



MONROE COUNTY

Multi-Jurisdictional All-Hazard Mitigation Plan 2012

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1.0 INTRODUCTION

This multi-jurisdictional all-hazard mitigation plan has been completed in accordance with 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. The guidelines for the completion of this plan appear in the Code of Federal Regulations (CFR) under Title 44: Emergency Services, Part 201.6. The Ohio Emergency Management Agency (OEMA) further monitored both the original and update planning processes. Funding for the original project was distributed by OEMA under the Pre-Disaster Mitigation (PDM) program. Two (2) types of funding facilitated the first update: the Hazard Risk Assessment (HRA) was funded by US Department of Homeland Security (DHS) funds through the OEMA while the Action Plan (AP) was funded locally.

The Monroe County Emergency Management Agency (MCEMA) acted as the lead agency for the completion of this plan at the local level. The MCEMA contracted both the HRA and AP out. The original HRA was completed in November of 2003; the updated HRA was completed in August of 2011. The original AP was completed in late 2004; the updated AP was completed in September, 2011. The original plan was formally adopted by participating jurisdictions in October of 2004. The first revision was adopted in **August of 2013**.

The *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* is considered “multijurisdictional” for several reasons. In addition to the county governing body of Monroe County, all 10 municipal jurisdictions participated in the data compilation and AP development. The municipal jurisdictions provided representatives on the Hazard Mitigation Core Planning Committee (CPC) and contributed at least one (1) project to the AP. Further, all 10 governmental entities in Monroe County formally adopted the plan by resolution.

A number of documents were utilized as resources throughout the development and updating of the hazard mitigation plan. References to these documents are, at times, direct and cited; other references are indirect and implied. This paragraph serves to formally recognize these documents.

- *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan, 2005*
- *Monroe County Emergency Operations Plan, 2004*
- *Monroe County Disaster Recovery Plan, 2006*
- *Monroe County Terrorism Annex, 2012*

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 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, and how the public was involved.
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At the direction of the Monroe County Emergency Management Agency (MCEMA), Monroe County and its municipalities have developed and conducted the first update to their Multi-Jurisdictional All-Hazards Mitigation Plan in a continuing effort to identify probable hazard risks, profile future hazard events, estimate damage and losses as a result of future hazard events, and advocate mitigation projects to reduce the effects of the identified hazards on the communities within the county. The plan's aim is to create safer, more disaster-resistant communities. The following plans and studies were integrated into this plan; the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan*, 2005, *Monroe County Emergency Operations Plan (EOP)*, 2004, and the *Monroe County Disaster Recovery Plan*, 2006.

The planning process utilized by Monroe County is 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 (USDHS) Federal Emergency Management Agency (FEMA) *Mitigation Planning How-To Series*, the governing regulations found in Title 44 – Emergency Management of the Code of Federal Regulations (CFR), and documents provided by Ohio Emergency Management Agency (OEMA). The planning process utilized to update the plan included the following steps, which will be described in greater detail throughout the plan:

- Step 1: Reestablishment of a Core Planning Committee (CPC),
- Step 2: Conducting an update to the Hazard Risk Assessment (HRA),
- Step 3: Development of an update to the Action Plan (AP), and
- Step 4: Re-adopting and implementing the updated plan.

To guide the completion of the plan update at the local level, a multi-jurisdictional CPC was established to examine the community's risks and vulnerabilities to natural and technological hazards. This committee was comprised of key officials representing state, county, municipal, and private entities with a stake in mitigation, and included the following.

Monroe County Core Planning Committee (CPC) / Participating Jurisdictions

PARTICIPATING JURISDICTIONS			
Community	Name	Position/Title	Agency/Organization
Monroe County	John V. Pyles	Commissioner	Monroe County Commission
Village of Antioch	Melinda Vernon	Mayor	Village of Antioch
Village of Beallsville	Jon Gramlich	Mayor	Village of Beallsville
Village of Clarington	Jeff Wade	Mayor	Village of Clarington
Village of Graysville	Larry Ullman	Council Member	Village of Graysville
Village of Jerusalem	Jeff Fluharty	Mayor	Village of Jerusalem
Village of Lewisville	Nathan Betts	Mayor	Village of Lewisville
Village of Miltonsburg	Kathy South	Mayor	Village of Miltonsburg
Village of Stafford	Ed McVay	Mayor	Village of Stafford
Village of Wilson	Cliff Truex	Mayor	Village of Wilson
Village of Woodsfield	Bill Bolon	Mayor	Village of Woodsfield

Table 1.1

Following Federal approval, the jurisdictions listed above intend to formally adopt the plan by passing a Resolution or Ordinance.

1.1.1. Original Plan Development Process

1.1.1.A. OVERVIEW

The original process in 2005 was led by the Hazard Mitigation Core Planning Committee (CPC) and supported by the planning and engineering firm R.D. Zande & Associates, Inc. This current, updated version was compiled by the Monroe County Emergency Management Agency (MCEMA) staff, and its Risk Assessment CPC, as well as JH Consulting, LLC of West Virginia.

The MCEMA compiled a CPC, known as project stakeholders, to be responsible for the development and implementation of the original plan. The committee included primarily representatives from the cities, villages, and the

emergency services organizations within the county (i.e., fire, police, etc.). Other organizations that were involved in the process included township representatives, and county engineering staff.

Members of the CPC reported the actions of the project stakeholders back to the participating jurisdictions. As such, participating jurisdictions and the public were updated as to the status of the plan's preparation and the repercussions of not completing a plan. Further, with respect to the development of an Action Plan (AP), one (1) special CPC meeting and two (2) public review sessions were scheduled to discuss ways in which the county could lessen its susceptibility to the hazards identified in the Hazard Risk Assessment (HRA).

Feedback received from the CPC proved valuable in the development of the original plan. Several comments were received that resulted in the reevaluation of the risks that should be included in the plan. Several simply implemented yet highly beneficial strategies, such as downloading weather tracking computer software, were discussed at meetings. Further, all governmental jurisdictions in Monroe County were polled in an effort to gather local opinion on prominent hazards and high-priority mitigative actions. As a result, the plan was tailored to Monroe County's specific needs, and proved to be a document county resident's felt ownership of, and utilized to make educated decisions that reduced their vulnerability to hazards.

1.1.1.B. METHODOLOGY

The Hazard Risk Assessment (HRA) phase of the original mitigation plan was completed using a variety of research techniques. Federal Emergency Management Agency (FEMA) GeoHazards, National Oceanic and Atmospheric Administration (NOAA), and other Internet sites were searched for historical hazard event records. R.D. Zande & Associates, Inc. conducted searches of local newspaper archives and existing reports and plans that were on file with the Monroe County Emergency Management Agency (MCEMA), and the participating jurisdictions to assist in the determination of hazard-susceptibility areas. Interviews and other discussions were conducted with numerous local officials, including first responders, insurance agents, and other emergency services officials to ascertain the risks associated with particular hazards in specific areas of the county. After identifying the areas in which the hazards were most prominent, they were profiled and positioned into a base map of the county. This Geographic Information System (GIS)-based map contains

several themes with information regarding the individual hazards. Assets (i.e., structures, utilities etc.) were inventoried and loss estimates were calculated for each of the inventoried assets with respect to the hazards profiled on the GIS-based maps. The general public of Monroe County was further involved in the planning process as information was gathered from the county's assets to complete loss estimates. The county's contractor contacted representatives from each of these assets, explaining the process and collecting ideas on hazard susceptibility and mitigation actions.

Following the completion of the HRA, the Hazard Mitigation Core Planning Committee (CPC) used information such as hazard profiles and loss estimates to formulate mitigation goals, objectives, and strategies. For this phase of the project, the CPC met separately to discuss baseline strategies. Such an action was reasoned most appropriate, as project stakeholders are individuals that deal with hazard events on a regular basis and will be directly affected by the implementation of the plan. Members of the CPC were notified of the meetings via memoranda and telephone correspondence from the MCEMA. The stakeholders' ideas were used as the starting point for further planning steps.

The baseline mitigation strategies were presented to the public at the public review sessions to ensure fair participation from all sectors of the county. However, the public meetings, which were publicized in the local newspaper, were not well attended. Local media did attend the public meetings; however, and coverage was given to the planning process. As a result of the low attendance, the MCEMA agreed to take public comment at its office throughout the remainder of the planning process. The local media also announced this arrangement.

In an effort to obtain greater public comment, the commission's contractor provided CPC members with "Households Hazard Preparedness" questionnaires to distribute to members of the general public, as well as civic and governmental organizations throughout the county. These questionnaires allowed members of the public to participate in the process without requiring speaking in front of a crowd. The questionnaires also were a convenient form of participation in terms of work schedules, etc. The questionnaires asked those completing them to rank the hazards to which they felt most vulnerable, and provided space to list potential projects to lessen the effects of those hazards. The MCEMA did receive completed questionnaires for inclusion into the planning process. The results of those

questionnaires were integrated into the goals, objectives, and strategies that appeared later in the plan. A summary of the results appears below.

2. How concerned are you about the following disasters affecting Monroe County? (Please check the box that applies)					
Natural Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	14%	24%	33%	19%	10%
Earthquake	0%	0%	0%	19%	81%
Flood	62%	29%	5%	0%	10%
Heat Wave	5%	24%	5%	29%	43%
Hailstorm	0%	10%	29%	38%	24%
Landslide/Mine Subsidence	5%	10%	24%	43%	19%
Thunderstorm	10%	5%	38%	19%	29%
Wildfire	5%	14%	29%	33%	19%
Windstorm	0%	29%	38%	19%	14%
Winter Storm	14%	33%	29%	19%	5%
Hazmat	0%	33%	38%	24%	5%
Terrorism	14%	33%	29%	19%	5%

Figure 1.1

1.1.1.C. FORMAL ADOPTION OF THE PLAN

Governmental agencies of Monroe County worked cooperatively to complete the original Multi-Jurisdictional All-Hazards Mitigation Plan through the Hazard Mitigation Core Planning Committee (CPC), and with the help of the Monroe County Emergency Management Agency (MCEMA). To show each entity's dedication to completing the project, all entities adopted formal resolutions to implement the plan in their jurisdiction. Copies of the adopting documents were included in the plan.

1.1.2. First Plan Update Process

1.1.2.A. OVERVIEW

The planning process to complete the first five (5)-year update of the plan was much simpler than the process used to originally develop the document. Such a statement was made for two (2) reasons: this was an update and, by nature, less involved and the advent of technology made information sharing without formal meetings much more reliable and efficient.

The update process was completed between June 2011 and May of 2012. It was facilitated through a series of stakeholders and public meetings. The "stakeholders" meetings were sessions with the reconvened Core Planning Committee (CPC) from 2004-2005. The Monroe County Emergency Management Agency (MCEMA) again utilized the services of a planning consultant (JH Consulting, LLC of West Virginia) to guide the update process. The consultant

provided an objective perspective to ensure that the CPC was achieving the goals it had intended to achieve in 2004-2005. The current CPC, had recently conducted meetings in both May and July of 2011, and is comprised of the following:

- Director/LEPC President, Monroe County Emergency Management Agency
- Public Health Emergency Coordinator, Monroe County Health Department
- Commissioner, Monroe County Commission
- Lieutenant, Monroe County Sheriff's Office
- Village Administrator, Village of Woodsfield
- Trustee, Switzerland Township
- President, Monroe County EMS Association

The major employers, academia, non-profit organizations and other interested parties invited to participate in the planning process included:

Major Employers	Colleges & Universities	Non-Profit Organizations
Ormet Corp.	Belmont College	Captina Creek
Reisbeck Food Markets	Marietta College	Duck Creek Watershed
Extendicare/Woodsfield Nursing Center	Muskingum University	Wills Creek Watershed
Safe Auto Insurance Group	Zane State College	
Slay Transportation Co. Inc.		
Voith Hydro		

Table 1.2

Although representatives of these organizations were invited, none chose to participate as of the time of this submission. The contiguous counties to Monroe County were also invited to attend and participate in the planning process. These counties include:

Ohio	West Virginia
Belmont County	Marshall County
Noble County	Tyler County
Washington County	Wetzel County

Table 1.3

Although representatives of these counties were invited, none chose to participate as most were conducting the same processes to update their mitigation plans.

1.1.2.B. METHODOLOGY

A total of one (1) Core Planning Committee (CPC) meeting and one (1) public meeting were held during the updating process. The CPC meeting was held on May 22, 2011 at the Monroe County Emergency Operations Center (EOC). The Monroe County Emergency Management Agency (MCEMA) invited members of the CPC to this meeting via memorandum (see *Appendix 3 – Public Involvement*). The primary topics of discussion were updating the hazard list, discussing any emergencies that had occurred since 2005, updating the asset inventory list, and addressing any new development trends that may have occurred since 2005.

The public meeting was held on July 6, 2011, at the Monroe County Emergency Operations Center (EOC). The primary topics for discussion at this meeting were updating the goals, objectives and strategies, and how to re-prioritize mitigation projects. CPC members went through the existing project list jurisdiction-by-jurisdiction to ensure that all participating cities and villages (as well as the county) were covered. This discussion allowed committee members to add any projects that had been completed during the 5-year interval (yet were not on the original project list).

This meeting provided the public the opportunity to comment on the existing mitigation plan, as well as the proposed revisions to the document. The meeting was poorly attended by the general public.

Many of the same resources used for research during the original development of the plan were again utilized to update the plan. The consultant compiled all project documents and forwarded them to the MCEMA for draft distribution to CPC members. As such, the CPC could comment on the plan as it was being developed. Further, this allowed participating jurisdictions an on-going opportunity to comment on the plan, which expedited the adoption process (see section 1.1.2.C below).

During the initial stages of the updating process the MCEMA published an advertisement in the local newspaper inviting the public and surrounding communities and agencies to review the original plan at the Monroe County Emergency Management Agency (MCEMA) during regular business hours. A Public Comment Form was developed and distributed by the MCEMA to any member of public that visited the EMA to review the original plan, allowing them to comment on improvements that could be made to the original plan during the update.

Following the compilation of the updated/revised plan, the MCEMA published an advertisement in the local newspaper inviting the public and surrounding communities and agencies to review the revised *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan* at the Monroe County Emergency Operations Center (EOC) during regular business hours, Public Comment Form were distributed for the revised/updated plan as well. Copies of the updated/revised plan were also made available for the public online at the MCEMA website, this also allowed neighboring communities, local and regional agencies involved in hazard mitigation activities, businesses representative, academia, nonprofit organizations, and other interested parties a chance to view and comment on the plan. Following FEMA approval and the formal adoption of the plan, the MCEMA notified neighboring county emergency managers of the plans completion via a letter.

1.1.2.C. FORMAL ADOPTION OF THE UPDATED PLAN

The updated *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan* was developed as a multi-jurisdictional plan; therefore, to meet the requirements of Section 322 the final plan was re-adopted by formal resolution by each of the municipalities as well as the county to implement the plan in their jurisdiction. This process was aided by the on-going participation of the jurisdictions during the update process. Further, the Monroe County Emergency Management Agency (MCEMA) provided technical assistance to any governing body requesting it during the adoption process. To ensure that jurisdictions only needed to sign a single resolution, the adoption process was started once state and federal approval had been conditionally granted. See *Appendix 4 – Adopting Resolutions* for signed adoption letters for the county and each participating municipality.

1.2 DESCRIPTION OF THE PLANNING AREA

1.2.1. Monroe County

Monroe County is one (1) of 88 counties in the State of Ohio and is located in the southeastern portion of the state at the foothills of the Appalachian Mountains. It is bordered on the north by Belmont County, OH; on the northeast by Marshall County, WV; on the east by Wetzel County, WV; on the southeast by Tyler County, WV; on the south by Washington County, OH; and on the west by Noble County, OH. The county was established in January of 1813, and named in honor of James Monroe, who was the Secretary of State when the county was formed and later became the Fifth U.S. President. The county contains 10 incorporated municipalities including the Villages of Antioch, Beallsville, Clarington, Graysville, Jerusalem, Lewisville, Miltonsburg, Stafford, Wilson, and Woodsfield which functions as the county seat with a population of 2,388. Monroe County has a total population of 14,642 (2010 U.S. Census estimate), as part of Ohio's Appalachian Region Monroe County has been called the "Switzerland of Ohio" because of its rugged hills and early Swiss settlers. Metropolitan cities located within close proximity to Monroe County include Pittsburgh, PA (90 miles); Columbus, OH (120 miles), Cleveland, OH (150 miles) and Washington DC (285 miles).



According to the U.S. Census the county has a total area of 458 square miles, with approximately 456 square miles of land area, and two (2) square miles of water. Monroe County varies in elevation from a low of approximately 594 feet above sea level near the community of Fly along the Ohio River, to a high of 1,415 feet above sea level just east of Beallsville on Pugh Ridge.

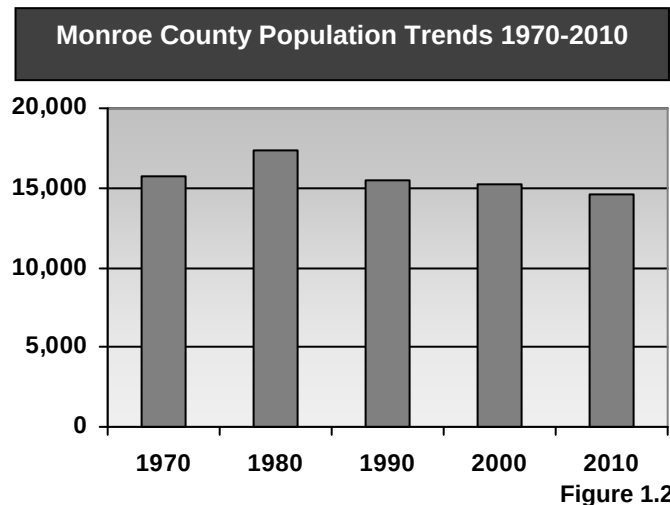
There are three (3) main watersheds in Monroe County. These include the Sunfish Creek Watershed, Little Muskingum River Watershed, and the Ohio River Watershed. Sunfish Creek flows from Monroe Lake passing north of Woodsfield through the Sunfish Creek State Forest and empties into the Ohio River at the Village of Clarington. The Sunfish Creek basin is approximately 114 square miles in area and drains most of northern Monroe County. The Little Muskingum River is a tributary of the Ohio River, with a total length of approximately 65 miles. It rises in the hill country of Monroe County passing near the Village of Antioch, approximately five (5) miles northwest of the Ohio River, and eight (8) miles southeast of Woodsfield. It flows

southwest, in a tight meandering course, roughly parallel to, and staying within eight (8) miles of the Ohio. The river has a basin area of approximately 315 square miles and drains most of southern Monroe County. The Ohio River flows along the eastern portion of the county, passing near the communities of Fly, Sardis, Duffy, Hannibal, and the Village of Clarington. Minor streams that drain other parts of the county include, Opossum Creek, Bares Run, Stillhouse Run, Wills Creek and Narrows Run. All of these drainage basins are tributaries to the Ohio River. The topography of Monroe County is characterized as steep to gently rolling with occasional water gaps. The county is located in an area known as the Unglaciaded Allegheny Plateau.

Population Trends

Demographic information is an integral part of community and mitigation planning. According to the Federal Emergency Management Agency's (FEMA) *Risk, Hazard and Value Evaluation*,

"an awareness of changes in population projections help decision makers anticipate needs before they arise." Monroe County's population continues to decline. This decline can partially be attributed to the fact that the county's oil boom which held an important place in its history and economic development has



pasted. Monroe County's population trends are represented in Figure 1.2 above. According to 2010 estimates from the U.S. Census Bureau, Monroe County has a population of approximately 14,642, which is a decrease of 538 from 2000. Census figures also indicate that there are 7,270 housing units in Monroe County. Housing units include both traditional houses and apartments. The county has an average of two (2) persons per household. Further, the county's Median Household Income (MHI) is listed at \$34,621.

The Ohio Department of Development predicts the following population projections for Monroe County:

Monroe County Population Projections		
Year	Percent decrease over Year 2000 Population	Population Projections
2020	5.93% decrease	14,280
2030	11.13% decrease	13,490

Table 1.4

Population density is measured in person per square mile. Because Monroe County's boundaries are set and the population is decreasing, population density is also decreasing. The population density within the incorporated areas of Monroe County is much higher than in the rural areas. Table 1.3 demonstrates this fact. Such a situation can be expected in future years, as municipalities offer the greatest access to such services as health care, emergency services, educational facilities, recreation, etc.

Municipal Population Densities			
Name	Population (2010 Census)	Land Area (in sq.mi.)	Persons per Square Mile
Village of Antioch*	86	0.1	860
Village of Beallsville*	409	0.4	1,023
Village of Clarington	384	1.3	295
Village of Graysville	76	1.0	76
Village of Jerusalem*	161	0.3	537
Village of Lewisville*	176	0.4	440
Village of Miltonsburg*	43	0.1	430
Village of Stafford*	81	0.3	270
Village of Wilson*	88	0.5	176
Village of Woodsfield	2,384	2.0	1,192
Monroe County (Total)	14,642	456	32

* Persons per square mile totals are higher than populations because municipalities are less than 1 square mile.

Table 1.5

The highest concentration of residents lives in the Villages of Woodsfield, Beallsville, and Antioch. Several large townships also have high population concentrations including Center, Salem and Sunbury. The most heavily populated area is the urbanized northern portion of the county. The southeastern rural areas are less densely populated; however, unincorporated areas account for approximately 73 percent (73%) of the county's total population. The population density within what are termed "rural areas" can vary significantly as well. For instance, subdivision or unincorporated

communities may include clusters of person and homes that result in very small, dense areas located sporadically throughout rural Monroe County.

Highway Infrastructure

Monroe County's transportation infrastructure is comprised of highway, railway, waterway, and air elements. The county contains approximately 213 miles of State Highway and 923 miles of county, township, and/or municipal highway. State Routes 7, 78, 145, and 800 are the principal arterial routes through the county (see Table 1.4 below). Monroe County is located just south of Interstate 70 and east of Interstate 77. Other components of Monroe County's highway infrastructure include State Routes 26, 255, 260, and 536 all of which travel north and south, and State Route 556 which travel east and west.

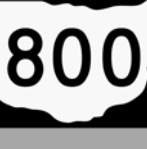
Highway	Approximate Route/Location
	North/South – At just over 292 miles in length, State Route 7 is the longest state route in Ohio. Its southern terminus is an interchange with U.S. Route 52 just west of Chesapeake. Its northern terminus also serves as the eastern terminus of State Route 531 in Conneaut. The path of State Route 7 stays within five (5) miles of the Ohio River for the southern portion, and for the entire length of eastern Monroe County. State Route 7 passes through the Communities of Fly, Sardis, Duffy, Hannibal, and Clarrington Village.
	East/West – State Route 78 runs for 105 miles, traveling from east to west it passes near or through the Villages of Clarrington, Woodsfield and Lewisville ending at State Route 379 in Seneca Township. Car and Driver has called it one of the most scenic highways nationwide. Much of this highway runs through old coal-producing areas.
	North/South – State Route 145 is approximately 46 miles long, its western terminus is at a T-intersection with State Route 821 in Lower Salem. Its eastern terminus is at a T-intersection with State Route 148 approximately 5.25 miles northeast of Beallsville. Traveling from north to south it passes near or through the Villages of Beallsville, Wilson, Jerusalem, Miltonsburg, Lewisville, and Stafford before crossing into Noble County.
	North/South – State Route 800 is approximately 111 miles long, its southern terminus is at State Route 7 near New Matamoras, and its northern terminus is at its interchange with Interstate 77 in Canton. Traveling from south to north it passes near or through the Community of Fly, the Villages of Antioch and Woodsfield, and the Community of Malaga before crossing into Belmont County.

Table 1.6

Railway Infrastructure

Railway lines are also a part of the county's transportation infrastructure. A former Conrail line was purchased by Ormet for short line spur possibilities for the Clarington Industrial Site. This line traverses the northeast corner of the county parallel to the Ohio River from Hannibal, north to Powhatan Point, where it ties into a Norfolk Southern line.

Airway / Waterway Infrastructure

Airways also play a part in the county's transportation infrastructure. There are two (2) airports within close proximity to Monroe County that provide international service, Pittsburgh International Airport (PIT), and Dulles International Airport (IAD). The Monroe County Airport is located one (1) mile north of Woodsfield on State Route 26 and provides commercial service. It is adjacent to the Monroe County Commerce Park and the Monroe County Fairgrounds.

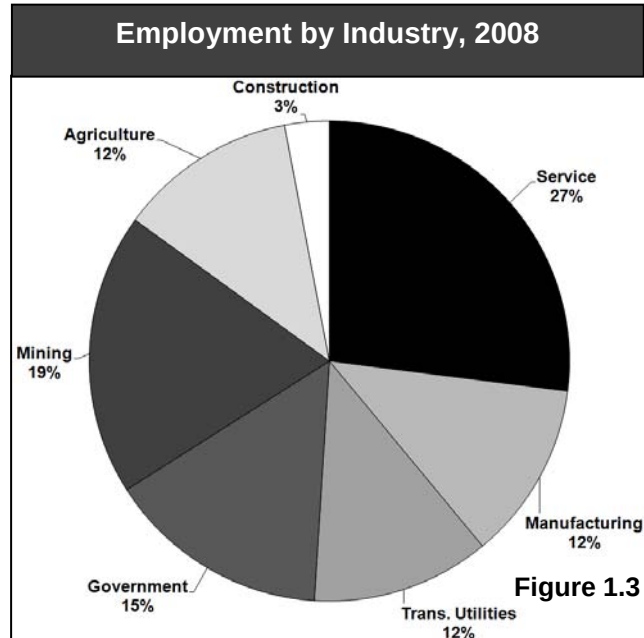
The Ohio River provides an unsurpassed, low-cost transportation of bulk commodities via barge service. Year-round water transportation on the Ohio River is maintained by the U.S. Army Corps of Engineers, and links up with the Mississippi River to the Gulf ports.

Monroe County's transportation infrastructure is sufficient to meet the needs of most of the county's current population. Although Monroe County contains miles of highway, there are towns and municipalities with limited access, which could create a problem if those areas were required to evacuate during an emergency situation.

Economic Trends

Monroe County has a very diverse employment sector. According to 2008 Economic Census information from the Ohio Department of Development, the largest areas of employment are service, mining, and government, as illustrated in Figure 1.3.

Total employment is currently 5,000 persons. The county's unemployment rate is approximately 13 percent (13%). In 2008, a total of 18 new businesses opened while 19 other businesses closed, the total number of active businesses in 2008 was 309. The major employers of the county include AGI/Artco Steel, Extendicare/Woodsfield Nursing Center, Monroe County Government, Ormet Corp., Riesbeck Food Markets, Safe Auto Insurance Group,



Slay Transportation Company Inc., Switzerland of Ohio Local Schools, and Voith Hydro. The utility providers of Monroe County include Dominion East Ohio Gas Company, Columbia Gas of Ohio, Woodsfield Electric, American Electric Power (AEP), Verizon, Ameritech, Time Warner, Comcast, Clarington Water System, Monroe Water System, Ohio & Lee Water and Sewer Authority, Switzer Water Association, Switzerland of Ohio Water District, and the Woodsfield Water Department.

Monroe County is the home of several tourist attractions, including the Fly Ferry, Foreaker and Knowlton covered bridges, Kiedaish Point scenic overlook near Hannibal, Monroe Lake and Wildlife Management Area (WMA), the Ohio River, Parry Museum at Woodsfield, Piatt Park, Ring Mill, and Wayne National Forest.

Education System

The education system in Monroe County consists of 10 public schools at which 2,481 students attend and 183 teachers instruct, and one (1) private school at which 80 students attend. The public school system consists of six (6) elementary schools, three (3) high schools, and one (1) vocational school. The graduation rate is currently at

94.1%. Monroe County is served by the Monroe County District Library which has over 6,000 cardholders.

Healthcare System

Health care facilities are limited in Monroe County. There are no registered hospitals in the county, two (2) licensed nursing homes with 160 available beds, one (1) licensed residential care center with 62 available beds, and seven (7) physicians that practice throughout the county. The Monroe County Health Department is a public health agency that serves most of the communities and townships in the county.

Land Cover / Climate

The majority of Monroe County's land cover is forested; nearly 91percent (91%) of the total land cover is that of forest. A large portion of this forested land can be found within the Monroe Wildlife Management Area, Sunfish Creek State Forest, and the Wayne National Forest, which is the only national forest in Ohio. Agricultural cropland and pasture make up another 8% of the total land cover. Approximately 630 individual farms operate in Monroe County, with an average size of 157 acres per farm. Monroe County's topography is that of steep to gently sloping, which offering protection against strong straight-line winds or tornadoes that may form and touchdown.

Monroe County has a continental-type climate, predominantly influenced by air from the west. There is considerable variation in seasonal temperatures, with none of the temperatures being considered severe. The climate of Monroe County is seasonal in nature, with wet stormy springs, warm summers, colorful falls, and cold snowy winters. The average temperature in January is 28°F; the July average temperature is 75°F, creating a mean average temperature of 51°F. Precipitation is evenly distributed throughout the year, with an annual average of approximately 42 inches. Data from the National Weather Service (NWS) indicate that the area experiences approximately 20 to 30 inches of snowfall per year, usually during the December to March winter season.

1.2.2. Village of Antioch

The Village of Antioch was named for a biblical place. The village is positioned in the southern portion of Monroe County in Perry Township, within the boundaries of Wayne National Forest. The Village has a total land area of 64 acres (0.1 mi²) and has a general elevation of 1,070 feet. The only major roadway accessing the village is State

Route 800, which intersects with State Routes 255 and 26 south of Woodsfield. The Little Muskingum River flows to the west of the village, and has caused flooding problems in the past. The Foraker Cover Bridge is located just to the west of Antioch on County Route 40.

Slay Transportation opened a terminal and new office facility in late 2000 in the village, the company employs over 100 people. According to 2010 Census estimates, the Village of Antioch has a population of 86, and contains 52 housing units with an average of 1.65 persons per household. The Median Household Income (MHI) in 2010 was \$26,667.

1.2.3. Village of Beallsville

The Village of Beallsville is located in the north-central portion of the county near the Belmont County line in Sunbury Township. The Village has a total land area of 256 acres (0.4 mi²) and has a general elevation of 1,257 feet. The village gained national attention during the Vietnam War by having lost six (6) of its 475 citizens to the war, the worst per-capita loss of life experienced by any place in the country. Beallsville was the birthplace of Merriman Colbert Harris, a Civil War soldier and Methodist Episcopal Church Missionary Bishop.

The village can be access by State Routes 145 from the west and north and 556 from the east. The Sunfish Creek State Forest is located just to the east of Beallsville and provides residents of the village with several recreational opportunities. There are currently two (2) schools that operate in the village, Beallsville Elementary and Beallsville High School.



According to 2010 Census estimates, the Village of Beallsville has a population of 409 and is one of the major population centers in the county. Beallsville contains 199 housing units with an average of 2.06 persons per household. The Median Household Income (MHI) in 2010 was \$23,750.

1.2.4. Village of Clarington

The Village of Clarington is positioned in the northeastern portion of Monroe County along the Ohio River in Salem Township. The Village has a total land area of 704 acres (1.1 mi²) and sets at a general elevation of 633 feet. The village was settled in 1798 and incorporated in 1847. Clarington Village is the birthplace of J. Mack Gamble. The Sunfish Creek State Forest is located just to the north of the village. The primary means of egress to and from the village includes State Routes 7, 556, and 78.



As indicated by 2010 Census estimates, the Village of Clarington has a population of 384 making it the third most populated municipality in Monroe County. The village contains 203 housing units with an average of 1.89 persons per household, and the Median Household Income (MHI) in 2010 was \$37,708.

1.2.5 Village of Graysville

The Village of Graysville is located in the southwestern portion of the county, and is within the Wayne National Forest in Washington Township. The Village has a total land area of 640 acres (1.0 mi²) and sets at a general elevation of 1,102 feet. The Little Muskingum River flows just to the east of the village. The major roadways that can be utilized to access the village include State Routes 26 and 537. Skyvue Elementary School is the only school located in village of Graysville.



According to 2010 Census estimates Graysville has a population of 76. There are 37 total housing units in the village, with an average of 2.05 persons per household. The Median Household Income (MHI) is reported to be \$35,625.

1.2.6 Village of Jerusalem

The Village of Jerusalem is located in the northern portion of the county in Malaga Township just to the south and west of the Village of Wilson. The Monroe Wildlife Management Agency (WMA) is located just the south of the village and provides

recreational opportunities for residents of Jerusalem. The village can be accessed from the north or south by State Route 26 and from the east or west by State Route 145. The village has a land area of 192 acres (0.3 mi²) and the general elevation of the village is 1,263 feet.

As indicated by 2010 Census estimates, Jerusalem Village has a population of 161. The village contains 68 housing units with an average of 2.37 persons per household. Census estimates also indicate that the Median Household Income (MHI) in Jerusalem is \$27,500.

1.2.7 Village of Lewisville

The Village of Lewisville is positioned in western Monroe County in Summit Township just north of the Wayne National Forest. The village has a land area of 256 acres (0.4 mi²); the general elevation of the village is 1,201 feet. The village can be accessed via State Routes 78 and 145, which intersect in the village. Lewisville is home to Ring Mill (illustrated at right).



Estimates from the 2010 Census indicate that the Village of Lewisville has a population of 176. The village contains 68 housing units with an average of 2.59 persons per household, and the Median Household Income (MHI) in 2010 was \$27,143.

1.2.8 Village of Miltonsburg

The Village of Miltonsburg is located in the northwestern portion of Monroe County in Malaga Township. The only direct route into the Village of Miltonsburg is State Route 145. The village has a land area of 64 acres (0.1 mi²), and sets at a general elevation of 1,296 making it the highest of the villages. The Monroe Wildlife Management Area (WMA) and Monroe Lake are located just to the east of Miltonsburg. Safe Auto Insurance, one (1) of the county's top 10 employers, is located in the Village of Miltonsburg.

According to estimates from the 2010 Census, the Village of Miltonsburg has a population of 43 making it the smallest incorporated place in Ohio. The village contains 24 total housing units with an average of 1.79 persons per household. The current

Median Household Income (MHI) in Miltonsburg is reported to be \$67,500, which is the highest among Monroe County's 10 municipalities.

1.2.9 Village of Stafford

The Village of Stafford is positioned in the western-most portion of Monroe County near the Noble County line in Franklin Township. The village lies within the Wayne National Forest. Major roadways that can be utilized to access Stafford Village include State Routes 145 and 724. The village has a land area of 192 acres (0.3 mi²), and the general elevation of the village is 1,079.

According to estimates from the 2010 Census, the Village of Stafford has a population of 81. The village contains 37 housing units with an average of 2.19 persons per household. Stafford currently reports a Median Household Income (MHI) of \$27,344.

1.2.10 Village of Wilson

The Village of Wilson is located in northern Monroe County in Sunbury Township, and is the last community in northern Monroe County before passing into Belmont County. In fact, part of the corporate limits for the village of Wilson is located in Belmont County. The Village of Wilson is part of the Wheeling, West Virginia Metropolitan Statistical Area (MSA). State Routes 28 and 145 are the major routes that can be utilized to gain access to the village. Wilson Village has a land area of 256 acres (0.4 mi²), and the general elevation of the village is 1,250 feet.

As indicated by 2010 Census estimates, the Village of Wilson has a population of 88. There are 44 total housing units in the village with an average of 2.00 persons per household. The reported Median Household Income (MHI) in the village is \$53,750, which is the second highest in the county.

1.2.11 Village of Woodsfield

The Village of Woodsfield is located in central Monroe County in Center Township and functions as the county seat housing the Monroe County Courthouse. Woodsfield can be accessed using one (1) of the three (3) following State Routes, 26, 78, and 800. The Monroe County Airport which is a Class II airport is located near the Village of Woodsfield. The



village has a land area of 1,280 acres (2.0 mi²) making it the largest village by land area in Monroe County. The general elevation of Woodsfield is 1,204 feet. The Little Muskingum River flows through the Wayne National Forest both of which are located to the south of Woodsfield.

The schools in Woodsfield are part of the Switzerland of Ohio Local School District and include the following; Woodsfield Elementary School, Monroe Central High School, Swiss Hills Career Center, and St. Sylvester's Central Elementary School which is a private Catholic grade school. Woodsfield is also home to the Monroe County District Library.

As indicated by 2010 Census estimates, the Village of Woodsfield has a population of 2,384 and is the most populated municipality in Monroe County. It contains 1,037 housing units with an average of 2.30 persons per household. The Median Household Income (MHI) for the Village of Woodsfield was reported to be \$25,848 in 2010.

1.3 RECORD OF CHANGES

This “Record of Changes” document lists each section of the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan* and indicates if it was updated as part of the 2011 revision. To determine which sections would be updated, the Hazard Mitigation Core Planning Committee (CPC) reviewed and analyzed each section of the plan. The first CPC meeting (reference 1.1 – *Documentation of the Planning Process*) focused on reviewing all components of Sections 1.0, 2.0, 5.0, and the appendices. The second CPC meeting was used to review all components of Sections 3.0 and 4.0. These changes are reflected in the following “Record of Changes”. Where no changes were made, the group decided that no change was needed and that the information from the original plan remains current and valid.

Section	Description of Change
INTRODUCTION	
General, Section-Wide Revisions	- Added 1.0 numbering. - Reorganization of document layout. - Reformatted headers and footers.
1.1 Documentation of the Planning Process	Notes on the process used to update the plan were included, plan updating schedule was reset.
1.2 Description of the Planning Area	- Verified and/or updated demographic data. - Verified and/or updated population statistics of all jurisdictions (including municipalities). - Verified and/or updated population growth trends. - Verified and/or updated housing data. - Verified and/or updated commercial infrastructure data. - Verified and/or updated employment data. - Verified and/or updated land use data. - Verified and/or updated transportation Infrastructure. - Verified and/or updated economic trends. - Verified and/or updated climatology information.
1.3 Record of Changes	Entire section added per 201.6 requirements.
HAZARD RISK ASSESSMENT	
General, Section-Wide Revisions	- Added 2.0 numbering. - Reformatted headers and footers. - Condensed specific information from original plan development into more general statements and added similar information from updating process (e.g., removed names of agencies consulted during the first process). - Updated hazards list, if and as appropriate, to include events occurring between 2005 and 2011.

Table 1.7

HAZARD RISK ASSESSMENT	
2.1 Identify Hazards	• Re-assessment and identification of all natural, technological, and man-made hazards. • Field reconnaissance to obtain updated hazard data for Monroe County. • Review of local media archives. • Review of existing plans and reports, such as updated Emergency Operations Plans (EOPs). • Interviews with local officials. • Add appropriate research sources. • Confirm web addresses. • Included all potential hazards in Table format.
2.2 Profile Hazards	• Delineation of hazard susceptibility areas using previously-compiled data and new data. • Development of GIS base maps of Monroe County using Census and other available GIS data. • Creation of hazard susceptibility area “shape files” for use in GIS mapping. • Creation of GIS-based hazard susceptibility maps for all identified hazards. • Reduced to a single cover page referencing the new Appendix 1. • For usability and overall plan maintenance, the cover page was only included once rather than repeated for each participating jurisdiction. • Updated the “Probability vs. Severity” chart. • Added significant NFIP language to the flooding profile.
2.3 Inventory Assets	• Revised text to focus only on methodology. • Moved Worksheet #3b to Section 2.3. • Added hazard information as another row to Worksheet #3b. • Updated the master, countywide asset inventory list with new facilities, removed closed facilities, updated values where applicable, and added values where applicable. • Revised hazard vulnerabilities. • Created asset inventories for all participating municipalities. • Labeled revised Worksheet #3b for county and municipalities as “tables” in Section 2.3. • Added hazard vulnerabilities for each facility to the master inventory spreadsheet.
2.4 Estimate Losses	• Revised methodology per OEMA/FEMA V recommendation. • Revised numbers based on OEMA/FEMA V recommendation. • Significantly revised loss estimate amounts in an attempt to be more accurate, and per OEMA recommendation. • Listed losses in tabular format for greater usability and easier reference.
2.5 Analyze Development Trends	• Updated list of planned development projects. • Listed potential hazard susceptibilities to planned development projects. • Removed much of the hazard-specific language from the development trends narrative to make Section 2.5 easier to update.

Table 1.7 continued

ACTION PLAN	
3.0 Local Hazard Mitigation Goals	• Removed the list of stakeholders because they are listed in Section 1.1: Documentation of the Planning Process. • Removed methodology discussion because it was encapsulated by Section 1.1. • Alphabetized the municipal project listings and re-numbered accordingly. • Added new projects as directed by CPC. • Added a status statement for each project from the original version of the plan to document if the objective has been started, completed, not completed, etc. • Moved the timeframe, funding, coordinating agency, and mitigation type notations to organize all implementation and prioritization discussions under Section 4.0.
4.1 Identification and Analysis of Mitigation Measures	• Moved implementation information (i.e., timeframe, funding source, coordinating agency, mitigation type) to this section for usability (so that all implementation and prioritization information was listed behind a single tab). • Deleted the project list that formerly comprised this section (since the former section was a re-statement of the previously-presented project list). • Updated per the development of new goals, objectives and strategies.
4.2 Implementation of Mitigation Actions	• Revised the project list for consistency with Sections 3.0 and 4.1. • Revised the prioritization methodology so that projects under a single hazard are prioritized in comparison to one other only. Hazards were then prioritized as a means of ranking the entire project list. • Revised language formerly referring to a “benefit-cost analysis” to now read “benefit cost review” per FEMA publication 386-5. • Incorporated the STAPLEE method of prioritizing projects into the Monroe County plan.
5.0 Plan Maintenance Process	• Revised the updating schedule to be a formal process every five (5) years rather than after every significant hazard event. Such a decision was made by the Core Planning Committee (CPC) to encourage greater participation (by lessening the time commitments and numbers of meetings). Additionally, waiting for the full five (5)-year period would allow CPC members to determine trends as opposed to making decisions based on what could have been an anomalous hazard event. • Added additional, secondary performance measures to guide future plan updates. • Formally identified the Monroe County Emergency Management Agency (MCEMA) as the custodial agency for this document. • Added a discussion as to how the project administration requirements of other funding sources that could be involved in mitigation projects could assist in the overall monitoring of plan maintenance. • Strengthened the discussion on implementing mitigation strategies through existing programs, using projects that actually were implemented via the framework established by existing programs as evidence.

Table 1.7 continued

APPENDICES	
Appendix 1: Multi-Jurisdictional Hazard Risk Assessment	• Re-named “Hazard Profiles, Loss Calculations, and Mapping”. • All original risk assessment information was revised appropriately and moved to Section 2.0: Risk Assessment. • Hazard list revised accordingly so that tabbing could be accurate. • Updated research sources in profiles for consistency with Section 2.1. • Removed graphics from hazard definitions for readability. • Updated hazard occurrences since 2005. • Added a statement regarding buyouts. • Added NFIP discussion to flooding profile. • Added the following section to each hazard profile; Introduction, Hazard Identification, History of Events, Hazard Impacts, Past Mitigation Efforts, Mapping.
Appendix 2: Calculation Methodologies	• Removed per new Loss Estimate Methodologies.
Appendix 3: Glossary	• Added for usability, renumber as Appendix 2.
Appendix 3: Completed Questionnaires & Prioritization Matrices	• Removed so that the plan document could be more manageable. Information gleaned from matrices and questionnaires was absorbed into the appropriate narrative discussions.
Appendix 4: Evidence of Public Involvement	• Appropriate information from updating process added. • Re-numbered to Appendix 3.
Appendix 5: Adopting Resolutions	• Re-numbered as “Appendix 4”. • Original resolutions replaced with resolutions adopting the current update.

Table 1.7 continued

2.1 IDENTIFYING HAZARDS

§201.6(c)(2)(i)

[The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

The first step in the Hazard Risk Assessment (HRA) process was to identify each of the hazards that can occur within Monroe County and or its incorporated municipalities. This hazard identification process began with a review of previous hazard events based on historical data provided by the Monroe County Emergency Management Agency (MCEMA), the Core Planning Committee (CPC), and the National Weather Service (NWS). A consultant also conducted reviews of existing resources, plans, local media archives, reports provided by the Federal Emergency Management Agency (FEMA), Monroe County, and other sources, as well as conducting interviews with local officials in order to ensure accurate data and understand the nature and extent of natural, technological and man-made hazards in the county. The findings from these steps were utilized to determine the priority hazards for Monroe County and its municipalities, which will become the focus of the mitigation strategies developed in the Action Plan (AP) of the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan*.

The hazards listed below have been updated utilizing an extensive research process with input from the sources listed below. As a result of this research, updated information has been integrated into all existing hazard descriptions.

- Local media archives ranging in date from 1970 to 2011,
- Interviews with local officials/experts:
 - Mr. Phillip Keevert, Monroe County EMA Director, Floodplain Coordinator,
 - Mr. Tom Scott, Workforce and Community Developer,
 - Mr. Charles R Black Jr., Monroe County Sheriff,
 - Mr. Denzil Knowlton, Chief Deputy Sheriff,
 - Mrs. Pandora Neuhart, Monroe County Auditor,
 - Monroe County Engineers Office,
 - Representatives of the Core Planning Committee (CPC), and
 - Representatives of the general public.

- Existing plans:
 - *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan*, 2005,
 - *Monroe County Emergency Operations Plan (EOP)*, 2004, and
 - *Monroe County Disaster Recovery Plan*, 2006.
- Reviews of Flood Insurance Rate Map (FIRM) information for Monroe County and the villages of Antioch, Beallsville, Clarington, Graysville, Jerusalem, Lewisville, Miltonsburg, Stafford, Wilson and Woodsfield.
- Searches of multiple Internet sites concerning hazard mitigation and planning (The following sites are general listings that were searched at the onset of the project. Sites that were searched regarding specific hazards are listed with those hazards below.):
 - American Red Cross – Local Chapters
<http://www.redcross.org/where/where.html>
 - Disaster Center
<http://www.desastercenter.com>
 - Digital Q3 Flood Data
<http://msc.fema.gov/MSC/statemap.htm>
 - ESRI
<http://www.esri.com/hazards>
 - Federal Emergency Management Agency
<http://www.fema.gov>
 - HAZUS Instruction and Technical Information
<http://www.fema.gov/hazus>
 - Socio-Economic Data Resources
http://www.csc.noaa.gov/products/nchaz/htm/dinfo_4.htm
 - USDA Natural Resources Conservation Service
<http://www.nhq.nrcs.usda.gov/RID/RID.html>
 - National Oceanic Atmospheric Administration
<http://www4.ncdc.noaa.gov/cgi-win>
 - Flood Map Information – Ohio Department of Natural Resources (ODNR)
<http://dnr.state.oh.us/water/tabid.aspx>

The following Table (Table 2.1) 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 areas within the county can be found in the hazard profiles in Appendix 1.

<i>Hazard</i>	<i>How Identified</i>	<i>Why Identified</i>
Dam Failure	• ODNR, Division of Soil & Water Resources – Dam Safety • National Dam Inventory • Internet research	• There are currently 12 dams in Monroe County, one (1) of which is Class I dam. • According to the ODNR, Division of Soil & Water Resources, the potential downstream hazard associated with Class I dams includes probable loss of life, serious hazard to health, and structural damage to high value property.
Drought	• Local media research • Monroe County Emergency Operations Plan (EOP) • ODNR, Division of Soil & Water Resources • Palmer Drought Severity Index (PDSI) • National Climatic Data Center (NCDC) Event Records • USGS website	• The Palmer Drought Severity Index indicates that Ohio counties spend 0-5% of the summer and autumn months under drought conditions. • The NCDC reported one (1) significant drought events in Monroe County between 1930 and 2011.
Earthquake	• Monroe County EOP • Ohio Seismic Network • ODNR • ESRI GIS information for Ohio • USGS National Seismic Hazard Mapping Project	• The USGS lists Monroe County as a PGA 2.0-3.0 (MMI IV). • The Ohio Department of Natural Resources reported a 2.8 mbLg magnitude earthquake in 2010, 5 miles northeast of Marietta in Washington County which borders Monroe County to the south.
Epidemic	• Public input • Monroe County Health Dept. • Ohio Department of Health (ODH) • Center for Disease Control & Prevention (CDC)	• Monroe County contains many densely populated areas. • The H1N1 Virus has created a growing concern in many Ohio counties including Monroe.

Table 2.1

Hazard	How Identified	Why Identified
Flooding	• Public input • Local media research • Monroe County EOP • FIRM information • NCDC Event Records • Past disaster declarations	• Monroe County is positioned in the Muskingum, Tuscarawas, and Ohio River basins. • Monroe County has experienced 38 flooding events over the past 18 years.
Hailstorm	• Interviews with local representatives • Local media research • NCDC Event Records • Climatology Reports • National Weather Service (NWS)	• The NCDC reported 14 hail events in Monroe County between 1974 and 2010. • Severe thunderstorms and wind storms are often accompanied by hail.
Hazardous Materials Incident	• Ohio Emergency Management Agency (OEMA) • Ohio Environmental Protection Agency (OEPA) • Monroe County LEPC • US EPA	• Ohio is a crossroads state into which, through which, or out of which virtually every one of the 50,000 chemicals known to be manufactured in the U.S. are transported. • There are several Tier II reporting facilities in Monroe County.
Infestation	• Interviews with local representatives • Ohio Department of Health (ODH) • ODNR • Ohio Division of Forestry	• Monroe County may possibly encounter an infestation of gypsy moths, Asian long-horned beetles, Emerald Ash Borer's and mosquitoes. • Monroe County contains many acres of agricultural and forest land, including a portion of Wayne National Forest.
Land/Mine Subsidence	• Public input • ODNR • FEMA website • USGS website	• There are abandoned underground mines in the northeast corner of Monroe County primarily in Switzerland and Salem Townships. • Monroe County is located in a "high risk" area in regards to landslide occurrences according to a <i>USGS Landslide Overview Map</i>.
Severe Thunderstorm	• Monroe County EOP • Local media research • NCDC Event Records • National Weather Service (NWS)	• The NCDC reported 58 thunderstorm winds events in Monroe County between 1967 and 2011, resulting in \$570,000 in property damage.

Table 2.1 continued

Hazard	How Identified	Why Identified
Severe Wind/Tornado	• Monroe County EOP • Local media research • NCDC Event Records • FEMA "Mitigation Planning How-To Series" • National Weather Service (NWS)	• The NCDC reported two (2) tornadoes in Monroe County between 1967 and 2011, and six (6) high wind events over the past 15 years.
Severe Winter Storm	• Monroe County EOP • Public input • Local media research • NCDC Event Records • Past disaster declarations	• Monroe County is highly vulnerable to the wide-ranging effects of snowstorms, blizzards, ice storms, and severe cold snaps. • Monroe County has endured 16 winter storms events over the past 15 years according to the National Oceanic and Atmospheric Administration.
Temperature Extremes	• Local media research • NCDC Event Records • National Weather Service (NWS) • FEMA website	• According to a map prepared by NOAA, the highest recorded temperature in Ohio through the year 2000 was 113 degrees Fahrenheit and was reported in the southeastern portion of Ohio near Monroe County.
Terrorism	• Public input • Ohio State Highway Patrol (OSHP) • Federal Bureau of Investigation (FBI) web site • FEMA web site • Department of Homeland Security (DHS) website	• Monroe County contains high-profile sites that could be considered targets of terrorism. • According to <i>The Monroe County Beacon</i>, the Monroe County Sheriff's Office was called to investigate the detonation of two (2) homemade bombs at the Ormet Corporation in Hannibal. The Woodsfield Police Department has also investigated several similar explosions.
Wildfire	• Local media research • ODNR • Ohio Division of Forestry	• The majority of Monroe County's land cover is wooded or forested; approximately 90% of the total land cover is forested. • In a typical year, it is estimated that more than 15,000 wildfire and natural fuel fire occurrences are encountered statewide. • Each year, an average of 1,000 acres of forest and grassland within Ohio's forest fire protection district perish as a result of wildfires.

Table 2.1 continued

- Avalanche – Monroe County does contains elevated terrain and although it receives significant amounts of snowfall per year, the general elevation in not high enough to cause snow to be present year-round. Therefore, avalanches do not appear to be a significant hazard.
- Coastal Erosion – Monroe County is located inland from the Atlantic Ocean and does not have any coastal boundaries.
- Coastal Storm – Monroe County is located inland from the Atlantic Ocean.
- Hurricane – While Monroe County sometimes receives precipitation as hurricanes hit the eastern and southern coastal states, the county does not experience intense hurricane conditions. The precipitation that is received can be classified as a severe thunderstorm or winter storm (see also Severe Thunderstorm and Severe Winter Storm).
- Tsunami – Monroe County is located inland from the Atlantic Ocean and has no coastal boundaries.
- Volcano – Research shows no volcanic activity in Monroe County.

MULTI-JURISDICTIONAL REQUIREMENTS

§201.6(c)(2)(iii)

For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The development of a Hazard Risk Assessment (HRA) is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural, technological, or man-made hazards. The results of this HRA will assist Monroe County and its incorporated municipalities in identifying and understanding their risks from natural, technological and manmade hazards. This information also serves as the foundation for the development of the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan*, as well as the development of strategies to help reduce risks from future hazard events.

The Monroe County HRA followed the methodology described in the Federal Emergency Management Agency (FEMA) publication 386-2 “*Understanding Your Risks – Identifying Hazards and Estimating Losses*” and was based on a four (4)-step process: 1) Identifying Hazards, 2) Profiling Hazard Events, 3) Inventory of Critical Assets, and 4) Estimating Losses. Using FEMA guidance, as well as Section 322 regulations for

developing local multi-jurisdictional hazard mitigation plans, a HRA that identifies the following has been developed for Monroe County.

- The hazards to which Monroe County and its communities are susceptible.
- The impact of those hazards on physical, social, and economic assets.
- The areas within Monroe County that is most vulnerable to the identified hazards.
- The potential costs of damages or costs avoided through future mitigation projects.

While it is true that the municipalities can be said to be susceptible to the above hazards by virtue of their location in Monroe County, it is stressed that they may be more or less susceptible to these hazards than each other, and the balance of Monroe County. The following chart (Figure 2.1) determines if they are equally (=), more (>), or less (<) susceptible to these hazards than the balance of the county. (Only those hazards affecting the county are listed below.)

	Antioch	Beallsville	Clarington	Graysville	Jerusalem	Lewisville	Miltonsburg	Stafford	Wilson	Woodsfield
Dam Failure	<	<	=	<	>	<	<	<	>	>
Drought	=	=	<	=	=	=	=	=	=	=
Earthquake	>	=	=	>	=	=	=	=	=	=
Epidemic	=	=	=	=	=	=	=	=	=	>
Flooding	>	=	>	=	=	>	=	=	=	>
Hailstorm	=	=	=	=	=	=	=	=	=	=
Hazmat Incident	=	=	=	=	=	>	=	=	=	>
Infestation	>	=	=	>	=	=	=	>	=	=
Land/Mine Subsidence	=	=	>	=	=	=	=	=	=	=
Severe Thunderstorm	=	=	=	=	=	=	=	=	=	=
Severe Wind/Tornado	=	=	=	=	=	=	=	=	=	=
Severe Winter Storm	=	=	=	=	=	=	=	=	=	=
Temperature Extreme	=	=	=	=	=	=	=	=	=	>
Terrorism	=	=	=	=	=	=	=	=	=	>
Wildfires	>	=	=	>	=	=	=	>	=	<

Figure 2.1

KEY

- = : Municipality affected by hazard same as county.
>: Municipality affected by hazard more than county.
<: Municipality affected by hazard less than county.

For the purpose of this assessment, risk will be assessed separately for each jurisdiction involved where it differs significantly. If the risk affects one (1) jurisdiction and not another, or if the risk affects one (1) jurisdiction in a significantly different manner, it will be so noted in the hazard identification and hazard profile steps. If the risks are determined to impact each jurisdiction equally or in the same manner, it will be so noted. In such cases, please refer to the larger jurisdiction's hazard profile (i.e., Profiling Hazard Events – Monroe County for risks affecting Monroe County and all of its municipalities in the same manner.)

This Hazard Risk Assessment and Multi-Jurisdictional All-Hazards Mitigation Plan will cover the following jurisdictions of Monroe County:

JURISDICTIONS COVERED BY THIS PLAN	
Villages	
Antioch	Lewisville
Beallsville	Miltonsburg
Clarington	Stafford
Graysville	Wilson
Jerusalem	Woodsfield

Table 2.2

No municipal jurisdictions have been added or removed from the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan* since it was first approved and adopted in 2005. Monroe County also contains the following townships and unincorporated communities:

Townships		Communities
Adams	Ohio	Cameron
Benton	Perry	Hannibal
Bethel	Salem	Laings
Center	Seneca	Malaga
Franklin	Summit	Rinard Mills
Green	Sunbury	Sardis
Jackson	Switzerland	Sycamore Valley
Lee	Washington	
Malaga	Wayne	

Table 2.3

2.2 PROFILING 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.

2.2.a Section Overview

Several hazards affect Monroe County, as noted in the Section 2.1: Identifying Hazards. Those hazards, however, may not affect the county in ways that residents and planners may typically think. Additionally, while a hazard may occur frequently, it may cause little damage or disruption; conversely, a hazard that rarely occurs may cause significant damage and disruption. Consequently, this section discusses the probability and severity of the hazards identified by Section 2.1.

Further, this section references detailed descriptions of how the identified hazards affect Monroe County and the municipalities therein. As such, refer to Appendix 1 of this plan for detailed hazard profiles (including scholarly discussions of the hazards and historical occurrences), extensive asset inventory and loss estimate data, and Geographic Information System (GIS)-based mapping that predicts low, moderate, and high susceptibility areas.

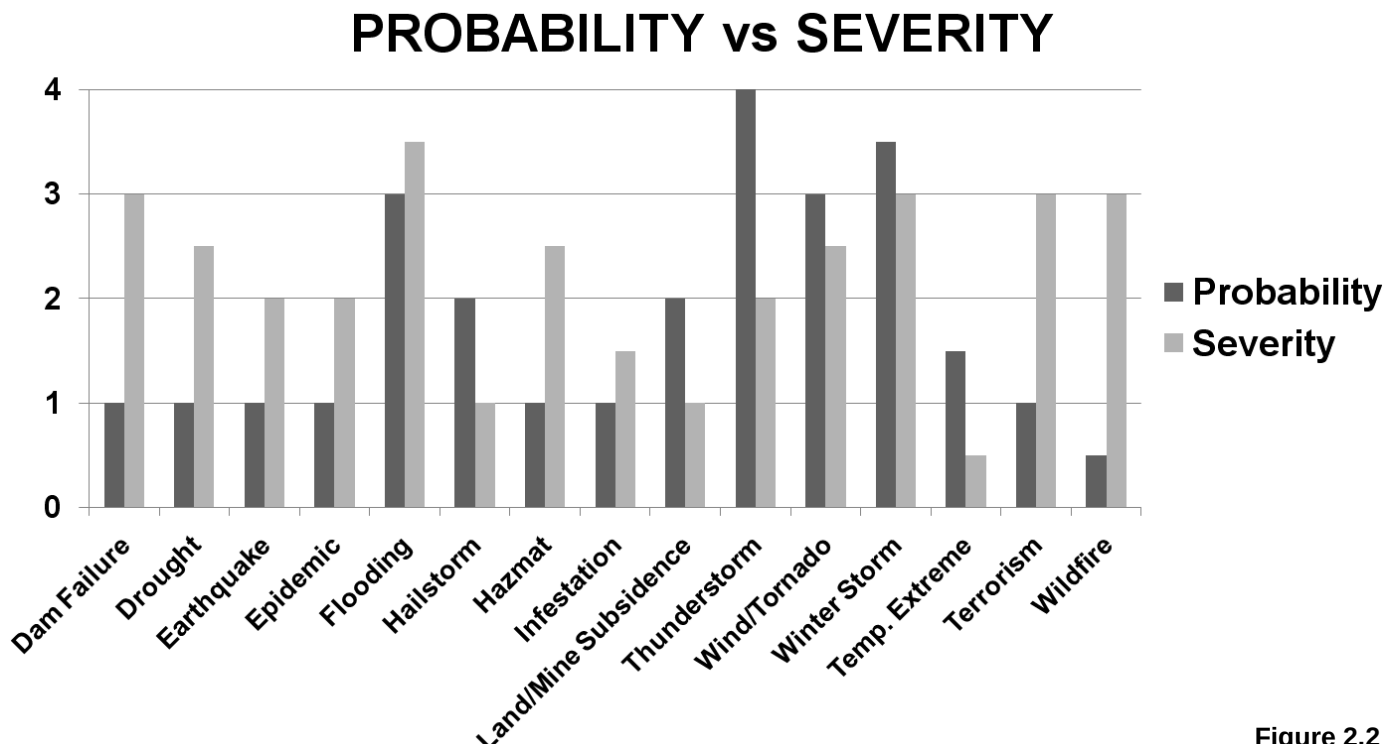


Figure 2.2

2.2.b Probability vs. Severity Explanation

In the case of many hazards, it is not possible to eliminate risks; they can only be reduced. When many risks exist at once, or when resources are limited, mitigation and preparedness require the setting of priorities. For example, local officials may want to invest mitigation and preparedness dollars in projects that lessen losses from higher probability hazards. The classification of “probability” and “severity” for hazard risks in Monroe County is quantified by the *Risk Assessment Decision Matrix* in Figure 2.3 below.

Figure 2.2 above was created to enhance the usability of the plan. It provides a more holistic snapshot of risk in terms of probability and severity in a format that is more familiar to most readers of this plan. To create the bar graph, the approximations in Table 2.4 were used.

PROBABILITY		SEVERITY	
Frequent	= 4	Catastrophic	= 4
Probable	= 3	Critical	= 3
Occasional	= 2	Marginal	= 2
Remote	= 1	Negligible	= 1
Improbable	= 0		

Table 2.4

2.2.c. Probability vs. Severity Methodology

The first task that was undertaken was to determine the frequency of hazard occurrences. For instance, how many floods occur in a year? How many tornadoes has Monroe County experienced in the past 60 years? To answer these questions, the *NCDC Event Records* database was used. The National Climatic Data Center (NCDC) keeps records of significant storm events back to 1950. The number of hazard events (i.e., floods, hailstorms, thunderstorms, tornados, winter storms, etc.) was counted.

Based on records for only Monroe County, probability was determined. As such, probability for hazards in Monroe County is a comparison between the hazards that have actually occurred in Monroe County as opposed to a comparison with data from another location. For example, a total of ten (10) occurrences of Event “X” may be significant in Monroe County, but could be a very low number of occurrences in a neighboring or other county.

If the information contained in the NCDC database was insufficient, other historical data, such as local media archives and interviews with local officials, were gathered. If repeated coverage was given to a particular hazard event, that event was considered highly probable to occur. Also, local officials were able to verify or identify those hazards occurring frequently. Table 2.4 lists the classifications considered for hazard probability.

HAZARD PROBABILITY CLASSIFICATION

Label	Specific Hazard Event	Frequency
Frequent	Likely to occur frequently.	Continuously experienced.
Probable	Will occur several times in the life of an item.	Experienced several times.
Occasional	Likely to occur sometime in the life of an item.	Experienced.
Remote	Unlikely but possible to occur in the life of an item.	Unlikely that it has been experienced.
Improbable	So unlikely it can be assumed occurrence may not be experienced.	Not experienced.

Table 2.5

The second and final task was to determine the severity of identified hazard events. Again, *NCDC Event Records* were used. These documents record the atmospheric conditions of the event and other details, such as wind speeds, damage incurred, and the number of deaths/injuries. If it appeared that thunderstorms frequently occurred but did not result in significant monetary losses or deaths, then thunderstorms were said to have a high probability and low severity. If winter storms, for example, appeared to occur frequently and also cause significant damage and deaths/injuries, winter storms were said to have a high probability *and* high severity. As with probability, if the NCDC database was insufficient, local media archives and interviews with local officials were used. Table 2.5 lists the severity classifications that were considered.

HAZARD SEVERITY CLASSIFICATIONS

Description	Mishap Definition
Catastrophic	Death or major structural loss.
Critical	Severe injury, severe illness, or marginal structural damage.
Marginal	Minor injury, minor illness, or structural damage.
Negligible	Less than minor injury, illness, or structural damage.

Table 2.6

Figure 2.3 combines the probability and severity information into a “*Risk Assessment Decision Matrix*” that generalizes the potential impact of each hazard included in the plan. This is the figure that was re-formatted into a bar graph as described above.

RISK ASSESSMENT DECISION MATRIX

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent	Probable	Occasional	Remote	Improbable
Catastrophic		5			
Critical	12	11		1, 2, 14, 15	
Marginal	10			3, 4, 7	
Negligible			6, 9, 13	8	

Figure 2.3

	Risk reduction required.	1 – Dam Failure	9 – Land/Mine Subsidence
	Risk reduction suggested.	2 – Drought	10 – Severe Thunderstorm
	Risk reduction not required.	3 – Earthquake	11 – Severe Wind/Tornado
		4 – Epidemic	12 – Severe Winter Storm
		5 – Flooding	13 – Temperature Extreme
		6 – Hailstorm	14 – Terrorism
		7 – Hazmat	15 – Wildfires
		8 – Infestation	

2.3 ASSET INVENTORY

§201.6(c)(2)(ii)	[The risk assessment shall include a] description of the jurisdiction's vulnerability of the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
§201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

This Hazard Risk Assessment (HRA) 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: Identifying 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 (CPC) maintains a specific list of community assets as part of this plan. These assets are grouped into the following categories.

- *Critical Facilities:* Governmental 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.

While inventorying assets, much information can be gathered. 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. Following is a brief description of how the above numbers are derived.

- *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.
- *Function Use or Value:* Directly contacting the facility.
- *Displacement Cost:* Function Use or Value divided by 365.
- *Occupancy:* Directly contacting the facility.

ASSET INVENTORY

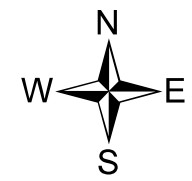
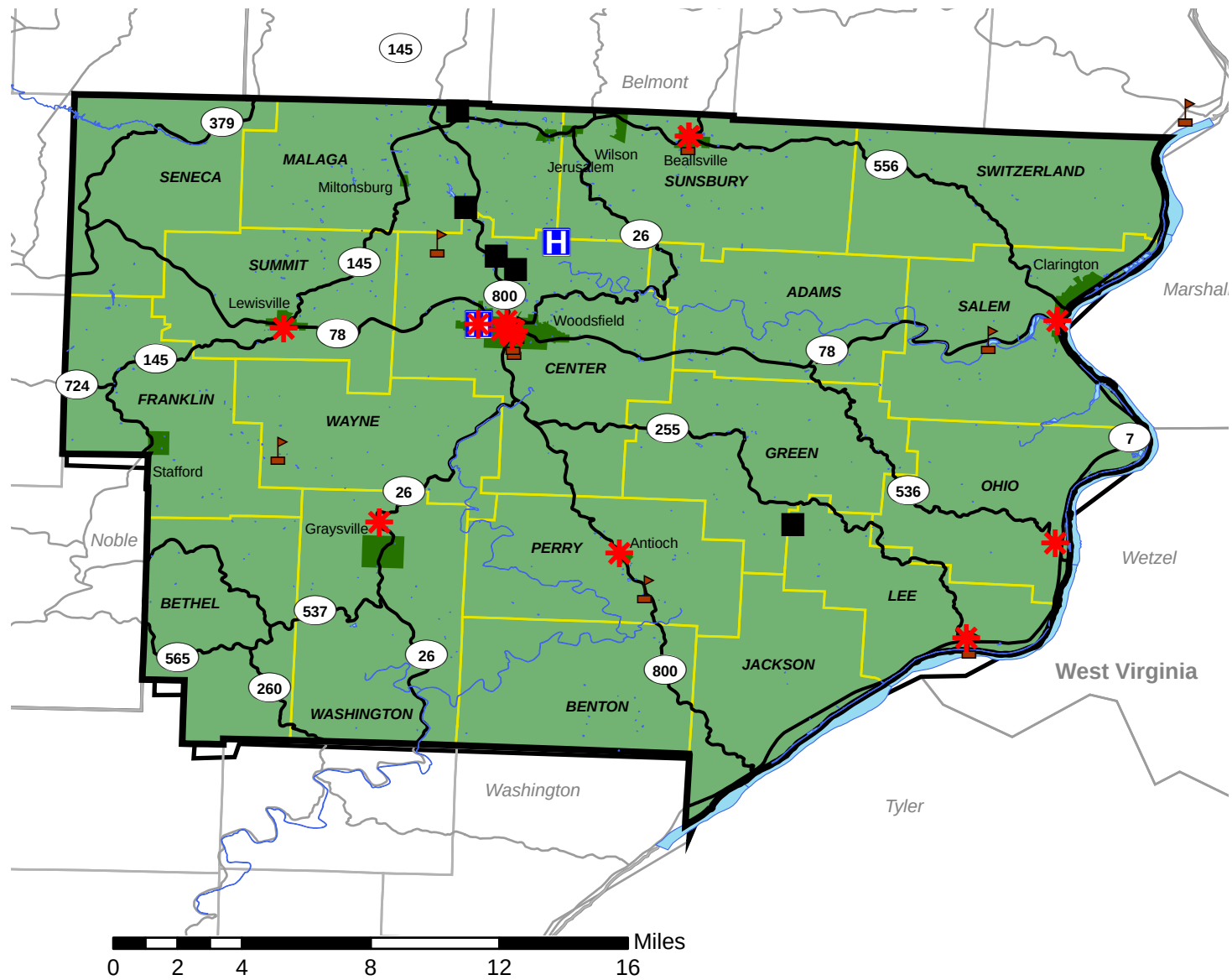
The above information for the complete asset inventory is listed on Table 2.7 below. Table 2.7 is a replica of Worksheet #3b from the *State and Local Mitigation Planning How-To Guide: Understanding Your Risks* (FEMA 386-2). Following is a key for the acronyms found on Table 2.7.

- *EMS:* Emergency Medical Services
- *ES:* Elementary School
- *FD:* Fire Department
- *HS:* High School
- *MS:* Middle School
- *PD:* Police Department
- *PO:* Post Office
- *VFD:* Volunteer Fire Department
- *WTP:* Water Treatment Plant

Tables 2.8 through 2.17 represent the assets located within the municipalities in the county. *NOTE: The assets listed on Tables 2.8 through 2.17 are *also* listed on the countywide asset inventory (Table 2.7).

- Table 2.8: Antioch
- Table 2.9: Beallsville
- Table 2.10: Clarington
- Table 2.11: Graysville
- Table 2.12: Jerusalem
- Table 2.13: Lewisville
- Table 2.14: Miltonsburg
- Table 2.15: Stafford
- Table 2.16: Wilson
- Table 2.17: Woodsfield

MONROE COUNTY HAZARD MITIGATION PLAN ASSET INVENTORY MAP



Legend

- Municipality
- Township
- ✱ Public Safety
- 🚩 Secondary Education
- H Healthcare
- 🚩 School K-12
- Dam

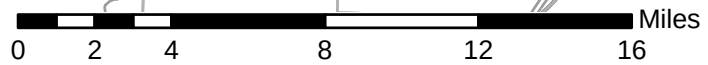


Table 2.7

Monroe County Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)		
		X	X	X	X	X													
		HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme
American Red Cross	204 S Paul St. WOODSFIELD 740.472.2377	X				X		N/A		\$275,000	\$85,000			\$82,200		\$250		N/A	
Residential Housing	N/A					X		N/A		\$581,600,000	\$116,320,000			\$0		\$0		2	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Antioch Office	ANTIOCH Ohio 740.934.2460		X					N/A		\$350,000	\$845,000			\$68,840		\$210		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Beallsville Office	BEALLSVILLE Ohio 740.926.9901		X					N/A		\$410,000	\$490,000			\$950,625		\$515		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Clarington Office	CLARINGTON Ohio 740.458.1266		X					N/A		\$375,000	\$795,000			\$68,840		\$206		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Village of Graysville Office	GRAYSVILLE Ohio 740.934.2128		X					N/A		\$400,000	\$510,000			\$68,840		\$220		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Jerusalem Office	JERUSALEM Ohio		X					N/A		\$325,000	\$800,000			\$55,700		\$165		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Lewisville Office	LEWISVILLE Ohio 740.567.3528		X					N/A		\$310,000	\$815,000			\$51,325		\$158		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Miltonsburg Office	MILTONSBURG Ohio 740.472.1787		X					N/A		\$325,000	\$375,000			\$50,225		\$169		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Stafford Office	STAFFORD Ohio 740.567.3108		X					N/A		\$310,000	\$655,000			\$57,690		\$213		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Wilson Office	WILSON Ohio 740.926.1515		X					N/A		\$316,000	\$525,000			\$56,740		\$185		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Village of Woodsfield Office	118 E Court Street WOODSFIELD 740.472.0830		X					N/A		\$1,550,000	\$1,500,000			\$70,950		\$720		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe County Health Department	118 Home Avenue WOODSFIELD		X					N/A		\$655,000	\$652,000			\$95,640		\$556		20	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)		
		X	X	X	X	X													
		HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme
Adams Township Office	45774 Skyline Road WOODSFIELD 740.472.0968		X					280		\$750,000		\$325,000		\$129,950		\$530		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Benton Township Office	34961 Old Field Road 740.865.2108		X					N/A		\$695,000		\$300,000		\$115,750		\$483		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Bethel Township Office	33478 Mt. Hope Road GRAYSVILLE 740.934.9591		X					1,872		\$675,400		\$298,000		\$126,425		\$513		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Center Township Office	336 Guilford Avenue WOODSFIELD 740.472.1081		X					2,220		\$307,700		\$550,000		\$123,450		\$426		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Franklin Township Office	30820 Lafferre Lane LEWISVILLE 740.567.3473		X					2,400		\$276,000		\$678,080		\$302,220		\$340		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Green Township Office	44890 TH 452 WOODSFIELD 740.483.1290		X					2,400		\$270,330		\$322,133		\$100,000		\$375		4	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Jackson Township Office	36850 Walnut Camp Road SARDIS 740.483.1838		X					384		\$196,000		\$256,000		\$126,400		\$365		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Lee Township Office	39155 Goddard Ridge Road SARDIS 740.483.2344		X					300		\$230,780		\$368,000		\$264,000		\$410		3	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Malaga Township Office	38437 Flynn Road JERUSALEM 740.472.2428		X					4,320		\$862,000		\$956,000		\$536,370		\$635		4	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Ohio Township Office	48812 State Route 536 SARDIS 740.483.1579		X					1,080		\$750,000		\$134,800		\$695,000		\$1,800		9	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Ohio Township Garage	52746 State Route 536 CLARINGTON		X					1,600		\$160,000		\$280,000		\$523,000		\$465		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Ohio Township Storage Building	CLARINGTON		X					600		\$110,000		\$110,000		\$142,000		\$321		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Perry Township Office	42489 West Union Road SARDIS 740.934.2123		X					115,367		\$1,978,692		\$465,000		\$123,000		\$1,690		0	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Salem Township Office	46620 TH 187 CLARINGTON 740.458.0005		X					N/A		\$795,000		\$295,000		\$159,150		\$610		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Seneca Township Office	29372 Skin Creek Road SUMMERFIELD 740.838.4008		X					1,932		\$679,000		\$259,000		\$136,410		\$568		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Summit Township Office	32615 TH 1032 LEWISVILLE 740.567.9817		X					2,640		\$694,000		\$264,000		\$129,430		\$589		11	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Sunsbury Township Office	51885 ST RT 145 BEALLSVILLE 740.926.2015		X					2,592		\$536,000		\$329,400		\$136,250		\$462		2	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Switzerland Township Office	50910 German Ridge Road BEALLSVILLE 740.458.1827		X					2,400		\$420,000		\$171,000		\$163,000		\$300		5	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity		
		X	X	X	X	X			\$	\$	\$	\$	\$	\$	#				
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Washington Township Office	35024 SR 26 GRAYSVILLE 740.934.2646	X					2,520		\$550,000	\$226,740	\$150,145	\$575	4						
Wayne Township Office	36128 Conner Ridge Road WOODSFIELD 740.567.3223	X					2,000		\$720,000	\$310,000	\$162,000	\$800	0						
					L	L	L	L	L	M	L	M	H	M	H	M	L	L	
Monroe Water Systems	43022 Six Points Road WOODSFIELD 740.472.1030	X					N/A		\$4,685,000	\$9,850,000	\$84,900	\$250	N/A						
					L	L	L	L	L	M	L	M	H	M	H	M	L	L	
Ohio/Lee Water Authority	37414 5th Avenue SARDIS 740.483.1542	X					N/A		\$3,956,000	\$8,692,000	\$79,600	\$360	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Switzerland of Ohio Water	51748 Main Street JERUSALEM 740.926.1465	X					2,500		\$2,080,000	\$7,963,000	\$85,000	\$463	4						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Village of Woodsfield Water	39415 Water Works Road WOODSFIELD 740.472.0995	X					N/A		\$3,462,000	\$8,569,000	\$79,000	\$568	N/A						
					L	L	L	L	L	M	L	M	H	M	H	M	L	L	
East Ohio Gas	WOODSFIELD			X			N/A		\$4,568,000	\$9,632,000	\$89,000	\$647	N/A						
					L	L	L	L	L	M	L	M	H	M	H	M	L	L	
River Gas Company	CLARINGTON			X			N/A		\$4,698,000	\$9,254,000	\$79,000	\$658	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Antioch Fire Department	39116 State Route 800 ANTIOCH 740.934.2345	X					2,400		\$310,000	\$650,000	\$86,360	\$261	15						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Bethel Fire Department	32219 Little Injun Road SALEM 740.934.2828	X					N/A		\$275,000	\$800,000	\$72,260	\$236	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Graysville Fire Department	35763 Merrill Ridge Road GRAYSVILLE	X					N/A		\$300,000	\$750,000	\$72,260	\$236	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Sardis Fire Department	37286 Muskingun Street SARDIS 740.483.2551	X					2,400		\$350,000	\$965,000	\$96,000	\$326	18						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Beallsville Fire Department	52732 South Washington Street BEALLSVILLE 740.926.1636	X					N/A		\$295,000	\$695,000	\$92,300	\$238	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Clarington Fire Department	221 Main Street CLARINGTON 740.458.1233	X					8,000		\$902,000	\$1,005,000	\$72,000	\$246	30						
					L	L	L	L	H	M	L	M	H	M	H	M	L	L	
Lewisville Fire Department	LEWISVILLE Ohio 740.567.3528	X					N/A		\$565,000	\$850,000	\$102,200	\$280	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Woodsfield Fire Department	38000 Old Airport Road WOODSFIELD 740.472.1372	X					7,000		\$1,200,000	\$1,500,000	\$131,400	\$360	30						
					L	L	L	L	L	M	L	M	H	M	H	M	L	L	
Sardis E-Squad	37286 Muskingum Street SARDIS 740.483.2551	X					N/A		\$300,000	\$623,000	\$75,200	\$250	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	
Beallsville E-Squad	P.O. Box 154 BEALLSVILLE 740.926.1636	X					N/A		\$320,000	\$642,000	\$68,500	\$310	N/A						
					L	L	L	L	M	M	L	M	H	M	H	M	L	L	

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg.		Replace-ment Value		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity			
		X	X	X	X	X	(sq. ft.)		(\$)		(\$)		(\$)		(\$)		#)			
		HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism
Antioch E-Squad	39116 SR 800 SARDIS 740.934.2345		X				N/A		\$295,000		\$723,000		\$69,400		\$275		N/A			
Clarington E-Squad	P.O. Box 257 CLARINGTON 740.458.1233		X				N/A		\$689,000		\$964,000		\$110,000		\$410		N/A			
					L	L	L	L	H	M	L	M	H	M	H	M	L	L		
Woodsfield E-Squad	P.O. Box 653 WOODSFIELD 740.472.1372		X				N/A		\$860,000		\$978,000		\$132,000		\$395		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Bethel/Graysville E-Squad	32219 Little Injun Road SALEM 740.934.2828		X				N/A		\$394,000		\$598,000		\$63,000		\$265		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L		
Monroe County Sheriff's Office	108 W Court Street WOODSFIELD 740.472.1612		X				N/A		\$775,000		\$810,000		\$255,875		\$675		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Woodsfield Police Department	221 S Main Street WOODSFIELD 740.472.5771		X				N/A		\$710,000		\$425,000		\$64,250		\$350		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Central Office School Board	304 Mill Street WOODSFIELD 740.472.5801		X				N/A		\$550,000		\$650,000		\$65,000		\$425		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Beallsville HS/ES	52682 Ohio Street BEALLSVILLE 740.926.1302		X				N/A		\$1,250,000		\$2,250,000		\$146,000		\$400		N/A			
					L	L	L	L		M	L	M	H	M	H	M	L	L		
Monroe Central HS	46605 SR 78 WOODSFIELD 740.472.0414		X				N/A		\$1,550,000		\$2,200,000		\$79,425		\$245		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Swiss Hills Career Ctr.	46601 State Route 78 WOODSFIELD		X				N/A		\$1,750,000		\$3,250,000		\$694,500		\$320		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Hannibal ES	52634 Main Street CLARIINGTON 740.483.1624		X				N/A		\$1,255,000		\$2,600,000		\$79,425		\$245		N/A			
					L	L	L	L	H	M	L	M	H	M	H	M	L	L		
Powhatan ES	125 2nd Street 614.795.5665		X				N/A		\$1,239,000		\$2,490,000		\$634,520		\$235		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L		
Sardis ES	37184 Mound Street SARDIS 740.483.1412		X				N/A		\$1,345,000		\$2,680,000		\$649,000		\$265		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L		
Skyvue ES	33329 Hartshorn Ridge Road GRAYSVILLE 740.567.3312		X				N/A		\$1,938,500		\$1,821,314		\$316,100		\$236		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L		
Woodsfield ES	118 N Paul Street WOODSFIELD 740.472.0953		X				N/A		\$1,735,000		\$1,625,000		\$206,600		\$840		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Tri-county Help Center, Inc.	117 North Main Street WOODSFIELD 740.695.5441		X				N/A		\$575,000		\$750,000		\$1,168,000		\$2,200		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
Southeast, Inc.	37990 Old Airport Road WOODSFIELD 614.225.0980		X				N/A		\$565,000		\$500,000		\$164,250		\$450		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L		
North Point Consulting	37990 Airport Road, BOX 545		X				N/A		\$425,000		\$225,000		\$165,400		\$425		N/A			

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg.		Replace-ment Value		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity		
		X	X	X	X	X	(sq. ft.)		(\$)		(\$)		(\$)		(\$)		(#)		
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire	
and Behavioral Health Services	37990 Airport Road, POB 343 WOODSFIELD 740.782.0092				L	L	L	L	L	M	L	M	H	M	H	M	L	L	
Monroe Co. Dept. of Job & Family Services	100 Home Avenue WOODSFIELD 740.472.1602		X				9,100		\$400,000		\$300,000		\$2,000,000		\$7,660		23		
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
AGI/Artco Steel	103 W Market Street HANNIBAL				X		N/A		\$2,750,000		\$1,895,000		\$87,600		\$240		N/A		
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Extendicare/Woodsfield Nursing Center	37930 Airport Road WOODSFIELD 740.472.1678				X	X	N/A		\$1,750,000		\$1,350,000		\$52,560		\$144		N/A		
						L	L	L	M	L	M	L	M	H	M	H	M	L	L
Monroe County Courthouse	101 N. Main Street WOODSFIELD				X		X	N/A		\$10,665,000		\$15,214,597		\$1,155,600		\$2,440		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Ormet Corp.	43840 SR 7 HANNIBAL 740.483.1381				X			N/A		\$58,000,000		\$70,000,000		\$2,400,000		\$6,575		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Riesbeck Food Markets	324 Lewisville Road WOODSFIELD 740.472.0777				X			N/A		\$875,000		\$1,000,000		\$43,800		\$120		N/A	
						L	M	L	L	L	M	L	M	H	M	H	M	L	L
Safe Auto Insurance Group	47060 Industrial Park Rd WOODSFIELD				X			N/A		\$200,000		\$375,000		\$46,720		\$128		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Slay Transportation Co. Inc.	PO Box 234 SARDIS 740.865.2910				X			N/A		\$250,000		\$1,500,000		\$62,050		\$170		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Switzerland of Ohio Local Schools	304 Mill Street WOODSFIELD 740.472.5801				X			N/A		\$120,000		\$100,000		\$3,606,930		\$9,882		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Voith Hydro	42722 SR 7 COOLVILLE 740.483.1566				X			N/A		\$27,000,000		\$35,000,000		\$400,000		\$1,095		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
First United Methodist Church	136 N. Main Street WOODSFIELD						X	N/A		\$355,000		\$165,000		\$66,650		\$210		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Foraker Bridge	3 miles East of Graysville on Plainview Rd.						X	N/A		\$1,000,000		N/A		N/A		N/A		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Hollister-Parry House	217 Eastern Avenue WOODSFIELD						X	N/A		\$215,000		\$450,000		N/A		N/A		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Frederick Kindleberger Stone House and Barn	Northwest Clarington SR 25						X	N/A		\$350,000		\$500,000		N/A		N/A		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Knowlton Covered Bridge	North of Rinard Mills on SR 387-A						X	N/A		\$150,000		\$75,000		N/A		N/A		N/A	
						L	L	L	N/A	M	M	L	M	H	M	H	M	L	L
William C. Mooney House	122 N. Paul Street WOODSFIELD						X	N/A		\$350,000		\$400,000		N/A		N/A		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Walter Ring House and Mill Site	Township Road 575 crossing Muskingum River						X	N/A		\$625,000		\$850,000		N/A		N/A		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)	
		X	X	X	X	X												
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Salem Church	48452 SR 255					X	N/A		\$210,000	\$150,000	N/A		N/A					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Monroe Lake Dam	ODNR-Division of Wildlife		X				N/A		\$1,550,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Baker Lake Dam	Private owned-Mary H. Baker		X				N/A		\$1,344,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Fish Bones Lake Dam	Private Owned-Ron Tank		X				N/A		\$525,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Lower Woodfield Dam	Village of Woodfield		X				N/A		\$910,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Upper Woodfield Dam	Village of Woodfield		X				N/A		\$785,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Baker Pond Dam	Private owned-Mary H. Baker		X				N/A		\$325,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Monroe County Emergency Management Agency/911	47069 SR 26 WOODSFIELD 740.472.2144		X				N/A		\$3,800,000	\$175,000	\$2,500		\$95		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Roads	N/A	X					N/A		\$1,495,000,000	\$0	\$0		\$0		\$0		N/A	
					L	N/A	L	N/A	M	M	L	M	H	M	H	M	L	L
Bridges	N/A	X					N/A		\$430,000,000	\$0	\$0		\$0		\$0		N/A	
					L	L	L		M	M	L	M	H	M	H	M	L	L
Woodfield PO	125 N. Main Street WOODSFIELD 740.472.1711				X		N/A		\$175,000	\$90,000	\$73,000		\$200		N/A			
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Jerusalem PO	51666 Main Street JERUSALEM 740. 926.1853				X		N/A		\$185,000	\$50,000	\$29,200		\$80		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Stafford PO	42385 Mill Street STAFFORD 740.567.3192				X		N/A		\$100,000	\$40,000	\$36,500		\$100		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Lewisville PO	33212 Railroad Street LEWSIVILLE 740.567.3156				X		N/A		\$175,000	\$50,000	\$54,750		\$150		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Malaga PO	50871 SR 145 740.472.1127				X		N/A		\$150,000	\$45,000	\$35,400		\$180		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Beallsville PO	52731 Ohio Avenue BEALLSVILLE 740.926.1249				X		N/A		\$135,000	\$55,000	\$81,250		\$175		N/A			
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Clarington PO	48126 Main Street CLARINGTON 740.458.1017				X		N/A		\$145,000	\$60,000	\$75,000		\$150		N/A			
					L	L	L	L	H	M	L	M	H	M	H	M	L	L

Table 2.8

Antioch Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	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 (#)	
		X	X	X	X	X												
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Antioch Office	ANTIOCH Ohio 740.934.2460		X					N/A	\$350,000	\$845,000	\$68,840	\$210	N/A					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Antioch Fire Department	39116 State Route 800 ANTIOCH 740.934.2345		X					2,400	\$310,000	\$650,000	\$86,360	\$261	15					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.9

Beallsville Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)	
		X	X	X	X	X												
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Beallsville Office	BEALLSVILLE Ohio 740.926.9901		X			L	L	N/A	\$410,000	\$490,000	\$950,625	\$515	N/A				L	L
Sunsbury Township Office	51885 ST RT 145 BEALLSVILLE 740.926.2015		X					2,592	\$536,000	\$329,400	\$136,250	\$462	2					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Switzerland Township Office	50910 German Ridge Road BEALLSVILLE 740.458.1827		X					2,400	\$420,000	\$171,000	\$163,000	\$300	5					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Beallsville Fire Department	52732 South Washington Street BEALLSVILLE 740.926.1636		X					N/A	\$295,000	\$695,000	\$92,300	\$238	N/A					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Beallsville E-Squad	P.O. Box 154 BEALLSVILLE 740.926.1636		X					N/A	\$320,000	\$642,000	\$68,500	\$310	N/A					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L
Beallsville HS/ES	52682 Ohio Street BEALLSVILLE 740.926.1302		X					N/A	\$1,250,000	\$225,000	\$146,000	\$400	N/A					
					L	L	L	L		M	L	M	H	M	H	M	L	L
Beallsville PO	52731 Ohio Avenue BEALLSVILLE 740.926.1249					X		N/A	\$275,000	\$55,000	\$81,250	\$175	N/A					
					L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.10

Clarington Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	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 (#)		
		X	X	X	X	X													
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Clarington Office	CLARINGTON Ohio 740.458.1266		X			L	L	L	L	H	M	L	M	H	M	H	M	L	L
Ohio Township Garage	52746 State Route 536 CLARINGTON		X					1,600		\$160,000		\$280,000		\$523,000		\$465		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Ohio Township Storage Building	CLARINGTON		X					600		\$110,000		\$110,000		\$142,000		\$321		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Salem Township Office	46620 TH 187 CLARINGTON 740.458.0005		X					N/A		\$795,000		\$295,000		\$159,150		\$610		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
River Gas Company	CLARINGTON				X			N/A		\$4,698,000		\$9,254,000		\$79,000		\$658		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Clarington Fire Department	221 Main Street CLARINGTON 740.458.1233		X					8,000		\$902,000		\$1,005,000		\$72,000		\$246		30	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Clarington E-Squad	P.O. Box 257 CLARINGTON 740.458.1233		X					N/A		\$689,000		\$964,000		\$110,000		\$410		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L
Frederick Kindleberger Stone House and Barn	Northwest Clarington SR 25						X	N/A		\$350,000		\$500,000		N/A		N/A		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Clarington PO	48126 Main Street CLARINGTON 740.458.1017					X		N/A		\$300,000		\$60,000		\$75,000		\$150		N/A	
						L	L	L	L	H	M	L	M	H	M	H	M	L	L

Table 2.11

Graysville Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations			Replace-ment Value		Contents		Function Use or Value		Displace-ment Cost		Occupancy or Capacity		
		X	X	X	X	X	Size of Bldg. (sq. ft.)		(\$)		Value (\$)		Value (\$)	Value (\$)	Value (\$)	Value (\$)	Value (\$)	(#)	
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Graysville Office	GRAYSVILLE Ohio 740.934.2128		X					N/A		\$400,000		\$510,000		\$68,840		\$220		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Bethel Township Office	33478 Mt. Hope Road GRAYSVILLE 740.934.9591		X					1,872		\$675,400		\$298,000		\$126,425		\$513		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Washington Township Office	35024 SR 26 GRAYSVILLE 740.934.2646		X					2,520		\$550,000		\$226,740		\$150,145		\$575		4	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Graysville Fire Department	35763 Merrill Ridge Road GRAYSVILLE		X					N/A		\$300,000		\$750,000		\$72,260		\$236		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Bethel/Graysville E-Squad	32219 Little Injun Road SALEM 740.934.2828		X					N/A		\$394,000		\$598,000		\$63,000		\$265		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Skyvue ES	33329 Hartshorn Ridge Road GRAYSVILLE 740.567.3312		X					N/A		\$3,938,500		\$821,314		\$316,100		\$236		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.12

Jerusalem Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations			Replace-ment Value		Contents		Function		Displace-ment Cost		Occupancy or Capacity		
		X	X	X	X	X	Size of Bldg. (sq. ft.)		Value (\$)		Value (\$)	Use or Value (\$)		Cost (\$)		or Capacity (#)			
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Jerusalem Office	JERUSALEM Ohio		X					N/A		\$325,000		\$800,000		\$55,700		\$165		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Malaga Township Office	38437 Flynn Road JERUSALEM 740.472.2428		X					4,320		\$862,000		\$956,000		\$536,370		\$635		4	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Switzerland of Ohio Water	51748 Main Street JERUSALEM 740.926.1465		X					2,500		\$2,080,000		\$7,963,000		\$85,000		\$463		4	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Jerusalem PO	51666 Main Street JERUSALEM 740. 926.1853					X		N/A		\$185,000		\$50,000		\$29,200		\$80		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.13

Lewisville Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)		
		X	X	X	X	X													
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire	
Village of Lewisville Office	LEWISVILLE Ohio 740.567.3528		X					N/A	\$310,000	\$815,000	\$51,325	\$158	N/A						
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Franklin Township Office	30820 Lafferre Lane LEWISVILLE 740.567.3473		X					2,400	\$276,000	\$678,080	\$302,220	\$340	N/A						
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Lewisville Fire Department	LEWISVILLE Ohio 740.567.3528		X					N/A	\$565,000	\$850,000	\$102,200	\$280	N/A						
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Lewisville PO	33212 Railroad Street LEWSIVILLE 740.567.3156					X		N/A	\$175,000	\$50,000	\$54,750	\$150	N/A						
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.14

Miltonsburg Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)		
		X	X	X	X	X													
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire	
Village of Miltonsburg Office	MILTONSBURG Ohio 740.472.1787		X					N/A		\$325,000		\$375,000		\$50,225		\$169		N/A	
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.15

Stafford Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	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 (#)		
		X	X	X	X	X													
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire	
Village of Stafford Office	STAFFORD Ohio 740.567.3108		X					N/A	\$310,000		\$655,000		\$57,690		\$213		N/A		
						L	L	L	L	M	M	L	M	H	M	H	M	L	L
Stafford PO	42385 Mill Street STAFFORD 740.567.3192					X		N/A	\$200,000		\$40,000		\$36,500		\$100		N/A		
						L	L	L	L	M	M	L	M	H	M	H	M	L	L

Table 2.16

Wilson Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)	
			X	X	X	X	X												
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Village of Wilson Office	WILSON Ohio 740.926.1515			X				N/A		\$316,000		\$525,000		\$56,740		\$185		N/A	
							L	L	L	L	M	M	L	M	H	M	H	M	L

Table 2.17

Woodsfield Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)	
		X	X	X	X	X												
HAZARDS					Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
American Red Cross	204 S Paul St. WOODSFIELD 740.472.2377				X		N/A		\$275,000		\$85,000		\$82,200		\$250		N/A	
Village of Woodsfield Office	118 E Court Street WOODSFIELD 740.472.0830	X					N/A		\$1,550,000		\$1,500,000		\$70,950		\$720		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe County Beacon	103 E Court Street WOODSFIELD 740.472.0734				X		N/A		\$250,000		\$82,000		\$81,525		\$214		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe County Health Department	118 Home Avenue WOODSFIELD	X					N/A		\$655,000		\$652,000		\$95,640		\$556		20	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Adams Township Office	45774 Skyline Road WOODSFIELD 740.472.0968	X					280		\$750,000		\$325,000		\$129,950		\$530		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Center Township Office	336 Guilford Avenue WOODSFIELD 740.472.1081	X					2,220		\$307,700		\$550,000		\$123,450		\$426		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Green Township Office	44890 TH 452 WOODSFIELD 740.483.1290	X					2,400		\$270,330		\$322,133		\$100,000		\$375		4	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Wayne Township Office	36128 Conner Ridge Road WOODSFIELD 740.567.3223	X					2,000		\$720,000		\$310,000		\$162,000		\$800		0	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe Water Systems	43022 Six Points Road WOODSFIELD 740.472.1030	X					N/A		\$4,685,000		\$9,850,000		\$84,900		\$250		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Village of Woodsfield Water	39415 Water Works Road WOODSFIELD 740.472.0995	X					N/A		\$3,462,000		\$8,569,000		\$79,000		\$568		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
East Ohio Gas	WOODSFIELD			X			N/A		\$4,568,000		\$9,632,000		\$89,000		\$647		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Woodsfield Fire Department	38000 Old Airport Road WOODSFIELD 740.472.1372	X					7,000		\$1,200,000		\$1,500,000		\$131,400		\$360		30	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Woodsfield E-Squad	P.O. Box 653 WOODSFIELD 740.472.1372	X					N/A		\$860,000		\$978,000		\$132,000		\$395		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe County Sheriff's Office	108 W Court Street WOODSFIELD 740.472.1612	X					N/A		\$775,000		\$810,000		\$255,875		\$675		N/A	
					L	L	L	L	L	M	L	M	H	M	H	M	L	L

Name or Description of Asset	Address and Jurisdictional Location	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)		
		X	X	X	X	X													
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
Woodsfield Police Department	221 S Main Street WOODSFIELD 740.472.5771		X					N/A		\$710,000		\$425,000		\$64,250		\$350		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Central Office School Board	304 Mill Street WOODSFIELD 740.472.5801		X					N/A		\$550,000		\$650,000		\$65,000		\$425		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe Central	46605 SR 78 WOODSFIELD 740.472.0414		X					N/A		\$1,550,000		\$220,000		\$79,425		\$245		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Swiss Hills Annex	46601 State Route 78 WOODSFIELD		X					N/A		\$1,750,000		\$325,000		\$694,500		\$320		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Woodsfield ES	118 N Paul Street WOODSFIELD 740.472.0953		X					N/A		\$7,000,000		\$625,000		\$206,600		\$840		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Tri-county Help Center, Inc.	117 North Main Street WOODSFIELD 740.695.5441		X					N/A		\$10,575,000		\$7,950,000		\$1,168,000		\$2,200		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Southeast, Inc.	37990 Old Airport Road WOODSFIELD 614.225.0980		X					N/A		\$565,000		\$500,000		\$164,250		\$450		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
North Point Consulting and Behavioral Health Services	37990 Airport Road, POB 545 WOODSFIELD 740.782.0092		X					N/A		\$425,000		\$225,000		\$165,400		\$425		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe Co. Dept. of Job & Family Services	100 Home Avenue WOODSFIELD 740.472.1602		X					9,100		\$1,400,000		\$300,000		\$2,000,000		\$7,660		23	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Extendicare/Woodsfield Nursing Center	37930 Airport Road WOODSFIELD 740.472.1678				X	X		N/A		\$1,750,000		\$1,350,000		\$52,560		\$144		N/A	
						L	L	L	M	L	M	L	M	H	M	H	M	L	L
Monroe County Courthouse	101 N. Main Street WOODSFIELD				X		X	N/A		\$10,665,000		\$15,214,597		\$1,155,600		\$2,440		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Riesbeck Food Markets	324 Lewisville Road WOODSFIELD 740.472.0777				X			N/A		\$875,000		\$1,000,000		\$43,800		\$120		N/A	
						L	M	L	L	L	M	L	M	H	M	H	M	L	L
Safe Auto Insurance Group	47060 Industrial Park Rd WOODSFIELD				X			N/A		\$500,000		\$375,000		\$46,720		\$128		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Switzerland of Ohio Local Schools	304 Mill Street WOODSFIELD 740.472.5801				X			N/A		\$80,000,000		\$35,000,000		\$3,606,930		\$9,882		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
First United Methodist Church	136 N. Main Street WOODSFIELD						X	N/A		\$355,000		\$165,000		\$66,650		\$210		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Hollister-Parry House	217 Eastern Avenue WOODSFIELD						X	N/A		\$215,000		\$450,000		N/A		N/A		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
Monroe Bank	117 Main Street WOODSFIELD						X	N/A		\$32,000,000		\$16,000,000		N/A		N/A		N/A	
						L	L	L	L	L	M	L	M	H	M	H	M	L	L
William C. Mooney	122 N. Paul Street						X	N/A		\$350,000		\$400,000		N/A		N/A		N/A	

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)		Replace-ment Value (\$)		Contents Value (\$)		Function Use or Value (\$)		Displace-ment Cost (\$)		Occupancy or Capacity (#)	
			X	X	X	X	X												
HAZARDS						Dam Failure	Drought	Earthquake	Epidemic	Flooding	Hailstorm	Infestation	Land Subsidence	Severe Thunderstorm	Severe Wind/Tornado	Severe Winter Storm	Temp. Extreme	Terrorism	Wildfire
House	WOODSFIELD					L	L	L	L	L	M	L	M	H	M	H	M	L	L

2.4 ESTIMATE LOSSES

§201.6(c)(2)(ii)(B)

[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.

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 significant 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.

METHODOLOGY

The loss estimates are derived based on historical information contained in Storm Event Records maintained by the National Climatic Data Center (NCDC), the Spatial Hazard Events and Losses Database US (SHELDUS), prediction systems such as Hazards U.S.-Multi Hazard (HAZUS-MH), and information contained in the *State of Ohio Hazard Mitigation Plan*. Loss estimates are calculated and totaled for each hazard identified in 2.1: Identifying Hazards. These sources did not contain figures for all these hazards, in which case the cells in Figure 2.4 below are filled with “No Data”.

Summary of Estimated Losses					
Hazard	HAZUS-MH	NCDC*	OEMA Plan	SHELDUS**	Average
Dam Failure	No Data	No Data	No Data	No Data	No Data
Drought	No Data	\$0	No Data	\$0	\$0
Earthquake	\$138,942,102	No Data	No Data	\$0	\$138,942,102
Epidemic	No Data	No Data	No Data	No Data	No Data
Flooding ¹	No Data	\$18,687,000	\$758,675,000	\$20,716,775	\$266,026,258
Hailstorm	No Data	\$0	No Data	\$791,265	\$791,265
Hazmat	No Data	No Data	No Data	No Data	No Data
Infestation	No Data	No Data	No Data	No Data	No Data
Land/Mine Subsidence	No Data	\$0	No Data	\$0	\$0
Severe Thunderstorm ²	No Data	\$665,000	\$212,000	\$5,162,835	\$2,013,278
Severe Wind/Tornado ³	No Data	\$225,000	\$7,339,590	\$2,008,018	\$3,190,869
Severe Winter Storm ⁴	No Data	\$11,000	\$6,400,000	\$6,932,709	\$4,447,903
Temperature Extreme	No Data	\$0	No Data	\$573,864	\$573,864
Terrorism	No Data	No Data	No Data	No Data	No Data
Wildfire ⁵	No Data	\$0	\$23,960	\$0	\$23,960

Figure 2.4

*Note: NCDC Data is over a 17 year period (6,401 days) from 01/01/1996 to 07/10/2013.

**Note: SHELDUS Data is over a 63 year period from 01/01/1950 to 07/10/2013.

¹Note: The Flooding estimate listed under the OEMA Plan column was derived by averaging 100-year and 25-year estimates for Monroe County listed in the *Ohio State Hazard Mitigation Plan* in Tables 2.2e and 2.2h.

²Note: The Severe Thunderstorm estimate listed under the OEMA Plan column was taken from Table 2.12a Estimate of Potential Losses to Summer Storms by Region – 10 year Cumulative for Monroe County, from the *Ohio State Hazard Mitigation Plan*.

³Note: The Wind/Tornado estimate listed under the OEMA Plan column was taken from Tables 2.3i, 2.3l, and 2.3o, from the *Ohio State Hazard Mitigation Plan*.

⁴Note: The Winter Storm estimate listed under the OEMA Plan column was taken from Table 2.4a Estimate of Potential Losses to Winter Storms by Region, *Ohio State Hazard Mitigation Plan*.

⁵Note: The Wildfire estimate listed under the OEMA Plan column was taken from Table 2.7d contained in the *Ohio State Hazard Mitigation Plan*.

2.5 ANALYZING DEVELOPMENT TRENDS

§201.6(c)(2)(ii)(C)

[The plan should describe vulnerability in terms of] providing a general discussion of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Monroe County is located in southeastern Ohio at the foothills of the Appalachian Mountains. Interstate 77 (north-south) is 16 miles from the western edge of the county while Interstate 70 (east-west) is within 15 miles of the northern border. The Ohio River borders the entire eastern side of the county, making easy access to economical low-cost river transportation. Monroe County has a total population of 14,642 (2010 U.S. Census estimate). Metropolitan cities located within close proximity to Monroe County include Pittsburgh, PA (90 miles); Columbus, OH (120 miles), Cleveland, OH (150 miles) and Washington DC (285 miles).

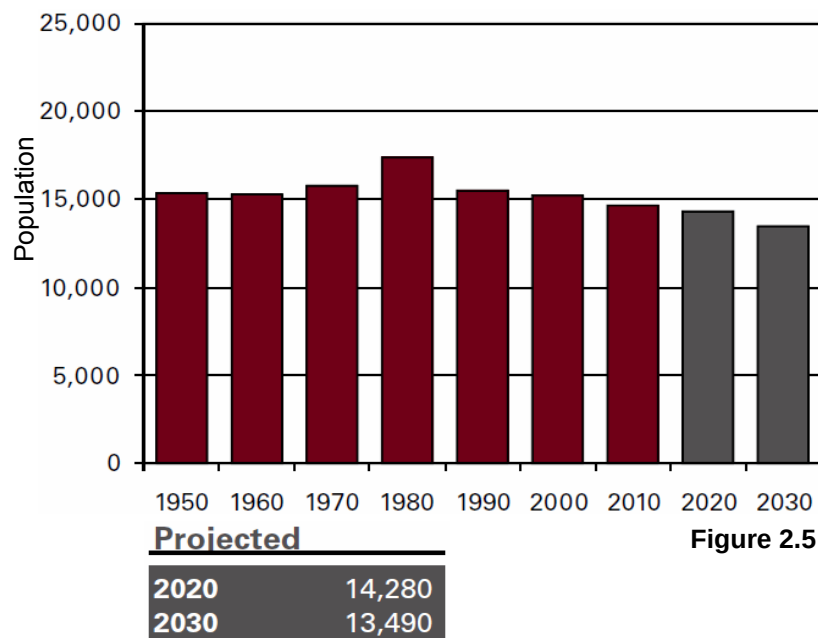
Monroe County consists primarily of rural communities located throughout the county with the Village of Woodsfield located in the center. Labeled “the Switzerland of Ohio”, Monroe County continues to be a great place to live and raise a family. High crime rates and many other problems typically associated with more urban communities continue to pass by the predominantly rural area.

In the past, Monroe County has been the home of several small businesses. During the recent history of the county, these businesses have changed. For example, companies are bought and sold; old companies close, leaving empty facilities behind that are filled by new companies etc. In 2008, a total of 18 new businesses opened while 19 other businesses closed, the total number of active businesses in 2008 was 309. Other land uses in the county consist of the following:

- **Industrial and commercial areas** – The majority of the commercial areas can be found in and near the Villages of Woodsfield and Clarington, located in the central and eastern portion of the county. Other commercial and industrial areas are located along the Ohio River.
- **Residential areas** – Located in the municipalities and throughout the county, primarily along the major roadways, and sparsely in the more rural areas of the county.

- **Farmland** – Agricultural land covers approximately 99,000 acres of the county (a total of 630 individual farms). These agricultural areas are spread throughout the county.
- **Specialized land use designations** – Unique features associated with Monroe County include the Fly Ferry, Foreaker and Knowlton covered bridges, Kiedaish Point scenic overlook near Hannibal, Monroe Lake and Wildlife Management Area (WMA), the Ohio River, Parry Museum at Woodsfield, Piatt Park, Ring Mill, Sunfish Creek State Forest, and Wayne National Forest.

The residential areas in the county have experienced a population decrease since this plan was original adopted. As indicated by 2010 U.S. Census data, the total population in 2000 was 15,180 which decreased to 14,642 in 2010, an average of 54 people per year over the 10 year period. According to the Ohio Department of Development, this is a trend that is expected to continue. As can be seen in the figure to the right, the projected population



for the year 2030 is 13,490. The majority of the employment sector in 2010 was comprised of service and mining.

Residential construction in the county has slowed considerably; however, local officials should continue enforcing existing building codes to reduce the number of residential properties located within known flood zones.

The major employers of the county include AGI/Artco Steel, Extendicare/Woodsfield Nursing Center, Monroe County Government, Ormet Corp., Riesbeck Food Markets, Safe Auto Insurance Group, Slay Transportation Company Inc., Switzerland of Ohio Local Schools, and Voith Hydro. The utility providers of Monroe

County include Dominion East Ohio Gas Company, Columbia Gas of Ohio, Woodsfield Electric, American Electric Power (AEP), Verizon, Ameritech, Time Warner, Comcast, Clarington Water System, Monroe Water System, Ohio & Lee Water and Sewer Authority, Switzer Water Association, Switzerland of Ohio Water District, and the Woodsfield Water Department.

Local officials in Monroe County are looking at ways to develop the riverfront areas of the county, especially near Clarington, Hannibal, Sardis, and Fly. Northern areas in Switzerland Township are also attractive for such development. However, development in these areas must consider the severity of flooding and landslides. As development continues upriver into Switzerland Township, developers will have to consider the effects of potential mine subsidence, as several sites in that area have been undermined.

3.0 LOCAL HAZARD MITIGATION GOALS

§201.6(c)(3)(i)

[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

STAKEHOLDERS (Core Planning Committee)

The Monroe County Emergency Management Agency (MCEMA) in coordination with the County Commission of Monroe County compiled a representative group of stakeholders to be known as the Core Planning Committee (CPC) for the implementation and updating of the county's Multi-Jurisdictional All Hazards Mitigation Plan. A listing of these stakeholders can be viewed in the planning process section of this plan.

METHODOLOGY

In the fall of 2010, the MCEMA in conjunction with members of the CPC, and with the assistance of a consultant, updated the Monroe County Hazard Risk Assessment (HRA). The updated HRA includes not only an updated listing of the hazards to which the county is susceptible, but also an analysis of the county's vulnerability to these hazards. Vulnerability was examined on several levels, including economic, environmental and social. The updated HRA includes an inventory of the county's assets, including critical facilities, economic assets, vulnerable populations, etc., and indicates the potential loss each of the assets could incur as a result of the identified hazards. The updated HRA also includes a brief analysis of development trends in the county. In short, the updated HRA provides a factual, numerical foundation on which to base the Action Plan update.

Using the findings from the updated HRA as a guide the CPC was able to update existing, and identify new goals, objectives and strategies to mitigate the hazard risks identified in the Monroe County HRA. Goals and objectives were updated and/or developed in a working session with the CPC with a period provided for comment and revision. Once the final goals and objectives were determined, the CPC met again to update and/or develop the mitigation strategies that would aid the county in meeting the goals and objectives identified in the plan. Strategies were selected using the information obtained from the updated HRA, which identified existing programs and shortfalls related to mitigation activities.

These meetings were made known and open to the general public, neighboring communities, businesses, academia and other relevant private and non-profit organizations via articles in local newspapers. As a result of these meetings and comments received from FEMA Region V on the original mitigation plan, the MCEMA, and several of the stakeholders listed in the planning process section determined the areas of the plan that needed to be updated, and those that did not.

GOALS, OBJECTIVES, AND STRATEGIES

The MCEMA in coordination with the Core Planning Committee (CPC) determined several goals, objectives, and strategies to mitigate the hazard risks identified in the county's updated HRA. These mitigation actions were developed based on projects thought to be most feasible and beneficial to hazard reduction.

These projects are hereby listed with the jurisdictions they will benefit, as well as a timeframe for completion, funding source and cost estimate, and coordinating agency to oversee their implementation. Many of these strategies (such as the development of information displays) also address multiple hazards. For the purposes of this document, each project is listed with the hazard it *primarily* addresses. It is important to note that not all hazards appearing in the updated HRA have a significant number of mitigation strategies suggested. For many hazards, public awareness is the most feasible, cost effective and beneficial strategy.

Goals, objectives, and strategies are only listed in this section as a “quick reference guide” for users of the plan. Strategies – which are the mitigation projects under consideration – are organized both by hazard and jurisdiction. A simple update status statement is also listed for each project. Projects can be classified as: Completed, Deleted, Deferred, Unchanged, or On-Going. Detailed discussions on the implementation and prioritization of mitigation projects, including an explanation of each status indicator, can be found in Section 4.0.

Mitigation strategies fall into several categories. Following, each strategy is listed with the category to which it belongs. The categories of mitigation strategies are:

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

Goal 1: Reduce the potential for dam failures in Monroe County.

Objective 1.1: Reduce the probability of significant flood damage as a result of a dam failure.

Strategy 1.1.1: Coordinate with the Ohio Department of Natural Resources, Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Monroe County as a result of a change in circumstances not in existence at the time of the dam's initial classification to ensure adequate safety according to the potential for downstream damage.

Status: ONGOING Conducted on an annual basis. Jurisdictions throughout Monroe County comply with ODNR and other dam safety regulations accordingly.

Strategy 1.1.2: During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.

Status: COMPLETED This project is completed as necessary and to the level required of local government per compliance with existing dam safety regulations.

Strategy 1.1.3: Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of existing dams in Monroe County.

Status: COMPLETED This project is completed as necessary and to the level required of local government per compliance with existing dam safety regulations.

Strategy 1.1.4: Consider the feasibility of developing regulations to limit the number of structures located within close proximity to large Class I dams, if such regulations do not already exist.

Status: COMPLETED This strategy is completed as necessary and to the level required of local government per compliance with existing dam safety regulations.

Goal 2: Protect Monroe County's agricultural assets from the negative effects of drought.

Objective 2.1: Increase public awareness as to the agricultural effects of drought, as well as the ramifications to the public water supply.

Strategy 2.1.1: Develop an informational brochure to distribute to local farmers and residents.

Status: DEFERRED Insufficient funding available

Strategy 2.1.2: Educate local residents on the benefits of conserving water at all times, not just during a drought.

Status: ONGOING Conducted on an annual basis and as necessary, through the State, and local water departments.

Objective 2.2: Develop methods for the procurement of an emergency water supply.

Strategy 2.2.1: Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Monroe County.

Status: COMPLETED The Monroe County Emergency Management Agency (MCEMA) – Resource Management Section can obtain emergency water supplies through resource requests to the Ohio EMA.

Goal 3: Reduce the potential effects of earthquakes in Monroe County.

Objective 3.1: Educate the public as to the potential for earthquakes in Ohio, specifically Monroe County.

Strategy 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 pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

Status: ON-GOING MCEMA is working with the county Health Department

Strategy 3.1.2: Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes.

Status: COMPLETED Conducted on an annual basis. This project was completed as part of the aforementioned EPI campaigns.

Objective 3.2: Lessen the potential for secondary effects, such as a large fire, after an earthquake event in Monroe County.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.

Status: DEFERRED The emergency services sector is still coordinating with local utilities on this strategy.

Goal 4: Protect Monroe County's population from an epidemic.

Objective: 4.1: Increase public awareness and knowledge after an epidemic has been declared.

Strategy 4.1.1: Produce public awareness campaigns through local media outlets.

Status: COMPLETED Public awareness campaigns have been and will continue to be released through local media outlets via the county health department. This project was completed as part of the H1N1 response in late 2009.

Objective 4.2: Work with the Monroe County Health Department to control epidemics.

Strategy 4.2.1: Coordinate with the Monroe County Health Department to identify the source of epidemics, and determine appropriate actions for the general public to take to reduce or slow the spread of epidemics.

Status: COMPLETED This project was completed as part of the H1N1 response in late 2009.

Strategy 4.2.2: Coordinate with the Monroe County Health Department to develop an immunization program to help prevent the spread of communicable diseases.

Status: NEW This project was developed during the update process

Goal 5: Reduce the negative effects of flooding in Monroe County.

Objective 5.1: Lessen flood damage by preserving the natural course of waterways.

Strategy 5.1.1: Clean or dredge creeks and streams, clearing log jams, trees, shrubs, and sediment bars.

Status: ON-GOING This strategy is currently underway

Objective 5.2: Increase coordination among pertinent individuals/groups to mitigate flood hazards.

Strategy 5.2.1: Coordinate with local and rural property owners to gain access to flooded property for recovery purposes after a flood has occurred.

Status: ON-GOING This project has been completed, and is on-going.

Strategy 5.2.2: Facilitate the formation of flood task forces throughout the county to address flooding problems on a regular basis.

Status: DEFERRED This project has been deferred due to political and environmental issues

Strategy 5.2.3: Update FEMA 100-year floodplain maps.

Status: COMPLETED Updated mapping is being completed through FEMA's Map Modernization Project.

Strategy 5.2.4: Develop specific flood mitigation plan(s) to accompany this mitigation plan especially for flood-prone areas.

Status: DELETED This project was removed due to implementation of more specific ordinances.

Objective 5.3: Develop, implement, or strengthen local regulatory requirements to lessen flood damage.

Strategy 5.3.1: Enforce building and development ordinances.

Status: ON-GOING Conducted on a daily basis.

Strategy 5.3.2: Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.

Status: COMPLETED This project has been addressed since the original development of the plan.

Objective 5.4: Reduce flood damage by undertaking structural projects to lessen obstructions to the flow of water.

Strategy 5.4.1: Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.

Status: ON-GOING Several projects have been initiated throughout the county.

Goal 6: Lessen hail damage in Monroe County.

Objective 6.1: Provide local residents with advanced warning of impending hailstorms.

Strategy 6.1.1: Coordinate efforts with the local media to post advance warnings of hailstorms.

Status: ONGOING Conducted on an as-needed basis. This project was completed as necessary as part of Monroe County's participation in the Emergency Alert System (EAS).

Strategy 6.1.2: Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio.

Status: COMPLETED This project was completed as part of a DHS/FEMA initiative to issue NOAA radios to all schools. The County Administration Building was also issued a radio through the ARC.

Goal 7: Protect Monroe County's population and assets from an infestation.

Objective 7.1: Increase public awareness and knowledge regarding a potential infestation.

Strategy 7.1.1: Develop an informational brochure to distribute to local farmers and residents.

Status: DELETED This project removed due to lack of funding locally. ODNR was identified as principal agency in this matter and has information posted on its website.

Goal 8: Reduce or eliminate the negative effects of all land subsidence in Monroe County.

Objective 8.1: Minimize future damages from land subsidence throughout Monroe County.

Strategy 8.1.1: Develop, implement and enforce building codes as well as educate the public to these codes and land use planning.

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Objective 8.2: Assess the feasibility of undertaking reclamation projects.

Strategy 8.2.1: Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location.

Status: COMPLETED Small-scale reclamation projects have been conducted by the ODNR

Strategy 8.2.2: Encourage developers and residents to avoid large significant developments in areas especially prone to mine subsidence.

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Strategy 8.2.3: Consider filling or buttressing subterranean open spaces to prevent or alleviate collapse.

Status: DELETED

Strategy 8.2.4: Conduct hydrological monitoring to monitor groundwater levels in subsidence-prone areas.

Status: DELETED Conducted by ODNR

Goal 9: Reduce damages from severe thunderstorms in Monroe County.

Objective 9.1: Increase public awareness that a severe thunderstorm is imminent.

Strategy 9.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions.

Status: ONGOING Conducted on an as-needed basis. The project has been completed via the on-going coordination between the MCEMA and the NWS.

Strategy 9.1.2: Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio.

Status: COMPLETED This project was completed as part of a DHS/FEMA initiative to issue NOAA radios to all schools.

Strategy 9.1.3: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.

Status: ONGOING This project was completed as necessary as part of Monroe County's participation in the Emergency Alert System (EAS).

Strategy 9.1.4: Provide electronic weather alert pagers that can be monitored by at least one (1) township trustee in each township

Status: DELETED This project has been deleted due to use of DeltAlert system and social media.

Strategy 9.1.5: Ensure that surge protection, such as surge protectors and grounding, has been installed on all critical electronic equipment owned by county government.

Status: COMPLETED This project has been completed via normal equipment upgrades.

Goal 10: Reduce damage from severe wind and tornadoes in Monroe County.

Objective 10.1: Increase public awareness that severe wind and tornadoes are imminent.

Strategy 10.1.1: Coordinate with the National Weather Service to warn residents of impending severe winds and possible tornado conditions.

Status: ONGOING Conducted on an as-needed basis. The project has been completed via the on-going coordination between the MCEMA and the NWS.

Objective 10.2: Minimize future damage from severe wind or tornadoes throughout Monroe County by increasing control over construction activities.

Strategy 10.2.1: Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Strategy 10.2.2: Consider burying power lines to ensure uninterrupted power following a severe wind, or tornado event.

Status: DELETED Determined to be unfeasible

Strategy 10.2.3: Purchase and install fixed-in-place 35kw generators (gen-sets) at emergency services facilities and the Monroe County EMA office.

Status: ON-GOING This strategy initiated and being completed as local funding permits.

Objective 10.3: Increase public knowledge of what steps to take after a severe windstorm or tornado has occurred.

Strategy 10.3.1: Develop an informational brochure to distribute to local residents.

Status: COMPLETED MCEMA posts advertisements with local media.

Objective 10.4: Conduct an inventory of available shelters within Monroe County.

Strategy 10.4.1: Assess the number, location, strength, and ability of shelters to house residents and withstand high wind speeds

Status: COMPLETED This project was done in 2005. The MCEMA, local ARC chapter, and local health department partnered to identify sheltering capabilities in the county.

Goal 11: Reduce the effects of severe winter storms in Monroe County.

Objective 11.1: Ensure adequate capacities throughout the county to respond to a severe winter storm event.

Strategy 11.1.1: Institute countywide building codes and other general planning requirements that will regulate the materials used in construction with respect to snow and ice weight.

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Strategy 11.1.2: Enforce existing building codes that are already in place

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Strategy 11.1.3: Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal.

Status: DELETED This project has been deleted and is managed by the local authorities

Objective 11.2: Increase public knowledge as to the risks associated with severe winter weather.

Strategy 11.2.1: Produce and distribute family and traveler emergency preparedness information relating to severe winter weather hazards.

Status: COMPLETED .

Objective 11.3: Reduce the number of injuries and fatalities as a result of severe winter weather.

Strategy 11.3.1: Identify, establish, and encourage the use of heated shelter sites, which may be sites, pre-determined as shelter sites, for vulnerable populations and stranded motorists/travelers in Monroe County.

Status: COMPLETED

Strategy 11.3.2: Construct or create snow fences or “living snow fences” (rows of trees or other vegetation) to limit the blowing and drifting of snow over critical roadway segments.

Status: DELETED

Goal 12: Protect Monroe County’s population from heat waves.

Objective: 12.1: Increase public knowledge of protective measures to take during heat waves.

Strategy 12.1.1: Develop an informational brochure to distribute to local residents.

Status: COMPLETED This project has been completed; information is listed on the MCEMA website via a link to a Red Cross informational page local media

Strategy 12.1.2: Educate local residents on the benefits of conserving water during a heat wave.

Status: COMPLETED

Goal 13: Protect Monroe County’s population and forests from wildfires.

Objective 13.1: Educate the public on how to avoid starting wildfires.

Strategy 13.1.1: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.

Status: ONGOING This is an on-going project that is conducted through the State Fire Marshal’s Office, and local fire departments.

Strategy 13.1.2: Encourage residents to maintain a defensible space or buffer zone of 30 to 100 feet that is cleared of combustible materials.

Status: COMPLETED

Strategy 13.1.3: Encourage residents and large facility owners to inspect and clean their chimneys at least once a year.

Status: COMPLETED Conducted on an annual basis. This project is completed as part of periodic EPI campaigns sponsored by the MCEMA and other emergency services organizations (e.g., regularly-updated websites, etc.).

Objective 13.2: Reduce the potential for wildfires by limiting the time periods during which burning is permitted to take place.

Strategy 13.2.1.: Establish ordinances requiring burn permits and restricting campfires and outdoor burning during unsafe hours in particular seasons, if not already established.

Status: COMPLETED

Goal 14: Protect the general public and the environment of Monroe County from hazardous materials incidents.

Objective 14.1: Study and evaluate transportation systems for problems that could lead to hazardous materials spills and other incidents.

Strategy 14.1.1: Assess the feasibility of conducting a commodity flow study.

Status: ON-GOING The Monroe County LEPC is in the process of updating the county's Commodity Flow Study which includes highway and rail analysis.

Strategy 14.1.2: Assess the feasibility of cleaning up busy intersections.

Status: DELETED Conducted by ODOT

Strategy 14.1.3: Evaluate railroad and roadway intersections for warning systems, etc.

Status: DELETED All railway temporarily suspended

Strategy 14.1.4: Increase public education and awareness regarding hazardous materials incidents.

Status: ONGOING Conducted on an annual basis by the LEPC, and information is posted on the county's website.

Objective 14.2: Increase hazardous materials response capabilities through planning efforts.

Strategy 14.2.1: Coordinate with the Local Emergency Planning Committee (LEPC) to update existing hazardous materials emergency plans that serve as a guide for preparing for and responding to chemical emergencies.

Status: ON-GOING This project has been completed as part of a major re-organization of the county's hazmat team (to include how equipment and other resources are distributed as well as revised membership requirements).

Strategy 14.2.2: Establish a trained, equipped, and prepared emergency response team for hazardous materials incidents that occur within Monroe County.

Status: DEFFERED This project currently deferred due to lack of funding and resources available.

Goal 15: Protect the general public in Monroe County from potential biological, chemical, or Weapons of Mass Destruction (WMD) terrorist events.

Objective 15.1: Increase countywide preparedness for terrorist attacks.

Strategy 15.1.1: Develop and/or enhance terrorist annexes in county the Emergency Operations Plan (EOP).

Status: COMPLETED

Strategy 15.1.2: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.

Status: COMPLETED

Objective 15.2: Enact response programs to cope with terrorist attacks should they occur.

Strategy 15.2.1: Establish field medical centers to offer medical attention and counseling to affected populations in the event of a terrorist event or disasters.

Status: ON-GOING This project has been initiated with recent planning and resources allocated

Strategy 15.2.2: Coordinate with first responders for interagency cooperation to assist in collaborative planning.

Status: COMPLETED

Strategy 15.2.3: Continue education and training efforts of first responders and emergency personnel.

Status: ON-GOING

Strategy 15.2.4: Consider providing heightened security at public gatherings, special events, and critical community facilities and industries.

Status: ON-GOING Planning per occurrence has been addressed and is being implemented.

Objective 15.3: Increase public knowledge as to the hazards affecting the county and response mechanisms in place throughout Monroe County.

Strategy 15.3.1: Educate the public on the response services available following a hazard event, and the appropriate actions that individuals can take following a hazardous event.

Status: COMPLETED This project has been completed by the development of this plan, and the planning process.

VILLAGES OF MONROE COUNTY

ANTIOCH, BEALLSVILLE AND MILTONSBURG

Goal 1A: Reduce the negative effects of severe thunderstorms in the Villages of Antioch, Beallsville, and Miltonsburg.

Objective 1A.1: Provide early warning to the residents of the above-mentioned villages that a severe thunderstorm is approaching.

Strategy 1A.1.1: Coordinate with the Monroe County EMA to invest in a public early warning system and train personnel to use the system.

Status: COMPLETED

Goal 2A: Reduce the negative effects of flooding in the Villages of Antioch, Beallsville, and Miltonsburg.

Objective 2A.1: Reduce flood damage in the above mentioned villages by providing advance warning to the residents of the villages.

Strategy 2A.1.1: Consider installing stream gauges at several strategic locations, in conjunction with NOAA weather radios, and EAS broadcasts, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.

Status: DEFERRED This project currently deferred due to lack of funding

Strategy 2A.1.2: Participate in the Community Rating System (CRS) to reduce flood insurance rates.

Status: COMPLETED

Goal 3A: Protect the Village of Antioch, Beallsville, and Miltonsburg's populations and critical assets from the negative effects of severe winter storms

Objective 3A.1: Reduce the amount of property damage in the aforementioned villages as a result of severe winter storms.

Strategy 3A.1.1: Consider constructing snow fences or rows of trees to limit the blowing and drifting of snow over critical roadways within the villages.

Status: DELETED

Strategy 3A.1.2: Develop contracts, or mutual aid agreements with private contractors to aid in snow removal from village roads.

Status: DEFERRED This issue is currently adequately handled by local authorities.

CLARINGTON

Goal 1B: Reduce the negative effects of flooding in the Village of Clarington.

Objective 1B.1: Remove and limit the number of structures located within the floodplain

Strategy 1B.1.1: Acquisition or purchase properties identified in the Village of Clarington Flood Mitigation Plan.

Status: COMPLETED

Strategy 1B.1.2: Provide educational and technical advice to all residents and businesses located in the floodplain to help them develop individual flood proofing, evacuation and damage reduction plans, as well as encouraging purchase of flood insurance

Status: COMPLETED

Strategy 1B.1.3: Ensure that any and all construction within the floodplain complies with all requirements of the village's flood damage prevention ordinance, including engineer's certification of elevation

Status: ONGOING

Objective 1B.2: Create emergency egress for Hedgedale residents.

Strategy 1B.2.1: Reopen Brown Hill Road or construct a new road for residents of Hedgedale to enable them to leave town if the regular egress roads and streets are flooded

Status: DEFERRED

Goal 2B: Reduce the impact of hazardous materials on the environment.

Objective 2B.1: Conduct studies to determine if environmental clean-up operations are necessary along the South Market Street Area.

Strategy 2B.1.1: Coordinate with the Ohio EPA or local engineering firms to conduct Phase II Environmental Assessments in appropriate areas

Status: ON-GOING Pending completion of Commodity Flow Study

GRAYSVILLE

Goal 1C: Reduce the negative effects of severe thunderstorms in Graysville.

Objective 1C.1: Increase public awareness that a severe thunderstorm is imminent.

Strategy 1C.1.1: Coordinate with the National Weather Service (NWS) to provide advanced warnings to residents of impending severe thunderstorm conditions.

Status: COMPLETED

Goal 2C: Reduce the effects of severe winter storms in Graysville.

Objective 2C.1: Maintain village roadways, in a safe condition during severe winter storms.

Strategy 2C.1.1: Establish contracts with private contractors to aid in snow removal from village roadways.

Status: DEFERRED This issue is currently adequately handled by local authorities.

LEWISVILLE, JERUSALEM AND STAFFORD

Goal 1D: Reduce the negative effect of tornadoes and severe windstorms in the Villages of Lewisville, Jerusalem, and Stafford.

Objective 1D.1: Reduce the potential for power outages as a result of severe winds.

Strategy 1D.1.1: Coordinate with the power company to prune trees near power lines reducing the potential for trees to fall on and break power lines.

Status: ONGOING Conducted by power company as part of regular right-of-way maintenance

Goal 2D: Reduce the negative impact that severe winter storms have on the Villages of Lewisville, Jerusalem, and Stafford.

Objective 2D.1: Maintain village roadways, in a safe condition during severe winter storms.

Strategy 2D.1.1: Establish contracts with local private contractors to aid in snow removal

Status: DEFERRED This issue is currently adequately handled by local authorities.

Strategy 2D.1.2: Construct snow fences in areas where snow drifting occurs, to limit the amount of snow on critical roadways

Status: DELETED

WILSON

Goal 1E: Lessen the effects of severe winter storms in Wilson Village.

Objective 1E.1: Minimize future damage from severe winter storms throughout Wilson by increasing control over construction activities.

Strategy 1E.1.1: Instate building codes and other general planning requirements that will regulate the materials used in construction with respect to snow and ice weight.

Status: DEFERRED This project has been deferred due to absence of established zoning authority.

Strategy 1E.1.2: Establish contracts with private contractors to aid in snow removal from village roadways.

Status: DEFERRED This issue is currently adequately handled by local authorities.

WOODSFIELD

Goal 1F: Reduce the negative effects of flooding in the Village of Woodsfield.

Objective 1F.1: Decrease upstream flooding as a result of constrictions and obstructions.

Strategy 1F.1.1: Consider increasing the size of culverts to allow water to discharge properly.

Status: ON-GOING

Strategy 1F.2.3: Examine the benefit of either decreasing the amount of impermeable surfaces or increasing the amount of permeable surfaces, as excessive amounts of paved areas or other such surfaces (impermeable) upstream can increase the amount and rate of water runoff that could be absorbed by natural vegetation (permeable).

Status: DELETED

TOWNSHIPS OF MONROE COUNTY

ADAMS

Goal 1a: Reduce the negative effects of flooding in Bazetta and Mecca Townships.

Objective 1a.1: Lessen flood damage by preserving the natural course of waterways.

Strategy 1a.1.1: Clean/drag Sunfish Creek, clearing log jams, trees and shrubs, and sediment bars.

Status: ONGOING

BENTON, BETHEL AND PERRY

Goal 1b: Reduce the negative effect of flooding in Benton, Bethel, and Perry Townships.

Objective 1b.1: Reduce flood damage in Benton, Bethel, and Perry Townships by providing advanced warning to the residents of the townships.

Strategy 1b.1.1: Consider installing stream gauges at several strategic locations, to monitor water levels.

Status: DEFERRED Awaiting funding and resources

Strategy 1b.1.2: Provide electronic weather alert pagers that can be monitored by at least one (1) township trustee in each township

Status: DELETED This project has been deleted due to use of DeltAlert system and social media resources.

Goal 2b: Reduce human injuries and property damage as a result of severe thunderstorms in Benton, Bethel, and Perry Townships.

Objective 2b.1: Provide advanced warning to the residents of Benton, Bethel, and Perry Townships when severe thunderstorms are imminent.

Strategy 2b.1.1: Invest or otherwise make available an early warning system and train personnel to use it.

Status: COMPLETED

Goal 3b: Reduce the negative affects of severe winter storms in Benton, Bethel, and Perry Townships.

Objective 3b.1: Maintain village roadways, in a safe condition during severe winter storms.

Strategy 3b.1.1: Establish contracts with local private contractors to aid in snow removal.

Status: DEFERRED This issue is currently adequately handled by local authorities.

CENTER

Goal 1c: Reduce the negative effects of flooding in Center Township.

Objective 1c.1: Conduct structural projects to reduce the affects of flooding in Center Township.

Strategy 1c.1.1: Conduct acquisition and relocation projects within Center Township.

Status: ON-GOING Conducted on an as needed basis.

Strategy 1c.1.2: Consider increasing the size of culverts to allow water to discharge properly.

Status: ON-GOING Several projects have been initiated as part of a county-wide project.

FRANKLIN

Goal 1d: Reduce the negative effect of flooding in Franklin Township.

Objective 1d.1: Reduce the number of structures located within flood prone areas in Franklin Township

Strategy 1d.1.1: Conduct acquisition and relocation projects in flood prone area of Franklin Township.

Status: COMPLETED

Goal 2d: Reduce property damage as a result of severe winter storms in Franklin Township.

Objective 2d.1: Increase awareness severe winter storms imminent.

Strategy 2d.2.1: Provide electronic weather alert pagers to at least one (1) township trustee to monitor impending weather conditions and prepare accordingly.

Status: DELETED This project has been deleted due to use of DeltAlert system and social media.

GREEN AND LEE

Goal 1e: Reduce human injuries and property damage as a result of flooding in Green and Lee Townships.

Objective 1e.1: Increase knowledge as to steps that can be taken to lessen flood damage.

Strategy 1e.1.1: Encourage the use of check valves, sump pumps, and other backflow prevention devices in homes and buildings.

Status: COMPLETED This project has been completed through information available on the county's website.

JACKSON

Goal 1f: Reduce the negative effects of flooding in Jackson Township.

Objective 1f.1: Reduce flood damage by undertaking structural projects to lessen obstructions to the flow of water.

Strategy 1f.1.1: Consider increasing the size of culverts to allow water to discharge properly, and/or replacing old culverts under State Route 7.

Status: COMPLETED

Objective 2f.1: Increase knowledge of steps that can be taken to lessen losses as a result of land subsidence.

Strategy 2f.1.1: Encourage residents wanting to build a sloped ground in subsidence prone areas to have an engineering study done to determine construction requirements.

Status: ONGOING Information available through the County Floodplain administrator and ODNR website

MALAGA AND SUNSBURY

Goal 1g: Protect Malaga and Sunsbury Townships agricultural assets from the negative effects of drought.

Objective 1g.1: Increase public awareness as to the agricultural effects of drought, as well as the ramifications to the public water supply.

Strategy 1g.1.1: Educate local residents on the benefits of conserving water at all times, not just during a drought.

Status: COMPLETED This project has been completed through information available on the county's website.

Objective 1g.2: Develop methods for the procurement of emergency water supplies in Malaga and Sunsbury Townships.

Strategy 1g.2.1: Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Malaga and Sunsbury Townships.

Status: COMPLETED Mutual aid agreements made with surrounding water suppliers.

OHIO AND SALEM

Goal 1h: Reduce the negative effects of flooding in Ohio and Salem Townships.

Objective 1S.1: Lessen flood damage by preserving the natural course of waterways.

Strategy 1h.1.1: Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.

Status: ON-GOING

Strategy 1h.1.2: Construct floodwalls using gabion baskets in flood prone areas of Ohio and Salem Townships.

Status: COMPLETED

SENECA

Goal 1i: Lessen the negative effects of severe wind and tornadoes in Seneca Township.

Objective 1i.1: Increase public awareness that severe wind and tornadoes are imminent.

Strategy 1i.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

Status: COMPLETED This project has been completed due to use of DeltAlert system and social media.

Goal 2i: Lessen the negative effects of severe winter storms in Seneca Township.

Objective 2i.1: Reduce the number of injuries and fatalities as a result of severe winter weather

Strategy 2i.1.1: Establish and encourage the use of heated shelter sites for vulnerable populations and stranded motorists/travelers in Seneca Township

Status: COMPLETED

SUMMIT

Goal 1j: Reduce the negative effects of flooding in Summit Township.

Objective 1j.1: Lessen flood damage by preserving the natural course of waterways.

Strategy 1j.1.1: Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.

Status: ON-GOING This project has been initiated; however, is not complete.

Objective 1j.2: Reduce flood damage by undertaking structural projects to lessen obstructions to the flow of water.

Strategy 1j.2.1: Consider increasing the size of culverts to allow water to discharge properly.

Status: COMPLETE

SWITZERLAND

Goal 1k: Develop a warning system throughout Switzerland Township.

Objective 1k.1: Increase the area and decrease the time in which a warning can be announced.

Strategy 1k.1.1: Encourage the use of NOAA weather radios, which provide continuous National Weather Service (NWS) forecasts, warnings, and other crucial weather information.

Status: COMPLETED This project has been completed due to use of DeltAlert system and social media.

Strategy 1k.1.2: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems, to allow local officials to send out emergency information targeted to a specific area.

Status: COMPLETED This project has been completed due to use of DeltAlert system and social media.

WASHINGTON

Goal 1l: Provide advanced warning to the population of Washington Township.

Objective 1l.1: Develop a warning system that will increase the area and decrease the time in which a warning can be given.

Strategy 1l.1.1: Encourage the use of NOAA weather radios, which provide continuous National Weather Service (NWS) forecasts, warnings, and other crucial weather information.

Status: COMPLETED This project has been completed due to use of DeltAlert system and social media.

Strategy 1l.1.2: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems, to allow local officials to send out emergency information targeted to a specific area.

Status: COMPLETED This project has been completed due to use of DeltAlert system and social media.

WAYNE

Goal 1m: Lessen the amount of human injuries and property damage as a result of flooding in Wayne Township.

Objective 1m.1: Provide advanced warning to the residents of Wayne Township during flooding events.

Strategy 1m.1.1: Consider installing stream gauges at several strategic locations, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.

Status: DEFERRED This project has been deferred due to lack of funding.

Objective 1m.2: Reduce flood damage by conducting structural projects to lessen obstructions to the flow of water.

Strategy 1m.2.1: Consider increasing the size of culverts to allow water to discharge properly.

Status: ON-GOING

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.

This portion of the plan builds on the strategies list presented in Section 3.0. Whereas Section 3.0 simply lists Monroe County's mitigation goals, objectives, and strategies, this section analyzes those strategies as projects and discusses how they should be implemented. Each strategy is listed along with a timeframe, primary coordinator, support agencies, potential funding source (and cost estimate), and its current status. Strategies are also categorized by six (6) different types of mitigation projects. (*NOTE: "Strategies" are considered mitigation "projects".)

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

It is important to note that the cost estimates are tentative and meant as a starting point for research on project feasibility. More specifically, these cost estimates are only ranges of probable project costs; all figures are approximations. At the time the implementation of any strategy is considered, a full cost estimate should be sought prior to securing funding. The Benefit-Cost Review was emphasized in the prioritization process. Mitigation actions were evaluated by their pros and cons, which are represented as costs and benefits.

Finally, as a navigational note, this section only contains *current* mitigation projects (organized by jurisdiction). If the status indicator in Section 3.0 classified as project as "Completed", "Deleted", or "Deferred", it will *not* be listed below (unless the Hazard Mitigation Core Planning Committee chose to re-list the project because of a future benefit). As a result, the strategy numbers may not run consecutively (e.g., Strategy X.1.5 may follow Strategy X.1.3).

MONROE COUNTY

Strategy 1.1.1: Coordinate with the Ohio Department of Natural Resources (ODNR), Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Monroe County as a result of a change in circumstances not in existence at the time of the initial classification to ensure adequate safety according to the potential for downstream damage.

Timeframe: Start: 2012 End: 2017

Funding ODNR quite possibly has items such as this budgeted as this project
(*Cost Estimate*): would fall under the responsibilities of ODNR personnel. (N/A)

Primary Coordinator: ODNR

Support Agency: Dam Owner

Mitigation Type: Prevention

Status: Jurisdictions throughout Monroe County comply with ODNR and other dam safety regulations accordingly. The CPC elected to re-list this project because other projects under this goal may result in the “changes in circumstances” noted by this project.

Strategy 2.1.1: Develop an informational brochure to distribute to local farmers and residents.

Timeframe: Start: 2012 End: 2017

Funding USDA, If necessary (\$3,000 for publication and distribution, if USDA
(*Cost Estimate*): does not already have such materials printed).

Primary Coordinator: Natural Resource Conservation Service (NRCS)

Support Agency: Farm Bureau

Mitigation Type: Public Education & Awareness

Status Description: This strategy is deferred due to insufficient funding available.

Strategy 2.1.2: Educate local residents on the benefits of conserving water at all times, not just during a drought.

Timeframe: Start: 2012 End: 2017

Funding Local funding, PDM (\$3,000 for publication and distribution of
(*Cost Estimate*): informative materials.

Primary Coordinator: Monroe County EMA

Support Agency: Local Public Service Districts

Mitigation Type: Public Education & Awareness

Status Description: Conducted on an annual basis and as necessary, through the State, and local Public Service Districts.

Strategy 2.2.1: Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Monroe County.

Timeframe: Start: 2012 End: 2017

Funding Coordinating mutual aid agreements will require no funding; however,
(*Cost Estimate*): initiating any sort of agreement may require local funding. (N/A)

Primary Coordinator: Affected Jurisdictions

Support Agency: Fire Departments

Mitigation Type: Emergency Services

Status: This project is on-going as local fire departments are developing a regional capability to supply each other with emergency water. Resource Management Section can obtain emergency water supplies through resource requests to the Ohio EMA.

Strategy 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 pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

Timeframe: Start: 2012 End: 2017

Funding PDM, Local Funding (*Up to \$3,000 for publication and distribution of*
(*Cost Estimate*): *informative materials.*)

Primary Coordinator: MCEMA, Monroe County Health Dept., Emergency Services

Support Agency: Ohio Seismic Network (ODNR)

Mitigation Type: Public Education and Awareness

Status: This project is on-going as part of periodic EPI campaigns sponsored by the MCEMA and other emergency services organizations and the recent addition of the Monroe County Health Department (e.g., regularly-updated websites, etc.). The CPC elected to re-list this project with more general language to afford those sponsoring information campaigns greater flexibility. Also, other emergency services organizations were added as coordinating agencies.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.

Timeframe: **Start:** 2012 **End:** 2017

Funding PDM, HMGP, Local funding (Up to \$3,000 per sensor).
(*Cost Estimate*):

Primary Coordinator: Utility Providers

Support Agency: MCEMA

Mitigation Type: Property Protection

Status: This project is currently deferred. The emergency services sector is still coordinating with local utilities on this strategy.

Strategy 4.2.2: Coordinate with the Monroe County Health Department to develop an immunization program to help prevent the spread of communicable diseases.

Timeframe: **Start:** 2012 **End:** 2017

Funding Local funding.
(*Cost Estimate*):
Primary Coordinator: Monroe County Health Department

Support Agency: Municipal Health Departments

Mitigation Type: Emergency Services

Status: This project is new and was developed during the update process.

Strategy 5.1.1: Clean or dredge creeks and streams, clearing log jams, trees, shrubs, and sediment bars.

Timeframe: **Start:** Oct. 2011 **End:** Sept. 2012
Funding NEG (\$350,000 awarded for this project)
(*Cost Estimate*):
Primary Coordinator: MCEMA
Support Agency: Monroe County Commission
Mitigation Type: Prevention
Status: This strategy is currently on-going

Strategy 5.2.1: Coordinate with local and rural property owners to gain access to flooded property for recovery purposes after a flood has occurred.

Timeframe: **Start:** 2012 **End:** 2017
Funding No additional funding required.
(*Cost Estimate*):
Primary Coordinator: Monroe County Commission
Support Agency: MCEMA
Mitigation Type: Emergency Services
Status: This project has been completed, and is on-going.

Strategy 5.2.2: Facilitate the formation of flood task forces throughout the county to address flooding problems on a regular basis.

Timeframe: **Start:** 2012 **End:** 2017
Funding The formation of citizens' action groups would not require additional
(*Cost Estimate*): funding. However, projects that are undertaken may require funding.
Primary Coordinator: LEPC
Mitigation Type:
Status: This project has been deferred due to political and environmental issues.

Strategy 5.3.1: Enforce building and development ordinances.

Timeframe: Start: 2012 End: 2017

Funding Developing and implementing ordinances requires no additional
(*Cost Estimate*): funding; however, administrative aspects of code enforcement may require local funding.

Primary Coordinator: County Commission

Mitigation Type: Prevention

Status: This project has been deferred due to lack of a Zoning Authority

Strategy 5.4.1: Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.

Timeframe: Start: Sept. 2011 End: Sept. 2016

Funding FMA,PDM,HMGP (up to \$300,000 for replacement of up to 15
(*Cost Estimate*): culverts)

Primary Coordinator: County Commissioners, ODOT

Mitigation Type: Structural, Prevention

Status: Several projects have been initiated throughout the county.

Strategy 6.1.1: Coordinate efforts with local media providers to post advance warnings of hailstorms.

Timeframe: Start: 2012 End: 2017

Funding Coordination should require no additional funding, especially since
(*Cost Estimate*): the Emergency Alert System (EAS) is already operational. (N/A)

Primary Coordinator: MCEMA

Support Agency: Affected Jurisdictions

Mitigation Type: Public Education and Awareness

Status: Conducted on an as-needed basis. This project was completed as necessary as part of Monroe County's participation in the Emergency Alert System (EAS). The CPC elected to re-list this project and list it as on-going.

Strategy 8.1.1: Develop, implement and enforce building codes as well as educate the public to these codes and land use planning.

Timeframe: Start: 2012 End: 2017

Funding No funding needed for development of codes; however, local funding
(*Cost Estimate*): may be required for enforcement and administrative duties.

Primary Coordinator: County Commission

Mitigation Type: Prevention

Status: This project has been deferred due to absence of established zoning authority.

Strategy 8.2.1: Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location.

Timeframe: Start: 2012 End: 2017

Funding Coordination should require no significant additional funding;
(*Cost Estimate*): however, a project would require significant funding, primarily from ODNR through the AML&R program. (*Up to \$2,000,000*)

Primary Coordinator: Affected Jurisdiction

Support Agency: ODNR

Mitigation Type: Property Protection

Status: This project was completed and is on-going. Small-scale reclamation projects have been conducted by the ODNR. The HMC elected to re-list this project because of the presence of the hazard. The coordinating agency was changed to "Affected Jurisdiction" to better reflect actual responsibilities and to allow for greater flexibility.

Strategy 8.2.2: Encourage developers and residents to avoid large significant developments in areas especially prone to mine subsidence.

Timeframe: Start: 2012 End: 2017

Funding Encouraging individuals will not result in significant costs for local
(*Cost Estimate*): government

Primary Coordinator: Monroe County EMA

Support Agency: Local economic development organizations

Mitigation Type: Public education

Status: This project has been deferred due to absence of established zoning authority.

Strategy 9.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions.

Timeframe: Start: 2012 End: 2017

Funding Coordination should require no significant additional funding. (N/A)
(*Cost Estimate*):
Primary Coordinator: MCEMA, NWS

Mitigation Type: Public Education and Awareness

Status: The project has been completed via the on-going coordination between the MCEMA and the NWS. The CPC elected to re-list this project since it is easily-implementable and likely to continue. Conducted on an as-needed basis.

Strategy 9.1.3: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.

Timeframe: Start: 2012 End: 2017

Funding Coordination should require no additional funding, especially since
(*Cost Estimate*): the EAS is already operational. (N/A)
Primary Coordinator: MCEMA and local law enforcement agencies

Support Agency: Affected Jurisdictions

Mitigation Type: Public Education and Awareness

Status: This project was completed as necessary as part of Monroe County's participation in the Emergency Alert System (EAS). The CPC elected to re-list this project and list it as on-going.

Strategy 10.1.1: Coordinate with the National Weather Services (NWS) to warn residents of impending severe winds and possible tornado conditions.

Timeframe: Start: 2012 End: 2017

Funding Coordination should require no significant additional funding. (N/A)
(*Cost Estimate*):
Primary Coordinator: MCEMA and NWS

Mitigation Type: Public Education and Awareness

Status: Conducted on an as-needed basis. The project has been completed via the on-going coordination between the MCEMA and the NWS. The CPC elected to re-list this project since it is easily-implementable and likely to continue.

Strategy 10.2.1: Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.

Timeframe: **Start:** 2012 **End:** 2017

Funding No funding needed for development of codes; however, local funding
(*Cost Estimate*): may be required for enforcement and administrative duties.

Primary Coordinator: County Commission

Mitigation Type: Prevention, Property Protection

Status: This project has been deferred due to absence of established zoning authority.

Strategy 10.2.3: Purchase and install fixed-in-place 35kw generators (gen-sets) at emergency services facilities and the Monroe County EMA Office.

Timeframe: **Start:** Sept. 2010 **End:** May 2015

Funding Local Funding (Up to \$15,000 per generator, installed)
(*Cost Estimate*):

Primary Coordinator: Monroe County Commission

Support Agency: MCEMA

Mitigation Type: Prevention

Status: This strategy initiated and being completed as local funding permits.

Strategy 13.1.1: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.

Timeframe: **Start:** 2012 **End:** 2017

Funding No additional funding required
(*Cost Estimate*):

Primary Coordinator: MCEMA, Ohio State Fire Marshall

Support Agency: Local Fire Departments

Mitigation Type: Public Education and Awareness

Status: This is an on-going project that is conducted through the State Fire Marshal's Office, and local fire departments.

Strategy 14.1.1: Assess the feasibility of conducting a commodity flow study.

Timeframe: Start: 2012 End: 2014

Funding SERC, HMEP, Local Funding (*Assessing feasibility would require no*
(*Cost Estimate*): *additional funding; a study itself, however, may cost up to \$15,000.*)

Primary Coordinator: Local Emergency Planning Committee (LEPC)

Support Agency: MCEMA

Mitigation Type: Emergency Services

Status: The Monroe County LEPC is in the process of updating the county's Commodity Flow Study which includes highway and rail analysis.

Strategy 14.1.4: Increase public education and awareness regarding hazardous materials incidents.

Timeframe: Start: 2012 End: 2017

Funding PDM, SERC (approximately \$3,000 for brochure development and
(*Cost Estimate*): printing)

Primary Coordinator: LEPC, MCEMA

Mitigation Type: Public Education and Awareness

Status: Conducted on an annual basis by the LEPC, and information is posted on the county's website. The CPC elected to re-list it to support the on-going efforts of the LEPC.

Strategy 14.2.1: Coordinate with the Local Emergency Planning Committee (LEPC) to update existing hazardous materials emergency plans that serve as a guide for preparing for and responding to chemical emergencies.

Timeframe: Start: 2012 End: 2017

Funding SERC, HMPG (approximately \$5,000)
(*Cost Estimate*):

Primary Coordinator: MCEMA, LEPC

Support Agency: Emergency Services Organizations

Mitigation Type: Emergency Services

Status: This project has been continued as part of a major re-organization of the county's hazmat team (to include how equipment and other resources are distributed as well as revised membership requirements).

Strategy 15.2.1: Establish field medical centers to offer medical attention and counseling to affected populations in the event of a terrorist event or disasters.

Timeframe: Start: 2012 End: 2017

Funding CDBG, PDM, HMGP, Local Funding (Up to \$1,500,000 per system).
(*Cost Estimate*):
Primary Coordinator: County Commission, MCEMA, MCHD
Support Agency: Local hospitals
Mitigation Type: Emergency Services
Status: This project has been initially started with the recent acquisition of a 25 bed portable medical facility.

Strategy 15.2.3: Continue education and training efforts of first responders and emergency personnel.

Timeframe: Start: 2012 End: 2017

Funding FEMA, DHS, Local Funding (\$1,500 to \$10,000 per event)
(*Cost Estimate*):
Primary Coordinator: Local ARC Chapter, MCEMA,
Mitigation Type: Emergency Services
Status: This project continues as funding is available.

Strategy 15.2.4: Consider providing heightened security at public gatherings, special events, and critical community facilities and industries.

Timeframe: Start: 2012 End: 2017

Funding Local Funding (cost is dependent on number of additional security
(*Cost Estimate*): personnel required and varies, possibly up to \$5,000/ event)
Primary Coordinator: MCEMA, Local Law Enforcement
Support Agency: County Commission
Mitigation Type: Prevention, Emergency Services
Status: Planning per occurrence has been addressed and is being implemented.

VILLAGES OF ANTIOCH, BEALLSVILLE AND MILTONSBURG

Strategy 2A.1.1: Consider installing stream gauges at several strategic locations, in conjunction with NOAA weather radios, and EAS broadcasts, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.

Timeframe: Start: 2012 End: 2017

Funding Local funding, NOAA
(*Cost Estimate*):

Primary Coordinator: Mayor, NOAA, MCEMA

Mitigation Type: Prevention

Status: This project currently deferred due to lack of funding.

Strategy 3A.1.2: Develop contracts, or mutual aid agreements with private contractors to aid in snow removal from village roads.

Timeframe: Start: 2012 End: 2017

Funding Local funding. Development should have no additional funding
(*Cost Estimate*): requirements

Primary Coordinator: Village Council

Mitigation Type: Property Protection

Status: This is currently deferred but re-listed to show acknowledgement of issue. This task is currently adequately handled by the local authorities

VILLAGE OF CLARINGTON

Strategy 1B.2.1: Reopen Brown Hill Road or construct a new road for residents of Hedgedale to enable them to leave town if the regular egress roads and streets are flooded

Timeframe: Start: 2012 End: 2017

Funding FEMA – FMA (\$500,000 to \$2 million)
(*Cost Estimate*):

Primary Coordinator: Village Council, ODOT, County Commission

Mitigation Type: Structural Project

Status: This project currently deferred due to lack of funding.

Strategy 2B.1.1: Coordinate with the Ohio EPA or local engineering firms to conduct Phase II Environmental Assessments in appropriate areas.

Timeframe: Start: 2012 End: 2017

Funding SERC, HMEP, Local Funding (*Assessing feasibility would require no*
(*Cost Estimate*): *additional funding; a study itself, however, may cost up to \$15,000.*)

Primary Coordinator: Village Council, MCEMA

Mitigation Type: Prevention

Status: Pending completion of Commodity Flow Study

VILLAGE OF GRAYSVILLE

Strategy 2C.1.1: Establish contracts with private contractors to aid in snow removal from village roadways.

Timeframe: Start: 2012 End: 2017

Funding Establishing contracts will not require significant funding.
(*Cost Estimate*):

Primary Coordinator: Village Council

Mitigation Type: Emergency Services

Status: This is currently deferred but re-listed to show acknowledgement of issue. This task is currently adequately handled by the local authorities

VILLAGES OF LEWISVILLE, JERUSALEM AND STAFFORD

Strategy 1D.1.1: Coordinate with the power company to prune trees near power lines, reducing the potential for trees to fall and break the power lines.

Timeframe: Start: 2012 End: 2017

Funding Local funding (Approximately \$2,500)
(*Cost Estimate*):

Primary Coordinator: Village Council, First Energy

Mitigation Type: Prevention

Status: This is conducted as part of the power company's right-of-way maintenance

Strategy 2D.1.1: Establish contracts with local private contractors to aid in snow removal

Timeframe: Start: 2012 End: 2017

Funding Establishing contracts will not require significant funding.
(*Cost Estimate*):
Primary Coordinator: Village Council
Mitigation Type: Emergency Services
Status: This is currently deferred but re-listed to show acknowledgement of issue. This task is currently adequately handled by the local authorities

VILLAGE OF WILSON

Strategy 1E.1.1: Instate building codes and other general planning requirements that will regulate the materials used in construction with respect to snow and ice weight.

Timeframe: Start: 2012 End: 2017

Funding No funding needed for development of codes; however, local funding
(*Cost Estimate*): may be required for enforcement and administrative duties.
Primary Coordinator: County Commission
Mitigation Type: Prevention, Property Protection
Status: This project has been deferred due to absence of established zoning authority.

Strategy 1E.1.2: Establish contracts with local private contractors to aid in snow removal

Timeframe: Start: 2012 End: 2017

Funding Establishing contracts will not require significant funding.
(*Cost Estimate*):
Primary Coordinator: Village Council
Mitigation Type: Emergency Services
Status: This is currently deferred but re-listed to show acknowledgement of this issue. This task is currently adequately handled by the local authorities

VILLAGE OF WOODSFIELD

Strategy 1F.1.1: Consider increasing the size of culverts to allow water to discharge properly.

Timeframe: **Start:** 2012 **End:** 2017

Funding FMA,PDM,HMGP (up to \$300,000 for replacement of up to 15
(*Cost Estimate*): culverts throughout Monroe County)

Primary Coordinator: Village Council

Support Agency: County Commissioners, ODOT

Mitigation Type: Structural, Prevention

Status: Several projects have been initiated as part of a county-wide project.

TOWNSHIPS OF MONROE COUNTY

ADAMS

Strategy 1a.1.1: Clean/drag Sunfish Creek, clearing log jams, trees and shrubs, and sediment bars.

Timeframe: **Start:** Oct. 2011 **End:** Sept. 2012

Funding NEG (\$350,000 awarded for this project)
(*Cost Estimate*):

Primary Coordinator: MCEMA

Support Agency: Monroe County Commission

Mitigation Type: Prevention

Status: This strategy is currently on-going

BENTON, BETHEL AND PERRY

Strategy 1b.1.1: Consider installing stream gauges at several strategic locations, to monitor water levels.

Timeframe: **Start:** 2012 **End:** 2017

Funding Local funding, NOAA
(*Cost Estimate*):

Primary Coordinator: Township Trustee's, NOAA, MCEMA

Mitigation Type: Prevention

Status: This project currently deferred due to lack of funding

Strategy 1E.1.2: Establish contracts with local private contractors to aid in snow removal

Timeframe: Start: 2012 End: 2017

Funding Establishing contracts will not require significant funding.
(*Cost Estimate*):
Primary Coordinator: Township Trustee's
Mitigation Type: Emergency Services
Status: This is currently deferred but re-listed to show acknowledgement of this issue. This task is currently adequately handled by the local authorities

CENTER

Strategy 1c.1.1: Conduct acquisition and relocation projects within Center Township.

Timeframe: Start: 2012 End: 2017

Funding AFGP, Local funding (\$20,000 to \$250,000, contingent upon
(*Cost Estimate*): equipment needed.
Primary Coordinator: Township Trustees, Floodplain Administrator
Mitigation Type: Emergency Services
Status: Conducted on an as needed basis.

Strategy 1c.1.2: Consider increasing the size of culverts to allow water to discharge properly.

Timeframe: Start: 2012 End: 2017

Funding FMA,PDM,HMGP (up to \$300,000 for replacement of up to 15
(*Cost Estimate*): culverts throughout Monroe County)
Primary Coordinator: Township Trustee's
Support Agency: County Commissioners, ODOT
Mitigation Type: Structural, Prevention
Status: Several projects have been initiated as part of a county-wide project.

JACKSON

Strategy 2f.1.1: Encourage residents wanting to build a sloped ground in subsidence prone areas to have an engineering study done to determine construction requirements.

Timeframe: **Start:** 2012 **End:** 2017

Funding Local Funding
(*Cost Estimate*):

Primary Coordinator: ODNR, Floodplain Administrator

Mitigation Type: Public Education and Awareness

Status: Information available through the County Floodplain administrator and ODNR website

OHIO AND SALEM

Strategy 1h.1.1: Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.

Timeframe: **Start:** Oct. 2011 **End:** Sept. 2012

Funding NEG (\$350,000 awarded for this project)
(*Cost Estimate*):

Primary Coordinator: MCEMA

Mitigation Type: Monroe County Commission

Status: Prevention

SUMMIT

Strategy 1j.1.1: Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.

Timeframe: **Start:** Oct. 2011 **End:** Sept. 2012

Funding NEG (\$350,000 awarded for this project)
(*Cost Estimate*):

Primary Coordinator: MCEMA

Mitigation Type: Monroe County Commission

Status: Prevention

WAYNE

Strategy 1m.1.1: Consider installing stream gauges at several strategic locations, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.

Timeframe: Start: 2012 End: 2017

Funding Local funding, NOAA
(*Cost Estimate*):
Primary Coordinator: Township Trustee's, NOAA, MCEMA

Mitigation Type: Prevention

Status: This project currently deferred due to lack of funding

Strategy 1c.1.2: Consider increasing the size of culverts to allow water to discharge properly.

Timeframe: Start: 2012 End: 2017

Funding FMA,PDM,HMGP (up to \$300,000 for replacement of up to 15
(*Cost Estimate*): culverts throughout Monroe County)

Primary Coordinator: Township Trustee's

Support Agency: County Commissioners, ODOT

Mitigation Type: Structural, Prevention

Status: Several projects have been initiated as part of a county-wide project.

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 Sections 3.0 and 4.1. Each current project is listed with a “primary coordinator” in Section 4.1 that should be responsible for the overall implementation of the project.

Project (i.e., strategy) prioritization occurred in three (3) phases. First, the Monroe County Core Planning Committee (CPC) ranked the 15 hazards considered by this plan, with “1” being the one to which they felt the county was most vulnerable and “15” being the hazard to which they felt the county to be least vulnerable.

Second, the CPC ranked the projects under each hazard by priority. Projects receiving a rank of “1” were considered to be the highest priority project *for that particular hazard*. The following criteria (roughly corresponding to the STAPLEE method) were used as considerations when prioritizing projects.

- **Social Impacts:** Consider whether the public would support implementation of the project. If so, priority likely rises.
- **Technical Feasibility:** Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.
- **Administrative Requirements:** Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.
- **Political Impacts:** Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.
- **Legal Ramifications:** Consider whether the project can be lawfully implemented. If not, the project cannot be listed.
- **Environmental Impacts:** Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impact, priority would be likely to fall.
- **Economic Impacts/Cost Benefit:** A brief “benefit cost review” per *FEMA Publication 386-5: Using Benefit Cost Review in Mitigation Planning* was

conducted for each project to determine the “pros” and “cons” of each project as it related to project prioritization. Maximizing the use of available funds would positively affect a project’s priority.

Finally, to generate a complete, prioritized project list, the prioritized list of projects corresponding to the highest ranked hazard (i.e., the one to which the CPC felt the county was most vulnerable) was listed, followed by the prioritized list of projects corresponding to the second-highest ranked hazard, and so on. The CPC felt that organizing the priorities in this manner allowed for the greatest flexibility when implementing mitigation projects (yet still maintained compliance with state and federal prioritization requirements). *NOTE: Municipal priorities are not categorized by hazards because of the smaller number of projects under municipal coordination.

MONROE COUNTY

PRIORITY HAZARD 1: FLOODING			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
5.3.2	Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.	1	1
5.1.1	Clean or dredge creeks and streams, clearing log jams, trees, shrubs, and sediment bars.	2	2
5.4.1	Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.	2	3
5.3.1	Enforce building and development ordinances.	3	4
5.2.1	Coordinate with local and rural property owners to gain access to flooded property for recovery purposes after a flood has occurred.	4	5
5.2.2	Facilitate the formation of flood task forces throughout the county to address flooding problems on a regular basis.	4	6
PRIORITY HAZARD 2: SEVERE WINTER STORM			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
11.1.1	Institute countywide building codes and other general planning requirements that will regulate the materials used in construction with respect to snow and ice weight.	2	7

Table 4.1

11.1.2	Enforce existing building codes that are already in place	2	8
PRIORITY HAZARD 3: SEVERE WIND / TORNADO			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
10.1.1	Coordinate with the National Weather Services (NWS) to warn residents of impending severe winds and possible tornado conditions.	1	9
10.2.3	Purchase and install fixed-in-place 35kw generators or (gen-sets) at emergency services facilities and the Monroe County EMA Office.	2	10
10.2.1	Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.	3	11
PRIORITY HAZARD 4: SEVERE THUNDERSTORM			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
9.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions.	1	12
9.1.3	Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.	2	13
PRIORITY HAZARD 5: DAM FAILURE			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
1.1.1	Coordinate with the Ohio Department of Natural Resources (ODNR), Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Monroe County as a result of a change in circumstances not in existence at the time of the initial classification to ensure adequate safety according to the potential for downstream damage.	1	14
PRIORITY HAZARD 6: HAZARDOUS MATERIALS			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
14.1.4	Increase public education and awareness regarding hazardous materials incidents.	2	15
14.1.1	Assess the feasibility of conducting a commodity flow study.	1	16

Table 4.1 continued

PRIORITY HAZARD 7: TERRORISM			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
15.2.3	Continue the education and training of first responders and emergency personnel.	1	17
15.2.1	Establish field medical centers to offer medical attention and counseling to affected populations in the event of a terrorist event or disasters.	2	18
15.1.5	Consider providing heightened security at public gatherings, special events, and critical community facilities and industries.	3	19
PRIORITY HAZARD 9: HAILSTORM			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
6.1.1	Coordinate efforts with local media providers to post advance warnings of hailstorms.	1	20
PRIORITY HAZARD 10: DROUGHT			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
2.1.2	Educate local residents on the benefits of conserving water at all times, not just during a drought.	1	21
2.1.1	Develop an informational brochure to distribute to local farmers and residents.	2	22
PRIORITY HAZARD 11: EPIDEMIC			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
4.2.2	Coordinate with the Monroe County Health Department to develop an immunization program to help prevent the spread of communicable diseases.	1	23
PRIORITY HAZARD 12: EARTHQUAKE			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
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 pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	1	24
3.2.1	Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.	2	25
PRIORITY HAZARD 13: WILDFIRE			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
13.1.1	Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.	1	26

Table 4.1 continued

PRIORITY HAZARD 14: LAND / MINE SUBSIDENCE			
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Hazard Priority</i>	<i>Overall Priority</i>
8.1.1	Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location.	1	27
8.2.2	Encourage developers and residents to avoid large significant developments in areas especially prone to mine subsidence.	2	28

Table 4.1 continued

VILLAGES OF ANTIOCH, BEALLSVILLE AND MILTONSBURG

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
2A.1.1	Consider installing stream gauges at several strategic locations, in conjunction with NOAA weather radios, and EAS broadcasts, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.	1
3A.1.2	Develop contracts, or mutual aid agreements with private contractors to aid in snow removal from village roads.	2

Table 4.2

VILLAGE OF CLARINGTON

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1B.1.3	Ensure that any and all construction within the floodplain complies with all requirements of the village's flood damage prevention ordinance, including engineer's certification of elevation	1
1B.2.1	Reopen Brown Hill Road or construct a new road for residents of Hedgedale to enable them to leave town if the regular egress roads and streets are flooded	2

Table 4.3

VILLAGE OF GRAYSVILLE

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
2C.1.1	Establish contracts with private contractors to aid in snow removal from village roadways.	1

Table 4.4

VILLAGE OF LEWISVILLE , JERUSALEM AND STAFFORD

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1D.1.1	Coordinate with the power company to prune trees near power lines reducing the potential for trees to fall on and break power lines.	1
2D.1.1	Establish contracts with local private contractors to aid in snow removal	2

Table 4.5

VILLAGE OF WILSON

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1E.1.1	Instate building codes and other general planning requirements that will regulate the materials used in construction with respect to snow and ice weight.	1
1E.1.2	Establish contracts with private contractors to aid in snow removal from village roadways.	2

Table 4.6

VILLAGE OF WOODSFIELD

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1F.2.1	Consider increasing the size of culverts to allow water to discharge properly.	1

Table 4.7

ADAMS TOWNSHIP

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1a.1.1	Clean/drag Sunfish Creek, clearing log jams, trees and shrubs, and sediment bars.	1

Table 4.8

BENTON, BETHEL, AND PERRY TOWNSHIPS

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1b.1.1	Consider installing stream gauges at several strategic locations, to monitor water levels.	1
3b.1.1	Establish contracts with local private contractors to aid in snow removal.	2

Table 4.9

CENTER TOWNSHIP

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1c.1.2	Consider increasing the size of culverts to allow water to discharge properly.	1
1c.1.1	Conduct acquisition and relocation projects within Center Township.	2

Table 4.10

JACKSON TOWNSHIP

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
2f.1.1	Encourage residents wanting to build a sloped ground in subsidence prone areas to have an engineering study done to determine construction requirements.	1

Table 4.11

OHIO AND SALEM TOWNSHIPS

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1h.1.1	Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.	1

Table 4.12

SUMMIT TOWNSHIP

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1j.1.1	Clean/drag creeks and streams, clearing log jams, trees and shrubs, and sediment bars.	1

Table 4.13

WAYNE TOWNSHIP

HAZARD PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Priority</i>
1m.2.1	Consider increasing the size of culverts to allow water to discharge properly.	1
1m.1.1	Consider installing stream gauges at several strategic locations, to serve as a flood warning system to provide citizens with additional time to escape floodwaters.	2

Table 4.14

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.

5.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

The Monroe County Emergency Management Agency (MCEMA), Core Planning Committee (CPC), and jurisdictions adopting this plan have established a method for the systematic and periodic review of this document. The MCEMA and CPC will monitor the performance of the plan in several ways, such as analyzing social, technical, administrative, economic, and environmental criteria. Participating jurisdictions will also evaluate mitigation strategies as the chance to implement them arises.

The MCEMA and CPC have decided to formally update this plan at five (5) year intervals, regardless of the number of hazard events that occur during that period. As a result of this update, the plan will be resubmitted in 2017, 2022, 2027, etc.

The MCEMA will serve as the coordinator of the updates. As such, the MCEMA will contact participating jurisdictions to schedule meetings, facilitate virtual or other discussions, obtain lists of completed projects, collected updated asset inventory data, etc. It is also significant to note that a number of meetings may be held as, and if, mitigation strategies are implemented, but such meetings would only anecdotally discuss this document (to ensure that projects to be implemented are included within). Further, such sections as 2.0: Risk Assessment may be reviewed and utilized for other planning processes, as it contains a comprehensive overview of hazard risks in Monroe County at a macro level.

The formal updating process will consist of a series of meetings (either face-to-face or virtual) to determine the plan's effectiveness at determining hazard susceptibility areas. The effectiveness of any implemented mitigation strategies should also be determined. Successful, implemented strategies can then be removed from the plan.

Finally, the CPC should discuss new mitigation strategies, quite possibly based on recent hazard events.

As mentioned above, the CPC will monitor the performance of the plan based on several criteria. For instance, the committee should consider revising mitigation strategies if it appears that the plan is failing according to one (1) of the following measures (again, roughly corresponding to the STAPLEE method).

- **Social:** Has the public perceived that the project has positively lessened hazard-related losses? Has implementing the project adversely affected any segment of the population?
- **Technical:** Are the mitigation strategies proving to be technically feasible? Are the mitigation strategies eliminating problems rather than creating new, different problems?
- **Administrative/Legal:** Do the mitigation strategies conform with local, state, and federal policies as they are implemented?
- **Economic:** Has the cost/benefit ratio of implementing the project been acceptable? Has implementing a project adversely affected a particular segment of the local economy?
- **Environmental:** Does implementing mitigation strategies create any adverse environmental conditions? Do mitigation strategies represent sound environmental practices?

Other measures may be used to guide the discussions on the primary measures listed above. These measures include the following.

- **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?
- **Political Impacts:** Has implementing a particular project (or type of project) been delayed due to the political consequences of its implementation?
- **Overall Positive Impacts:** Have local leaders generally agreed that implementing a particular project was beneficial to the community?

To date, 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 only administrative issue that has hampered the implementation of mitigation projects has been confusion as to the specific function of this document. CPC participation during the original plan development (and the updating process) was excellent; however, many of the specific departments within the participating jurisdictions' structure have been generally unaware of the existence of this document and how it can be used to leverage funding for mitigation projects. As such, educational strategies aimed at publicizing this plan with local governmental structures were included during the update.

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 require stringent project administration tasks (including performance measures and close-out procedures), all of which would be followed by the jurisdiction implementing a 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.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

The members of the CPC 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.

Additionally, hazard mitigation is a component of a number of other planning processes undertaken throughout the county. For example, the MCEMA incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The MCEMA's operations plan works to primarily address the negative effects of natural, technological, and man-made hazards. Additionally, the Monroe County Health Department (MCHD) has become increasingly involved in emergency preparedness in recent years. The types of hazard analyses contained in this document aid the MCHD's planning efforts. Further, as with the MCEMA's operations planning efforts, the MCHD's plans support mitigative efforts by creating a framework to ensure mitigation occurs.

The emergency response agencies are heavily involved in emergency planning at the local level, to include the identification and implementation of mitigation strategies. Such officials as fire chiefs and police chiefs have become just as involved on the CPC as elected officials. As such, these individuals are integrating, where applicable, the four (4) phases of emergency management – the first of which is mitigation – into the development of their agency-specific Standard Operating Guidelines (SOGs).

Additionally, as county government departments, the MCEMA and the Monroe County Planning Commission maintain frequent contact. Many of the discussions between the agencies focus on the services that can be provided to areas that are targeted for development; however, the MCEMA is consulted as to what hazards could affect an area that is developable. The comprehensive plans for Monroe County communities that had been completed since the original adoption of this plan were reviewed as part of the updating process; such a practice will be continued in subsequent updates. As such, local officials can be made aware of the hazards to which targeted development areas may be susceptible.

As identified in the original version of this plan, several of the strategies identified within this document address the need for code enforcement and/or the creation of codes or ordinances. Local government bodies are encouraged to periodically examine

their ordinances with respect to hazard mitigation; to a very large extent, these examinations occur. Since the original adoption of this document, a number of mitigation projects have been implemented or initially planned (e.g., the cleaning and dredging of Sunfish Creek, etc.) through existing ordinance structures and planning mechanisms. As such, during this update, the CPC worked from the assumption that existing programs were not significantly hampering the development and implementation of mitigation strategies.

5.3 CONTINUED PUBLIC INVOLVEMENT

The MCEMA and CPC understand that the general public must be involved in the planning process as well as the update processes scheduled every five (5) years. As such, the CPC will ensure public involvement through invitations to future public and/or CPC meetings, distributing questionnaires, etc. Further, as the plan is re-adopted, the public will be given the chance to comment on the document that is to be adopted *prior* to its actual adoption.

The MCEMA, at a minimum, will maintain file copies of this document to be available for review and perusal at any time. The MCEMA intends to log all comments received regarding the mitigation plan. Members of the public are invited to contact the MCEMA with comments regarding hazard events, etc. Local officials are also invited to review the plan's effectiveness at determining hazard susceptibility based on data from hazard events as they occur.

APPENDIX 1: HAZARD PROFILES, LOSS CALCULATIONS, AND MAPPING

This appendix contains hazard-specific information created as a result of the comprehensive Hazard Risk Assessment (HRA) 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.

As a navigational note for the electronic copy of the plan, Worksheet #3a is listed outside of any hazard folders. It is a single file that contains multiple worksheets organized by hazard name. A master copy of Worksheet #4 is also listed outside of all folders. It contains all assets and values but no damage percentages.

2.2 PROFILING HAZARDS

2.2.1. Dam Failure

A dam is a barrier built across a waterway to control the flow or raise the level of water. A dam failure occurs when the barrier constructed across the waterway fails or otherwise does not obstruct or restrain the flow of water, which can rapidly result in a large area of completely inundated land.

INTRODUCTION

Several methods of research identified dam failure as a hazard in Monroe County, including discussions with local representatives. General information on dam failures was obtained from the following sources:

- Local media research,
- Ohio Department of Natural Resources (ODNR), Division of Soil & Water Resources – Dam Safety,
- National Dam Inventory, and
- Internet research.

There are approximately 80,000 dams in the United States, the majority of which are privately owned. State and local authorities, public utilities, and federal agencies own others. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation, and save lives by preventing or reducing floods. Dams are man-made structures designed to obstruct or restrain waters that may cause flooding downstream. These structures are generally made with concrete or earthen materials. The failure of these dams, although a man-made

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.

Figure 2.1a

structure, could result in the natural event of flooding.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a low to moderate dam failure risk even though there are no recorded instances of a dam failure historically. The risk of dam failure is site specific and is targeted to particular areas within the county including, the Villages of Jerusalem, Wilson and Woodsfield.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.1b

HAZARD IDENTIFICATION

There are 17 dams in Monroe County, according to the Ohio Department of Natural Resources (ODNR), Division of Soil & Water Resources – Dam Safety. Of those dams, one (1) are Class I, and five (5) are Class II. Dams are classified under two (2) conditions: height and storage (as illustrated in the height and storage charts, Table 2.1a below).

The height of a dam is defined as the vertical dimension measured from the natural streambed at the downstream toe of a dam to the low point along the top of the dam. The storage volume of a dam is defined as the total volume impounded when the pool level is at the top of the dam immediately before it is overtopped. According to the Ohio Department of Natural Resources, the damage predicted by a dam failure coincides with the class of the dam.

HEIGHT OF DAM	
Class I	Greater than 60 ft.
Class II	Greater than 40 ft.
Class III	Greater than 25 ft.
Class IV	Less than or equal to 24 ft.

STORAGE VOLUME	
Class I	Greater than 5,000 ac-ft.
Class II	Greater than 500 ac-ft.
Class III	Greater than 50 ac-ft.
Class IV	Less than or equal to 50 ac-ft.

Table 2.1a

The table below lists the dams that are located within Monroe County. Also listed in the table are the classifications, owners, and downstream areas that would be effect in the event of a dam failure.

Name of Dam	Hazard Class	Downstream Areas	Owner
Monroe Lake Dam	I	Community of Cameron & areas along Sunfish Creek	ODNR-Division of Wildlife
Fish Bones Lake Dam	II	Unknown	Private Owned – Ron Tank
Lower Woodsfield Dam	II	Community of Cameron & areas along Sunfish Creek	Village of Woodsfield
Baker Lake Dam	II	Unknown	Private Owned – Mary H. Baker
Baker Pond Dam	II	Unknown	Private Owned – Mary H. Baker
Upper Woodsfield Dam	II	Community of Cameron & areas along Sunfish Creek	Village of Woodsfield
Malaga/Stires Lake Dam	III	Portions of Malaga	Malaga Valley Development Company
Tubaugh Lake Dam	III	Northern portion of Foxtown	Private Owned – John Kerr

Table 2.1b

There are three (3) types of failures of earthen dams: overtopping, seepage, and structural failure. Overtopping failures result from the erosive action of water on the embankment. Erosion is due to uncontrolled flow of water over, around, and adjacent to the dam. Earthen embankments are not designed to be overtopped and therefore are particularly susceptible to erosion; all of the dams in Monroe County are of earthen construction. Once erosion has begun during overtopping, it is almost impossible to stop.

All earthen dams have seepage resulting from water percolating slowly through the dam and its foundation. Seepage must, however, be controlled in both velocity and quantity. If uncontrolled, it can progressively erode soil from the embankment or its foundation, resulting in the rapid failure of the dam. Erosion of the soil begins at the downstream side of the embankment, either in the dam proper or the foundation, progressively works toward the reservoir, and eventually develops a “pipe” or direct conduit into the reservoir. Seepage can cause slope failure by creating high pressures in the soil pores or by saturating the slope.

Structural failures can occur in either the embankment or the appurtenances. Structural failure of a spillway, lake drain, or other appurtenance may lead to failure of the embankment. Cracking, settlement, and slides are the more common signs of structural failure of embankments. Large cracks in an appurtenance or the embankment, major settlement, and major slides will require emergency measures to ensure safety, especially if the problems occur suddenly.

The three (3) types of failures previously described are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to a structural failure. A structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may result in structural failure, and so on.

Minor defects such as cracks in the embankment may be the first visual sign of a major problem, which could lead to failure of the structure. Someone experienced in dam design and construction should evaluate the seriousness of all deficiencies as soon as they are detected.

HISTORY OF EVENTS

Several research methods were utilized in an attempt to identify any past occurrences of dam failures in Monroe County. Those research efforts yielded no evidence of any historic or recent dam failures in Monroe County.

HAZARD IMPACTS

The potential downstream hazards are defined as the resultant downstream damage should the dam fail, including probable future development. The potential downstream hazards are broken into four (4) classes, which coincide with the class of dam defined by height and storage as discussed above.

POTENTIAL DOWNSTREAM HAZARDS	
Class I	Probable loss of life, structural damage to high value property (i.e., homes, industries, major public utilities).
Class II	Flood water damage to structures (no loss of life envisioned), damage to state and interstate highways, railroads, only access to residential areas.
Class III	Damage to low value non-residential structures, blocked roads, damaged crops and livestock.
Class IV	Losses restricted mainly to the dam.

Table 2.1c

Uncontrolled floodwaters are one of the most powerful and destructive forces in nature. Dams that are not designed to withstand major storms or are in a state of disrepair may be destroyed, increasing flood damage downstream. The potential for damage due to dam failure is increasing along with the increased amount of residential and commercial development within the hydraulic shadow of dams. In many cases, existing dams will need to be modified to keep downstream areas safe from catastrophic flooding.

Monroe County contains dams that could present the possibility of significant flood damage to the residents and businesses located near or downstream from the

dams. In many cases, the dams are less than five (5) miles away from the nearest community. The Monroe Lake Dam is a 1,246 acre dam located on the Baker Fork River, upstream from the community of Cameron. It is a state-owned, public recreational lake, and maintained by ODNR. As mentioned in the table above, Class I dams are capable of significant loss of life, structural damage to high value properties, including residential, industrial, and public utilities.

PAST MITIGATION EFFORTS

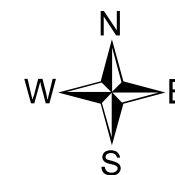
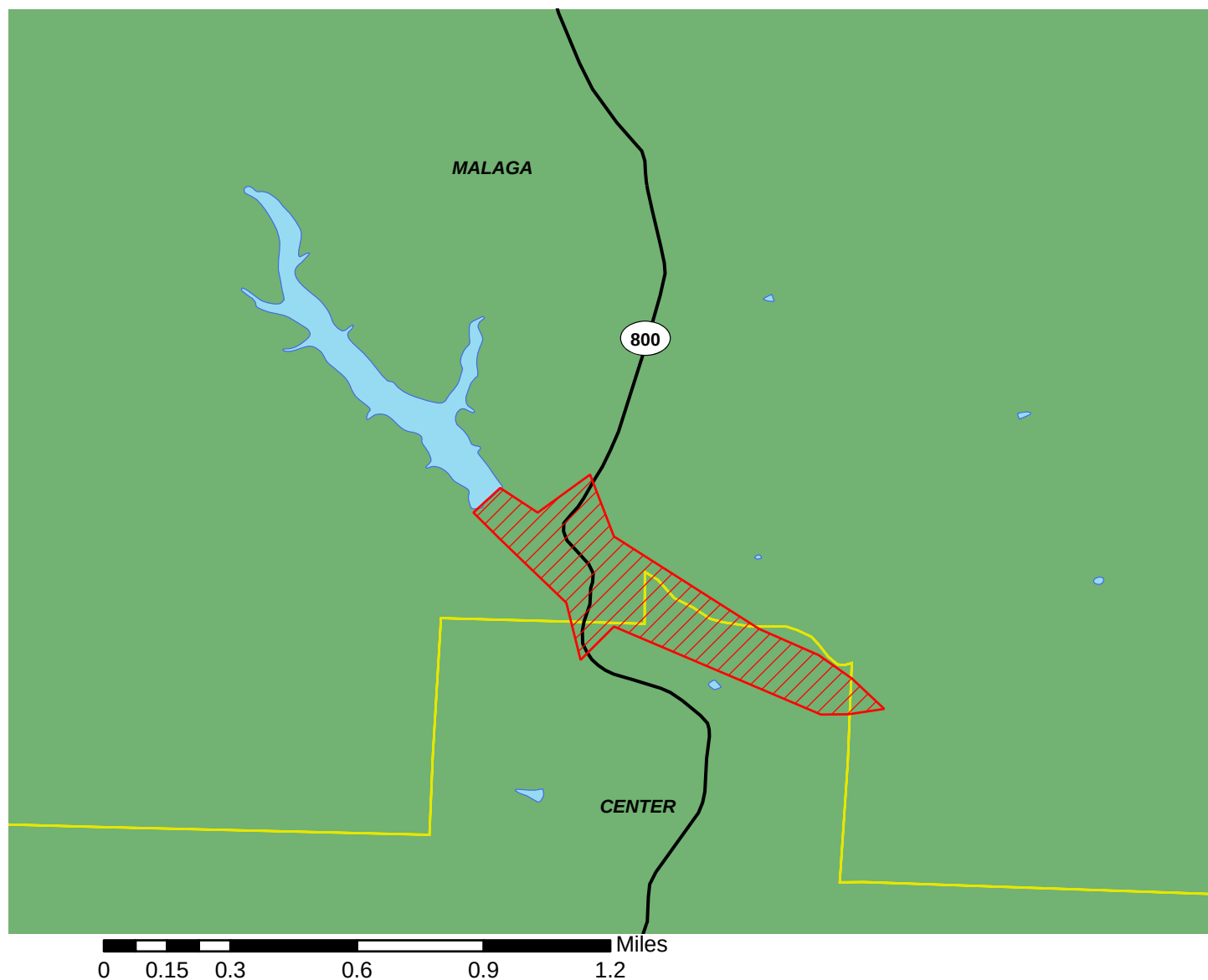
During the summer of 2001 the nearly 50 year old Monroe Lake Dam was rehabilitated by the Ohio Department of Natural Resources, as the dam was experiencing some age problems that needed repair. A new spillway was constructed in an effort to help the flow energy become less violent downstream, the lake drain was rehabilitated, a concrete wall was constructed to provide a little extra storage, and a grout curtain was installed to help with seepage.

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	727	10%	\$581,600,000	\$46,528,000	8%	14,642	1,464	11%
<i>Commercial</i>	840	25	3%	\$630,000,000	\$25,200,000	4%	4,200	210	5%
<i>Industrial</i>	95	3	3%	\$93,575,000	\$935,750	1%	1,900	38	2%
<i>Agricultural</i>	1,890	142	15%	\$37,800,000	\$4,252,500	10%	1,890	265	14%
<i>Religious/Non-Profit</i>	46	2	5%	\$5,750,000	\$322,000	2%	1,380	55	4%
<i>Government</i>	30	3	8%	\$17,550,000	\$877,500	5%	600	42	7%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	0	0%
<i>Utilities</i>	5	1	20%	\$150,000,000	\$2,500,000	1%	25	2	5%
Total	10,187	903	10%	\$1,615,275,000	\$80,615,750	5%	27,387	2,076	8%

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

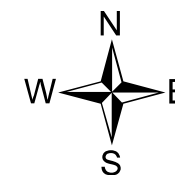
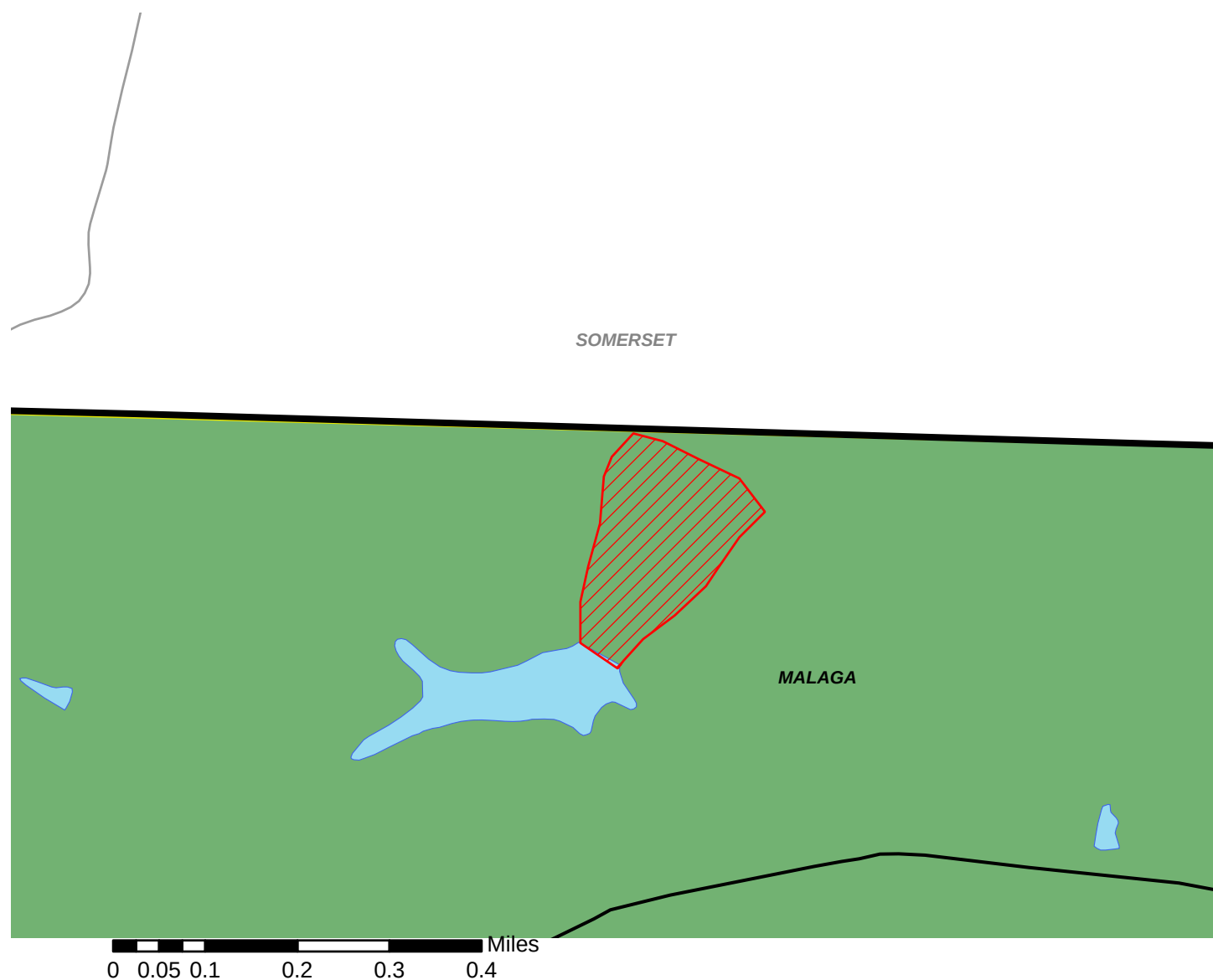
MONROE COUNTY HAZARD MITIGATION PLAN DAM FAILURE MAP: LAKE MONROE



Legend

-  Township
-  Lake
-  Dam Failure Hazard

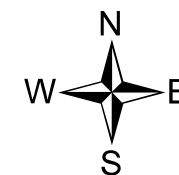
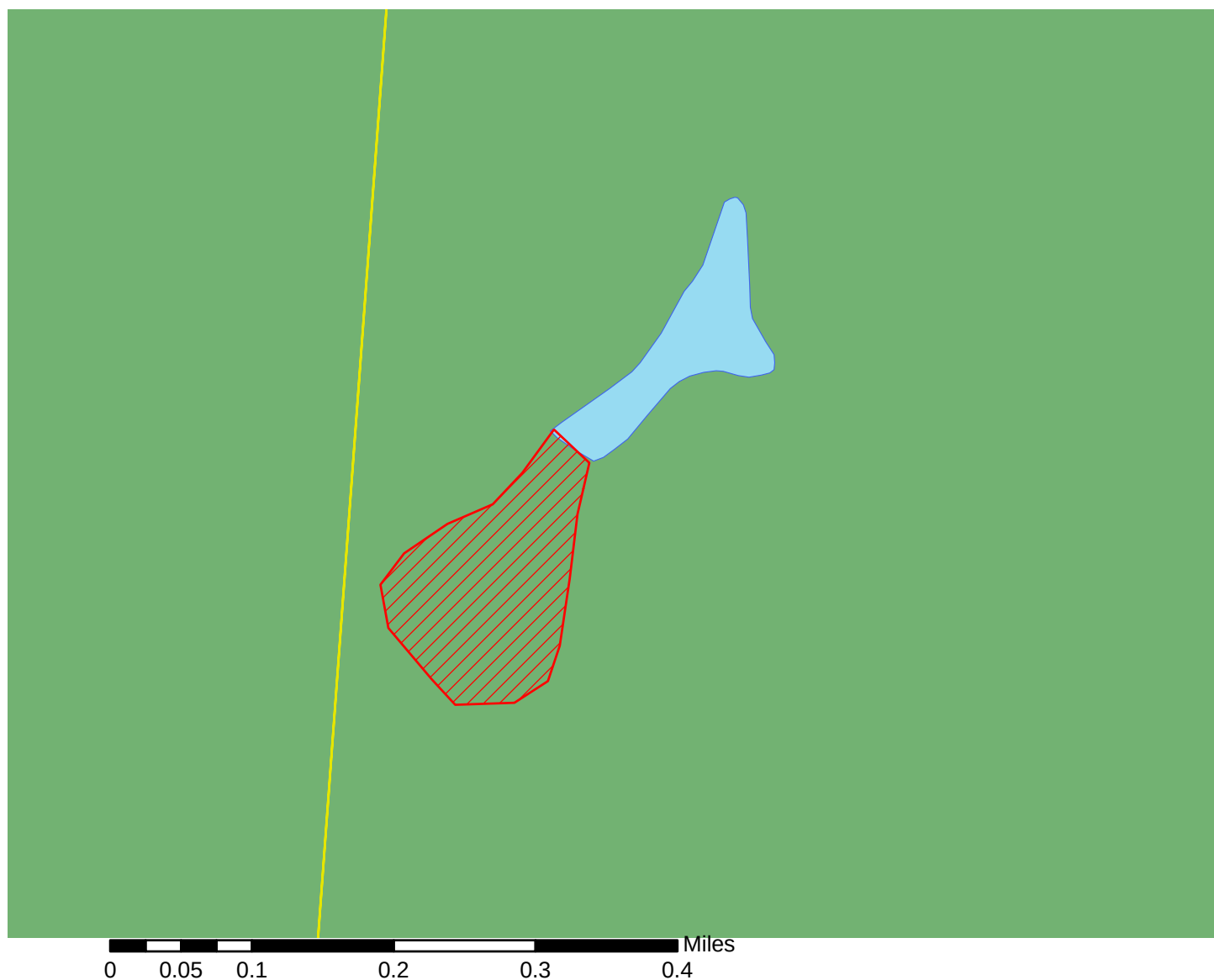
MONROE COUNTY HAZARD MITIGATION PLAN DAM FAILURE MAP: STIRES LAKE



Legend

- Township
- Lake
- Dam Failure Hazard

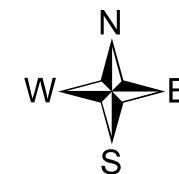
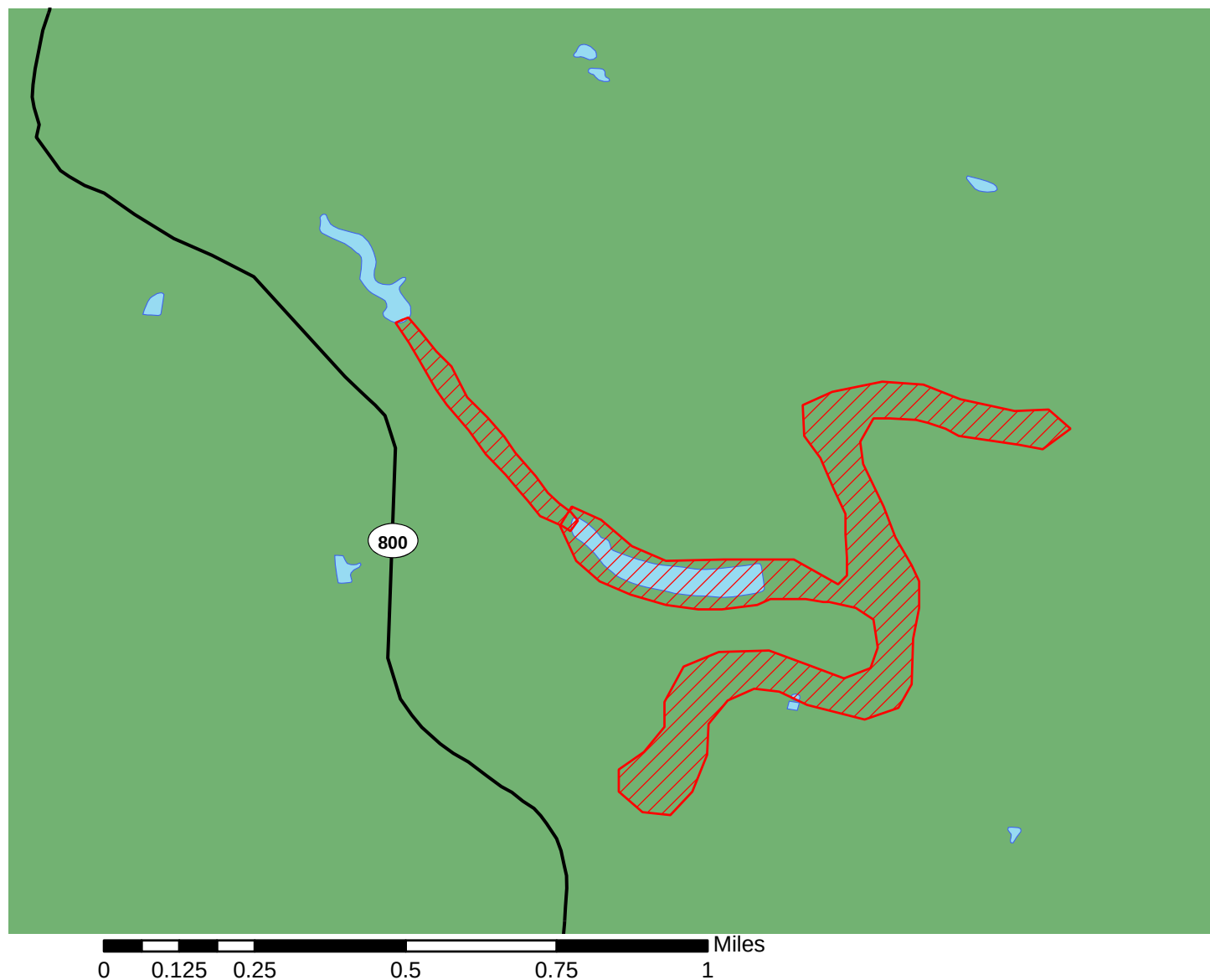
MONROE COUNTY HAZARD MITIGATION PLAN DAM FAILURE MAP: TUBAUGH LAKE



Legend

- Township
- Lake
- Dam Failure Hazard

MONROE COUNTY HAZARD MITIGATION PLAN DAM FAILURE MAP: UPPER AND LOWER WOODSFIELD DAMS



Legend

- Township
- Reservoir
- Dam Failure Hazard

2.2 PROFILING HAZARDS

2.2.2. Drought

Drought is an extended period of deficient rainfall relative to the statistical mean for a region.

INTRODUCTION

Several methods of research identified drought as a hazard in Monroe County, including discussions with local representatives. Drought information was also obtained from the following sources.

- Local media research,
- Monroe County Emergency Operations Plan (EOP),
- ODNR, Division of Soil & Water Resources,
- Palmer Drought Severity Index (PDSI),
- National Climatic Data Center (NCDC) Event Records,
- United States Geological Survey (USGS), and
- National Drought Mitigation Center.

Drought is defined as a period of abnormally dry weather, which persists long enough to produce a serious hydrological imbalance. Drought is a relative term and is used in relation to who or what is being affected by the lack of moisture. Drought can be a result of multiple causes including global weather patterns that produce persistent, upper-level high-pressure systems with warm dry air resulting in less precipitation. Droughts can be

Period of Occurrence:	Summer months or extended periods with no precipitation.
Number of Events to Date (1999 – 2011):	1
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.

Figure 2.2a

categorized into three (3) types, each one affecting the other.

- **Agricultural Drought** – Moisture deficiency seriously injurious to crops, livestock, or other agricultural commodities. Parched crops may wither and die. Pastures may become insufficient to support livestock. Effects of agricultural droughts are difficult to measure because there are many other variables that may impact production during the same growing season.
- **Hydrological Drought** – Reduction in stream flow, lake and reservoir levels, depletion of soil moisture, and a lowering of the ground water table. Consequently, there is a decrease in groundwater discharge to streams and lakes. A prolonged hydrological drought will affect the water supply.
- **Mathematical Drought** – Computation in which rainfall deficiencies are expressed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a low to moderate drought risk even though there are limited recorded instances of drought historically. The risk of drought is not targeted to any particular areas within the county.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.2b

HAZARD IDENTIFICATION

Drought is clearly a hazard for which occurrence cannot be reliably predicted in the long term. Extended, widespread droughts are fairly infrequent; however, brief local droughts are common and can be severe. The drought of 1930-36 was the most severe that has been recorded in Ohio. Precipitation totals for 1930 and 1934 were the smallest since the earliest statewide records began in 1883. An estimated annual average precipitation of approximately 42 inches falls on Monroe County annually. The average precipitation is about 3.7 inches per month, with October (2.6 inches) typically being the driest month, and July (4.8 inches) the wettest. There can be extreme variation in some years and in certain months within a year. Such seasonal and yearly extremes, which may have serious consequences, are not apparent from long-term precipitation

information. The Palmer Drought Severity Index (PDSI) is a widely used measure of drought in the United States 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 PDSI is from –6.0 (extremely dry) to +6.0 (excessively wet), with the central half (-3.0 to +3.0) representing the normal or near normal conditions. According to the 2006 Annual *Palmer Drought Severity Index* (Figure 2.2c) which is the most recent available, Monroe County’s precipitation levels were near normal over the course of the entire year.

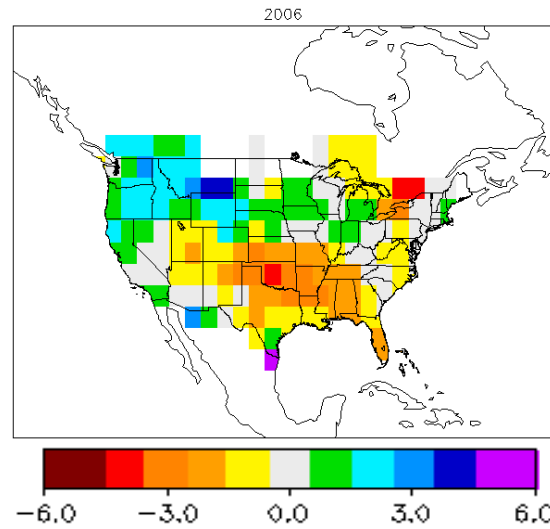


Figure 2.2c

Monroe County’s forest’s, which make up approximately 90 percent (90%) of the total land cover, is extremely susceptible to drought and could potentially suffer. According to the *Palmer Drought Severity Index* for a period between 1985 and 1995, Ohio counties spend 0-5% of the summer and autumn months under drought conditions.

HISTORY OF EVENTS

According to the National Climatic Data Center (NCDC) Event Record Database, Monroe County has experienced just one (1) significant drought over the past 12 years. According to an Event Record dated September 1999, drought conditions that began in June continued across most of eastern Ohio during September, with several areas reporting the driest September on record. The U.S. Department of Agriculture declared all of eastern Ohio an agricultural disaster area. Losses from reduced crop yields were estimated at \$600 million statewide.

HAZARD IMPACTS

Drought conditions often affect farmers (both commercial farmers and personal farmers) and the local water supply (wells often run dry, rivers run low forcing public water supplies to decrease). Monroe County’s large agricultural sector is extremely susceptible to drought and could suffer significant economic losses as agriculture has

long been an important component of the Monroe County economy. Additionally there may be impacts to Monroe County industry, including a negative impact on the capabilities of firefighters in the area, as water shortages may result in reduced water flow and pressure available to combat wild land and structural fires that may take place in the region.

Water is a resource often taken for granted. In recent years, water availability and quality have become important public concerns in Monroe County. Approximately 53 percent (53%) of the overall population of Monroe County depend on groundwater for their water supply; about 20% have a private well; and 33% use public-water supplies with ground water as the source. The primary ground-water sources are sand and gravel deposits found in the flood plains along the Ohio River on the eastern side of Monroe County. Substantial quantities of water can be obtained in these aquifer materials, which supply four (4) of the six (6) public water systems in the county. The Yield potential decreases drastically to the west as the majority of the county is underlain by inter-bedded sandstone, shale and limestone formations.

PAST MITIGATION EFFORTS

Efforts to mitigate the effects of drought conditions in Monroe County include consistent vigilance of forecasted conditions like the prevalence of rainfall, the development and distribution of public awareness materials concerning natural hazard risks, displaying drought information at public events.

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	0	0%	\$581,600,000	\$0	0%	14,642	4,392	30%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	630	15%
<i>Industrial</i>	95	0	0%	\$93,575,000	\$0	0%	1,900	228	12%
<i>Agricultural</i>	945	284	30%	\$37,800,000	\$6,378,750	17%	1,890	567	30%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	345	25%
<i>Government</i>	30	0	0%	\$17,550,000	\$0	0%	600	150	25%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	825	30%
<i>Utilities</i>	5	2	40%	\$150,000,000	\$0	0%	25	6	24%
Total	9,242	286	3%	\$1,615,275,000	\$6,378,750	<1%	27,387	7,143	26%

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

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	0	0%	\$581,600,000	\$0	0%	14,642	4,392	30%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	630	15%
<i>Industrial</i>	95	0	0%	\$93,575,000	\$0	0%	1,900	228	12%
<i>Agricultural</i>	945	284	30%	\$37,800,000	\$6,378,750	17%	1,890	567	30%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	345	25%
<i>Government</i>	30	0	0%	\$17,550,000	\$0	0%	600	150	25%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	825	30%
<i>Utilities</i>	5	2	40%	\$150,000,000	\$0	0%	25	6	24%
Total	9,242	286	3%	\$1,615,275,000	\$6,378,750	<1%	27,387	7,143	26%

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

2.2 PROFILING HAZARDS

2.2.3. Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulation within or along the edge of the Earth's tectonic plates.

INTRODUCTION

Earthquakes are one of nature's most damaging hazards and are more widespread than is often realized. The area of greatest seismic activity in the United States is along the Pacific Coast, in the states of California and Alaska; however, as many as 40 states can be characterized as having moderate earthquake risk. Although most people do not think of Ohio as an earthquake-prone state, at least 170 earthquakes with

Period of Occurrence:	At any time.
Number of Events to Date:	0 EPICENTERS
Probability of Event:	Infrequent.
Warning Time:	None.
Potential Impacts:	According to FEMA, areas with a PGA of 3 to 5 (0.03 to 0.05) will incur little to no damage with no function loss.
Cause Injury or Death:	Minor risk of injury.
Potential Facility Shutdown:	None.

Figure 2.3a

epicenters in Ohio have been felt since 1776. Several methods of research identified earthquakes as a hazard in Monroe County, including the following sources:

- Monroe County Emergency Operations Plan (EOP),
- Ohio Seismic Network,
- Ohio Department of Natural Resources (ODNR), Division of Geological Survey,
- Ohio Earthquake Information Center (OEIC),
- ESRI GIS earthquake data for Ohio, and
- USGS National Seismic Hazard Mapping Project.

Most earthquakes go unnoticed, some people and animals are more sensitive to minor events than others. Usually, it requires a magnitude of 2.5-3.0 for a local shaker to be noticed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a low earthquake risk. There is no recorded historic or recent evidence of an earthquake being epicentered in Monroe County, and occurrences of earthquakes with epicenters near Monroe County have not resulted in any significant damage. The risk of earthquake is not targeted to any particular areas within the county.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.3b

HAZARD IDENTIFICATION

Peak Ground Acceleration (PGA) is a measure of the strength of ground movements. The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity.

Based on the national map provided by the United States Geological Survey (USGS) (see figure 2.3c at right) that shows the PGA values for areas with a 10% chance of being exceeded over 50 years, the majority of Ohio including Monroe County has an earthquake risk as it is located in the 3% area. According to the FEMA *State and Local Mitigation*

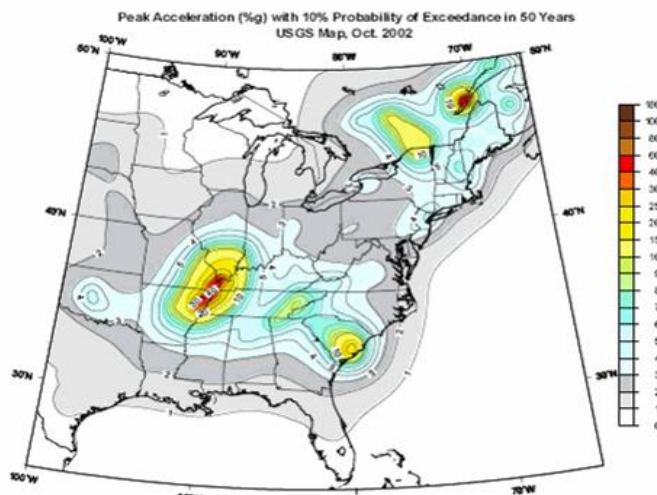


Figure 2.3c

Planning How-To Guide: Understanding Your Risks, areas rated as an MMI IV (a PGA of 2.0%-3.0% classifies an area as MMI IV) will not experience damage as a result of earthquakes. In these areas, perceived shaking is also light.

Ohio is located on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that was the site of the largest earthquake sequence to occur in historical times in the continental United States. Earthquake activity in Monroe County would probably stem from an event along the Burning Springs Fault System, which is the closest known fault to Monroe County extending into the southwestern edge of the County.

The table below (Table 2.3a) is the Modified Mercalli Scale, which is the general relationship between epicentral Modified Mercalli intensities and magnitude. Intensities can be highly variable depending on local geologic conditions. The Mercalli Scale is a semi-quantitative linear scale, whereas the Richter Scale (shown in Table 2.3b below) is a quantitative logarithmic scale. The Richter Magnitude Scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded between the various seismographs. Adjustments are located for the variation in the distance between the various seismographs and the epicenter of the earthquake. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake and a strong earthquake might be rated as a magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude.

Modified Mercalli Scale		Magnitude Scale
I	Detected only by sensitive instruments	1.5
II	Felt by few persons at rest, especially on upper floors; delicately suspended objects may swing	2
III	Felt noticeably indoors, but not always recognized as earthquake; standing autos rock slightly, vibrations like passing truck	2.5
IV	Felt indoors by many, outdoors by few, at night some awaken; dishes, windows, doors disturbed; standing autos rock noticeably	3
V	Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects	3.5
VI	Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small	4
VII	Everybody runs outdoors; damage to buildings varies depending on quality of construction; noticed by drivers of autos	4.5
VIII	Panel walls thrown out of frames; walls, monuments, chimneys fall; sand and mud ejected; drivers of autos disturbed	5
IX	Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked; underground pipes broken	5.5
X	Most masonry and frame structures destroyed; ground cracked, rails bent, landslides	6
XI	Few structures remain standing; bridges destroyed, fissures in ground, pipes broken, landslides, rails bent	6.5
XII	Damage total; waves seen on ground surface, lines of sight and level distorted, objects thrown up into air	7
		7.5
		8

Table 2.3a

Severity	Richter Scale	
	Magnitude	Mercalli
Mild	0-2.9	I-III
Moderate	2.9-4.1	IV-V
Intermediate	4.1-5.4	VI-VII
Severe	5.4-7.3	VIII-X
Catastrophic	7.3 +	XI-XIII

Table 2.3b

HISTORY OF EVENTS

According to an *Earthquake Epicenters In Ohio Map* prepared by the Ohio Department of Natural Resources (see Figure 2.3d), there has been one (1) earthquake to occur near Monroe County. An instrumental 2.8mbLg magnitude earthquake occurred approximately five (5) miles east north east of Marietta in Washington County, Ohio. It awakened residents in Marietta and Reno who described a loud boom and brief shaking that rattled glassware in cabinets. No damages were reported. Even though Monroe County has endured relatively limited earthquake activity, Ashtabula and Geauga Counties, in north Ohio, has been the site of multiple earthquakes ranging in magnitudes of 2.0 to 5.4.

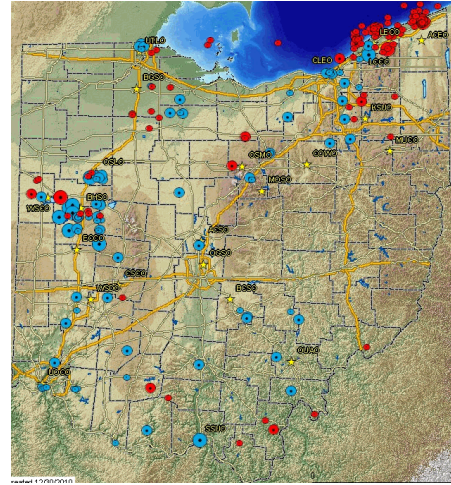


Figure 2.3d

HAZARD IMPACTS

The severity of an earthquake is dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning, and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface ruptures, and ground failure. The risk of fire immediately following an earthquake is often high because of broken electrical lines and gas mains. In recent years, officials in most of the world's major cities have installed devices that shut these services down automatically if an earthquake strikes. Other hazards that may result from an earthquake are utility and communications failures.

The impacts to a community from earthquake events include injuries to citizens and public safety officials, damage to property, lost revenue and economic damages, increased demand on public safety and infrastructure related services. Ground shaking from earthquakes can collapse buildings and bridges, disrupt gas, electric, and phone service, and sometimes trigger landslides, flash floods, fires, and tsunamis.

PAST MITIGATION EFFORTS

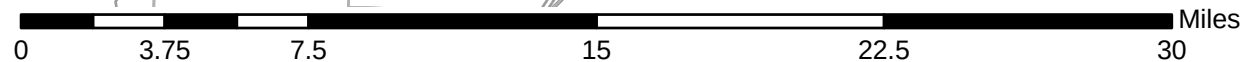
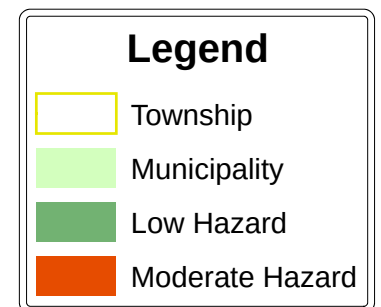
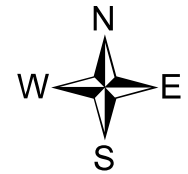
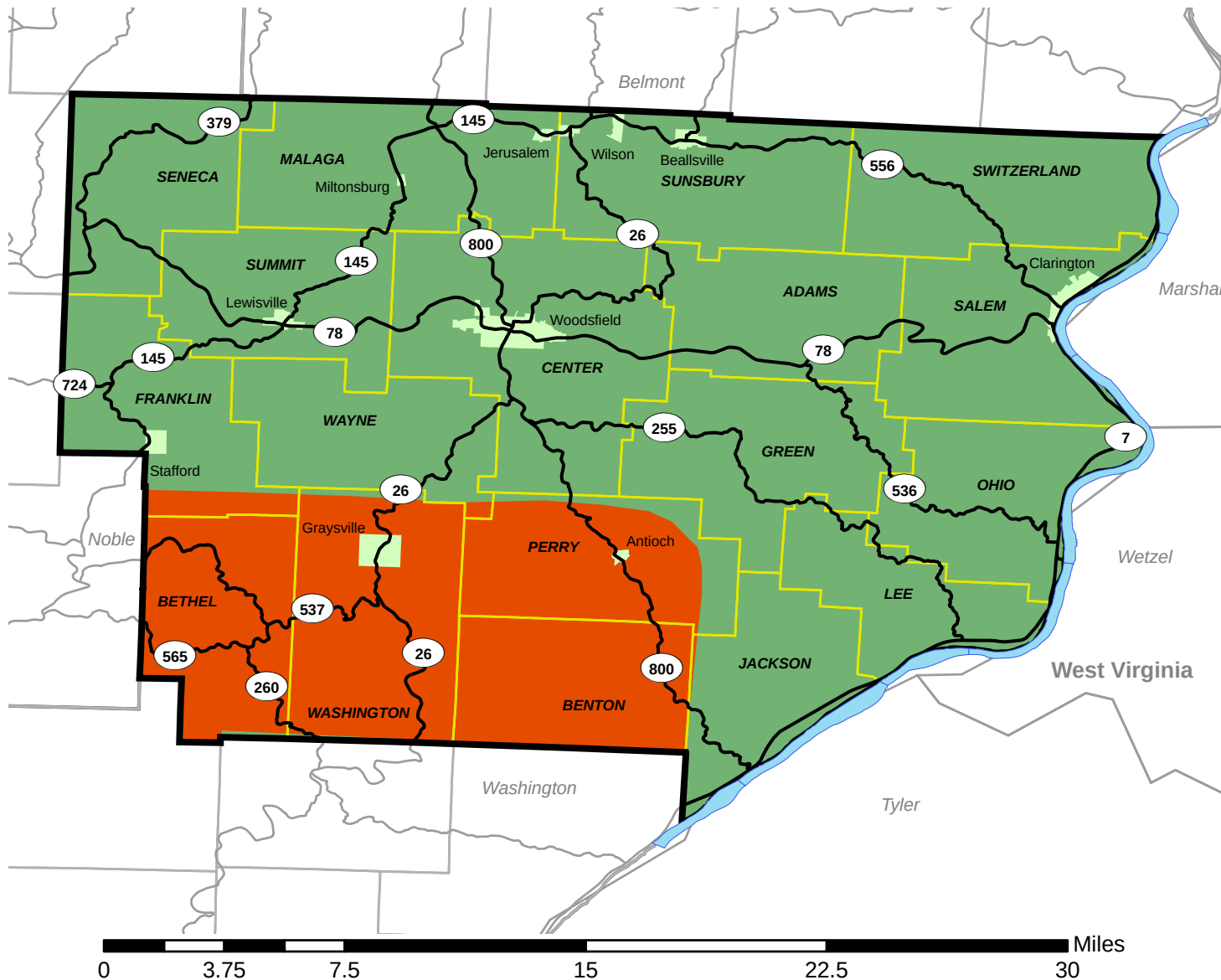
The United States has been a world front-runner in mitigation efforts related to natural disasters. The advent of United States building codes, zoning codes, research on liquefaction areas and ground shaking, building retrofitting, non-structural mitigation/tie-downs, public education, drop-cover-and-hold exercises, and public television specials have dramatically reduced the impact to property, injuries and economic damage. When the United States is compared to countries that do not have these codes and standards (e.g., Turkey, Iran, and Pakistan) the earthquake disaster results are dramatically different.

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	363	5%	\$581,600,000	\$5,816,000	1%	14,642	1,464	10%
<i>Commercial</i>	840	25	3%	\$630,000,000	\$4,725,000	<1%	4,200	336	8%
<i>Industrial</i>	95	3	3%	\$93,575,000	\$608,237	<1%	1,900	152	8%
<i>Agricultural</i>	945	47	5%	\$37,800,000	\$425,250	1%	1,890	189	10%
<i>Religious/Non-Profit</i>	46	2	4%	\$5,750,000	\$161,000	3%	1,380	138	10%
<i>Government</i>	30	2	7%	\$17,550,000	\$175,500	1%	600	48	8%
<i>Education</i>	11	1	9%	\$99,000,000	\$990,000	1%	2,750	220	8%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$2,500,000	2%	25	2	8%
Total	9,242	443	5%	\$1,615,275,000	\$15,400,987	1%	27,387	2,549	9%

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

MONROE COUNTY HAZARD MITIGATION PLAN EARTHQUAKE MAP



2.2 PROFILING HAZARDS

2.2.4. Epidemic

An epidemic is a disease, usually contagious, that recurs in a community and attacks a large number of people at the same time. The potential impacts of an epidemic are illness or fatalities, disruption or closing of schools, or the forced closure of businesses and industrial operations.

INTRODUCTION

Epidemic is a natural hazard risk in Monroe County. The probability of an epidemic striking Monroe County is relatively low. However, the risk associated with this hazard could be significant. An epidemic can occur at any time of the year, but the warm summer months, when bacteria and microorganism growth are at their highest, present the greatest risk. Several methods of research identified epidemic as a hazard in Monroe County, including discussions with local representatives. Information concerning epidemic outbreaks was also obtained from the following sources.

- Public input,
- Monroe County Health Department, Director of Nursing
- Monroe County Health Department, Threat Preparedness Coordinator
- Ohio Southeast Regional Epidemiologist,
- Ohio Department of Health (ODH), and
- Center for Disease Control & Prevention (CDC).

Period of Occurrence:	At any time.
Number of Events to Date (2004 – 2011):	1 (H1N1 Swine Flu).
Probability of Event:	Likely.
Warning Time:	Days to Months.
Potential Impacts:	Widespread illness can force the closure of business/government operations; emergency services could be strained through inoculation efforts.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Moderate.

Figure 2.4a

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a low probability of epidemic occurrence, and a moderate impact with the potential for a high impact dependent upon the type of disease. The risk of an epidemic outbreak is targeted to the larger municipalities of the county (i.e., Woodsfield),

as well as places within the county where mass gathering occur (i.e., the county fairgrounds, shopping centers, sporting events, etc.).

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.4b

HAZARD IDENTIFICATION

An epidemic has the potential to affect the entire county, but is more probable to occur in densely populated areas, such as the central portion of the county, especially at facilities containing large numbers of occupants. Many commercial and industrial sites contain many facilities at which a large work force is employed. A potential epidemic is of particular concern at these facilities. The Ormet Corporation facility and other industrial parks are examples. The majority of viruses affect elderly and younger populations; with that being said, there are several schools and nursing homes in Monroe County with large populations that are vulnerable to an epidemic outbreak.

The West Nile Virus has created growing concern in Ohio and the northeast where widespread spraying to kill mosquitoes has not stopped the spread of the virus. Other, more common epidemics, such as Influenza, bacterial meningitis, and Hepatitis can also strike Monroe County at anytime.

HISTORY OF EVENTS

According to the Southwest Regional Epidemiologist, the recent H1N1 Swine Flu outbreak did have a minor impact in Monroe County. Although Monroe County has no laboratory confirmed cases of the 2009 strain of H1N1, a suspect case was reported. A suspect case, by definition, includes the following criteria; fever (temperature greater than 100°F) and either cough or sore throat with no other known cause for symptoms. Estimating the number of suspect cases is very challenging because many people with flu don't seek medical care and only a small number of those that do seek medical care are tested. According to the Center for Disease Control and Prevention (CDC), estimates of 2009 H1N1 influenza cases in the U.S. from April 2009 to mid-January 2010 ranged widely, from 41 million to 84 million.

The Southwest Regional Epidemiologist indicated that although no lab specimens from Monroe County patients were sent to the Ohio Department of Laboratory for H1N1 testing, this does not mean that Monroe County did not have H1N1 cases. The 2009 strain of H1N1 was a global pandemic. Once the influenza pandemic arrived in Ohio, to continue testing would have been costly and time consuming. Whether one has seasonal influenza or the new (or new at that time) H1N1 flu, the symptoms and treatment for flu are the same, so testing to determine which kind of influenza an individual may have is not necessary. After H1N1 was confirmed in Ohio, testing was limited to people who were seriously ill, mainly those who were hospitalized.

HAZARD IMPACTS

Epidemics can develop with little or no warning and quickly erode the capacity of local medical care providers. A fast-developing epidemic can last several days and extend into several weeks. In some extreme cases, they can last for several months. Major concerns during an epidemic include the ability of local health care providers to provide medical attention to everyone who becomes ill, and the ability to identify the source of what is causing the population to become ill.

Since various residents of Monroe County travel, and because groups/individuals from outside of the county (or state) frequently travel to Monroe County destinations, the possibility does exist for novel strains to be introduced to the local population.

PAST MITIGATION EFFORTS

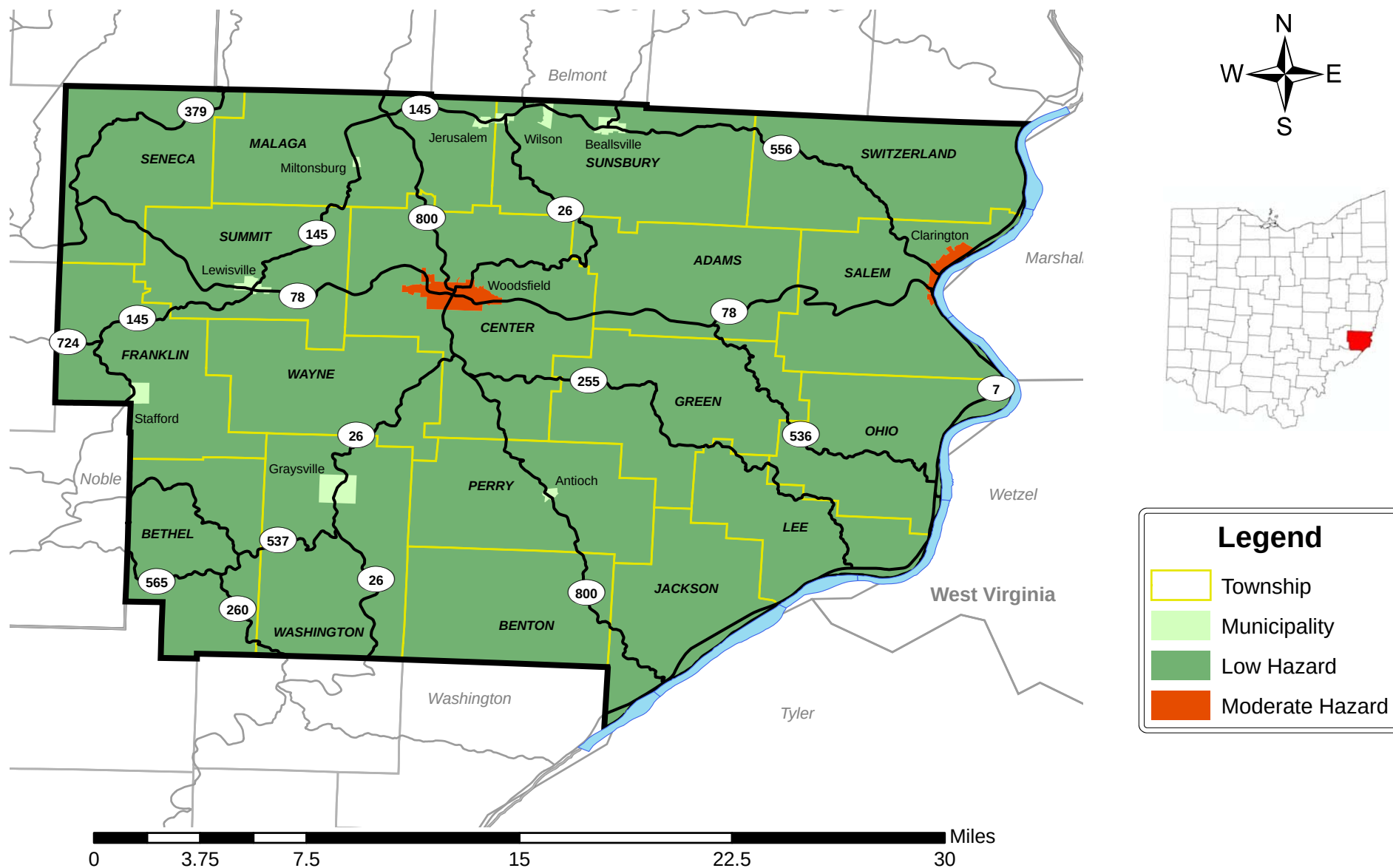
The Monroe County General Health District has taken many steps to ensure a base level of preparedness for epidemic and pandemic conditions. Initiatives surrounding general preparedness for Avian flu (beginning in 2006), and most recently for H1N1 (swine flu) have led other local governments to create and adopt business continuity plans. The Monroe County Health Department also administered 1,507 H1N1 vaccinations, and conducted 31 clinics in 2010. The Health Department continually conducts disease surveillance, and maintains an adequate supply of vaccinations. The Health Departments has also developed the following plans in a continuing effort to remain prepared for epidemic outbreaks; Pandemic Preparedness Plan, Bioterrorism Plan, and Epi Plan.

Hazard: Epidemic

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	0	0%	\$581,600,000	\$0	0%	14,642	5,125	35%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	1,890	45%
<i>Industrial</i>	95	0	0%	\$93,575,000	\$0	0%	1,900	855	45%
<i>Agricultural</i>	945	0	0%	\$37,800,000	\$0	0%	1,890	662	35%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	0	0%
<i>Government</i>	30	0	0%	\$17,550,000	\$0	0%	600	210	35%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	1,237	45%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$0	0%	25	8	32%
Total	9,242	0	0%	\$1,615,275,000	\$0	0%	27,387	9,987	36%

	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

MONROE COUNTY HAZARD MITIGATION PLAN EPIDEMIC MAP



2.2 PROFILING HAZARDS

2.2.5. Flooding

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 rapid flooding of low-lying areas, rivers, and streams that is caused by intense rainfall and is often associated with thunderstorms.

INTRODUCTION

Floods are the most prevalent hazard in the United States. Each year, floods cause more property damage in the United States than any other type of natural disaster, killing an average of 150 people a year. The history of flooding within Monroe County indicates that flooding can occur at any time of the year. However, nearly all major floods are produced by winter and spring rains falling on saturated, snow covered, or frozen soil. Winter and spring rains, although of lesser intensity than summer and fall rains, are usually of longer duration and result in greater peak flows in streams.

Several methods of research identified flooding as a hazard in Monroe County, including reviews of FIRM maps, review of existing plans that have been compiled including the Monroe County Emergency Operations Plan, reviews of newspaper coverage, reviews of past

Period of Occurrence:	Primarily June through August (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 (1993 – 2011):	44
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.

Figure 2.5a

disaster declarations, discussions with local floodplain coordinators and floodplain managers, and public input. The following Internet sites were also used to gain information on flooding.

- Federal Emergency Management Agency
<http://www.fema.gov/maps/>
- Flood Risk and Map Information
<http://www.fema.gov/nfip/.htm>
- Floodplain Management Association
<http://www.floodplain.org>
- General Flood Information
<http://www.nfpa.org>
- Latest Hydrological Information
<http://www.nws.noaa.gov>
- Real-Time Hydrologic Data Page
<http://water.usgs.gov/realtime.html>
- State Floodplain Managers
<http://www.floods.org>
- USGS Streamflow Data Historical
<http://water.usgs.gov/usa/nwis/sw>

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a moderate to high flooding risk. The risk of flooding is targeted to several different areas within the county. 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).

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.5b

HAZARD IDENTIFICATION

Monroe County has two (2) major drainage basins; the Little Muskingum River and Sunfish Creek. Minor streams that drain other parts of the county include; Opossum Creek, Bares Run, Stillhouse Run, Wills Creek and Narrows Run. All of these drainage basins are tributaries to the Ohio River. The Little Muskingum River basin, with an area of approximately 314 square miles, drains most of southern Monroe County, a small part of eastern Noble County, and much of eastern Washington County. The Sunfish Creek basin is approximately 114 square miles in area and drains most of northern Monroe County.

Flooding is arguably the highest priority hazard in Monroe County as floods threaten nearly all of Monroe County's townships. Riverine flooding, which is usually caused by a significant amount of rainfall over a period of days and can be worsened by

snowmelt conditions, is very likely to continue striking areas located along the banks of the Sunfish Creek, as well as the Little Muskingum and Ohio Rivers. Some areas near the paths of these rivers are particularly low-lying areas, especially Sycamore Valley, Hannibal, Duffy, Sardis, Cameron, and Clarington. Local officials should consider strengthening, and/or developing building and/or development regulations in these areas.

Because the majority of Monroe County is of relatively steep to gently rolling topography, flooding is usually a widespread event, as small creek and streams over fill their banks and flood large areas of agricultural fields and several rural roads. Areas located below higher elevations are often susceptible to flash flooding, as short periods of intense rainfall can result in water flowing rapidly down hills and collecting in valley streams and creeks. Flooding that occurs in or near the urban areas is often attributed to failing storm sewers and poor drainage systems. Excessive amounts of impermeable surfaces such as pavement can increase the amount and rate of water runoff. Development affects the runoff of storm water and snowmelt. When rain falls in an undeveloped area, as much as 90 percent (90%) of it will infiltrate the ground; in a highly developed area, as much as 90% of it will run off.

Flash flooding is difficult to mitigate against, as many urbanized areas may not actually be in designated floodplains, and are not subject to floodplain ordinances. However, residents and business owners in these areas should be warned of the potential for flash flooding, especially if the storm water system in their community is old.

There are currently eight (8) listed “repetitive loss” properties in Monroe County, and zero (0) Severe Repetitive Loss (SRL) properties according to representatives with the Mitigation Branch of Ohio Emergency Management Agency (OEMA). The total losses from these properties are approximately \$226,003. Table 2.5a below indicates the type of structures, the number of losses suffered, and the approximate locations of the properties. This information is legally privileged and confidential. Its use is protected under the privacy act of 1974, 5 U.S.C. Section 552(a). Use of this information should be restricted to applicable routine use.

The county Floodplain Administrator has been arduously working with municipalities to gain compliance with NFIP and is designated as “NFIP Coordinator” for Monroe County. The municipalities of Clarington and Woodsfield are listed with NFIP and have designated coordinators. The NFIP Coordinator routinely monitors and

maintains the jurisdiction's floodplain area and ordinance to ensure that development is compliant with that ordinance (and, consequently, the NFIP).

MONROE COUNTY REPETITIVE LOSS DETAILS			
Type of Structure	Location	Number of Losses	Date of Losses
Single Family	Salem Township	2	November 18, 1985 June 5, 1981
Single Family	Community of Cameron	2	September 16, 2004 September 8, 2004
Single Family	Community of Cameron	2	September 17, 2004 September 8, 2004
Assumed Condominium	Center Township	2	September 16, 2004 June 28, 1998
Single Family	Community of Cameron	2	September 17, 2004 June 28, 1998
Single Family	Community of Cameron	2	September 17, 2004 September 8, 2004
2-4 Family	Village of Clarington	2	January 7, 2005 September 17, 2004
Single Family	Village of Clarington	2	January 7, 2005 September 19, 2004

Table 2.5a

HISTORY OF EVENTS

According to the National Climatic Data Center (NCDC) Event Record Database there have been 38 flood events recorded in Monroe County between 1993 and 2011, of those events 20 were considered river floods, and 18 were considered flash floods. The NCDC Event Record Database also indicates that the months when the most flooding occurs are January, with eight (8) reported floods, and June, with six (6) reported floods.

The worst hazard events experienced in Monroe County have been incidences of flooding. The following are brief descriptions of the significant floods that have occurred over the past 18 years.

- January 19, 1996 – Flood waters from the Allegheny and the Monongahela Rivers crested in phase at the Point in Pittsburgh. Water from these two (2) mainstem rivers flow into the Ohio River. Major flooding to communities along the Ohio River occurred in Columbiana, Jefferson, Belmont, and Monroe Counties in east-central Ohio. Crests downstream were not as high, Hannibal, Ohio crested at 39.4 feet (4.4 feet above flood stage) on the 21st. Nonetheless, damages to homes and businesses and their contents, public facilities, bridges and roads along the river were enormous. In Monroe County, 85 residences were affected, 35 minor damage and 50 with major

damage. Seven (7) businesses had major damage. Damages from this flood were estimated at \$3.7 million.

- March 1, 1997 – Heavy rainfall led to widespread flooding across Monroe County. Sunfish Creek in the eastern part of the county was among the first creek to be reported out of its banks. State Route 78 was also under water where the creek crosses the road. A total of 15 township roads were closed, and portions of roads, hillsides, and culverts were washed away, primarily in the southern and southwestern parts of the county. A six inch (6”) water line broke apart after part of a hill slide away near Round Bottom. Every township in the county was affected to some degree with flooding, and 20 to 30 homes were affected by basement and/or minor first floor flooding. This flooding event resulted in approximately \$3 million in property damage.
- June 26, 1998 – Thunderstorm rain produced flooding from Wills Creek onto State Route 379 in Calais. Another series of thunderstorms passed over the county on the evening of the 27th, triggering extensive flash flooding across the entire county. Subsequent thunderstorms over the next several days continued the flooding through the end of the month. The towns of Woodsfield and Cameron were especially hard hit. In Cameron, flood waters from Sunfish Creek prompted several evacuations.
- September 8, 2004 – Sunfish Creek left its banks and flooded several houses in Cameron. Many roads were under water, including those in Sardis, State Route 78 near Lewisville, and State Route 26 near Graysville. There were basements flooded and people evacuated from homes in Cameron and Clarington.

The following table includes FEMA public assistance dollars granted to Monroe County Ohio per declared flooding event.

Flooding – Public Assistance Funding Monroe County		
DR-1484-OH TORNADOES, FLOODING, SEVERE STORMS, AND HIGH WINDS		
Date of Occurrence	Damage Category Code	Federal Share Eligible
8/1/2003	A – Debris Removal	\$16,522.42
	B – Protective Measures	\$1,916.25
	C – Roads & Bridges	\$284,286.95
	G – Recreational / Other	\$4,479.94
	Total	\$307,205.56
DR-1507-OH SEVERE STORMS, FLOODING, MUDSLIDES, AND LANDSLIDES		
Date of Occurrence	Damage Category Code	Federal Share Eligible
1/26/2004	A – Debris Removal	\$7,707.39
	B – Protective Measures	\$8,892.76
	C – Roads & Bridges	\$803,433.33
	F – Public Utilities	\$12,477.07
	Total	\$832,510.55
DR-1556-OH SEVERE STORMS AND FLOODING		
Date of Occurrence	Damage Category Code	Federal Share Eligible
9/19/2004	A – Debris Removal	\$71,372.25
	B – Protective Measures	\$53,861.11
	C – Roads & Bridges	\$1,315,900.75
	E – Public Buildings	\$170,629.58
	F – Public Utilities	\$75,253.49
	Total	\$1,687,017.18
DR-1580-OH SEVERE WINTER STORMS, FLOODING, AND MUDSLIDES		
Date of Occurrence	Damage Category Code	Federal Share Eligible
2/15/2005	A – Debris Removal	\$16,637.55
	B – Protective Measures	\$821.27
	C – Roads & Bridges	\$1,353,241.67
	F – Public Utilities	\$35,774.51
	Total	\$1,406,475.00
DR-4002-OH SEVERE STORMS AND FLOODING		
Date of Occurrence	Damage Category Code	Federal Share Eligible
7/13/2011	A – Debris Removal	\$7,950.06
	B – Protective Measures	\$1,269.63
	C – Road & Bridges	\$824,353.45
	D – Water Control Facilities	\$7,727.12
	Total	\$841,300.26

Table 2.5b

Over the nine (9) year period approximately \$5 million FEMA public assistance dollars were granted to Monroe County Ohio due largely in part to flooding, which is an average of approximately \$634,000 per year.

HAZARD IMPACT

Flooding continues to be a frequent and damaging natural disaster as a result of the Little Muskingum and Ohio Rivers and their many tributaries that flow near the village of Clarington and the communities of Hannibal, Duffy, Sardis, Cameron, and Rinard Mills. Flooding is among the most costly natural hazard in Monroe County, and has resulted in approximately \$12.3 million in property damage and \$10 million in crop damage over the past 18 years. Additional problems may occur from urban flooding, which results in high water from the lack of adequate drainage systems, such as flooded streets, basements, etc.

Flooding impacts to the community include injuries to citizens and public safety officials, damage to property, lost revenue and economic damages, and increased demand on public safety and infrastructure related services. Response activities include unanticipated overtime for Emergency Operation Center (EOC) activations, evacuations, sheltering of displaced people, rerouting traffic destined for impassible roads, bridge and road damage repairs, and rescue or medical missions related to motorists and isolated families. Private property damages to homes and vehicles as well as land erosion, river channel changes, agricultural damages and livestock losses resulting in significant rural economic impacts to local residents.

Hazards associated with flooding can be divided into: primary hazards that occur due to contact with water, secondary effects that occur because of the flooding, such as disruption of services and health impacts, and tertiary effects, such as changes in the position of river channels.

Primary Effects

- With higher velocities, streams are able to transport larger particles as suspended load. Such large particles include not only rocks and sediment, but, during a flood, such large objects as automobiles, houses, and bridges.
- Massive amounts of erosion can be accomplished by floodwaters. Such erosion can undermine bridge structures, levees, and buildings, causing their collapse.
- Water entering human-built structures causes damage. Even with minor flooding of homes, furniture is ruined, floors and walls are damaged, and anything that comes in contact with the water is likely to be damaged or lost. Flooding of automobiles usually results in damage that cannot easily be repaired.

- The higher velocity of floodwaters allows the water to carry more sediment as suspended load. When the floodwaters retreat, velocity is generally much lower and sediment is deposited. After retreat of the floodwaters, everything is usually covered with a thick layer of stream-deposited mud, including the interior of buildings.
- Flooding of farmland usually results in crop loss. Livestock, pets, and other animals are often carried away and drowned.
- Humans that get caught in high velocity floodwaters are often drowned.
- Floodwaters can concentrate garbage, debris, and toxic pollutants into small areas that can cause the secondary effects of health hazards.

Secondary and Tertiary Effects (Cascading Effects)

- Disruption of Services
 - Drinking water supplies may become polluted, especially if sewerage treatment plants are flooded.
 - Gas and electrical service may be disrupted.
 - Transportation systems may be disrupted, resulting in shortages of food and cleanup supplies.
- Long-Term Effects (Tertiary effects)
 - Location of river channels may change as the result of flooding; new channels develop, leaving the old channels dry.
 - Sediment deposited by flooding may destroy farmland (although silt deposited by floodwaters could also help to increase agricultural productivity).
 - Jobs may be lost due to the disruption of services, destruction of business, etc. (although jobs may be gained in the construction industry to help rebuild or repair flood damage).
 - Destruction of wildlife habitat.

PAST MITIGATION EFFORTS

Past mitigation efforts to reduce the effects of flooding throughout Monroe County include the following:

- Require applications for floodplain development permits for all development activities located within, or in contact with, an identified special flood hazard area.

Such application shall be made by the owner of the property or his/her authorized agent, prior to the actual commencement of such construction. Where it is unclear whether a development site is in a special flood hazard area, the Floodplain Administrator may require an application for a floodplain development permit to determine the development's location. It shall be unlawful for any person to begin construction or other development activity, including but not limited to, filling; grading; construction; alteration, remodeling, or expanding any structure; or alteration of any watercourse wholly within, partially within or in contact with any identified special flood hazard area, until a floodplain development permit is obtained.

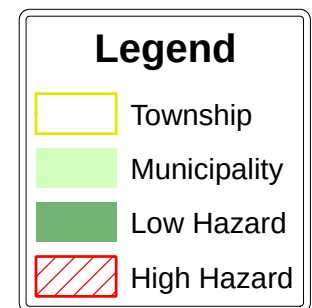
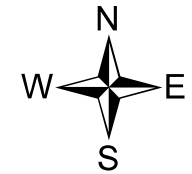
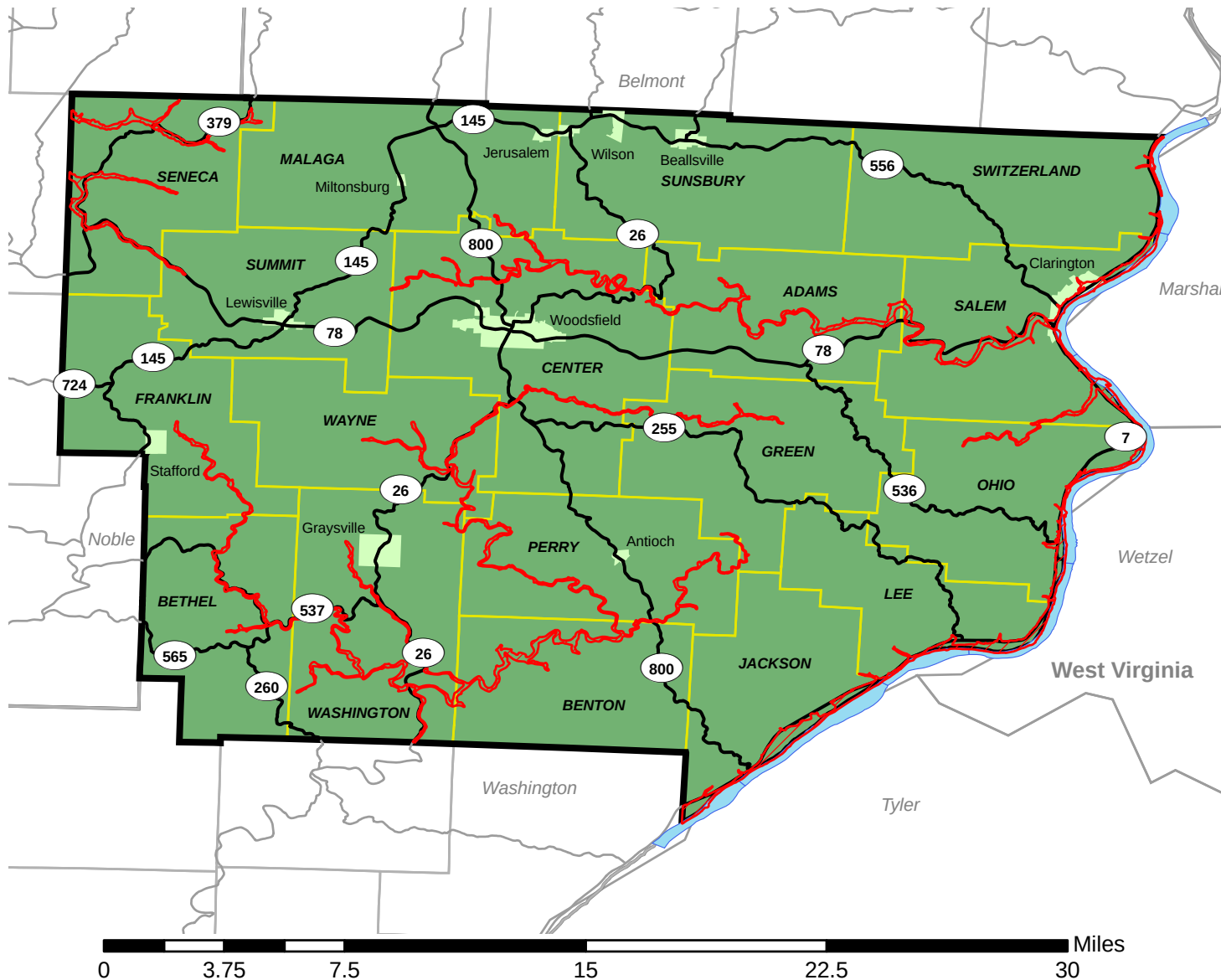
- Conducted buyouts or property acquisition and relocation projects in several areas, and have conducted flood elevation adjustments to several facilities.
- Several jurisdictions have designated an "NFIP Coordinator". The NFIP Coordinator maintains the jurisdiction's floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).
- The cleaning and clearing of waterways was conducted in 2006 and re-initiated beginning in 2011.
- Working with FEMA and the Ohio Emergency Management Agency (OEMA) on the Map Modernization Program to improve FIRMs.
- Working with the municipalities to update all outdated floodplain ordinances.
- Collecting updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- Identifying owners of repetitive loss properties who are interested in participating in future property acquisition and relocation projects.
- The distribution of letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).
- The development and distribution of public awareness materials concerning flood hazard risks, and updating the county's website to provide hazard related information that is easily accessible.

Hazard: Epidemic

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	0	0%	\$581,600,000	\$0	0%	14,642	5,125	35%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	1,890	45%
<i>Industrial</i>	95	0	0%	\$93,575,000	\$0	0%	1,900	855	45%
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<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	1,237	45%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$0	0%	25	8	32%
Total	9,242	0	0%	\$1,615,275,000	\$0	0%	27,387	9,987	36%

	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

MONROE COUNTY HAZARD MITIGATION PLAN FLOODING MAP



2.2 PROFILING HAZARDS

2.2.6. Hailstorm

Hail is a form of precipitation which occurs when freezing water in thunderstorm type clouds accumulates in layers around an icy core. When this event takes place, balls or irregular lumps of ice are created. On average, hail can be from 5mm to 50mm in diameter.

INTRODUCTION

A hailstorm is defined as an atmospheric disturbance manifested in strong winds and accompanied by precipitation. The precipitation is made of hailstones or hard pellets of snow and ice. Numerous methods of research identified hailstorms as a natural hazard in Monroe County, including discussions with local representatives and Internet searches at ESRI, National Weather Service (NWS), and National Oceanic Atmospheric Administration (NOAA) sites.

Period of Occurrence:	At any time.
Number of Events to Date (1974 – 2011):	14
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.

Figure 2.6a

A hot summer afternoon thunderstorm is capable of transforming the landscape from verdant green to icy white with the onset of a hailstorm. The first sign that hail may be arriving is a growing whitening among shafts of rain. Soon, a rattling sound is heard as hailstones strike roofs and pavements and the ground whitens, becoming slippery as hailstones cover grass and roadways. A hailstorm can be the most damaging part of a thunderstorm, inflicting injury to man and beast and destroying crops, gardens, and property.

According to the Monroe County Emergency Management Agency (MCEMA) Director, and data at the state level, it is assumed that the entire county is at moderate risk from hailstorms.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.6b

HAZARD IDENTIFICATION

As water vapor inside a thunderstorm cloud condenses to become ice, a large amount of heat energy is given off during this transition and the process produces hailstones. Hailstones are initially small in size but due to rain water freezing over them they gradually grow in size as they fall to the ground at speeds of 50 meters per second or 111 miles per hour. According to the National Climatic Data Center (NCDC) Event Record Database, there have been a total of 14 hailstorms since 1974. Nearly 65 percent (65%) of the hailstorms reported occurred between the months of May and August. There have been two (2) hailstorm occurrences since the original plan was adopted in 2005.

HISTORY OF EVENTS

The following table details the hailstorms that have occurred in Monroe County over the past 37 years, including the location, date, and magnitude of the event.

LOCATION	DATE OF OCCURRENCE	MAGNITUDE
Countywide	08/27/1974	1.75 inches
Countywide	08/10/1980	1 inch
Countywide	03/25/1987	1.25 inches
Woodsfield	06/16/1998	0.75 inches
Woodsfield	06/26/1998	1 inch
Lewisville & Woodsfield	01/21/1999	1 inch
Graysville	05/23/2000	0.75 inches
Woodsfield	07/14/2000	1 inch
Beallsville, Lewisville, Jerusalem & Woodsfield	04/28/2002	1.75 inches
Hannibal	07/18/2003	0.88 inches
Graysville & Jerusalem	05/21/2004	0.75 inches
Fly & Lewisville	08/18/2004	1 inch
Woodsfield	04/03/2006	0.75 inches
Woodsfield	03/14/2007	1 inch

Table 2.6a

HAZARD IMPACT

Hail damage is often confined to automobiles and crops; however, structural damage is a possibility in the form of broken windows and damaged gutters or HVAC systems (depending on the size of the structure). Historical records indicate that hailstorms are a countywide hazard and can occur at any time in any location. Hail is often associated with severe thunderstorms and/or severe winter storms, both of which have been identified as natural hazards in Monroe County.

PAST MITIGATION EFFORTS

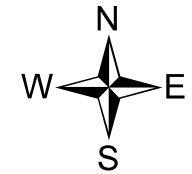
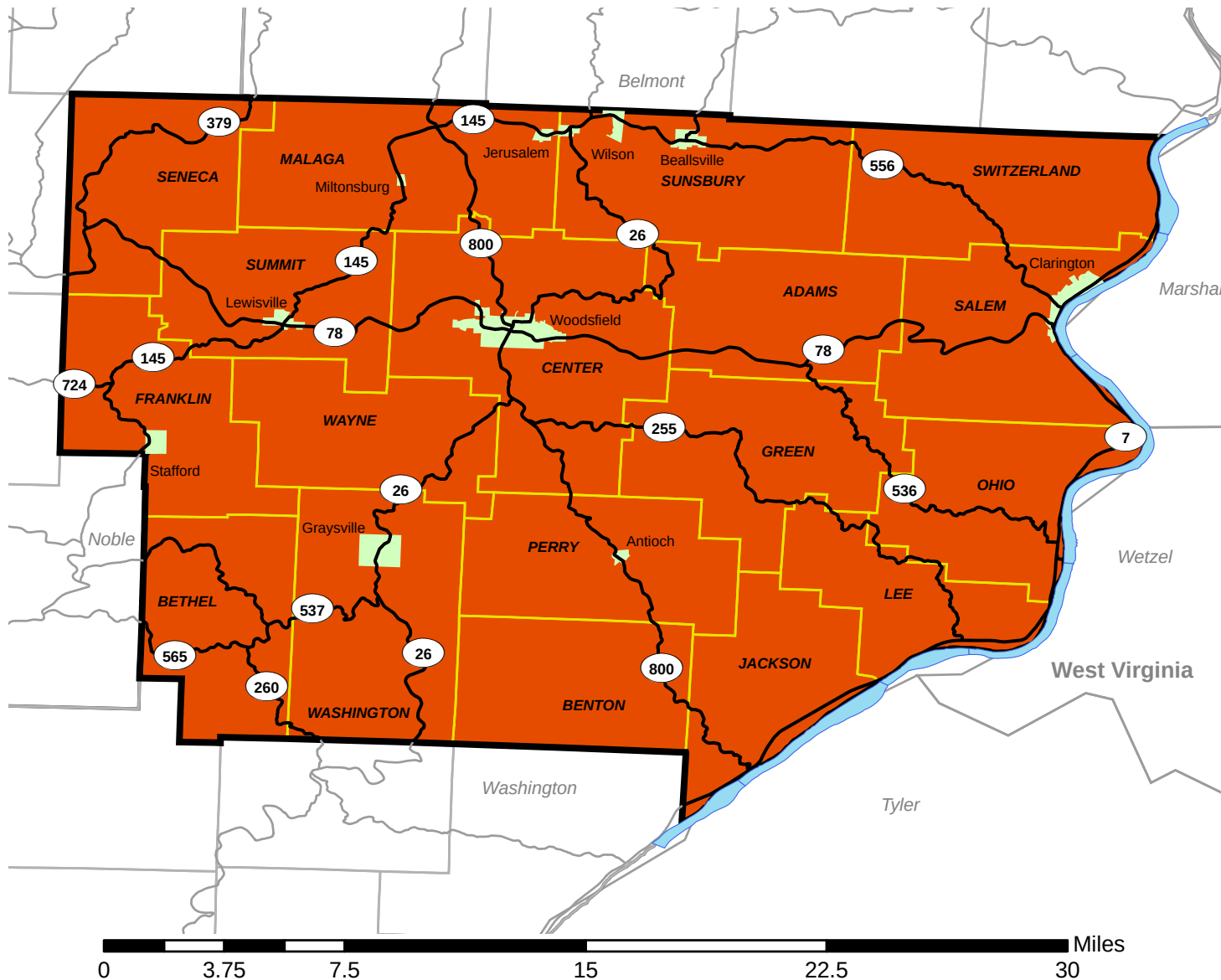
Past mitigation efforts to reduce the effects of hailstorms throughout Monroe County include the following; the development and distribution of public awareness materials concerning hailstorms, the utilization of local media for the distribution and publication of hazard information, and conducting National Weather Service (NWS) Storm Spotter classes.

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	7,270	100%	\$581,600,000	\$1,454,000	<1%	14,642	14,642	100%
<i>Commercial</i>	840	840	100%	\$630,000,000	\$945,000	<1%	4,200	4,200	100%
<i>Industrial</i>	95	95	100%	\$93,575,000	\$140,362	<1%	1,900	1,900	100%
<i>Agricultural</i>	945	945	100%	\$37,800,000	\$4,252,500	11%	1,890	1,890	100%
<i>Religious/Non-Profit</i>	46	46	100%	\$5,750,000	\$24,150	<1%	1,380	1,380	100%
<i>Government</i>	30	30	100%	\$17,550,000	\$26,325	<1%	600	600	100%
<i>Education</i>	11	11	100%	\$99,000,000	\$148,500	<1%	2,750	2,750	100%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$375,000	<1%	25	25	100%
Total	9,242	9,242	100%	\$1,615,275,000	\$7,365,837	<1%	27,387	27,387	100%

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

MONROE COUNTY HAZARD MITIGATION PLAN HAILSTORM MAP



Legend

- Township
- Municipality
- Moderate Hazard

2.2 PROFILING HAZARDS

2.2.7. Hazardous Materials

Hazardous Materials (hazmat) – These are defined as explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious, or radioactive materials that, when involved in an accident, and released in sufficient quantities, will place a segment of the general public in immediate danger from exposure, contact, inhalation, or ingestion.

Hazmat Incident – These are incidents involving either the release or potential release of a hazardous material as the result of accidental spills, leaks, or released airborne hazardous materials at transportation or fixed facility accidents.

INTRODUCTION

The hauling, storage, and use of hazardous materials plays a vital role in the economy of the nation. These materials are stored and handled at fixed facilities and are transported over highways, railways, and water transportation systems. It is estimated that over four (4) billion tons of hazardous materials are transported annually and that 100,000 trucks haul hazardous materials on the country's highways each day. Almost

Period of Occurrence:	At any time.
Number of Events to Date (1980 – 2011):	6
Probability of Event:	Infrequent – usually associated with a fixed facility.
Warning Time:	Minutes to hours.
Potential Impacts:	Upon release place a segment of the general public in immediate danger from exposure.
Cause Injury or Death:	Injury and death.
Potential Facility Shutdown:	Minimal.

Figure 2.7a

half of all freight trains carry hazardous materials. Ohio is a crossroads state into which, through which, or out of which travels virtually every one of the 50,000 chemicals known to be manufactured in the United States. There are 2,500 hazardous materials shipments per day on the highways across the state.

Hazardous substances fall under two (2) definitions of hazard: **Health Hazard** – Means a chemical for which there is statistically significant evidence based on at least one (1) study conducted in accordance with established scientific principles that acute or chronic health effects may occur. Hazardous materials can enter the body in one (1) of four (4) ways. The four (4) routes of entry include inhalation, ingestion, injection, and skin absorption. **Physical Hazard** – Means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed liquid, a compressed gas,

explosive, flammable, an organic oxide, an oxidizer, pyrophoric (ignites spontaneously), unstable (reactive), or water reactive.

Hazardous materials subject to reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA), or Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) include these four (4) groups:

1. **Extremely Hazardous Substances** – These are materials with acutely toxic properties that may do irreversible damage, cause death to people, or harm the environment when released or used outside their intended use. Examples include ammonia, chlorine, and sulfuric acid.
2. **Hazardous Substances** – These are any materials posing a threat to human health and/or the environment, or any substance designated by the Environmental Protection Agency (EPA) to be reported if a designated quantity of the substance is spilled into the waters of the United States, or is otherwise released into the environment.
3. **Hazardous Chemicals** – If present at a chemical facility in certain amounts, these substances require a Material Safety Data Sheet (MSDS) under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects such as cancer, burns, or dermatitis.
4. **Toxic Chemicals** – Chemicals or chemical categories that appear on the list because of their chronic or long-term toxicity.

Hazardous chemicals are prevalent throughout our society. While industry is the primary user and maintainer of hazardous chemicals, we also have them in our homes, in our cars, at our places of work and recreation. The geographic and economic characteristics of Monroe County make it unlikely but possible for a hazardous materials release to occur.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.7b

HAZARD IDENTIFICATION

There are four (4) principal means of transporting hazardous materials through Monroe County (i.e., highways, railroads, pipelines, and the Ohio River). The most probable site for a hazmat incident in Monroe County would be along its 213 miles of state highway, or at any of the fixed facilities, which handle, use, or store hazardous materials on a regular basis. The Ohio River borders the entire eastern portion of Monroe County, and receives a great deal of barge traffic, the majority of which haul coal; however, hazardous materials are transported on the Ohio River. According to representatives from the Huntington District of the US Army Corps of Engineers (USACE), approximately 7.6 million tons of petroleum products, and 1.3 million tons of chemical products are transported on the Ohio River annually. The following list of hazardous materials is transported via barge on the Ohio River.

- Acetic Acid
- Acetone
- Anhydrous Ammonia
- Ammonium Nitrates and Sulfates
- Benzene
- Boric Acid
- Calcium Chloride
- Chlorine
- Diammonium Phosphate
- Ethylene Glycol
- Fuel Oils
- Gasoline
- Manganese
- Methanol
- Monoammonium Phosphate
- Phthalic Anhydrous
- Sodium Chloride
- Sodium Hydroxide
- Styrene
- Zinc

There are approximately 20 miles of railroads within the county, all of which are used to transport hazardous materials. Hazmat incidents do not follow any seasonal pattern and could occur at any time of the year. Monroe County has eleven (11) facilities, which produce, use, or store Extremely Hazardous Substances (EHS), and 26 facilities having hazardous substances. One of these facilities is Ormet, which is located on the Ohio River and employs several individuals. An incident at Ormet could significantly affect all of Monroe County, its neighbors, as well as several counties in West Virginia. Monroe County also borders the Hannibal Locks and Dam at which a barge carrying hazardous materials could be involved in an accident.

Hazardous materials can be released as a secondary result of a natural disaster like an earthquake or flood. In either case, buildings or vehicles can release their hazardous materials inventories when structurally compromised or involved in traffic accidents. Additional potential causes of hazardous material releases may include terrorist incident and illegal drug labs or dumping. Illegal drug labs present a special concern due to the fact that each must be treated as a chemical hazard site and decontaminated before the property can be used again. Illegal drug labs can be set up in homes, apartments, vacant buildings, shacks in the forest, or even in a van parked on the street.

HISTORY OF EVENTS

The United States Environmental Protection Agency (USEPA) Envirofacts Data Warehouse maintains an inventory of the EPA-Regulated facilities in each city, town, and village of the United States, along with the number of toxic releases and air releases that have occurred at those facilities. Table 2.7a below provides this information for the municipalities of Monroe County.

Village	Regulated Facilities	Toxic Releases	Air Releases	Hazardous Waste Handler
Antioch	0	0	0	0
Beallsville	5	0	0	3
Clarington	6	0	0	4
Graysville	1	0	0	1
Jerusalem	0	0	0	0
Lewisville	7	0	3	4
Miltonsburg	0	0	0	0
Stafford	0	0	0	0
Wilson	0	0	0	0
Woodsfield	18	0	3	14
Total	37	0	6	26

Table 2.7a

According to an article in *The Monroe County Beacon*, a Texas Eastern gas transmission line exploded on May 5, resulting in flames shooting hundreds of feet into the air, and continuous roar of burning heard for several miles. The pilot of an aircraft flying at 3,000 feet thought he was seeing a nuclear explosion when he saw a mushroom cloud and fire erupt in rural Monroe County.

HAZARD IMPACT

Hazardous materials incidents are a moderate man-made hazard in Monroe County. Hazardous materials in various forms have the potential to result in death, serious injury, long lasting health effects, and damage to buildings, homes, and other property. These events can occur rapidly over a large area. An incident causing the accidental release of a hazardous material is spontaneous, with little time of warning. Further, the recovery and clean-up activities involved in a hazmat incident may require several hours, days, or even weeks to complete.

The chemical, physical and biological properties of hazardous materials pose a potential risk to life, health, the environment, and property when not properly contained. Hazardous materials incidents may be either generated from a fixed site or the result of a transportation-related accident or release. Hazardous substances are subject to regulation by a variety of state and federal agencies through an assortment of labor, environmental and transportation laws.

Many factors determine the impact of a potential incident including quick and solid decision-making by emergency officials, location and type of release, evacuation and shelter-in-place needs, public health concerns, and relevant economic considerations. Additionally, while most incidents are generally brief, the resulting recovery and cleanup may take time to exact.

If evacuation is necessary due to a chemical emergency, road closures and traffic jams may result. If a large-scale evacuation is deemed necessary, it can pose serious long term economic consequences to the involved population area. A delay in the resumption of industry commerce may cause economic losses for both business owners and employees. In addition, an evacuation ordered on short-notice could cause serious problems for businesses requiring time to shut down specialized equipment. There is also the monetary impact borne by responding public or private emergency response organization. These agencies may be challenged by the expenses dictated by a hazardous material release, and may need to wait an uncomfortable length of time for the responsible party to reimburse any outstanding costs, further straining the economic resources of the region.

A major incident involving significant injuries may severely tax regional medical services, as medical facilities aren't generally designed to handle mass amounts of victims on short notice. Consequently, in the event of a major incident, hospitals and

other medical facilities must still be able to provide their customary level of service to all patients, regardless of whether they were incident victims or not.

PAST MITIGATION EFFORTS

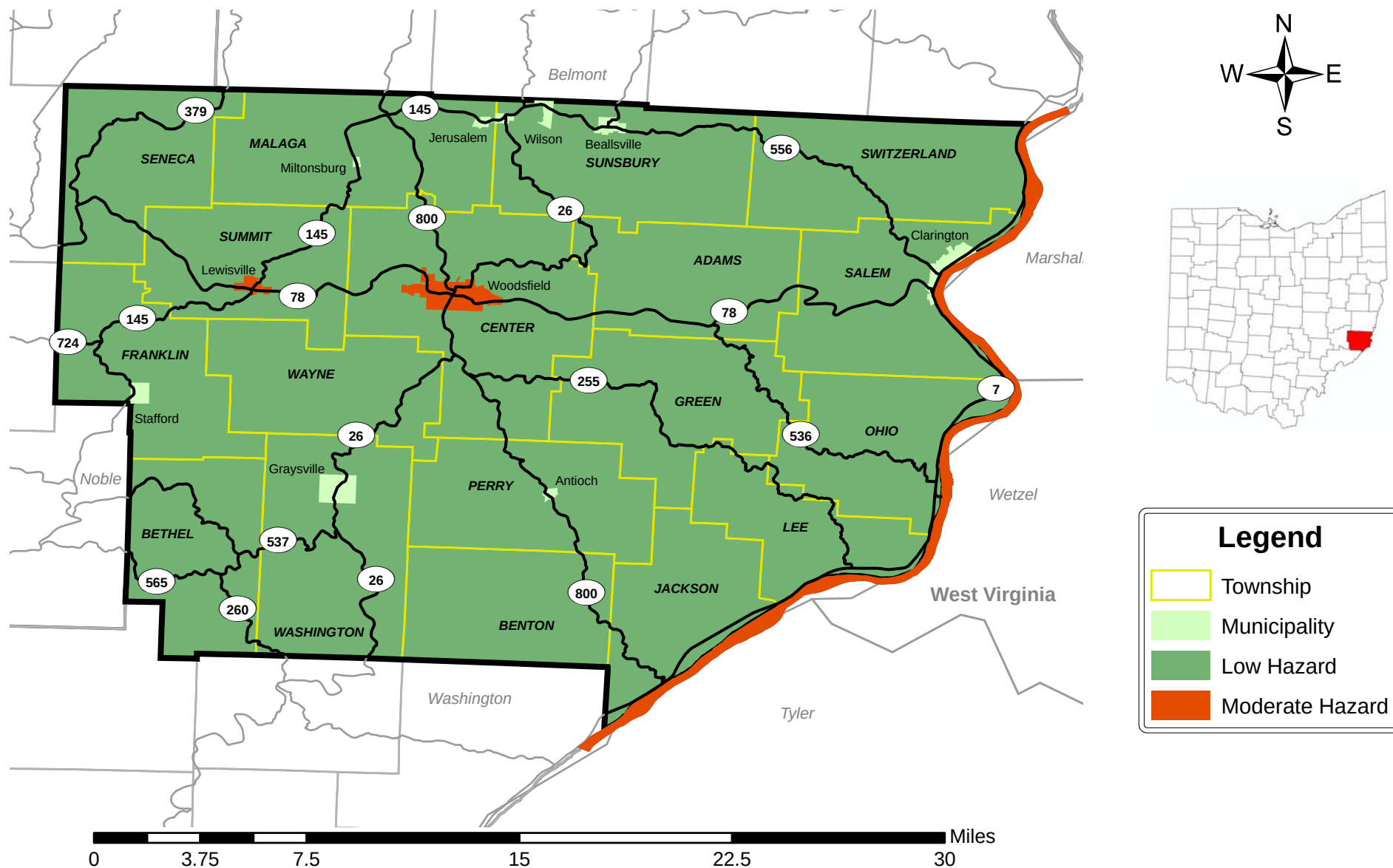
The Monroe County Local Emergency Planning Committee (LEPC) has conducted Commodity Flow Studies (CFS) in the past to identify the major risks involved with hazardous material transportation in Monroe County. The data that was collected allows for a better understanding of the types and quantities of hazardous materials being transported through and within the county.

Hazard: Hazmat Incident

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	1,090	15%	\$581,600,000	\$13,080,000	2%	14,642	1,464	10%
<i>Commercial</i>	840	336	40%	\$630,000,000	\$50,400,000	8%	4,200	630	15%
<i>Industrial</i>	95	62	65%	\$93,575,000	\$12,805,000	14%	1,900	760	40%
<i>Agricultural</i>	945	142	15%	\$37,800,000	\$1,597,500	4%	1,890	189	10%
<i>Religious/Non-Profit</i>	46	9	20%	\$5,750,000	\$472,500	8%	1,380	0	0%
<i>Government</i>	30	11	37%	\$17,550,000	\$965,250	6%	600	60	10%
<i>Education</i>	11	4	36%	\$99,000,000	\$5,400,000	5%	2,750	413	15%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$12,500,000	8%	25	5	20%
Total	9,242	1,659	18%	\$1,615,275,000	\$97,220,250	6%	27,387	3,521	13%

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

MONROE COUNTY HAZARD MITIGATION PLAN HAZMAT MAP



2.2 PROFILING HAZARDS

2.2.8. Infestation

An infestation is to spread or swarm in or over in a troublesome manner. Also, an infestation may mean to live in, or on, as a parasite.

INTRODUCTION

According to searches of online information provided by the Ohio Division of Forestry, Monroe County is subject to an infestation of a European strain of gypsy moth, as well as the emerald ash borer.

Period of Occurrence:	At any time.
Number of Events to Date (1987 – 2011):	2 – European gypsy moth & Emerald Ash Borers
Probability of Event:	Likely.
Warning Time:	Months to Years.
Potential Impacts:	Can be particularly damaging to crops and timber.
Cause Injury or Death:	N/A
Potential Facility Shutdown:	N/A

Figure 2.8a

For the purposes of this risk assessment it is assumed that the probability of an infestation actually occurring in Monroe County is low, with low associated impact. The risk of an infestation is targeted to the rural areas of the county and large forested areas such as the Monroe Lake Wildlife Management Area (WMA), Sunfish Creek State Forest, and the Wayne National Forest.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.8b

HAZARD IDENTIFICATION

The European strain of gypsy moth is one (1) of the most destructive defoliating insect pests to attack the trees and forests of the northeastern United States. An infestation of the gypsy moth is most likely to occur in the 220,288 acres of forest, or the 64,623 acres of farmland that exist in Monroe County. Other highly probably infestation that could occur in Monroe County include emerald ash borers, Asian long horned beetles, mosquitoes known to be infected with the West Nile Virus, spider mites, and bed bugs.

Most of the state of Ohio, which is home to about half of the nations 7.5 billion ash trees is under quarantine due to an infestation of the emerald ash borer, which means ash trees cannot be moved out of those areas (see Figure 2.8c). In May 2007, 26 counties were under quarantines designed to stem the insect's spread. Today, the state's quarantined area includes 68 of 88 counties, 49 where the borer has been spotted, and 19 with an "elevated risk" according to the Ohio Department of Agriculture. Despite a range of efforts by a coalition from 14 states, two (2) Canadian provinces and both countries' federal governments, the emerald ash borer continues to expand its infestation, however has not made a significant presents in Monroe County as of yet.

Ohio's emerald ash borer quarantine

Ash tree material and hardwood firewood prohibited from leaving quarantined areas.

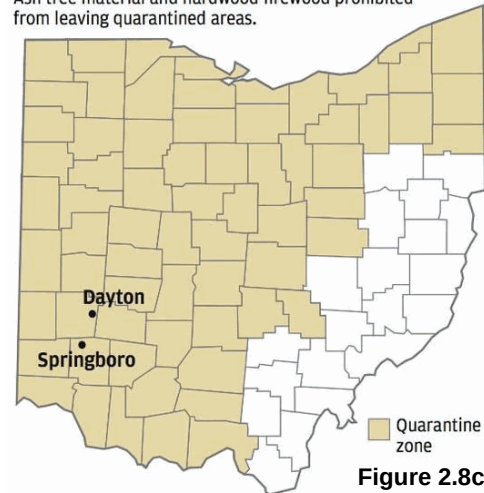


Figure 2.8c

HISTORY OF EVENTS

A state gypsy moth quarantine was established in 1987. The quarantine is an effort to minimize the movement of egg masses into non-infested areas of Ohio. Monroe County is among a few counties in southeastern Ohio that has not been quarantined due to gypsy moth infestation.

Sometime in the late 1990s, the emerald ash borer, a wood-boring beetle, Latin name (*Agrilus planipennis*), was introduced into North America from eastern Asia with ash products used in packaging of consumer products. Originally detected in 2002 in Ontario and Michigan, the ash borer has spread to Ohio, Kentucky, Indiana, Illinois, Maryland, Minnesota, Missouri, New York, Pennsylvania, Virginia, West Virginia, Wisconsin, Quebec and Iowa. The beetles land on ash trees and lay larvae that tunnel into a tree's bark, killing it within five (5) years.

HAZARD IMPACT

The impact of an infestation of gypsy moths would include economic losses through timber mortality, loss of recreational opportunities in severely defoliated areas, and nuisances from gypsy moth caterpillars. An infestation of gypsy moths will likely cause no damage to structural assets.

According to the Ohio Division of Forestry there are tens of millions of ash trees that are dead, or in decline as a result of the emerald ash borer infestation.

PAST MITIGATION EFFORTS

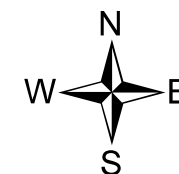
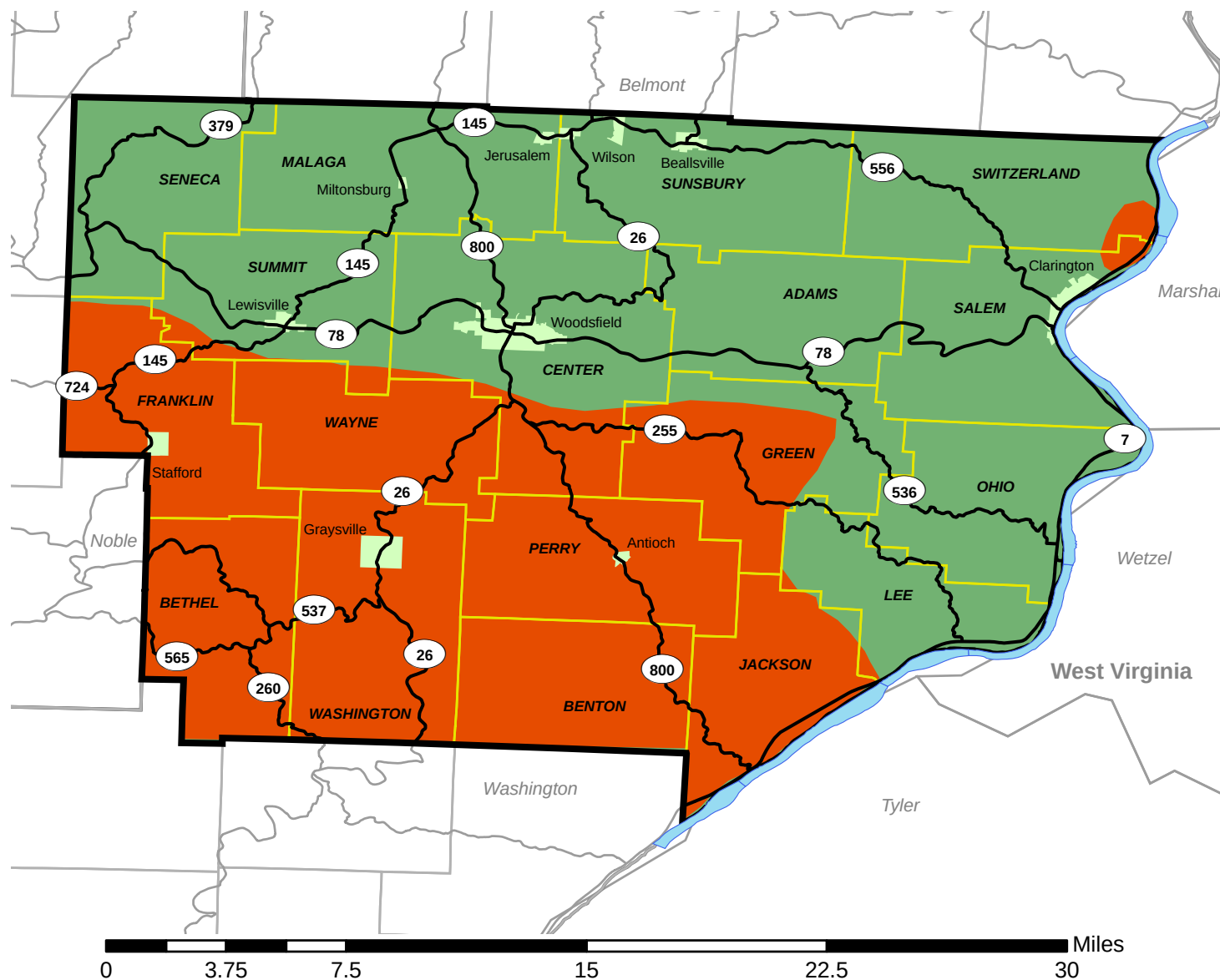
The Ohio Division of Forestry has disseminated public information encouraging Ohio residents to not move firewood, in an effort to slow the spread of the emerald ash borer. Research is also being aimed at controlling and stemming the spread of the ash borer through insecticides and other treatments, including the introduction of predators, such as a wasp native to China. The Ohio Division of Forestry has also strategically places pheromone traps throughout Monroe County, in an effort to reduce the European strain of gypsy moth population.

Hazard: Infestation

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	1,817	25%	\$581,600,000	\$0	0%	14,642	3,660	25%
<i>Commercial</i>	840	84	10%	\$630,000,000	\$0	0%	4,200	630	15%
<i>Industrial</i>	95	10	11%	\$93,575,000	\$0	0%	1,900	285	15%
<i>Agricultural</i>	945	567	60%	\$37,800,000	\$19,136,250	51%	1,890	662	35%
<i>Religious/Non-Profit</i>	46	5	11%	\$5,750,000	\$0	0%	1,380	207	15%
<i>Government</i>	30	6	20%	\$17,550,000	\$0	0%	600	72	12%
<i>Education</i>	11	2	18%	\$99,000,000	\$0	0%	2,750	275	10%
<i>Utilities</i>	5	2	40%	\$150,000,000	\$0	0%	25	4	16%
Total	9,242	2,493	27%	\$1,615,275,000	\$19,136,250	1%	27,387	5,795	21%

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

MONROE COUNTY HAZARD MITIGATION PLAN INFESTATION MAP



Legend

- Township
- Municipality
- Low Hazard
- Moderate Hazard

2.2 PROFILING HAZARDS

2.2.9. Land and Mine Subsidence

Land subsidence (commonly named sinkholes) refers to any failures in the ground that cause collapses in the earth's surface.

INTRODUCTION

Land subsidence is a general term for a variety of collapses in the earth's surface. Some can be rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Subsidence, in the context of underground mining, is the lowering of the Earth's surface due to collapse of bedrock and unconsolidated materials (i.e., sand, gravel, silt, and clay) into underground mined areas.

Research identified land and mine subsidence as potential hazards in Monroe County. Subsidence information was obtained from the following Internet sites.

Period of Occurrence:	At any time – Chance of occurrence increases following long periods of heavy rain, snowmelt, or near timbering and construction activity.
Number of Events to Date:	Limited small-scale events.
Probability of Event:	Infrequent.
Warning Time:	Weeks to months – Some instances of land subsidence can occur quickly without warning, but often in the context of other storm events.
Potential Impacts:	Economic losses such as decreased land values, agrobusiness losses, disruption of utility and transportation systems, and costs for any litigation. May cause geological movement, causing infrastructure damages ranging from minimal to severe.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days to weeks.

Figure 2.9a

- Ohio Department of Natural Resources, Division of Geological Survey
- Public Comment
- USGS Soil Survey
- Nationalatlas.gov

For the purposes of this risk assessment, it is assumed that Monroe County has a moderate probability, and low impact to land and mine subsidence. The hazard of land

and mine subsidence is targeted to the Village of Clarington and Switzerland Township, as this is the only area within the county that has been undermined.

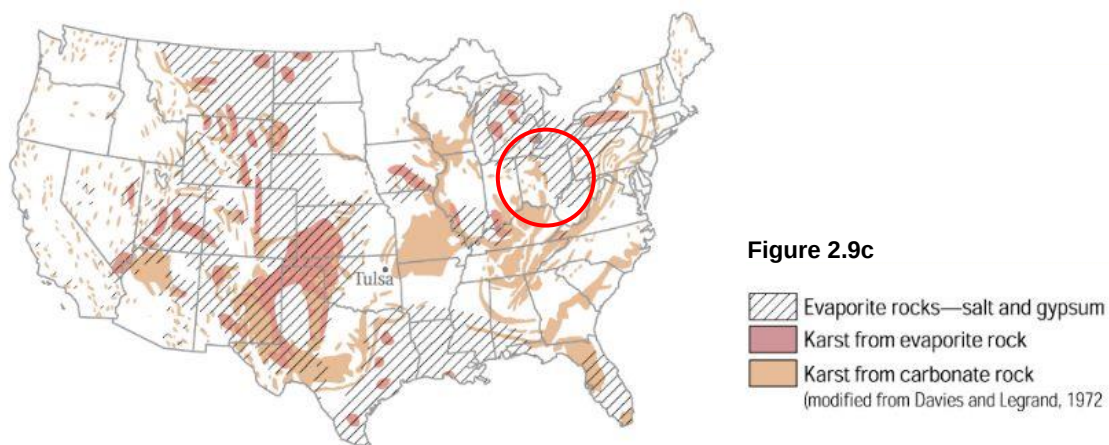
High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.9b

HAZARD IDENTIFICATION

Land subsidence is a global problem and, in the United States, more than 17,000 square miles in 45 states, an area roughly the size of New Hampshire and Vermont combined, have been directly affected by subsidence. More than 80 percent (80%) of the identified subsidence in the nation has occurred because of exploitation of underground water, and increasing development of land and water resources threatens to exacerbate existing land-subsidence problems and initiate new ones.

Land subsidence can be caused by natural processes, such as the dissolving of limestone underground, and earthquake, or volcanic activity. It can also be the result of human actions such as withdrawal of subsurface fluids or underground mining; unplanned commercial, residential, or industrial developments; roadway construction; etc. Land subsidence occurs when large amounts of ground water have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rocks fall into the void. Land subsidence can go unnoticed because it can occur over large areas rather than in a small spot.



punching in deeper mines (overburden of more than 75 feet). Sag subsidence features may fill with water if the surface of the subsidence intersects the water table.

HISTORY OF EVENTS

There has been very limited historical land subsidence activity in Monroe County. Extensive research indicates that there has been limited land subsidence activity in the county since this plan was originally adopted in 2005.

HAZARD IMPACT

Land subsidence causes many problems including: changes in elevation and slope of streams, canals, and drains; damage to bridges, roads, railroads, electric power lines, storm drains, sanitary sewers, canals, and levees; damage to private and public buildings; failure of well casings from forces generated by compaction of fine-grained materials in aquifer systems. Safety problems for residents caused by sinkholes and subsidence (as illustrated in figure 2.9f) initiated by abandoned underground mines are a growing concern. The Ohio Department of Transportation (ODOT) developed an abandoned Underground Mine Inventory and Risk Assessment process as a proactive



Figure 2.9f

method of locating and assessing the safety of mine sites underlying highways throughout Ohio. For example, a 12-foot section of Interstate Route 70 in Guernsey County suddenly collapsed due to abandoned underground mine subsidence on March 5, 1995. This collapse resulted in near tragedy and the subsequent closure of the roadway for four (4) months.

Mine subsidence, like an earthquake, is a geologic hazard that can strike with little or no warning and can result in catastrophic and costly damages. There are at least three (3) highways that could become damaged as a result of mine subsidence in Monroe County: State Routes 7, 78, and 556. Unlike an earthquake, mine subsidence normally only affects few people. However, if a mine collapses under an interstate highway, several lives and industries are subjected to potential damage.

Mine subsidence can also cause foundation damage to buildings, disrupt underground utilities, and be a potential risk to human life. There are approximately 203 housing units in the Village of Clarington.

PAST MITIGATION EFFORTS

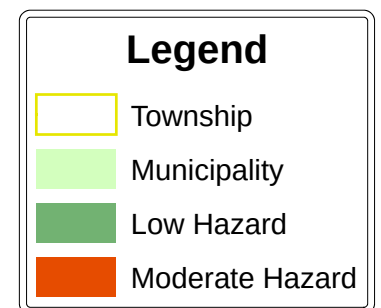
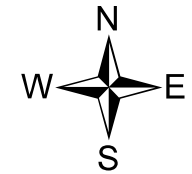
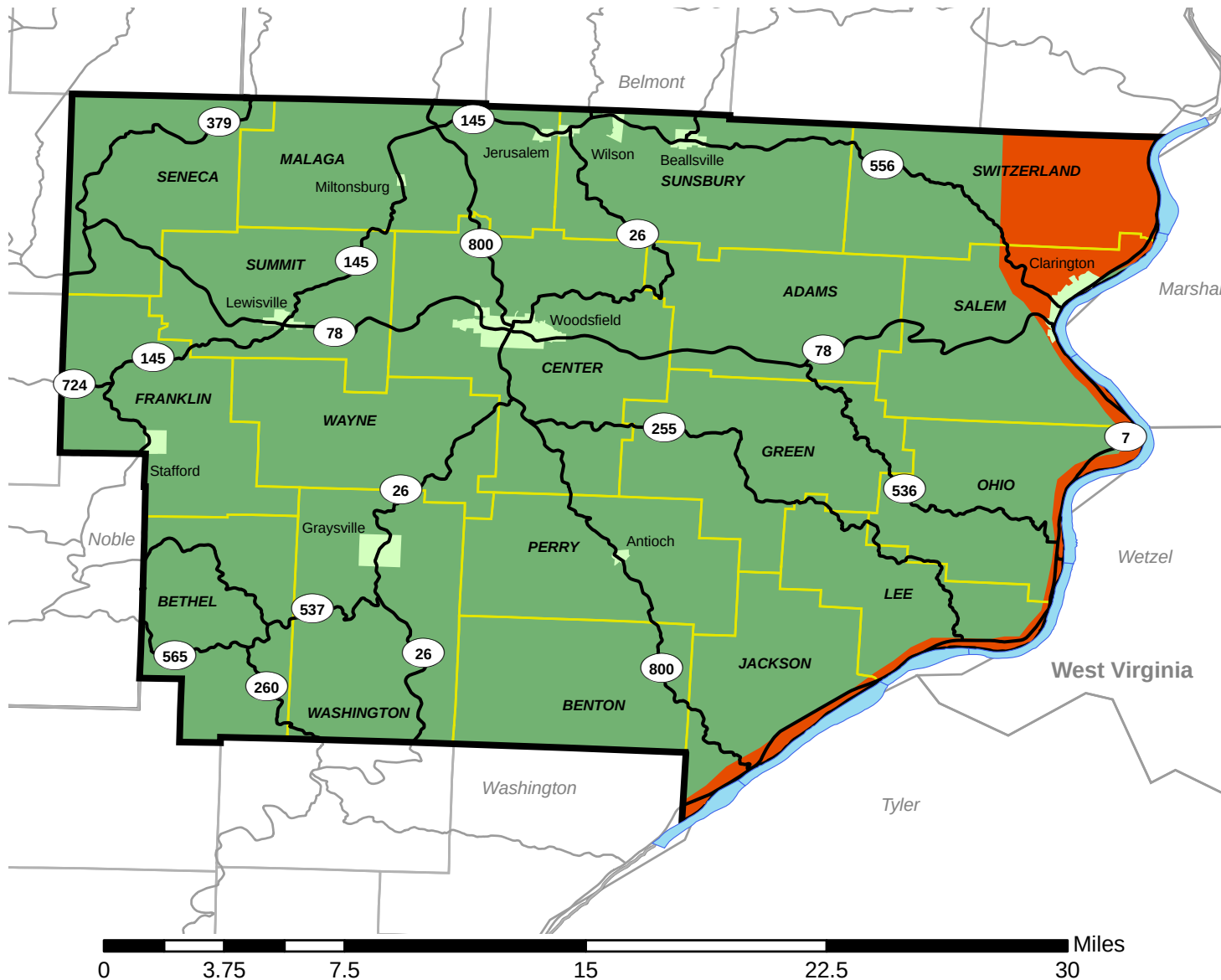
Efforts to mitigate the effects of land and mine subsidence in Monroe County have included the review of existing regulations, comprehensive plans, and capital improvement plans, to ensure adequacy in reducing the amount of future development in areas identified as prone to land and mine subsidence. The ODNR has also developed GIS based, on-line mapping which illustrates the areas in Monroe County that have been undermined.

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	290	4%	\$581,600,000	\$2,320,000	<1%	14,642	580	4%
<i>Commercial</i>	840	17	2%	\$630,000,000	\$1,275,000	<1%	4,200	85	2%
<i>Industrial</i>	95	2	2%	\$93,575,000	\$197,000	<1%	1,900	40	2%
<i>Agricultural</i>	945	47	5%	\$37,800,000	\$317,250	1%	1,890	94	5%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	0	0%
<i>Government</i>	30	0	0%	\$17,550,000	\$0	0%	600	0	0%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	0	0%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$0	0%	25	0	0%
Total	9,242	356	4%	\$1,615,275,000	\$4,109,250	<1%	27,387	799	3%

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

MONROE COUNTY HAZARD MITIGATION PLAN LAND/MINE SUBSIDENCE MAP



2.2 PROFILING HAZARDS

2.2.10. Severe Thunderstorm

A thunderstorm is considered severe when that storm produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least ¾" in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal too, or greater than 40 mph (35 knots), and/or hail of at least ½" is defined as "approaching severe".

INTRODUCTION

A severe thunderstorm is the result of a violent form of convection wherein cold upper air falls, and warm moist air rises. As the warm air rises, cumulonimbus clouds can develop and turn into severe thunderstorms with strong winds, lightning, heavy rain, 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.

Period of Occurrence:	Spring, and early summer.
Number of Events to Date (1967 – 2011):	58
Probability of Event:	Frequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems). Impacts human life, health, and public safety.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days.

Figure 2.10a

Several methods of research identified severe thunderstorms and lightning as natural hazards in Monroe County, including discussions with local representatives, as well as research of several Internet sites.

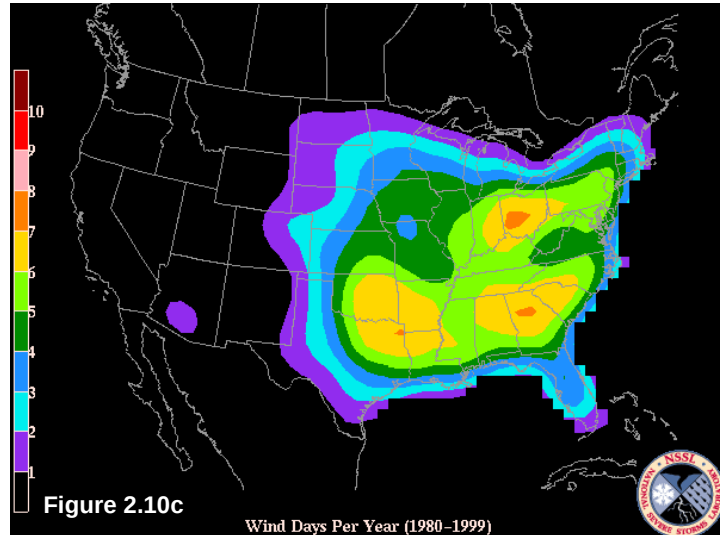
For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Monroe County has a high probability, and low impact to severe thunderstorms. The hazard of severe thunderstorm is not targeted to any specific portion of Monroe County.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.10b

HAZARD IDENTIFICATION

The National Weather Service (NWS) defines a thunderstorm as “severe” when wind speeds reach 58 mph or stronger, and/or hail is produced that is $\frac{3}{4}$ inch in diameter or larger, and/or a tornado is produced. High wind events are one (1) of the most common types of hazards in Monroe County. Figure 2.10c shows the number of high-wind days that occur per year. To be classified as a “high wind event,” winds must be in excess of 52 mph. As can be seen, southeast Ohio is one (1) of the most prominent areas for high wind events. Winds at these speeds are capable of doing great damage.



Thunderstorms are a seasonal hazard and can be expected to occur every year. According to the NWS, the most active thunderstorm season in Ohio is late spring and early summer. The key ingredient that defines a thunderstorm is lightning. Because lightning creates thunder, a storm with lightning is termed a thunderstorm. A bolt of lightning reaches a temperature of 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.

HISTORY OF EVENTS

According to records provided by the Monroe County Emergency Management Agency (MCEMA) and the National Climatic Data Center (NCDC), Monroe County has experienced numerous severe thunderstorm events.

- March 25, 1996 – Thunderstorm winds caused substantial damage to the roof of the River High School at Hannibal. A 6,400 square foot section of the roof on the southwest section of the building was peeled back. Also, a 13,000 square foot section of the roof over a gymnasium was damaged.
- May 18, 1997 – Thunderstorm winds blew down a produce stand, two (2) large trees also fell, and a small shed was destroyed along Rt. 26 near Woodsfield.

- April 9, 2001 – Thunderstorm winds downed several trees in the Woodsfield area. Numerous hail reports were received from across east central Ohio, with the hailstones ranging in diameter from dime-sized to as large as golf-balls.
- March 9, 2002 – Enough instability was present to produce a line of severe thunderstorms along the main cold front as it entered east central Ohio. This combination of strong gradient winds and severe thunderstorm winds produced widespread damage across the area, mostly in the form of downed trees and power lines. It is estimated that approximately 15,000 people were left without electricity in east central Ohio in the wake of this wind event.
- September 22, 2010 – A line of severe thunderstorms associated with a stalled cold front moved over eastern Ohio. These thunderstorms produced damaging straight line winds that caused numerous toppled and snapped trees as well as downed power lines that left an estimated 100,000 people without power across the region. A local fire department reported large branches and two (2) playground sets overturned in Beallsville.

HAZARD IMPACT

Severe thunderstorms that occur in Monroe County can be associated with winds over 50 mph resulting in damage to trees, the loss of electrical power to several customers, as well the closure of roads due to limbs and other debris. Severe thunderstorms can also prompt flash flooding which can result in road closures, and minor basement flooding in some residential areas. Severe thunderstorms are also capable of producing hail which can break windows, destroy HVAC systems, and destroy several acres of cash crops.

According to event records maintained by the National Climatic Data Center (NCDC), Monroe County has endured 58 severe thunderstorms with high winds since 1967. These storms have caused in excess of \$573,000 in property damage.

Residents and businesses are likely to incur more damage as a result of these “smaller” storms as individual houses and vehicles are damaged by fallen limbs and businesses are forced to close due to a lack of electricity.

Ohio averages four (4) deaths and 15 injuries per year as a result of lightning. According to *NCDC Event Records*, there has been one (1) incident involving lightning in Monroe County over the past 61 years. On February 5, 2008 the Monroe County

Emergency Management Agency (MCEMA) reported that lightning struck and killed a 60 year old man out tending cows in an open field in Lewisville.

PAST MITIGATION EFFORTS

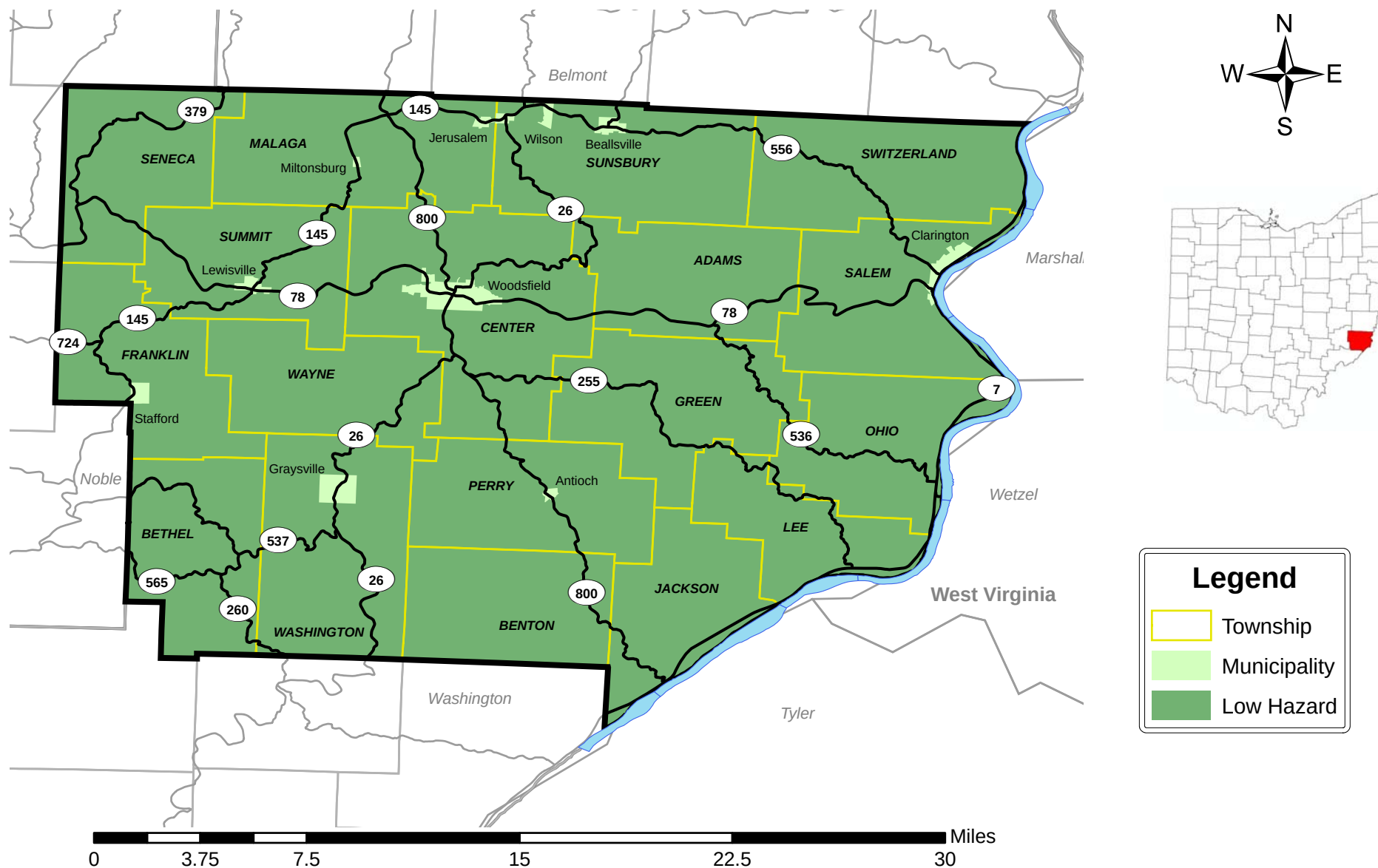
One of the most common impacts from severe weather is the loss of commercial power. Since many of the services rely on power for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from severe thunderstorms. The Monroe County Emergency Management Agency (MCEMA) has also initiated the development of a countywide Continuity of Operations Plan (COOP) which will include specific COOP guidelines for nearly all of the county agencies.

Hazard: Severe Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	7,270	100%	\$581,600,000	\$5,816,000	1%	14,642	14,642	100%
<i>Commercial</i>	840	840	100%	\$630,000,000	\$1,575,000	<1%	4,200	4,200	100%
<i>Industrial</i>	95	95	100%	\$93,575,000	\$233,937	<1%	1,900	1,900	100%
<i>Agricultural</i>	945	945	100%	\$37,800,000	\$2,126,250	6%	1,890	1,890	100%
<i>Religious/Non-Profit</i>	46	46	100%	\$5,750,000	\$40,250	<1%	1,380	1,380	100%
<i>Government</i>	30	30	100%	\$17,550,000	\$43,875	<1%	600	600	100%
<i>Education</i>	11	11	100%	\$99,000,000	\$247,500	<1%	2,750	2,750	100%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$375,000	<1%	25	25	100%
Total	9,242	9,242	100%	\$1,615,275,000	\$10,457,812	<1%	27,387	27,387	100%

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

MONROE COUNTY HAZARD MITIGATION PLAN THUNDERSTORM MAP



2.2 PROFILING HAZARDS

2.2.11. Severe Wind/Tornado

Wind storms are destructive wind events that occur with or without the presence of other storm events, such as tornados or severe thunderstorms.

A tornado is a violently rotating column of air extending from a super-cell thunderstorm to the ground.

INTRODUCTION

A windstorm is a storm with high winds or violent gusts, sometimes called a wind shear or microburst, but with little or no rain. A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one (1) mile wide and 50 miles long.

Several methods of research identified severe wind and tornadoes as natural hazards in Monroe County.

Period of Occurrence:	At any time – Primarily during March through August.
Number of Events to Date (1950 – 2011):	2 tornados & 6 high wind events.
Probability of Event:	Infrequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, and damaged or destroyed critical facilities. Impacts human life, health, and public safety.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	Days to weeks or more.

Figure 2.11a

General severe wind and tornado information was obtained from the following sources:

- FEMA *State and Local Mitigation Planning How-to-Guide: Understanding Your Risks*.
- National Climatic Data Center (NCDC) – Event Record Database.
- Monroe County Emergency Operations Plan (EOP).

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Monroe County has a moderate probability, and moderate impact to severe wind and tornadoes. The hazard of severe wind and tornadoes is not targeted to any specific portion of Monroe County.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.11b

HAZARD IDENTIFICATION

Tornadoes are among the most unpredictable of weather phenomena. Tornadoes can occur in any state in the United States but are more frequent in the Midwest, Southeast, and Southwest. Ohio is positioned geographically on the eastern-most edge of what has come to be known as “tornado alley” and is no stranger to tornado sightings.

The nature of tornadoes is they strike at random. While it is known that some areas of the country experience tornadoes more than others, predicting exactly what parts of Monroe County have a greater chance of being struck by a tornado is difficult. The best predictor of future tornadoes is the occurrence of previous tornadoes which are discussed below.

Most sources have only been recording tornado activity since 1950. Southeastern Ohio falls into the “moderate” category for tornado risk, and the second highest category for wind zones in the United States, which is illustrated in figure 2.11c at right. Monroe County falls within the zone III, wind zone. According to county and National Weather Service (NWS) records there have been two (2) recorded tornado events in Monroe

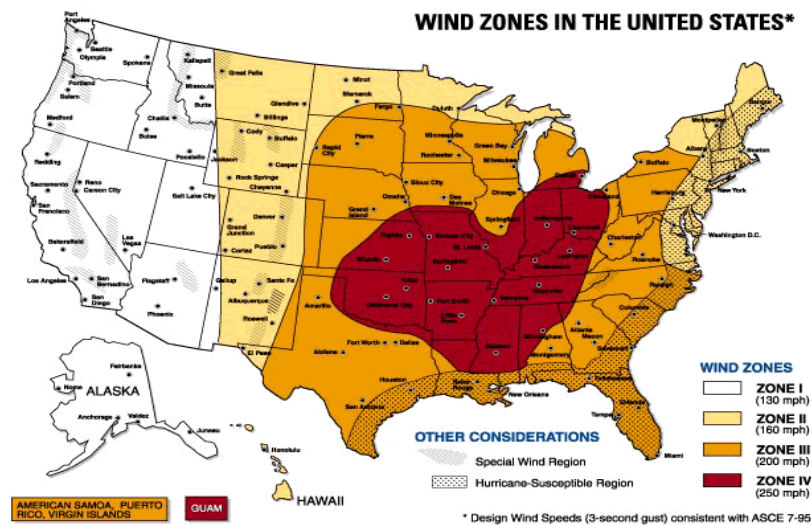


Figure 1.2 Wind zones in the United States

Figure 2.11c

County over the past 61 years. The largest of these tornadoes was characterized as an F1 on the Fujita Tornado Measurement Scale.

The Enhanced Fujita Damage scale is illustrated in table 2.11a. The Enhanced Fujita Scale (EF Scale) rates the strength of tornadoes in the United States based on the damage they cause.

SCALE	WIND SPEED mph	RELATIVE FREQUENCY	POTENTIAL DAMAGE
EF0	65-85	53.5%	<i>Minor or no damage.</i> Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	31.6%	<i>Moderate damage.</i> Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	<i>Considerable damage.</i> Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	<i>Severe damage.</i> Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	0.7%	<i>Extreme damage.</i> Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	<0.1%	<i>Total destruction.</i> Strong framed, well built houses leveled off foundations and swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations.

Table 2.11a

Implemented in place of the Fujita scale introduced in 1971 by Ted Fujita, it began operational use on February 1, 2007. The scale has the same basic design as the original Fujita scale, six (6) categories from zero (0) to five (5) representing increasing degrees of damage. It was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. Better standardizing and elucidating what was previously subjective and ambiguous, it also adds more types of structures, vegetation, expands degrees of damage, and better accounts for variables such as differences in construction quality.

It was developed from 2000 to 2004 by the Fujita Scale Enhancement Project of the Wind Science and Engineering Research Center at Texas Tech University, which

brought together dozens of expert meteorologists and civil engineers in addition to its own resources.

HISTORY OF EVENTS

According to Event Records from the National Climatic Data Center (NCDC) there have been two (2) tornadoes in Monroe County between 1967 and 2011. The most recent tornado occurred in June of 1990.

MONROE COUNTY TORNADOES (1967 – 2011)			
Location	Date	Mag.	Description
Unknown	May 8, 1969	F1	Wind speeds ranging between 86 and 110 mph. The tornado was on the ground for approximately one (1) mile and was 67 yards wide, and resulted in \$250,000 in property damage.
Unknown	June 22, 1990	F0	The tornado was on the ground for approximately one (1) mile and was 50 yards wide, with winds speeds of 65 to 85 mph. The tornado resulted in an estimated \$25,000 in damages.

Table 2.11b

Monroe County has also experienced high windstorms not associated with tornado events in the past, and can expect wind-related problems in the future. According to the materials provided by the National Weather Service (NWS), the county has experienced six (6) high wind events within the past 17 years.

- February 25, 2001 – An intense area of low pressure passing over the region brought a prolonged period of high winds to east central Ohio. Wind gusts estimated to around 60 mph continued from late morning into the early evening hours, downing numerous trees, large limbs and power lines across the entire area.
- January 30, 2008 – Strong pressure gradient behind a cold front produced wind gusts near 60 mph in many locations across eastern Ohio, producing numerous reports of trees and power lines down across the region.
- February 12, 2009 – A convective line along a cold front produced widespread damage across eastern Ohio, with wind gusts of 60 to 70 mph. In all across eastern Ohio, western Pennsylvania, and northern West Virginia over one half million homes and businesses were without power at some point during the storm.

The following table includes FEMA public assistance dollars granted to Monroe County Ohio per declared severe wind / tornado event.

Wind / Tornado – Public Assistance Funding Monroe County		
DR-1484-OH TORNADOES, FLOODING, SEVERE STORMS, AND HIGH WINDS		
Date of Occurrence	Damage Category Code	Federal Share Eligible
8/1/2003	A – Debris Removal	\$16,522.42
	B – Protective Measures	\$1,916.25
	C – Roads & Bridges	\$284,286.95
	G – Recreational / Other	\$4,479.94
	Total	\$ 307,205.56
DR-4077-OH SEVERE STORMS AND STRAIGHT LINE WINDS		
Date of Occurrence	Damage Category Code	Federal Share Eligible
8/20/2012	A – Debris Removal	\$56,225.93
	B – Protective Measures	\$17,378.77
	E – Public Buildings	\$5,103.63
	G – Recreational / Other	\$375.00
	Total	\$79,083.33

Table 2.11c

Over the 10 year period approximately \$400,000 FEMA public assistance dollars were granted to Monroe County Ohio due in part to tornadoes, and or severe straight line winds, that is an average of \$40,000 per year.

HAZARD IMPACT

While tornadoes are relatively short lived in duration, they are intensely focused, making them one of the most destructive forces in nature. As previously discussed above, Monroe County is located in the “Zone III” wind zone. This wind zone places Monroe County in a category that could experience severe tornadoes with 158-206 mph wind speeds. Such winds would cause significant damage to structures, such as roofs torn off frame houses, mobile homes demolished, and boxcars pushed over.

Severe wind events can cause a variety of secondary, or cascading, hazard events. For instance, wind may blow limbs from trees down knocking out electric power or blocking roadways. Wind often results in damages to roofs and other home finishings (such as siding, etc.). Damage and loss of life could be severe and overwhelm the ability of local responders to address the emergency. Tornadoes and severe winds have resulted in approximately \$1 million in total property damage, as well as two (2) injuries over the past 61 years.

PAST MITIGATION EFFORTS

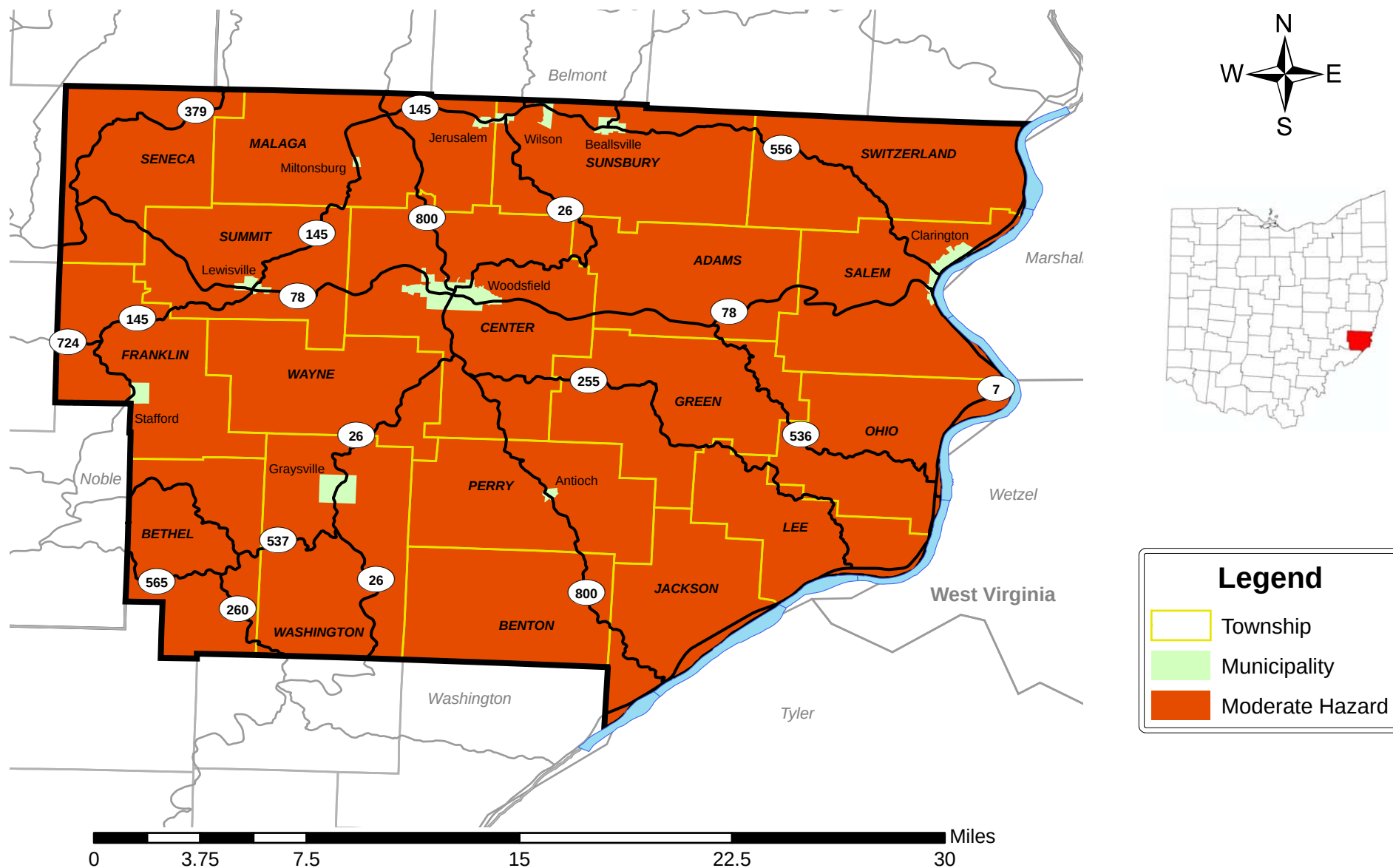
Past mitigation efforts to reduce losses associated with severe wind and tornadoes in Monroe County have included, the development and distribution of public awareness materials about natural hazard risks, preparedness, and mitigation; establishment of a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and Monroe County Emergency Management Agency (MCEMA), and conducting National Weather Service (NWS) Storm Spotter classes.

Hazard: Severe Wind/Tornado

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	7,270	100%	\$581,600,000	\$29,080,000	5%	14,642	14,642	100%
<i>Commercial</i>	840	840	100%	\$630,000,000	\$25,200,000	4%	4,200	4,200	100%
<i>Industrial</i>	95	95	100%	\$93,575,000	\$1,871,500	2%	1,900	1,900	100%
<i>Agricultural</i>	945	945	100%	\$37,800,000	\$3,402,000	9%	1,890	1,890	100%
<i>Religious/Non-Profit</i>	46	46	100%	\$5,750,000	\$483,000	8%	1,380	1,380	100%
<i>Government</i>	30	30	100%	\$17,550,000	\$351,000	2%	600	600	100%
<i>Education</i>	11	11	100%	\$99,000,000	\$1,980,000	2%	2,750	2,750	100%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$5,000,000	3%	25	25	100%
Total	9,242	9,242	100%	\$1,615,275,000	\$67,367,500	4%	27,387	27,387	100%

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

MONROE COUNTY HAZARD MITIGATION PLAN WIND/TORNADO MAP



2.2 PROFILING HAZARDS

2.2.12. Severe Winter Storm

A winter storm is a type of storm in which the dominant varieties of precipitation are forms that only occur at cold temperatures such as snow or sleet, or a rainstorm where ground temperatures are cold enough to allow ice to form.

INTRODUCTION

One or more of the following characterizes a winter storm: heavy snow, ice storms, strong winds, extreme cold, and, in certain areas, coastal flooding and beach erosion. Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chills. There are three (3) categories of winter storms. A blizzard is the most dangerous of all winter storms. It combines low temperatures, heavy snowfall, and winds of at least 35 miles per hour (mph) reduce visibility to only a few yards. A heavy snowstorm is one that drops four (4) or more inches of snow in a 12-hour period. An ice storm occurs when moisture falls and freezes immediately upon impact.

Period of Occurrence:	Winter season.
Number of Events to Date (1994 – 2011):	16
Probability of Event:	Likely.
Warning Time:	Snow – Days. Ice – Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, damaged critical facilities. Can cause severe transportation problems and make travel extremely dangerous. Power outages, which result in loss of electrical power and potentially loss of heat. Extreme cold temperatures may lead to frozen water mains and pipes, damaged car engines, and prolonged exposure to cold resulting in frostbite.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days.

Figure 2.12a

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that all of Monroe County is at equal risk from severe winter storm events. Several methods of research identified winter storm as a hazard in Monroe County, including reviews of newspaper coverage, reviews of past disaster declarations, reviews of the Monroe

County Emergency Operations Plan (EOP), public input, and reviews of the National Climatic Data Center (NCDC) Event Record database.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.12b

HAZARD IDENTIFICATION

Monroe County is highly vulnerable to the wide-ranging effects of snowstorms, blizzards, ice storms, and severe cold snaps due to its location with respect to Lake Erie and the general elevation of the county. The higher elevations of the county appear to be more susceptible to severe winter storms. The county receives approximately 20 to 30 inches of snowfall annually.

Research indicates that winter storms are the third leading weather threat in Ohio. The storms of 1950 and 1978 were of a duration that required extensive mass sheltering and statewide response and recovery efforts. A total of 269 winter storms from 1923 to 1994 have been classified as severe in Ohio.

HISTORY OF EVENTS

Monroe County has had several severe winter storms reported to the NCDC. In total, the NCDC indicates that 16 snow and ice events have occurred over the past 17 years, resulting in approximately \$5.9 million in property damage. Some of the worst winter storms of record in Monroe County have occurred within the last decade. Severe winter storms are common in this part of the state due to its extreme northern location, general elevation, and proximity to Lake Erie.

- February 11, 1994 – Heavy freezing rain accumulated ½ to 1 ½ inches. One (1) to two (2) inches of snow fell in many areas before the change to freezing rain. Power lines and trees were downed, and some areas were without electricity for several days. A number of roads were closed due to the icy conditions and many other roads became virtually impassable. A number of falls and accidents occurred and numerous traffic accidents were reported. This winter storm resulted in 26 injuries and approximately \$5 million in property damage.
- January 2, 1996 – A major winter storm moved through the Upper Ohio Valley and dumped a mixture of freezing rain and sleet in east central Ohio. One-

quarter of an inch (1/4") of ice accumulated in Monroe, Noble and Belmont Counties. One (1) to two (2) inches of ice was reported in Muskingum, Jefferson, Guernsey and Harrison Counties.

- March 9, 1999 – A winter storm moved quickly across the Ohio Valley, producing snowfall totals of between five (5) and seven (7) inches across the majority of east central Ohio. The snowfall and icy roads were responsible for numerous minor accidents on area roadways.
- February 16, 2003 – A massive, slow-moving snow storm began shortly after midnight on the 16th. Counties in the south reached six (6) inches of snow by noon on 16th, and 12 inches by 9 pm on 16th. Monroe County accumulated 30 inches by the morning of the 18th.
- February 5, 2010 – A large area of low pressure moving north from the Gulf of Mexico on February 5th combined with low pressure across the Ohio Valley and intensified over the Mid-Atlantic States. This produced a historic snow storm across eastern Ohio from the afternoon of February 5th to the afternoon of February 6th. Over 3 feet (3') of snow fell across portions of southeastern Ohio.

The following table includes FEMA public assistance dollars granted to Monroe County Ohio per declared severe winter storm event.

Winter Storm – Public Assistance Funding Monroe County		
DR-1453-OH SEVERE WINTER STORM AND RECORD SNOW		
Date of Occurrence	Damage Category Code	Federal Share Eligible
3/15/2003	B – Protective Measures	\$100,830.58
	C – Roads & Bridges	\$1,004,103.01
	Total	\$1,104,933.59
DR-1580-OH SEVERE WINTER STORMS, FLOODING, AND MUDSLIDES		
Date of Occurrence	Damage Category Code	Federal Share Eligible
2/15/2005	A – Debris Removal	\$16,637.55
	B – Protective Measures	\$821.27
	C – Roads & Bridges	\$1,353,241.67
	F – Public Utilities	\$35,774.51
	Total	\$1,406,475.00

Table 2.12a

Over the three (3) year period approximately \$2.5 million FEMA public assistance dollars were granted to Monroe County Ohio due largely in part to severe winter storms, which is an average of approximately \$800,000 per year.

HAZARD IMPACT

A severe winter storm could affect the entire county at the same time, virtually bringing all county operations to a standstill. This type of hazard creates a difficult emergency response effort due to adverse road conditions which impede or prohibit vehicle movement. Driving is treacherous during winter storms as roadways freeze and become covered with snow and slush. These adverse driving conditions may lead to additional property damage. According to a FEMA Winter Storm Fact Sheet, the leading cause of death during winter storms is from automobile or other transportation accidents. During severe winter storms, heavy snow may cause property damage and power outages. Roads are sometimes blocked, stranding rural residents from the incorporated areas where medical and other emergency services are located. Heavy snowfall and blizzards can trap motorists in their cars. Attempting to walk for help in a blizzard can be a deadly decision. Disorientation and confusion come quickly in blowing snow. Risks associated and identified with severe winter storms include but are not limited to the following:

- Emergency medical evacuation of the sick, elderly, and infirmed to shelters.
- Power outages to those on life support systems.
- Communications interruptions and/or outages.
- Loss of the ability to heat homes.
- Interruption of the delivery of home supplies and food.

Health hazards stemming from severe winter storms include frostbite and hypothermia. Frostbite is a severe reaction to cold exposure that can permanently damage its victims. A loss of feeling and a white or pale appearance in fingers, toes, the nose, and/or ear lobes are symptoms of frostbite.

Hypothermia is a condition brought on when the body temperature drops to less than 55 degrees Fahrenheit. Symptoms of hypothermia include uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness, and exhaustion.

PAST MITIGATION EFFORTS

One of the most common impacts from severe weather is the loss of commercial power. Since many other services rely on power for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from winter storms. Other mitigation efforts that have been conducted include the development and

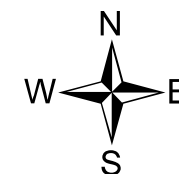
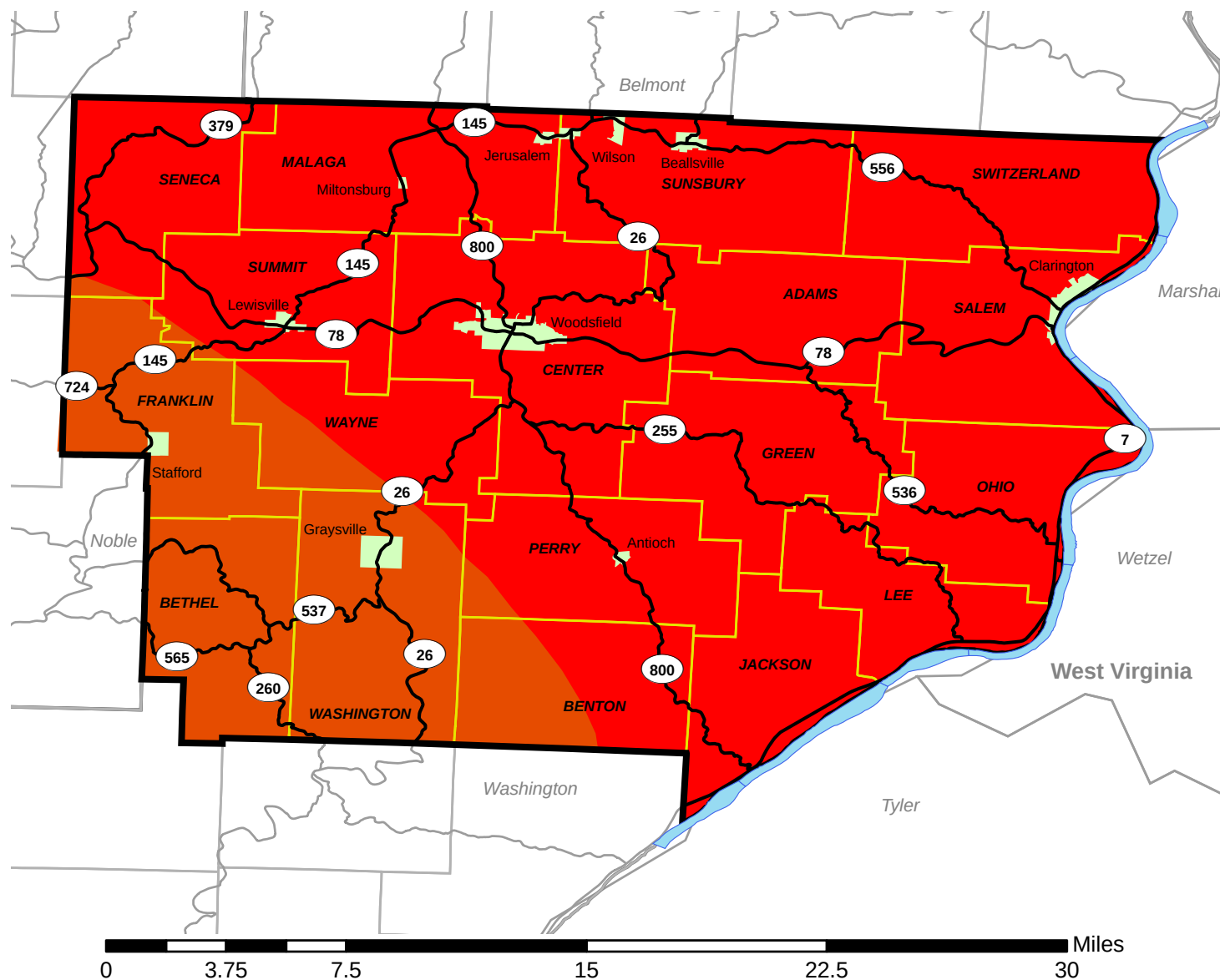
distribution of public awareness materials about natural hazard risks, utilizing the media for the distribution and publication of hazard information, and updating the county website to provide hazard related information that is easily accessible.

Hazard: Severe Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	7,270	100%	\$581,600,000	\$2,908,000	<1%	14,642	14,642	100%
<i>Commercial</i>	840	840	100%	\$630,000,000	\$2,835,000	<1%	4,200	4,200	100%
<i>Industrial</i>	95	95	100%	\$93,575,000	\$233,937	<1%	1,900	1,900	100%
<i>Agricultural</i>	945	945	100%	\$37,800,000	\$850,500	2%	1,890	1,890	100%
<i>Religious/Non-Profit</i>	46	46	100%	\$5,750,000	\$72,450	<1%	1,380	1,380	100%
<i>Government</i>	30	30	100%	\$17,550,000	\$43,875	<1%	600	600	100%
<i>Education</i>	11	11	100%	\$99,000,000	\$247,500	<1%	2,750	2,750	100%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$625,000	<1%	25	25	100%
Total	9,242	9,242	100%	\$1,615,275,000	\$7,816,262	<1%	27,387	27,387	100%

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

MONROE COUNTY HAZARD MITIGATION PLAN WINTER STORM MAP



Legend

- Township
- Municipality
- Moderate Hazard
- High Hazard

0 3.75 7.5 15 22.5 30 Miles

2.2 PROFILING HAZARDS

2.2.13. Temperature Extremes

Extreme heat is defined as three (3) or more consecutive days with daytime temperatures of 90 degrees Fahrenheit (90°F) or higher and nighttime temperatures no lower than 85°F, accompanied by high humidity and causing a significant amount of medically treated, heat-related illnesses or deaths.

INTRODUCTION

Extreme heat is a hazard usually found in more desert regions than Monroe County, Ohio. However, extreme heat can and has been a hazard in Ohio, causing heat strokes to occur to residents and proving detrimental to crops. The highest reported temperature in Ohio through the year 2000

Period of Occurrence:	Summer season (July – Sept.).
Number of Events to Date: (1995 to 2010)	4
Probability of Event:	Occasional.
Warning Time:	Weeks.
Potential Impacts:	Potential loss of human life, economic loss.
Cause Injury or Death:	Illnesses and risk of few deaths.
Potential Facility Shutdown:	Days.

Figure 2.13a

was 113 degrees Fahrenheit (113°F), and was recorded in Southeastern Ohio.

Several methods of research identified extreme heat as a minor hazard in Monroe County, including searches of local media, National Climatic Data Center (NCDC) Event Record Database, National Weather Service (NWS) records, and the Federal Emergency Management Agency (FEMA) website.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that the larger municipalities of Monroe County are at greater risk from temperature extremes, due to the fact that cities hold heat longer due to the amount of paved surfaces, and a large portion of the vulnerable populations are located in the larger cities.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.13b

HAZARD IDENTIFICATION

Health hazards related to extreme heat include sunburns, heat cramps, heat exhaustion, and heat stroke. In a normal year, approximately 175 Americans die from extreme heat. Young children, the elderly, and those who are sick or overweight are more likely to become victims. According to 2010 Census estimates, approximately 18 percent (2,600 people) of the total population in Monroe County are 65 years old or older. Because men sweat more than women, men are more susceptible to heat related illnesses because they become more quickly dehydrated.

The Heat Index is the temperature the body feels when heat and humidity are combined. The chart below (Figure 2.13c) illustrates the heat Index that corresponds to

the actual air temperature and relative humidity. This chart is based upon shady, light wind conditions. Exposure to direct sunlight can increase the heat index by up to 15°F.

As the heat index rises, so do health risks. When the heat index is 90° to 104°F, heat exhaustion is possible. When it is above 105°F, it is probable. Heatstroke is possible when the heat

index is above 105°F, and very likely when it is 130°F and above. Physical activity and prolonged exposure to the heat increase the risks.

		Relative Humidity (%)												
		40	45	50	55	60	65	70	75	80	85	90	95	100
Temperature (°F)	110	136	-	-	-	-	-	-	-	-	-	-	-	-
	108	130	137	-	-	-	-	-	-	-	-	-	-	-
	106	124	130	137	-	-	-	-	-	-	-	-	-	-
	104	119	124	131	137	-	-	-	-	-	-	-	-	-
	102	114	119	124	130	137	-	-	-	-	-	-	-	-
	100	109	114	118	124	129	136	-	-	-	-	-	-	-
	98	105	109	113	117	123	128	134	-	-	-	-	-	-
	96	101	104	108	112	116	121	126	132	-	-	-	-	-
	94	97	100	102	106	110	114	119	124	129	135	-	-	-
	92	94	96	99	101	105	108	112	116	121	126	131	-	-
	90	91	93	95	97	100	103	106	109	113	117	122	127	132
	88	88	89	91	93	95	98	100	103	106	110	113	117	121
	86	85	87	88	89	91	93	95	97	100	102	105	108	112
	84	83	84	85	86	88	89	90	92	94	96	98	100	103
	82	81	82	83	84	84	85	86	88	89	90	91	93	95
	80	80	80	81	81	82	82	83	84	84	85	86	86	87
With Prolonged Exposure and/or Physical Activity:														
Caution: Fatigue possible		Extreme Caution: Sunstroke, muscle cramps, and/or heat exhaustion possible				Danger: Sunstroke, muscle cramps, and/or heat exhaustion likely				Extreme Danger: Heat Stroke or Sunstroke likely				

Figure 2.13c

HISTORY OF EVENTS

Southeastern Ohio has endured five (5) excessive heat events within the past 16 years these events have resulted in 13 fatalities.

Year	Conditions	Fatalities
7/1995	Record high temperatures near or exceeding 100°F along with excessive humidity occurred on the 14 th . Dewpoints were also unusually high, averaging near 80 which produced a heat index as high as 126°F. It was so hot that a heat kink occurred on railroad tracks near The Plains in Athens County. A Conrail freight train had 16 cars derail around 1700 on the 13th. A chemical leak prompted a six hour evacuation in the vicinity.	0
3/1998	An unusually long stretch of early spring heat lasted 6 consecutive days. Afternoon temperatures were in the 80s.	0
9/1998	The hottest temperatures of the summer occurred. Readings reached the mid and upper 90s. Preliminary cooperative observations had 97 degrees as a maximum temperature on the 14th for Athens and Waterloo, Carpenter had 92 degrees, Marietta and Jackson recorded 95. New Lexington reached 92 degrees. The dry weather pattern during the late summer contributed to this unusual mid September heat.	0
7/1999	The last part of July was very hot and humid across the state with temperatures reaching into the 90s most days and above 100 for a few days. The dew points and overnight lows were in the 70s through much of the period. The excessive heat contributed to 10 deaths in the Cincinnati metro area and 3 in the Dayton metro area.	13
8/2007	Oppressively hot and humid conditions with heat indices near 105 degrees impacted southern Ohio August 7 through August 10.	0

Table 2.13a

HAZARD IMPACT

Approximately 400 people die each year from exposure to heat, according to the Centers for Disease Control and Prevention (CDC). Our bodies dissipate heat by varying the rate and depth of blood circulation, by losing water through the skin and sweat glands, and as a last resort, by panting, when blood is heated above 98.6°F.

Sweating cools the body through evaporation. However, high relative humidity retards evaporation, robbing the body of its ability to cool itself. When heat gain exceeds the level the body can remove, body temperature begins to rise, and heat-related illnesses and disorders may develop.

Heat exhaustion occurs when the body is dehydrated.

- Symptoms: headache, nausea, dizziness, cool and clammy skin, pale face, cramps, weakness, profuse perspiration.
- First aid: move to a cooler spot, drink water with a small amount of salt added (one teaspoon per quart).
- It can lead to collapse and heatstroke.

Heatstroke occurs when perspiration cannot occur and the body overheats.

- Symptoms: headache, nausea, face flushed, hot and dry skin, no perspiration, body temperature over 101°F, chills, rapid pulse.
- First aid: cool person immediately, move to shade or indoors, wrap in a cool, wet sheet, get medical assistance.
- It can lead to confusion, coma, and death.

PAST MITIGATION EFFORTS

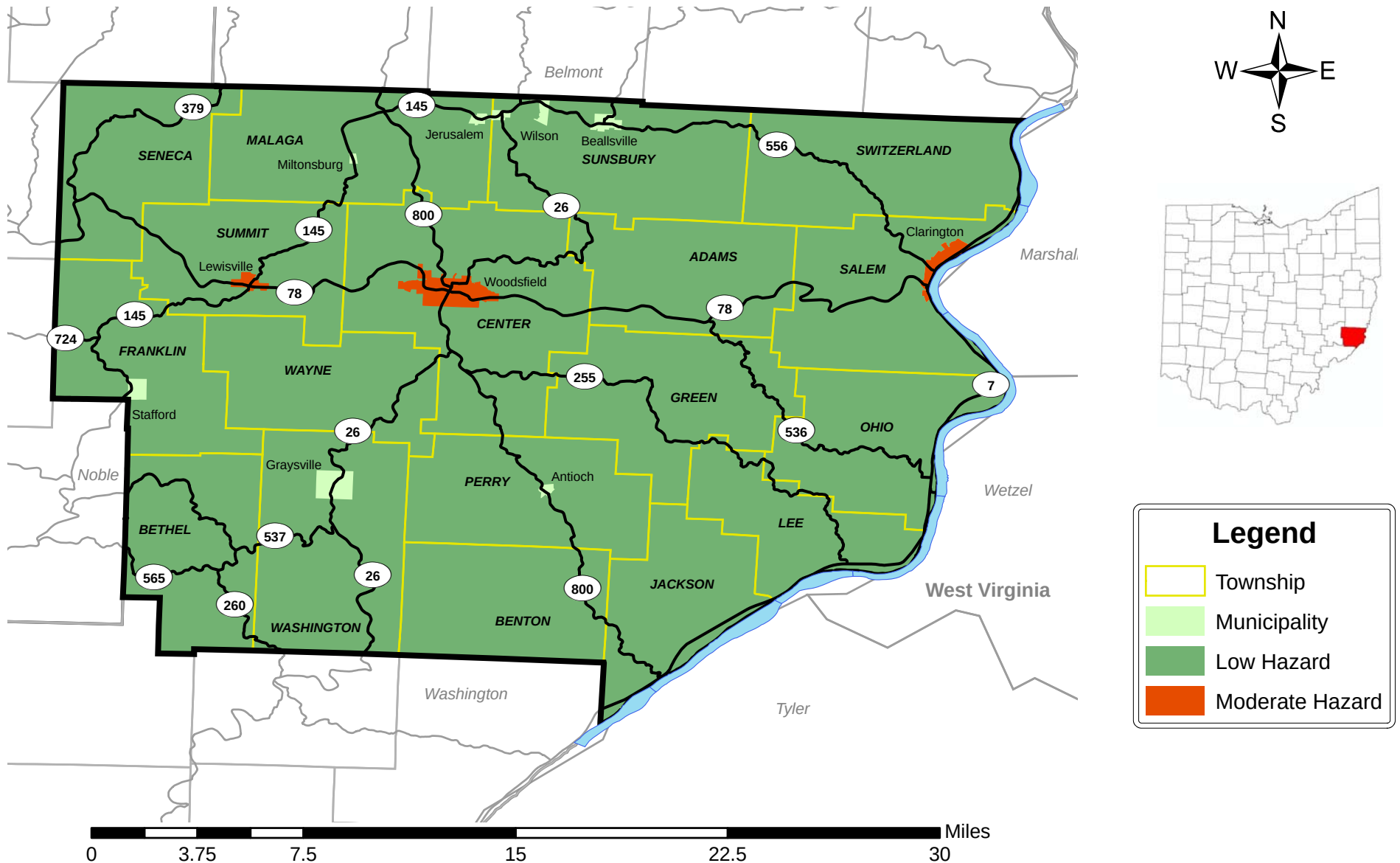
County officials have identified cooling centers for vulnerable populations with air conditioning, and have developed an outreach program encouraging at-risk populations to use the centers.

Hazard: Temperature Extreme

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	0	0%	\$581,600,000	\$0	0%	14,642	5,856	40%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	420	10%
<i>Industrial</i>	95	0	0%	\$93,575,000	\$0	0%	1,900	190	10%
<i>Agricultural</i>	945	189	20%	\$37,800,000	\$4,252,500	11%	1,890	756	40%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	552	40%
<i>Government</i>	30	0	0%	\$17,550,000	\$0	0%	600	60	10%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	275	10%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$0	0%	25	3	12%
Total	9,242	189	2%	\$1,615,275,000	\$4,252,500	<1%	27,387	8,112	30%

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

MONROE COUNTY HAZARD MITIGATION PLAN TEMPERATURE EXTREMES MAP



2.2 PROFILING HAZARDS

2.2.14. Terrorism

Terrorism is the use of force or violence, including threats of force or violence, against persons or property in violation of the criminal laws of the United States for the purposes of intimidate, coercion, or ransom.

INTRODUCTION

Terrorism is a form of violence aimed at a public audience. The Federal Bureau of Investigation (FBI) defines terrorism as “the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof in furtherance of political or social objections.” More importantly, it is necessary to understand that the objective of terrorism is not destruction or death; it is the psychological impact to the targeted population and world opinion. Disruption to public services, economies, and social patterns, or a feeling of insecurity is the desired goal.

Period of Occurrence:	At any time.
Number of Events to Date:	0
Probability of Event:	Infrequent.
Warning Time:	Minimal – Depends on the presence of a threat.
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:	Days to weeks or more.

Figure 2.14a

Terrorist incidents are at the forefront of everyone’s consciousness as the war on terror continues. We, as a society, have realized how vulnerable we are to such actions. Monroe County is not immune from terrorist activity. Terrorist attacks can be focused on government or the civilian population. Several methods of research identified terrorism as a hazard in Monroe County, including public input, reviews of the Monroe County Terrorism Risk Assessment, information provided by the Ohio State Highway Patrol (OSHP), and reviews of the Federal Bureau of Investigation (FBI) website, Federal Emergency Management Agency (FEMA) website, and Department of Homeland Security (DHS) website.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Monroe County has a low probability and moderate impact risk with regards to terrorism. The larger municipalities of Monroe County are at greater risk, due to the fact that cities house the most likely targets, and have higher concentrated populations.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.14b

HAZARD IDENTIFICATION

This profile is intentionally generalized. Local officials have identified a number of potential terrorist-related hazards throughout the county and maintain files of such information separately from this document.

Terrorism can be categorized as either domestic or international. Domestic terrorism incidents are acts conceived of and carried out by U.S. citizens within the U.S. borders. Examples of domestic terrorism include environmental groups like the Earth Liberation Front (ELF), groups opposing abortion, animal rights groups opposing the fur trade, or the Oklahoma City bombing of the Murrah Building. International terrorism originates from groups based outside the U.S. and may be perpetrated against U.S. interests abroad or within the territorial boundaries of the U.S. Examples would be Al-Qaeda and sympathizer groups.

Terrorism is not always accomplished on a “grand scale”, as is the case with international terrorists who are attempting to coerce the federal government. Such terrorism, while technically a hazard in Monroe County, is more unlikely than what is known as “domestic terrorism”. Domestic terrorism can involve disgruntled employees (in the case of large industrial plants), angry parents (at schools), upset citizens (at government facilities), etc. Domestic terrorists may often only intend to harm a single individual or a small group of individuals, but the threat of their actions can be highly disruptive.

Terrorist targets tend to be located in urban areas such as the Washington D.C. metro area; seats of government, stadiums, and public meeting places are high-value targets that produce substantial news coverage. Contrary to this, there is some evidence that terrorist organizations prefer rural safe houses from which to operate that are similar to that of Monroe County. The rural environment offers an environment for the terrorists that are more difficult to observe.

Organized criminal groups do operate within Ohio, according to the Buckeye Sheriff’s Association and the President’s Commission on Crime. Without a doubt, such criminal organizations intimidate and threaten the freedom of many Ohio residents,

including those in Monroe County. Each year municipal police departments within Monroe County receive calls related to bomb threats.

HISTORY OF EVENTS

The U.S. population has largely been spared the impacts of international terrorism until recently. The devastation which occurred at the World Trade Center in New York City and the Alfred Murrah Building in Oklahoma City illustrates the need to plan for potential threats within our own communities. Domestically, the distribution of anthrax spores using the United States Postal System as a delivery mechanism caused concern nationwide for several weeks. The bomb detonated at the Atlanta Olympics in (1996) resulted in an investigation/manhunt that lasted years. Richard Reid (a.k.a., the shoe bomber) disrupted air travel and changed security measures in airports.

HAZARD IMPACT

“Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail.” (FEMA)

Biological terrorist incidents have a somewhat low probability of occurring in Monroe County. These incidents include the release of diseases such as smallpox into the general population for destructive purposes. Biological events have an extremely high risk associated with them, as the affects of such an event can exceed the capabilities of the healthcare facilities located in Monroe County and the loss of human life can be disastrous. While preparedness is improving, Monroe County is not equipped on the local level to cope with a large-scale terrorist incident. Monroe County does contain public water systems, which makes the threat of a biological and chemical attack more plausible.

Chemical terrorist incidents are comparable to biological incidents in that they have a relatively low probability of occurring, yet are associated with an extremely high risk. Chemical incidents include the use of weapons that subject the general population

to toxic chemicals similar to those that could be released during a hazardous materials incident. Chemical incidents are capable of subsequent losses to large percentages of the population.

Events involving explosive Weapons of Mass Destruction (WMDs) also have a relatively low probability of occurring in Monroe County. However, in the event that a nuclear or other large explosive device was to discharge in or near the county, the inherent loss of life could be catastrophic. A WMD threat is ever present and the reduction of such threat is dependent upon the actions of other countries, which are unpredictable. As long as there are weapons, and the capability to deliver those weapons, the threat will remain. The Department of Defense estimates that as many as 26 nations may possess chemical agents and/or weapons and an additional 12 may be seeking to develop them.

PAST MITIGATION EFFORTS

While some legislation and operational countermeasures have existed for some time, the events of September 11, 2001 have accelerated terrorism mitigation efforts. Broadly, grants have been awarded to local first responders since 1998 for the purchase of important response equipment; national and local exercises of plans and procedures conducted; powers given or broadened for law enforcement regarding surveillance; and the consolidation of several agencies into the U.S. Department of Homeland Security have been completed.

Equipment grants for decontamination, detection, and protective gear for first responders have been available to local first responders since 1998. These grants and supplemental grants have provided millions of dollars in increased capabilities. As these capabilities have improved, the definition of first responder has been broadened from fire and police to now include hospital personnel and facilities, public works and emergency medical responders.

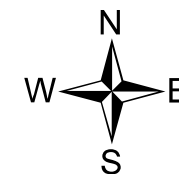
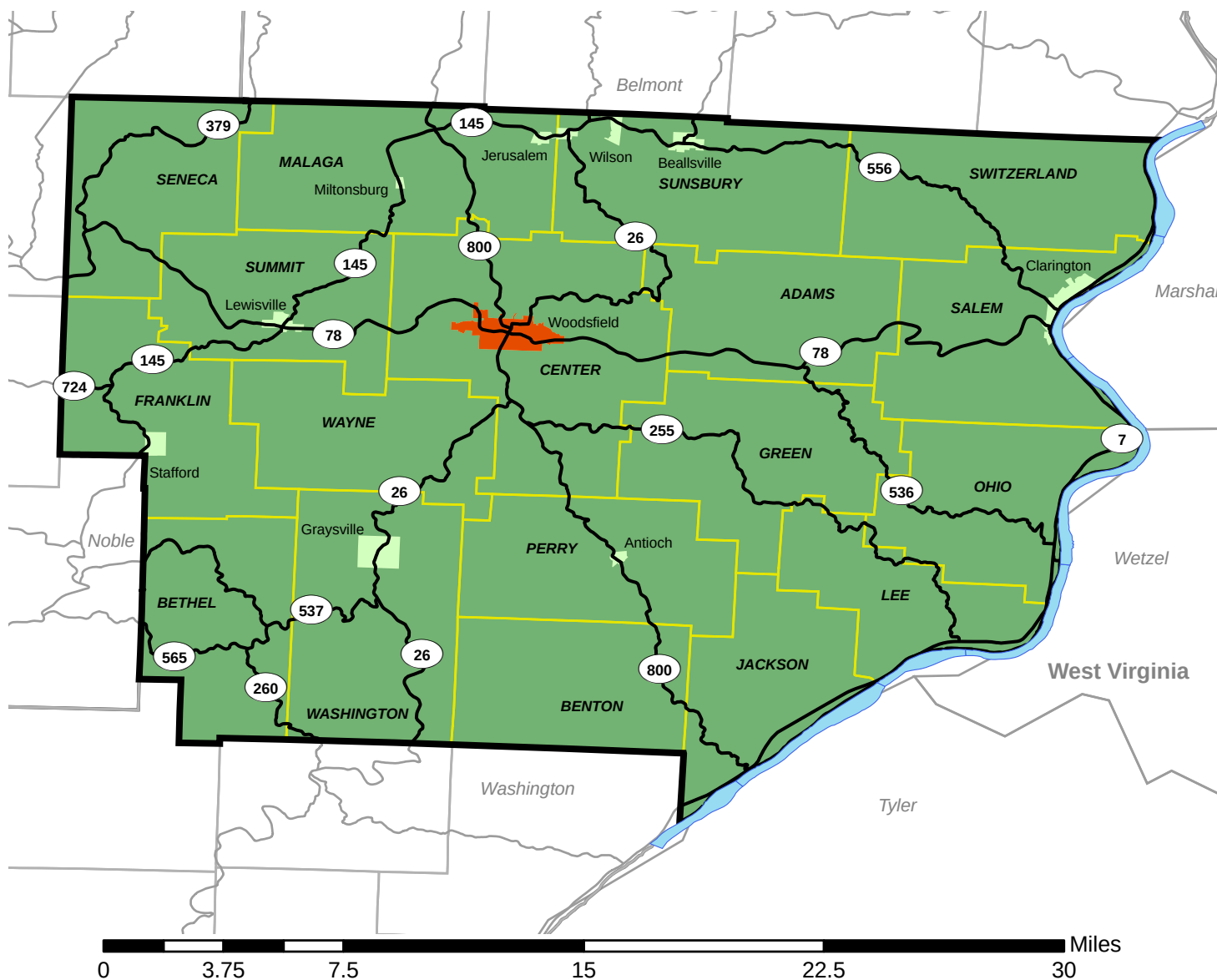
Due to the sensitive nature of the information compiled for the analysis of terrorism threats a separate risk assessment containing mitigation strategies for terrorism was developed to accompany this plan. At this time that risk assessment is not available for public viewing and is restricted to members of the county and municipal emergency management, public safety, and law enforcement agencies.

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	363	5%	\$581,600,000	\$5,808,000	1%	14,642	726	5%
<i>Commercial</i>	840	0	0%	\$630,000,000	\$0	0%	4,200	0	0%
<i>Industrial</i>	95	2	2%	\$93,575,000	\$886,500	1%	1,900	40	2%
<i>Agricultural</i>	945	0	0%	\$37,800,000	\$0	0%	1,890	0	0%
<i>Religious/Non-Profit</i>	46	0	0%	\$5,750,000	\$0	0%	1,380	0	0%
<i>Government</i>	30	30	100%	\$17,550,000	\$9,652,500	55%	600	600	100%
<i>Education</i>	11	0	0%	\$99,000,000	\$0	0%	2,750	0	0%
<i>Utilities</i>	5	5	100%	\$150,000,000	\$100,000,000	67%	25	25	100%
Total	9,242	400	4%	\$1,615,275,000	\$116,347,000	7%	27,387	1,391	5%

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

MONROE COUNTY HAZARD MITIGATION PLAN TERRORISM MAP



Legend

- Township
- Municipality
- Low Hazard
- Moderate Hazard

2.2 PROFILING HAZARDS

2.2.15. Wildfire

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

INTRODUCTION

Wildfires often begin unnoticed, spread quickly, and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. An urban fire is any instance of uncontrolled burning which results in major structural damage to residential, commercial, industrial, institutional, or other properties in developed areas. Municipalities with significant development in either a downtown area or an industrial park are prime targets for this type of occurrence. For the purposes of this Hazard Risk Assessment (HRA) urban fire hazards will be considered low

Period of Occurrence:	At any time – Primarily late summer and early fall.
Number of Events to Date (1950 – 2010):	0
Probability of Event:	Remote.
Warning Time:	Minimal.
Potential Impacts:	Impacts human life, health, and public safety. Loss of wildlife habitat, increased soil erosion, and degraded water quality. Utility damage and outages, infrastructure damage (transportation and communication systems), and damaged or destroyed critical facilities.
Cause Injury or Death:	Injury and risk of death.
Potential Facility Shutdown:	Days to weeks or more.

Figure 2.15a

for the incorporated municipalities of the county.

Fires do not generally call for region wide attention unless the fire migrates to adjoining buildings, homes, or property or is determined to have the potential to do so. Fast-spreading structure fires can quickly threaten a large amount of people, as well as tax the resources of local fire-fighting jurisdictions.

Several methods of research identified wildfires (on a very small scale) as a hazard in Monroe County, including discussions with local representatives, and review of on-line information from the Ohio Department of Natural Resources (ODNR), and the Ohio Division of Forestry.

For the purposes of this HRA it is assumed that Monroe County has a low probability and moderate impact wildfire risk. The rural areas of Monroe County are at greater risk of wildfires, due to the fact that there is more fuel to sustain wildfires in those areas.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.15b

HAZARD IDENTIFICATION

According to the Ohio Division of Forestry, there are several factors that can contribute to the starting of wildfires in Monroe County, including arson, equipment fires, campfires, and lightning. Approximately 10,000 forest fires are started each year by lightning. Monroe County contains a great deal of forestland, with recreational campsites and other attractions in designated areas (i.e., Monroe Lake Wildlife Management Area (WMA), Sunfish Creek State Forest, and the Wayne National Forest). Campfires, coupled with large numbers of visitors and a large proportion of trees, make wildfires a potential hazard for Monroe County.

Monroe County is at risk from three (3) types of fire threats: structure, wildland, and limited wildland-urban interface fires. These threats are typically defined as:

- Structure Fire – a fire of natural or human-caused origin that results in the uncontrolled destruction of homes, businesses, and other structures in populated, urban or suburban areas.
- Wildland Fire – a fire of natural or human-caused origin that results in the uncontrolled destruction of forests, field crops and grasslands.
- Wildland-Urban Interface – a fire of natural or human-caused origin that occurs in or near forest or grassland areas where isolated homes, subdivisions, and small communities are also located.

A fire needs three (3) elements in the right combination to ignite and grow – a heat source, fuel, and oxygen. How a fire behaves primarily depends on the characteristics of available fuel, weather conditions, and terrain. Fuels can include ignition sources like poor wiring or unattended candles, lighter fuels like grasses and

leaves, heavier fuels like tree branches and logs, and hazard trees that may be diseased or dying.

Weather also plays a role in the forms of wind, low precipitation, and lightning. As a result, strong, dry east winds in late summer and early fall can produce extreme fire conditions. Drought, snow pack, and local weather conditions can also expand the length of the fire season. Terrain is an additional factor, as the topography of a region or local area influences the amount and moisture of available fuel. Other elements like barriers and land elevation also need to be taken into account as highways and lakes can affect spread of fire, as can an uphill/downhill orientation, as fire spreads more easily as it moves uphill.

People themselves can add to the fire risk. Examples include: carelessness; residents increase the probability of electrical fires in their homes by improperly using appliances and overloading outlets; many people enjoy fireplaces in their homes; and a larger population will require more vehicles which could result in more frequent motor vehicle accidents and vehicle fires.

The “urban/wildland” interface that currently exists in Monroe County also contributes to the fire risk. If, in the future more housing opportunities are needed, populated areas will encroach upon wild areas or, in some instances, wild areas will be cleared to make way for population growth. In any event, a population residing near a “wildland area” will have to shoulder more responsibility for fire protection (e.g., brush will likely need to be cleared from around homes). During the spring and fall seasons when wildfires are most likely to occur (because of dry dead foliage covering the ground), populations in and near heavily wooded areas are at a greater risk. A quickly-spreading wildfire could consume many houses before firefighters could respond. This risk is compounded when the population most at risk is located a significant distance from its first-due fire company’s station.

Wildfire hazard severity can be determined using the fire hazard severity table below (Table 2.15a). The table takes into consideration the degree of the slope, due to the fact that the steeper the slope of the land the faster a fire can spread, fuel classification, as well as the average number of critical fire weather days that occur per year. This is a set of weather conditions, usually in a combination with low relative humidity and wind, whose effects on fire behavior make control difficult and threaten firefighter safety. According to the USGS, Monroe County’s percent slope is less between 41 and 60 percent. The National Weather Service indicates that there are on

average between two (2) to seven (7) critical fire weather days per year, and the county is located in a medium fire fuel area. Therefore, Monroe County has a fire hazard severity of high.

Critical Fire Weather Frequency									
Fuel Classification	<1 Day/Year			2 to 7 Days/year			>8 Days/year		
	Slope (%)			Slope (%)			Slope (%)		
	<40	41-60	>61	<40	41-60	>61	<40	41-60	>61
Light Fuel	M	M	M	M	M	M	M	M	H
Medium Fuel	M	M	H	H	*H*	H	E	E	E
Heavy Fuel	H	H	H	H	E	E	E	E	E

Source: Urban Wildland Interface Code: 2000

M = Moderate hazard H = High hazard E = Extreme hazard

Table 2.15a

HISTORY OF EVENTS

Each year an average of 1,000 wildfires burn 4,000 to 6,000 acres of forest and grassland within Ohio's forest fire protection district, which corresponds mostly to the state's unglaciated hill country which includes Monroe County. In a typical year it is estimated that more than 15,000 wildfire and natural fuel fire occurrences are encountered statewide.

Members of volunteer fire departments confirm that small brush fires are a common occurrence during the dry summer months, in what is typically known as the "burning season." These small brush fires are usually handled by local fire departments and often do not cause damage to structures. However, the threat is present that these bush fires could burn out of control and consume many structures, as well as a portion of the nearly 220,288 acres of forestland that exists in Monroe County. According to the Ohio Department of Natural Resources – Division of Forestry, there were no reported fires in Monroe County during 2009.

HAZARD IMPACT

Depending upon temperature, wind, topography, and other factors, wildland fires can spread rapidly and may require thousands of firefighters working several weeks to extinguish. Wildland fires can create their own winds and weather, and generating hurricane force winds of up to 120 miles per hour. Fires can also heat fuels in their path, drying them out, and making them easier to ignite and burn.

Monroe County contains a great deal of forested land, with recreational campsites and other attractions in designated areas. With a large influx of people, forested areas such as the state and national forests are extremely susceptible to wildfires, which would be catastrophic to the local economy, as agriculture, tourism, recreation, and the timber industry all play an important role.

The monetary amount of damage will fluctuate according to where the fire occurs. If, for some reason, the area affected by a wildfire interfaced a municipality, the amount of damage could be greatly increased. However, most historical events have not consumed significant land or property. Most wildland fires are usually extinguished in their initial stages being less than one (1) acre in area.

PAST MITIGATION EFFORTS

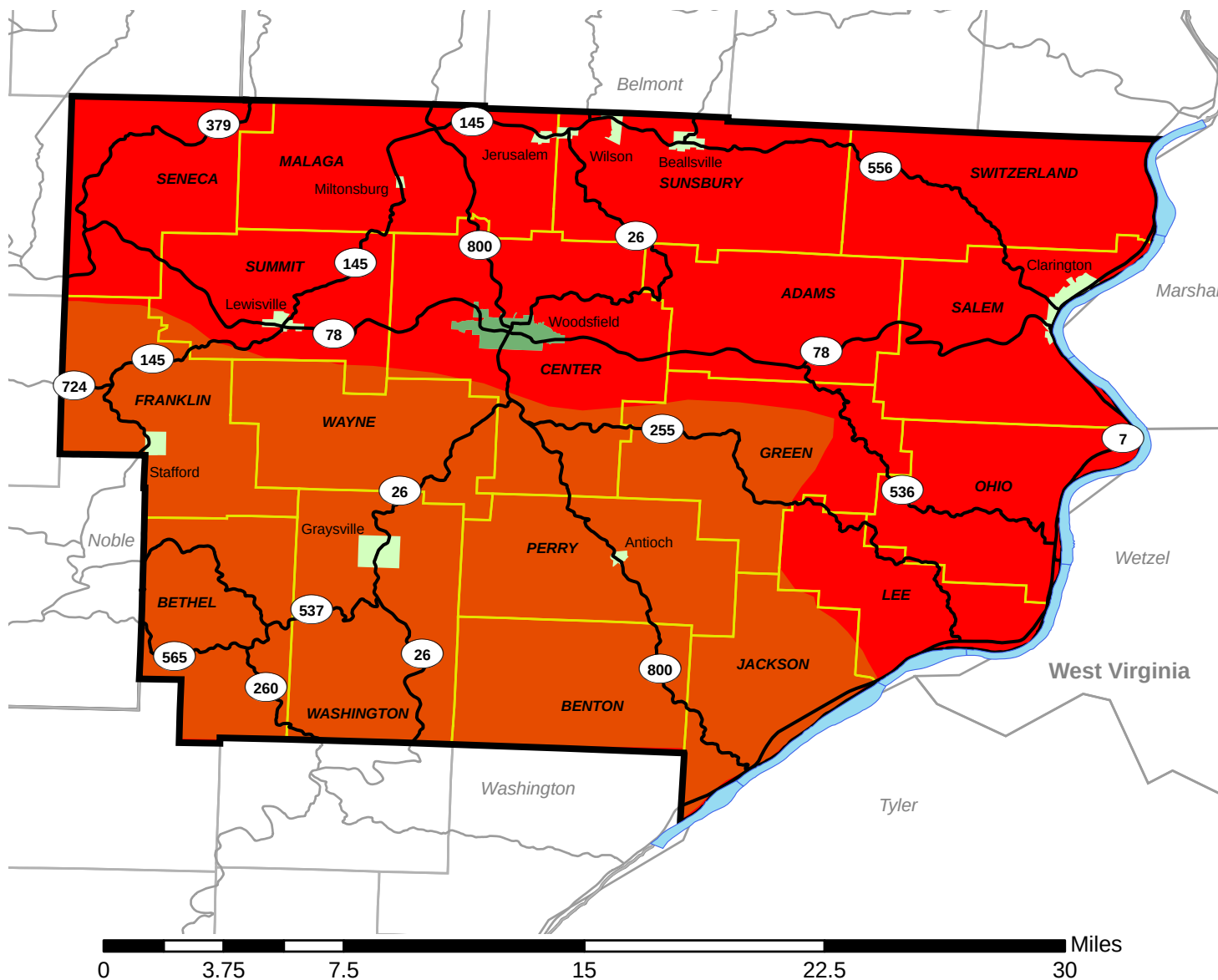
Local fire departments in coordination with the State Fire Marshal's Office as part of an on-going effort have developed, and distribute, information concerning the leading causes of wildfires, and steps the general public can take to avoid starting wildfires.

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
<i>Residential</i>	7,270	2,544	35%	\$581,600,000	\$61,056,000	10%	14,642	5,856	40%
<i>Commercial</i>	840	84	10%	\$630,000,000	\$28,350,000	5%	4,200	840	20%
<i>Industrial</i>	95	10	11%	\$93,575,000	\$4,432,500	5%	1,900	285	15%
<i>Agricultural</i>	945	567	60%	\$37,800,000	\$14,033,250	37%	1,890	1,512	80%
<i>Religious/Non-Profit</i>	46	7	15%	\$5,750,000	\$980,000	17%	1,380	276	20%
<i>Government</i>	30	6	20%	\$17,550,000	\$1,579,500	9%	600	210	35%
<i>Education</i>	11	3	27%	\$99,000,000	\$9,450,000	10%	2,750	962	35%
<i>Utilities</i>	5	0	0%	\$150,000,000	\$0	0%	25	9	36%
Total	9,242	3,221	35%	\$1,615,275,000	\$119,881,250	7%	27,387	9,950	36%

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

MONROE COUNTY HAZARD MITIGATION PLAN WILDFIRE MAP



Legend

- Township
- Municipality
- Low Hazard
- Moderate Hazard
- High Hazard

APPENDIX 2: GLOSSARY

This appendix contains definitions of commonly-used terms throughout the *Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan*. These terms are considered because they are either unique to the mitigation planning process, or used in a different way in a mitigation context as compared to other emergency preparedness contexts. This appendix also contains a list of the acronyms used throughout this document and their corresponding definitions.

Definition of Terms

Asset Inventory: A listing of critical facilities, historical facilities, facilities housing vulnerable populations (e.g., schools, nursing homes, hospitals), large economic assets in the community, and other, community-designated special considerations on which a risk assessment is completed.

Benefit Cost Review: A process by which a community considers both the potential benefits of mitigation projects in comparison with their costs. It is a way to determine if the costs are achievable and feasible based on the benefits that can be realistically anticipated.

Emergency Services Project: Action that protects people and property during, and immediately after, a disaster or hazard event.

Hazard Risk Assessment: The process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from hazards by assessing the vulnerability of people, buildings, and infrastructure to hazards.

Loss Estimate: A mathematical calculation of the potential damage – structural, contents, and functional – a facility and/or community could occur as a result of a specific hazard.

Mitigation: Activities providing a critical foundation in the effort to reduce the loss of life and property from natural and/or man-made disasters, by avoiding or lessening the impact of a disaster, and providing value to the public by creating safer

communities. Mitigation seeks to fix the cycle of disaster damage, reconstruction, and repeated damage. These activities or actions, in most cases, will have a long-term sustained effect.

Natural Resource Protection: Action that, in addition to minimizing hazard losses, also preserves or restores the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Prevention: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses.

Property Protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area.

Public Education and Awareness Project: Action to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

Robert T. Stafford Disaster Relief and Emergency Assistance Act: Section 322 was added as part of the Disaster Mitigation Act (DMA) of 2000 to take a new and revitalized approach to mitigation planning. This new section emphasizes the need for local entities to closely coordinate mitigation planning and implementation efforts. In succinct terms, this is the mandate requiring local communities to compile and adopt a mitigation plan as an eligibility requirement for mitigation funding.

STAPLEE Method: A technique for identifying, evaluating, and prioritizing mitigation actions based on existing local conditions. It advocates an analysis based on the following conditions: social, technical, administrative, political, legal, economic, and environmental.

Structural Project: Action that involves the construction of structures to reduce the impact of a hazard.

Definition of Acronyms

AP – Action Plan
ARC – American Red Cross
CAK – Akron-Canton Regional Airport
CDBG – Community Development Block Grant
CDC – Center for Disease Control & Prevention
CFR – Code of Federal Regulations
CLE – Cleveland Hopkins International Airport
COOP – Continuity of Operations Plan
CPC – Core Planning Committee
CRS – Community Rating System
DMA – Disaster Mitigation Act
EAS – Emergency Alert System
EHS – Extremely Hazardous Substance
EMA – Emergency Management Agency
EMPG – Emergency Management Performance Grant
EMS – Emergency Medical Services
EOC – Emergency Operations Center
EOP – Emergency Operations Plan
EPI – Emergency Public Information
ESRI – Environmental Systems Research Institute
FBI – Federal Bureau of Investigation
FIRM – Flood Insurance Rate Map
FEMA – Federal Emergency Management Agency
FMA – Flood Mitigation Assistance
GIS – Geographic Information System
HAZMAT – Hazardous Materials
HAZUS – Hazards US
HMC – Hazard Mitigation Core Planning Committee
HMEP – Hazardous Materials Emergency Planning
HMGP – Hazard Mitigation Grant Program
HRA – Hazard Risk Assessment
HSGP – Homeland Security Grant Program
IAD – Dulles International Airport

LEPC – Local Emergency Planning Committee
MAA – Mutual Aid Agreement
MCEMA – Monroe County Emergency Management Agency
MCGHD – Monroe County General Health District
MHI – Median Household Income
MPH – Miles Per Hour
MSA – Metropolitan Statistical Area
NCDC – National Climatic Data Center
NFIP – National Flood Insurance Program
NOAA – National Oceanic Atmospheric Administration
NRCS – Natural Resource Conservation Service
NWS – National Weather Service
ODH – Ohio Department of Health
ODNR – Ohio Department of Natural Resources
ODOT – Ohio Department of Transportation
OEIC – Ohio Earthquake Information Center
OEMA – Ohio Emergency Management Agency
ORC – Ohio Revised Code
OSHP – Ohio State Highway Patrol
PDM – Pre-Disaster Mitigation
PDSI – Palmer Drought Severity Index
PGA – Peak Ground Acceleration
PIT – Pittsburgh International Airport
POD – Points of Dispensing
SERC – State Emergency Response Commission
SHELDUS – Spatial Hazard Events and Losses Database for US
SOG – Standard Operating Guidelines
STAPLEE – Social, Technical, Administrative, Political, Legal, Environmental,
Economical
USACE – United State Army Corps of Engineers
USDA – United States Department of Agriculture
USDHS – United States Department of Homeland Security
USDOT – United States Department of Transportation
USGS – United States Geological Survey

VFD – Volunteer Fire Department

WMD – Weapons of Mass Destruction

WTP – Water Treatment Plant

YNG – Youngstown-Warren Regional Airport

APPENDIX 3: EVIDENCE OF PUBLIC INVOLVEMENT

This appendix contains copies of sign-in sheets and advertisements for any meetings held as part of the hazard mitigation planning process. Planning committee meetings were not advertised; consequently, only sign-in sheets are provided for those. All public meetings were advertised.

NOTICE OF PUBLIC MEETING

The Monroe County Emergency Management Agency, as part of the Monroe County Hazard Mitigation Planning Committee, will hold a public meeting on July 6, 2011 at the Monroe County EOC, at 1:00 P.M.

The purpose of the meeting is to review updates to the county's hazard mitigation plan. Members of the public will be given the opportunity to comment on the natural and man-made hazards most affecting them.

The Monroe County Multi-Jurisdictional Hazard Mitigation Plan was developed in 2005 per federal requirements in 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.

Monroe County

2011

Mitigation Core Planning Committee Members

Phillip Keevert: EMA

Robin Groves: Public Health

Carl Davis: Commissioner

Tracy Truax: Sheriff's Office

Rick Schuerman: Village Admin

Fred Smith: TWP

Jay Chaplin: EMS

MONROE COUNTY
MULTI-JURISDICTIONAL ALL-HAZARDS MITIGATION PLAN UPDATE
STAKEHOLDERS / PUBLIC MEETING INVITATION

Date: May 22, 2011

Time: 3:00 PM

Location: EOC

As you may be aware the Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan was adopted by Monroe County and participating jurisdictions in 2005. The plan is required to be updated at a minimum of every five (5) years, per federal requirements in 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.

The Monroe County Emergency Management Agency (MCEMA), as part of the Monroe County Hazard Mitigation Planning Committee, and representatives from JH Consulting LLC, of West Virginia will facilitate a Stakeholders/Public meeting on May 22, 2011 at EOC, at 3:00 to continue the required plan update process. The primary goal of the meeting is to update the status of mitigation strategies and objectives identified in the original plan, and discuss any mitigation efforts that have been conducted since the original plan was adopted.

The updating process involves reassembling the Planning Stakeholders Committee to guide necessary plan revisions, as well as to provide the public an opportunity to comment, to assure that the plan update remains relevant to Monroe County's needs. We would like to invite you to join the Monroe County Hazard Mitigation Planning Committee at this meeting, in an effort to complete preliminary update functions, and keep this process headed in the right direction. We look forward to working with you on this important project. Thank you for your support.

Sincerely,

Phillip Keevert

Director, Monroe County EMA

Meeting Sign-In

Date 5/22/11

1. Phil Kras EMD
2. U. J. Jones S.O.
3. [Signature] MCSO
4. Marsha Masters
5. U. J. Jones MCHD
6. [Signature] M.C. A.P.
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

**MONROE COUNTY
MULTI-JURISDICTIONAL ALL-HAZARDS MITIGATION PLAN UPDATE
STAKEHOLDERS / PUBLIC MEETING INVITATION**

Date: July 6, 2011

Time: 1:00 PM

Location: EOC

As you may be aware the Monroe County Multi-Jurisdictional All-Hazards Mitigation Plan was adopted by Monroe County and participating jurisdictions in 2005. The plan is required to be updated at a minimum of every five (5) years, per federal requirements in 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.

The Monroe County Emergency Management Agency (MCEMA), as part of the Monroe County Hazard Mitigation Planning Committee, and representatives from JH Consulting LLC, of West Virginia will facilitate a Stakeholders/Public meeting on July 6, 2011 at EOC, at 1:00 to continue the required plan update process. The primary goal of the meeting is to update the status of mitigation strategies and objectives identified in the original plan, and discuss any mitigation efforts that have been conducted since the original plan was adopted.

The updating process involves reassembling the Planning Stakeholders Committee to guide necessary plan revisions, as well as to provide the public an opportunity to comment, to assure that the plan update remains relevant to Monroe County's needs. We would like to invite you to join the Monroe County Hazard Mitigation Planning Committee at this meeting, in an effort to complete preliminary update functions, and keep this process headed in the right direction. We look forward to working with you on this important project. Thank you for your support.

Sincerely,

Phillip Keevert

Director, Monroe County EMA

Meeting Sign-In

Date 7-6-111. Philip Van S. O. A.2. [Signature] MCHD3. [Signature] MCHD4. [Signature] S. O.5. Robert J. MCHD

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

MITIGATION PLAN AVAILABLE FOR REVIEW

The Monroe County Hazard Mitigation Core Planning Committee is currently in the process of updating the Monroe County Hazard Mitigation Plan.

This plan identifies the hazards to which Monroe County is susceptible as well as a variety of projects that can be undertaken to lessen the effects of those hazards. The original document is available for review at the Monroe County Emergency Management Agency at 47069 State Route 26, Woodsfield, OH from July 25, 2011 through July 29, 2011. A form will be provided to document any comments.

The Monroe County Hazard Mitigation Plan was developed in 2005 per federal requirements in 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.

Monroe County Hazard Mitigation Plan

Public Comment Form

The Monroe County Hazard Mitigation Plan is being updated as per the requirements of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. As part of that requirement, members of the public must have an opportunity to review and comment on the document. During the preparation of the update, two public meetings will be held to allow the public a chance to review the existing document and make suggestions regarding improvements. This form is provided to the public to record comments on the original version of the plan. Following your review of the plan, please use this document to mark any strengths or areas for improvement.

1. List any hazards you feel were not included in the plan but should have been.

1a. Why should these be included?

2. What hazards are in the plan that should be removed?

2a. Why?

3. List any projects you feel should have been included in the plan but were not.

3a. Why?

4. What projects are in the plan that should be removed?

4a. Why?

5. Please list any general comments you have.

6. In what jurisdiction (i.e., city, village, or township) do you live?

THANK YOU for completing this form. If you would like to leave your name and other contact information, you may do so on the back of this sheet.

Monroe County Hazard Mitigation Plan

Public Comment Form

The Monroe County Hazard Mitigation Plan has been updated as per the requirements of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. As part of that requirement, members of the public must have an opportunity to review and comment on the document. During the preparation of the update, two public meetings were held to allow the public a chance to review the existing document and make suggestions regarding improvements. This form is provided to the public to record comments on the updated version of the plan. Following your review of the plan, please use this document to mark any strengths or areas for improvement.

1. List any hazards you feel were not included in the plan but should have been.

1a. Why should these be included?

2. What hazards are in the plan that should be removed?

2a. Why?

3. List any projects you feel should have been included in the plan but were not.

3a. Why?

4. What projects are in the plan that should be removed?

4a. Why?

5. Please list any general comments you have.

6. In what jurisdiction (i.e., city, village, or township) do you live?

THANK YOU for completing this form. If you would like to leave your name and other contact information, you may do so on the back of this sheet.

Doug Britvec

From: Karen Ault [Karen.Ault@odh.ohio.gov]
Sent: Wednesday, August 10, 2011 3:37 PM
To: dbritvec@jhcmemergencypreparedness.com
Subject: FW: H1N1 Monroe County

Doug,
Hope this helps.

Karen Ault, RN
Director of Nursing

Monroe County Health Dept.
118 Home Avenue
Woodsfield, Ohio 43793

Phone: 740-472-1677 ext. 202
Fax: 740-472-2508

karen.ault@odh.ohio.gov

From: Amy Murphy [amy.murphy@noblecohd.org]
Sent: Tuesday, August 09, 2011 11:00 AM
To: Karen Ault
Subject:

Monroe County had no laboratory confirmed cases of the 2009 strain of H1N1. A suspect case, by definition, included the following criteria: fever (temp greater than 100 F) and either cough or sore throat with no other known cause for symptoms. Estimating the number of suspect cases is very challenging because many people with flu don't seek medical care and only a small number of those that do seek medical care are tested. According to CDC, estimates of 2009 H1N1 influenza cases<http://www.cdc.gov/h1n1flu/estimates_2009_h1n1.htm> in the U.S. from April 2009 to mid-January 2010 ranged widely, from 41 million to 84 million.

Although no lab specimens from Monroe County patients were sent to the Ohio Department of Laboratory for H1N1 testing, this does not mean that Monroe County did not have H1N1 cases. The 2009 strain of H1N1 was a global pandemic. Once the influenza pandemic arrived in Ohio, to continue testing would have been costly and time consuming. Whether one has seasonal influenza or the new (or new at that time) H1N1 flu, the symptoms and treatment for flu are the same, so testing to determine which kind of influenza an individual may have is not necessary. After H1N1 was confirmed in Ohio, testing was limited to people who were seriously ill, mainly those who were hospitalized.

Amy J Murphy, RN, BSN
Epidemiologist
Belmont, Coshocton, Guernsey, Monroe, Noble & Washington Counties

Noble County Health Department
44069 Marietta Rd
Caldwell, OH 43724
Office: 740-732-4958
Fax: 740-732-5043
Cell: 740-630-1846

APPENDIX 4: ADOPTING RESOLUTIONS

This appendix contains copies of the resolutions signed and adopted by each participating jurisdiction.

RESOLUTION – MONROE COUNTY BOARD OF COUNTY COMMISSIONERS

WHEREAS natural, technological, and man-made hazards can affect Monroe County;
and

WHEREAS significant structural, historical, and economic losses could result from an
occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease
the total losses Monroe County incurs as a result of said hazard occurrences.

THEREFORE the Monroe County Commission has undertaken a project to update the
existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005,
in an effort to further identify, define, and characterize the hazards affecting Monroe
County as well as to continue identifying and prioritizing projects that could lessen
hazard vulnerability.

WHEREAS the Monroe County Commission has a strong interest in reducing losses
from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain
eligibility for hazard mitigation funding, and, by that requirement, must be updated a
minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce
hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Monroe County Commission joined the Villages of Antioch, Beallsville,
Clarington, Graysville, Jerusalem, Lewisville, Miltonsburg, Stafford, Wilson, and
Woodsfield in the completion of this plan update.

NOW BE IT RESOLVED THAT the Monroe County Board of County Commissioners
does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation
Plan* (as presented and with any state/federally-required modifications) this ____ day of
_____, 20__.

SIGNED: _____
President, Board of Commissioners

Witness

RESOLUTION – VILLAGE OF ANTIOCH

WHEREAS natural, technological, and man-made hazards can affect the Village of Antioch; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Antioch incurs as a result of said hazard occurrences.

THEREFORE the Antioch Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the Village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Antioch Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Antioch joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Antioch Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION – VILLAGE OF BEALLSVILLE

WHEREAS natural, technological, and man-made hazards can affect the Village of Beallsville; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Beallsville incurs as a result of said hazard occurrences.

THEREFORE the Beallsville Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Beallsville Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Beallsville joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Beallsville Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION –VILLAGE OF CLARINGTON

WHEREAS natural, technological, and man-made hazards can affect the Village of Clarington; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Clarington incurs as a result of said hazard occurrences.

THEREFORE the Clarington Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Clarington Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort, is a proven efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Clarington joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Clarington Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION – VILLAGE OF GRAYSVILLE

WHEREAS natural, technological, and man-made hazards can affect the Village of Graysville; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Graysville incurs as a result of said hazard occurrences.

THEREFORE the Graysville Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Graysville Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Graysville joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Graysville Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION –VILLAGE OF JERUSALEM

WHEREAS natural, technological, and man-made hazards can affect the Village of Jerusalem; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Jerusalem incurs as a result of said hazard occurrences.

THEREFORE the Jerusalem Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Jerusalem Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort, is a proven efficient way to plan for, and reduce, hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Jerusalem joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Jerusalem Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION – VILLAGE OF LEWISVILLE

WHEREAS natural, technological, and man-made hazards can affect the Village of Lewisville; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Lewisville incurs as a result of said hazard occurrences.

THEREFORE the Lewisville Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Lewisville Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Lewisville joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Lewisville Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION –VILLAGE OF MILTONSBURG

WHEREAS natural, technological, and man-made hazards can affect the Village of Miltonsburg; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Miltonsburg incurs as a result of said hazard occurrences.

THEREFORE the Miltonsburg Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Miltonsburg Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven efficient way to plan for, and reduce, hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Miltonsburg joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Miltonsburg Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION – VILLAGE OF STAFFORD

WHEREAS natural, technological, and man-made hazards can affect the Village of Stafford; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Stafford incurs as a result of said hazard occurrences.

THEREFORE the Stafford Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Stafford Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Stafford joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Stafford Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION –VILLAGE OF WILSON

WHEREAS natural, technological, and man-made hazards can affect the Village of Wilson; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Wilson incurs as a result of said hazard occurrences.

THEREFORE the Wilson Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Wilson Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven efficient way to plan for, and reduce, hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Wilson joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Wilson Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness

RESOLUTION – VILLAGE OF WOODSFIELD

WHEREAS natural, technological, and man-made hazards can affect the Village of Woodsfield; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard events; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Village of Woodsfield incurs as a result of said hazard occurrences.

THEREFORE the Woodsfield Village Council has partnered with the county to update the existing *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2005, in an effort to further identify, define, and characterize the hazards affecting the village as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Woodsfield Village Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Monroe County, Ohio.

THEREFORE the Village of Woodsfield joined Monroe County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Woodsfield Village Council does hereby adopt the updated *Monroe County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this ____ day of _____, 20__.

SIGNED: _____
Mayor

Witness