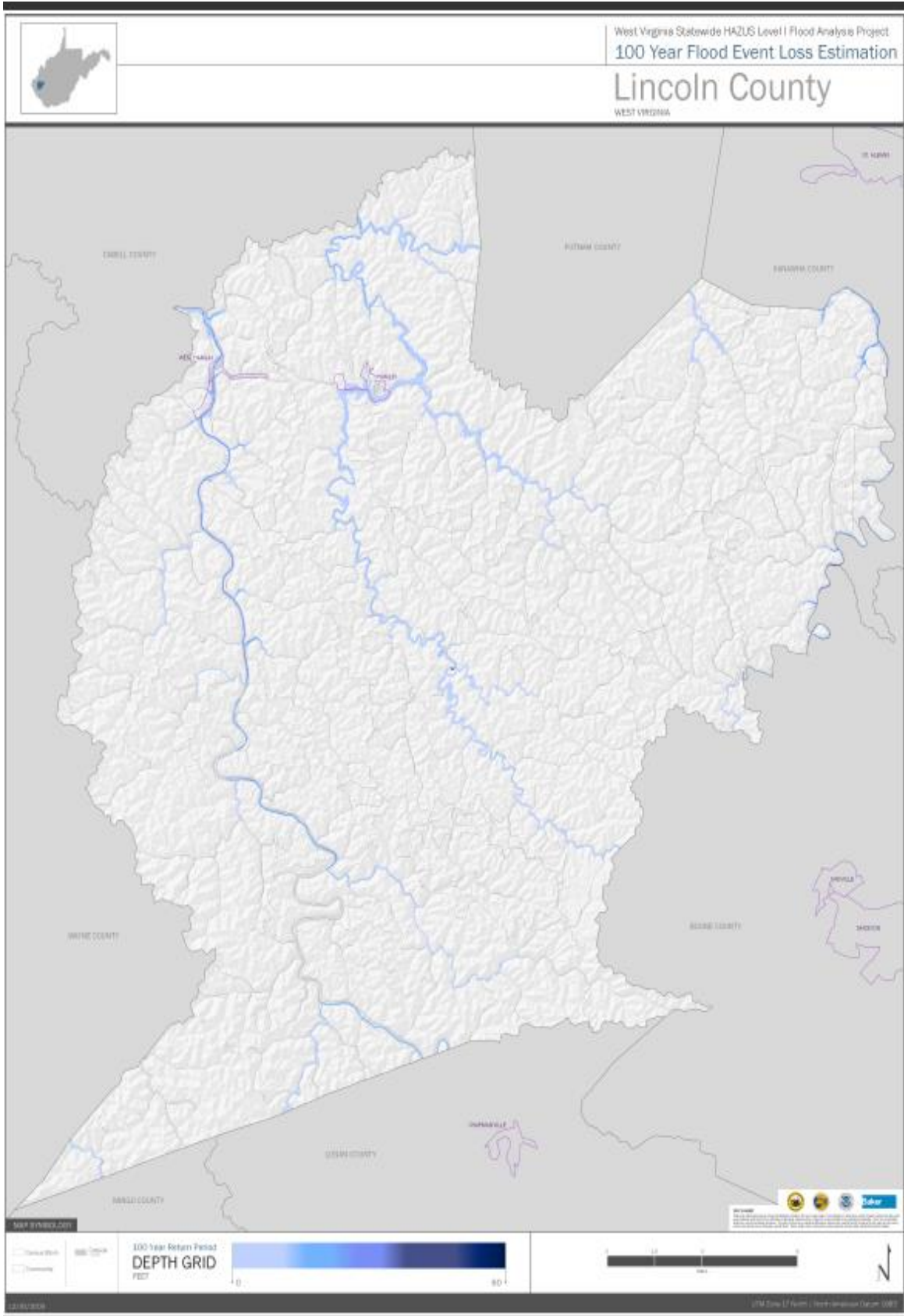


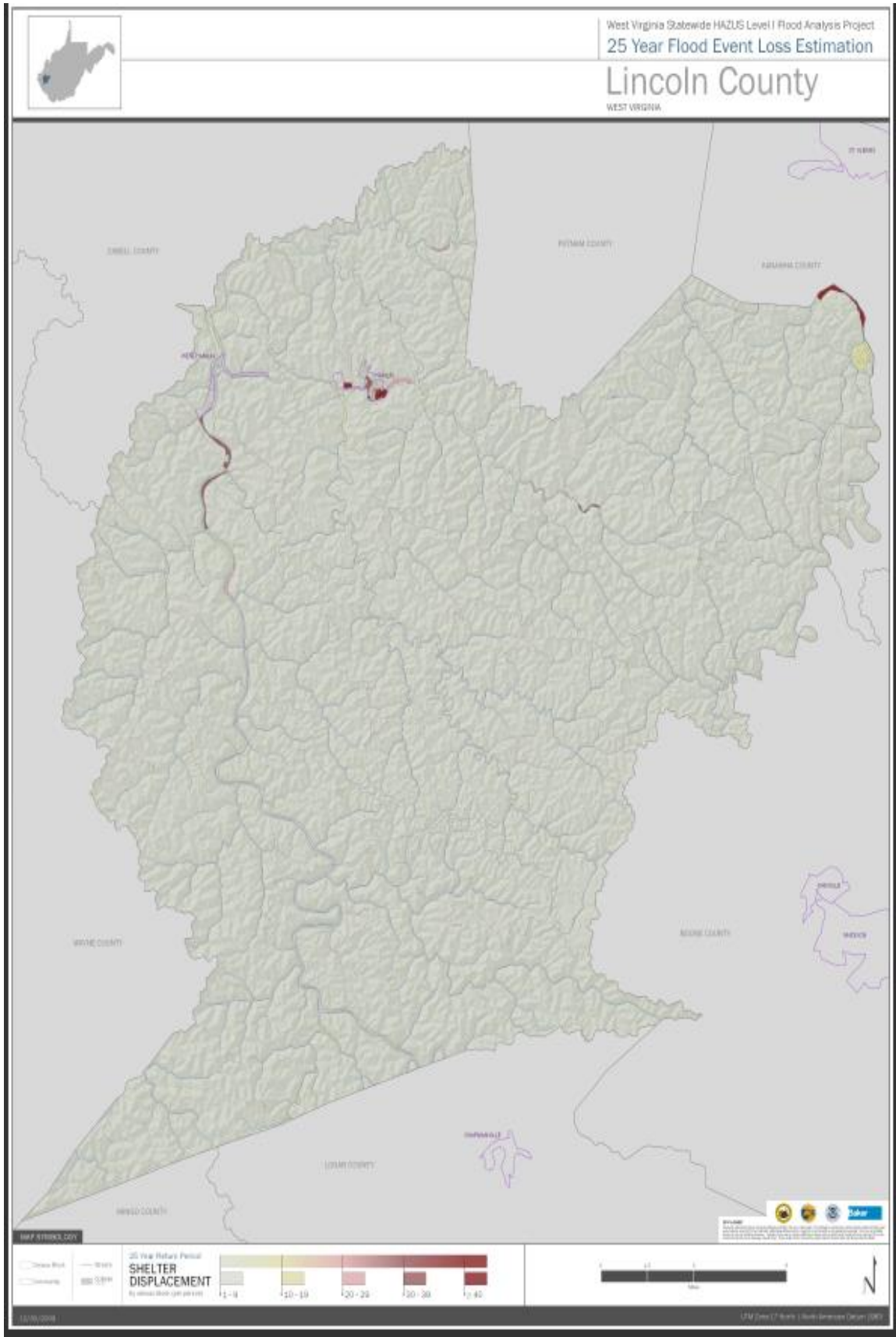


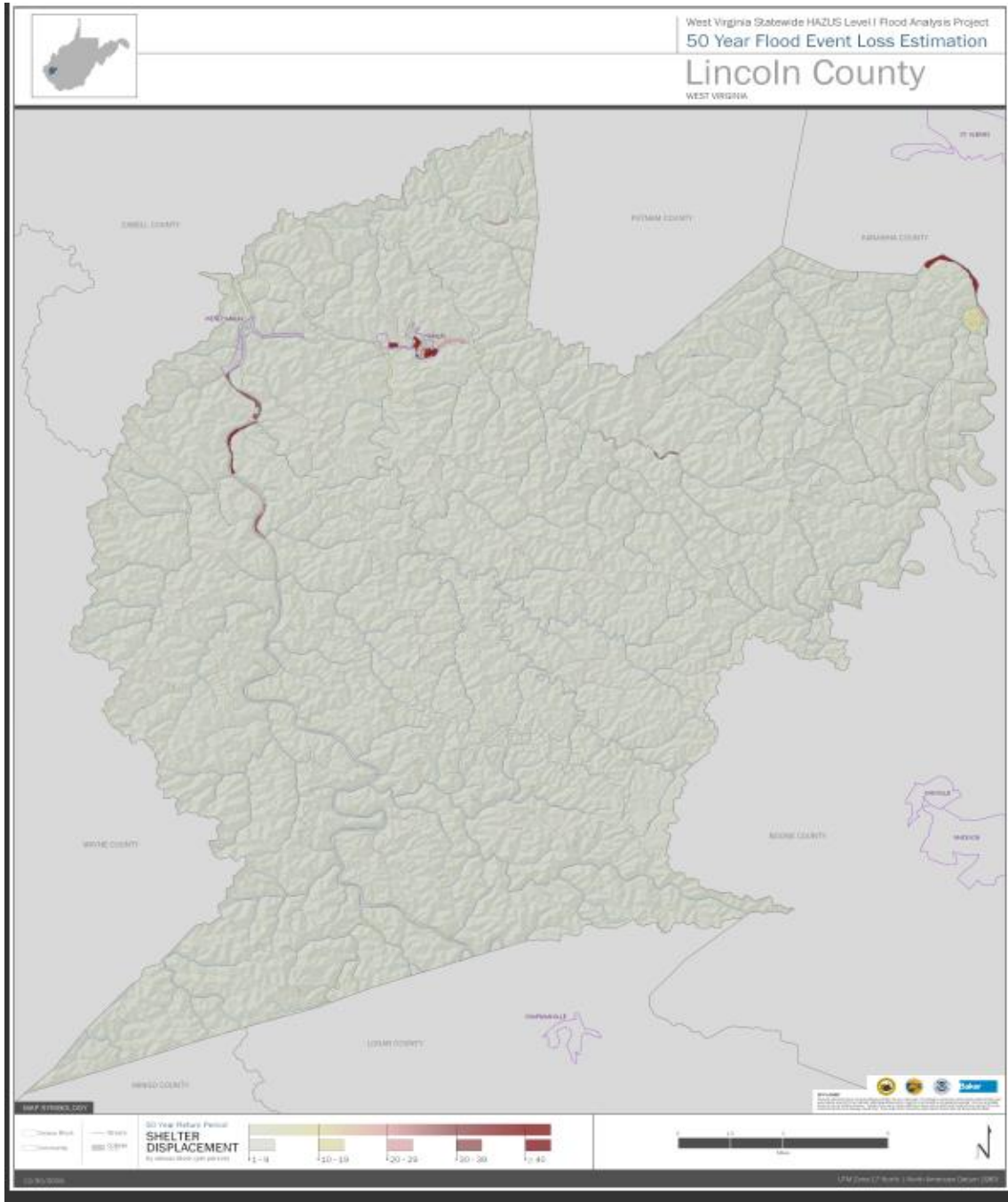


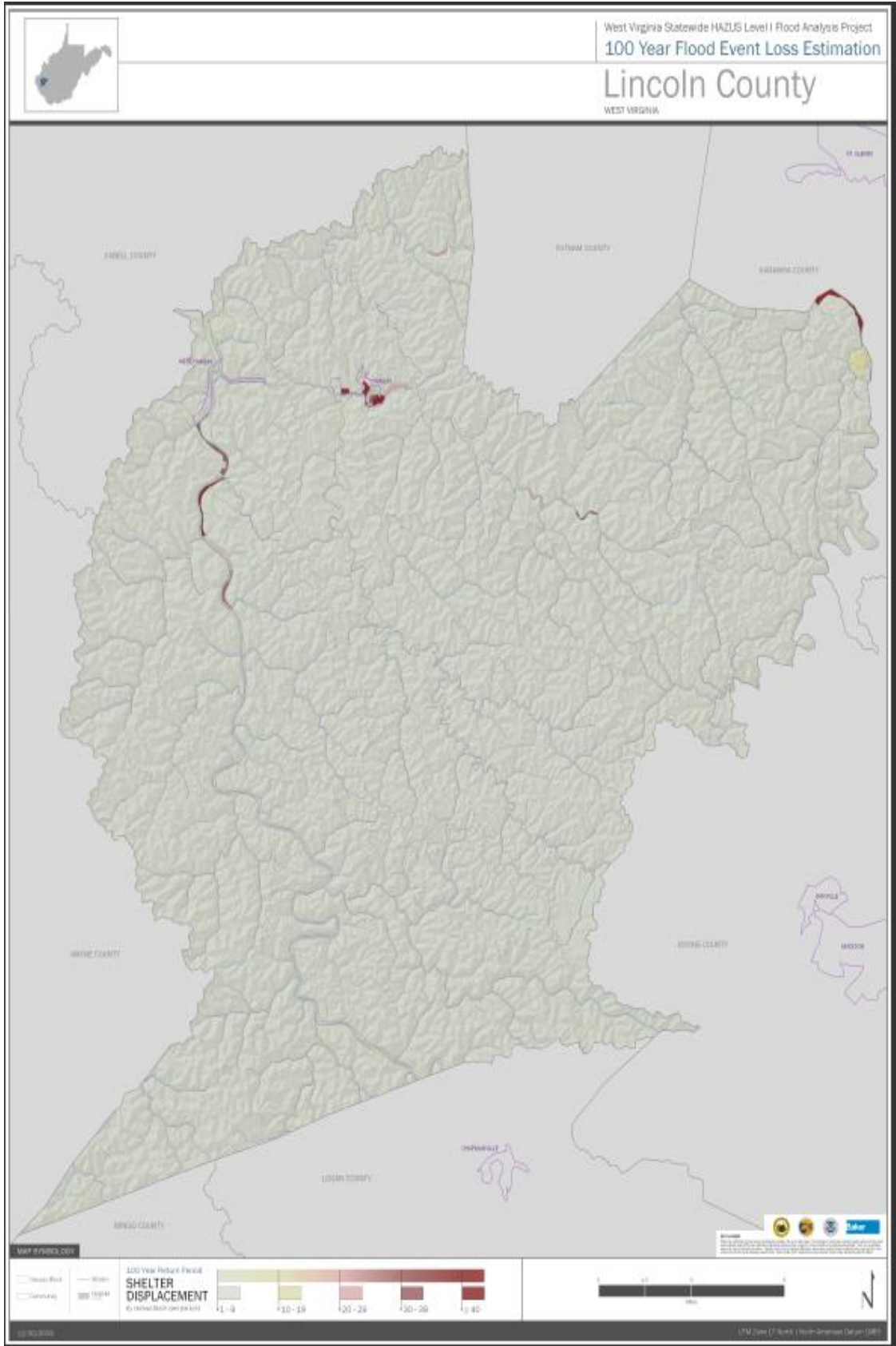


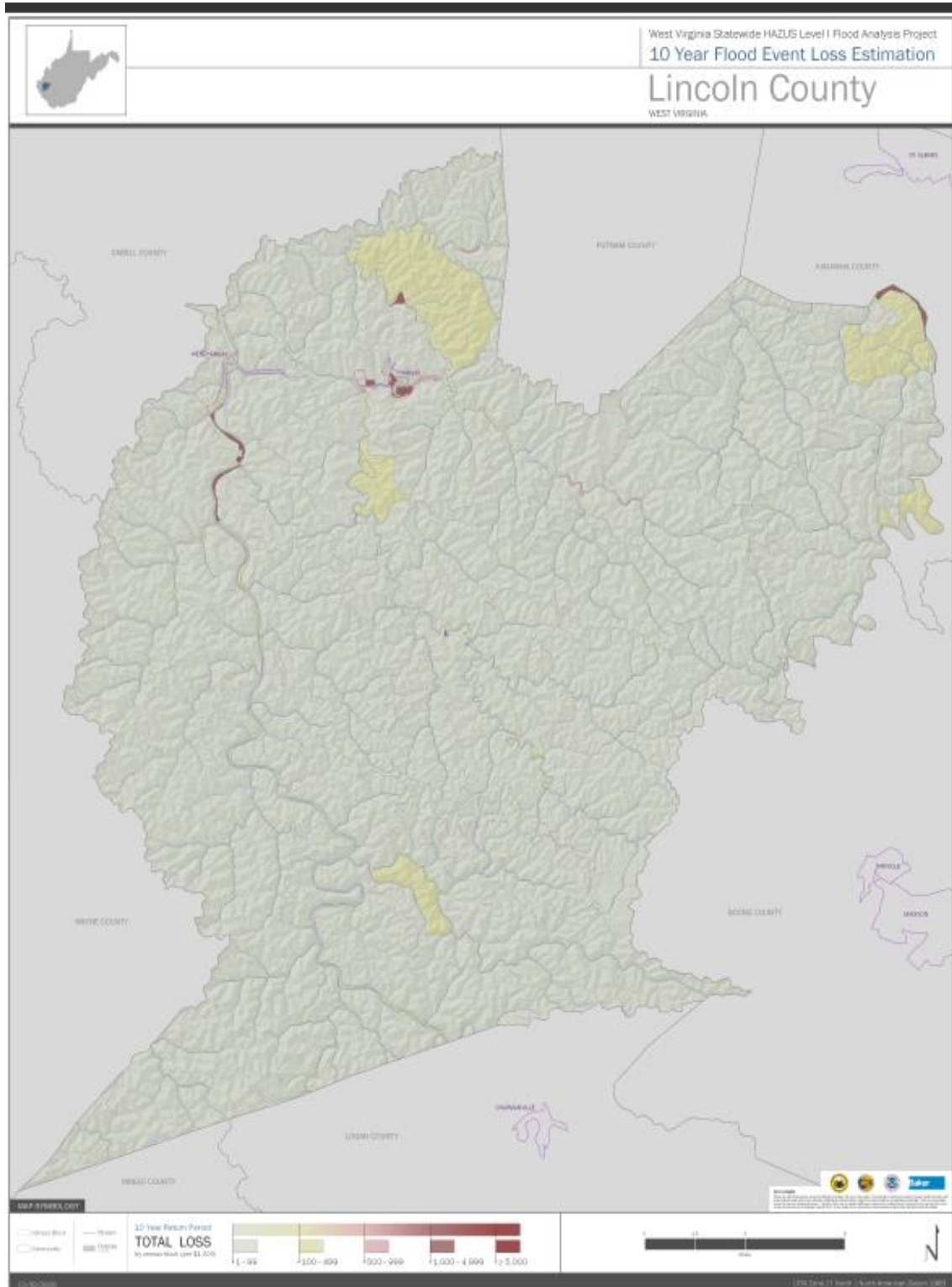


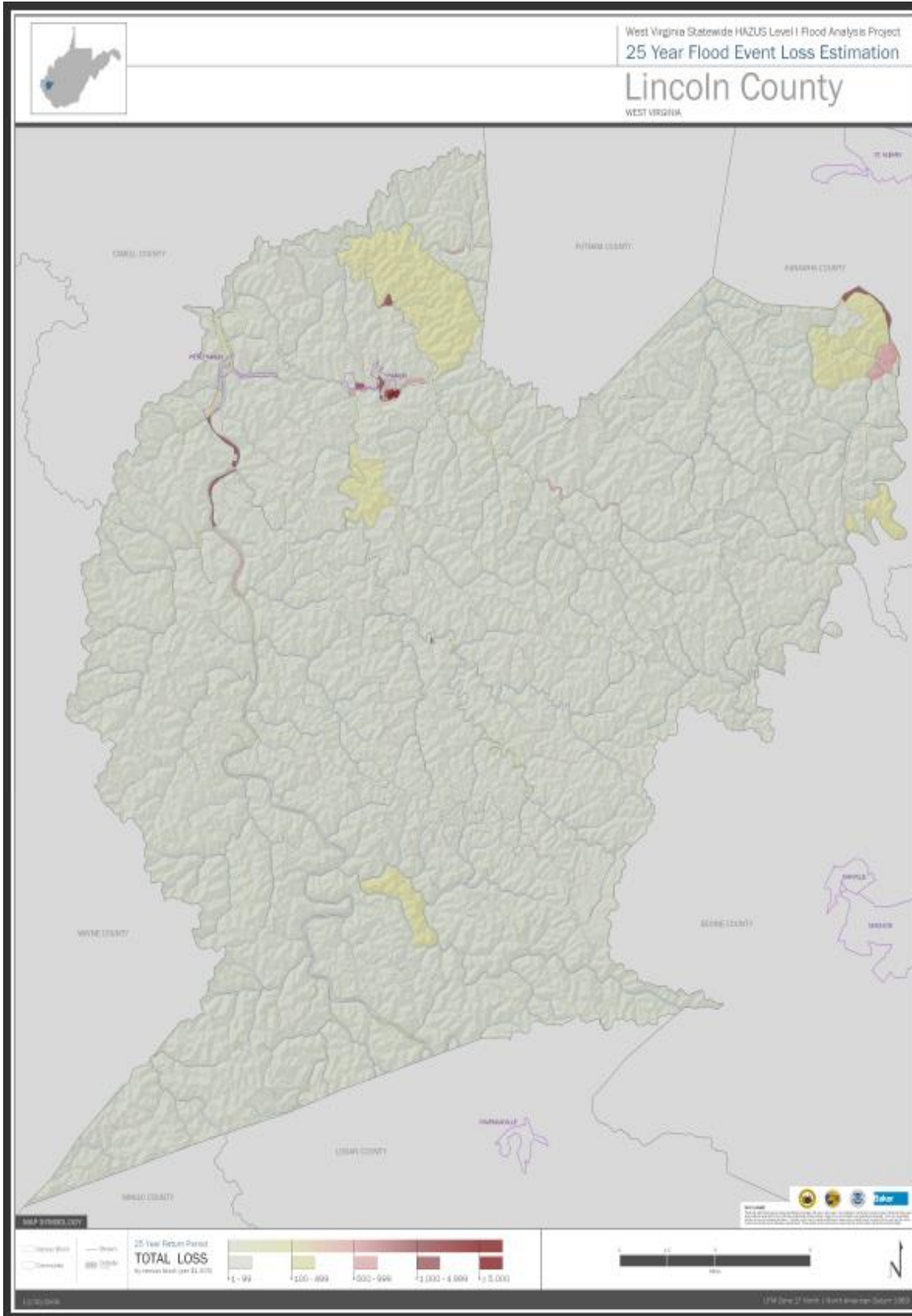


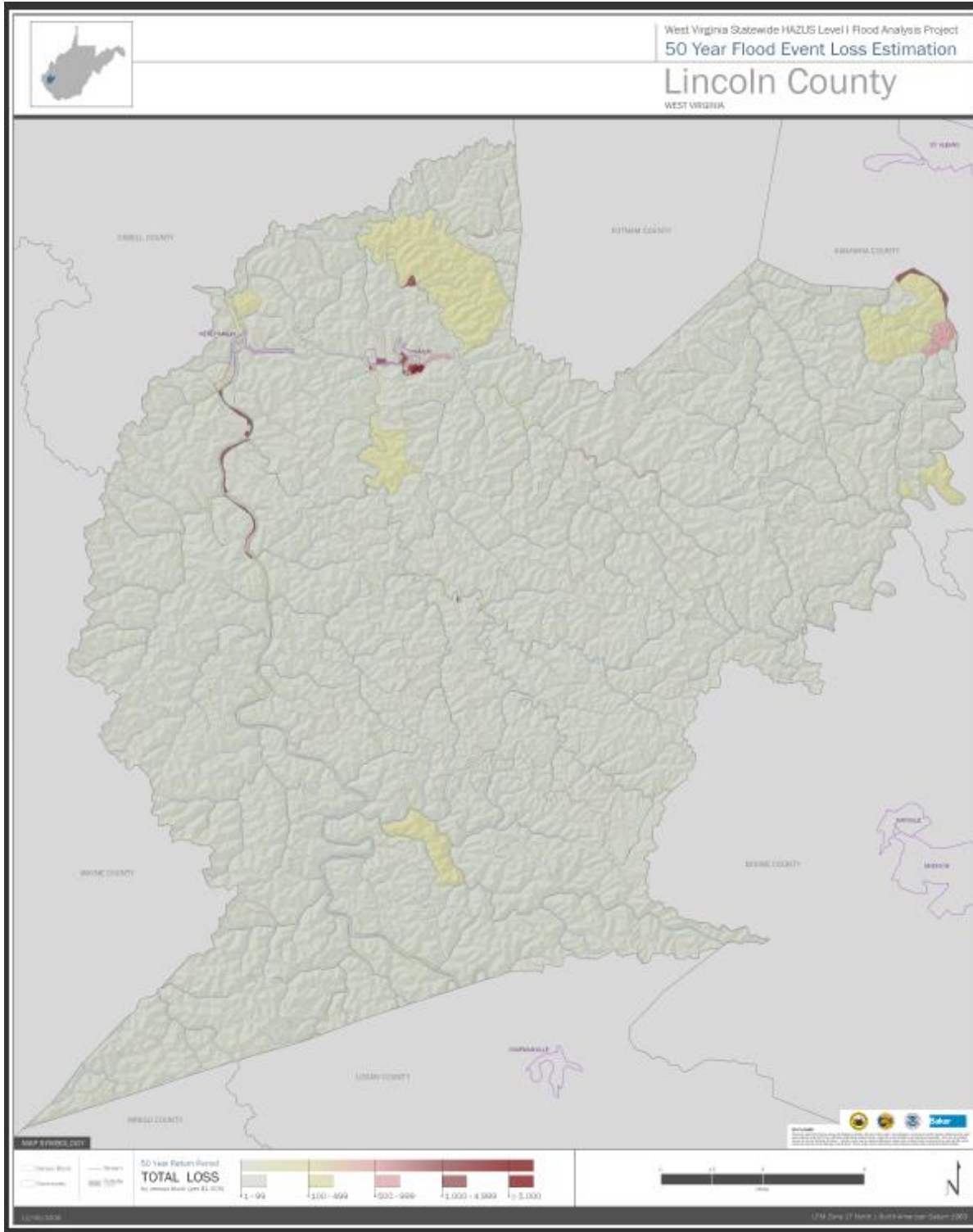


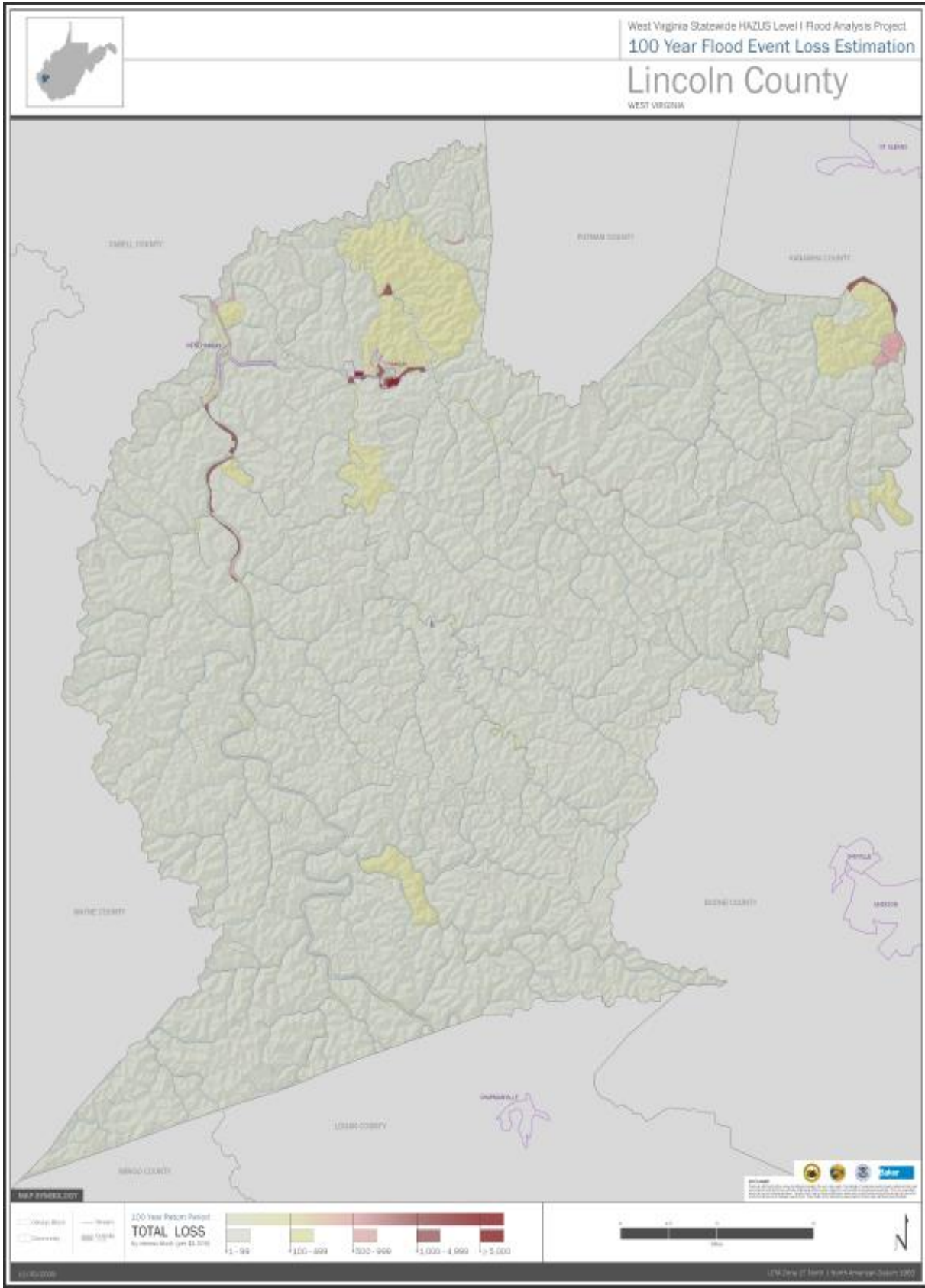












HAZUS-MH: Flood Event Report

Region Name: Lincoln County
Flood Scenario: 10-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 11,065 buildings in the region which have an aggregate total replacement value of 1,203 million (2006 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	1,052,137	87.4%
Commercial	80,236	6.7%
Industrial	14,070	1.2%
Agricultural	3,487	0.3%
Religion	15,317	1.3%
Government	19,367	1.6%
Education	18,537	1.5%
Total	1,203,161	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	595,616	86.1%
Commercial	49,283	7.1%
Industrial	6,549	1.2%
Agricultural	2,045	0.3%
Religion	9,025	1.3%
Government	13,678	2.0%
Education	13,886	2.0%
Total	682,082	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 10 schools, 6 fire stations, no police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 144 buildings will be at least moderately damaged. This is over 33% of the total number of buildings in the scenario. There are an estimated 29 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	5	3.47	57	39.58	20	13.89	33	22.92	29	20.14
Total	0		5		57		20		33		29	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manufacturing/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	22	100.00
Masonry	0	0.00	1	3.45	16	55.17	4	13.79	7	24.14	1	3.45
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	3	3.26	41	44.57	16	17.39	26	28.26	6	6.52

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	8	1	0	0
Hospitals	0	0	0	0
Police Stations	0	0	0	0
Schools	10	1	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 10,828 tons of debris will be generated. Of the total amount, Finishes comprises 35% of the total, Structure comprises 28% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 433 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 434 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 564 people (out of a total population of 22,108) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 52.53 million dollars, which represents 7.10 % 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 52.05 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 66.40% 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	Commerotal	Industrial	Others	Total
<u>Building Loss</u>						
	Building	22.02	2.30	0.86	0.97	26.15
	Content	12.83	6.05	1.42	5.15	25.45
	Inventory	0.00	0.20	0.22	0.04	0.46
	Subtotal	34.85	8.55	2.50	6.16	52.06
<u>Business Interruption</u>						
	Income	0.00	0.03	0.00	0.02	0.05
	Relocation	0.03	0.01	0.00	0.00	0.04
	Rental Income	0.00	0.01	0.00	0.00	0.01
	Wage	0.00	0.04	0.00	0.34	0.38
	Subtotal	0.04	0.09	0.00	0.36	0.49
ALL	Total	34.89	8.64	2.50	6.52	52.53

HAZUS-MH: Flood Event Report

Region Name: Lincoln County

Flood Scenario: 25-YR

Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 11,065 buildings in the region which have an aggregate total replacement value of 1,203 million (2006 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	1,052,137	87.4%
Commercial	80,236	6.7%
Industrial	14,070	1.2%
Agricultural	3,487	0.3%
Religion	15,317	1.3%
Government	19,367	1.6%
Education	18,537	1.5%
Total	1,203,161	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	618,400	86.5%
Commercial	49,602	6.9%
Industrial	6,549	1.2%
Agricultural	2,045	0.3%
Religion	9,025	1.3%
Government	13,678	1.9%
Education	13,896	1.9%
Total	716,186	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 10 schools, 6 fire stations, no police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 201 buildings will be at least moderately damaged. This is over 22% of the total number of buildings in the scenario. There are an estimated 49 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	3	1.43	50	24.88	31	15.42	68	33.83	49	24.38
Total	0	0.00	3	1.43	50	24.88	31	15.42	68	33.83	49	24.38

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	37	100.00
Masonry	0	0.00	1	2.70	11	29.73	8	21.62	14	37.84	3	8.11
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	1.57	39	30.71	23	18.11	54	42.52	9	7.09

Essential Facility Damage

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

Table 6: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	6	1	0	0
Hospitals	0	0	0	0
Police Stations	0	0	0	0
Schools	10	1	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 14,541 tons of debris will be generated. Of the total amount, Finishes comprises 33% of the total, Structure comprises 29% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 582 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 507 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 724 people (out of a total population of 22,108) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 68.43 million dollars, which represents 9.26 % 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 67.86 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 66.68% 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
<u>Building Loss</u>						
	Building	28.86	3.05	1.02	1.28	34.21
	Content	16.72	7.77	1.66	6.96	33.11
	Inventory	0.00	0.25	0.25	0.04	0.54
	Subtotal	45.58	11.07	2.94	8.27	67.86
<u>Business Interruption</u>						
	Income	0.00	0.04	0.00	0.02	0.06
	Relocation	0.05	0.01	0.00	0.00	0.06
	Rental Income	0.00	0.01	0.00	0.00	0.01
	Wage	0.00	0.05	0.00	0.39	0.44
	Subtotal	0.05	0.11	0.00	0.41	0.57
ALL	Total	45.63	11.18	2.94	8.68	68.43

HAZUS-MH: Flood Event Report

Region Name: LincolnCounty
Flood Scenario: 50-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 11,065 buildings in the region which have an aggregate total replacement value of 1,203 million (2006 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	1,052,137	87.4%
Commercial	80,236	6.7%
Industrial	14,070	1.2%
Agricultural	3,487	0.3%
Religion	15,317	1.3%
Government	19,367	1.6%
Education	18,537	1.5%
Total	1,203,151	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	663,019	87.3%
Commercial	47,960	6.3%
Industrial	9,108	1.2%
Agricultural	2,045	0.3%
Religion	9,372	1.2%
Government	13,833	1.8%
Education	13,886	1.8%
Total	759,223	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 10 schools, 6 fire stations, no police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 243 buildings will be at least moderately damaged. This is over 21% of the total number of buildings in the scenario. There are an estimated 65 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	4	1.65	50	20.66	30	12.40	93	38.43	65	26.86
Total	0		5		50		30		93		65	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	49	100.00
Masonry	0	0.00	1	2.00	13	26.00	7	14.00	25	50.00	4	8.00
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	3	2.10	37	25.67	23	16.08	68	47.55	12	8.39

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	6	2	0	1
Hospitals	0	0	0	0
Police Stations	0	0	0	0
Schools	10	3	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 16,256 tons of debris will be generated. Of the total amount, Finishes comprises 32% of the total, Structure comprises 30% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 650 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 529 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 788 people (out of a total population of 22,108) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 77.00 million dollars, which represents 10.41 % 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 76.33 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 65.62% 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
<u>Building Loss</u>						
	Building	31.99	3.58	1.12	1.49	38.17
	Content	18.48	9.36	1.81	7.92	37.57
	Inventory	0.00	0.27	0.28	0.04	0.59
	Subtotal	60.48	13.20	3.21	9.46	78.33
<u>Business Interruption</u>						
	Income	0.00	0.05	0.00	0.03	0.07
	Relocation	0.06	0.01	0.00	0.00	0.07
	Rental Income	0.01	0.01	0.00	0.00	0.01
	Wage	0.00	0.06	0.00	0.45	0.52
	Subtotal	0.08	0.13	0.00	0.48	0.67
ALL	Total	60.63	13.33	3.21	9.88	77.00

HAZUS-MH: Flood Event Report

Region Name: LincolnCounty
 Flood Scenario: 100-YR
 Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 11,065 buildings in the region which have an aggregate total replacement value of 1,203 million (2006 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	1,052,137	87.4%
Commercial	80,236	6.7%
Industrial	14,070	1.2%
Agricultural	3,487	0.3%
Religion	15,317	1.3%
Government	19,367	1.6%
Education	18,537	1.5%
Total	1,203,151	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	686,851	86.8%
Commercial	52,693	6.7%
Industrial	9,948	1.3%
Agricultural	2,045	0.3%
Religion	10,825	1.4%
Government	13,957	1.8%
Education	14,797	1.9%
Total	791,116	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 10 schools, 6 fire stations, no police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 261 buildings will be at least moderately damaged. This is over 20% of the total number of buildings in the scenario. There are an estimated 73 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	4	1.54	50	19.31	26	10.04	106	40.93	73	28.19
Total	0		6		50		26		106		73	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	55	100.00
Masonry	0	0.00	1	2.00	11	22.00	5	10.00	29	58.00	4	8.00
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	3	1.95	39	25.32	21	13.84	77	50.00	14	9.09

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	6	2	0	0
Hospitals	0	0	0	0
Police Stations	0	0	0	0
Schools	10	4	0	1

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 18,751 tons of debris will be generated. Of the total amount, Finishes comprises 31% of the total, Structure comprises 31% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 750 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 575 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 848 people (out of a total population of 22,108) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 84.26 million dollars, which represents 11.40 % of the total replacement value of the scenario buildings.

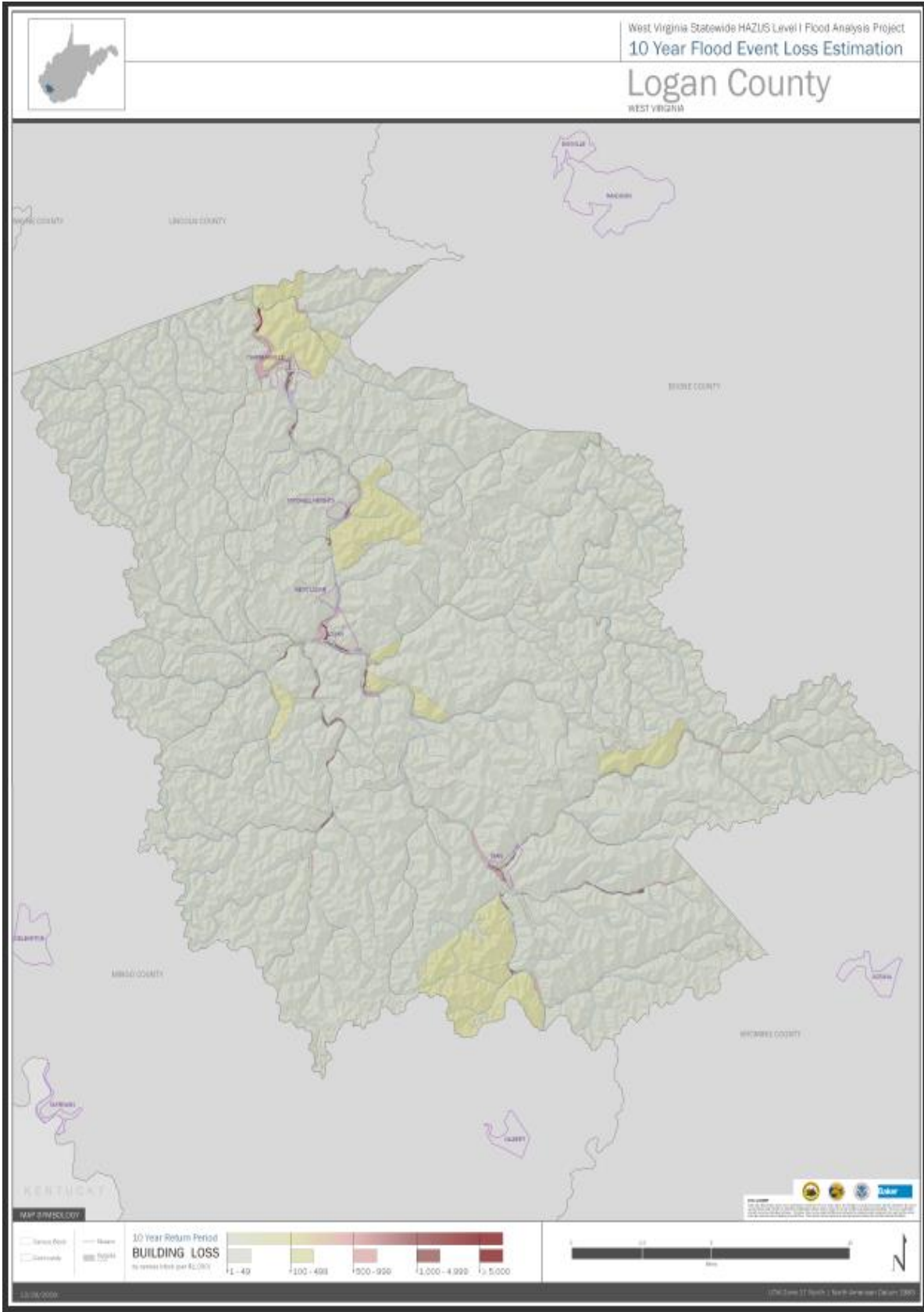
Building-Related Losses

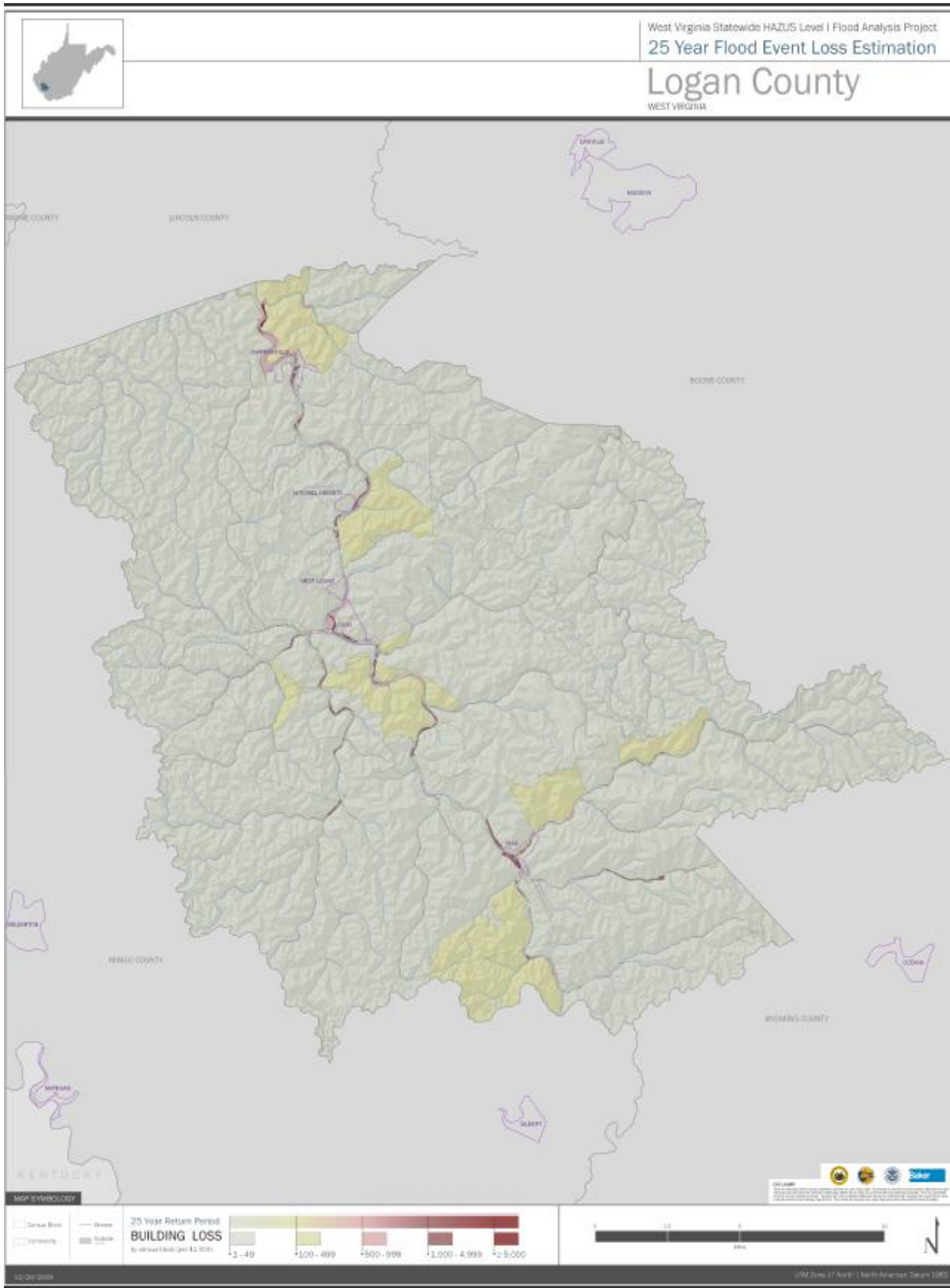
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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.

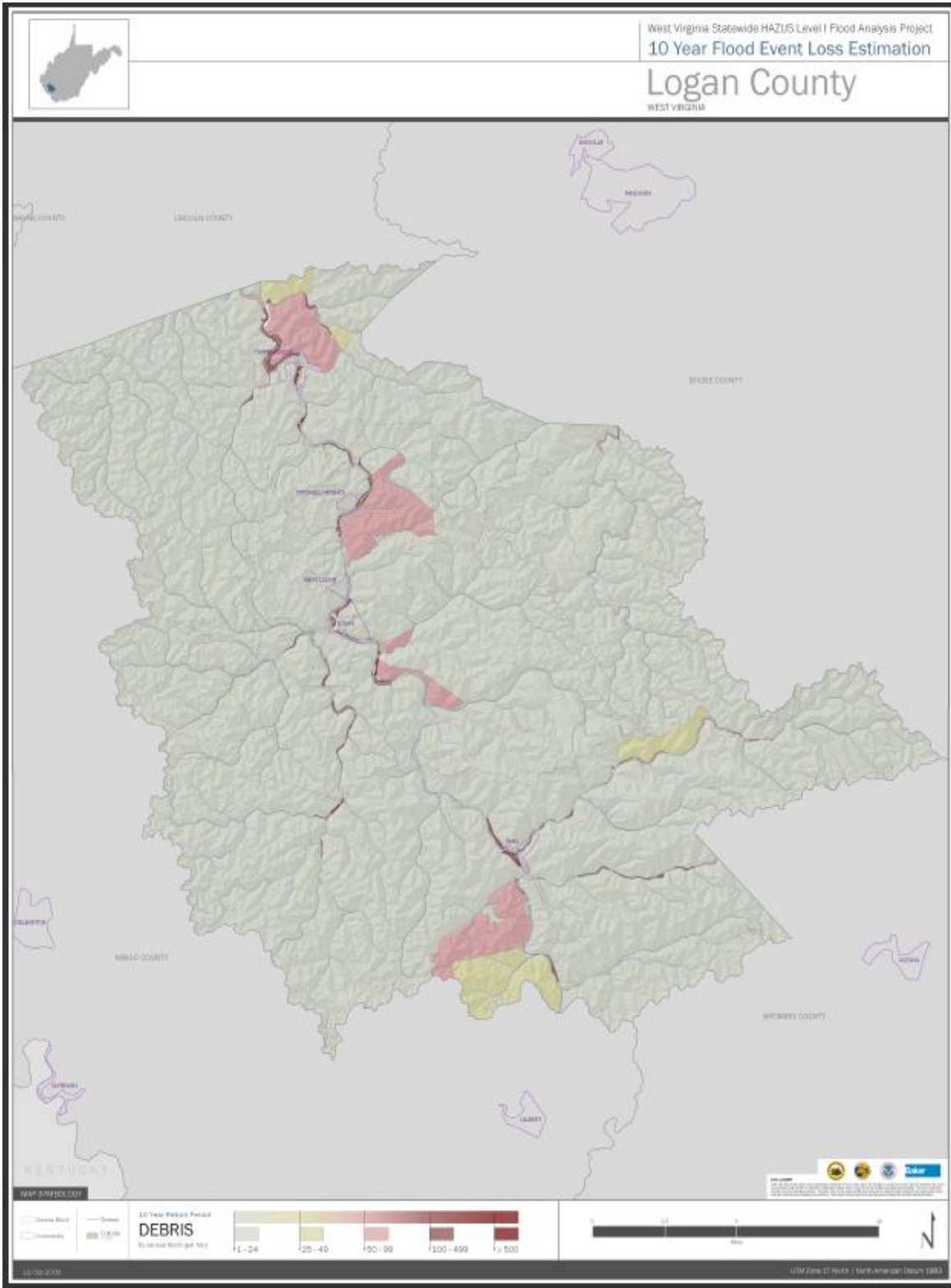
The total building-related losses were 83.56 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 66.47% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

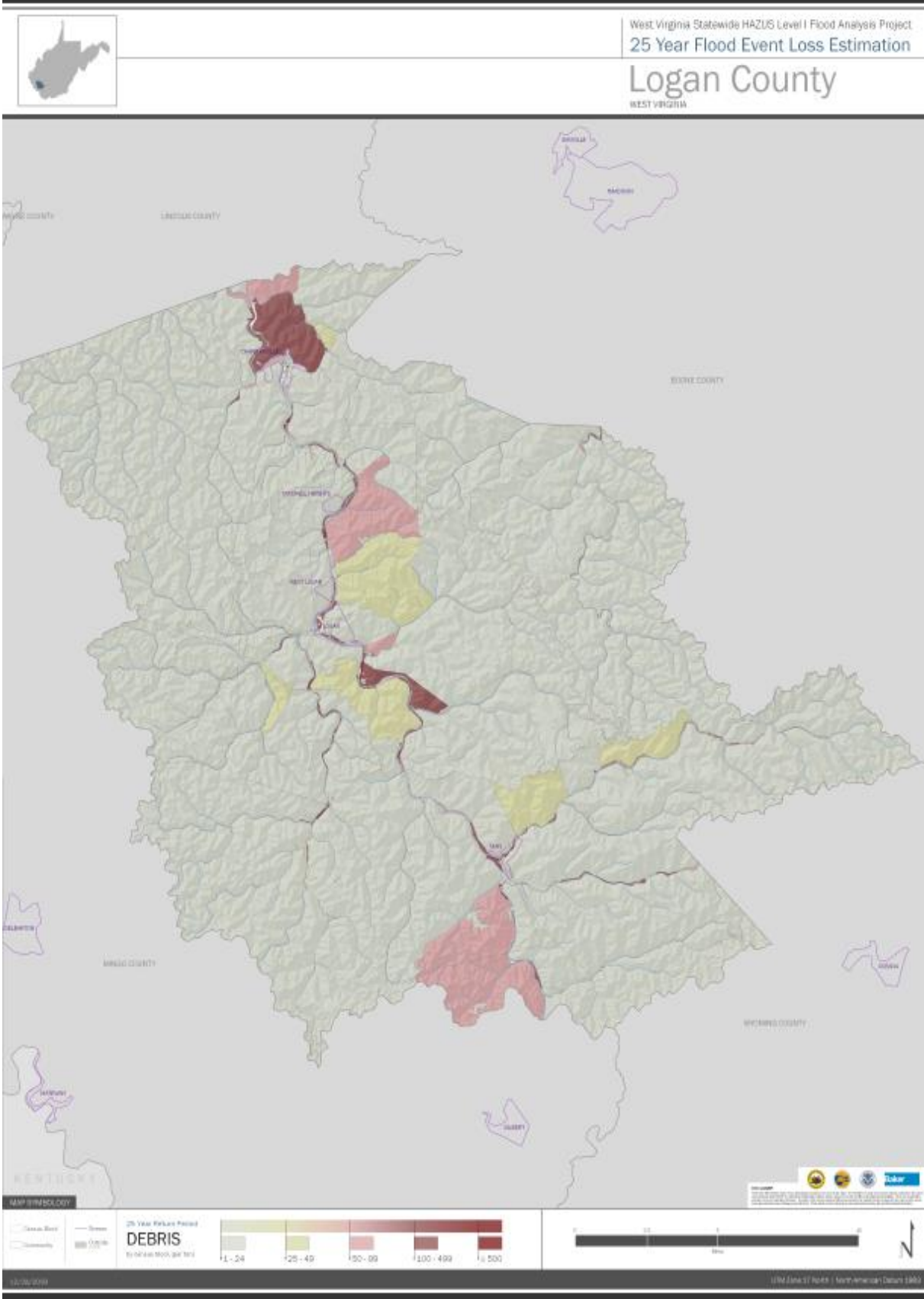
Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

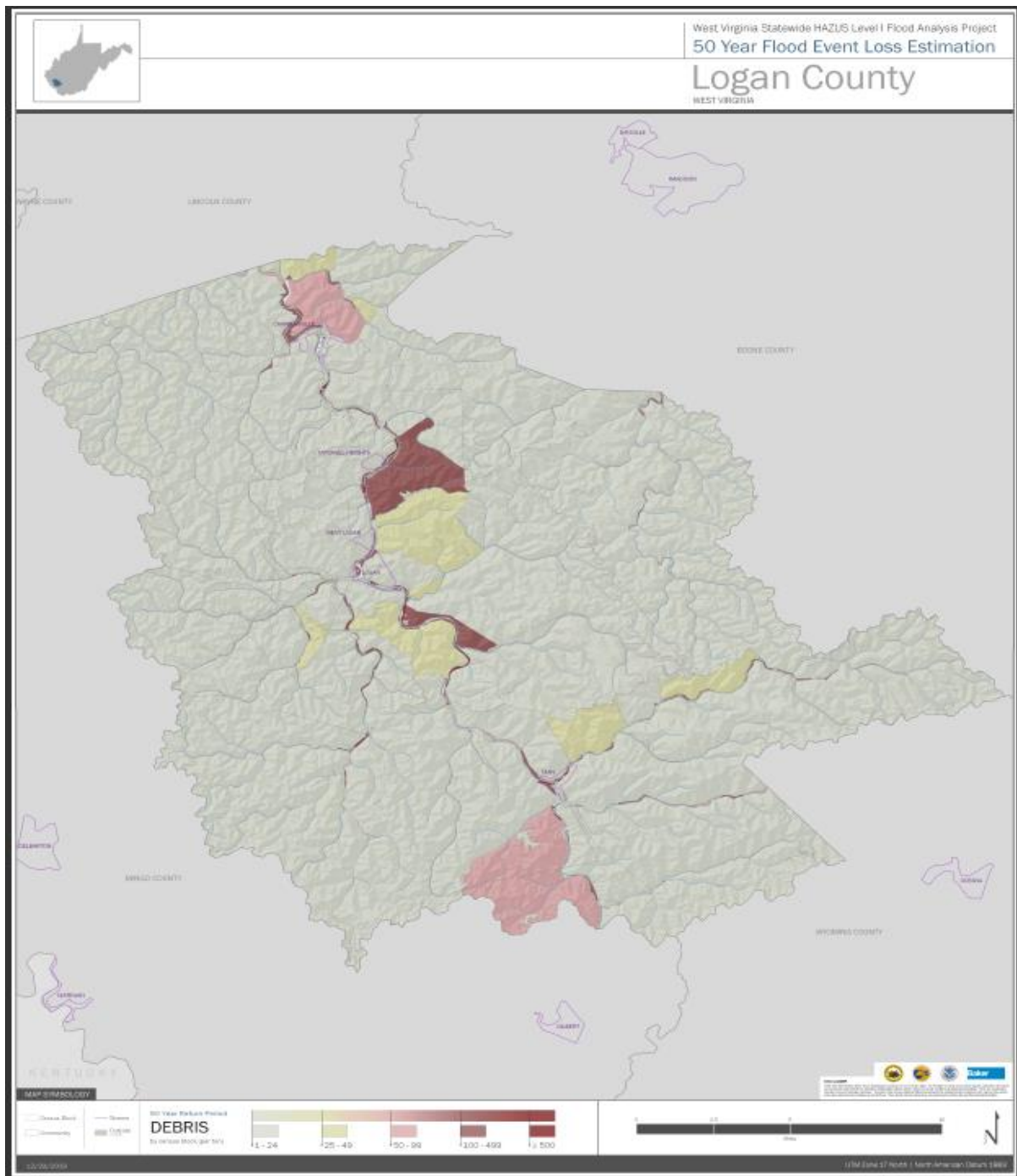
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	35.48	3.93	1.19	1.61	42.21
	Content	20.47	10.10	1.91	6.25	40.73
	Inventory	0.00	0.29	0.30	0.05	0.63
	Subtotal	55.94	14.31	3.41	8.90	83.56
Business Interruption						
	Income	0.00	0.05	0.00	0.03	0.08
	Relocation	0.05	0.01	0.00	0.00	0.07
	Rental Income	0.01	0.01	0.00	0.00	0.01
	Wage	0.00	0.07	0.00	0.47	0.54
	Subtotal	0.06	0.14	0.00	0.50	0.70
ALL	Total	56.01	14.45	3.41	10.40	84.26

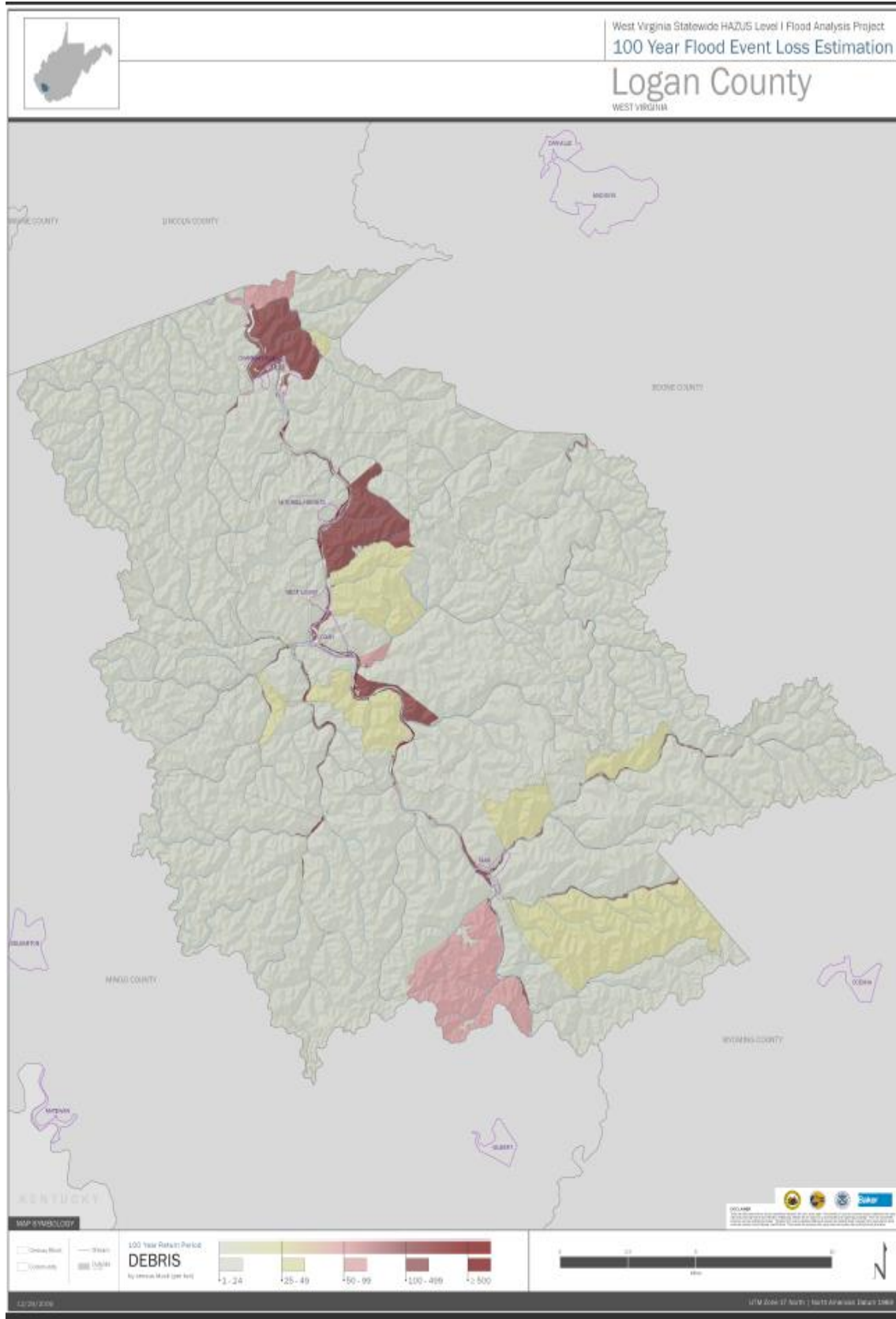


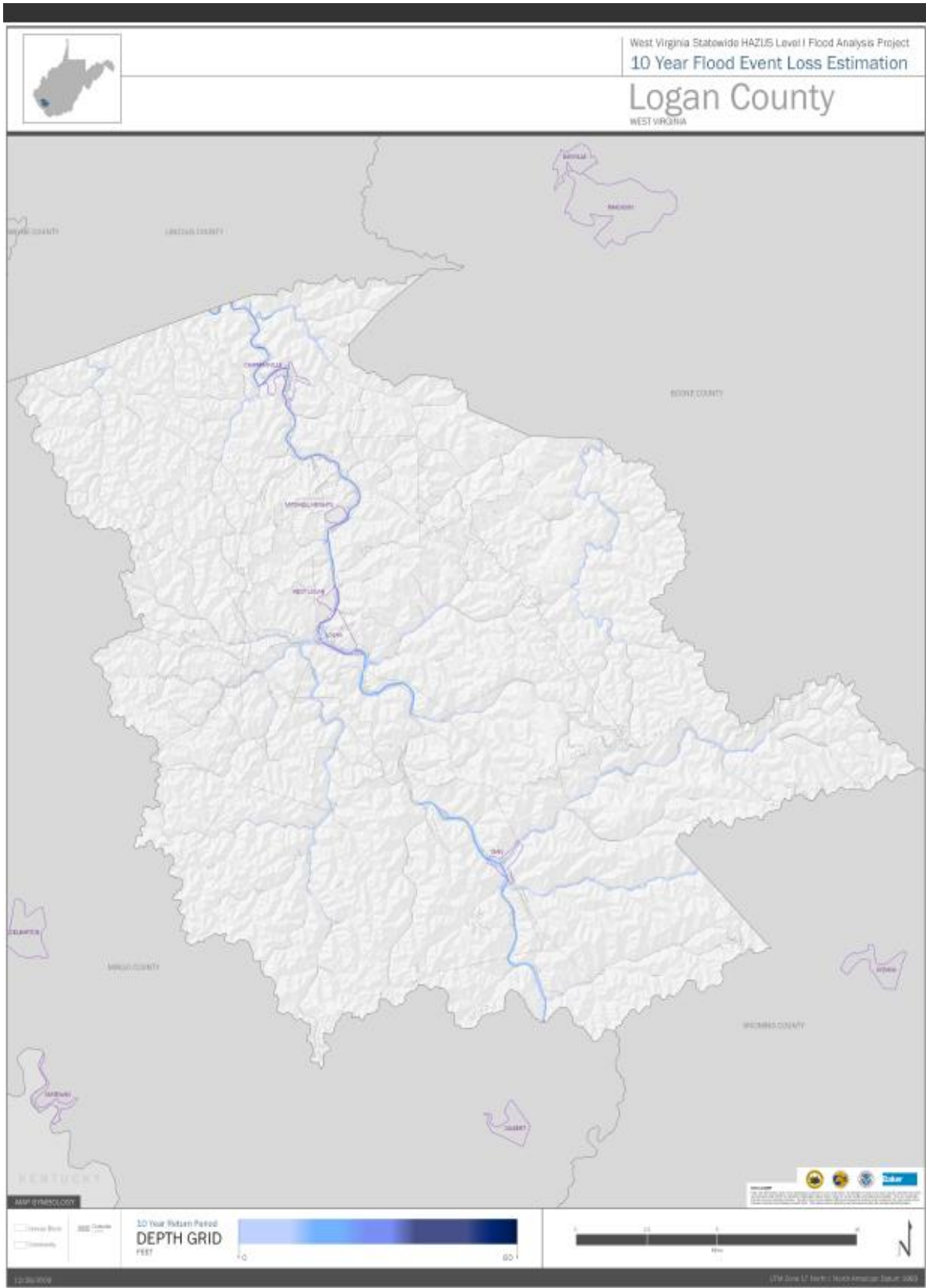


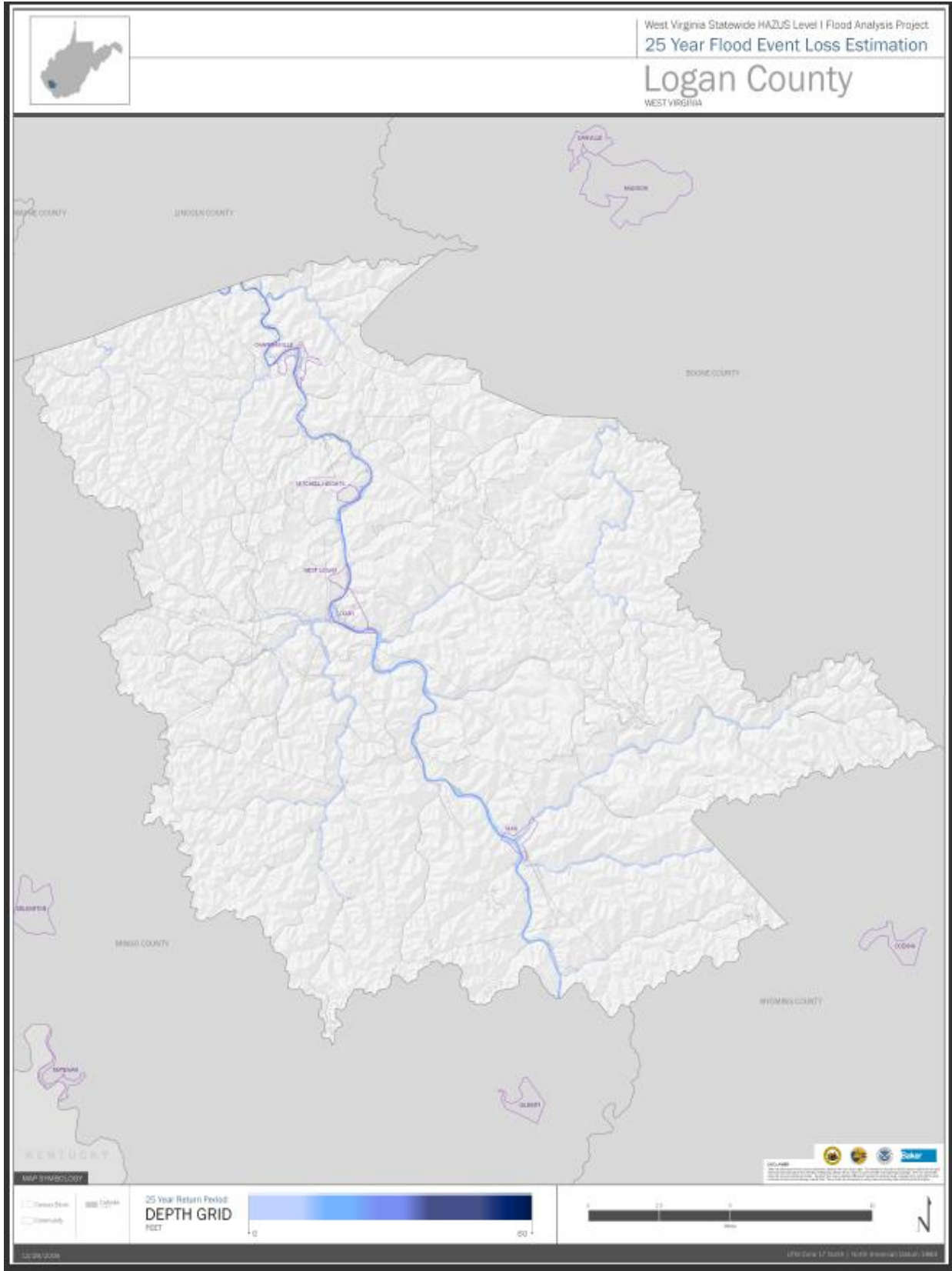


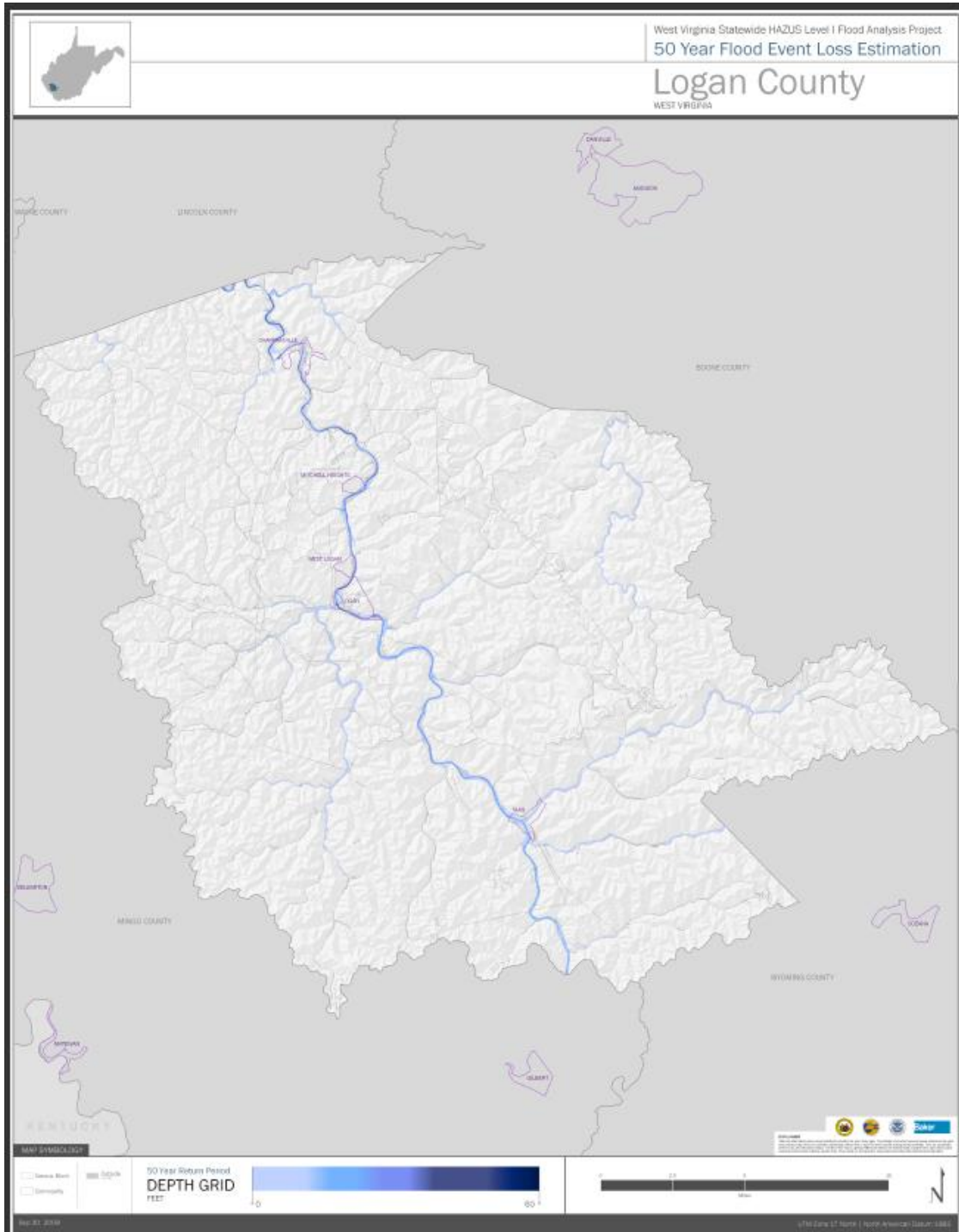


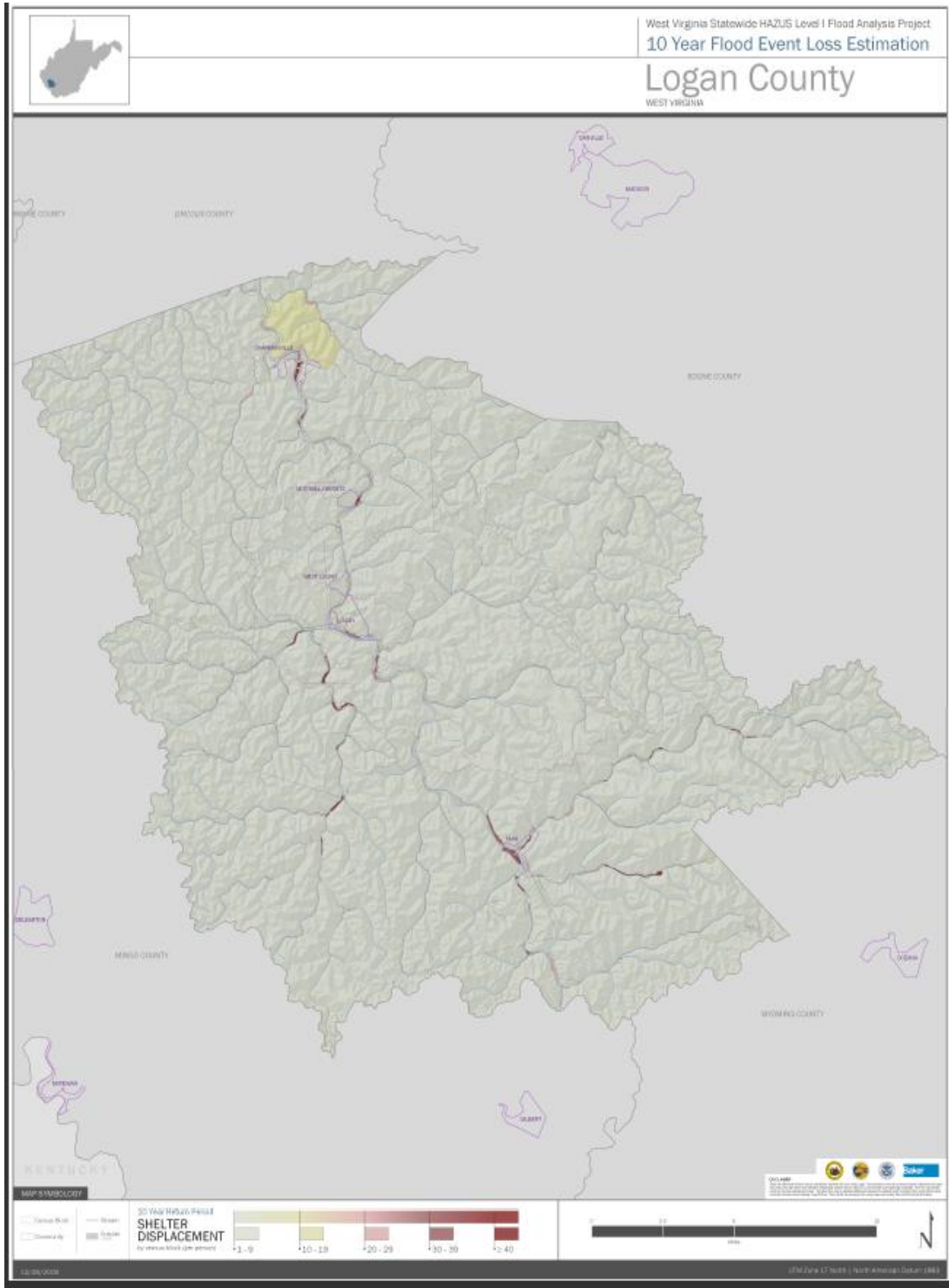


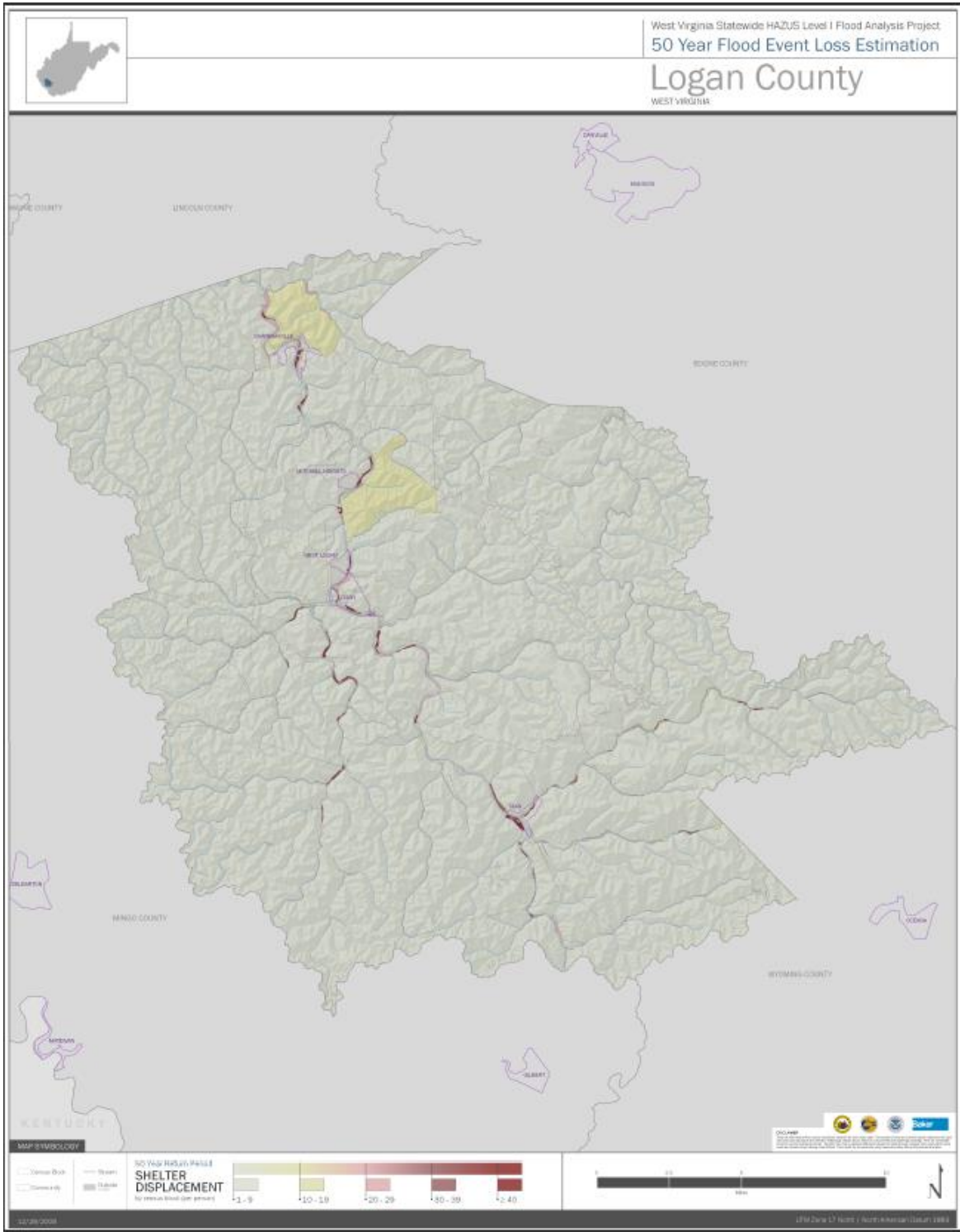


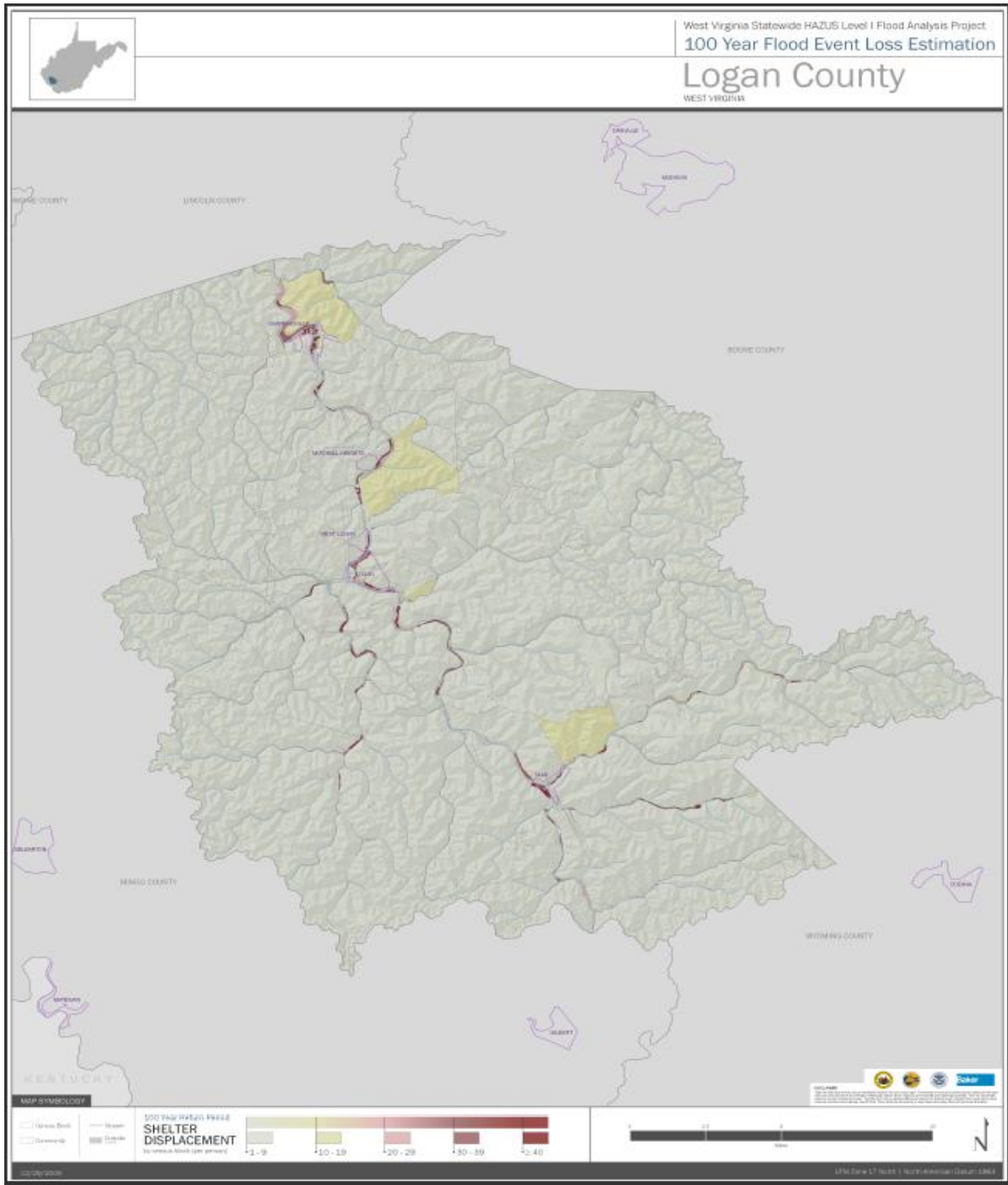


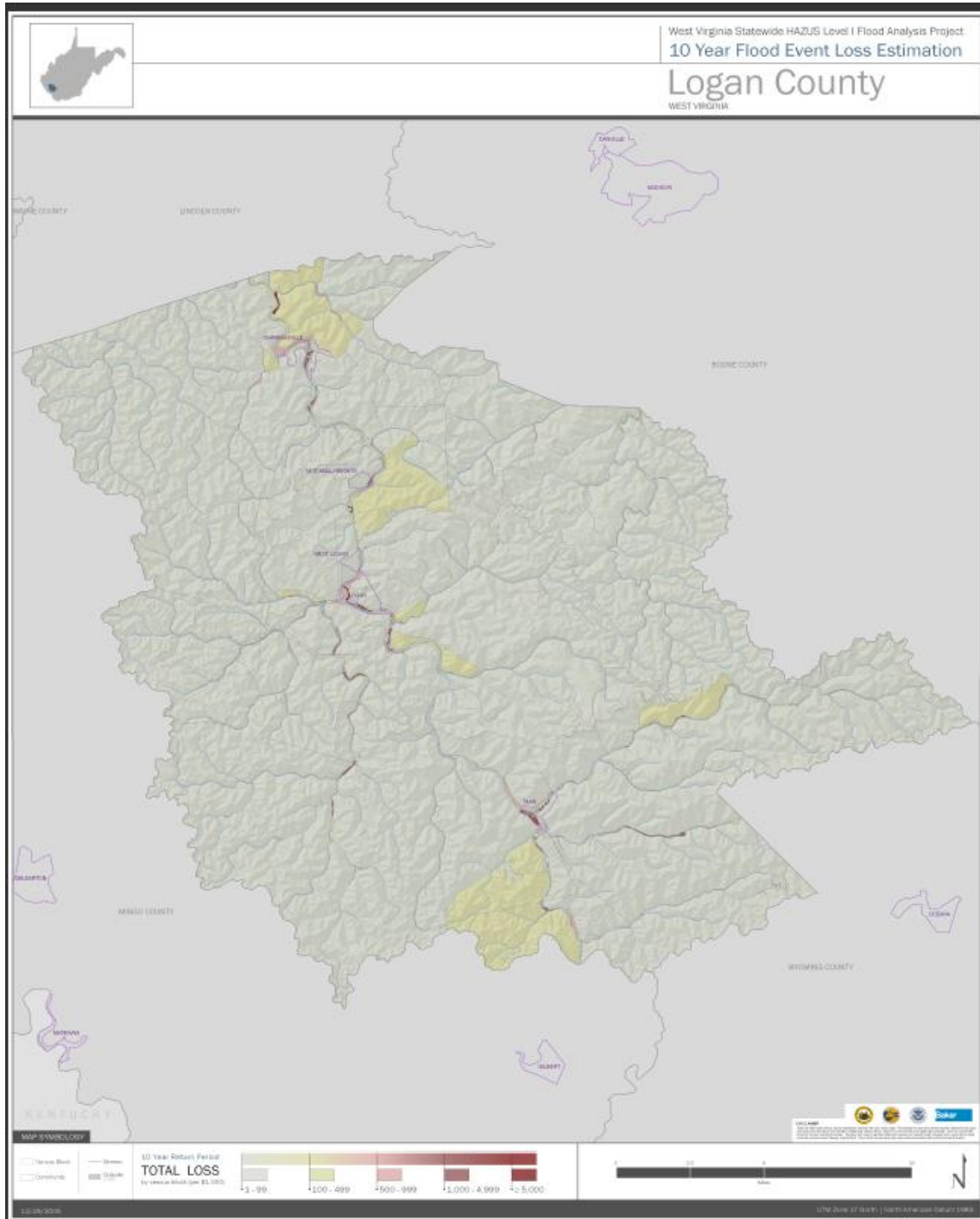


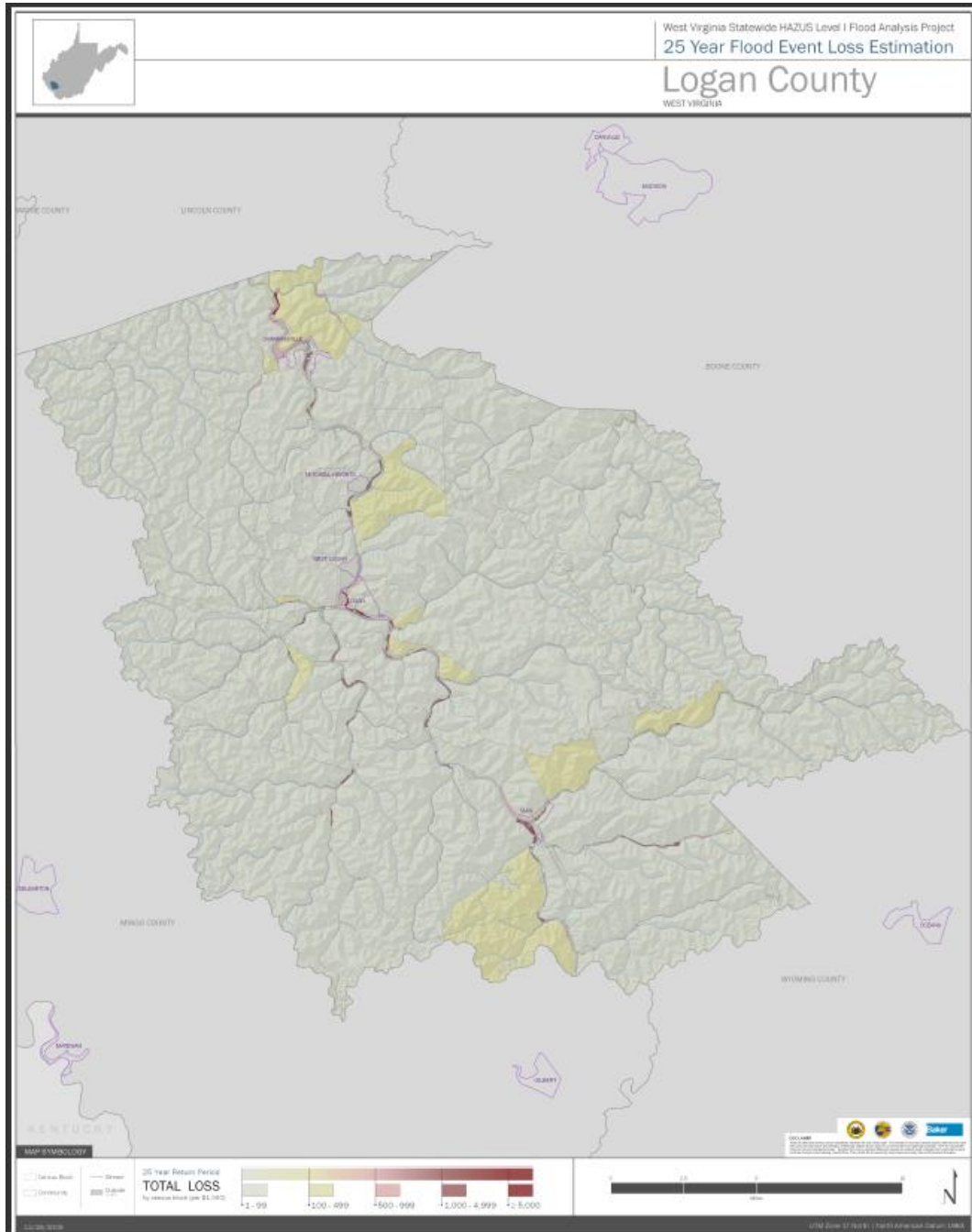


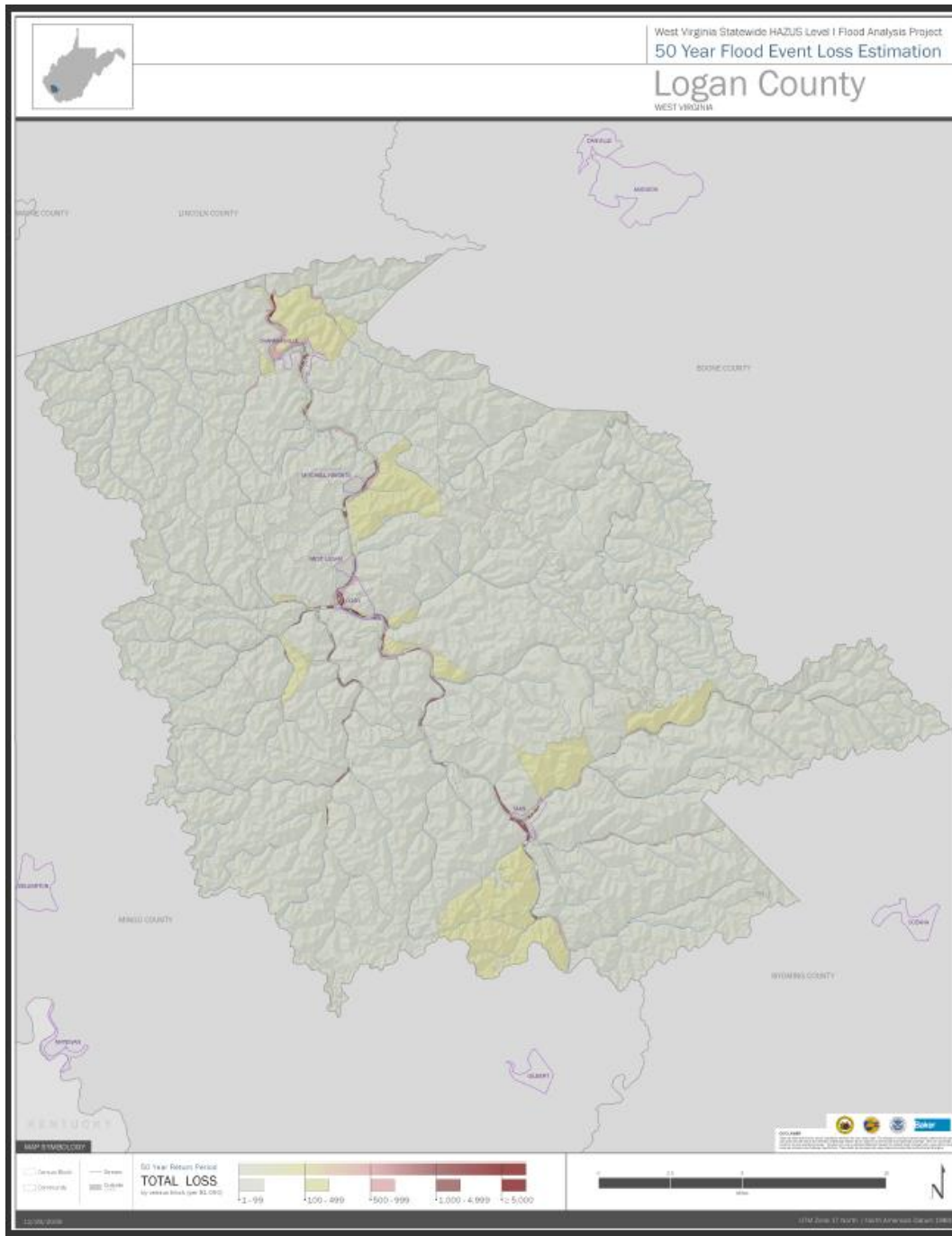


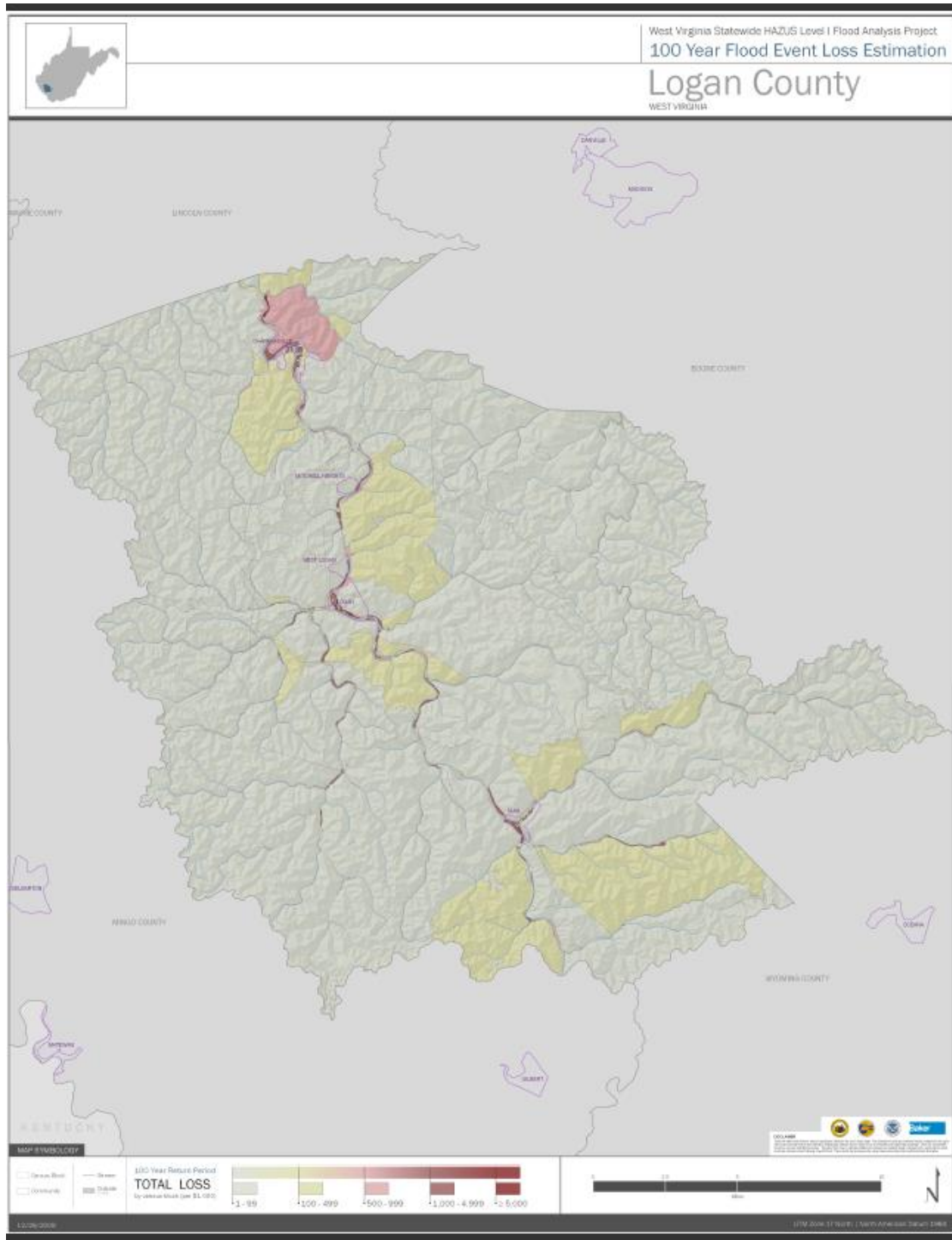












HAZUS-MH: Flood Event Report

Region Name: LoganCounty
Flood Scenario: 10-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 18,686 buildings in the region which have an aggregate total replacement value of 2,367 million (2006 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	1,886,194	79.7%
Commercial	306,699	13.0%
Industrial	59,269	2.5%
Agricultural	8,542	0.4%
Religion	35,462	1.5%
Government	25,466	1.1%
Education	43,972	1.9%
Total	2,366,604	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,321,833	81.3%
Commercial	190,433	11.7%
Industrial	35,098	2.2%
Agricultural	6,845	0.4%
Religion	19,380	1.2%
Government	16,933	1.0%
Education	35,102	2.2%
Total	1,625,624	100.00%

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 147 beds. There are 17 schools, 7 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 733 buildings will be at least moderately damaged. This is over 29% of the total number of buildings in the scenario. There are an estimated 175 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	3	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	24	3.29	279	38.27	84	11.52	167	22.91	175	24.01
Total	0		27		279		84		167		175	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf-Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	124	100.00
Masonry	0	0.00	3	2.01	68	45.64	19	12.75	45	30.20	14	9.40
Steel	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
Wood	0	0.00	22	4.81	211	46.17	65	14.22	122	26.70	37	8.10

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	2	0	1
Hospitals	2	0	0	0
Police Stations	4	1	0	0
Schools	17	4	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.

Economic Loss

The total economic loss estimated for the flood is 213.35 million dollars, which represents 12.17 % 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 209.76 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 56.13% 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
<u>Building Loss</u>						
	Building	75.22	15.07	4.88	3.89	99.05
	Content	44.31	38.65	9.68	14.93	107.57
	Inventory	0.00	1.05	2.05	0.04	3.14
	Subtotal	119.53	54.77	16.61	18.86	209.76
<u>Business Interruption</u>						
	Income	0.01	0.19	0.00	0.05	0.25
	Relocation	0.18	0.06	0.00	0.01	0.24
	Rental Income	0.03	0.04	0.00	0.00	0.07
	Wage	0.02	0.29	0.00	1.13	1.44
	Subtotal	0.23	0.57	0.01	1.20	2.00
ALL	Total	119.76	55.34	16.62	20.04	211.77

HAZUS-MH: Flood Event Report

Region Name: LoganCounty
 Flood Scenario: 25-YR
 Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 18,686 buildings in the region which have an aggregate total replacement value of 2,367 million (2006 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	1,886,194	79.7%
Commercial	306,699	13.0%
Industrial	59,269	2.5%
Agricultural	8,542	0.4%
Religion	36,462	1.5%
Government	25,466	1.1%
Education	43,972	1.9%
Total	2,366,604	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,415,587	81.6%
Commercial	200,769	11.6%
Industrial	36,509	2.1%
Agricultural	7,076	0.4%
Religion	19,986	1.2%
Government	16,994	1.0%
Education	38,537	2.2%
Total	1,735,458	100.00%

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 147 beds. There are 17 schools, 7 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 1,015 buildings will be at least moderately damaged. This is over 25% of the total number of buildings in the scenario. There are an estimated 283 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	5	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	22	2.18	308	30.53	122	12.09	275	27.25	262	27.95
Total	0		27		308		122		275		283	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	190	100.00
Masonry	0	0.00	2	1.01	75	37.88	27	13.64	72	36.36	22	11.11
Steel	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
Wood	0	0.00	21	3.38	233	37.46	95	15.27	203	32.64	70	11.25

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	7	2	0	0
Hospitals	2	0	0	0
Police Stations	4	2	0	0
Schools	17	7	0	2

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.

Economic Loss

The total economic loss estimated for the flood is 277.27 million dollars, which represents 15.82 % 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 272.71 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 57.38% 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
<u>Building Loss</u>						
	Building	99.85	19.58	5.87	4.92	130.22
	Content	58.95	50.65	11.57	17.47	138.64
	Inventory	0.00	1.36	2.45	0.04	3.85
	Subtotal	168.80	71.69	19.89	22.43	272.71
<u>Business Interruption</u>						
	Income	0.01	0.26	0.00	0.07	0.33
	Relocation	0.23	0.08	0.00	0.01	0.32
	Rental income	0.04	0.05	0.00	0.00	0.09
	Wage	0.02	0.37	0.00	1.36	1.75
	Subtotal	0.30	0.76	0.01	1.44	2.60
ALL	Total	169.10	72.45	19.90	23.87	276.20

HAZUS-MH: Flood Event Report

Region Name: LoganCounty
 Flood Scenario: 50-YR
 Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 18,686 buildings in the region which have an aggregate total replacement value of 2,367 million (2006 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	1,886,194	79.7%
Commercial	306,699	13.0%
Industrial	59,269	2.5%
Agricultural	8,542	0.4%
Religion	36,462	1.5%
Government	25,466	1.1%
Education	43,972	1.9%
Total	2,366,604	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,422,756	81.5%
Commercial	205,555	11.8%
Industrial	37,066	2.1%
Agricultural	7,076	0.4%
Religion	20,329	1.2%
Government	17,096	1.0%
Education	36,046	2.1%
Total	1,745,944	100.00%

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 147 beds. There are 17 schools, 7 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 1,142 buildings will be at least moderately damaged. This is over 24% of the total number of buildings in the scenario. There are an estimated 334 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	5	83.33	0	0.00	0	0.00	0	0.00	1	16.67
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	24	2.11	327	28.81	120	10.57	332	29.25	332	29.25
Total	0		29		327		120		332		334	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	221	100.00
Masonry	0	0.00	2	0.89	86	38.22	26	11.56	84	37.33	27	12.00
Steel	0	0.00	2	66.67	0	0.00	0	0.00	0	0.00	1	33.33
Wood	0	0.00	22	3.19	241	34.98	94	13.64	248	35.99	84	12.19

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	7	3	0	0
Hospitals	2	0	0	0
Police Stations	4	2	0	0
Schools	17	5	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.

Economic Loss

The total economic loss estimated for the flood is 313.99 million dollars, which represents 17.91 % 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 308.85 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 56.88% 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
<u>Building Loss</u>						
	Building	111.63	22.48	6.89	5.60	146.59
	Content	66.62	57.99	13.75	19.43	157.78
	Inventory	0.00	1.53	2.91	0.05	4.48
	Subtotal	178.26	82.00	23.64	25.07	308.86
<u>Business Interruption</u>						
	Income	0.01	0.30	0.00	0.08	0.39
	Relocation	0.25	0.09	0.00	0.01	0.36
	Rental Income	0.05	0.06	0.00	0.00	0.11
	Wage	0.02	0.43	0.00	1.46	1.91
	Subtotal	0.34	0.87	0.01	1.66	2.77
ALL	Total	178.60	82.87	23.65	26.83	311.83

HAZUS-MH: Flood Event Report

Region Name: LoganCounty
 Flood Scenario: 100-YR
 Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 18,698 buildings in the region which have an aggregate total replacement value of 2,367 million (2006 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	1,886,194	79.7%
Commercial	306,699	13.0%
Industrial	59,269	2.5%
Agricultural	8,542	0.4%
Religion	36,462	1.5%
Government	25,466	1.1%
Education	43,972	1.9%
Total	2,366,604	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,526,839	80.1%
Commercial	240,251	12.6%
Industrial	48,191	2.5%
Agricultural	8,045	0.4%
Religion	24,467	1.3%
Government	17,913	0.9%
Education	39,898	2.1%
Total	1,905,604	100.00%

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 147 beds. There are 17 schools, 7 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 1,569 buildings will be at least moderately damaged. This is over 24% of the total number of buildings in the scenario. There are an estimated 473 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	5	83.33	0	0.00	0	0.00	0	0.00	1	16.67
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	37	2.37	426	27.27	169	10.82	459	29.39	471	30.15
Total	0		42		426		169		459		473	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	304	100.00
Masonry	0	0.00	5	1.55	113	35.09	40	12.42	124	38.51	40	12.42
Steel	0	0.00	2	66.67	0	0.00	0	0.00	0	0.00	1	33.33
Wood	0	0.00	33	3.52	313	33.40	129	13.77	335	35.75	127	13.55

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	4	0	0
Hospitals	2	0	0	0
Police Stations	4	2	0	0
Schools	17	7	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.

Economic Loss

The total economic loss estimated for the flood is 408.97 million dollars, which represents 23.21 % of the total replacement value of the scenario buildings.

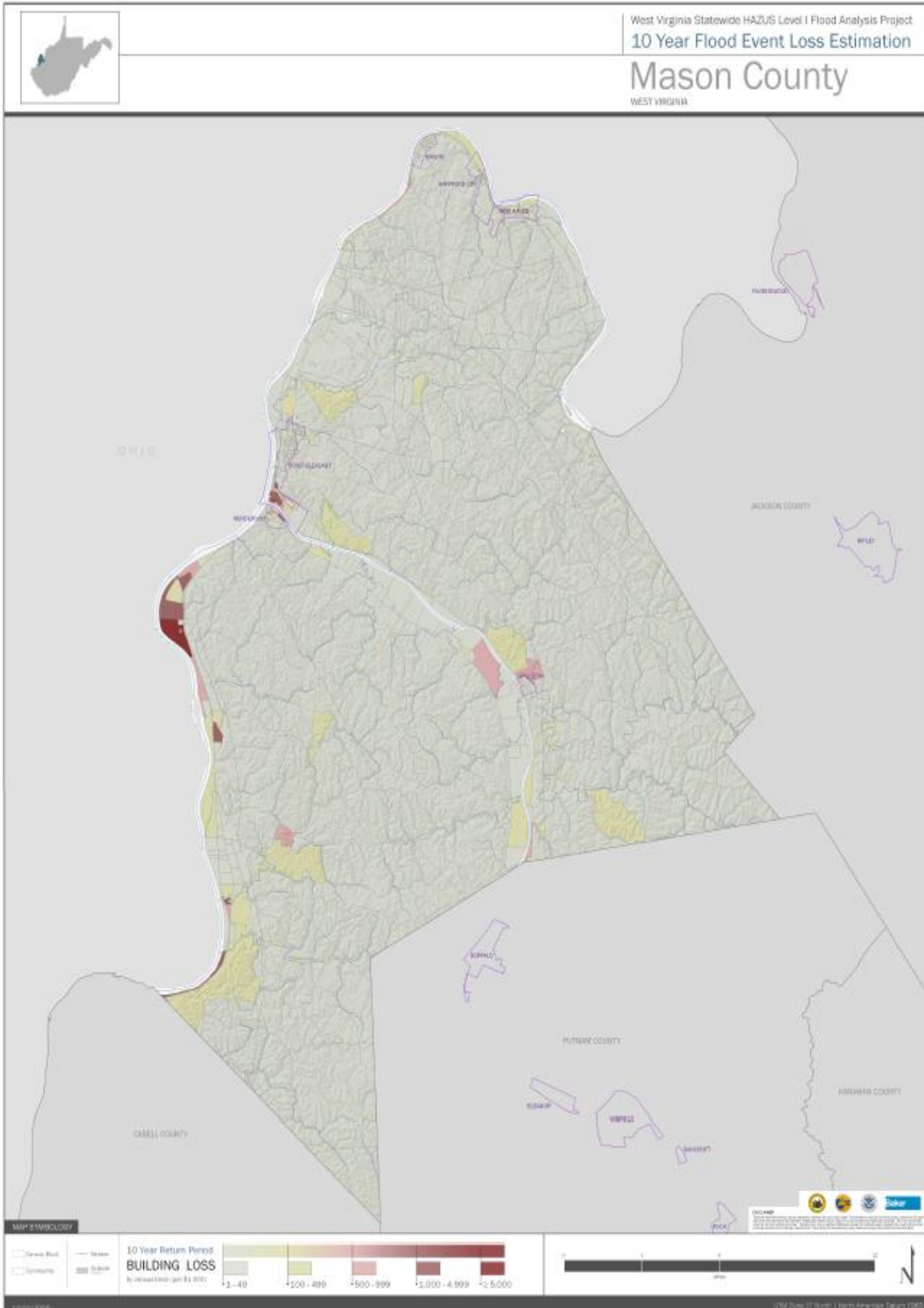
Building-Related Losses

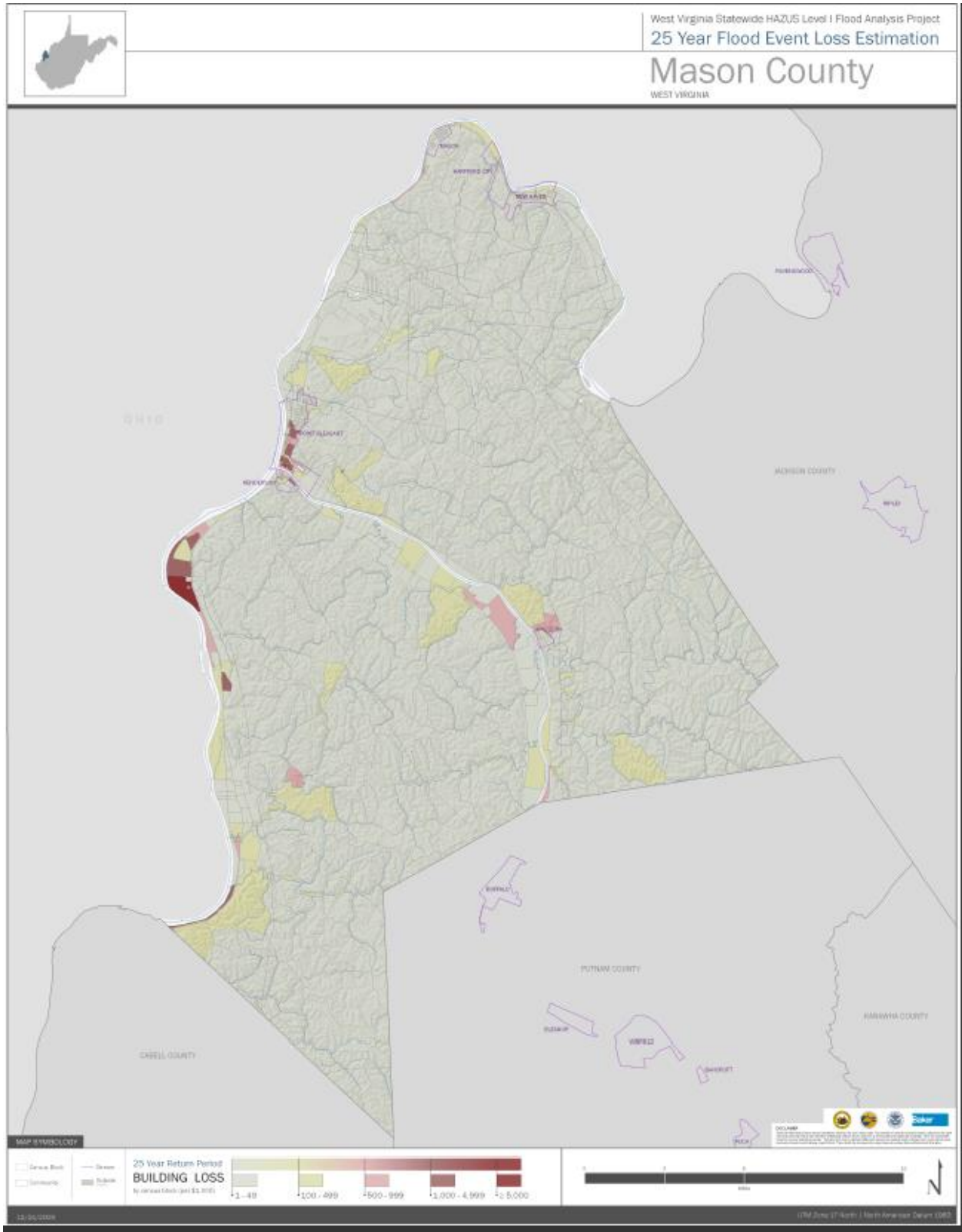
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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.

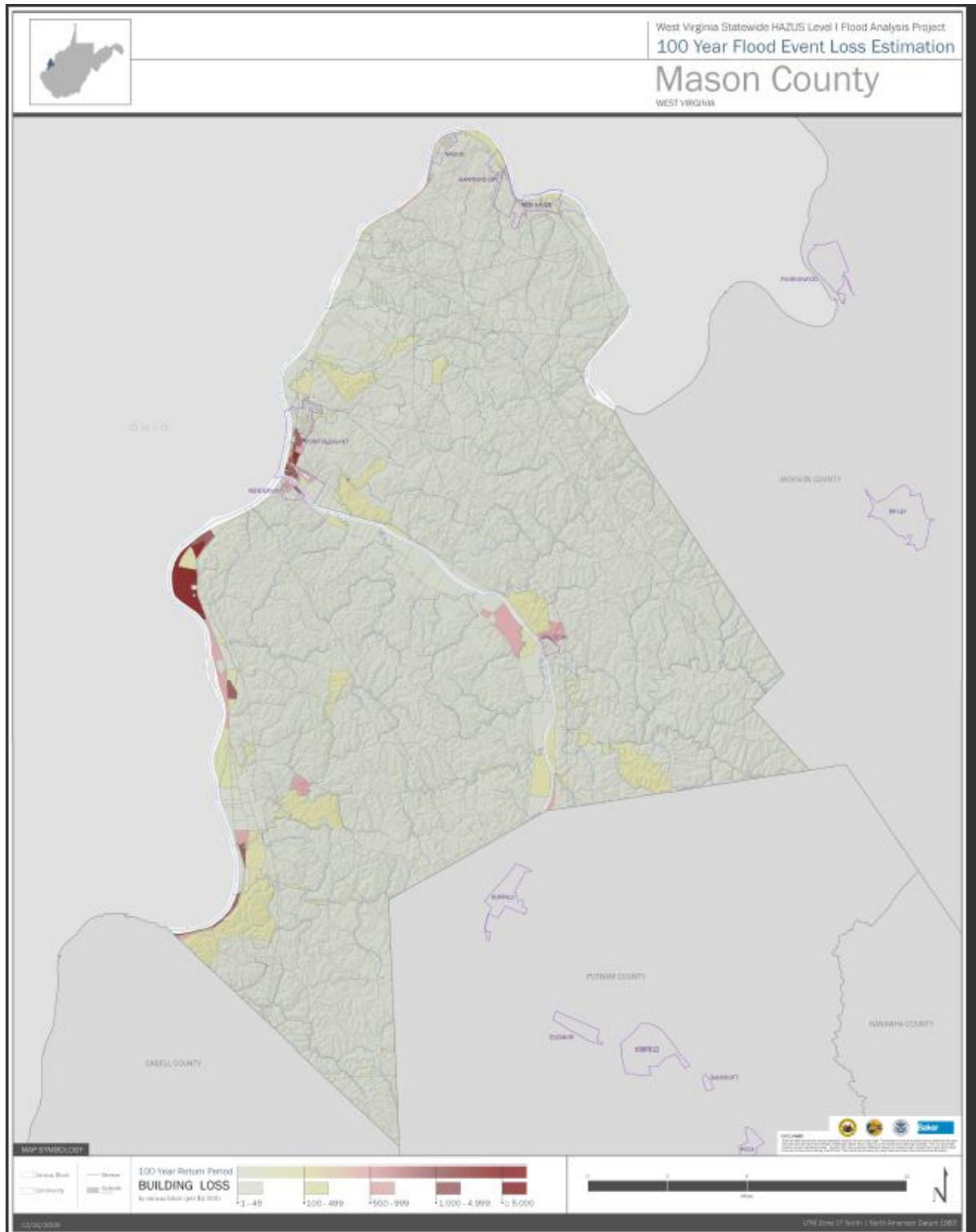
The total building-related losses were 400.12 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 57.36% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

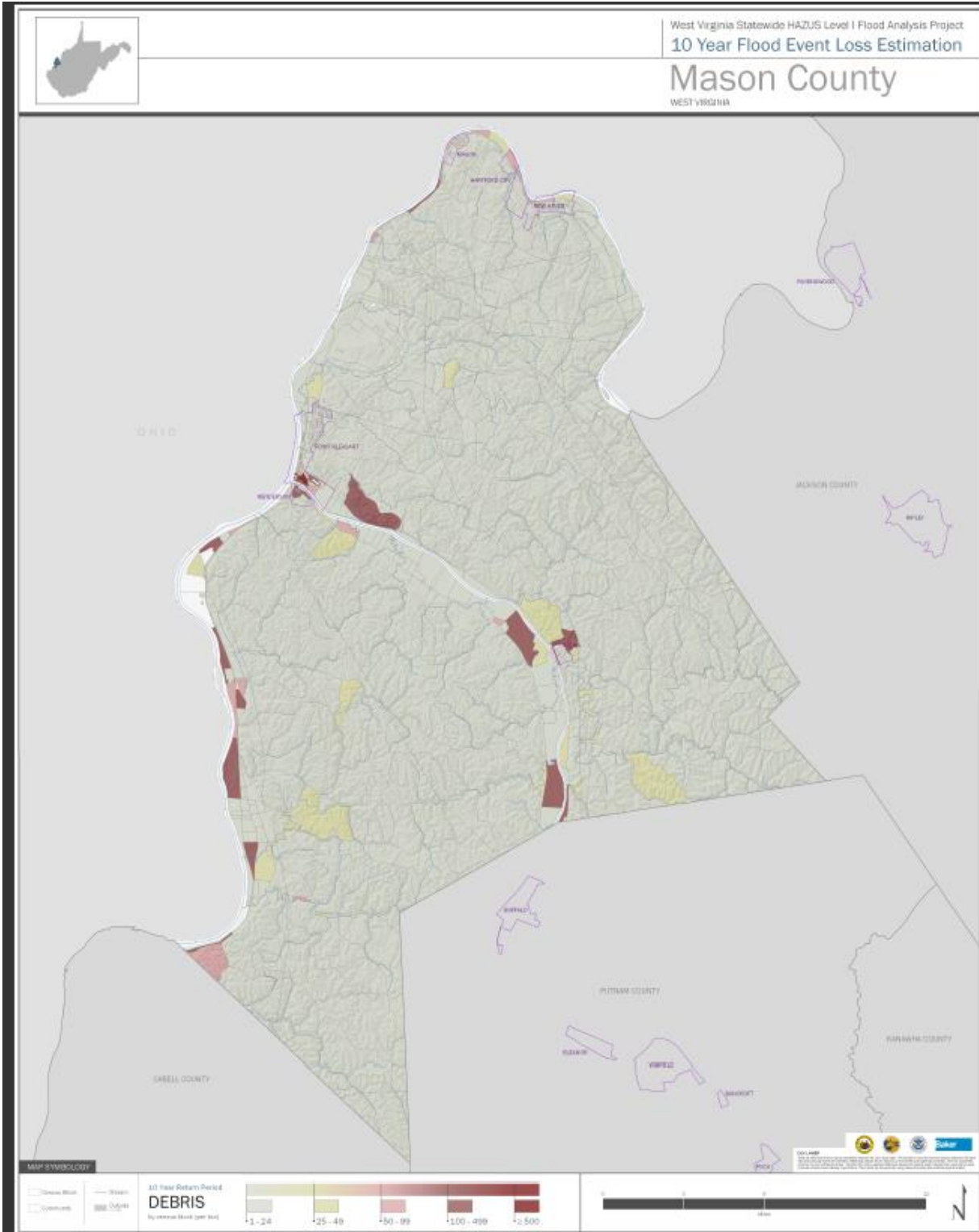
Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

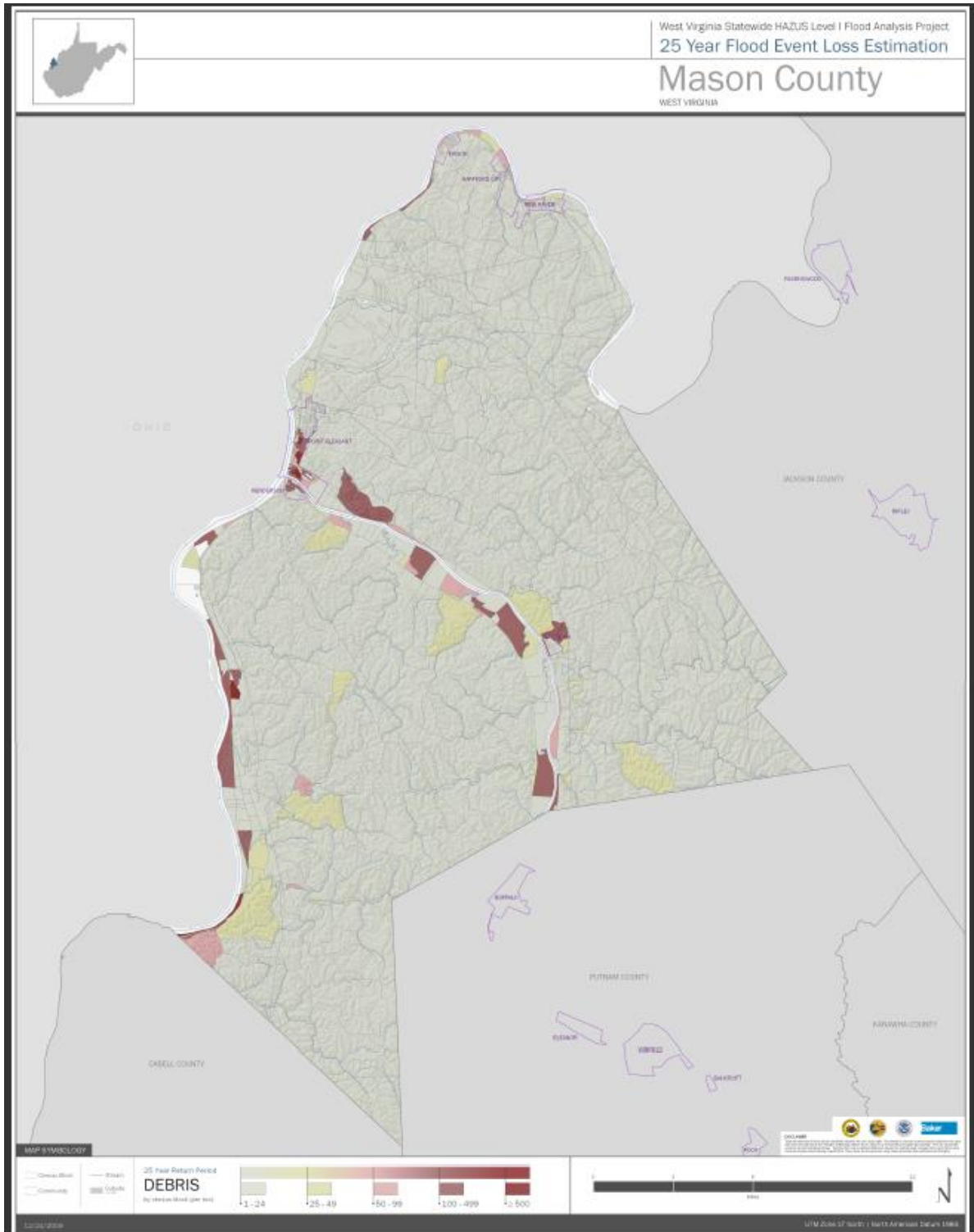
Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	145.80	29.30	8.03	7.24	190.37
	Content	87.18	76.20	16.04	24.89	204.31
	Inventory	0.00	2.03	3.35	0.06	5.43
	Subtotal	232.98	107.63	27.42	32.19	400.12
<u>Business Interruption</u>						
	Income	0.01	0.41	0.00	0.11	0.53
	Relocation	0.33	0.13	0.00	0.01	0.47
	Rental Income	0.07	0.08	0.00	0.00	0.15
	Wage	0.03	0.55	0.00	1.92	2.50
	Subtotal	0.44	1.17	0.01	2.04	3.66
ALL	Total	233.43	108.70	27.43	34.23	403.78

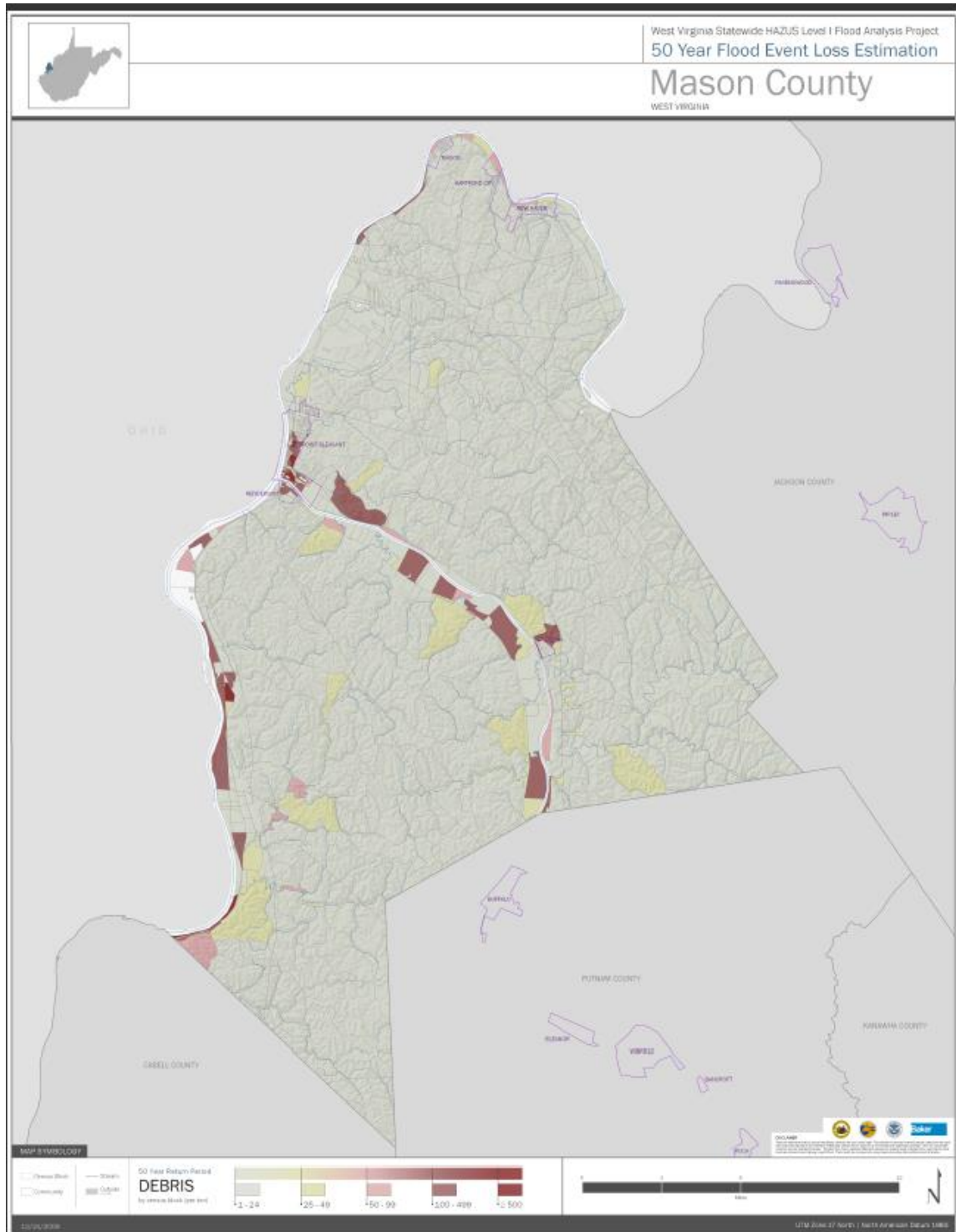


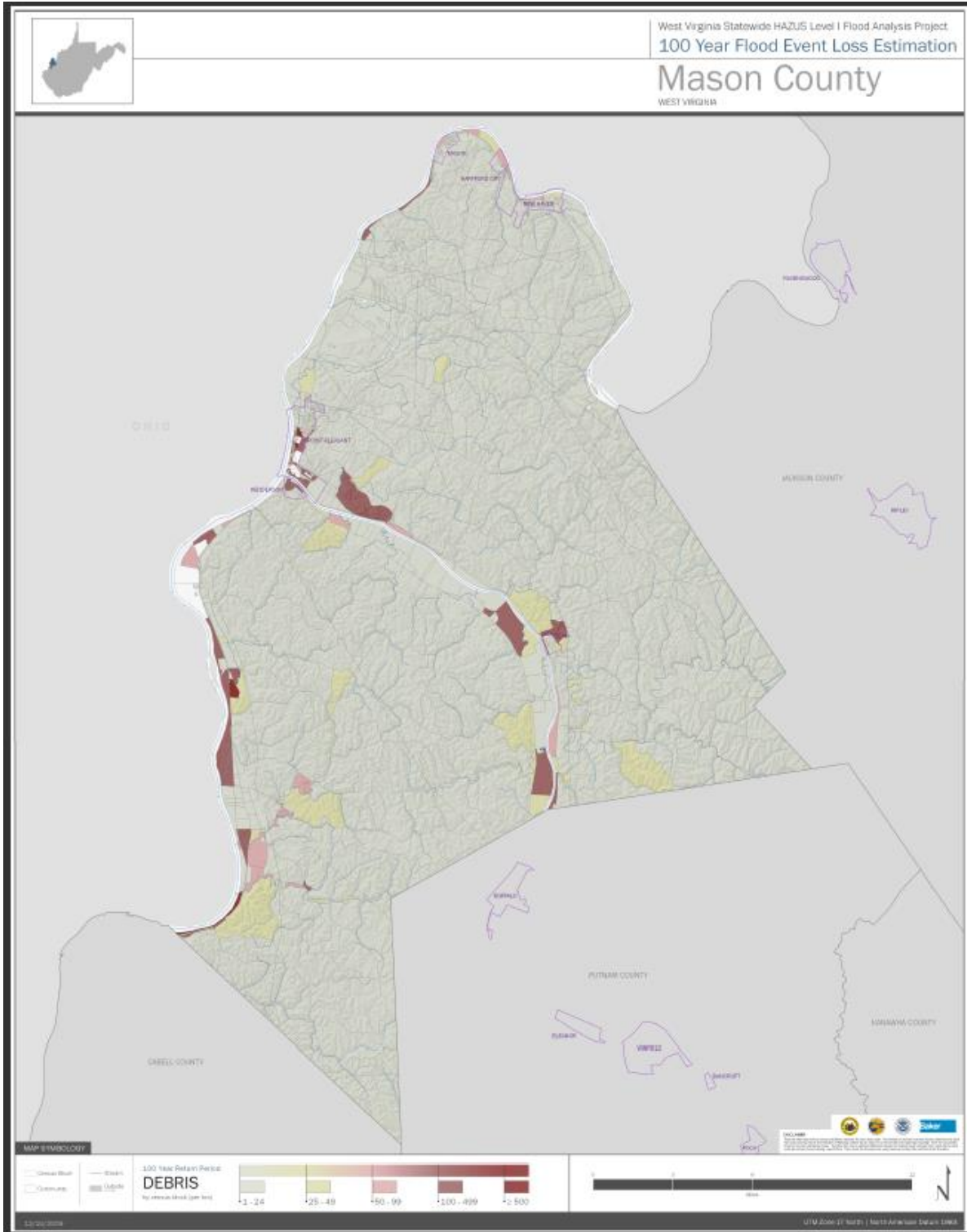


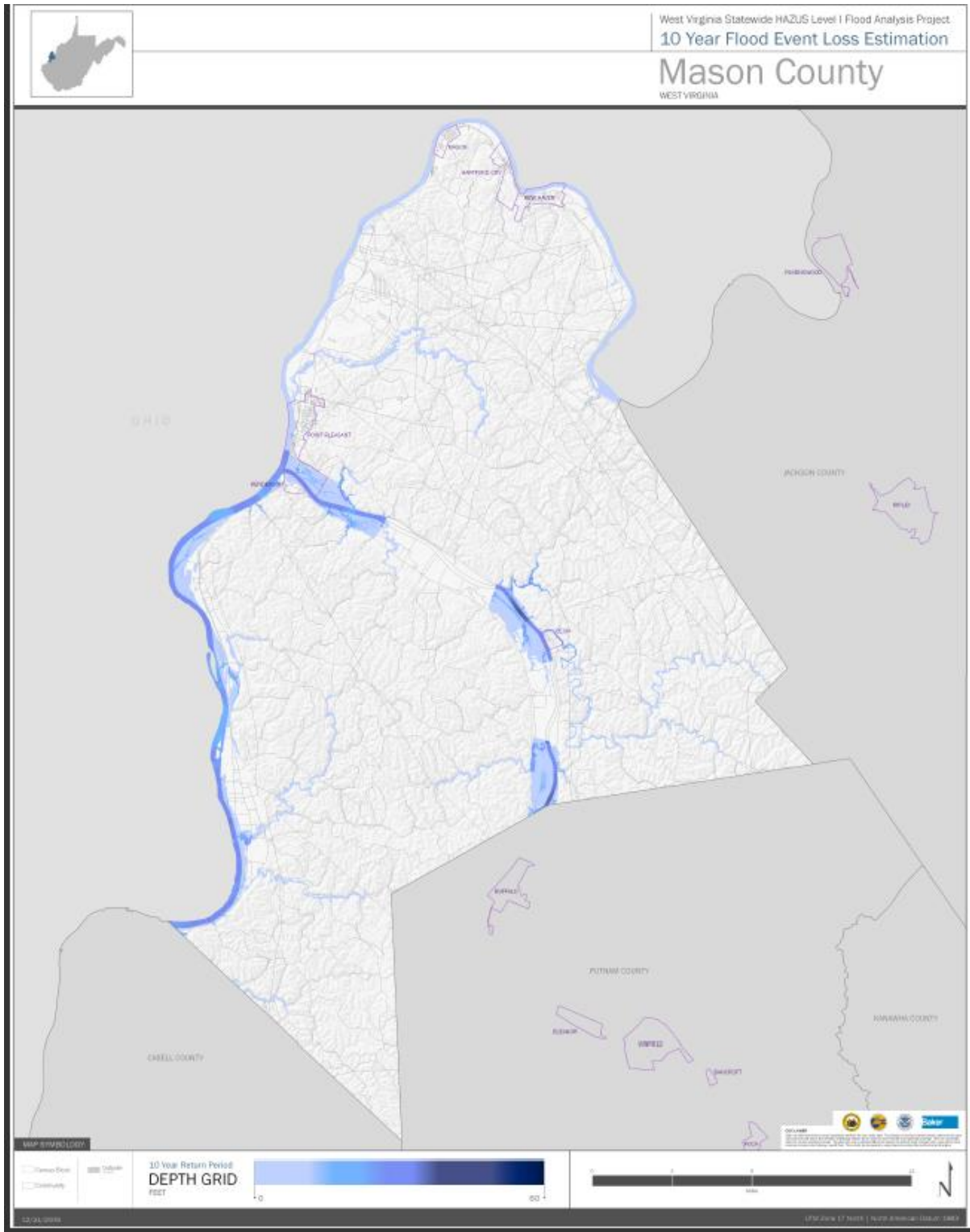


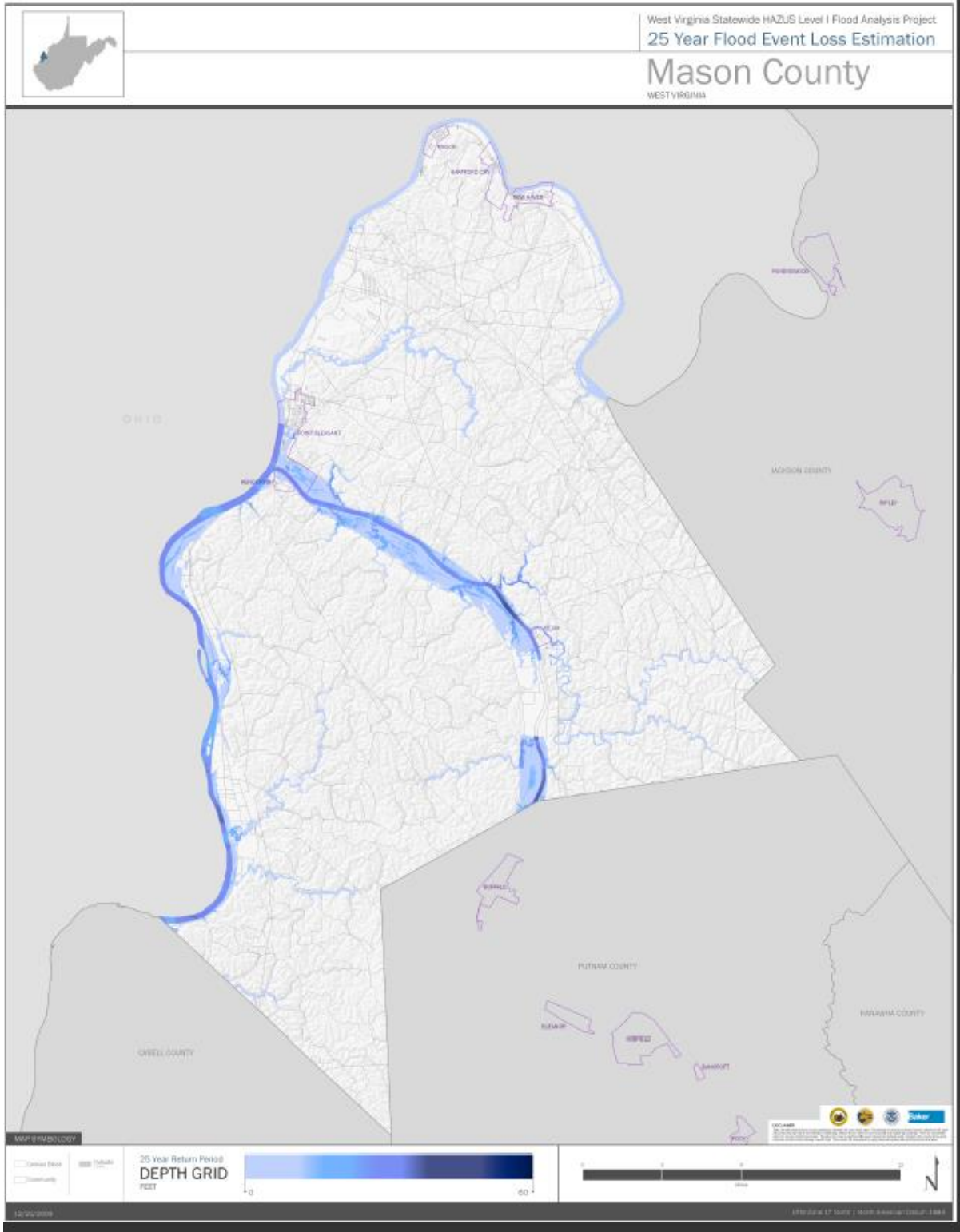


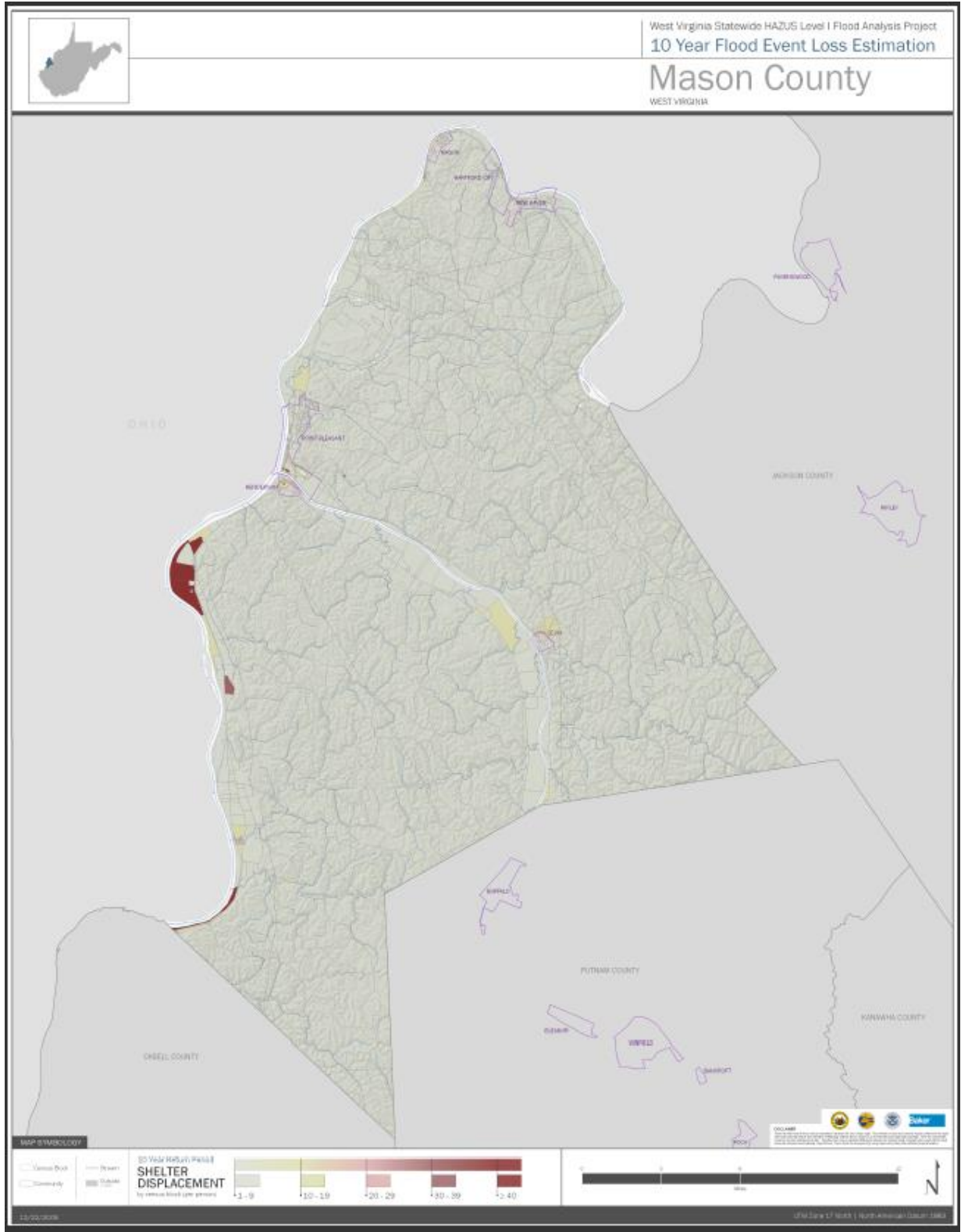


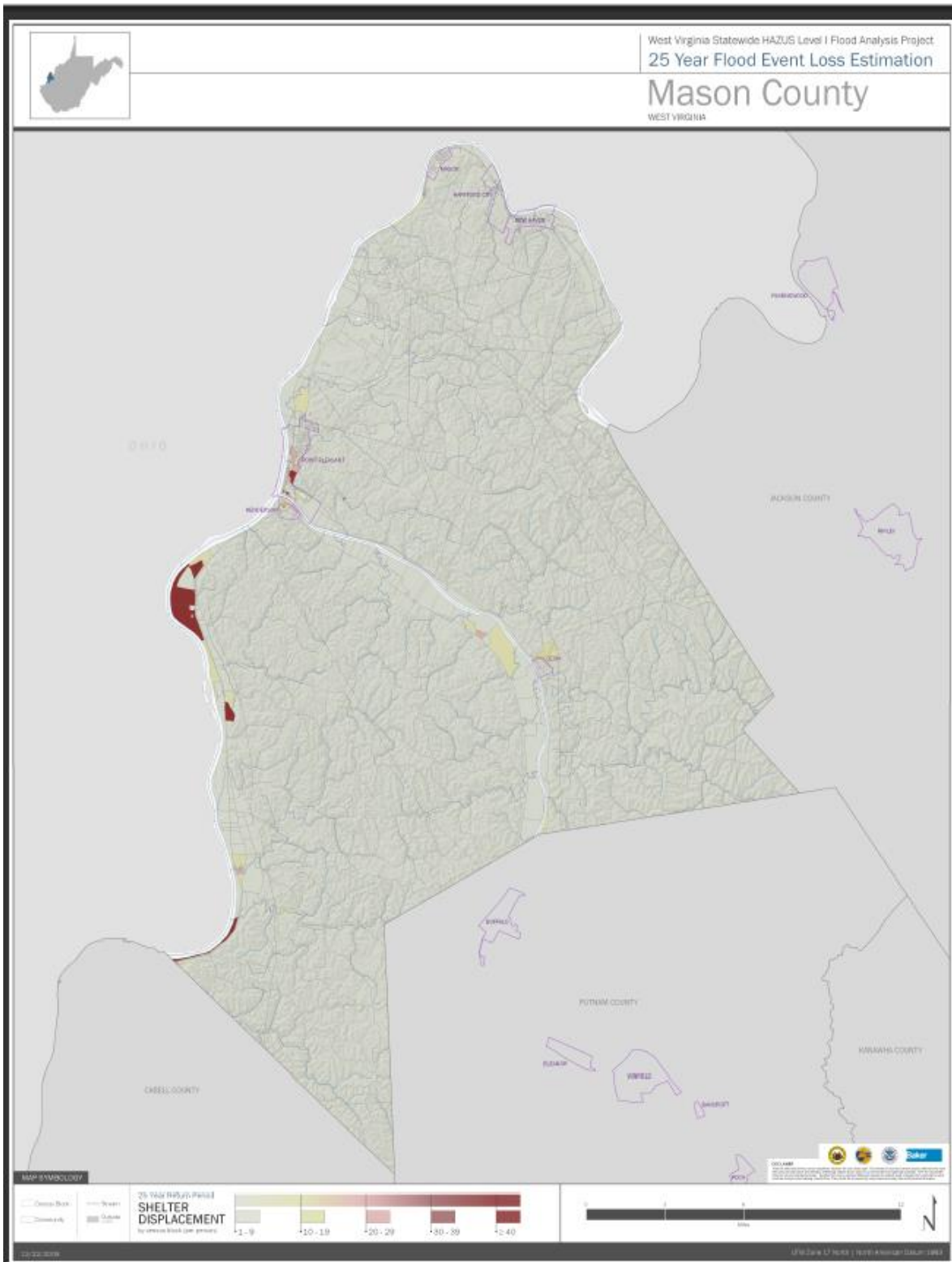


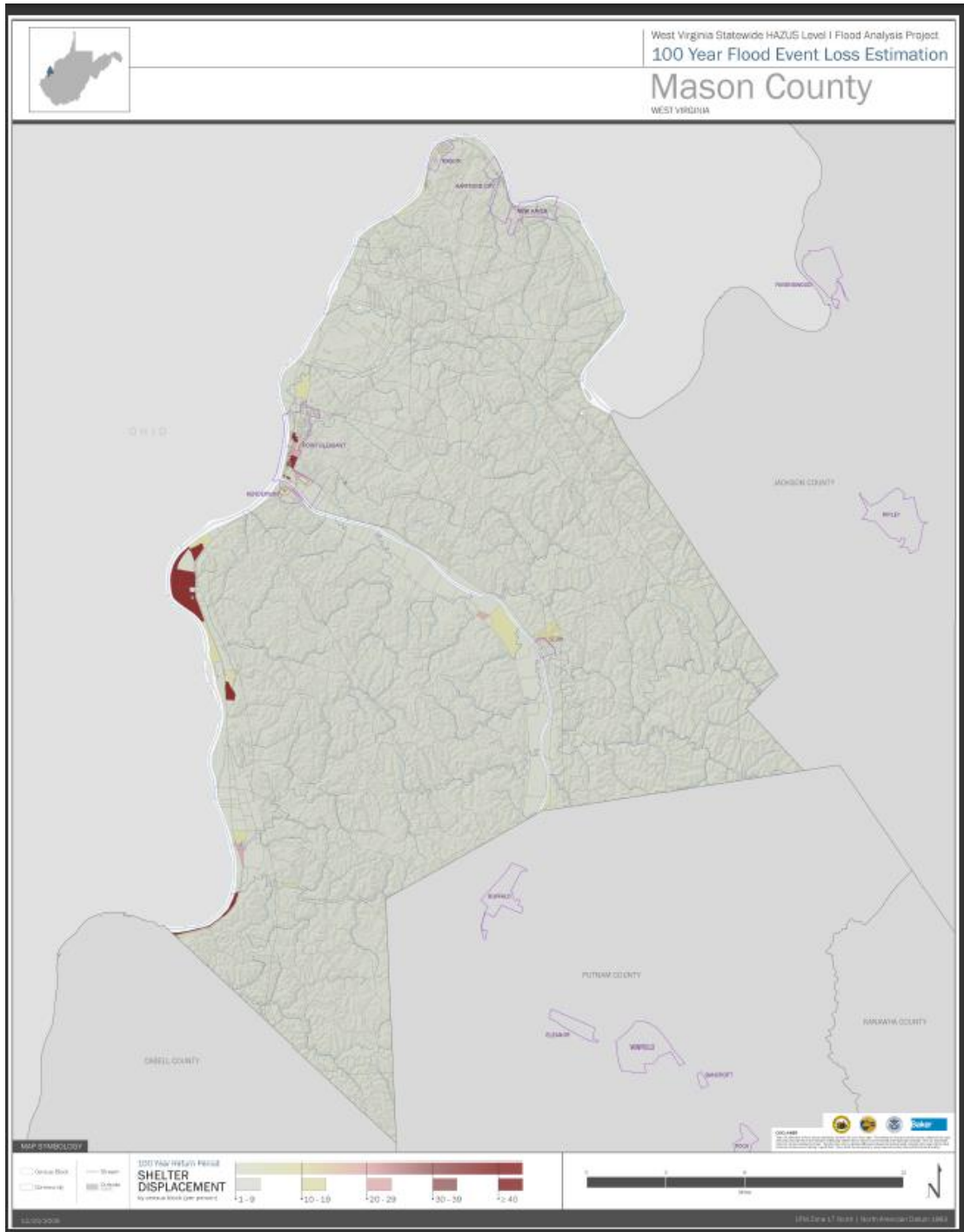


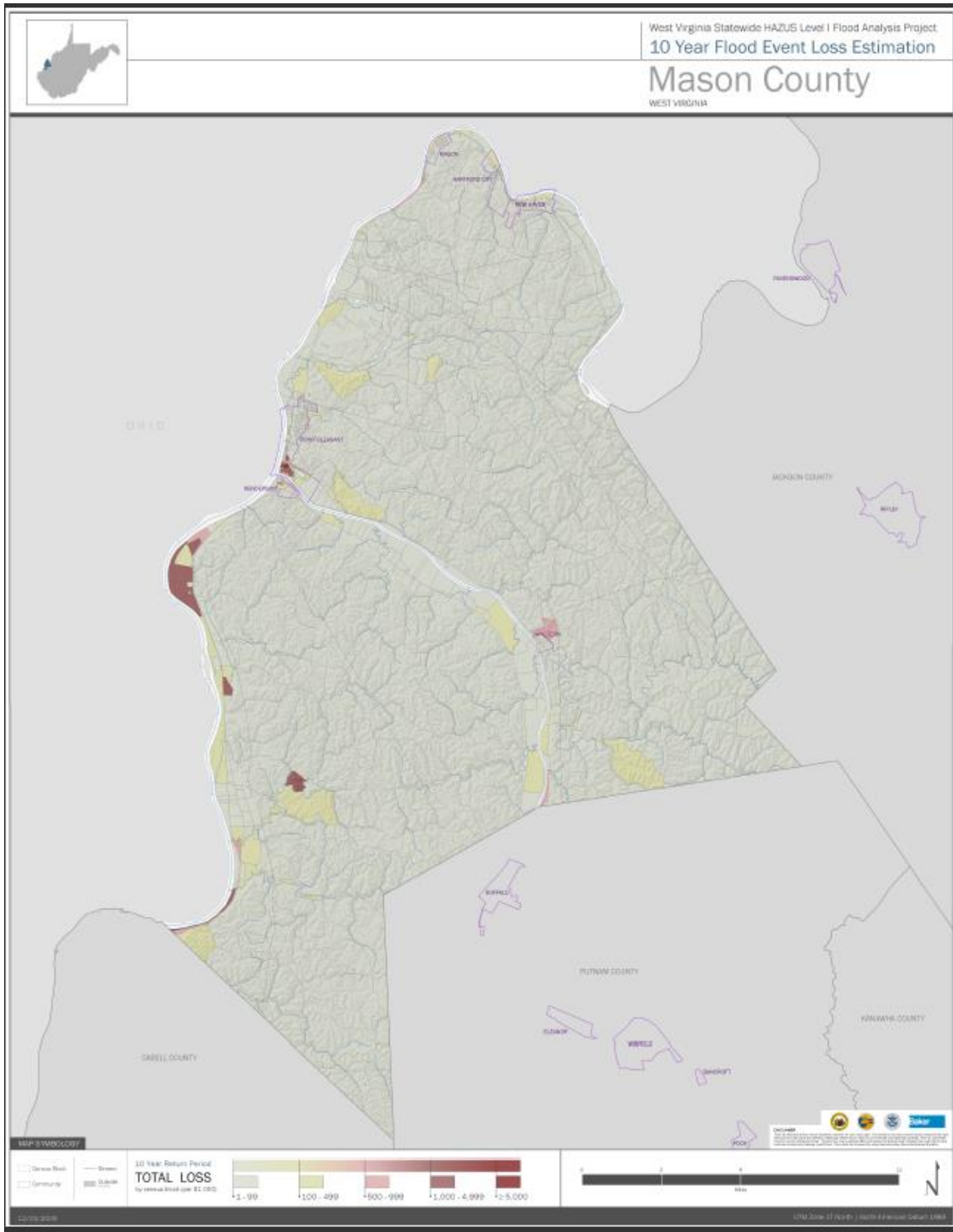


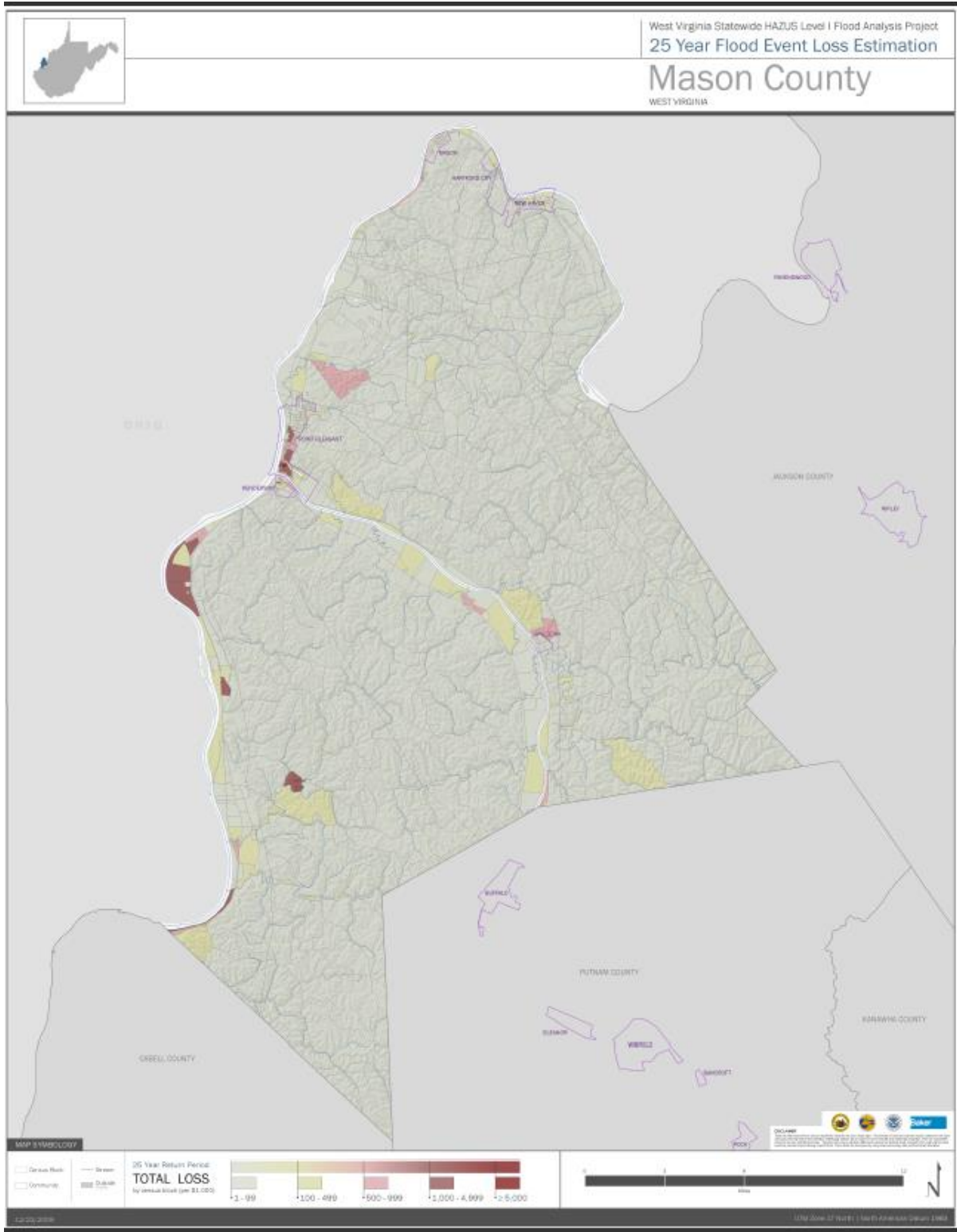


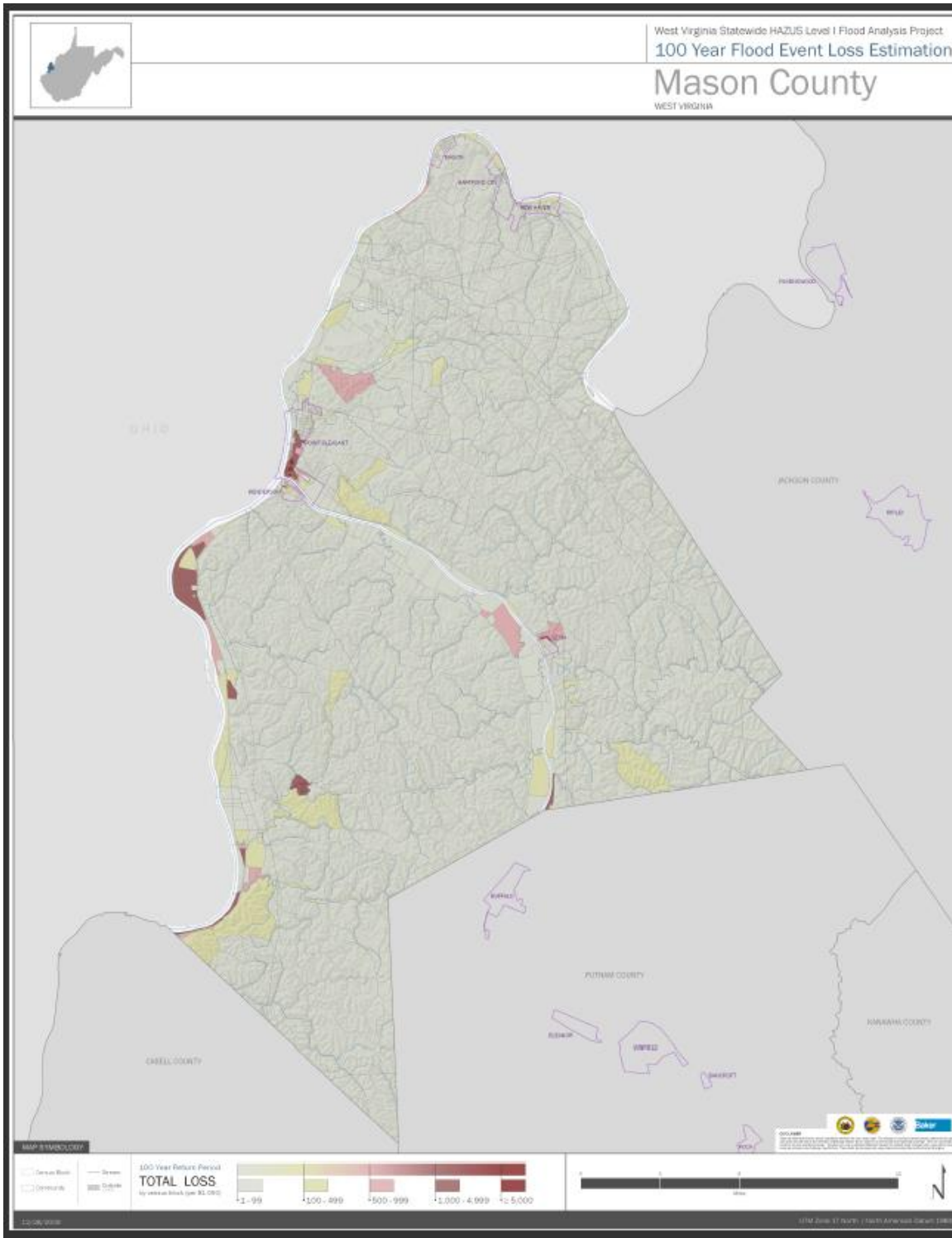












HAZUS-MH: Flood Event Report

Region Name: Mason County
Flood Scenario: 10-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,522 buildings in the region which have an aggregate total replacement value of 1,780 million (2006 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	1,456,915	81.9%
Commercial	161,896	9.1%
Industrial	41,345	2.3%
Agricultural	55,132	3.1%
Religion	30,241	1.7%
Government	14,143	0.8%
Education	20,309	1.1%
Total	1,779,981	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	444,737	82.0%
Commercial	54,751	10.1%
Industrial	17,117	3.2%
Agricultural	2,168	0.4%
Religion	10,897	2.0%
Government	6,408	1.2%
Education	6,351	1.2%
Total	542,429	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 201 beds. There are 15 schools, 3 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 311 buildings will be at least moderately damaged. This is over 17% of the total number of buildings in the scenario. There are an estimated 140 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	3	75.00	1	25.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	2	0.66	47	15.41	30	9.64	86	26.20	140	45.90
Total	0		7		48		30		86		140	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	105	100.00
Masonry	0	0.00	0	0.00	11	21.57	7	13.73	23	45.10	10	19.61
Steel	0	0.00	2	66.67	1	33.33	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	1.34	36	24.16	23	15.44	63	42.28	25	16.78

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	3	1	0	0
Hospitals	1	0	0	0
Police Stations	4	2	0	0
Schools	15	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.

Economic Loss

The total economic loss estimated for the flood is 103.43 million dollars, which represents 17.57 % 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 101.30 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 59.79% 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
<u>Building Loss</u>						
	Building	39.04	6.18	1.43	1.75	48.39
	Content	22.73	17.83	3.40	7.76	51.72
	Inventory	0.00	0.59	0.57	0.03	1.18
	Subtotal	61.77	24.68	5.40	9.64	101.30
<u>Business Interruption</u>						
	Income	0.00	0.09	0.00	0.01	0.11
	Relocation	0.05	0.03	0.00	0.00	0.08
	Rental Income	0.02	0.02	0.00	0.00	0.03
	Wage	0.01	0.10	0.00	1.11	1.22
	Subtotal	0.08	0.24	0.00	1.13	1.44
ALL	Total	61.84	24.88	5.40	10.87	102.74

HAZUS-MH: Flood Event Report

Region Name: MasonCounty
Flood Scenario: 25-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,522 buildings in the region which have an aggregate total replacement value of 1,780 million (2006 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	1,456,915	81.9%
Commercial	161,896	9.1%
Industrial	41,345	2.3%
Agricultural	55,132	3.1%
Religion	30,241	1.7%
Government	14,143	0.8%
Education	20,309	1.1%
Total	1,779,981	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	487,149	82.2%
Commercial	62,497	10.6%
Industrial	15,760	2.7%
Agricultural	2,199	0.4%
Religion	11,343	1.9%
Government	6,469	1.1%
Education	6,887	1.2%
Total	592,304	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 201 beds. There are 15 schools, 3 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 393 buildings will be at least moderately damaged. This is over 16% of the total number of buildings in the scenario. There are an estimated 161 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	4	1.03	63	16.20	32	8.23	129	33.16	161	41.39
Total	0		5		65		32		130		161	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manufacturing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	125	100.00
Masonry	0	0.00	1	1.61	16	25.81	5	8.06	33	53.23	7	11.29
Steel	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
Wood	0	0.00	3	1.49	47	23.27	27	13.37	96	47.52	29	14.36

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	1	0	0
Hospitals	1	0	0	0
Police Stations	4	2	0	0
Schools	15	1	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.

Economic Loss

The total economic loss estimated for the flood is 125.74 million dollars, which represents 21.36 % 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 123.24 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 59.99% 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
<u>Building Loss</u>						
	Building	47.61	8.57	1.65	2.18	60.02
	Content	27.74	21.52	3.93	8.70	61.89
	Inventory	0.00	0.64	0.66	0.03	1.33
	Subtotal	76.36	30.73	6.24	10.92	123.24
<u>Business Interruption</u>						
	Income	0.00	0.12	0.00	0.02	0.14
	Relocation	0.07	0.04	0.00	0.00	0.11
	Rental Income	0.02	0.02	0.00	0.00	0.04
	Wage	0.01	0.13	0.00	1.23	1.37
	Subtotal	0.09	0.32	0.00	1.26	1.68
ALL	Total	76.44	31.06	6.24	12.17	124.90

HAZUS-MH: Flood Event Report

Region Name: MasonCounty
Flood Scenario: 50-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,522 buildings in the region which have an aggregate total replacement value of 1,780 million (2006 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	1,458,915	81.9%
Commercial	161,898	9.1%
Industrial	41,345	2.3%
Agricultural	55,132	3.1%
Religion	30,241	1.7%
Government	14,143	0.8%
Education	20,309	1.1%
Total	1,779,981	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	493,311	81.6%
Commercial	64,429	10.7%
Industrial	17,997	2.9%
Agricultural	2,469	0.4%
Religion	12,131	2.0%
Government	6,469	1.1%
Education	7,795	1.3%
Total	604,301	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 201 beds. There are 15 schools, 3 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 456 buildings will be at least moderately damaged. This is over 9% of the total number of buildings in the scenario. There are an estimated 198 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	14.29	2	28.57	2	28.57	2	28.57	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.22	40	8.99	36	8.09	170	38.20	198	44.49
Total	0		3		43		38		174		198	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manufacturing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	140	100.00
Masonry	0	0.00	0	0.00	10	13.33	7	9.33	45	60.00	13	17.33
Steel	0	0.00	0	0.00	2	33.33	2	33.33	2	33.33	0	0.00
Wood	0	0.00	1	0.43	30	12.99	29	12.55	126	54.55	45	19.48

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	1	0	0
Hospitals	1	0	0	0
Police Stations	4	2	0	0
Schools	15	1	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.

Economic Loss

The total economic loss estimated for the flood is 141.64 million dollars, which represents 24.06 % 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 138.88 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 60.63% 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
<u>Building Loss</u>						
	Building	54.11	9.49	1.83	2.34	67.76
	Content	31.67	24.03	4.36	9.59	69.64
	Inventory	0.00	0.72	0.72	0.04	1.48
	Subtotal	86.78	34.23	6.91	11.98	138.88
<u>Business Interruption</u>						
	Income	0.00	0.14	0.00	0.02	0.16
	Relocation	0.08	0.05	0.00	0.00	0.12
	Rental Income	0.02	0.02	0.00	0.00	0.05
	Wage	0.01	0.15	0.00	1.37	1.53
	Subtotal	0.11	0.38	0.00	1.39	1.88
ALL	Total	86.88	34.69	6.91	13.38	140.74

HAZUS-MH: Flood Event Report

Region Name: MasonCounty
 Flood Scenario: 100-YR
 Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,522 buildings in the region which have an aggregate total replacement value of 1,790 million (2006 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	1,456,915	81.9%
Commercial	161,896	9.1%
Industrial	41,345	2.3%
Agricultural	55,132	3.1%
Religion	30,241	1.7%
Government	14,143	0.8%
Education	20,309	1.1%
Total	1,779,981	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	501,254	81.4%
Commercial	66,739	10.8%
Industrial	17,650	2.9%
Agricultural	2,230	0.4%
Religion	12,605	2.0%
Government	6,469	1.0%
Education	9,184	1.5%
Total	616,131	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 201 beds. There are 15 schools, 3 fire stations, 4 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 529 buildings will be at least moderately damaged. This is over 9% of the total number of buildings in the scenario. There are an estimated 230 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	2	40.00	0	0.00	0	0.00	2	40.00	1	20.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.19	47	9.04	33	6.35	210	40.38	229	44.04
Total	0		3		47		33		216		230	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	152	100.00
Masonry	0	0.00	1	1.03	12	12.37	7	7.22	59	60.62	18	18.56
Steel	0	0.00	0	0.00	0	0.00	0	0.00	4	90.00	1	20.00
Wood	0	0.00	1	0.37	35	12.87	26	9.56	151	55.51	59	21.69

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	3	1	0	0
Hospitals	1	0	0	0
Police Stations	4	2	0	0
Schools	15	2	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.

Economic Loss

The total economic loss estimated for the flood is 178.19 million dollars, which represents 30.26 % of the total replacement value of the scenario buildings.

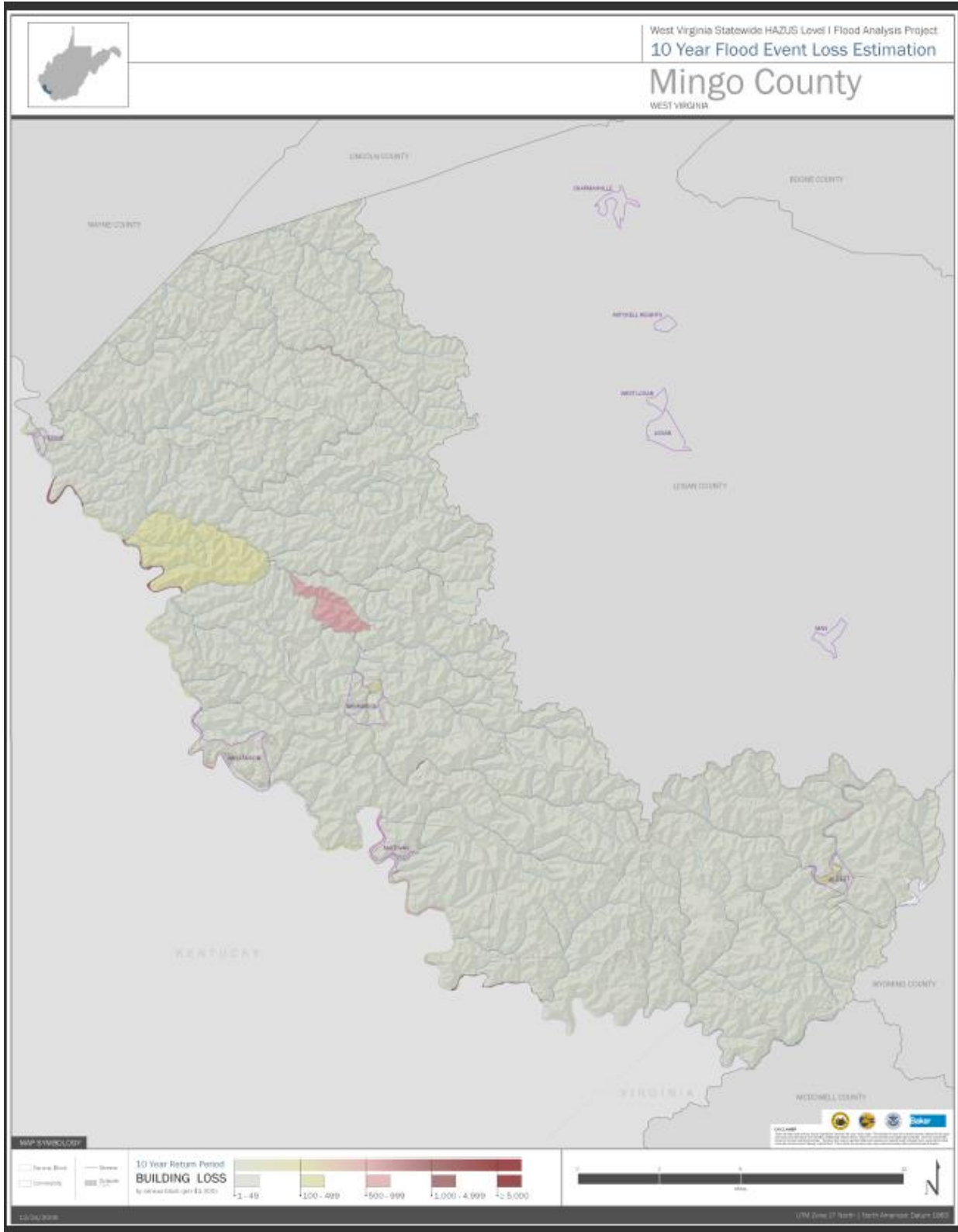
Building-Related Losses

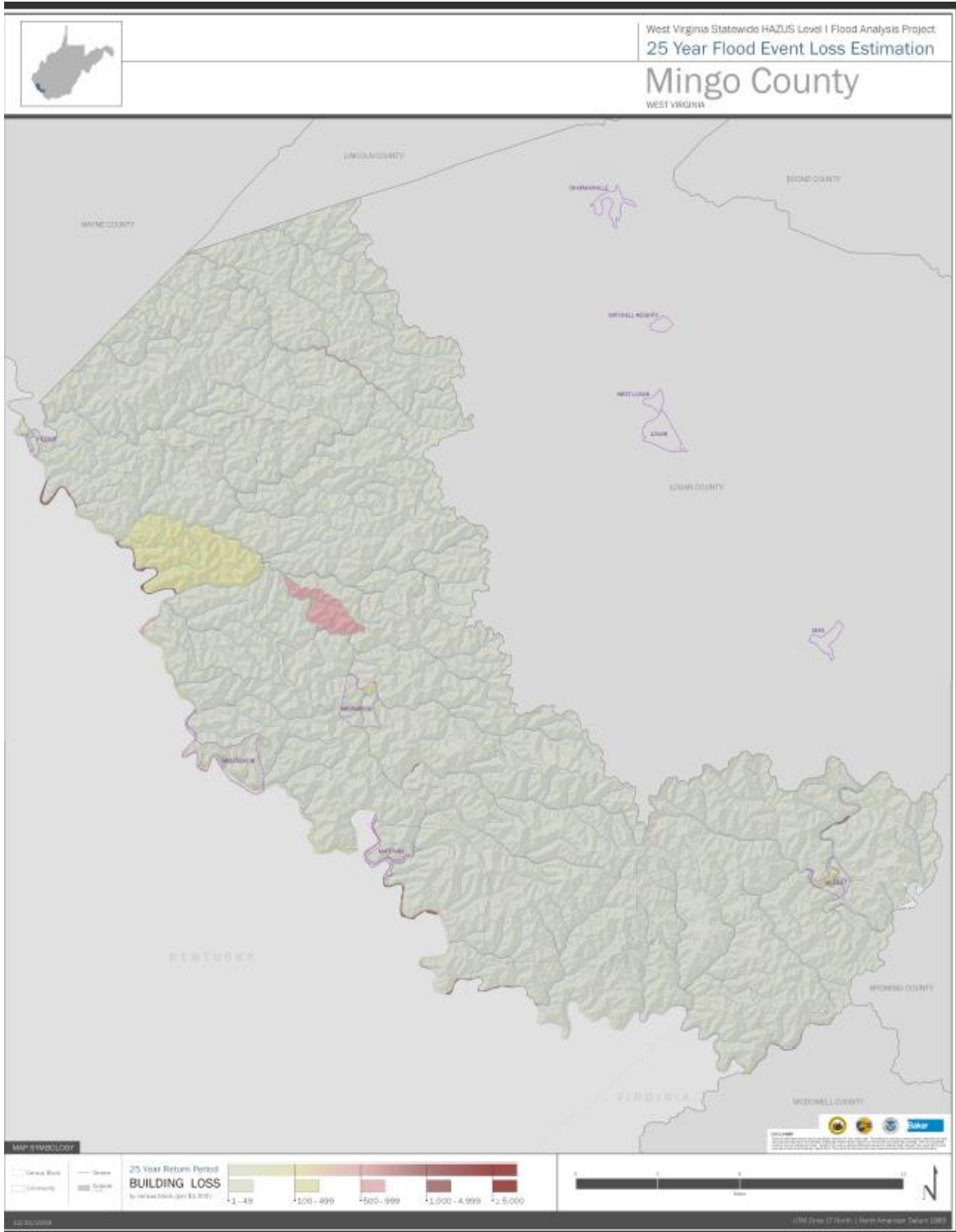
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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.

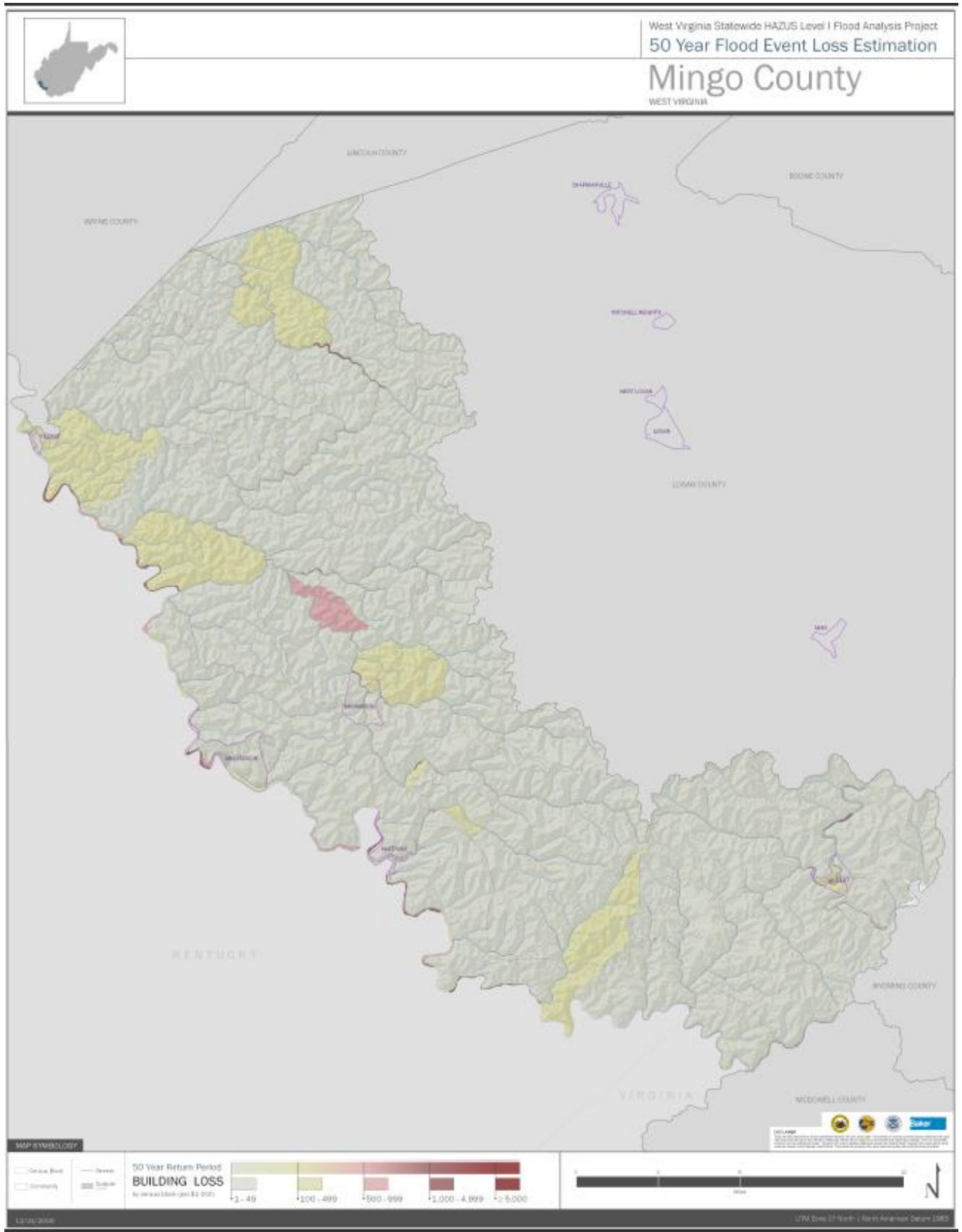
The total building-related losses were 174.50 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 57.19% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

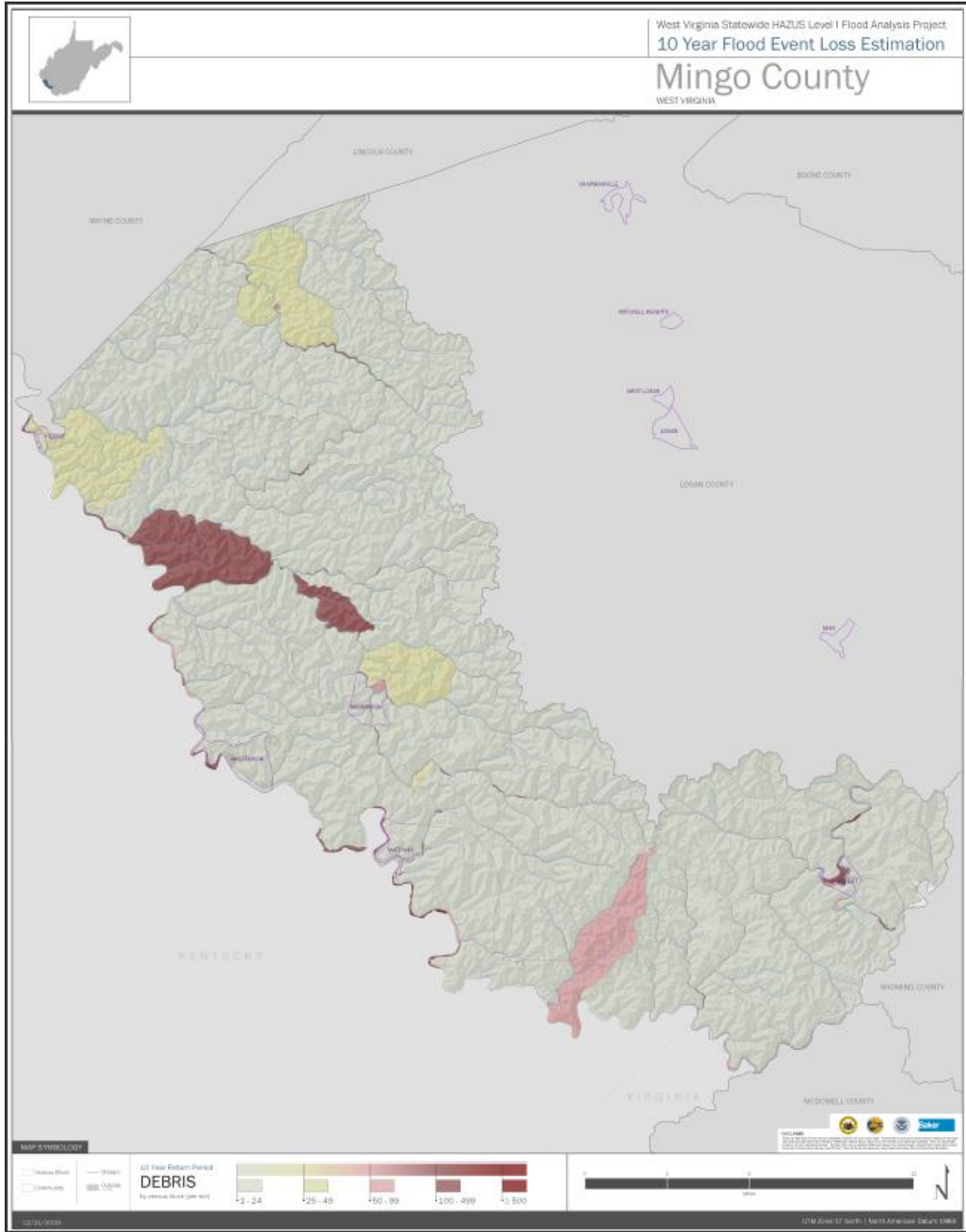
Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	54.49	15.11	2.10	3.92	85.61
	Content	37.29	32.36	4.71	12.94	87.29
	Inventory	0.00	0.81	0.75	0.04	1.59
	Subtotal	101.77	48.27	7.68	18.88	174.60
<u>Business Interruption</u>						
	Income	0.00	0.20	0.00	0.03	0.24
	Relocation	0.10	0.06	0.00	0.00	0.16
	Rental Income	0.02	0.04	0.00	0.00	0.07
	Wage	0.01	0.22	0.00	1.72	1.95
	Subtotal	0.13	0.62	0.00	1.78	2.41
ALL	Total	101.90	48.79	7.68	18.86	178.81

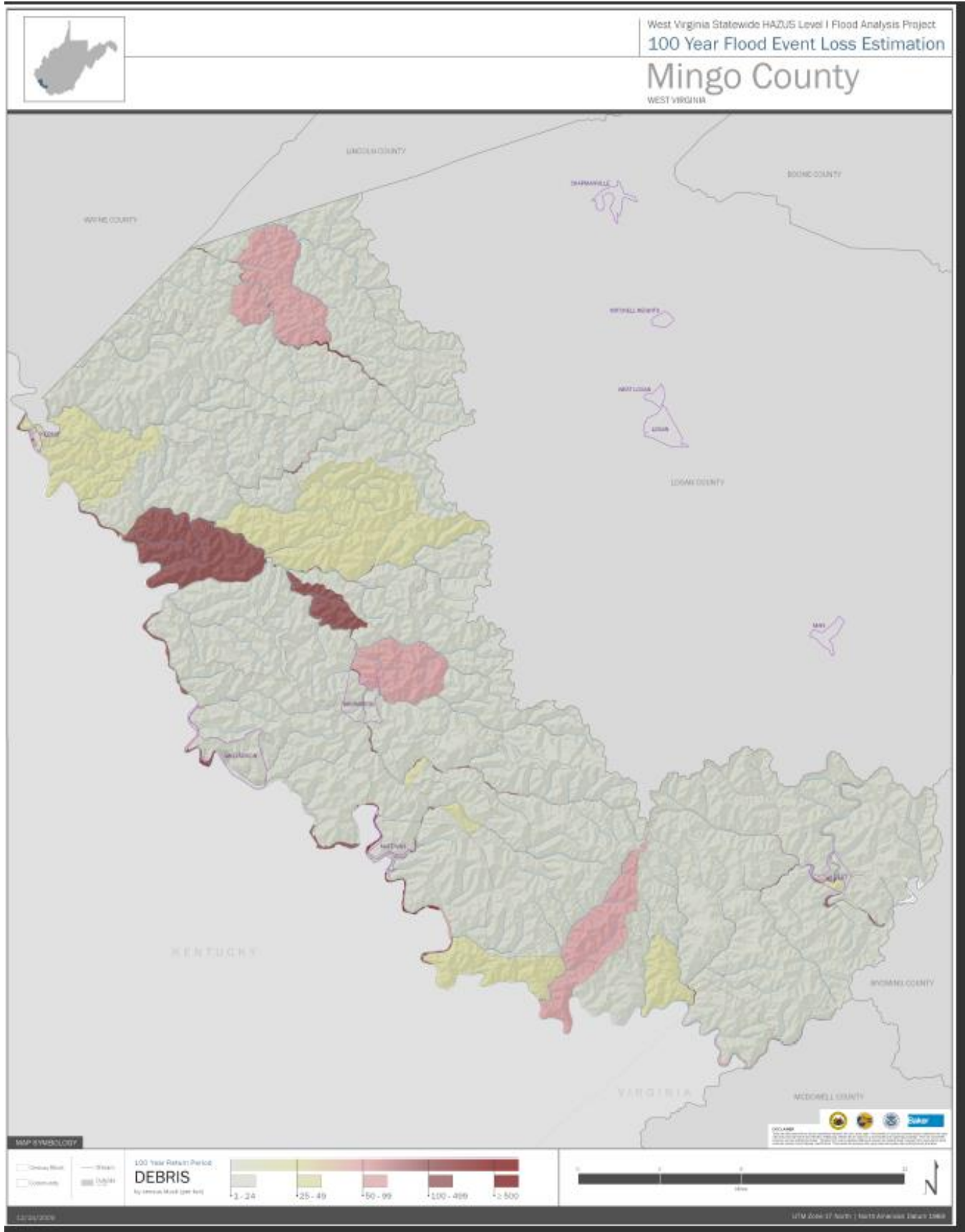


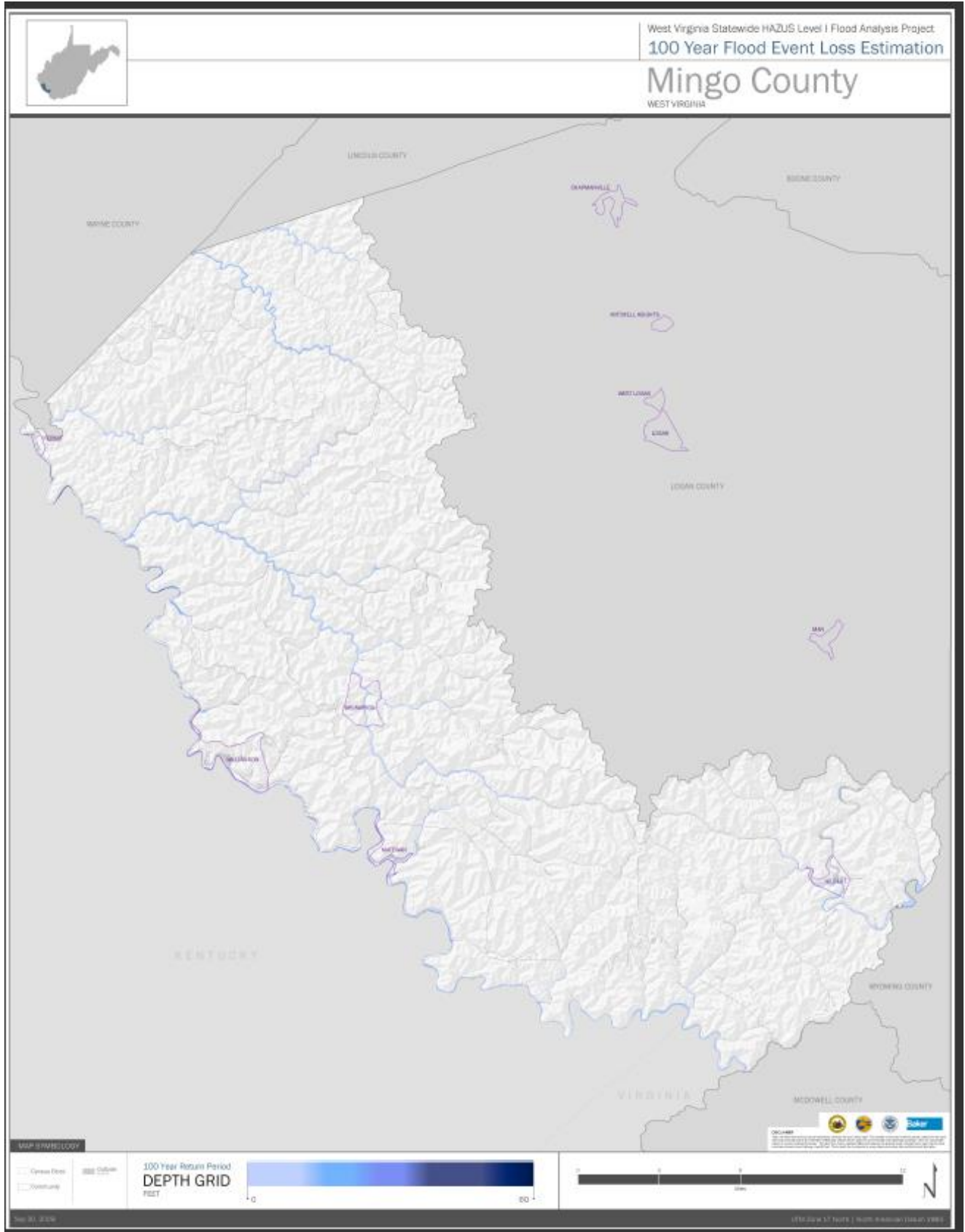


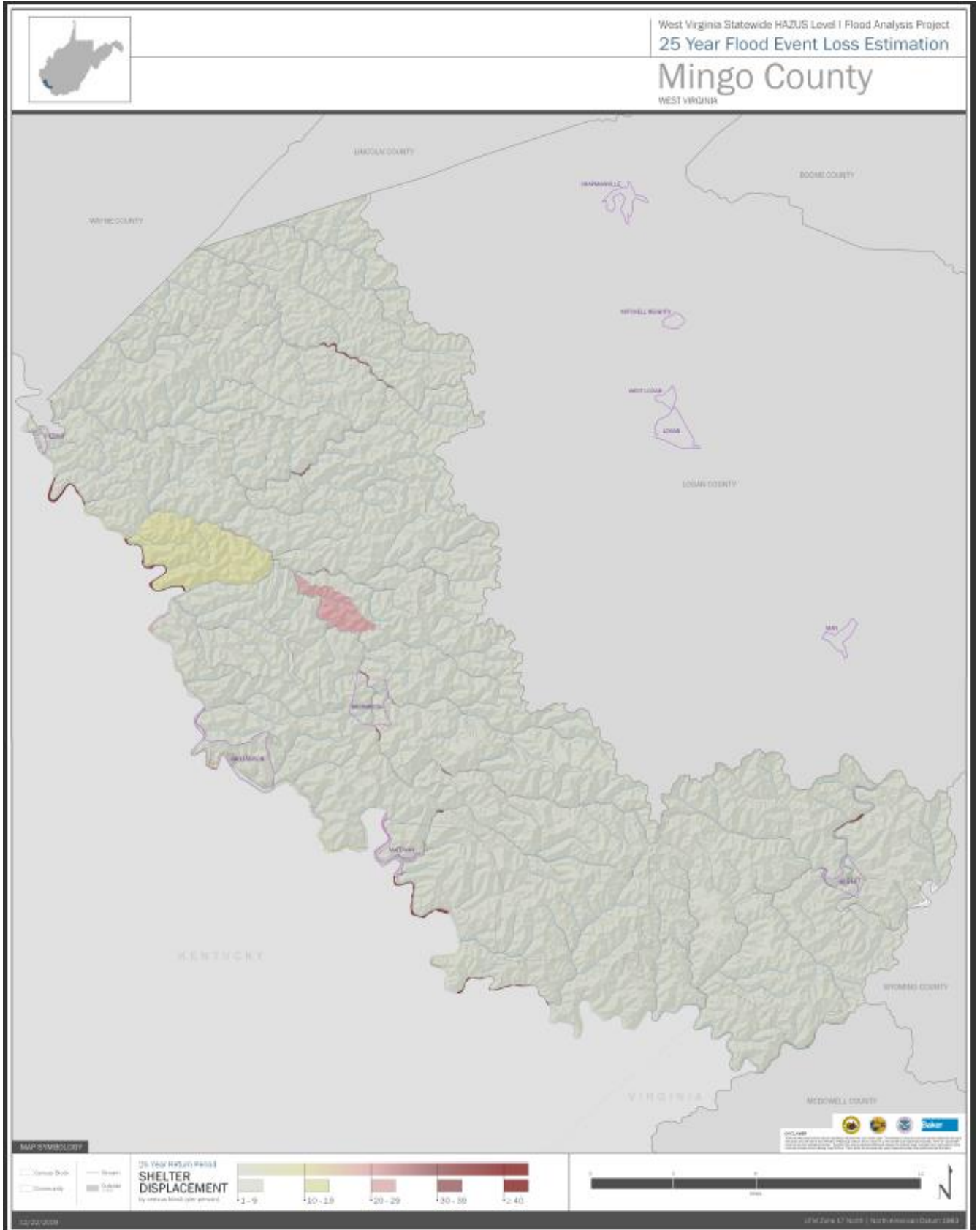


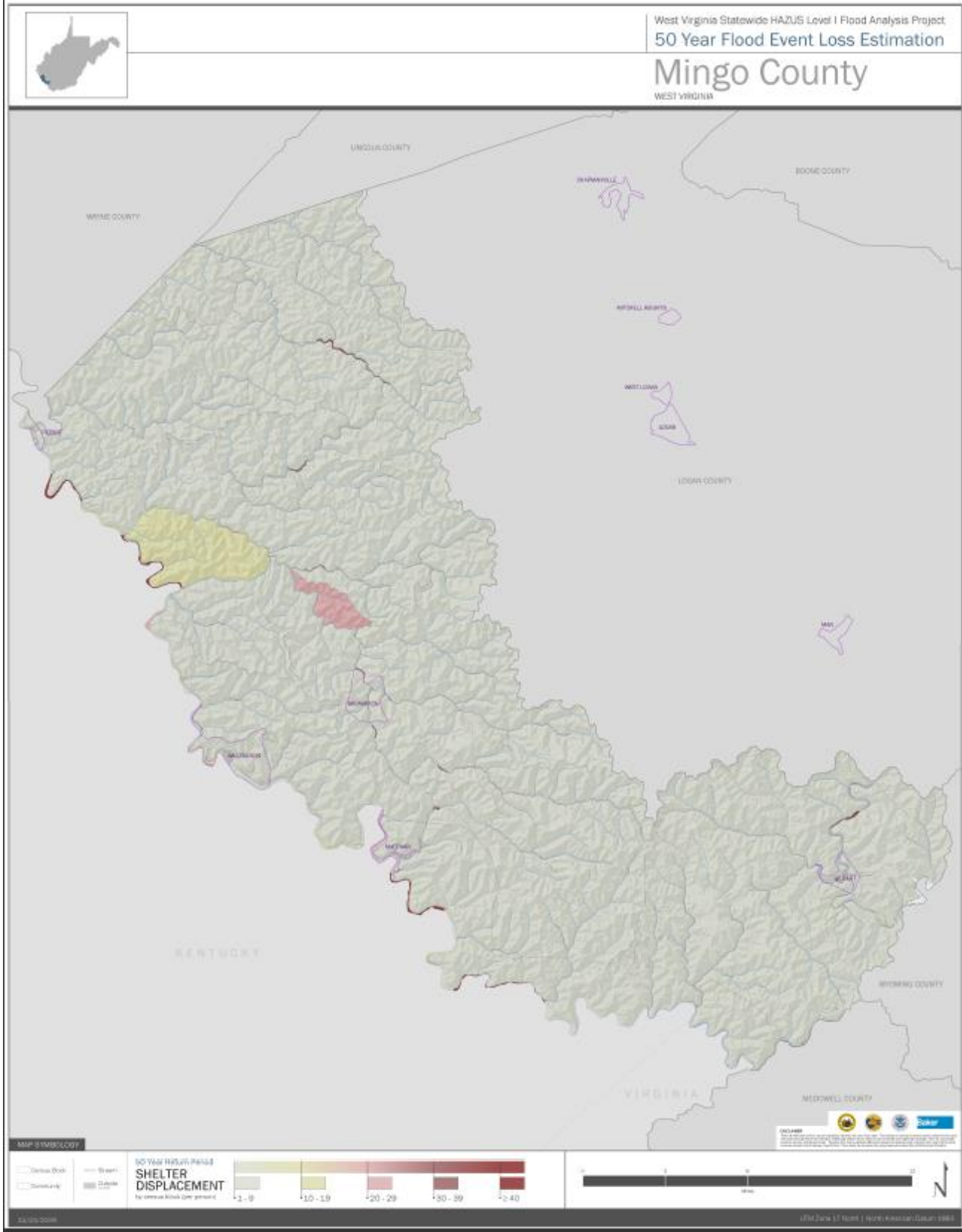


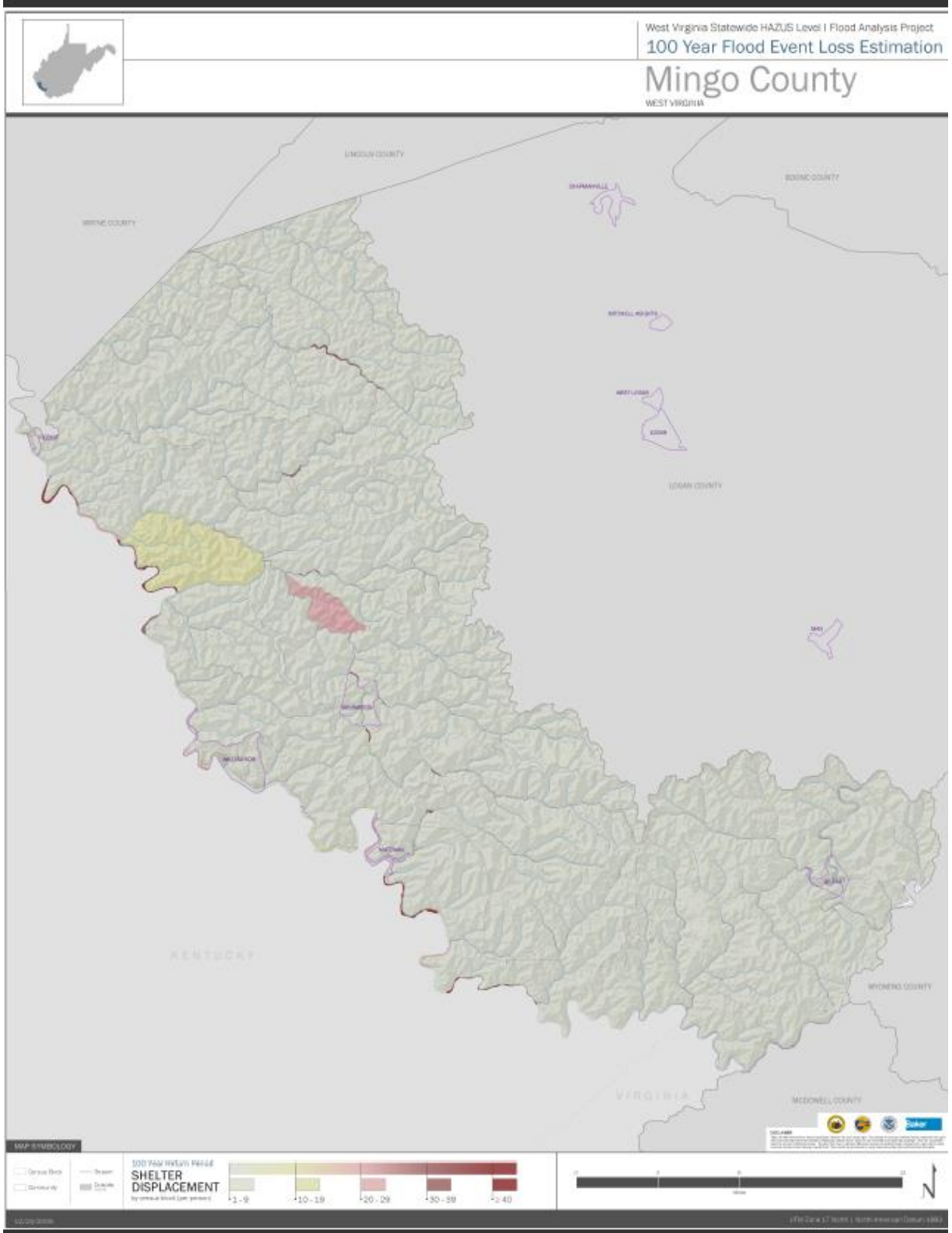
Region 2 Planning and Development Council
 Hazard Mitigation Plan

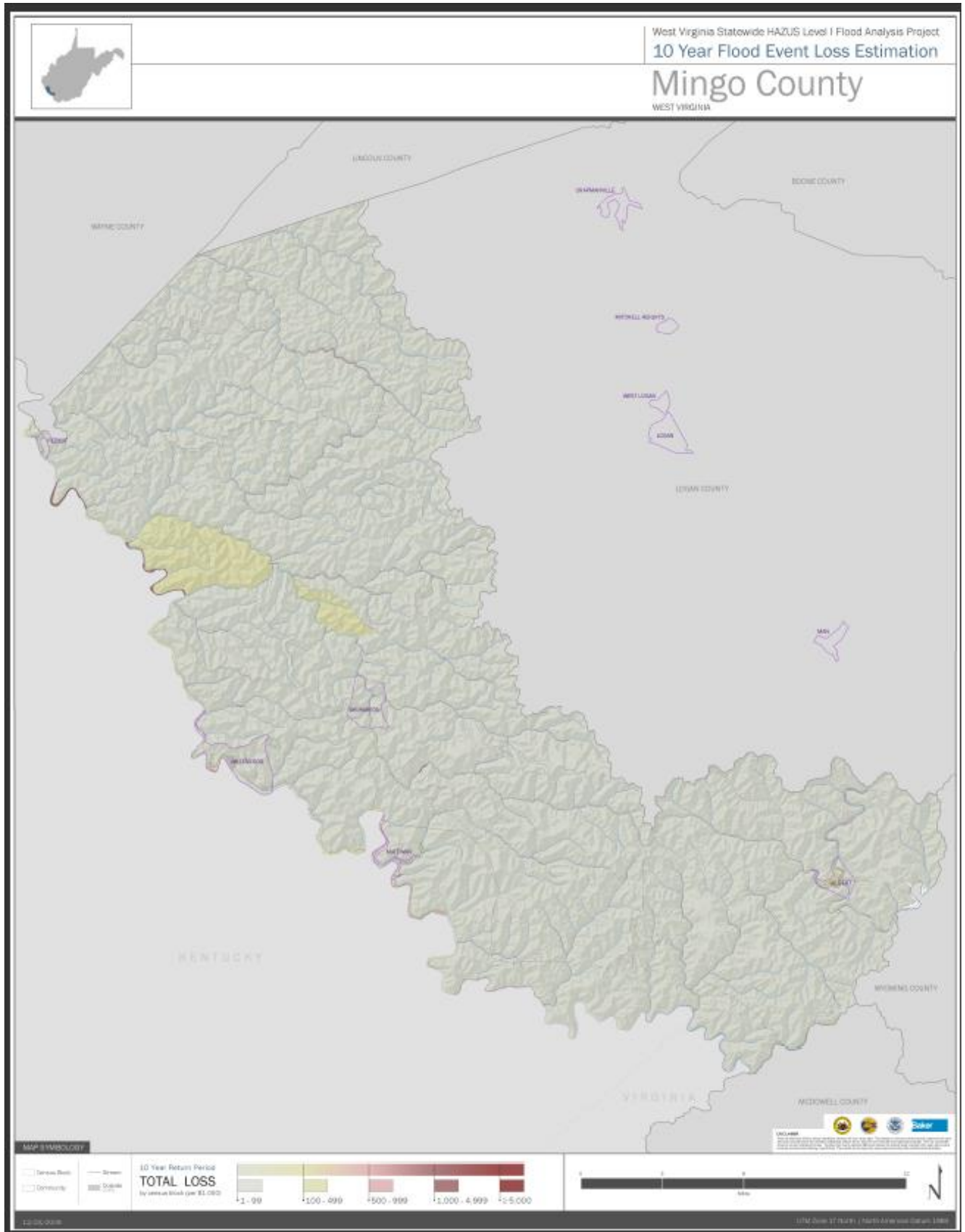


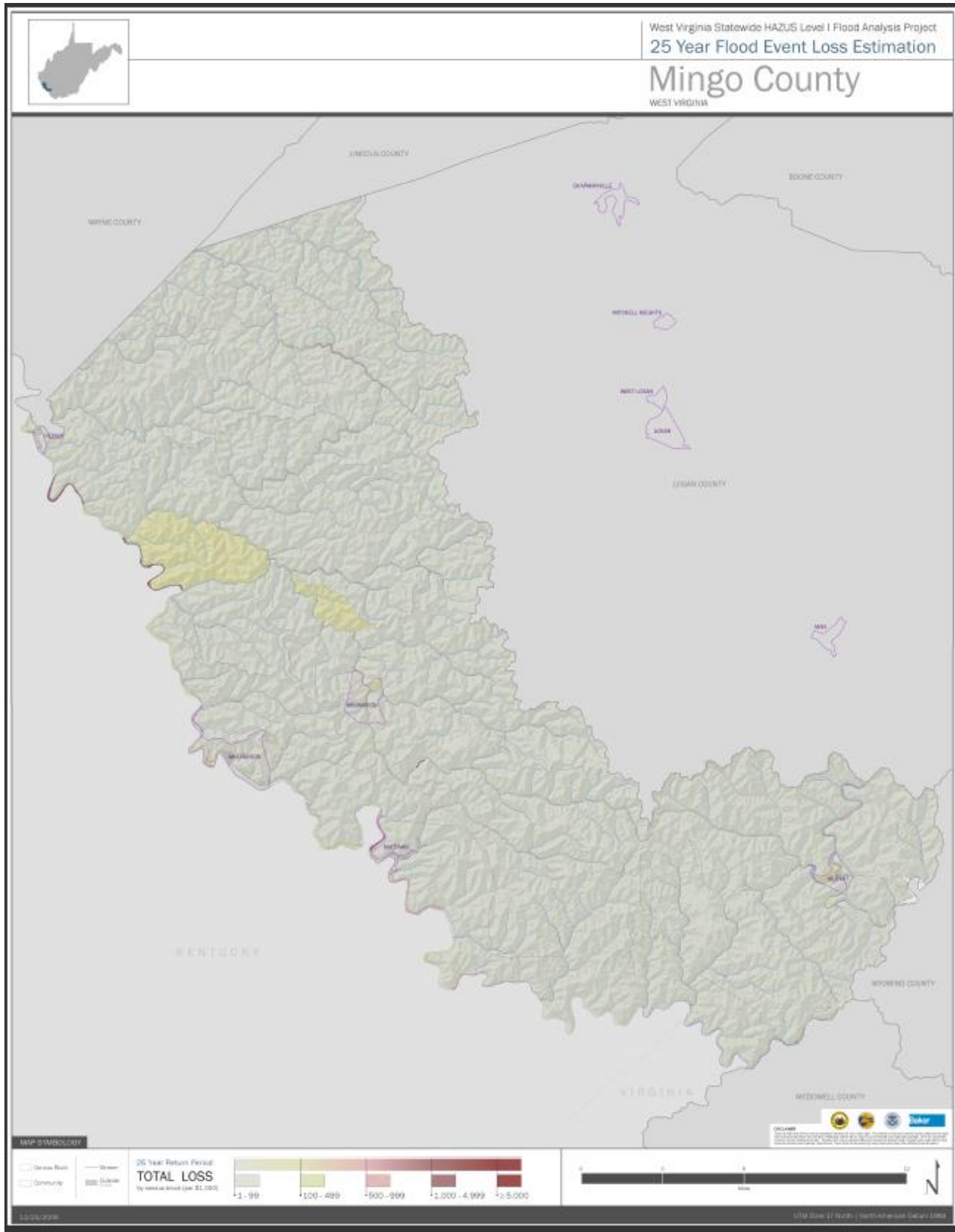




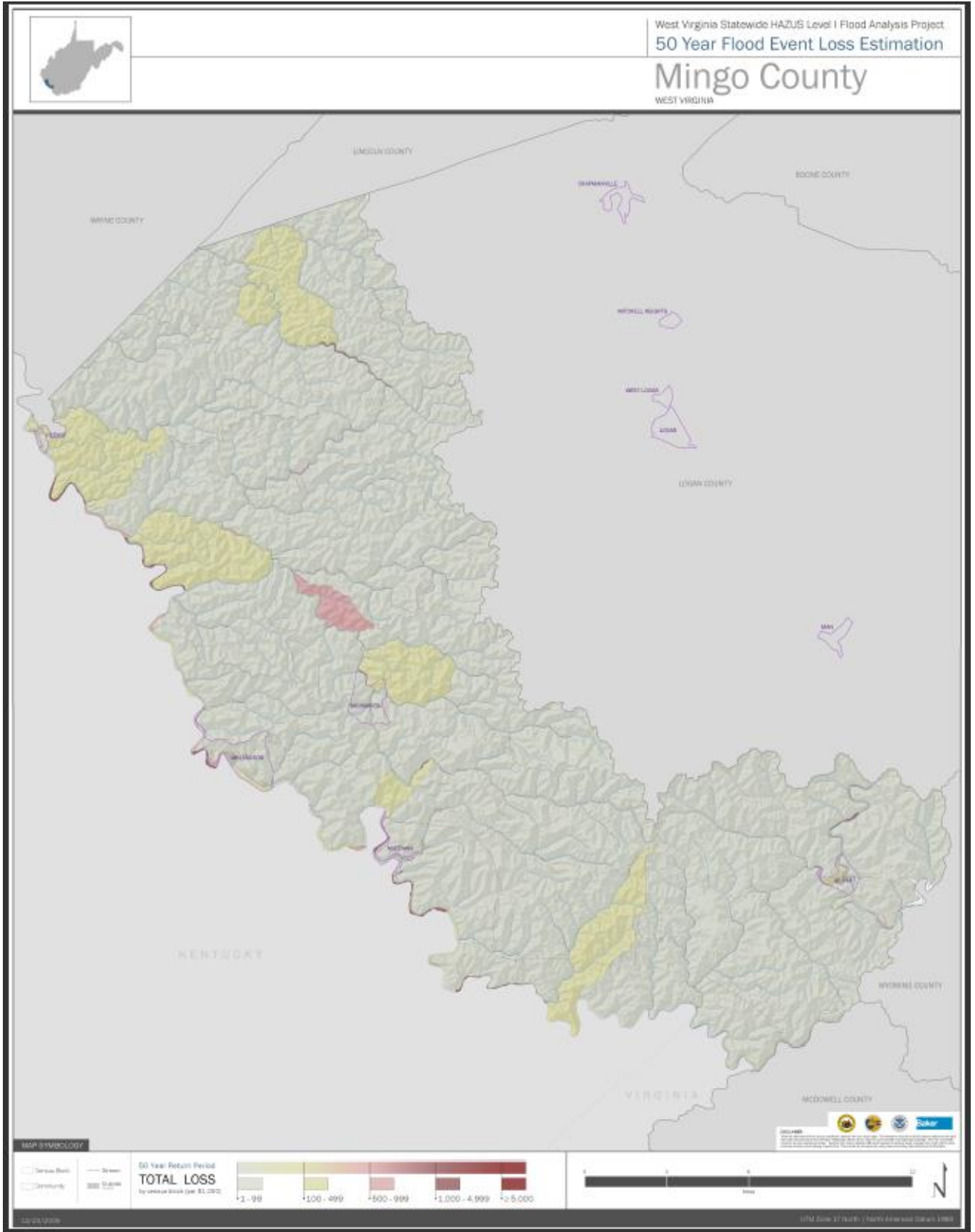


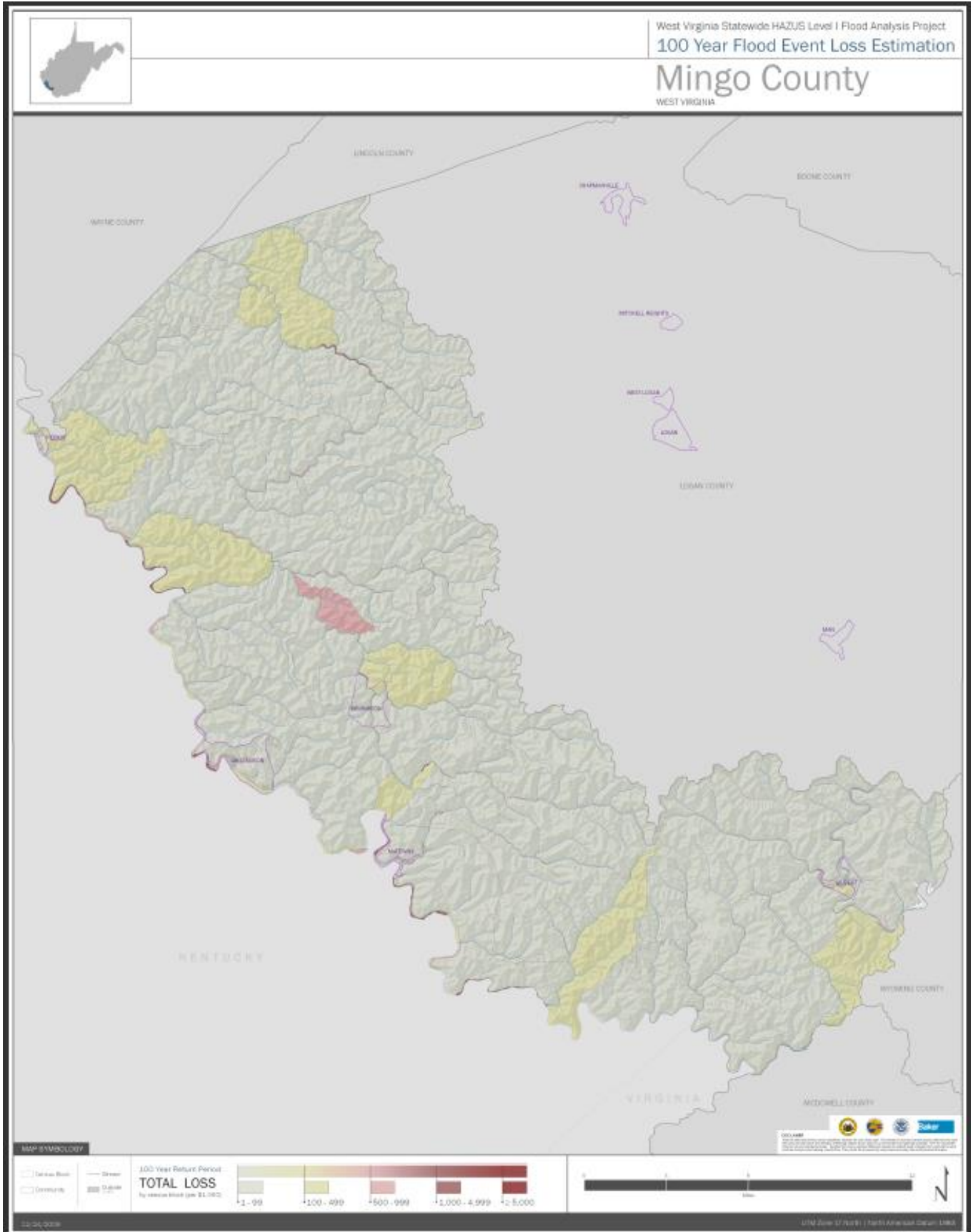






Region 2 Planning and Development Council
Hazard Mitigation Plan





HAZUS-MH: Flood Event Report

Region Name: MingoCounty
Flood Scenario: 10-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,647 buildings in the region which have an aggregate total replacement value of 1,424 million (2006 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	1,141,539	80.1%
Commercial	171,000	12.0%
Industrial	43,606	3.1%
Agricultural	1,776	0.1%
Religion	37,774	2.7%
Government	13,168	0.9%
Education	15,553	1.1%
Total	1,424,416	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	697,093	84.9%
Commercial	73,058	8.9%
Industrial	20,742	2.5%
Agricultural	1,171	0.1%
Religion	15,022	1.8%
Government	3,219	0.4%
Education	11,194	1.4%
Total	821,499	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 76 beds. There are 9 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 258 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 146 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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 building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.39	41	15.95	10	3.89	59	22.96	146	56.81
Total	0		2		41		10		59		146	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	96	100.00
Masonry	0	0.00	0	0.00	9	25.71	1	2.86	14	40.00	11	31.43
Steel	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	1	0.79	32	25.40	9	7.14	45	35.71	39	30.95

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	9	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.

HAZUS-MH: Flood Event Report

Region Name: MingoCounty
Flood Scenario: 25-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,647 buildings in the region which have an aggregate total replacement value of 1,424 million (2006 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	1,141,539	80.1%
Commercial	171,000	12.0%
Industrial	43,608	3.1%
Agricultural	1,776	0.1%
Religion	37,774	2.7%
Government	13,168	0.9%
Education	15,553	1.1%
Total	1,424,416	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	717,597	84.6%
Commercial	76,554	9.0%
Industrial	21,508	2.5%
Agricultural	1,171	0.1%
Religion	16,385	1.9%
Government	3,503	0.4%
Education	11,194	1.3%
Total	847,910	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 76 beds. There are 9 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 299 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 173 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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 building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.34	47	15.77	15	5.03	62	20.81	173	58.05
Total	0		2		47		15		62		173	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manufacturing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	113	100.00
Masonry	0	0.00	0	0.00	11	27.50	2	5.00	14	35.00	13	32.50
Steel	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	1	0.69	36	24.83	13	8.97	48	33.10	47	32.41

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	9	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.

Economic Loss

The total economic loss estimated for the flood is 63.79 million dollars, which represents 7.40 % 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 63.14 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 80.26% 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	33.07	1.59	0.42	1.54	36.62
	Content	18.06	3.94	1.00	3.27	26.26
	Inventory	0.00	0.08	0.18	0.00	0.26
	Subtotal	61.12	6.61	1.60	4.81	63.14
Business Interruption						
	Income	0.00	0.03	0.00	0.02	0.05
	Relocation	0.06	0.00	0.00	0.00	0.07
	Rental Income	0.01	0.00	0.00	0.00	0.01
	Wage	0.00	0.03	0.00	0.13	0.17
	Subtotal	0.08	0.08	0.00	0.16	0.30
ALL	Total	61.20	6.67	1.60	4.97	63.43

HAZUS-MH: Flood Event Report

Region Name: MingoCounty
Flood Scenario: 50-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,647 buildings in the region which have an aggregate total replacement value of 1,424 million (2006 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	1,141,539	80.1%
Commercial	171,000	12.0%
Industrial	43,606	3.1%
Agricultural	1,776	0.1%
Religion	37,774	2.7%
Government	13,168	0.9%
Education	16,553	1.1%
Total	1,424,416	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	744,866	84.1%
Commercial	84,878	9.6%
Industrial	23,028	2.6%
Agricultural	1,171	0.1%
Religion	16,692	1.9%
Government	3,503	0.4%
Education	11,194	1.3%
Total	885,332	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 76 beds. There are 9 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 331 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 191 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.30	52	15.76	15	4.55	71	21.52	191	57.88
Total	0		2		52		15		71		191	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	123	100.00
Masonry	0	0.00	0	0.00	11	25.00	2	4.55	15	34.09	16	36.36
Steel	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	1	0.61	41	25.15	13	7.98	56	34.36	52	31.90

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	9	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.

Economic Loss

The total economic loss estimated for the flood is 69.40 million dollars, which represents 8.05 % 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 68.69 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 79.68% 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	35.73	1.59	0.56	1.70	39.79
	Content	19.48	4.08	1.56	3.45	28.58
	Inventory	0.00	0.09	0.23	0.00	0.32
	Subtotal	65.21	6.88	2.48	6.16	68.69
Business Interruption						
	Income	0.00	0.03	0.00	0.02	0.06
	Relocation	0.07	0.00	0.00	0.00	0.07
	Rental income	0.01	0.00	0.00	0.00	0.01
	Wage	0.00	0.03	0.00	0.15	0.18
	Subtotal	0.08	0.07	0.00	0.17	0.32
ALL	Total	66.29	6.95	2.48	6.33	68.01

HAZUS-MH: Flood Event Report

Region Name: MingoCounty
Flood Scenario: 100-YR
Print Date: Tuesday, October 20, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 13,647 buildings in the region which have an aggregate total replacement value of 1,424 million (2006 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	1,141,539	80.1%
Commercial	171,000	12.0%
Industrial	43,606	3.1%
Agricultural	1,776	0.1%
Religion	37,774	2.7%
Government	13,168	0.9%
Education	15,553	1.1%
Total	1,424,416	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	750,981	84.3%
Commercial	84,878	9.5%
Industrial	23,028	2.6%
Agricultural	1,171	0.1%
Religion	16,692	1.9%
Government	3,418	0.4%
Education	11,194	1.3%
Total	891,362	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 76 beds. There are 9 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 348 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 207 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	2	0.58	50	14.41	17	4.90	71	20.46	207	59.65
Total	0		3		50		17		71		207	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	127	100.00
Masonry	0	0.00	0	0.00	12	24.00	2	4.00	16	32.00	20	40.00
Steel	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	1.18	38	22.35	15	8.82	55	32.35	60	35.29

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	9	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.

Economic Loss

The total economic loss estimated for the flood is 73.60 million dollars, which represents 8.54 % of the total replacement value of the scenario buildings.

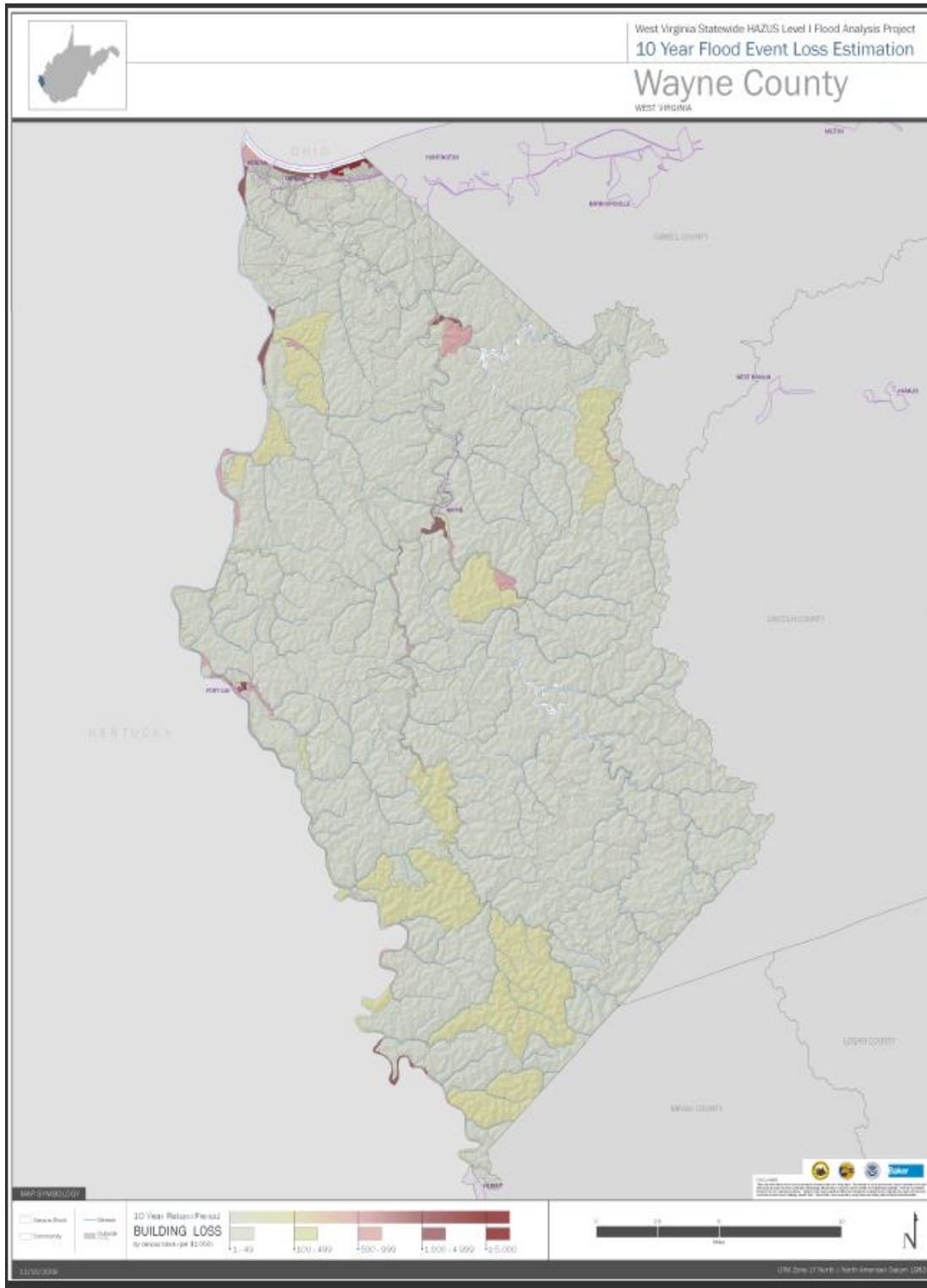
Building-Related Losses

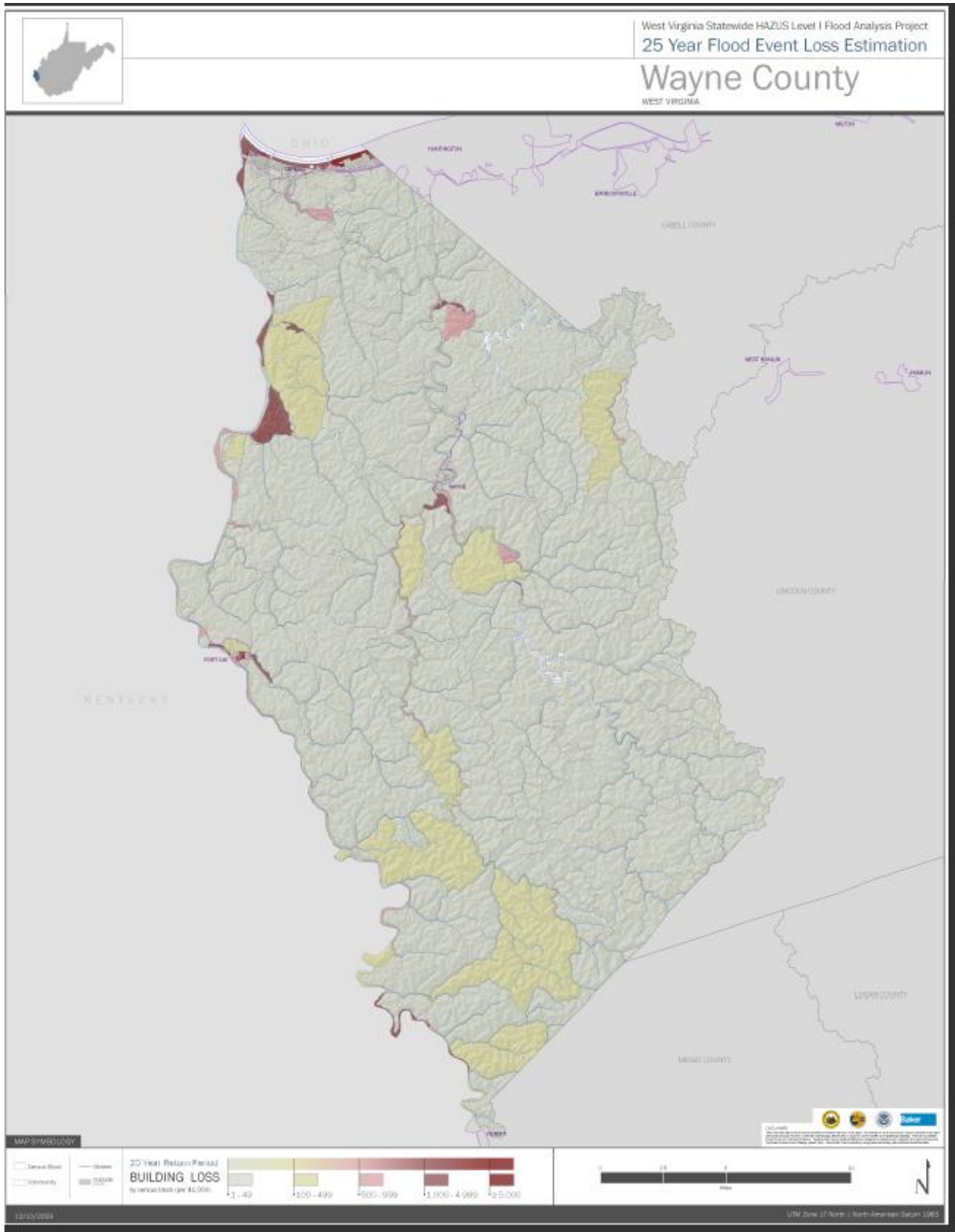
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability 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.

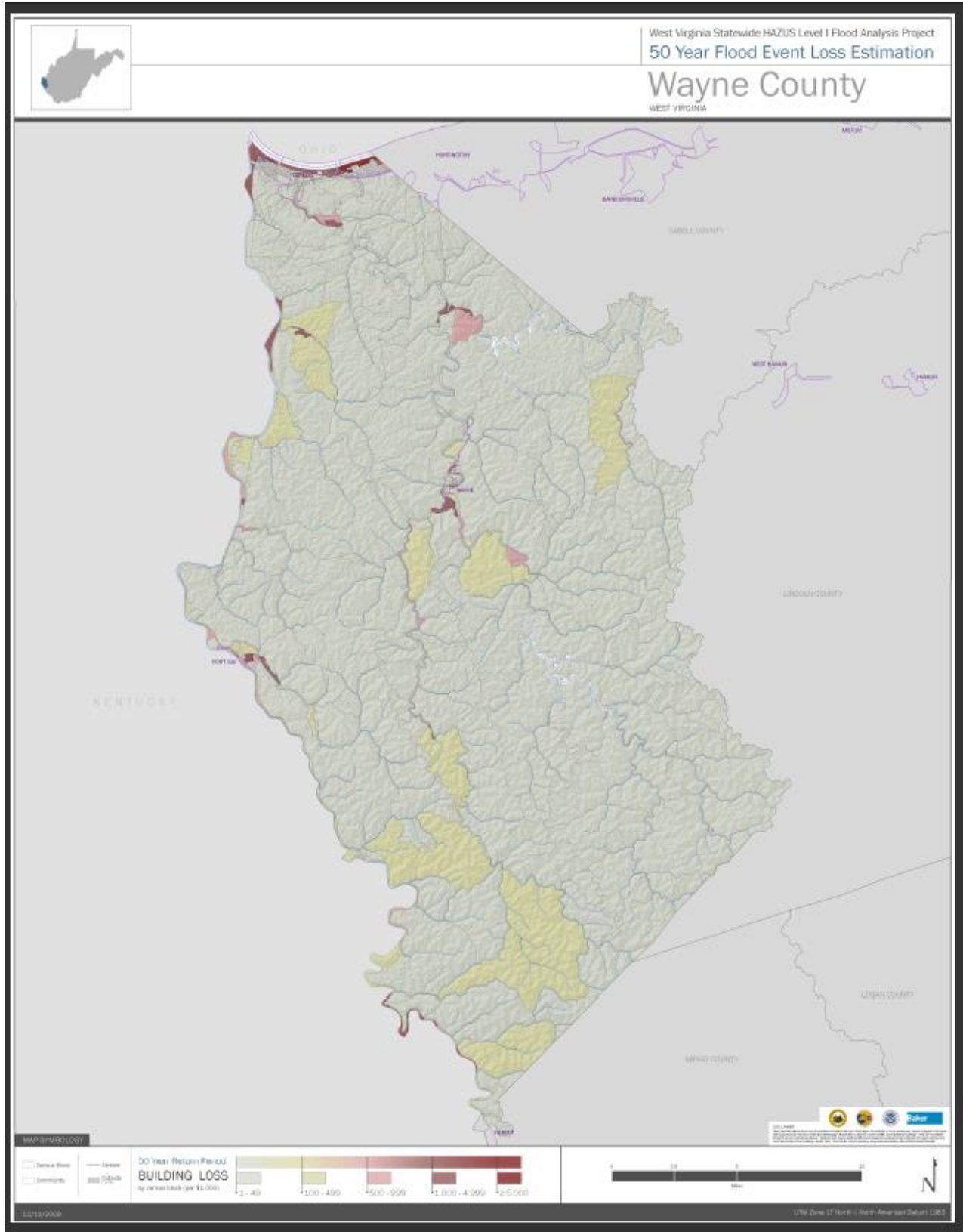
The total building-related losses were 72.83 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 79.16% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

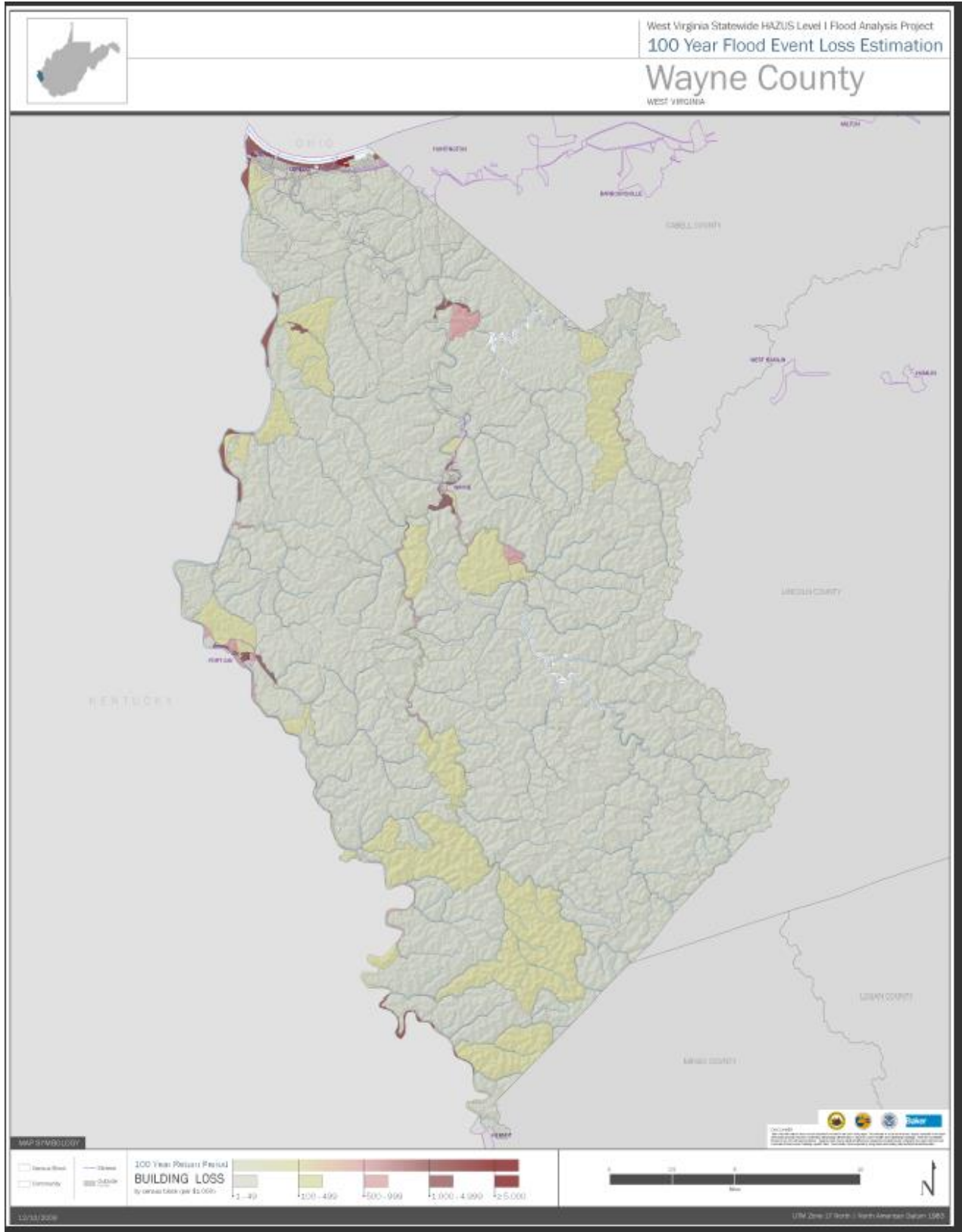
Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

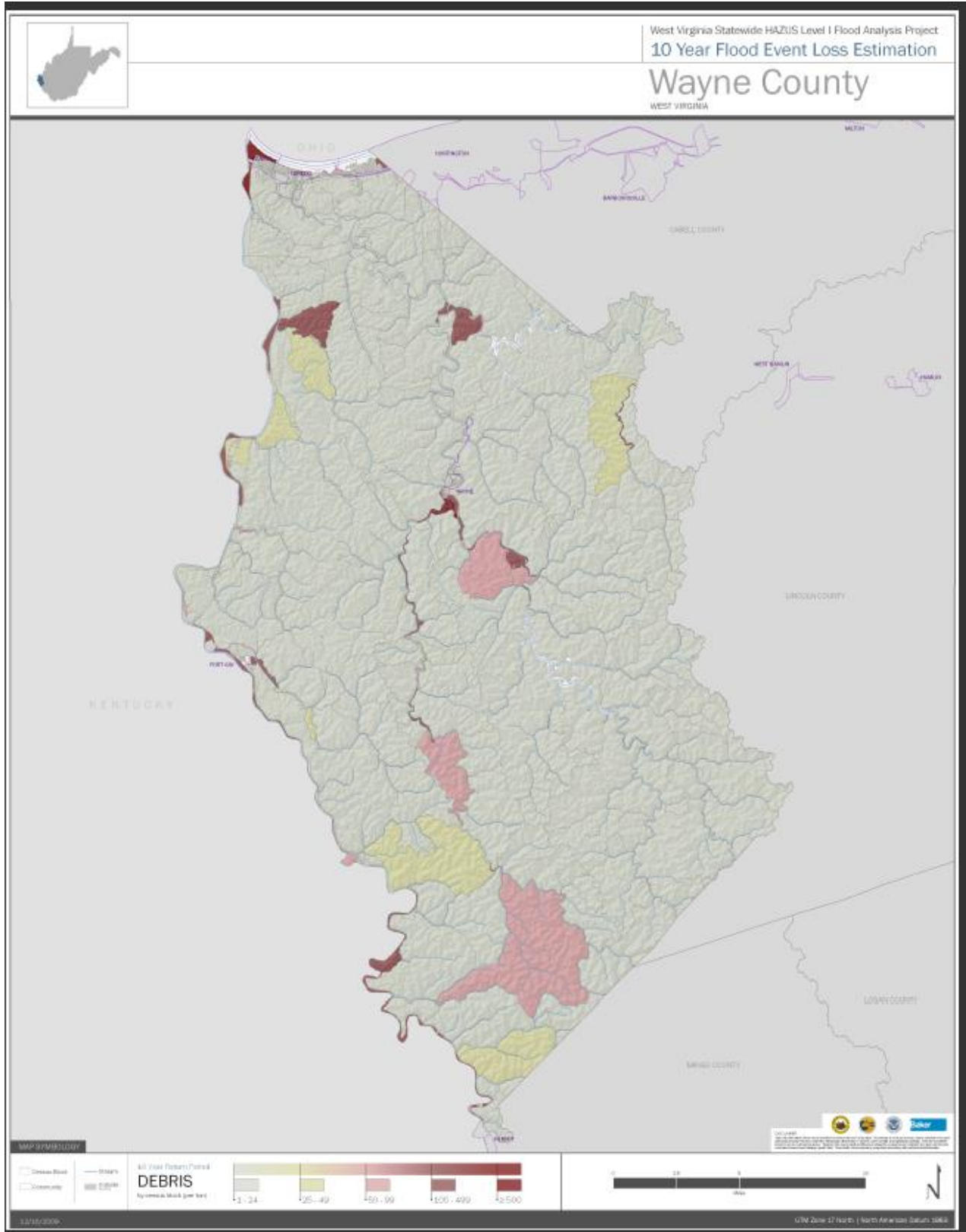
Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	37.70	1.83	0.71	1.86	42.09
	Content	20.48	4.43	1.66	3.83	30.39
	Inventory	0.00	0.09	0.25	0.00	0.34
	Subtotal	68.18	6.36	2.61	6.88	72.83
<u>Business Interruption</u>						
	Income	0.00	0.03	0.00	0.02	0.06
	Relocation	0.07	0.00	0.00	0.00	0.07
	Rental Income	0.01	0.00	0.00	0.00	0.01
	Wage	0.00	0.03	0.00	0.16	0.20
	Subtotal	0.08	0.07	0.00	0.18	0.34
ALL	Total	68.26	6.42	2.62	6.87	73.17

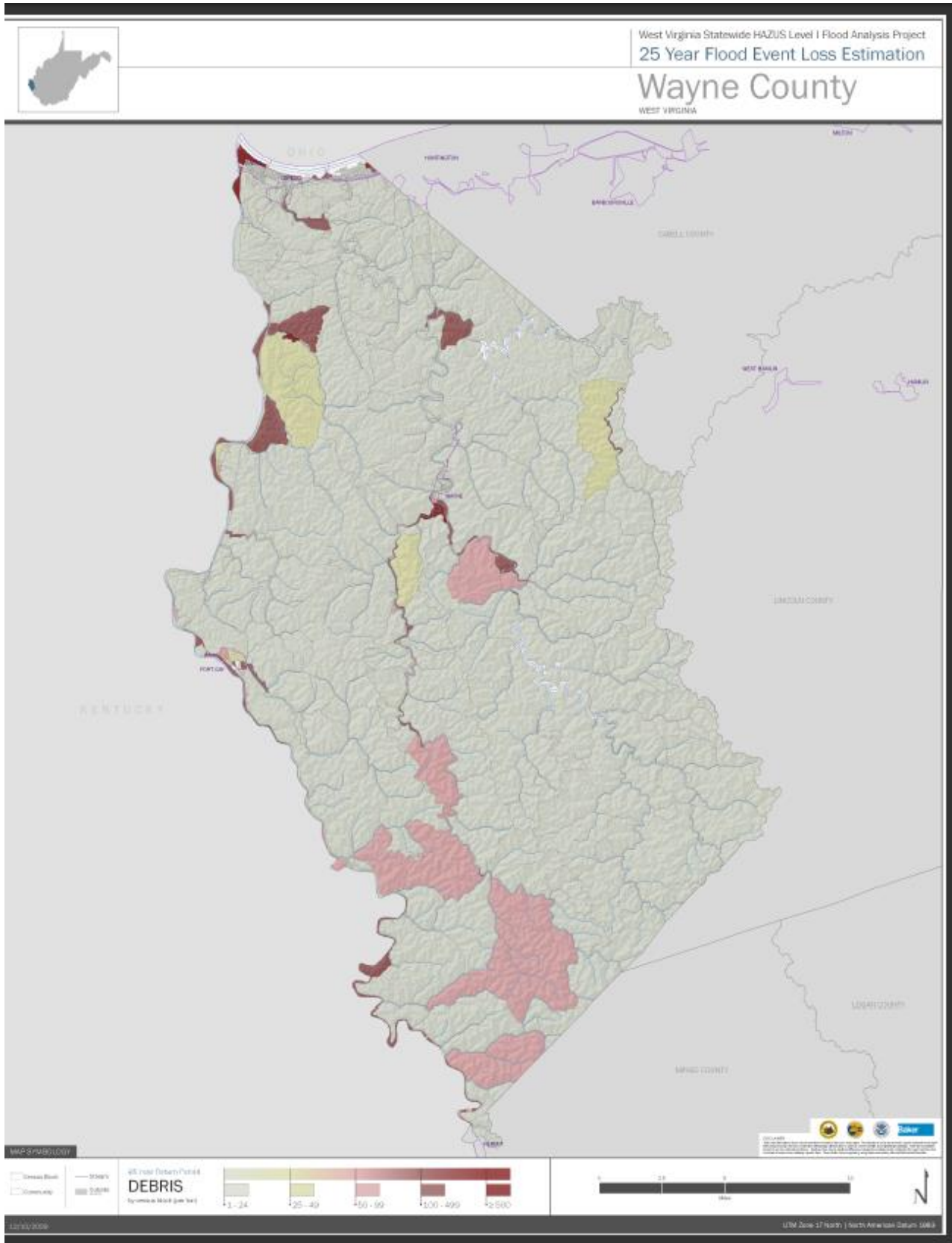


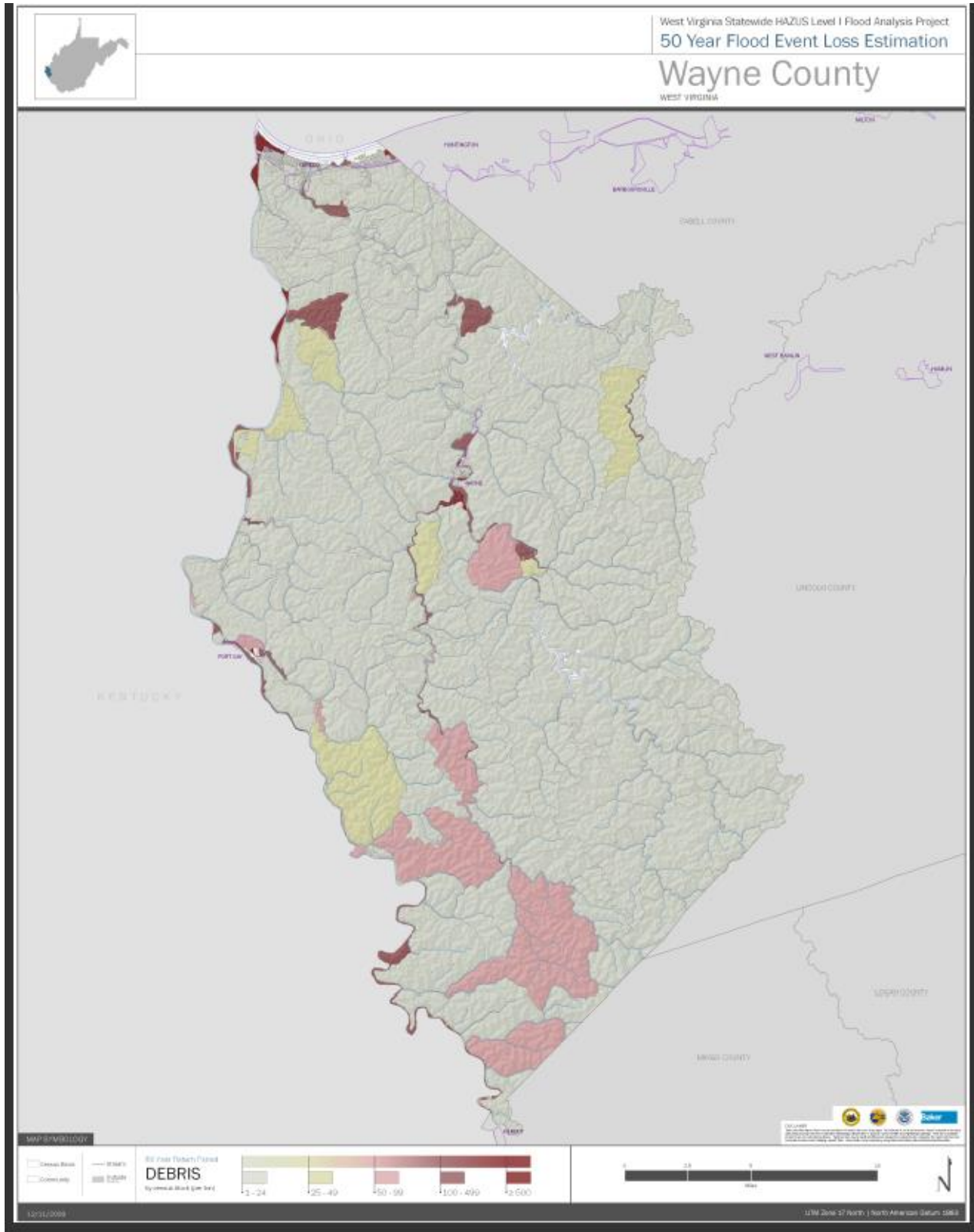


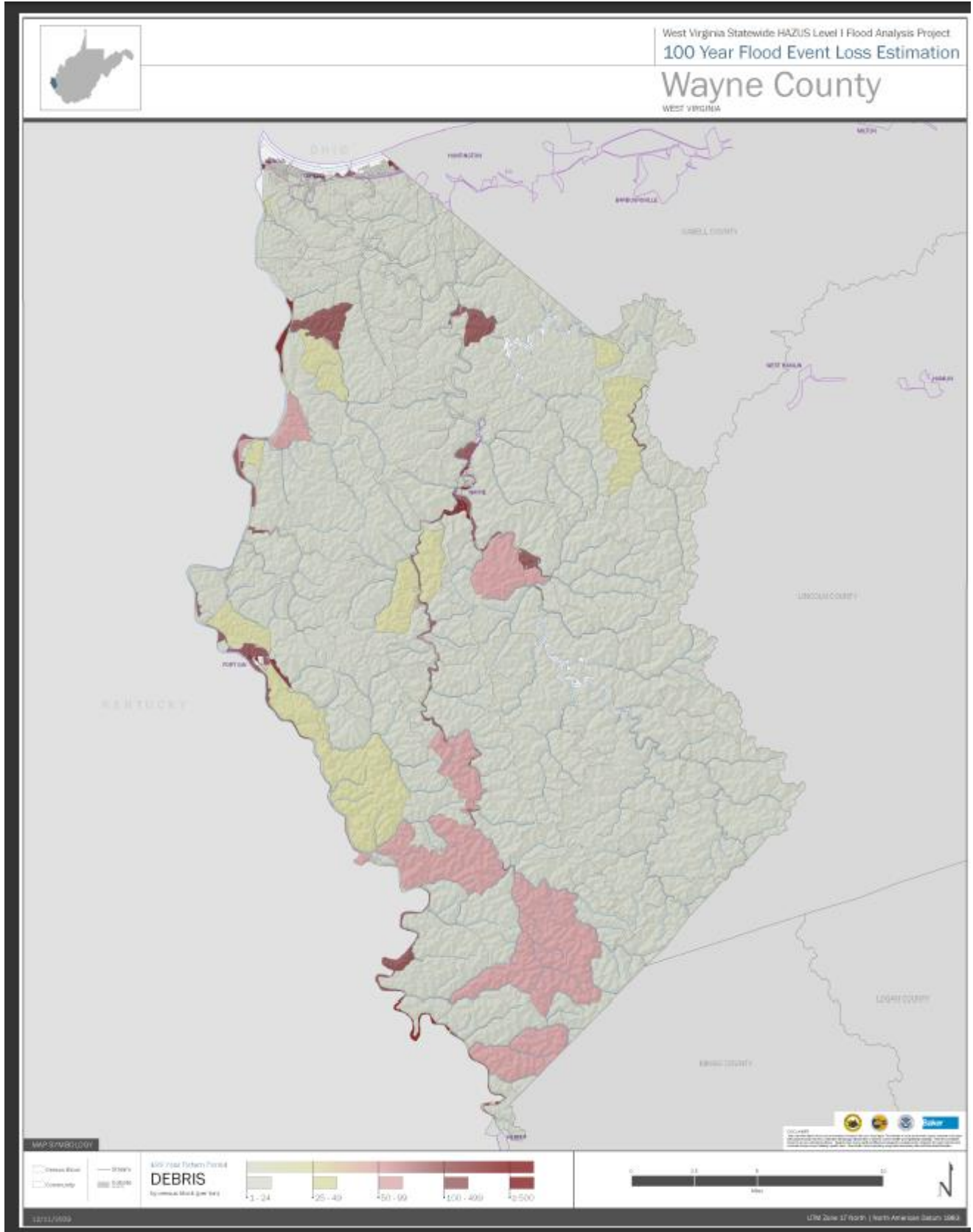


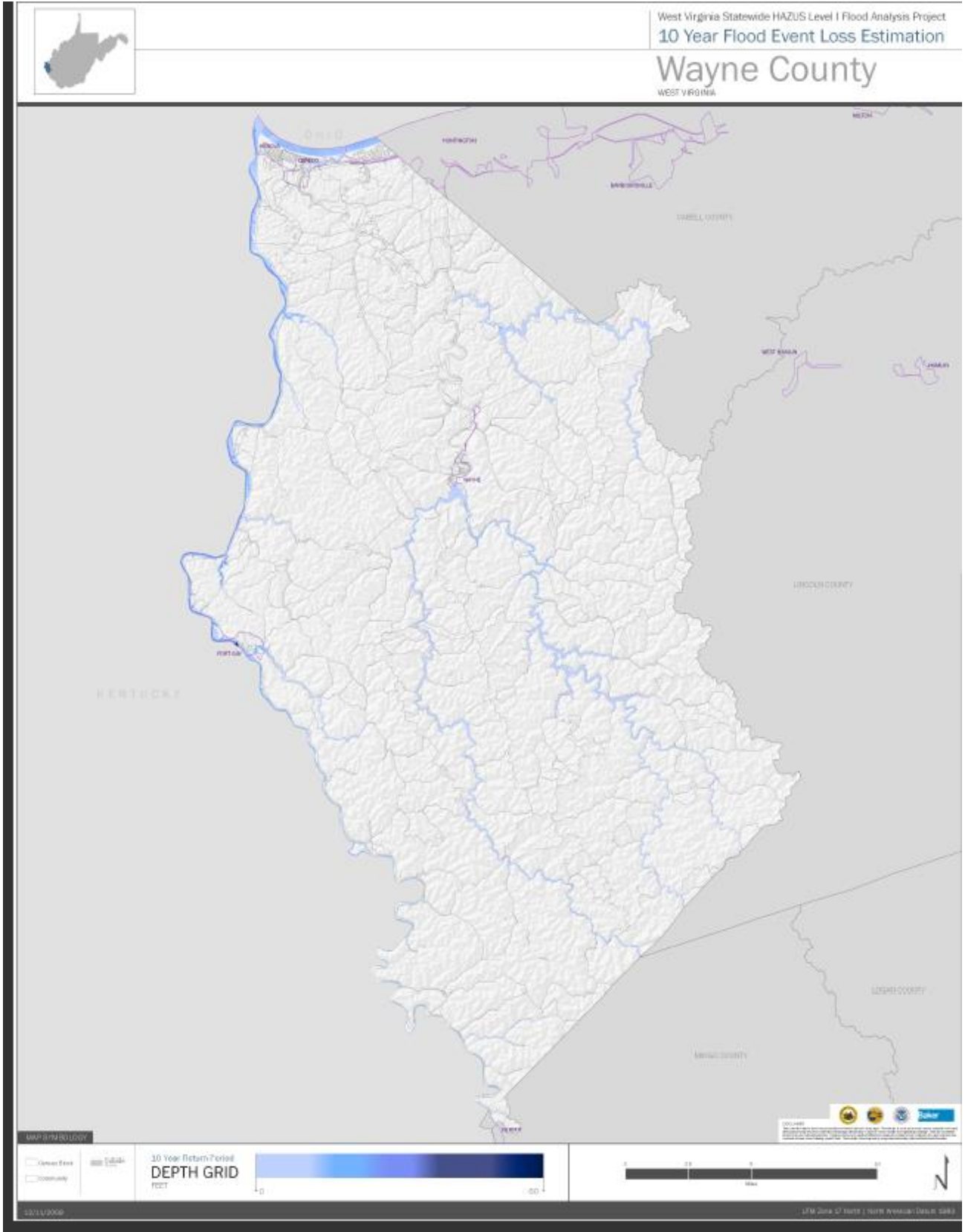


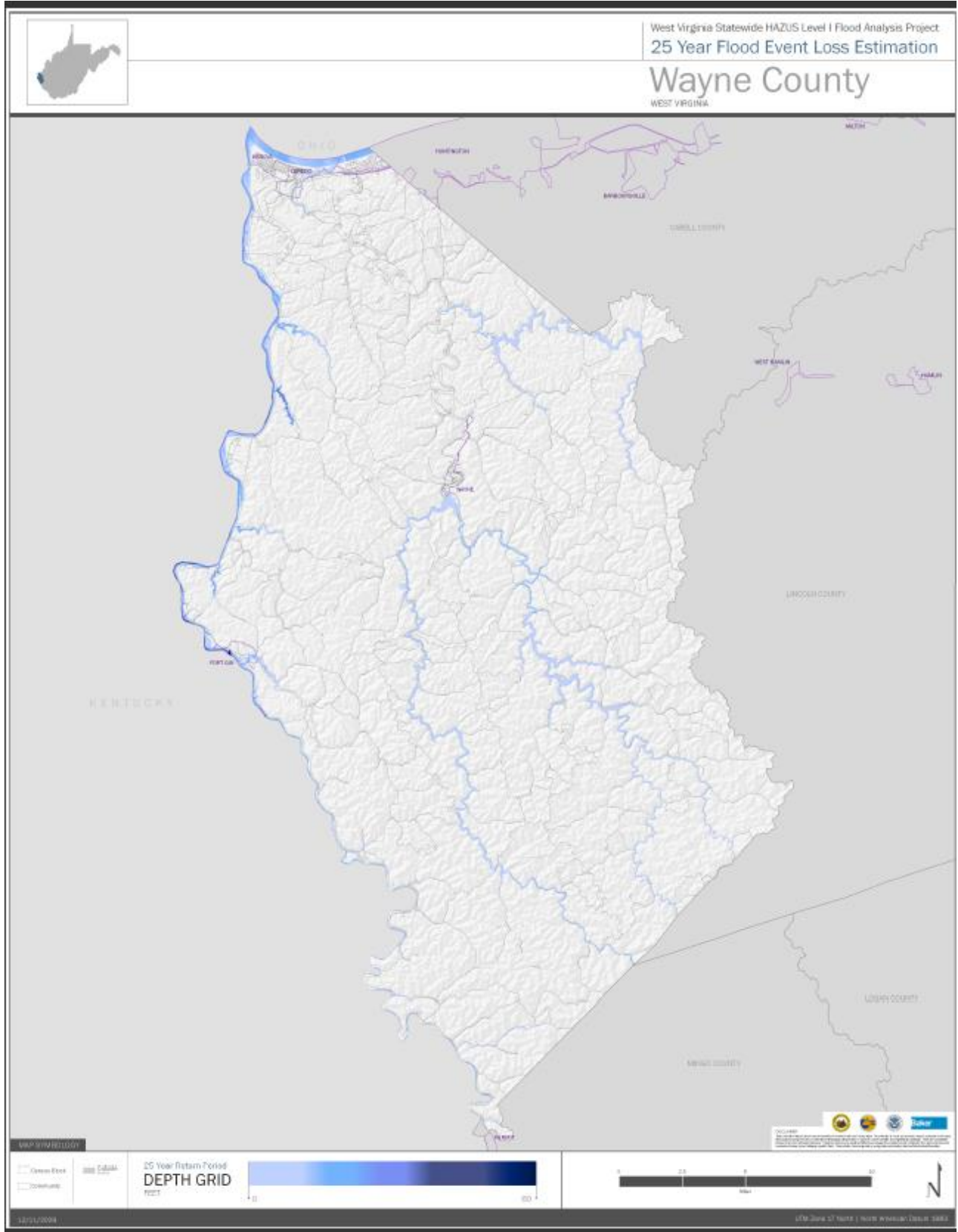


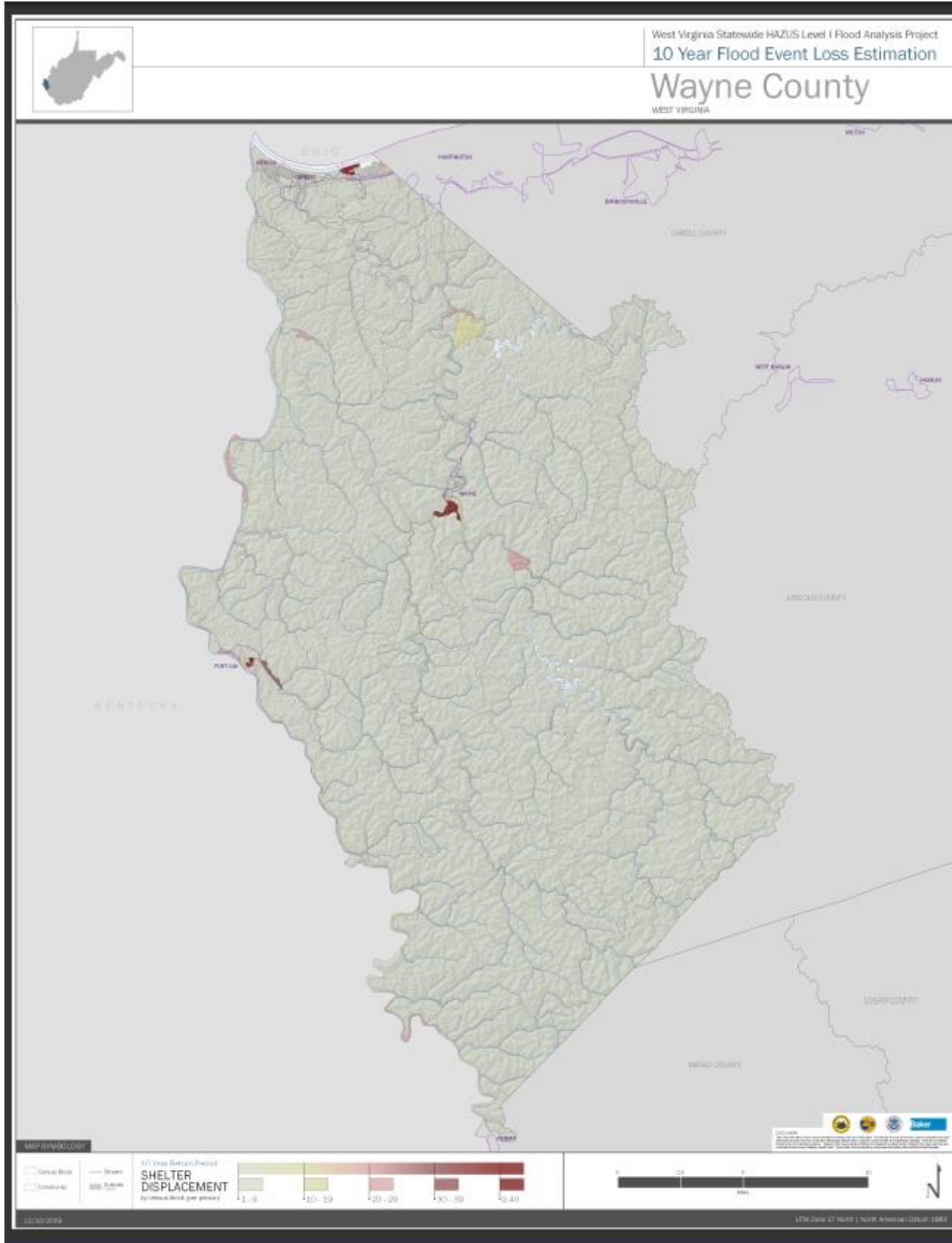


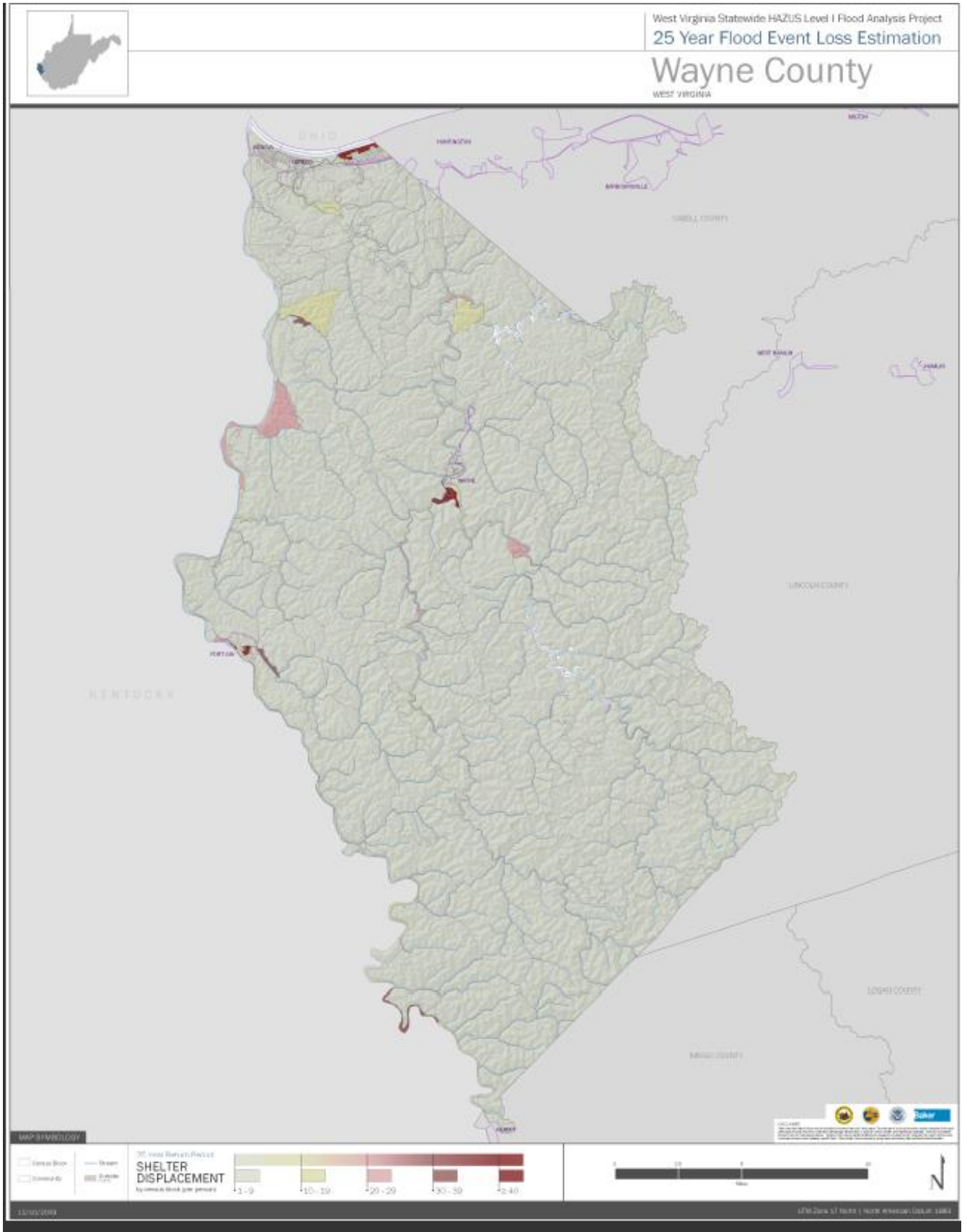


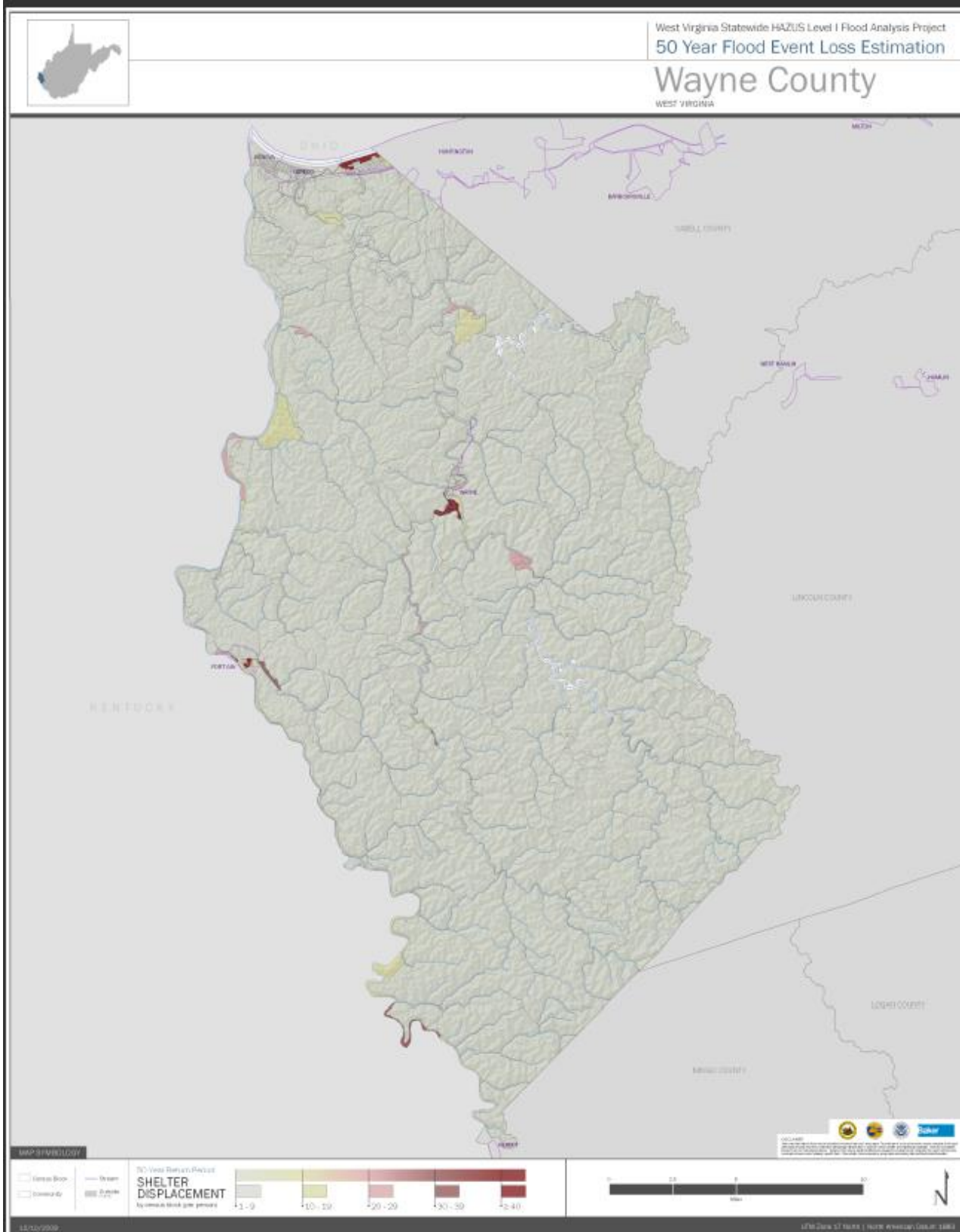


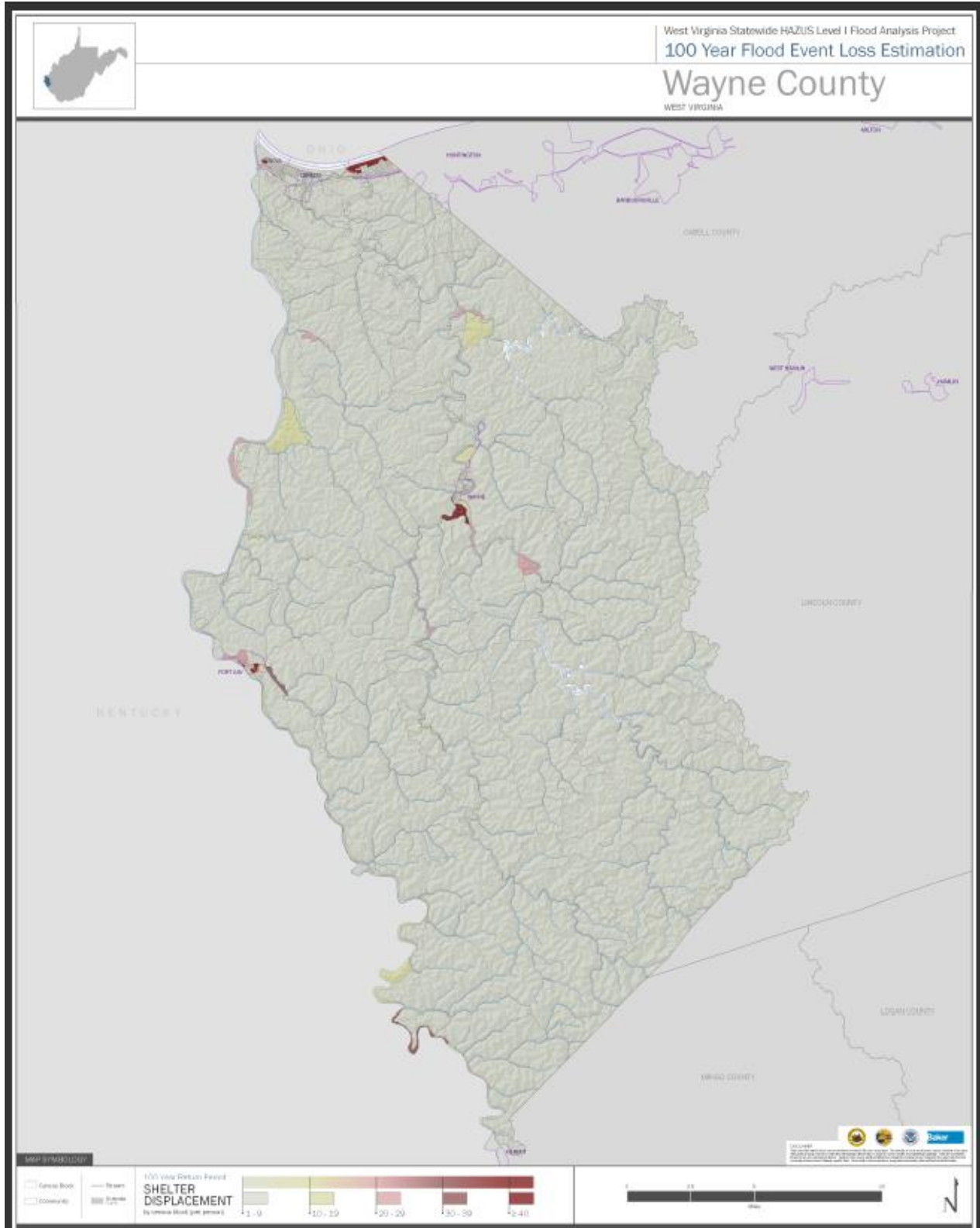


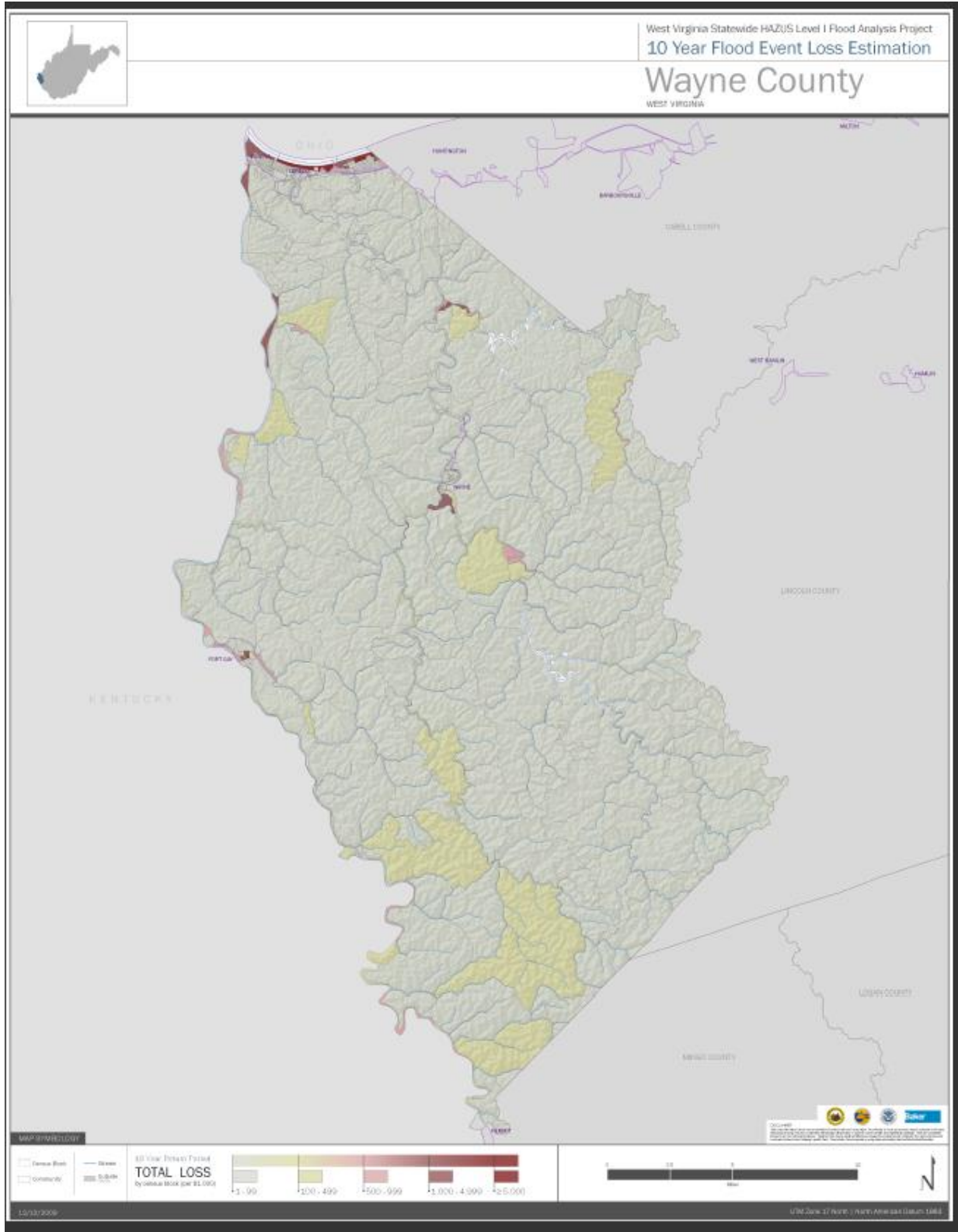


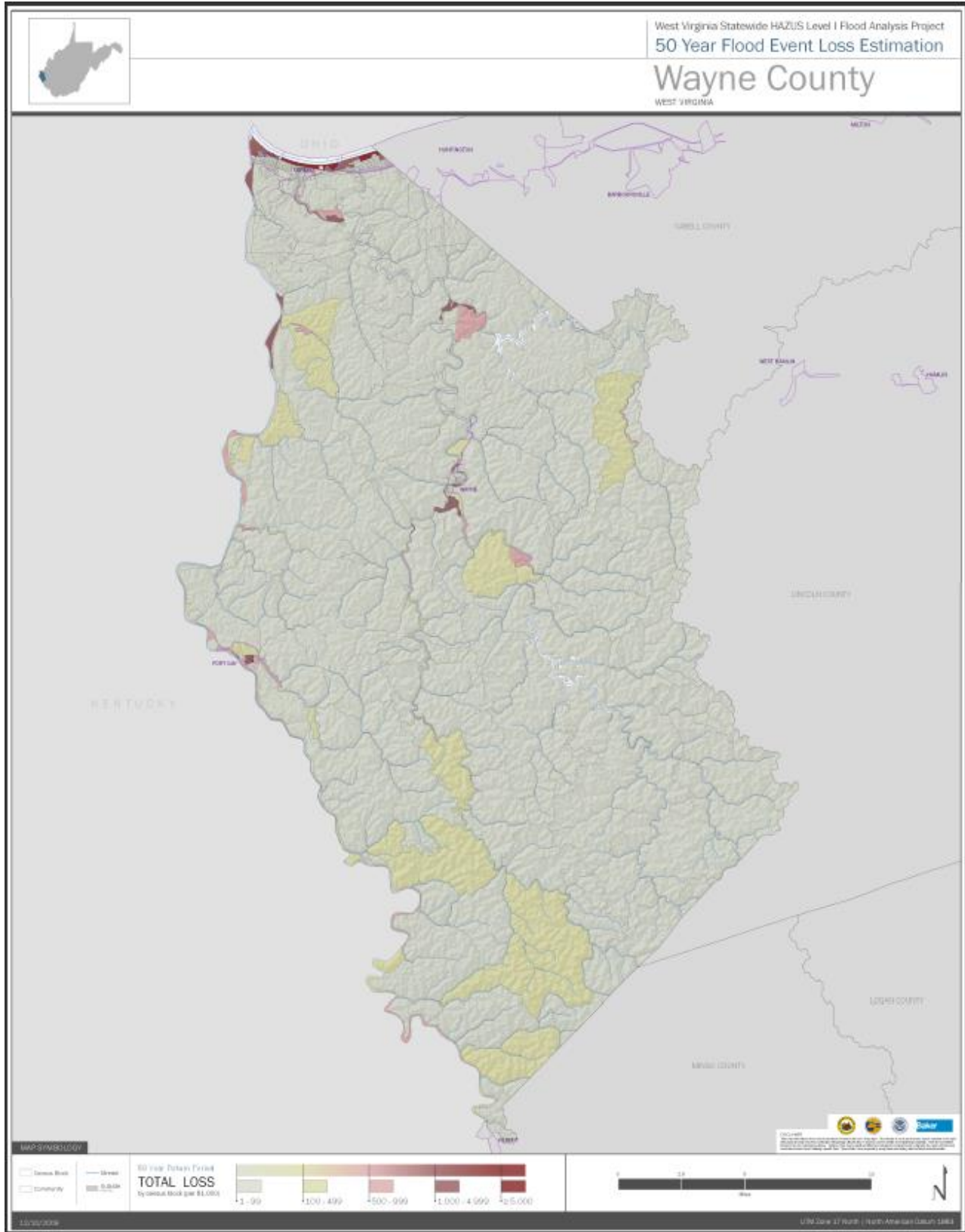


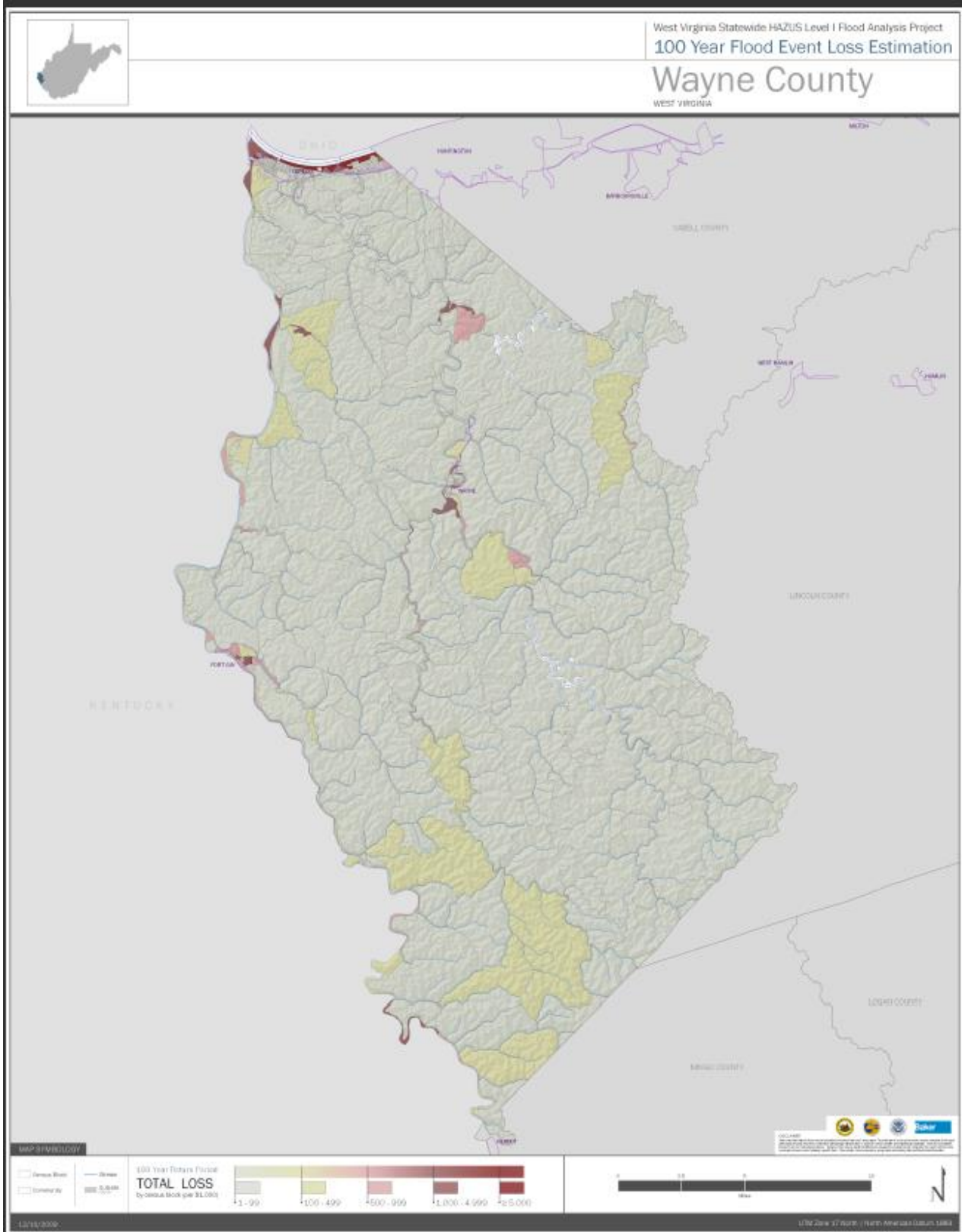












HAZUS-MH: Flood Event Report

Region Name: WayneCounty
Flood Scenario: 10-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 20,870 buildings in the region which have an aggregate total replacement value of 2,834 million (2008 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	2,388,907	84.3%
Commercial	252,370	8.9%
Industrial	67,560	2.4%
Agricultural	4,866	0.2%
Religion	53,927	1.9%
Government	32,848	1.2%
Education	33,146	1.2%
Total	2,833,624	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	740,094	83.7%
Commercial	63,025	7.1%
Industrial	48,815	5.5%
Agricultural	1,846	0.2%
Religion	10,261	1.2%
Government	8,222	0.9%
Education	12,331	1.4%
Total	884,594	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 80 beds. There are 8 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 302 buildings will be at least moderately damaged. This is over 11% of the total number of buildings in the scenario. There are an estimated 108 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	2	0.66	34	11.26	17	5.63	141	46.69	108	35.76
Total	0		2		34		17		141		108	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	58	100.00
Masonry	0	0.00	0	0.00	6	10.17	3	5.08	36	61.02	14	23.73
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	1.08	28	15.14	14	7.57	105	56.76	36	19.46

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	8	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.

Economic Loss

The total economic loss estimated for the flood is 88.49 million dollars, which represents 9.18 % 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 87.24 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 63.29% 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	35.47	4.93	2.49	2.11	45.00
	Content	20.45	10.32	5.35	5.17	41.28
	Inventory	0.00	0.33	0.60	0.03	0.96
	Subtotal	66.92	16.67	8.44	7.92	87.24
Business Interruption						
	Income	0.01	0.05	0.00	0.04	0.09
	Relocation	0.06	0.01	0.00	0.00	0.07
	Rental Income	0.01	0.00	0.00	0.00	0.01
	Wage	0.01	0.07	0.00	0.19	0.27
	Subtotal	0.09	0.12	0.00	0.23	0.46
ALL	Total	69.01	16.89	8.44	7.66	87.89

HAZUS-MH: Flood Event Report

Region Name: Wayne County
Flood Scenario: 25-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 20,870 buildings in the region which have an aggregate total replacement value of 2,834 million (2008 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	2,388,907	84.3%
Commercial	252,370	8.9%
Industrial	67,560	2.4%
Agricultural	4,866	0.2%
Religion	53,927	1.9%
Government	32,848	1.2%
Education	33,146	1.2%
Total	2,833,624	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	799,189	83.7%
Commercial	72,344	7.6%
Industrial	49,044	5.1%
Agricultural	1,846	0.2%
Religion	10,847	1.1%
Government	9,627	1.0%
Education	12,331	1.3%
Total	955,228	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 80 beds. There are 8 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 364 buildings will be at least moderately damaged. This is over 10% of the total number of buildings in the scenario. There are an estimated 148 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	2	0.55	36	9.89	18	4.95	160	43.96	148	40.66
Total	0		2		36		18		160		148	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	76	100.00
Masonry	0	0.00	0	0.00	7	9.86	3	4.23	44	61.97	17	23.94
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	0.92	29	13.36	15	6.91	116	53.46	55	25.35

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	1	0	0
Schools	8	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.

Economic Loss

The total economic loss estimated for the flood is 103.72 million dollars, which represents 10.76 % 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 102.31 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 65.75% 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
<u>Building Loss</u>						
	Building	43.41	5.53	2.61	2.26	53.81
	Content	24.67	11.50	5.56	5.73	47.47
	Inventory	0.00	0.36	0.63	0.04	1.03
	Subtotal	68.08	17.39	8.80	8.03	102.31
<u>Business Interruption</u>						
	Income	0.01	0.05	0.00	0.04	0.10
	Relocation	0.08	0.01	0.00	0.00	0.09
	Rental Income	0.02	0.00	0.00	0.00	0.02
	Wage	0.02	0.07	0.00	0.24	0.33
	Subtotal	0.11	0.14	0.00	0.28	0.64
ALL	Total	68.20	17.63	8.80	8.31	102.94

HAZUS-MH: Flood Event Report

Region Name: WayneCounty
Flood Scenario: 50-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 20,870 buildings in the region which have an aggregate total replacement value of 2,834 million (2006 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	2,388,907	84.3%
Commercial	252,370	8.9%
Industrial	67,560	2.4%
Agricultural	4,866	0.2%
Religion	53,927	1.9%
Government	32,848	1.2%
Education	33,146	1.2%
Total	2,833,624	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	857,040	83.3%
Commercial	84,583	8.2%
Industrial	49,772	4.8%
Agricultural	2,300	0.2%
Religion	11,554	1.1%
Government	11,125	1.1%
Education	12,331	1.2%
Total	1,028,705	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 80 beds. There are 8 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 392 buildings will be at least moderately damaged. This is over 6% of the total number of buildings in the scenario. There are an estimated 198 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	1	0.26	22	5.61	14	3.57	157	40.05	198	50.51
Total	0		1		22		14		157		198	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	81	100.00
Masonry	0	0.00	0	0.00	3	3.80	2	2.53	44	55.70	30	37.97
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	1	0.43	19	8.19	12	5.17	113	48.71	87	37.50

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	1	0
Schools	8	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.

Economic Loss

The total economic loss estimated for the flood is 121.78 million dollars, which represents 12.63 % 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 120.01 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 62.14% 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
<u>Building Loss</u>						
	Building	48.54	8.41	2.86	3.78	63.58
	Content	27.01	15.73	6.10	6.43	55.28
	Inventory	0.00	0.42	0.67	0.07	1.15
	Subtotal	75.55	24.56	9.63	10.28	120.01
<u>Business Interruption</u>						
	Income	0.01	0.08	0.00	0.04	0.13
	Relocation	0.08	0.01	0.00	0.00	0.10
	Rental Income	0.02	0.01	0.00	0.00	0.02
	Wage	0.02	0.11	0.00	0.39	0.52
	Subtotal	0.12	0.21	0.00	0.44	0.77
ALL	Total	75.67	24.77	9.63	10.71	120.78

HAZUS-MH: Flood Event Report

Region Name: WayneCounty
Flood Scenario: 100-YR
Print Date: Wednesday, October 21, 2009

Building Inventory

General Building Stock

HAZUS estimates that there are 20,870 buildings in the region which have an aggregate total replacement value of 2,834 million (2006 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	2,388,907	84.3%
Commercial	252,370	8.9%
Industrial	67,580	2.4%
Agricultural	4,866	0.2%
Religion	53,927	1.9%
Government	32,848	1.2%
Education	33,146	1.2%
Total	2,833,624	100.00%

Table 2
 Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	825,647	83.6%
Commercial	75,719	7.7%
Industrial	50,808	5.1%
Agricultural	2,300	0.2%
Religion	11,301	1.1%
Government	9,720	1.0%
Education	12,331	1.2%
Total	987,826	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 80 beds. There are 8 schools, 7 fire stations, 3 police stations and no emergency operation centers.

Building Damage

General Building Stock Damage

HAZUS estimates that about 447 buildings will be at least moderately damaged. This is over 7% of the total number of buildings in the scenario. There are an estimated 281 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of 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.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	3	0.67	29	6.49	15	3.36	119	26.62	281	62.86
Total	0		3		29		15		119		281	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manuf/Housing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	101	100.00
Masonry	0	0.00	0	0.00	6	6.52	4	4.35	32	34.78	50	54.35
Steel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	3	1.18	23	9.06	11	4.33	87	34.25	130	51.18

Essential Facility Damage

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

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	7	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	1	0
Schools	8	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.

Economic Loss

The total economic loss estimated for the flood is 134.63 million dollars, which represents 13.96 % 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 132.74 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 61.13% 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
<u>Building Loss</u>						
	Building	52.94	9.74	3.46	4.26	70.40
	Content	29.24	17.34	7.14	7.27	61.00
	Inventory	0.00	0.48	0.79	0.07	1.33
	Subtotal	82.18	27.68	11.40	11.81	132.74
<u>Business Interruption</u>						
	Income	0.01	0.08	0.00	0.05	0.14
	Relocation	0.09	0.02	0.00	0.00	0.10
	Rental Income	0.02	0.01	0.00	0.00	0.03
	Wage	0.02	0.12	0.00	0.39	0.53
	Subtotal	0.18	0.28	0.00	0.44	0.80
ALL	Total	82.31	27.78	11.40	12.04	133.64