Huntington County Multi-Hazard Mitigation Plan

May 2024

Prepared for:

Huntington County Emergency Management Agency
20 Victory Noll Dr.
Huntington, IN 46750


Prepared by:

Christopher B. Burke Engineering, LLC
115 W. Washington St., Ste. 1368 S.
Indianapolis, IN 46204

Burke Project No. 19R.230195

BURKE

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EXECUTIVE SUMMARY

The Federal Emergency Management Agency (FEMA) defines the disaster life cycle as the process through which emergency managers respond to disasters when they occur; help people and institutions recover from them; reduce the risk of future losses; and prepare for emergencies and disasters. In **Figure i** each phase in the Emergency Management Lifecycle; Mitigate, Prepare, Respond, and Recover has a description of the phase as well as a time frame within the disaster cycle. Although each of the phases is visually tied to a specific time period within the life cycle of the disaster, mitigation can take place throughout much of the disaster life cycle. The Huntington County Multi-Hazard Mitigation Plan (MHMP) update focuses on the mitigation activities that may be implemented throughout the disaster life cycle.

Figure i Phases of the Emergency Management Lifecycle

According to FEMA, mitigation is most effective when it's based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs. The MHMP planning process identifies hazards, the extent that they affect the municipality, and formulates mitigation practices to ultimately reduce the social, physical, and economic impact of the hazards.

The overall goals of the Huntington County MHMP, which align closely with the State of Indiana MHMP, are:

1) Lessen the impacts of disasters and enhance community resilience.
2) Minimize the loss of life and injuries caused by disasters.
3) Promote mitigation activities both prior to and following a disaster.

To achieve the stated goals the community strategy includes the following:

1) Lessen the impacts of disasters and enhance community resilience by:
   a. Supporting resilience opportunities within the community
   b. Incorporating the MHMP into local ordinances, local planning efforts and the community comprehensive plans
   c. Evaluating and strengthening collaboration among organizations
   d. Making sure essential facilities can withstand disasters
   e. Supporting the NFIP
   f. Identifying opportunities to reduce repetitive loss incidents

2) Minimize the loss of life and injures caused by disasters by:
   a. Improving warning systems for the residents
   b. Developing public awareness and outreach programs
   c. Improving shelter availability
   d. Developing a program of affordable housing that is resilient to flooding
   e. Improving education and training for emergency personnel and officials
   f. Developing ways to provide education, awareness, and warning of disasters to the underserved populations.

3) Promote mitigation activities prior to and following a disaster by:
   a. Ensuring better communication between federal, state and local officials
   b. Seizing opportunities to buy out properties, floodproof buildings, or improve building codes

c. Conducting new studies and/or research opportunities to reduce impacts from disasters and prepare for future events anticipating the impacts of our changing climate.
d. Conducting outreach efforts to educate community members of the risks and hazards in their area as well as encouraging the implementation of a variety of mitigation actions.

For National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt either their own MHMP or participate in the development of a multi-jurisdictional MHMP. Further, it is required that local jurisdictions review, revise, and resubmit the MHMP every five years. As representatives from Huntington County, the City of Huntington, the Towns of Andrews, Markle, Mount Etna, Roanoke, and Warren have provided information, attended meetings, and participated in the planning process, the planning process used to update the Huntington County MHMP satisfies the requirements of a multi-jurisdictional plan.

During Planning Committee meetings, those in attendance revisited existing the 2018 MHMP and identified new critical facilities and local hazards; reviewed the State's mitigation goals and updated the local mitigation goals; reviewed the most recent local hazard data, vulnerability assessment, and maps; evaluated the effectiveness of existing mitigation measures and identified new mitigation projects; and reviewed materials for public participation. Keeping in mind the ever-changing climate, the team also examined the needs of underserved populations that may be more vulnerable to the impacts of the listed hazards. Meetings were conducted with key groups such as city planners, health department specialists, representatives of organizations serving the underserved populations and various emergency responders. Their information has been incorporated into this MHMP update. This plan update will examine each of the hazards with data from the past 5 years, where possible.

The review of hazards and risks is based on the methodology described in the Local Mitigation Planning Policy Guide FP 206-21-0002, Effective April 19, 2023. The plan identifies the hazards assessed, the nature of each hazard including historic occurrences, vulnerabilities, and the relationship to other hazards. Using a ranking tool known as the Calculated Risk Priority Index (CPRI), the planning team scored each of the hazards. **Table i** lists the hazards in the plan and compares the scores to the previous plan. The CPRI scores reflect the hazards of most concern by the planning team members and change from one plan to another based on recent experiences, changes in community demographics, and challenges.

Table i: Comparison of CPRI Scores for All Hazards

Hazard	2024 Rank	CPRI Score	2018 Rank	Hazard
Fire and Wildfire	1	3.10	12	Wildfire only
Hail/Thunder/Wind	2	3.10	4	Summer Storm
Winter	3	2.98	5	Winter Storm
Drought	4	2.95	10	Drought
Dam and Levee Failure	5	2.55	13/14	Levee Failure/Dam Failure
Flood - Flash	6	2.72	6	Flash Flood
Extreme Temperature	7	2.51	8	Extreme Temperature
Flood - Riverine	8	2.51	3	Flood
Tornado	9	2.37	1	Tornado
Haz Mat - Transportation	10	2.00	2	Hazmat Spill
Earthquake	11	1.47	9	Earthquake
Land subsidence	12	1.45	11	Ground Failure
Haz Mat Fixed Facility				
			7	Harmful Organism

Lastly, the plan concludes with a discussion about mitigation actions. The MHMP lists a variety of mitigation actions the planning team members would like to accomplish within the next 5 years to enhance the resilience of Huntington County. In addition, it celebrates the mitigation successes from the previous MHMP Plans and community actions which contribute to mitigating the various risks and hazards identified.

This MHMP is a living document which has a 5-year life span. During the next 5 years, Huntington County and the incorporated communities that adopt this plan will work to complete the mitigation actions as well as regularly noting items for the 2029 MHMP update. The County EMA and planning team members will also use tools contained in the Appendices, or similar documents, to track progress, and note changes that may impact community resilience.

1.0 INTRODUCTION

1.1 DISASTER LIFE CYCLE

The Federal Emergency Management Agency (FEMA) defines the disaster life cycle as the process through which emergency managers respond to disasters when they occur; help people and institutions recover from them; reduce the risk of future losses; and prepare for emergencies and disasters. The disaster life cycle, shown in **Figure 1** includes four phases:

Figure 1 Disaster Life Cycle

Mitigation – to prevent or to reduce the effects of disasters (building codes and zoning, vulnerability analyses, public education)
Preparedness – planning, organizing, training, equipping, exercising, evaluation and improvement activities to ensure effective coordination and the enhancement of capabilities (preparedness plans, emergency exercises/training, warning systems)
Response – the mobilization of the necessary emergency services and first responders to the disaster area (search and rescue; emergency relief)
Recovery – to restore the affected area to its previous state (rebuilding destroyed property, re-employment, and the repair of other essential infrastructure)

The Huntington County Multi-Hazard Mitigation Plan (MHMP) focuses on the mitigation phase of the disaster life cycle. According to FEMA, mitigation is most effective when it's based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs. Recent reviews of grant programs have determined for every $1 spent on mitigation efforts, between $6 and $10 are saved within the community on efforts following disasters. The MHMP planning process identifies hazards, the extent that they affect the municipality, and formulates mitigation practices to ultimately reduce the social, physical, and economic impact of the hazards.

1.2 PROJECT SCOPE & PURPOSE

REQUIREMENT §201.6(d)(3):

A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding.

The purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. (44 CFR §201.1(b))

A FEMA-approved MHMP is required to apply for and/or receive project grants under the Building Resilient Infrastructure and Communities (BRIC), Hazard Mitigation Grant Program (HMGP), and Flood Mitigation Assistance (FMA). Additional detailed studies may need to be completed prior to applying for these grants even though this plan meets the requirements of DMA 2000 and eligibility requirements of the above listed grant programs.

The National Flood Insurance Program (NFIP) requires participating communities adopt either their own MHMP or participate in the development of a multi-jurisdictional MHMP to be eligible for future mitigation funds. The Indiana Department of Homeland Security (IDHS) and the United States Department of Homeland Security (US DHS)/FEMA Region V offices administer the MHMP program in Indiana. Local jurisdictions are required to review, revise, and resubmit the MHMP every five years. The MHMP updates must demonstrate that progress has been made in the last five years to fulfill the commitments outlined in the previously approved MHMP. The update may validate the information in the previously approved MHMP or may be a major rewrite depending on community needs and planning guidance. The updated MHMP is not intended to be an annex to the previously approved Plan; it stands on its own as a complete and current MHMP.

The Huntington County MHMP Update is a multi-jurisdictional planning effort led by the Huntington County EMA. This Plan was prepared in partnership with Huntington County, the City of Huntington, the Towns of Andrews, Markle, Mount Etna, Roanoke, and Warren. Representatives from these communities attended the Committee meetings, provided valuable information about their community, reviewed, and commented on the draft MHMP, and assisted with local adoption of the approved Plan. As each of the jurisdictions had an equal opportunity for participation and representation in the planning process, the process used to update the Huntington County MHMP satisfies the requirements of DMA 2000 in which multi-jurisdictional plans may be accepted.

The Community Rating Service (CRS) program is a voluntary incentive program that recognizes and encourages community floodplain activities that exceed the minimum NFIP requirements. As a result, flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote education and awareness of flood insurance. Savings in flood insurance premiums are proportional to the points assigned to various activities. A minimum of 500 points is necessary to enter the CRS program and receive a 5% flood insurance premium discount. This MHMP could contribute as many as 374 points toward participation in the CRS. At the time of this planning effort, the Towns of Andrews, Mount Etna, Roanoke and Warren, the City of Huntington and Huntington County participated in the NFIP, and Huntington County and the City of Huntington currently participate in the CRS program. Throughout this Plan, activities that could count toward CRS points are identified with the NFIP/CRS logo. (**Figure 2)** Acronyms referenced throughout this plan are contained in **Appendix 1.**

Figure 2 NFIP/CRS Logo

Funding to update the MHMP was made available through a FEMA/DHS grant awarded to the Huntington County EMA and is administered by IDHS. Huntington County provided the local 25% match required by the grant. Christopher B. Burke Engineering, LLC (Burke) was hired to facilitate the planning process and prepare the Huntington County MHMP.

1.3 ANALYSIS PROCESS

REQUIREMENT §201.6(c)(1):

The plan shall document the planning process used to prepare the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Preparation for the Huntington County MHMP Update began in 2022, when the grant request was approved by FEMA and grant funds were awarded in 2023. The plan update process began immediately upon the hiring of Chrispher B. Burke Engineering, LLC. The planning process to update

the 2018 MHMP took 14 months. This included a review period by IDHS and FEMA for the draft MHMP Update, and time for Huntington County and communities to adopt the final MHMP Update.

1.3.1 Planning Committee and Involvement of Other Interested Parties

In May of 2023, the EMA began to compile a list of Planning Committee members to guide the MHMP update planning process. These individuals were specifically invited to serve on the Committee because they were knowledgeable of local hazards; have been involved in hazard mitigation activities; have the tools necessary to reduce the impact of future hazard events; and/or served as a representative on the prior Planning Committee in 2018. Allen, Grant, Wabash, Wells and Whitley Counties were invited to attend the team meetings and were given an opportunity to provide input and feedback to the plan throughout the planning process and during draft review. No comments or corrections were received from the neighboring EMA offices. **Table 1.** lists the individuals that actively participated on the Committee and the entity they represented.

Table 1: Huntington County MHMP Planning Team

Name	Title	Organization	Representing
Rex Johnson	Assistant Fire Chief	Bippus Fire	Bippus CDP
Kevin Kraustopf	Communications	City of Huntington	City of Huntington
Adam Cuttriss	Director of Public Works	City of Huntington	City of Huntington
Bryn Keplinger	Dir of Community Development & Redevelopment	City of Huntington	City of Huntington
Charles Chapman	City Council & Dispatch	Huntington City Council	City of Huntington
Tony Johnson	Fire Chief	Huntington Fire Department	City of Huntington
Andy Ellet	Admin Captain	Huntington Police	City of Huntington
Kole Hacker	Patrol Man	Huntington Police Department	City of Huntington
Richard Strick	Mayor	Mayor of Huntington	City of Huntington
Bob Jeffers	Director	Huntington County EMA	Huntington County
Jason Wall	EMA	Huntington County	Huntington County
Tim Allen	Director	Huntington County Dispatch	Huntington County
Thomas Falle	Deputy Director	Huntington County EMA	Huntington County
Jamison Heyde	Volunteer	Huntington County EMA	Huntington County
Debra Barton	EMA-preparedness	Huntington County Health Dept	Huntington County
Brian Thubland	Huntington County Health Dept Administrator	Huntington County Health Dept	Huntington County
Robert Hayer	Vice-Chair	Huntington County LEPC	Huntington County
Aliza Tourkow	Grant Writer	Grant Writing Assistance	Huntington County
Avery Foehl	Fire Fighter	Andrews Fire Department	Town of Andrews
Evan Scheakel	Fire Chief	Andrews Fire Department	Town of Andrews
John Markley	Police Chief	Markle Police Department	Town of Markle
Mike Grant	Operation Manager	Town of Markle	Town of Markle
Adan Couch	Mt. Etna VFD SWCD	Huntington County	Town of Mt Etna
Dave Tucker	Roanoke and EMA	Roanoke	Town of Roanoke
James S Wood	Town Marshall	Roanoke	Town of Roanoke
Marcus Symons	EMA	Huntington County	Town of Warren
Alicia Symons	Environmental Health Specialist	Huntington County Health Dept	Town of Warren
Rick Uecker	Safety Coordinator	Parkview Health	Hospital
Johnny Newsome	EMA volunteer and Nursing Homes Facilities Maintenance	Huntington County	St. Anne's Nursing Home
Brad Gordon	Superintendent	CF Industries	Tier II Industry
Nathan Sharrard	Terminal Leader	Koch	Tier II Industry
Thomas Black	Manager Security & Safety	Sunoco	Tier II Industry

Name	Title	Organization	Representing
Jackie Pulley	LEPC Program Manger	Indiana Department of Homeland Security	State Agency
Megan Wilson	Deputy Director	Adams County EMA	Neighboring EMA
Barb Lehrman	Adams County Director	Adams County EMA	Neighboring EMA
Edwards Scott	Deputy Director	Whitley County EMA/DHS	Neighboring EMA

Members of the Committee participated in the MHMP Update through various team meetings as well as outside group meetings where mitigation opportunities are supported or addressed. During the MHMP team meetings, the Committee:

- Reviewed the State's mitigation goals and updated the local mitigation goals.
- Reviewed the most recent local hazard data, vulnerability assessment, and maps.
- Comparatively evaluated and ranked the hazards based on probability of occurrence, impact, warning time and duration of the hazard event.
- Revisited existing (in the 2018 MHMP) critical and essential infrastructure and identified new critical infrastructure and local hazards.
- Evaluated the effectiveness of existing mitigation measures and identified new mitigation projects.
- Reviewed materials for public participation.

A sign-in sheet recorded those present at each meeting to document participation. The following members also represented the underserved populations: Johnny Newsome - Senior Citizens and medically fragile. Two census tracts in the City of Huntington are identified as disadvantaged population areas. The City of Huntington team members were able to speak about the needs of the disadvantaged and programs currently underway to assist community members. Meeting agendas and summaries are included in **Appendix 2**. Members of the Committee also reviewed a draft MHMP, provided comments and suggestions, and assisted with adoption of the Huntington County MHMP Update.

1.3.2 Public Involvement

The Huntington County Public Information Officer kept the public up to date about the planning process by placing an article in the local paper about the planning meetings. In addition, the EMA Director has reported on the planning effort at public commissioner's meetings, LEPC meetings, and other events. A draft of the Huntington County MHMP Update was posted to the Huntington County website (https://www.huntington.in.us/county/department/index.php?structureid=22) for public review and comment. A media release indicating the posting of the draft MHMP and the ability to comment was submitted for release. Of the 125 views, no comments or corrections were received from the public or the Committee. The media release, web page posting, and any comments received are included in **Appendix 3**.

Neighboring Emergency Managers were invited to attend both planning meetings as well as being provided with an opportunity to review the draft plan. EMA Directors and staff from Adams and Whitley Counties attended the planning meetings. No comments or corrections were received from the neighboring Emergency Management Agencies in Allen, Wells, and Whitley Counties.

1.4 PLANS, STUDIES, REPORTS, AND TECHNICAL INFORMATION

REQUIREMENT §201.6(c)(1):

The plan shall include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

During the development of the Huntington County MHMP Update, several relevant sources of information were reviewed either as a document or through discussions with local personnel. This exercise was completed to gather updated information since the development of the previous Huntington County MHMP, and to assist the Committee in developing potential mitigation measures to reduce the social, physical, and economic losses associated with hazards affecting Huntington County.

Just as the 2018 Huntington County MHMP informed the plan writers of key concerns for the communities in 2018, including housing, land development and flood risks, this planning effort includes the review of community specific plans and studies for incorporation in this plan update. For the purposes of this planning effort, the following materials (among others) were discussed and utilized:

MHMP Huntington County 2018
Huntington County Comprehensive Plan 2040, approved December 10, 2018
Huntington County GIS data
City of Huntington Comprehensive Plan 2022 Update
Huntington County Ordinances
City of Huntington Ordinances
Ordinances for the Towns of Markle, Mount Etna, Roanoke, Warren, and Andrews.
Huntington County Flood Response Plan, 2019
Functional River Assessments for the Upper Wabash River (2019, 2020, and 2022)

The City of Huntington Comprehensive Plan update references on page I-19 the coordination with multiple plans to complete the 2022 update. The 2018 MHMP is listed as one of the coordinating plans.

The Huntington County Building and Planning Department has jurisdiction over the unincorporated rural areas of Huntington County as well as the Towns of Andrews, Markle, Mount Etna, Roanoke and Warrant. The City of Huntington has its own Building Department.

In addition to local agencies and offices such as those listed above, several regional and state agencies were contacted and subsequently provided data for this planning effort. Those contacts, and the information they provided, include:

- Indiana Department of Natural Resources, Division of Water – *Flood insurance policies, claims, and payment information; NFIP Participation; DNR listed Dams and associated records; Dam Breach Inundation App; and IN Floodplain Information Portal.*
- Indiana Department of Natural Resources, Other Divisions – *Mining Records*
- Indiana Geologic Survey and Water – *Earthquakes in Indiana; Liquefaction Potential Map: Karst Regions and Maps of Karst locations*
- Indiana Geographic Information Office - *IndianaMap*
- Indiana Department of Homeland Security – *Current Fire and Building Code Information*
- FEMA, Region V – Repetitive loss structure counts and insurance payments
- Midwest Regional Climate Center – Climate Trends; County specific climate reports
- National Weather Service – Indianapolis Weather Forecast Office – Confirmation of WSSI tool; local storm reports; weather event photos.

The CRS program credits NFIP communities with a maximum of 170 points. Up to 15 points for organizing a planning committee composed of staff from various departments; up to 120 points for involving the public in the planning process; and up to 35 points for coordinating among other agencies and departments to resolve common problems relating to flooding and other known natural hazards.

2.0 COMMUNITY INFORMATION

Figure 3 Huntington County Location

Huntington County was established in 1815 and is named after Samuel Huntington, president of the Continental Congress and signed the Declaration of Independence and the Articles of Confederation. Huntington County was organized from the previously unorganized Indiana Territory and gained by the Adams New Purchase of 1818. The first non-Native American settlers were a group of 29 farm families from Connecticut who arrived in the early 1830s known as the "Yankee" settlers. The settlers came to Huntington County due to construction of the Wabash and Erie Canal, which was a shipping canal that connected the Great Lakes to the Ohio River.

Huntington County has low rolling hills mostly agricultural and urban development. The total area of Huntington County is 387.72 square miles of which 5.07 square miles is water. The county is divided into 12 townships. The City of Huntington serves as the county seat. The location of the county within the State of Indiana is identified in **Figure 3.**

2.1 POPULATION AND DEMOGRAPHICS

The US Census Bureau estimates the 2023 population for Huntington County was was 36,871 which ranks 42 of 92 in the State. Since 2020, increased by 0.3%, the City of Huntington is the county's largest incorporated area, accounting for 46.3% of the county's population (17,023 people). Huntington County is a predominantly white community, making up 96.4% of the county's racial demographics. The county is 97% non-Hispanic and 3% Hispanic.

In 2022, the median age of the population in the county was 40.9 years of age. The largest demographic age group in the county is Older Adults (45 to 64) making up 26.3% of the county's population. The second largest is the Younger Adult group (25 to 44) making up 24.3% of the county and the third largest age group is the Seniors group (65 and older). The school age group (5 to 17) follows, making up 16% of the population; then the college age group (18 to 24) and finally the preschool age group (0 to 4). Huntington County age distribution is very similar to the state. Adults make up the largest portion of the population and this will be very important as the hazards are evaluated. **Figure 4** shows the age distribution totals compared to the state.

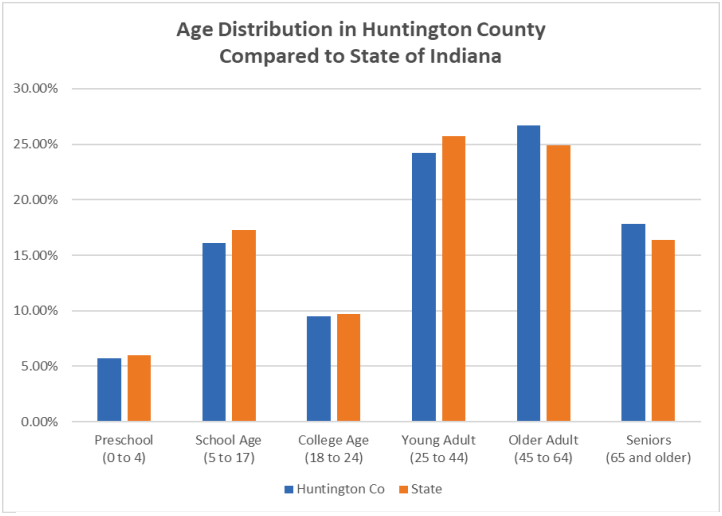


Figure 4 Huntington County Population Compared to Indiana

The approximate median household income in 2022 was reported to be $59,491 while the poverty rate in the same year was reported at 12.8% county-wide. In total, 2,452 (16.2%) of households are married with children, and 5,145 (33.9%) of households are married without children. There are 1,170 single parents in Huntington County with the remaining 4,447 (29.3%) of the population living alone.

Within the county, 92.6% of adults older than 25, have reportedly completed a High School education. Further, 21.9% of those same adults have also completed a Bachelor of Arts or higher degree.

In the past 14 years, Huntington County population has been shrinking with an overall net change of 0.8%. The population began to decline in 2012 and reached a low in 2018. Since 2018, the population has slowly climbed upward regaining about 2/3 of the population from its low point. The US Census population projections anticipate the county will shrink in population; however, the numbers currently do not agree with projections, showing a slight upward trend.

2.2 EMPLOYMENT

US Census data indicates that of the Huntington County workforce, the private sector is the largest employment sector within the county at 88.6%, followed by Government at 8% and then by Farming at 3.5%. The "Other Private – not listed above" category represents the largest group within the Private Sector Employment category at 23.8%. "Other Private" is a catchall category which addresses any employment category not normally reported on the census questionnaires. "Manufacturing" is the second largest employment category employing 19% of the workforce within the county. The total resident labor force according to estimates in 2022 is 18,421 (with 487 unemployed) and as of February 2024, unemployment rate of 4%. The top 10 employers within Huntington County according to Hoosiers by the Numbers are:

General Motors Fort Wayne (Roanoke)
Vera Bradley Inc (Roanoke)
Bendix Commercial Vehicle (Huntington)
Ground Effects Ltd. (Roanoke)
United Methodist Memorial Home (Warren)
Our Sunday Visitor Inc (Huntington)
Novae Corp (Markle)
Parkview Huntington Hospital (Huntington)
Huntington County Community School (Warren)
Huntington North High School (Huntington)

The Huntington County Economic Development website shares the strong, yet diversified manufacturing base which includes agriculture, automotive, food processing, logistics/warehousing/distributions, metal/steel fabrication/ mineral aggregates/ orthopedic devices and petroleum refining and distribution. Over the past 5 years, Huntington County employment has only grown by 1.34%. The County Economic Development team is working to grow the local economy and is working with community leaders with innovative plans for the next five years.

2.3 TRANSPORTATION AND COMMUTING PATTERNS

Interstate 69 crosses Huntington County from northeast to southwest with US Route 24, and State Roads 3, 5, 9, 16, 105, 114, 124, and 218 serving as main connectors throughout the county. There is one railroad, Norfolk Southern, which transects the county coming from Ft. Wayne in the northeast and running to the cities of Wabash and Peru and points westward from the county. **Figure 5** shows the location of each of the transportation routes.

Figure 5 Huntington County Transportation Routes

Although Huntington County attracts a number of workers to the community from neighboring counties, a significant number of the Huntington County workforce travel to neighboring counties for employment. According to STATSIndiana, 2,221 people commute into Huntington County daily. Approximately 39.3% travel from Allen County. Furthermore, approximately 4,875 Huntington County

residents commute to other counties, with Allen County receiving the greatest percentage of commuters from Huntington County at 68.7%.

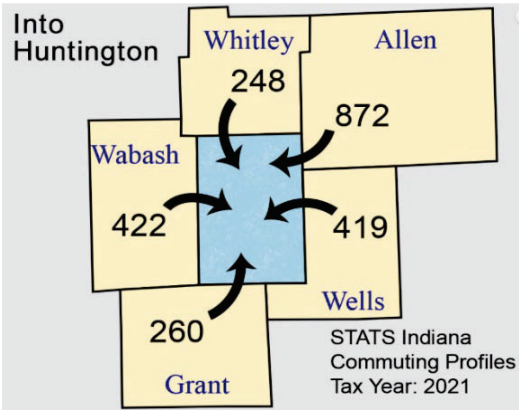


Figure 6 Commuters into Huntington County

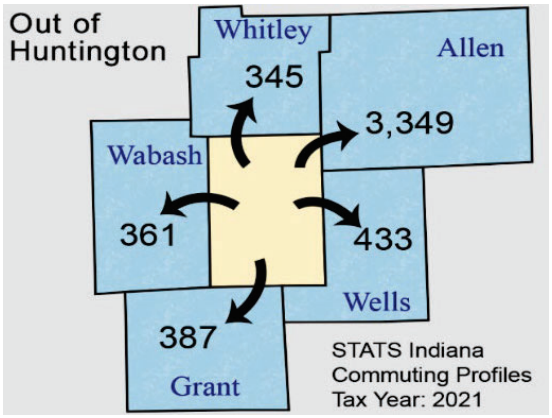


Figure 7 Commuters Out of Huntington County

Figure 6 indicates the number of Huntington County residents 16 and older do not live within Huntington County but commute into the County for employment purposes. **Figure 7** indicates the number of workers 16 and older who live in Huntington County and commute out of the county for employment.

2.4 CRITICAL AND ESSENTIAL INFRASTRUCTURE

REQUIREMENT §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….

Critical facilities, critical infrastructure, and essential facilities are the assets, systems, and networks, whether physical or virtual, so vital to local governments and the United States that their incapacitation or destruction would have a debilitating effect on security, economic security, public health or safety, or any combination thereof.

These structures are vital to the community's ability to provide essential services and protect life and property; are critical to the community's response and recovery activities; and/or are the facilities, the loss of which, would have a severe economic or catastrophic impact. The operation of these facilities becomes especially important following a hazard event.

Figure 8 Huntington County Courthouse

The Huntington County EMA and GIS Department Offices provided the listing and locations of the following 305 critical and essential facilities for the MHMP update. **Figure 8** shows the Huntington County Courthouse as one of the

critical facilities. The following list identifies the number of each of the critical and essential facilities identified.

- 1 Airport
- 1 Heliport
- 74 Churches
- 15 Daycare Centers
- 1 Emergency Operations Center
- 9 Fire Stations
- 23 Government Offices
- 5 Libraries
- 1 Hospital
- 25 Medical Care Facilities
- 13 Mobile Home Parks
- 21 Parks
- 4 Police Stations
- 6 Post Offices
- 4 Potable Water Plants
- 9 Retirement Facilities
- 14 Schools
- 11 Substations
- 59 Tier II Facilities
- 5 Wastewater Treatment Plants
- 5 Water Towers

Information provided by the EMA, Huntington County GIS, and the MHMP Planning Committee members was utilized to identify the types and locations of critical structures throughout Huntington County. Draft maps were provided to the Planning Department and EMA, along with the Planning Committee for their review and all comments were incorporated into the maps and associated databases.

Exhibit 1, located after the narrative chapters of this document**,** illustrates the critical infrastructure identified throughout the unincorporated Huntington County and the individual municipalities. **Appendix 4** lists the critical structures in Huntington County by community. Non-critical structures include residential, industrial, commercial, and other structures not meeting the definition of a critical facility and are not required for a community to function. The development of this MHMP focused only on critical and essential structures; non-critical structures are neither mapped nor listed.

2.5 MAJOR WATERWAYS AND WATERSHEDS

According to the United States Geological Survey (USGS), there are 34 rivers and streams in Huntington County, which are listed in **Appendix 5**. The county's main waterways are Little Huntington River, Salamonie River and Wabash River. The county lies within four 8-digit Hydrologic Unit Code (HUC): Clear Creek-Eel River, Mississinewa, Salamonie, and Upper Wabash River watersheds. These major waterways, and others, are identified on **Exhibit 2**. There are 6 USGS gauges located in Huntington County. The gauges are located at J. Edward Roush Lake, Wabash River at Markle, Wabash River at Huntington, Wabash River near Andrews, Little River at Huntington, and the Salamonie River near Warren.

Figure 9 Major Waterways of Huntington County

Huntington County is in the northeast part of the state. As a rural, agriculture-based community it is home to three major reservoirs, J. E. Roush Lake, Huntington Reservoir and Salamonie Reservoir. There are several regulated drains in Huntington County. Some of the other larger waterways in the county include Clear

Creek, Pony Creek, Loon Creek, Majenica Creek, Pond Creek, Joseph Beck Drain, Flint Creek, Trout Drain, and Flat Creek. (**Figure 9**)

There have been three Watershed Management Plans involving Huntington County. They are Upper Wabash River Phase III, Upper Middle Eel River, and Lower Salamonie River.

2.6 NFIP PARTICIPATION

The National Flood Insurance Program (NFIP) is a FEMA program that enables property owners in participating communities to purchase insurance protection against losses from flooding. According to FEMA, participation in the National Flood Insurance Program (NFIP) is voluntary. Huntington County, the City of Huntington, the Towns of Andrews, Markle, Mount Etna, Roanoke and Warren participate in the NFIP. At the time of this planning effort, according to the Indiana Department of Natural Resources, the Huntington County Planning Director is responsible for the administration of the floodplain program in the unincorporated areas of the County as well as all the incorporated towns of the county. The City of Huntington has their own community floodplain administrator. Substantial damage determinations are carried out by the floodplain administrators and their designated personnel to remain in compliance with the community flood ordinances.

Table 2 lists the NFIP number, effective map date, and the date each community joined the NFIP program.

Table 2: NFIP Participation

NFIP Community	NFIP Number	Effective Map Date	Join Date
Huntington County	180438A	06/02/15	03/03/78
City of Huntington	180094A	06/02/15	06/07/74
Town of Andrews	180097A	06/02/15	06/07/74
Town of Markle	180457A	06/02/15	No SFHA
Town of Mount Etna	180461A	06/02/15	06/02/15(M)
Town of Roanoke	180096A	06/02/15	12/28/73
Town of Warren	180095A	06/02/15	11/23/73

2.7 TOPOGRAPHY

Huntington County, Indiana, sprawls across 387.72 square miles, forming a rectangle measuring 16 miles from east to west and 24 Miles from north to south. The county shares its borders with Whitley County to the North, Allen County to the northeast, Wells County to the east, Wabash County to the west, and Grant County to the south. The Wabash River enters the county near the center of the eastern border with Wells County and flows in a northwesterly direction across the county. Along that path is one of two reservoirs built to help control floods along the Wabash River watershed. Downstream of the dam, the Wabash River is joined by the Little River in the City of Huntington. A second watershed is highlighted by a second flood control reservoir on the Salamonie River which enters the county from the southeast and like the Wabash flows northwest to join the Wabash River

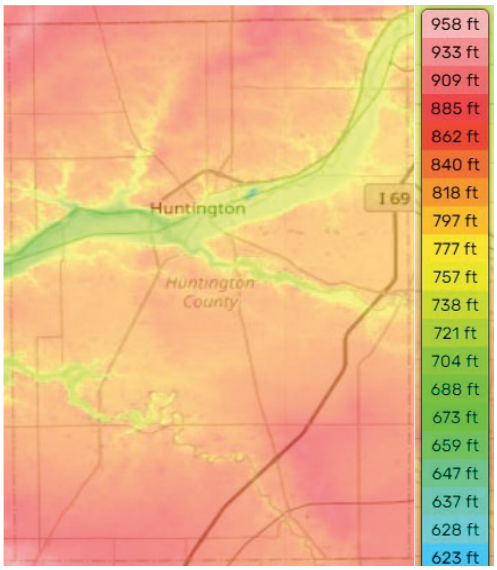


Figure 10 Topographic Map of Huntington County

in neighboring Wabash County. These streams not only provide ample drainage for the county, but also were the source of commerce in the early pioneer times serving as the closes link from the great lakes, Lake Erie, and the eventual connection with the great Mississippi River as a part of the Ohio River Basin. The Wabash and Erie Canal served as a time saving conduit to the overland trek from the east to the west until the rail industry took over the transportation of freight. Most of Huntington County is relatively flat with low rolling hills. The land is devoted to either agriculture or urban development. With an average elevation of 780 feet, the highest point in the county is 925 feet at the southwest corner. The majority of the county land surface slopes toward the Wabash River and its tributaries as it crosses the county.

Figure *10* shows the topographic map of Huntington County. This riverside terrain offers wonderful views and opportunities for outdoor activities such as hiking, camping, and wildlife observation.

2.8 CLIMATE

In Huntington County, the annual average maximum temperature was 61.3 degrees Fahrenheit with an average annual low (minimum) temperature of 39.6 degrees Fahrenheit**.** **Figure 11** and **Figure 12** chart the annual maximum and minimum temperatures and show trends utilizing data from the National Centers for Environmental Information (NCEI).

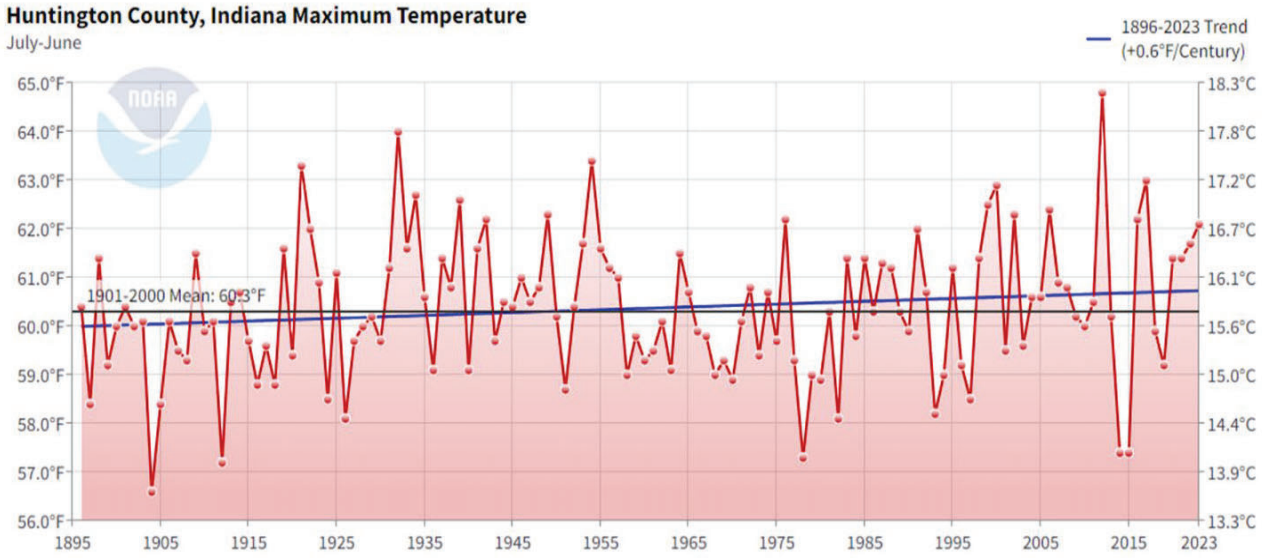


Figure 11 Huntington County Maximum Temperature Trends 1895-2023

The coldest month based on this data is January at a mean temperature of 25.5 degrees and the warmest is July with a mean temperature of 73.7 degrees. According to the Midwest Regional Climate Center (MRCC) between January 2018 and March 2024 at the Huntington, IN (the long-term weather data site), the maximum temperature was 97 degrees (6/15/22), and the lowest minimum temperature was -22 degrees (1/31/19). The average daily high was 61 degrees, which is 1 degree cooler than the median within that time frame. Additionally, the average daily minimum temperature for the same five-year period was recorded at 39.5 degrees. That is 1.5 degrees warmer than the median temperature identified at 38-degrees Fahrenheit.

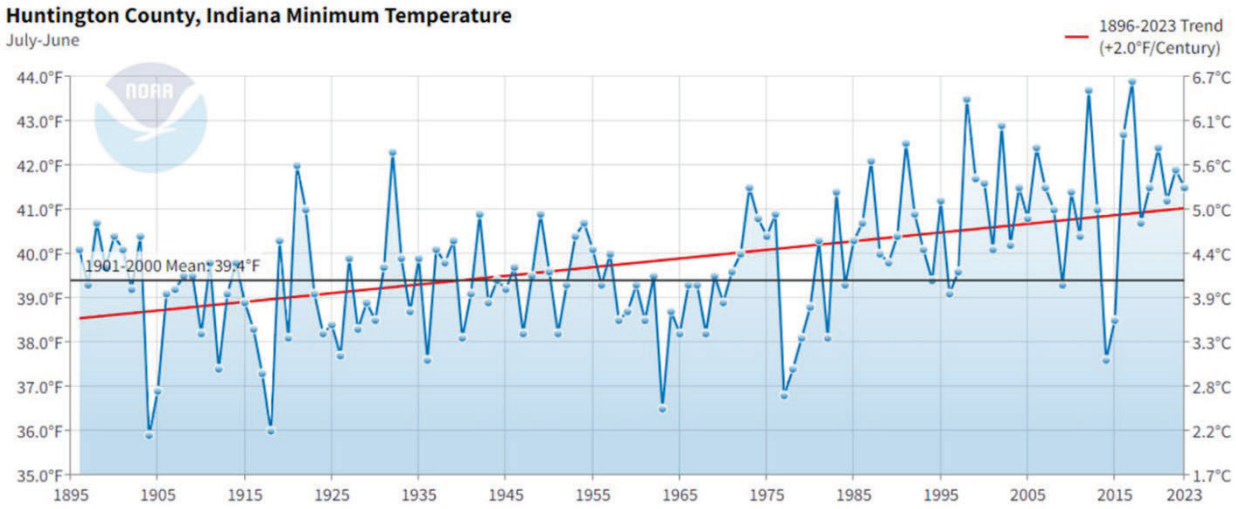


Figure 13 Huntington County Minimum Temperature Trends 1895 - 2023

May is typically the wettest month of the year, with February being the driest. The average annual precipitation for Huntington County is 38.34 inches. In the past 5 years Huntington County had a low of 35.04 inches in 2023 and the highest annual precipitation of 45.58 inches. The highest monthly precipitation rate between January 2018 and April 2024 occurred in July 2022 where 7.51 inches fell. That is 2.25 times the normal average monthly rainfall amount. On the opposite end of the spectrum the driest month was January 2022 with 0.72 inches of precipitation. **Figure 13** illustrates the annual precipitation in Huntington County.

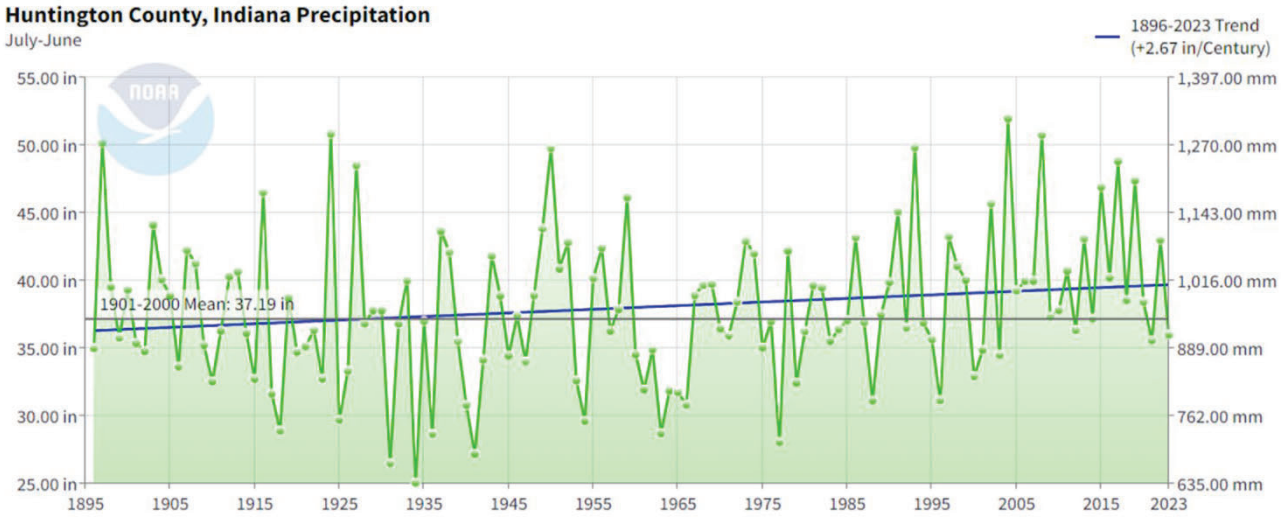


Figure 12 Huntington County Precipitation Trends 1895-2023

Purdue University Indiana Climate Change Impacts Assessment Report analyzed the increased frequency of short duration high volume rain events, also known as extreme precipitation events, in Indiana. According to the report, an extreme rain event occurs when more than 0.86 inches of rain falls in a day. Since 1900, the number of days per year with extreme rain has been increasing by 0.2 days per decade on average. However, most of that increase has occurred since 1990. The northwestern part of the state has seen the largest increase — a rate of about 0.4 days per decade. In **Figure 14** the trend line shows an increase in the number of days where the rainfall exceeds 99th percentile. This ever-increasing trend is resulting in more frequent flash flood and overland flood events.

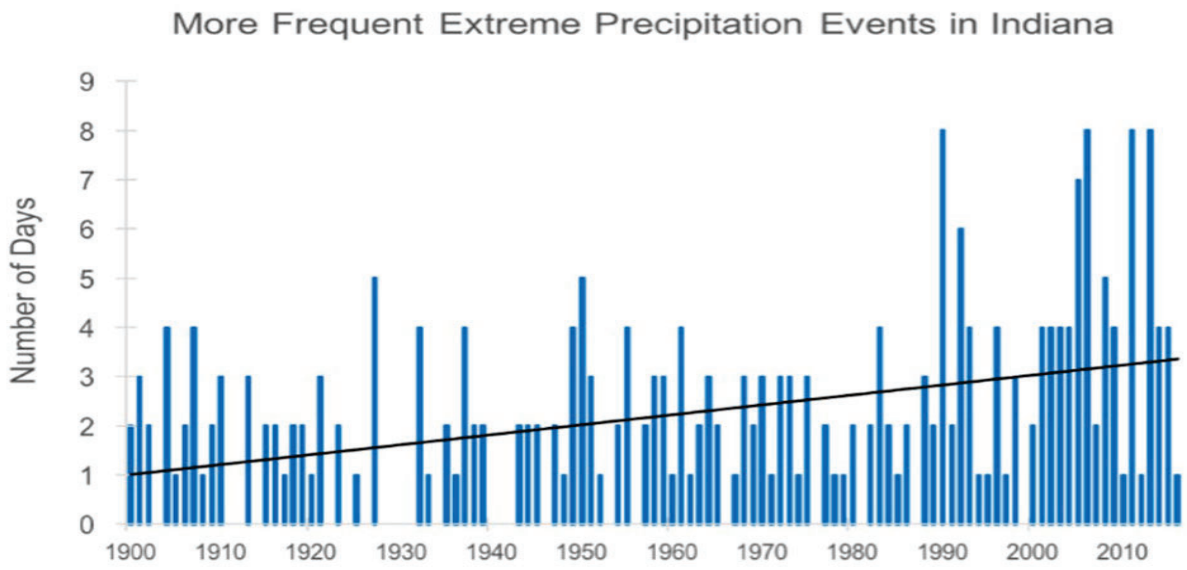


Figure 14 Extreme Precipitation Events in Indiana

According to NOAA National Centers for Environmental Information the State Climate Summary for Indiana the following observations have been observed based upon climate change:

- The temperatures have risen almost 1.5 degrees Fahrenheit since the beginning of the 20th Century. Temperatures in the 2000's have been higher than in any other historical period except during the early 1930's Dust Bowl era.
- Indiana has experienced an increase in the number of rain intensity is increasing and rain duration is decreasing.
- extreme events are increasing, especially flooding.

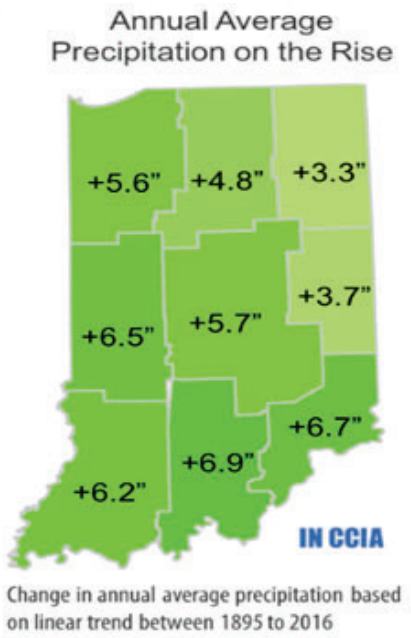


Figure 15 Annual Average Precipitation Change, Purdue University

This is also verified in the Indiana Climate Change Assessment report from Purdue University.(**Figure *15***) In the report, the authors wrote, "This assessment documents that significant changes in Indiana's climate have been underway for over a century, with the largest changes occurring in the past few decades. These projections suggest that the trends that are already occurring will continue, and the rates of these changes will accelerate. They indicate that Indiana's climate will warm dramatically in the coming decades, particularly in summer. Both the number of hot days and the hottest temperatures of the year are projected to increase markedly. Indiana's winters and springs are projected to become considerably wetter, and the frequency and intensity of extreme precipitation events are expected to increase, although more research is needed in this area to better determine the details."

2.9 UNDERSERVED, DISADVANTAGED AND SOCIALLY VULNERABLE POPULATIONS

For this planning effort, under the new FEMA guidance mitigation plan updates are required to include the perspective of socially vulnerable community members and the underserved communities in the county. The Agency for Toxic Substances and Disease Registry (ATSDR) and the Centers Disease Control (CDC) with higher education facilities to develop the Social Vulnerability Index (SVI). According to ATSDR/CDC, Social Vulnerability refers to the community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human caused threats, such as toxic chemical threats. Sixteen census-derived factors are grouped into 4 general themes which summarize the extent of social vulnerability. **Figure 16** shows the 16 factors and how they are grouped into the four themes. The more factors impacting community members to more vulnerable those members are to the hazardous events.

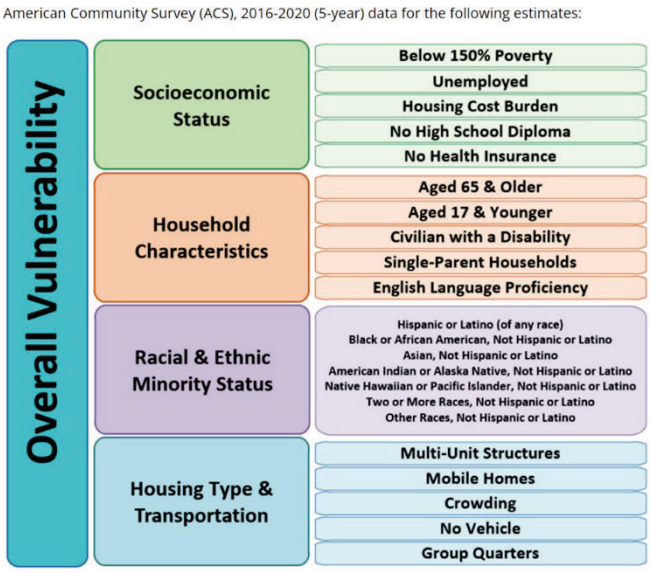


Figure 17 Social Vulnerability Factors

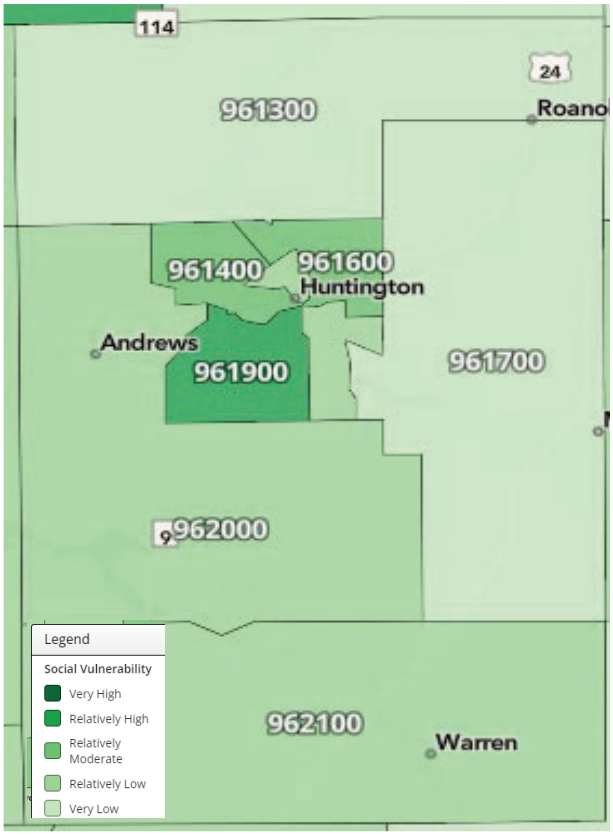


Figure 16 Huntington County Social Vulnerability by Census Tract

Figure 17 Is a map of the social vulnerabilty of each of the census tracts in Huntington County. Further details, including the 4 thematic maps may be found in **Appendix 11**. The Social Vulnerability Index is used in FEMA's National Risk Index, where the data is paired with expected annual losses, and community resilience to calculate a risk index for each of the hazards. This data is available both on the county level and the census tract level. Overall as a county the social vulnerability is very low, however, on closer examination, at the census tract level, the area flanking SR 9 from 600 W over to 200 W is rated relatively high in their social vulnerability scores. The northern and eastern regions of the county are rated at very low in their social vulnerability scores. When struck by the same intensity event, the areas in dark green on Figure 17. may require, more support in responding to and recovering from the hazardous event.

One last resource reviewed was the Climate and Economic Justice (CEJ) tool. Although the tool shows some similarities to the social vulnerabiltiy index, there are some differences.

The CEJ Tool highlights disadvantaged census tracts across all 50 states, the District of Columbia, and the U.S. territories. If the community is located in a census tracts that meet the thresholds for at least one of the tool's categories of burden, or if the community is on land within the boundaries of Federally Recognized Tribes then the people living within the census tract are considered disadvantaged.

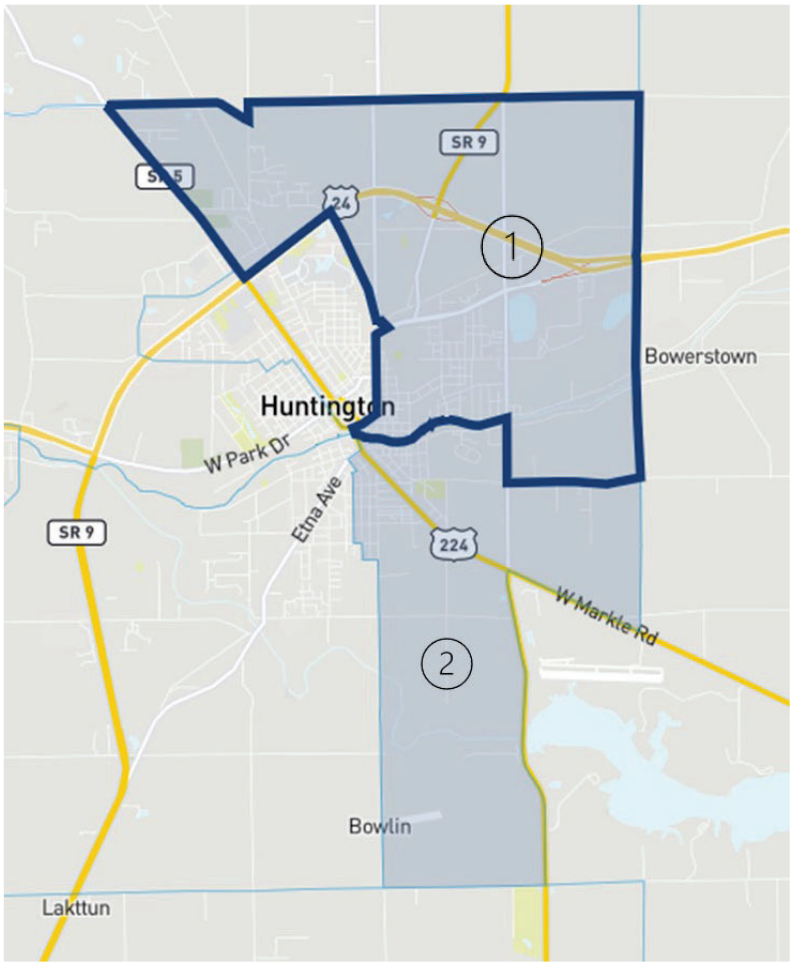


Figure 18 Disadvantaged Population Areas in Huntington County

Two census tracts within Huntington County are considered disadvantaged. (**Figure 18)** Each area is considered disavantaged beause the households from this area are above the 65th percentile for low income. Low income is defined as an income less than or equal to twice the federal poverty level, not including students enrolled in higher education. Additionally each area meets or exceeds one of the other criteria which includes climate change impacts, health, housing, transportation, and water and wastewater. A more detailed analysis of each area may be found in **Appendix 11**.

The team discussed the impacts of social vulnerability on the overall commuity and where possible has identified mitigation efforts to help address the hazards and make these areas of the community more resilient.

2.10 COMMUNITY CAPACITY

In Indiana the Fire Prevention and Building Safety Commission is tasked with the establishment and maintenance of fire and building safety codes. The commission also reviews variance requests, code modification proposals and orders enforcing the fire and building safety law. Only the commission is permitted to adopt codes for the state. Local communities may not adopt editions other than those adopted by the state. All jurisdictions of the state are required to follow the state adopted fire safety and building laws.

Local Building Officials serve as the local authority for building construction matters within their jurisdiction. In Huntington County, the county Local Building Official serves all the incorporated communities except the City of Huntington. The City of Huntington has their own Planning and Building Department. **Appendix 9** lists the local building official as well as a number of other key positions in each jurisdiction.

All the other incorporated communities and the county have digitally published their ordinances for easy access. The City of Huntington as well as the Town of Andrews and Huntington County have a local zoning ordinance, subdivision control ordinance, stormwater ordinance and flood ordinance. None currently have a water conservation ordinance. County and community leaders take advantage of grant funding to help address non-budgeted activities. The Health Department along with the hospital and county EMS service work together to assure health and safety needs are met. The planning team identified a few community-wide needs such as overnight sheltering capabilities for unhoused individuals but has already begun finding whole community solutions to address the challenges. As needs for capacity building are identified, the communities and their leadership work together to ensure the challenges are addressed.

The State of Indiana is presently working with subject matter experts to update the current fire and building safety codes to more recent International Code Council versions. Due to the hearing and adoptions processes this is a multi-year effort. It is hoped that within the next five years updated fire safety and building codes will be adopted to assist the community in becoming more resilient. In all cases, local floodplain ordinances are anticipated to be updated within the next five-year cycle using the state model ordinance to guide their process.

3.0 RISK ASSESSMENT

REQUIREMENT §201.6(c)(2):

[The risk assessment shall provide the] factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessment must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

A risk assessment measures the potential loss from a hazard incident by assessing the vulnerability of buildings, infrastructure, and people in a community. It identifies the characteristics and potential consequences of hazards, how much of the community may be affected by a hazard, and the impact on community assets. The risk assessment conducted for Huntington County and the communities within is based on the methodology described in the Local Mitigation Planning Handbook published by FEMA in 2023 and is incorporated into the following sections:

Section 3.1: Hazard Identification lists the natural, technological, and political hazards selected by the Planning Committee as having the greatest direct and indirect impact to the county as well as the system used to rank and prioritize the hazards.

Section 3.2: Hazard Profile for each hazard, discusses 1) historic data relevant to the county where applicable; 2) vulnerability in terms of number and types of structures, repetitive loss properties (flood only), estimation of potential losses, and impact based on an analysis of development trends; and 3) the relationship to other hazards identified by the Planning Committee.

Section 3.3: Hazard Summary provides an overview of the risk assessment process; a table summarizing the relationship of the hazards; and a composite map to illustrate areas impacted by the hazards.

3.1 HAZARD IDENTIFICATION

3.1.1 Hazard Selection

The MHMP Planning Committee reviewed the list of natural and technological hazards in the 2018 Huntington County MHMP, discussed recent events, and the potential for future hazard events. The Committee identified those hazards which affected Huntington County and each community selecting the hazards to study in detail as part of this planning effort. As shown in **Table 3,** these hazards include dam failure; drought; earthquake; extreme temperature; fires and wildfire; flooding; hailstorms, thunderstorms, and windstorms; hazardous materials incident; land subsidence, landslides and fluvial erosion; snowstorms and ice storms; and tornado. All hazards studied within the 2018 Huntington County MHMP, with the exception of harmful organism, are included in the update. Land Subsidence, Landslide, and Fluvial Erosion were added to the update since they are key hazards in the most recent Indiana State Multi-Hazard Mitigation Plan.

Table 3: Hazards Selected

Type of Hazard	List of Hazards	MHMP	
		2018	2024
Natural	Drought	Yes	Yes
	Earthquake	Yes	Yes
	Extreme Temperature	Yes	Yes
	Fires and Wildfire	Yes	Yes
	Flood	Yes	Yes
	Hail/Thunder/Wind	Yes	Yes
	Land Subsidence/Landslide	No	Yes
	Snow / Ice Storm	Yes	Yes
	Tornado	Yes	Yes
	Harmful Organism	Yes	No
Technological	Dam Failure	Yes	Yes
	Hazardous Material Incident	Yes	Yes

3.1.2 Hazard Ranking

The Planning Committee ranked the selected hazards in terms of importance and potential for disruption to the community using a modified version of the Calculated Priority Risk Index (CPRI). The CPRI is a tool by which individual hazards are evaluated and ranked according to an indexing system. The CPRI value (as modified by Burke) can be obtained by assigning varying degrees of risk probability, magnitude/severity, warning time, and the duration of the incident for each event, and then calculating as index value based on a weighted scheme. For ease of communications, simple graphical scales are used.

Probability:

Probability is defined as the likelihood of the hazard occurring over a given period. The probability can be specified in one of the following categories:

- Unlikely – incident is possible, but not probable, within the next 10 years.
- Possible – incident is probable within the next five years.
- Likely - incident is probable within the next three years.
- Highly Likely – incident is probable within the next calendar year.

Magnitude / Severity:

Magnitude/severity is defined by the extent of the injuries, shutdown of critical infrastructure, the extent of property damage sustained, and the duration of the incident response. The magnitude can be specified in one of the following categories:

- Negligible – few injuries OR critical infrastructure shutdown for 24 hours or less OR less than 10% property damaged OR average response duration of less than six hours.
- Limited – few injuries OR critical infrastructure shut down for more than one week OR more than 10% property damaged OR average response duration of less than one day.
- Significant – multiple injuries OR critical infrastructure shut down of at least two weeks OR more than 25% property damaged OR average response duration of less than one week.
- Critical – multiple deaths OR critical infrastructure shut down of one month or more OR more than 50% property damaged OR average response duration of less than one month.

Warning Time:

Warning time is defined as the length of time before the event occurs and can be specified in one of the following categories:

- More than 24 hours
- 12-24 hours
- 6-12 hours
- Less than six hours

Duration:

Duration is defined as the length of time that the actual event occurs. This does not include response or recovery efforts. The duration of the event can be specified in one of the following categories:

- Less than six hours
- Less than one day
- Less than one week
- Greater than one week

Calculating the CPRI:

The following calculation illustrates how the index values are weighted and how the CPRI value is calculated. CPRI = (Probability x 0.45) + (Magnitude/Severity x 0.30) + (Warning Time x 0.15) + (Duration x 0.10). For the purposes of this planning effort, the calculated risk is defined as:

- **Low** if the CPRI value is between 1 and 2.
- **Elevated** if the CPRI value is between 2 and 3.
- **Severe** if the CPRI value is between 3 and 4.

The CPRI value provides a means to assess the impact of one hazard relative to other hazards within the community. A CPRI value for each hazard was determined for each incorporated community in Huntington County, and then a weighted CPRI value was computed based on the population size of each community.

Table 4 presents each community, population, and the weight applied to individual CPRI values to arrive at a combined value for the entire county. Weight was calculated based on the average percentage of each community's population in relation to the total population of the county. Thus, the results reflect the relative population influence of each community on the overall priority rank.

Table 4: Determination of Weighted Value for Communities

Community	Population (2023)	% of Total Population	Weighted Value
Huntington County (w/o incorporated communities)	15,043	40.9%	0.409
Town of Andrews	1,053	2.9%	0.029
City of Huntington	17,023	46.3%	0.463
Town of Markle	576	1.6%	0.016
Town of Mount Etna	115	0.3%	0.003
Town of Roanoke	1,780	4.8%	0.048
Town of Warren	1,191	3.2%	0.032
Total	**36,781**	**100.0%**	**1**

3.2 HAZARD PROFILES

The hazards studied for this report are not equally threatening to all communities throughout Huntington County. While it would be difficult to predict the probability of an earthquake or tornado affecting a specific community, it is much easier to predict where the most damage would occur in a known hazard area such as a floodplain or near a facility utilizing an Extremely Hazardous Substance (EHS). The magnitude and severity of the same hazard may cause varying levels of damage in different communities.

In the past six years Indiana has had 3 FEMA disaster declarations and 1 FEMA Emergency Declaration. Those included DR 4363, declared May 5, 2018, for Severe Storms and Flooding; DR 4704, declared April 15, 2023, for Severe Storms, Straight-line Winds and Tornadoes; DR 4515, declared April 3, 2020, for COVID 19 Pandemic and EM 3456, declared March 13, 2020. In addition, the US SBA had disaster declarations for 10 Indiana events. Of all these events in Indiana, Huntington County was only included in the two COVID declarations (DR-4515 and EM-3456) as well as one SBA disaster declaration as a contiguous county for the Derecho which struck Allen County.

This section describes each of the hazards that were identified by the Planning Committee for detailed study as a part of this MHMP Update. The discussion is divided into the following subsections:

- **Hazard Overview** provides a general overview of the causes, effects, and characteristics that the hazard represents.
- **Historic Data** presents the research gathered from local and national courses on the hazard extent and lists historic occurrences and probability of future incident occurrence.
- **Assessing Vulnerability** describes, in general terms, the current exposure, or risk, to the community regarding potential losses to critical infrastructure and the implications to future land use decisions and anticipated development trends. Impacts on specific populations of communities is also addressed within this section.
- **Relationship to Other Hazards** explores the influence one hazard may have upon another hazard.

3.2.1 Drought

Overview

Drought, in general, means a moisture deficit extensive enough to have social, environmental, or economic effects. Drought is not a rare and random climate incident; rather, it is a normal, naturally recurring feature of climate. Drought may occur in all climactic zones, but its characteristics vary significantly from one region to another. Drought is a temporary aberration and is different from aridity, which is restricted to low rainfall regions.

Figure 19 Urban Grass Affected by Drought

There are four academic approaches to examining droughts; these are meteorological, hydrological, agricultural, and socio-economic. Meteorological drought is based on the degree, or measure, of dryness compared to a normal, or average amount of dryness, and the duration of the dry period. Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply. Agricultural drought is related to agricultural impacts; and focuses on precipitation shortages, differences between actual and potential evapo-transpiration, soil water deficits, reduced ground water or reservoir levels, and crop yields. Socioeconomic drought relates the lack of moisture to community functions in the full range of societal functions, including power generation, the local economy, and food source **Figure 19** shows urban grassed areas affected by drought conditions.

Recent Occurrences

Data gathered from the U.S. Drought Monitor indicated that between January 1, 2018 – December 31, 2023, there were 257 weeks where some portions of Huntington County was identified as being “Abnormally Dry” or at Drought Monitor Level D0. According to the Drought Monitor, there were 93 weeks within that period where any portion of Huntington County was in a drought state higher than a D0. **Figure 20** shows the distribution of weeks in drought over the 6-year time frame.

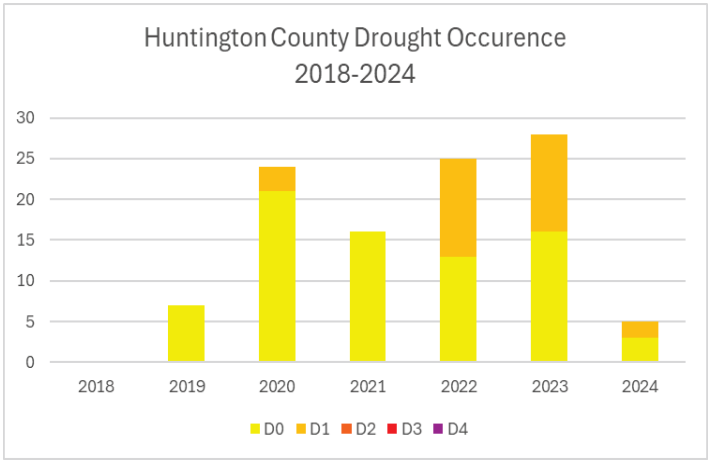
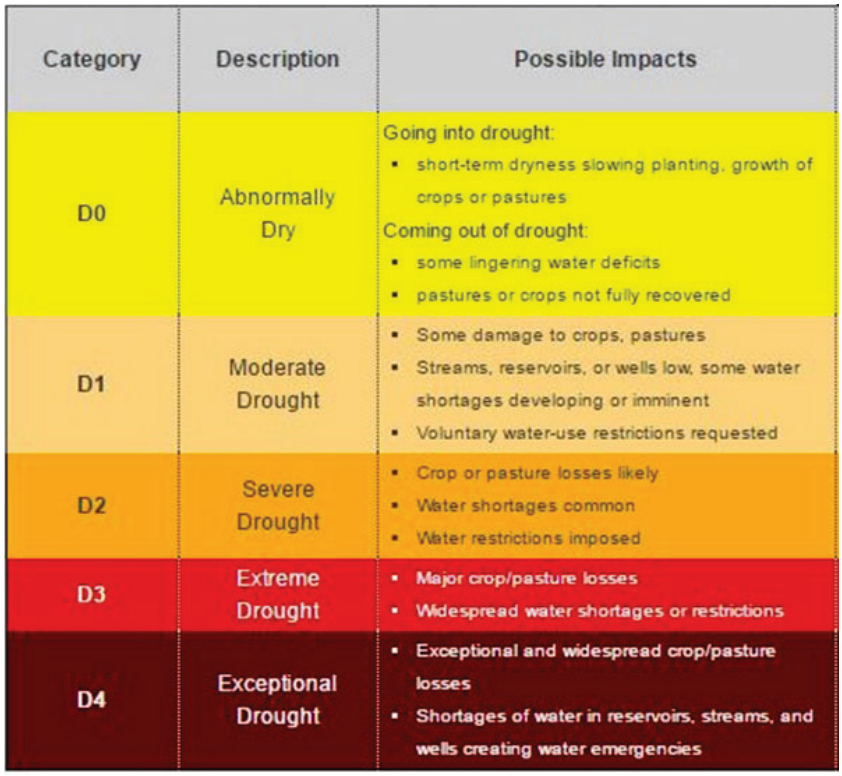


Figure 20 Drought Occurrences 2018-April 2024

As rain patterns change there are periodic times when the county is deemed "Abnormally Dry" or D0. Most of these instances are resolved quickly as sufficient rain arrives and the soil rehydrates. On occasion, the rain is insufficient to address the dryness and weather conditions cause the soil to further dry out stressing crops and reducing lake levels. Examples of continued dryness can be found in 2020, 2022, and 2023. During each of these years, Huntington County was found to be in "Moderate Drought" or D1. On July 14, 2020, USDA/NASS records showed crop conditions as of July 12 rated poor or very poor have reached or surpassed 10% for corn in Indiana and Ohio, and soy in Illinois, Indiana, and Ohio. The highest level of drought experienced in Huntington County in the past five years is D1 or "Moderate Drought". Many people will recall the summer of 2012 throughout Indiana because drought conditions had intensified and reached D3 for 7 weeks in Huntington County. Burn bans were common and the fire threat was so great that all July 4 fireworks events were postponed or cancelled. Most recently, September 19 through October 10, 2023, Huntington County once again was at D1 for 4 weeks. Although not as severe as 2012, due to high winds and low humidity many communities contemplated potential burn bans. **Figure 21**, from the U.S. Drought Monitor, describes the rationale to classify the severity of droughts.



Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies

Figure 21 US Drought Monitor Drought Classification Descriptions

Table 5: Huntington County Percent of Time in Drought

Year	Percent of the Year in Each Drought Category					
	None	D0	D1	D2	D3	D4
2011	50%	25%	25%	0%	0%	0%
2012	40%	19%	21%	6%	13%	0%
2013	66%	34%	0%	0%	0%	0%
2014	96%	4%	0%	0%	0%	0%
2015	71%	29%	0%	0%	0%	0%
2016	85%	15%	0%	0%	0%	0%
2017	100%	0%	0%	0%	0%	0%
2018	100%	0%	0%	0%	0%	0%
2019	87%	13%	0%	0%	0%	0%
2020	54%	40%	6%	0%	0%	0%
2021	69%	31%	0%	0%	0%	0%
2022	52%	25%	23%	0%	0%	0%
2023	47%	31%	23%	0%	0%	0%

The National Climate Data Center (NCDC) does not report any events nor property or crop losses within Huntington County during this planning period in relation to drought. During discussions with the Planning Committee, effects from the drought were highlighted. Committee members recalled the dry conditions and discussed the large field/wildland fires which frequently occur during harvest season. Although NCDC does not show any reports of damage, fires during harvest result in damage to farming equipment even if crops are preserved. **Table 5** depicts the number of weeks per year at each of the drought levels indicated above. Huntington County has not exceeded D1- Moderate Drought during the past 11 years.

The Planning Committee, utilizing the CPRI, determined the overall risk of drought throughout Huntington County is "Elevated." The impact of drought was determined to be the same for all communities and unincorporated area throughout the county due to the possible agricultural impacts and impacts to water wells. The committee agreed that a drought is "Highly Likely" (to occur within the next year), and the magnitude of drought is anticipated to be "Limited." Further it is anticipated that with the enhanced weather forecasting abilities, the warning time for a drought is greater than 24 hours and the duration will be greater than one week. A summary is shown in **Table 6.**

Table 6: CPRI for Drought

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
Town of Andrews	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
City of Huntington	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
Town of Markle	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
Town of Mount Etna	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
Town of Roanoke	Highly Likely	Limited	> 24 hours	> 1 week	Elevated
Town of Warren	Highly Likely	Limited	> 24 hours	> 1 week	Elevated

According to the National Drought Mitigation Center, scientists have difficulty predicting droughts more than one month in advance due to numerous variables such as the precipitation, temperature, soil moisture, topography, and air-sea interactions. Further anomalies may also enter the equation and create more dramatic droughts or lessen the severity of droughts. Based on the previous occurrences of significant droughts and drought related impacts felt within Huntington County, the Committee estimated that the probability of a drought occurring in the area is "Highly Likely;" or occurrence is probable within the next year. The damage anticipated throughout the county is predicted to be "Limited" as the municipalities rely on groundwater and surface water supplies for fire response efforts and face a higher risk during times of prolonged drought. Businesses and industry that rely upon water for their processes and products would be impacted by water limitations within the cities and towns. Throughout the unincorporated areas of the county, increased crop and livestock damage would also be expected during a significant drought. In addition, the long-term stress on the forested land could result in additional tree deaths and debris during subsequent high wind events.

Assessing Vulnerability

This type of hazard will generally affect entire counties and even multi-county regions at one time. Within Huntington County, direct and indirect effects from a lengthy period of drought may include:

Direct Effects:

- Urban, developed areas, and local wildlife areas may experience revenue losses from decreased tourism; landscaping companies, golf courses revenue losses due to lack of growth and plant death; restrictions on industry cooling and processing demands; reduced incomes for businesses dependent on crop yields, and increased potential for fires.
- Rural areas within the county may experience revenue losses from reductions in decreased livestock and crop yields as well as increased incidence of field fires.
- Loss of tree canopy due to increased susceptibility to pests and diseases.
- Citizens served by drinking water wells or surface water supplies may be impacted during low water periods and may require drilling of deeper wells or loss of water service for a period.

- According to Purdue's Indiana Climate Change Impacts Assessment climate change will as temperatures rise, and rainfall patterns shift, managing multiple water needs will become increasingly difficult. This could result in more drought conditions.

Indirect Effects:

- Loss of income of employees from businesses and industry affected; loss of revenue to support services (food service, suppliers, etc.)
- Loss of revenue from recreational or tourism sectors associated with reservoirs, streams, and other open water venues.
- Lower yields from domestic gardens increasing the demand on purchasing produce and increased domestic water usage for landscaping.
- Increased demand for emergency responders and firefighting resources due to grass fires and increased medical calls for people having respiratory issues because of increased dust amounts.
- Drought conditions could make it more difficult for the underserved population as many of them do not have air conditioning which makes breathing more difficult and air quality conditions can become compromised.

Estimating Potential Losses

It is difficult to estimate the potential losses associated with a drought for Huntington County because of the nature and complexity of this hazard and the limited data on past occurrences. However, for the purpose of this MHMP update, a scenario was used to estimate the potential crop loss and associated revenue lost due to a drought similar to that experienced during the drought of record from 1988. In 2023, Huntington County produced approximately 13.38 bushels of corn and 5.04M bushels of soybeans, as reported by the United States Department of Agriculture (USDA) National Agricultural Statistics Service. Using national averages of $4.70 per bushel of corn and $12.80 per bushel of soybeans, the estimated crop receipts for 2023 would be $127.39M. Using the range of crop yield decreases reported in 1988 and 1989, just after the 1988 drought period (50%-86%) and assuming a typical year, economic losses could range between $63.7M-$109.6M; depending on the crop produced and the market demand. Effects of drought on corn crops can be seen in **Figure 22.**

Figure 22 Drought Effects on Corn Crop

Purdue Agriculture News reports that as of March 2013, Indiana producers received more than $1.49B in crop insurance payments for 2012 corn, soybean, and wheat losses. This amount is nearly double that of the previous record, $522M following 2008 losses, also due to drought. These losses are still considered to be record-setting in terms of drought effects, damages, and costs for Indiana. In comparison, in 2022 Indiana received $51,104,285 in crop insurance from the drought and weather-related events.

According to a July 5, 2012, article in The Times (Noblesville, IN), "The effects of drought also could touch agricultural businesses, such as handlers and processors, equipment dealers, and see,

fertilizer and pesticide providers." Additional losses associated with a prolonged drought are more difficult to quantify. Drought has lasting impacts on trees: death to all or portions of a tree, reduction in the tree's ability to withstand insects and diseases, and interruption of normal growth patterns. Such effects on trees, especially urban trees can lead to additional impacts, both environmentally and monetarily in terms of the spread of Emerald Ash Borer insect and the weakening of tree limbs and trunks which may lead to increased damage during other hazard events such as wind and ice storms. Loss of trees also alters wildlife habitats causing wildlife to find new areas to live, often causing increased wildlife deaths as they navigate through more urbanized areas to reach new habitats.

Future Considerations

Advancements in plant hybrids and development have eased the impacts from short-lived droughts. Seeds and plants may be more tolerant of drier seasons and therefore fewer crop losses may be experienced.

As the municipal areas of the county continue to grow and expand, protocols may need to be updated to foster consistency throughout the communities and the unincorporated portions of the county for burn bans and water usage advisories.

According to the Indiana Climate Change Impacts Assessment, Indiana has experienced a rise in the average annual precipitation between 1895 and 2016; an increase of 3.3 inches for the area of Huntington County. This increase in precipitation may lessen the likelihood or overall impact of a long-term drought in Huntington County. However, the assessment also notes seasonal shifts in precipitation may lead to seasonal short-term droughts. In either scenario, changes in precipitation are not anticipated to relieve the area of a probability of a drought occurring.

Prior to municipalities expanding, provisions and considerations should be given regarding the potential additional demand for both water usage and fire response efforts. Following such expansion or development plans, alternative water sources should be explored. Since the previous MHMP was prepared, large scale and significant development has not occurred throughout the county. The majority of Huntington County remains largely unincorporated and rural in nature.

Relationship to Other Hazards

Discussions with the Planning Committee were held regarding the similar effects of prolonged periods of extreme heat and the similar impacts that may be experienced during these times. Planning and mitigation efforts for one hazard may benefit the other. It is anticipated that rural areas of the county may be more susceptible to brush and rangeland or woodland fires during a drought, while urban areas may experience these impacts in areas where several abandoned buildings or overgrown lots exist, and this may lead to increased losses associated with a fire.

3.2.2 Earthquake

Overview

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free, causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of the plates.

Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can move off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths, injuries, and extensive property damage.

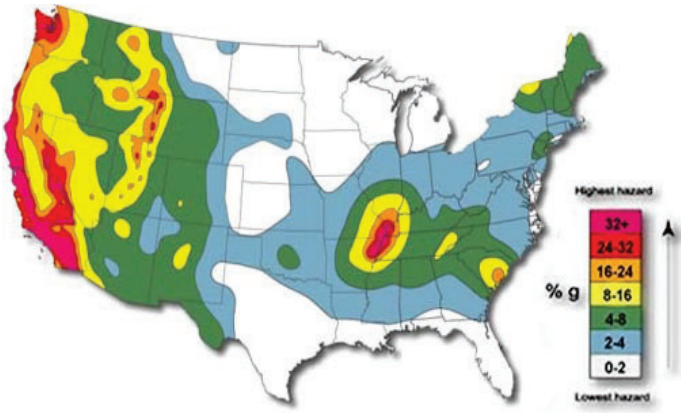


Figure 23 Earthquake Risk Areas in the US

Earthquakes strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70-75 damaging earthquakes occur throughout the world. Estimates of losses from a future earthquake in the United States approach $200B.

One method of measuring the magnitude or energy of an earthquake is the Richter Scale. This scale uses whole numbers and decimal fractions whereby each increase of a whole number represents a release of 31 times more energy than the amount associated with the previous whole number on the scale. Scientists are currently studying the New Madrid fault area and have predicted that the chances of an earthquake in the M8.0 range occurring within the next 50 years are approximately 7%-10%. However, the chances of an earthquake at a M6.0 or greater, are at 90% within the next 50 years.

Figure 24 Huntington County Liquefaction Potential Areas

There are 45 states and territories in the United States at moderate to very high risk from an earthquake, and they are located in every region of the county **(Figure 23)**. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes – most located in uninhabited areas. The largest earthquakes felt in the United States were along the New Madrid Fault in Missouri, where a three-month long series of quakes from 1811 to 1812 occurred over the entire Eastern United States, with Missouri, Tennessee, Kentucky, Indiana,

Illinois, Ohio, Alabama, Arkansas, and Mississippi experiencing the strongest ground shaking. Several smaller historic faults are located throughout the state of Indiana. Additionally, some soil in Indiana is highly susceptible to liquefaction during earthquake conditions. The older riverbeds within Huntington County show signs of a potential for liquefaction, especially near the northeast corner of the county where the potential is rated as high. (**Figure 24**)

Recent Occurrences

Indiana, as well as several other Midwestern states, lies in the most seismically active region east of the Rocky Mountains**. Figure 25** shows the 2014 Seismic Hazard for Indiana. The nearest known areas of concern for Huntington County are the Anna Fault, Wabash Seismic Zone, and the New Madrid Fault Zone.

On June 17, 2021, an earthquake centered near Bloomingdale, Indiana in Parke County was felt as far north as Chicago, Illinois and as far east as Cincinnati, Ohio. With a magnitude of 3.8 several localized reports included descriptions of shaking buildings and feelings of tremors. No injuries or severe damage was reported due to this incident. As reported by the NBC 5 Chicago, "Once the earthquake was confirmed, officials said the 9-1-1 phone line "started ringing immediately."" Before this event, the last earthquake to be felt in Indiana was a magnitude 5.1 centered in Sparta, North Carolina, and the last event to occur within the state (near this event) was a magnitude 2.3 earthquake centered in Haubstadt, IN on May 28, 2015. No injuries or damage were reported with either of these events.

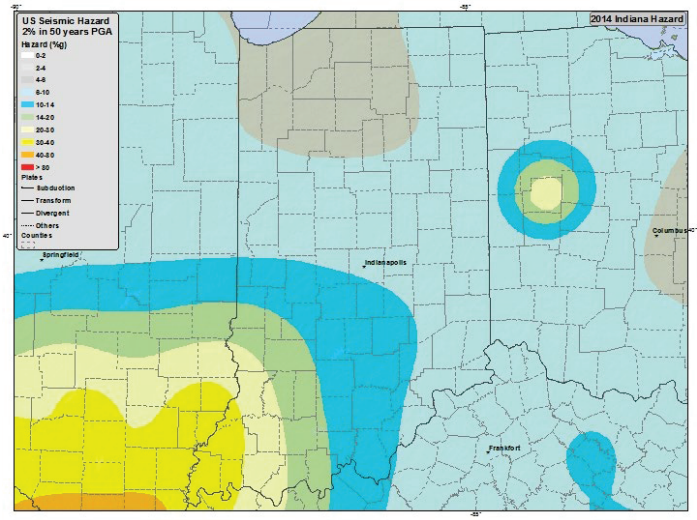


Figure 25 Indiana Seismic Zone Map

On December 30, 2010, central Indiana experienced an earthquake with a magnitude of 3.8; rare for this area in Indiana as it is only the 3rd earthquake of notable size to occur north of Indianapolis. Even rarer is the fact that scientists believe that the quake was centered in Greentown, Indiana approximately 13 miles southeast of Kokomo, Indiana. According to The Kokomo Tribune, "113 people called 911 in a 15-minute period after the quake, which was the first tremblor centered in Indiana since 2004". Further, a geophysicist from the USGS in Colorado stated, "It was considered a minor earthquake," and "Maybe some things would be knocked off shelves, but as far as some significant damage, you probably wouldn't expect it from a 3.8."

A M5.8 centered in Mineral, Virginia affected much of the East Coast on August 23, 2011. According to USA Today, 10 nuclear power plants were shut down for precautionary inspections following the quake, over 400 flights were delayed, and the Washington Monument was closed indefinitely pending detailed inspections by engineers.

Based on historical earthquake data, local knowledge of previous earthquakes, results of HAZUS-MH scenarios, and that Huntington County has not been directly impacted by an earthquake, the Committee determined that the probability of an earthquake occurring in Huntington County or any of the communities is "Unlikely", with the exception for the Town of Warren which felt it was "Possible". Should an earthquake occur, the impacts associated with this hazard are anticipated to be "Negligible" in all areas of the county. As with all earthquakes, it was determined that the residents of Huntington County would have little to no warning time (less than six hours) and that

the duration of the event would be expected to be less than 6 hours. A summary is shown in **Table 7.**

Table 7: CPRI for Earthquake

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Andrews	Unlikely	Negligible	< 6 hours	< 6 hours	Low
City of Huntington	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Markle	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Mount Etna	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Roanoke	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Warren	Possible	Negligible	< 6 hours	< 6 hours	Low

Per the Ohio Department of Natural Resources Division of Geological Survey, "…it is difficult to predict the maximum-size earthquake that could occur in the state and certainly impossible to predict when such an event would occur. In part, the size of an earthquake is a function of the area of a fault available for rupture. However, because all known earthquake-generating faults in Ohio are concealed beneath several thousand feet of Paleozoic sedimentary rock, it is difficult to directly determine the size of these faults." Further according to the Indiana Geological Survey, "…no one can say with any certainty when or if an earthquake strong enough to cause significant property damage, injury, or loss of life in Indiana will occur…we do indeed face the possibility of experiencing the potentially devastating effects of a major earthquake at some point in the future." The Committee felt that an earthquake occurring within or near Huntington County is "Unlikely" to occur within the next five years.

Figure 26 Minor Earthquake Damage

Assessing Vulnerability

Earthquakes generally affect broad areas and potentially many counties at one time. Within Huntington County, direct and indirect effects from an earthquake may include:

Direct Effects:

Urban areas may experience more damage due to the number of structures, the multi-story nature of the structures, and critical infrastructure (fire houses, cell phone towers, health care facilities, etc.) located in these areas.

- Rural areas may experience losses associated with agricultural structures such as barns and silos.
- Bridges buried utilities (gas lines, waterlines, pipelines), and other infrastructure may be affected throughout the county and municipalities.

- The homeless or underserved population will need to be checked on, especially if they seek shelter under bridges or structures that are not stable.

Indirect Effects:

- Huntington County may be called upon to provide emergency response personnel to assist in the areas with more damage.
- Provide shelter for residents of areas with more damage.
- Delays in delivery of goods or services originating from areas more affected by the earthquake or originating at locations beyond the damaged areas, but that would have to be re-routed to avoid damaged areas.

The types of loss caused by an earthquake could be physical, economic, or social in nature. Due to the unpredictability and broad impact regions associated with an earthquake, all critical and non-critical infrastructure are at risk of experiencing earthquake related damage. Damage to structures, infrastructure, and even business interruptions can be expected following an earthquake. Examples of varying degrees of damage are shown in **Figure 26** and **Figure 27.**

Figure 27 Structural Earthquake Damage

Estimating Potential Losses

To determine the losses associated with an earthquake, the HAZUS-MH software was utilized in the Huntington County MHMP update. HAZUS-MH is a nationally standardized risk modeling methodology which identifies areas with high risk for natural hazards and estimates physical, economic, and social impacts of earthquakes, hurricanes, floods, and tsunamis. For this plan an arbitrary earthquake scenario placed a magnitude 5.0 within Huntington County.

Per the HAZUS-MH scenario noted above, total economic losses are anticipated to be near $1.17M with moderate damage to approximately 12 buildings, of which 0 are anticipated to be damaged beyond repair. Further, there are 30 critical facilities (1 hospital, 12 schools, 1 EOC, 7 Police Stations, and 9 Fire Stations) with reduced functionality on day 1, and 0 highway segments with moderate damage. All other transportation segments (railways, buses, etc.) would be expected to remain undamaged. There is no damage anticipated for wastewater facilities. Residential occupancies would be anticipated to sustain the largest level of damage, representing 72% of total damages. No fires due to the earthquake were anticipated.

The HAZUS-MH model computes anticipated economic losses for the hypothetical earthquake due to direct building losses and business interruption losses. Direct building losses are the costs to repair or to replace the damage caused to the building and contents, while the interruption losses are associated with the inability to operate a business due to the damage sustained. Business interruption losses also include the temporary living expenses for those people displaced from their homes.

The HAZUS-MH Earthquake Model allows local building data to be imported into the analysis. However, these local data are imported as “general building stock,” meaning that the points are assigned to a census tract rather than a specific XY coordinate. HAZUS performs the damage analysis as a county wide analysis and reports losses by census tract. While the results of the hypothetical scenario appear to be plausible, care should be taken when interpreting these results.

Future Considerations

While the occurrence of an earthquake in or near to Huntington County may not be the highest priority hazard studied for the development of the plan, it is possible that residents, business owners, and visitors may be affected should an earthquake occur anywhere within the state. For that reason, Huntington County should continue to provide education and outreach regarding earthquakes and earthquake insurance along with education and outreach for other hazards. As Huntington County and the communities within the county grow and develop, the proper considerations for the potential of an earthquake to occur may help to mitigate social, physical, or economic losses in the future.

It can be anticipated that while all structures in Huntington County will remain at-risk of earthquake damage and effects, new construction or redevelopment may reduce the overall risks. As redevelopment or growth occurs, the new construction may be significantly sturdier. Further, as blighted or abandoned areas are addressed, those communities and the county are less susceptible to economic and physical damage associated with earthquakes. Since the last planning effort, no significant development has occurred within the county.

Relationship to Other Hazards

Hazardous materials incidents may occur because of damage to material storage containers or transportation vehicles involved in road crashes or train derailments. Further, dam failures, levee breaks, or landslides may occur following an earthquake or associated aftershocks due to the shifting of the soils in these hazard areas. These types of related hazards may have greater impacts on Huntington County communities than the earthquake itself. It is not expected that earthquakes will be caused by other hazards studied within this plan.

3.2.3 Extreme Temperature

Overview

Extreme Heat

Extreme heat is defined as a temporary elevation of average daily temperatures that hover 10 degrees or more above the average high temperature for the region for the duration of several weeks. Humid or muggy conditions, which add to the discomfort of elevated temperatures, occur when a dome of high atmospheric pressure traps water-laden air near the ground. In a normal year, approximately 175 Americans die from extreme heat.

According to the NWS, "The Heat Index or the "Apparent Temperature" is an accurate measure of how hot it really feels when the Relative Humidity is added to the actual air temperature." To find the Heat Index Temperature, refer to the Heat Index Chart in **Figure 28**. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index – how hot it feels – is 121°F. The National Weather Service has 3 levels of Excessive Heat Notifications.

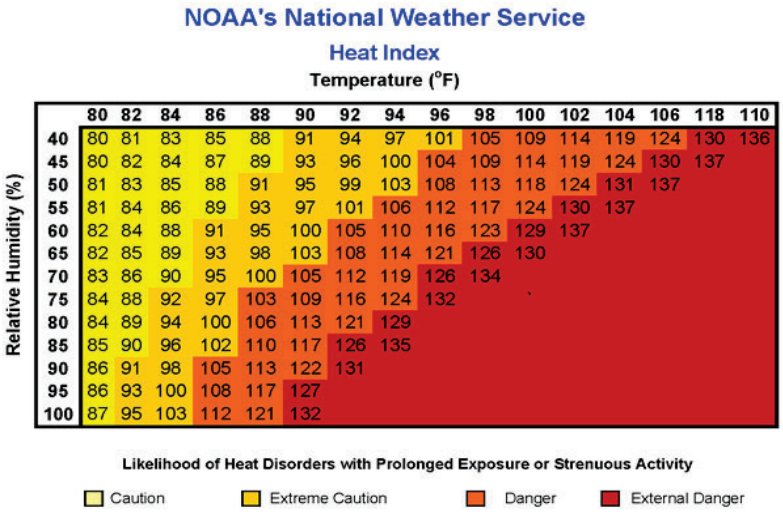


Figure 28 NWS heat Index Chart

1) A Heat Advisory - means that temperatures of at least 100°F* or Heat Index values of at least 105°F* are expected.

2) An Excessive Heat Watch means that Heat Index values are expected to reach or exceed 110°F* and not fall below 75°F* for at least a 48-hour period.

3) An Excessive Heat Warning means that Heat Index values are expected to reach or exceed 110°F* and not fall below 75°F* for at least a 48-hour period, beginning in the next 24 hours. A warning may also be issued for extended periods with afternoon heat index values of 105°F-110°F.

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

Figure 29 Extreme Heat Effects by Heat Index

It is important to also note that these heat index values were devised for shady, light wind conditions. Exposure to full sunshine may increase heat index values by up to 15°F. Further, high winds, particularly with very hot, dry air, can also be extremely hazardous.

As **Figure 29** indicates, there are four cautionary categories associated with varying heat index temperatures. Each category provides a heat index range along with effects on the human body.

People with underlying health issues, the very old or very young may be impacted at lower temperatures since their systems are less likely to be able to compensate for the heat and humidity.

Extreme Cold

Extreme cold is defined as a temporary, yet sustained, period of extremely low temperatures. Extremely low temperatures can occur in winter months when continental surface temperatures are at their lowest point and the North American Jet Stream pulls arctic air down into the continental United States. The jet stream is a current of fast-moving air found in the upper levels of the atmosphere. This rapid current is typically thousands of kilometers long, a few hundred kilometers wide, and only a few kilometers thick. Jet streams are usually found somewhere between 10-15 km (6-9 miles) above the Earth's surface. The position of this upper-level jet stream denotes the location of the strongest surface temperature contrast over the continent. The jet stream winds are strongest during the winter months when continental temperature extremes are greatest. When the jet stream pulls arctic cold air masses over portions of the United States, temperatures can drop below 0° F for one week or more. Sustained extreme cold poses a physical danger to all individuals in a community and can affect infrastructure function as well.(**Figure 30**)

Figure 30 Working in Extreme Cold

In addition to strictly cold temperatures, the wind chill temperature must also be considered when planning for extreme temperatures. The wind chill temperature, according to the NWS, is how cold people and animals feel when outside and it is based on the rate of heat loss from exposed skin. **Figure 31** identifies the Wind Chill Chart and how the same ambient temperature may feel vastly different in varying wind speeds.

Wind chill is a guide to winter danger

New wind chill chart

Frostbite occurs in 15 minutes or less

Wind (MPH) \ Temperature (°F)	30	25	20	15	10	5	0	-5	-10	-15	-10	-25
5	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40
10	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47
15	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51
20	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55
25	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58
30	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60
35	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62
40	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64
45	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65
50	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67
55	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68
60	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69

Figure 31 Wind Chill Guide

Recent Occurrences

The effects of extreme temperatures extend across large regions, typically affecting several counties, or states, during a single event. According to the NCDC, there has been no extreme heat event and two extreme cold events between January 1, 2017 and December 31, 2023. Local reports did not provide any additional information regarding the period of excessive heat during this time period. However, the National

Weather Service reported wind chills ranging from -25 to-50 degrees Fahrenheit in Huntington County on January 29 - 31, 2019. Three years later December 23 and 24, 2022, an extremely cold event ushered in wind chills ranging from -25 to -40 degrees Fahrenheit. Although the committee members recall several hot days with heat indexes greater than 100 in the past 5 years, neither NCDC nor the local National Weather Service Office website have any reports. No damage or losses associated with the prolonged cold temperatures or heat events were reported.

It is difficult to predict the probability that an extreme temperature event will affect Huntington County residents within any given year. However, based on historic knowledge and information provided by the community representatives, an extreme temperature event is "Likely" to Highly Likely" (likely within the year to next 3 years) to occur within the county and if an event did occur, it would result in "Negligible" to "Limited" magnitude. **Table 8** identifies the CPRI for extreme temperatures-both heat and cold events for all communities in Huntington County.

Table 8: CPRI for Extreme Temperatures

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Likely	Negligible	> 24 hours	< 1 week	Elevated
Town of Andrews	Likely	Limited	> 24 hours	< 1 week	Elevated
City of Huntington	Highly Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Markle	Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Mount Etna	Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Roanoke	Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Warren	Highly Likely	Limited	> 24 hours	< 1 week	Elevated

Assessing Vulnerability

As noted above, this type of hazard will generally affect entire counties and even multi-county regions at one time; however, certain portions of the population may be more vulnerable to extreme temperatures. For example, outdoor laborers, very young and very old populations, low-income populations, and those in poor physical condition are at an increased risk to be impacted during these conditions.

By assessing the demographics of Huntington County, a better understanding of the relative risk that extreme temperatures may pose to certain populations can be gained. In total, just over 18.6% of the county's population is over 65 years of age, 5.6% of the population is below the age of 5, and approximately 12.8% of the population is considered to be living below the poverty line. People within these demographic categories are more susceptible to social or health related impacts associated with extreme heat. Families below the poverty line are less likely to have functioning air conditioning in their homes. Because of high energy costs those who do have air conditioning may be less likely to use the units in a way to benefit their health and well-being. The same factors are key when looking at heating sources in cold temperatures. Elderly and those living below the poverty line are more likely to rely on alternative heating sources because of the cost of energy. These alternative heating sources are frequently the cause of carbon monoxide poisoning and/or house fires.

In January 2024, subzero windchills impacted the entire State of Indiana with Indianapolis reporting 84 hours of sub-zero windchills between January 13 and 17. Huntington County EMA along with County leadership and some non-governmental organizations together addressed the overnight warming needs for unsheltered homeless people who now reside in the community. Although there

are numerous daytime facilities open to warm those who are cold, nighttime accommodations have not been identified as an unmet need until this event.

Extreme heat can affect the proper function of organ and brain systems by elevating core body temperatures above normal levels. Elevated core body temperatures, usually more than 104°F are often exhibited as heat stroke. For weaker individuals, an overheated core body temperature places additional stress on the body, and without proper hydration, the normal mechanisms for dealing with heat, such as sweating to cool down, are ineffective. Examples of danger levels associated with prolonged heat exposure are identified in **Figure 32.** Extreme cold may result in similar situations as normal functions are impacted as the temperature of the body is reduced. Prolonged exposure to cold may result in hypothermia, frostbite, and even death if the body is not warmed.

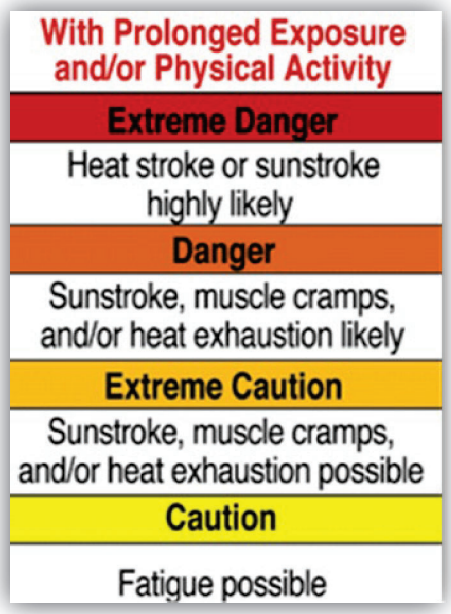


Figure 32 Heat Danger Classification

Within Huntington County, direct and indirect effects from a prolonged period of extreme temperature may include:

Direct Effects:

- Direct effects are primarily associated with health risks to the elderly, infants, people with chronic medical disorders, lower income families, outdoor workers, and athletes. Health risks can range from heat exhaustion or mild hypothermia to death due to heat stroke, amputations due to frost bite or death due to severe hypothermia.

Indirect Effects:

- Increased need for cooling or warming shelters
- Increased medical emergency response efforts.
- Increased energy demands for heating or cooling.

Estimating Potential Losses

It is difficult to estimate the potential losses due to extreme temperatures as damage is not typically associated with buildings but instead with populations and people.

This hazard is not typically as damaging to structures or critical infrastructure as it is to populations so monetary damages associated with the direct effects of the extreme temperature are not possible to estimate accurately.

Indirect effects:

- Increased expenses for facilities such as healthcare or emergency services due to the increased number of calls and people seeking assistance.

- Manufacturing facilities where temperatures are normally elevated may need to alter work hours or experience loss of revenue if forced to limit production during the heat of the day.

- Energy suppliers may experience demand peaks during the hottest and/or coldest portions of the day.

- Extreme cold indirect effects include pipes freezing resulting in loss of access to water for industrial processes as well as personal hygiene, sanitation and hydration of livestock and people. These effects may disproportionately impact vulnerable populations (elderly and children) within Huntington County.

Future Considerations

As more and more citizens are experiencing economic difficulties, local power suppliers along with charitable organizations have implemented programs to provide cooling and heating mechanisms to residents in need. Often, these programs are donation driven and the need for such assistance must be demonstrated. As susceptible populations increase, or as local economies are stressed, such programs may become more necessary to protect Huntington County's at-risk populations. Additionally, the increase in the number of unsheltered homeless in the area calls for innovative approaches to addressing heating and cooling needs after traditional business hours when this population is particularly susceptible.

The Climate Change Assessment identifies several temperature related considerations of which communities should be aware of and begin planning to avoid further impacts. For example, rising temperatures will increase the number of extreme heat days, thereby increasing the potential for heat related illnesses, potential hospitalizations, and medication costs to vulnerable populations. In addition, added days of extreme heat will impact agriculture, manufacturing, and potentially, water sources. Increasing greenspaces within the cities and towns not only provide benefits of stormwater control, carbon sequestration and air pollution filtration, but also are great for reducing the energy from the sun reaching the ground surface, thus cooling the area. Future community planning should include the incorporation of heat tolerant green infrastructure to lessen the impacts of extreme heat upon the community as a whole.

New construction associated with development of residential areas often brings upgraded and more efficient utilities such as central heating and air units further reducing vulnerabilities to the aging populations in those municipalities mentioned above. Conversely, new development associated with industrial or large commercial structures in the inner-urban centers often result in increased heat over time, which may cause additional stress to labor-related populations. Since the last planning effort, there has been significant residential and commercial development within the county.

Extreme Temperatures: Relationship to Other Hazards

While extreme temperatures may be extremely burdensome on the power supplies in Huntington County, the Committee concluded that this type of hazard is not expected to cause any hazards studied. It is anticipated that due to prolonged extreme temperatures, primarily long periods of elevated temperatures, citizens may become increasingly agitated and irritable, and this may lead to a disturbance requiring emergency responder intervention.

3.2.4 Fires and Wildfire

Overview

A wildfire, also known as a forest fire, vegetation fire, or a bushfire, is an uncontrolled fire in wildland areas and is often caused by lightning; other common causes are human carelessness and arson. Small wildfires may be contained to areas less than one acre, whereas larger wildfires can extend to areas that cover several hundred or even thousand acres. Generally, ambient weather conditions determine the nature and severity of a wildfire event. Very low moisture and windy conditions can help to exacerbate combustion in forested or brush areas (**Figure 33**) and turn a small brush fire into a major regional fire event in a very short period. Wildfires can be very devastating for residents and property owners.

Figure 33 Forest Fire

A structural fire is an incident where a fire starts within a structure and is largely contained to that structure. Causes of structure fires can be related to electrical shorts, carelessness with ignition sources and/or alternative heating sources, poor storage of flammable materials, as well as arson. These types of fires can be deadly if no warning or prevention measures are present. The most dangerous aspect of structural fires is the production of toxic gases and fumes that can quickly accumulate in enclosed areas of structures and asphyxiate those who might be in the structure.

Problems associated with structural fires are compounded when high-rise buildings catch fire. High-rise fires hinder the ability of rescue workers to fight the fire, reach impacted building occupants, and evacuate impacted occupants. Rescue efforts also become more complicated when handicapped or disabled persons are involved. Complications associated with high-rise fires typically increase as the height and occupancy levels of the buildings increase. Structural collapse is another concern associated with high-rise fires. Structural collapse often results in people becoming trapped and severely injured. However, it is important to note that the concern associated with structural collapse, is not limited to high-rise buildings; the collapse of smaller residential buildings can also lead to severe injury and death.

Combating a wildfire or a structure fire is extremely dangerous. If weather conditions change suddenly, the fire may change course and/or increase in strength potentially overtaking neighboring structures and firefighters, causing severe injury or death. Fires can travel at speeds greater than 45 mph. Members of the homeless community, hunters and/or campers may also be in the area of the fires with no means to escape. Fire response capabilities are limited by the ever-dwindling number of volunteer firefighters able to respond, especially during “normal working hours”. This further increases the risks for first responders and community members alike.

Recent Occurrences

Within the NCDC, there are no reports of wildfires occurring in Huntington County between January 1, 2018 to January 1, 2024. Many 10 acre or larger field/grass and woods fires take place regularly. In 2006 in Pike County, Indiana two field fires burned over 350. On November 20, 2022, a 110-acre brush fire was brough under control by several volunteer fire departments and Indiana DNR staff at Brown County State Park. Grass fires in the median and along Interstate 65 recently closed the southbound lanes for a number of hours while fire departments attempted to extinguish the wind driven fires. In Huntington County it took over an hour for fire crews from four departments to extinguish a 20-acre field fire on March 10, 2021

The impacts of wildfires can be quite extensive and reach well beyond the borders of the jurisdiction fighting the fire. This is well demonstrated by the summerlong wildland fires in Canada in 2023. Over 16.5 million acres, an area the size of the entire state of Florida, burned between March and September. The fires resulted in smoke plumes which reached central Indiana at levels requiring people with asthma and other respiratory difficulties to remain indoors.

Figure 34 One of Two Simultaneous Residence Fires

The NCDC does not report structure fires; therefore, local sources were utilized to provide information regarding residential and business fires. Residential fires are the most common fire hazard affecting Huntington County in the last several years. **Figure 34** show a fire department extinguishing activities at one of two simultaneous fires. Huntington County has some managed land, predominantly near the reservoirs and community parks. Due to the expansive acreage of agricultural land within Huntington County, and the potential for urban areas to be at risk due to abandoned homes, blighted areas, or industrial activities, the Planning Committee determined the probability to be “Highly Likely” throughout the County. **Table 9** identifies the CPRI rankings for fire in Huntington County.

Table 9: CPRI for Fire

	Probability	Magnitude / Severity	Warning Time	Duration	CPRI
Huntington County	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Andrews	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
City of Huntington	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Markle	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Mount Etna	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Roanoke	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Warren	Highly Likely	Limited	< 6 hours	< 6 hours	Severe

Information provided in **Table 10** highlights the number of fire calls the Huntington County fire departments responded to during the time period January 2019 through December 2023. Damage to structures, contents, crops, forests, and vehicles is significant for each municipality on an annual basis. Social losses, such as being unable to work following a residential structure fire or losses associated with a business fire should also be considered as an impact.

Table 10: Huntington County Fire Calls

Department	2019	2020	2021	2022	2023
Andrews Volunteer Fire Dept.	96	63	64	81	
Bippus Volunteer Fire Dept	83	93	96	106	
Huntington City Fire Department	1643	946	1122	1164	
Markle Volunteer Fire Dept	68	79	84	65	
Mt. Etna Volunteer Fire Dept	116	124	115	65	
Roanoke Volunteer Fire Dept	158	156	166	172	
Huntington Twp Vol. Fire Dept	203	172	177	180	
Warren Volunteer Fire Dept	169	134	151	234	

Assessing Vulnerability

Physical, economic, and/or social losses impact not only the property owner whose property was damaged by the fire, but also the community. Typically, a structural fire is limited to one or two structures, as the fire response focuses on extinguishment as well as containment thus preventing the fire from spreading to neighboring structures. This type of action works to reduce the magnitude and severity. Nonetheless, the loss of or damage to historic structures, town squares, etc. takes a toll on the community spirit as well as the financial and physical loss.

Much of the county is rural, which is also susceptible to brush and/or crop fires, especially in times of drought. Since agriculture is a big source of income for the community, field fires, especially during harvest season, or barn fires after crops have been stored have an immense impact.

Direct and indirect effects of fires and wildfires within Huntington County may include:

Direct Effects:

- Loss of structures (residential as well as agricultural)
- Loss of vital equipment (industrial and agricultural)
- Loss of forests
- Loss of natural resources and wildlife

Indirect Effects:

- Loss of revenue as businesses may be closed.
- Loss of revenue from reduced tourist activities in the county
- Increased emergency response times based on safety of roads.
- Loss of income if dependent on crop production or timber harvest

Estimating Potential Losses

Given the nature and complexity of a potentially large hazard such as a wildfire, it is difficult to quantify potential losses to property and infrastructure. As a result, all critical and non-critical structures and infrastructure may be at some degree of risk.

Monetary damages associated with the direct effects of the fires are difficult to estimate, other than utilizing historic information as provided. Indirect effects would cause increased efforts associated with emergency response services as wildfires are difficult to contain and may accelerate very

quickly. Further, multi-level business or residential structures place increased risks to those who work or live within those structures or nearby structures.

Future Considerations

As populations increase and community growth increases, the need to respond to fire will remain an important municipal effort. As new construction or re-development occurs, especially new or existing critical infrastructure, it is important to ensure that these new structures are equipped to deal with the potential risks associated with this hazard. Those may include increased risk for wooden or flammable outer structures and potential lengthy power outages. With the adverse impacts of extreme temperatures and drought upon the heavily forested areas, consideration must be given to mitigating fire risks for structures that are built in the rural areas to limit losses should a wildland fire take place.

In addition, increased populations require increased housing. Many urban communities develop large multi-family residential structures, or apartment complexes, where structures are not only in close proximity to each other, but also house a large number of citizens. As communities age, some structures may become abandoned, significantly increasing the risk of fire due to potential vagrant populations and lack of maintenance. These areas should be considered at-risk and potentially demolished to avoid such risk and potential hazard.

In areas such as Huntington County which are reliant on volunteer firefighters, firefighting responses can be slowed due to the limited numbers of volunteers available at various times of the day. Increasing numbers of people working outside of the community in which they reside limits volunteer presence to outside of normal working hours. Recruitment initiatives will need to be considered as the firefighting needs and staffing levels change.

Fires can also result in substantial indirect costs. Increased emergency response times, loss of work or the inability to get to work, as well as business interruption, are possible indirect effects of a fire and how it may affect those businesses related to cropland or natural resource areas.

Relationship to Other Hazards

Fires may certainly result in a hazardous materials incident if storage structures are within the path of the fire. Material storage containers farther away from the burn path may become damaged by high winds and embers resulting in a spill or release of materials. Fires may result from lightning either alone or associated with a thunderstorm. Typical wind speeds during a thunderstorm may also exacerbate the impacts from any ignitions from the lightning.

3.2.5 Flood

Overview

Floods are the most common and widespread of all the natural disasters. Most communities in the United States have experienced flooding because of spring rains, heavy thunderstorms, or winter snow melts. A flood, as defined by the National Flood Insurance Program (NFIP), is a general and temporary condition of partial or complete inundation or two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waters, or unusual and rapid accumulation or runoff of surface waters from any sources, or a mudflow. Floods can be slow or fast rising but generally develop over a period of days. Flash flooding is a term often used to describe flood events that are due to heavy or excessive rainfall in a short period of time, generally less than 6 hours. Unlike traditional flooding which can be slower developing, these raging torrents rip through river beds, streets and roads, and overland taking anything in its way with the force of the water. Flash floods typically occur within minutes up to a few hours after an excessive rain event.

Figure 35 Flooding in Huntington, 2014

Flooding and associated flood damage are most likely to occur during the spring because of heavy rains combined with melting snow. (**Figure 35**) However, provided the right saturated conditions, intense rainfall of short duration during rainstorms can produce damaging flash flood conditions. There are no exceptions to when floods may occur. There are times they are less likely, but given the right atmospheric conditions, even then, a flood or flash flood can take place. Climate change has had a direct impact on flooding with the increase in precipitation and the duration of the events being shorter.

The traditional benchmark for riverine or coastal flooding is a 1% Annual Exceedance Probability (AEP), formerly known as the 100-year flood. This is a benchmark used by FEMA to establish a standard of flood protection in communities throughout the country. The 1% AEP is referred to as the “regulatory” or “base” flood. Another term commonly used, the “100-year flood”, can be misleading. It does not mean that only one flood of that size will occur every 100 years, but rather there is a 1% chance of a flood of that intensity and elevation happening in any given year. In other words, the regulatory flood elevation has a 1% chance of being equaled, or exceeded, in any given year and it could occur more than once in a relatively short time period. The area impacted by the 1% AEP flood event is called the Special Flood Hazard Area (SFHA).

Recent Occurrences

The NCDC indicates that between January 1, 2018 to December 31, 2023, there were no flash floods or traditional riverine floods. There was one ice jam flood on February 17, 2022. According to the local storm report, the EMA Director reported that ice jam flooding occurred on the Salamonie River downstream of the Interstate 69 bridge around midnight. Rapid rises caused chunk ice to flow over Belleville Road. The jam finally released around 3 am.

Figure 36 Huntington County USGS River Gages

Stream gages are utilized to monitor surface water elevations and/or discharges at key locations and time periods. Some such gages are further equipped with NWS's National Water Prediction Service (NWPS) capabilities. These gages have the potential to provide valuable information regarding historical high and low water stages, hydrographs representing current and forecasted stages, and a map of the surrounding areas likely to be flooded. Within Huntington County, there are 4 active stream gages, pictured in **Figure 36**. The 3 river gages are located on the Little River at Huntington, IN, , Wabash River at Huntington, IN and Salamonie River near Warren, IN. There is 1 lake level gage located at JE Roush Lake Dam near Huntington, IN.

The gage located on Little River near Huntington reached its highest recorded river level in January 1950 at 20 feet. More recent crests, from January 1, 2018, through December 31, 2023, were not as destructive. Of the 4 recent crests, 3 were at or above action level (12 ft.) and 1 on January 21, 2018, reached Minor flood level (15 ft.) at 15.04 feet. The second highest crest was recorded on April 19, 2013, at 19.83 feet. Only one of the top 5 historic crests only one has taken place within the last 10 years.

The Wabash River at Huntington gage saw no crests at or above Action level (18 ft) in the past 5 years since January 1, 2018. The river has only once exceeded Major Flood Stage (23 ft) in the history of the gate (February 10m 1959). Much of this can be attributed to the gage location just downstream of the JE Roush Lake Dam, a USACE owned and operated flood control dam. Because of the controlled release of water from the dam, only two of the historic crests at this gage have approached Minor Flood Stage of 20 feet. The remaining historic crests have not reached the Action level of 18 feet.

Unlike the first two river gages in Huntington County, the gage located on the Salamonie River near Warren has three recent crests at or above the Minor Flood Stage (12 feet), and one additional recent crest which exceeded Action level (10 ft). The record high crest was recorded on March 6, 1963, at 16.94 feet, just below the Major Flooding threshold of 17 feet. None of the listed historic crests reached Major flood stage (17 ft) but were considered Moderate Flooding at 15 feet or greater.

Unlike the river gages, the lake gage reflects the volumes of water impounded after significant rain events and released over time to avoid any adverse impact. Normal Pool like winter pool is listed at 737 feet. The US Army Corps of Engineers (USACE) attempts to maintain the summer lake level near the summer pool height of 749 feet. Spillway pool is listed at 765 feet. This level was exceeded once in the past five years since January 1, 2018. On May 13, 2021, the lake level was recorded at 770.46 feet. The second highest pool height was recorded on June 30, 2015, at 799.4 feet. Record pool height was at 799.94 feet on July 3, 2003.

Flood insurance is a key for flood recovery. Any property having received two insurance claim payments for flood damages totaling at least $1,000, paid by the NFIP within any 10-year period since 1978 is defined as a repetitive loss property. These properties are important to the NFIP because they account for approximately 1/3 of the country's flood insurance payments. According

to FEMA Region V, there are a total of five repetitive loss structures in unincorporated Huntington County. Additional repetitive loss structures were reported for the City of Huntington, the Towns of Andrews, Roanoke and Warren. **Table 11** identifies the number of repetitive losses and claims per community, as provided by FEMA.

Table 11: Repetitive Properties, Claims, and Payments

Community	# Repetitive Loss Properties	Total # of Losses
Huntington County	5	13
City of Huntington	4	8
Town of Andrews	3	13
Town of Markle	0	0
Town of Mount Etna	0	0
Town of Roanoke	3	11
Town of Warren	1	2
TOTAL	16	47

There have been several claims made for damages associated with flooding in Huntington County since 1978. Within the City of Huntington, for example, there have been 8 claims at repetitive loss properties resulting in $86,902.37 in payments. **Table 12** further indicates the premiums and coverage totals for individual communities.

Table 12: Insurance Premiums and Coverage

Community	Flood Insurance Premiums	Flood Insurance Coverage, Millions
Huntington County	$18,654	$6.02M
City of Huntington	$8,570	$1.90M
Town of Andrews	$401	$0.08M
Town of Markle	0	0
Town of Mount Etna	0	0
Town of Roanoke	$6,994	$1.97M
Town of Warren	$5,438	$0.58M
TOTAL	$39,731	$10.06M

As determined by the Committee, the probability of riverine based flooding occurring throughout Huntington County is “Possible.” The City of Huntington felt it was ”Likely” and Roanoke felt it was “Highly Likely” to experience a Riverine Flood. This is largely based on recent experiences with the rivers and streams near the communities. The Committee also determined that accurate warning time would be less than 6 hours based on the terrain and flashy nature of the waterways in the county, forecasting methods, and local knowledge of stream activities. Finally, the duration of such an event is anticipated to last less than a week since the county is located closer to the headwaters for each of the streams and the presence of the flood control dams. A summary of riverine flooding CPRI is shown in **Table 13.**

Table 13: CPRI for Flood - Riverine

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Possible	Negligible	< 6 hours	< 1 week	Elevated
Town of Andrews	Possible	Limited	< 6 hours	< 1 week	Elevated
City of Huntington	Likely	Limited	< 6 hours	< 1 week	Elevated
Town of Markle	Possible	Negligible	< 6 hours	< 1 week	Elevated
Town of Mount Etna	Possible	Negligible	< 6 hours	< 1 week	Elevated
Town of Roanoke	Highly Likely	Negligible	< 6 hours	< 1 week	Elevated
Town of Warren	Possible	Negligible	< 6 hours	< 1 week	Elevated

The committee chose to separate the Riverine Flooding from Flash Flooding based upon recent occurrences and the differences between probability, magnitude and severity, warning time, and duration. **Table 14** illustrates these differences and changing climate features have enhanced their awareness. The committee determined that the probability of Flash Flooding to be "Likely" to "Highly Likely" and the magnitude to be "Negligible" to "Limited". The warning time would be less than 6 hours and the duration to be less than 1 week. This is compounded by the Climate Change of more intense rainfall in short time periods.

Table 14: CPRI for Flood - Flash Flooding

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Likely	Negligible	< 6 hours	< 1 week	Elevated
Town of Andrews	Likely	Limited	< 6 hours	< 1 week	Elevated
City of Huntington	Likely	Limited	< 6 hours	< 1 week	Elevated
Town of Markle	Likely	Negligible	< 6 hours	< 1 week	Elevated
Town of Mount Etna	Likely	Negligible	< 6 hours	< 1 week	Elevated
Town of Roanoke	Highly Likely	Negligible	< 6 hours	< 1 week	Elevated
Town of Warren	Likely	Negligible	< 6 hours	< 1 week	Elevated

Assessing Vulnerability

Flood events may affect substantial portions of Huntington County at one time as river systems and areas with limited drainage cover much of the county and the incorporated communities. With an increase in high volume rain events, the low-lying roads within the county are vulnerable to frequent inundation isolating and/or restricting access to some parts of the county. Wooded areas and farm fields have provided ample supply of debris causing clogs and damage to culverts, and bridges, in the past.

Whenever significant flooding impacts the communities in Huntington County, the concern about riverbank erosion also known as fluvial erosion is elevated. Fluvial Erosion Hazard (FEH) represents the risk associated with natural stream movements and losses associated with buildings and infrastructure. In some cases, this may be represented by a gradual movement of a stream across a farm field. In other, more extreme instances, homes or other infrastructure may be lost as riverbanks or bluffs sluff into the water below. This will be discussed in greater detail within the landslide/land subsidence discussion.

Log and ice jam flooding is a concern for the more populated areas. Although log jams can occur at any time of the year, ice jams are predominantly and early or late winter occurrence when air temperature rise after freezing temperatures which allow lake and river ice to form. Flooding occurs when pieces of ice either jam up against stationary sheets of ice or against structures in the river such as bridge pylons. The jammed ice can form a dam causing water levels behind it to rise causing localized flooding and pushing large pieces of ice out of the stream. The force of the moving ice pieces is enough to break off nearby trees and/or damage building foundations and small outbuildings. (**Figure 37**) The greatest challenge with ice jams is the lack of good science to predict when the jams will form and where jam formation is likely. With the variations in temperatures in late winter and early spring ice jams are becoming more common. Log jams, like ice jams, accumulate in low flow areas and near bridges and similar structures located in the stream, causing water levels to rise. Bridges and culverts are most frequently impacted since water flow is easily blocked at these locations forcing water outside of the riverbanks into neighborhoods and businesses.

Figure 37 Ice Slabs Remaining After Ice Jam Flood, 2014

There are no flood inundation maps developed to identify areas impacted by a variety of flood stages on any of the rivers located in Huntington County. The closest flood inundation map is on the St. Mary's River near Ft. Wayne. Because all of the communities are vulnerable to flooding either from short duration heavy rain events, or the more familiar riverine flooding, all have chosen to participate in the National Flood Insurance Program (NFIP).

Community	Init FHBM	Identified FIRM	Current Effective Map Date	Reg-Emerg Date
Town of Andrews	6/7/1974	9/30/1982	6/2/2015	9/30/1982
City of Huntington	6/7/1974	7/18/1983	6/2/2015	7/18/1983
Town of Markle		6/2/2015	No SFHA	11/7/1991
Town of Mount Etna		6/2/2015	6/2/2015	6/3/2015
Town of Roanoke	12/28/1973	12/1/1982	6/2/2015	12/1/1982
Town of Warren	11/23/1973	9/30/1982	6/2/2015	9/30/1982
Huntington County	3/3/1978	7/18/1983	6/2/2015	7/18/1983

Figure 38 List of NFIP Participating Communities

The Town of Markle has no Special Flood Hazard Areas designated within the corporate limits. All of the other communities in the county have areas of concern within their corporate limits, as shown in **Figure 38**. Many of the flood risk areas are located within the boundaries of the disadvantaged and underserved population census blocks. With less financial capacity to mitigate flooding becomes an additional burden on the communities. Flash flooding, being less predictable, does not allow the advanced warning to be able to protect property and seek shelter out of harm's way, thus increasing vulnerability throughout the county, especially the underserved and disadvantaged community members. **(Figure 39)**

Within Huntington County, direct and indirect effects of a flood event may include:

Direct Effects:

- Structural and content damage and/or loss of revenue for properties affected by increased water.
- Increased costs associated with additional response personnel, evacuations, and sheltering needs.
- Increased potential impacts to infrastructure and buildings located within the SFHA.
- Increased cleanup costs for more frequent flash flood impacts.
- Loss of topsoil and deposition of sand due to flood inundation of farm fields.

Indirect Effects:

- Increased response times for emergency personnel when roads are impassable.
- Increased costs associated with personnel to carry out evacuations in needed areas.
- Increased risk of explosions and other hazards associated with floating propane tanks or other debris.
- Losses associated with missed work or school due to closures or recovery activities.
- Cancellations of special events in impacted areas or water related activities that become too dangerous due to high water.
- Debris removal costs to return local drainage to normal function.
- Getting notifications to some of the underserved populations that may not have access to radio, television, or social media of evacuations.

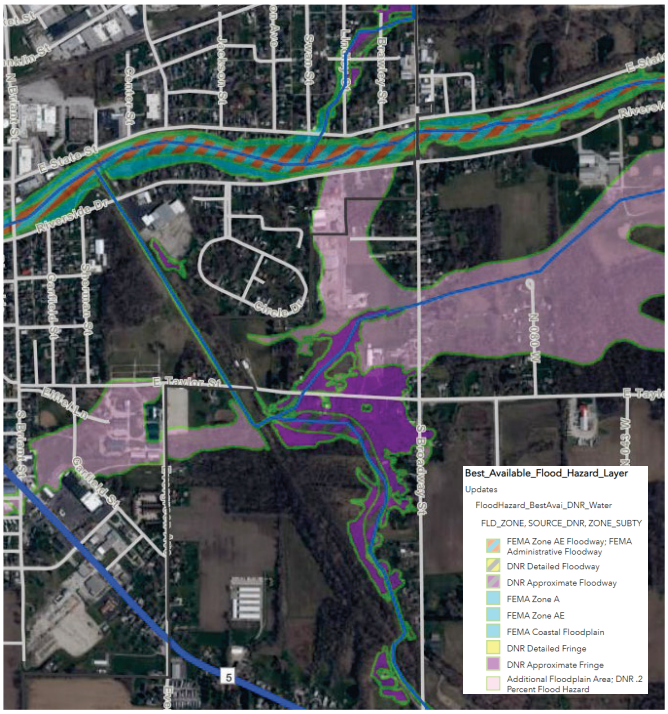


Figure 39 Sample of Flood Designated Areas near Huntington

Estimating Potential Losses

Critical and non-critical structures located in regulated floodplains, poorly drained areas, or low-lying areas are most at risk for damages associated with flooding. For this planning effort, a GIS Desktop Analysis methodology was utilized to estimate flood damages.

For the GIS Desktop Analysis method, an analysis was completed utilizing the effective Digital FIRMs (DFIRMs) overlaid upon a Modified Building Inventory developed with information provided by Huntington County. Structures located within each flood zone were tallied using GIS analysis techniques.

In the assessment, any structure listed as less than 400 ft^2 in area or classified in the Assessor's database as a non-habitable structure was assumed to be an outbuilding. It was assumed that a building was located on a parcel if the value listed in the "Assessed Value (Improvements)" showed a value greater than zero dollars. Parcels that intersected any portion of the FEMA flood zones were considered to be flood prone, and subsequently, further analyzed separately from parcels without structures. Structure values were calculated using:

Residential = Assessed Value x 0.5
Commercial = Assessed Value x 1.0
Industrial = Assessed Value x 1.5
Agricultural = Assessed Value x 1.0
Education = Assessed Value x 1.0
Government = Assessed Value x 1.0
Religious = Assessed Value x 1.0

To estimate anticipated damages associated with each flood zone in Huntington County and communities, it was estimated that 25% of structures in the flood zones would be destroyed, 35% of structures would be 50% damaged, and 40% of structures would be 25% damaged. **Table 15** identifies the estimated losses associated with structures in the floodway, the 1% AEP (100-year floodplain), and the 0.2% AEP (500-year floodplain) areas by community within Huntington County.

Table 15: Huntington County Building Inventory Utilizing Best Available Data

	Floodway		1% AEP		0.2% AEP		Unnumbered	
	#	$, Million	#	$, Million	#	$. Million	#	$, Million
Huntington County	742	112.87	92	13.11	53	6.07	184	23.88
City of Huntington	88	11.94	41	5.38	148	14.35	17	2.65
Town of Andrews	14	1.24	12	1.06	0	0	0	0
Town of Mt. Etna	0	0	0	0	0	0	0	0
Town of Roanoke	50	5.73	49	5.35	24	2.75	3	0.27
Town of Warren	3	0.27	14	2.13	4	0.61	20	1.82
TOTAL	897	$132.05	208	$27.03	229	$23.78	224	$28.62

Utilizing the same GIS information and process, critical infrastructure within each of the flood hazard areas in Huntington County was assessed and are included in **Table 16**. These buildings are included in the overall number of structures and damage estimate information provided in **Table 17**.

Table 16: Critical Infrastructure in the Flood Zones

Community	Floodway	1% AEP	0.2% AEP	DNR Zone A
Huntington County	Roanoke Water Pollution Control Plant,		Bethel Assembly of God, Irving Materials Inc.	Kil-So-Quah State Recreation Area
City of Huntington	Elmwood Park, River Greenway		Huntington County Highway Dept.	Ecolab Inc.,
Town of Andrews				
Town of Markle				
Town of Mount Etna				
Town of Roanoke	Roanoke Town Park	Lassus Brothers Oil Station 34	Christ's UMC, Roanoke United Methodist Childcare, Roanoke Town Hall, Roanoke Library,	

Community	Floodway	1% AEP	0.2% AEP	DNR Zone A
			Roanoke Vol. Fire Dept., Roanoke Town Marshall	
Town of Warren		Warren Town Utilities		

Utilizing the information in **Table 15** regarding the number of structures within each of the flood hazard areas, it is also important to note the number of flood insurance policies within each area in Huntington County. **Table 17** provides the comparison between the number of structures in the 1.0% AEP and the number of flood insurance policies. It is also important to note that flood insurance is voluntary unless the property owner carries a federally subsidized mortgage; insurance coverage may be discontinued when the mortgage is completed.

Table 17: Structures in the 1.0% AEP and Number of Flood Insurance Policies

Community	# Structures In 1.0% AEP	# Policies
Huntington County	92	26
City of Huntington	41	12
Town of Andrews	12	1
Town of Markle	0	0
Town of Mount Etna	0	0
Town of Roanoke	49	12
Town of Warren	14	4
Total	208	55

Future Considerations

As the municipalities within Huntington County grow in population and redevelop, it can be anticipated that the number of critical and non-critical infrastructure will also increase accordingly. Huntington County updated and adopted the County Floodplain Ordinance in 2022 similarly to the City of Huntington adopted their Floodplain Ordinance in 2022. The Towns of Andrews Mt. Etna, Roanoke and Warren also updated their flood ordinances in 2022. All of the listed communities discourage critical facilities such as schools, medical facilities, community centers, municipal buildings, and other critical infrastructure from being located within the 1% AEP (100-year) floodplain. New structures must also be protected to that level along with flood-free access to reduce the risk of damage caused by flooding and to ensure that these critical infrastructures will be able to continue functioning during major flood events. Flooding due to poor drainage, low-lying land, or flash flooding is also an important consideration. It will be important for recognition of potential flood impacts to residents and businesses in these areas to be coupled with proper planning for future development and redevelopment of the flood zones. This would also include studying the inundation areas mapped through the development of the Indiana Floodplain Portal as well as studies of all the streams with 1 square mile or drainage area or greater. Since the previous planning effort, no development has occurred within the flood zones of Huntington County or the incorporated communities within the county.

It is important to ensure that owners and occupants of residences and businesses within the known hazard areas, such as delineated or approximated flood zones and FEH, are well informed about the potential impacts from flooding incidents as well as proper methods to protect themselves and their property.

Increased precipitation, as predicted in the Indiana Climate Change Assessment, is anticipated to come in the form of heavier, shorter events which lead to the increased potential for flooding and stress on infrastructure such as sanitary and storm sewers. Heavy precipitation events are anticipated to occur more frequently as temperatures rise, replacing rain when previously there was snow.

Despite these efforts, the overall vulnerability and monetary value of damages is expected to increase in the area unless additional measures, such as those discussed later in Chapter 4 of this report, are implemented.

Indirect effects of flooding may include increased emergency response times due to flooded or redirected streets (**Figure 40),** the danger of dislodged and floating propane tanks causing explosions, and the need for additional personnel to carry out the necessary evacuations. Additional effects may include sheltering needs for those evacuated, and the loss of income or revenue related to business interruptions. Several communities within Huntington County host numerous special events near to or on the rivers and waterways. These special events may have to be cancelled or postponed due to flooding or high-water levels.

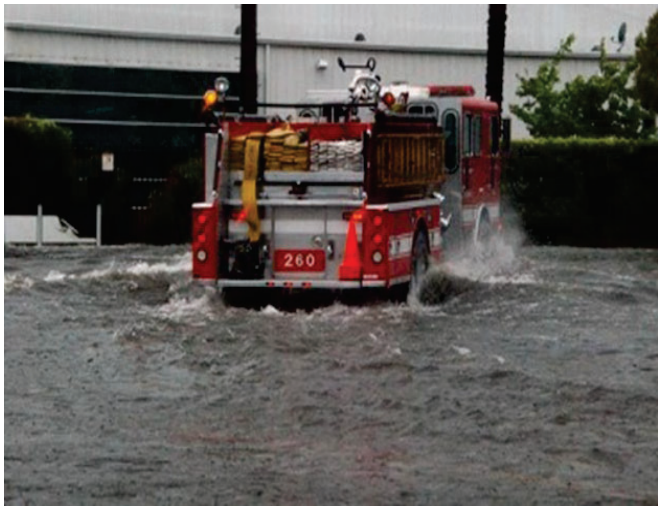


Figure 40 Fire Engine in Flood Waters

Relationship to Other Hazards

While flooding creates social, physical, and economic losses, it may also cause other hazards to occur. For example, flooding may increase the potential for a hazardous materials incident to occur. Above ground storage facilities may be toppled or become loosened and migrate from the original location. In less severe situations, the materials commonly stored in homes and garages such as oils, cleaners, and de-greasers, may be mobilized by flood waters. Should access roads to hazardous materials handlers become flooded, or if bridges are damaged by flood waters, response times to more significant incidents may be increased, potentially increasing the damage associated with the release.

Increased volumes of water during a flood event may also lead to a dam failure. As the water levels rise in areas protected by dams, at some point, these structures will over-top or will breach leading to even more water being released. These two hazards, flood, and dam failure, when combined, may certainly result in catastrophic damage.

In a similar fashion, a snowstorm or ice storm can also lead to flooding on either a localized or regional scale. When a large amount of snow or ice accumulates, the potential for a flood is increased. As the snow or ice melts, and the ground becomes saturated or remains frozen, downstream flooding may occur. Ice jams near bridges and culverts may also result in flooding of localized areas and potentially damage the bridge or culvert itself.

Repeated flooding may also create impacts associated with landslides along riverbanks and bluff areas. As floodwaters travel through the systems, saturating shorelines and increasing volumes and velocities of water, the natural process of fluvial erosion may be exacerbated. As these processes are increased, structures and infrastructure located on bluffs or in proximity to the river may be at risk.

Flooding in known hazard areas may also be caused by dams that experience structural damage or failures not related to increased volumes or velocities of water. These “sunny day failures,” while not typical, may occur wherever these structures exist throughout the county.

3.2.6 Hailstorms, Thunderstorms, and Windstorms

Overview

Hail occurs when frozen water droplets form inside a thunderstorm cloud, and then grow into ice formations held aloft by powerful thunderstorm updrafts, and when the weight of the ice formations becomes too heavy, they fall to the ground as hail. Hail size ranges from smaller than a pea to as large as a softball, and can be very destructive to buildings, vehicles (**Figure 40)** and crops. Even small hail can cause considerable damage to young and tender plants. Residents should take cover immediately in a hailstorm, and protect pets and livestock, which are particularly vulnerable to hail, and should be under shelter as well.

Thunderstorms are defined as strong storm systems produced by a cumulonimbus cloud, usually accompanied by thunder, lightning, gusty winds, and heavy rains. All thunderstorms are considered dangerous as lightning is one of the by-products of the initial storm. In the United States, on average, 300 people are injured, and 80 people are killed each year by lightning. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms. Other associated dangers of thunderstorms included tornados, high winds, hail, and flash flooding.

Windstorms or high winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds (high- or low-pressure systems). High winds are speeds reaching 50 mph or greater, either sustained or gusting.

Recent Occurrences

In Huntington County, the NCDC has recorded 21 reports of hail on 5 separate dates. 18 of the hail events took place between May 16 and May 29, 2019. The average diameter hail stone occurring throughout Huntington County ranges from ¾ to 1 inch with the largest one for this period of interest being 2.5 inches. According to the Midwest Regional Climate Center (MRCC) hail is considered severe if a thunderstorm produces hail stones larger than one inch in diameter, or larger than the size of a quarter.

Figure 41 Damaaging Hail on Vehicles

Between January 1st, 2018, to December 31st, 2023, 71 thunderstorms/windstorm events took place. Significant windstorms are characterized by the top wind speeds achieved during the incident. Such high wind events characteristically occur in conjunction with thunderstorms and have historically occurred year-round with the greatest frequency and damage occurring in May, June, and August. Within Huntington County, NCDC reports only 11 instances where top wind speeds were 60 mph or greater.

The NCDC recorded damages for hailstorms, thunderstorms, and windstorms throughout Huntington County. From January 2018 to January 2024, there were 21 instances of hailstorms, resulting in $2,000 property damage and no additional crop damage. Of the 71 instances of thunderstorms and high wind events, resulting in 4 reports indicated damages adding up to $16,500.72K in property damage and no additional crop damage. No injuries or deaths associated with these events. Many event reports included in the NCDC did not provide descriptive information on the social, physical, and economic losses resulting from individual storms specific to Huntington

County. In local storm reports at the National Weather Service, where damages were reported, narrative descriptions of the event rarely extended beyond reports of damage to broken tree limbs, downed power lines, or roof damage.

Appendix 6 provides the NCDC information regarding hailstorms, thunderstorms, and windstorms that have resulted in injuries, deaths, and monetary damage to property and/or crops.

According to the Institute for Business and Home Safety, central Indiana can expect to experience damaging hailstorms three to four times over 20 years; the average life of a residential roof. Further, thunderstorms and windstorms are considered a high frequency hazard and may occur numerous times per year. Climate change has impacted the frequency of hailstorms, thunderstorms, and windstorms.

The Committee determined the probability of a hailstorm, thunderstorm, or windstorm occurring anywhere throughout Huntington County is "Highly Likely" and will typically affect broad portions of the county at one time resulting in potentially "Limited" damages. As advancements in technologies such as weather radar systems and broadcast alerts are continually made, the warning time for such incidents may increase. Currently, the Committee feels that the warning time is anticipated to be less than six hours and the duration is expected to last less than six hours.

Indicative of a regional hazard, the probability, magnitude, warning time, and duration of a hailstorm, thunderstorm, or windstorm are expected to be similar throughout the county. These events are highly unpredictable, and the occurrences are distributed throughout the county, sometimes impacting one community more often or more severely than another. Therefore, the CPRI values reflect the distributed risk and associated priority for a hailstorm, thunderstorm, or windstorm. A summary is provided in **Table 18**.

Table 18: CPRI for Hailstorm, Thunderstorm, and Windstorm

	Probability	Magnitude / Severity	Warning Time	Duration	CPRI
Huntington County	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Andrews	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
City of Huntington	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Markle	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Mount Etna	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Roanoke	Highly Likely	Limited	< 6 hours	< 6 hours	Severe
Town of Warren	Highly Likely	Limited	< 6 hours	< 6 hours	Severe

Specific locations and frequency of hailstorms, thunderstorms, and windstorms are difficult to predict as many of these individual events are without significant warning time and may have impacts to very limited areas or may affect broader areas. However, based on NCDC data and personal experiences of the Committee, it was determined that all areas within the County are anticipated to experience a hailstorm, thunderstorm, or windstorm within the calendar year. More likely, these communities will be impacted by several of these hazard events each year. The magnitude is anticipated to be similar based on the number of critical infrastructure and populations of each of the municipalities, or "Limited."

Assessing Vulnerability

The effects of a hailstorm, thunderstorm, or windstorm may be minimal to extensive in nature and may affect small or broad ranges of land area. Within Huntington County, direct and indirect effects from a hailstorm, thunderstorm, or windstorm may include:

Direct Effects:

- Damages to infrastructure (power lines)
- Damages to individual properties (homes, cars)
- Physical injuries may be experienced by those unable to find shelter during storm events, such as homeless people, hikers and outdoor workers.

Indirect Effects:

- Downed power lines due to falling tree limbs.
- Losses associated with power outages.
- Damages sustained from blowing debris.
- Cancellation or interruption of special events.

Estimating Potential Losses

Figure 42 Home Damaged During Windstorm

Due to the unpredictability of this hazard all critical infrastructure and non-critical structures in Huntington County are at risk of damage including temporary or permanent loss of function. For hailstorms, thunderstorms, and windstorms, it is not possible to isolate specific critical infrastructure or non-critical structures that would be vulnerable to damages. However, areas where utility lines are above ground and areas where dead or dying trees have not been removed may be at a higher risk of property damage or power outages during hailstorms, thunderstorms, and windstorms. Additionally, mobile homes and accessory buildings such as pole barns and sheds may also be at a higher risk of damage from hailstorms, thunderstorms, and windstorms if not properly anchored to the ground. Damage from falling limbs or uprooted trees such as that shown in **Figure 42.** Homeless individuals and families who have alternative means of sheltering may experience greater losses since the stability of tents and alternative structures does not withstand the damaging forces of the storms.

Future Considerations

As the population of the communities in Huntington County develops and redevelops, it can be anticipated that the number of structures will also increase. To reduce the vulnerability for damage resulting from a hailstorm, thunderstorm, or windstorm, measures such as proper anchoring are vital. This includes not only roof anchors but also mobile home anchors. Proper tree maintenance, and burial of power lines should be completed. Adoption and enforcement of the current International Building Codes is key to ensuring structures are able to withstand the power of wind and hailstorms. While measures can be taken to remove existing structures or prevent future structures from being built in known hazard areas such as floodplains and hazardous materials facility buffers, such measures are not applicable to hailstorms, thunderstorms, and windstorms due to the diffuse nature and regional impacts of this hazard.

Indirect effects resulting from a hailstorm, thunderstorm, or windstorm can include power outages caused by downed tree limbs or flying debris, damage resulting from prolonged power outages, and damage to structures or property as a result of debris. Damage to homeless encampments resulting in loss of personal property and potential injuries are also a concern during storms.

Relationship to Other Hazards

Hailstorms, thunderstorms, and windstorms may be the precursor for other hazards. For example, hazardous materials incidents can be the result of a hailstorm, thunderstorm, or a windstorm. Material storage containers can become damaged by high winds, debris, or even lightning, and can result in a spill or release of materials. With wind speeds greater than 58 mph, tankers and other transportation vehicles carrying hazardous materials are also at risk while on the road. High winds may also cause gaseous substances to travel farther distances at a much faster rate, increasing the evacuation area necessary to protect residents and visitors of Huntington County.

Additionally, rainfall typically occurs with a thunderstorm and this additional precipitation may lead to localized flooding or riverine flooding depending on the amount of rain during the event. Debris from a windstorm may also lead to localized flooding if debris is deposited over drains or if obstructions are created by downed limbs, trees, or other storm related debris. A similar concern due to the potential precipitation would be dam failure. High winds may place debris near spillways, blocking the emergency drainage mechanism for the dams. High winds may also lead to structural damage to a dam or may cause damage to nearby trees or other structures, leading to indirect damage.

The risk of social losses also increases during a hailstorm, thunderstorm, or windstorm, as these hazards often result in downed power lines, utility poles, and trees. Debris such as this may impede traffic patterns and make it difficult for emergency vehicles (Fire, EMS, and Police) to pass through affected areas or people may be directly injured because of falling or flying debris.

3.2.7 Landslide/Subsidence

Overview

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over steepened slope is the primary reason for a landslide, there are other contributing factors. For example, erosion by rivers, glaciers, or ocean waves can cause rock to fall. Rock and soil slopes may be weakened through saturation by snowmelt or heavy rains, earthquakes can create stresses that make weak slopes fail, and excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or man-made structures that may stress weak slopes to the point of collapse.

Another important consideration is Fluvial Erosion Hazard (FEH). This represents the risk associated with natural stream movements and losses associated with buildings and infrastructure. In some cases, this may be represented by a gradual movement of a stream across a farm field. In other, more extreme instances, homes or other infrastructure may be lost as steep riverbanks or bluffs sluff into the water below.

Land subsidence, according to the USGS, is "a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials." Further, there are three processes that contribute to subsidence: compaction of aquifer systems, drainage and subsequent oxidation of organic soils, and dissolution and collapse of susceptible rocks.

Recent Occurrences

Figure 43 Fluvial Erosion Hazard along the Wabash River near Huntington

The potential for landslides or land subsidence within Huntington County was discussed by the Planning Committee. IndianaMap shows that there are no Karst Sinkhole areas anywhere in the County. To the knowledge of the Planning Committee, there are no active underground mining operations within Huntington County. Additionally, to date, there have not been any landslides or subsidence events reported in Huntington. **Figure 43** shows the FEH corridor near Huntington on Wabash River. The FEH zone appears to be relatively stable and located within the 1% flood event boundaries.

The Committee determined the probability of a landslide or subsidence occurring in Huntington County is "Unlikely". Any event is expected to result in potentially "Negligible" damages. Currently, the Committee feels that the warning time is expected to be less than six hours and similarly, the duration is expected to last less than six hours. These events are highly unpredictable and the risk, although very low according to the Committee, is distributed throughout the county. Therefore, the CPRI values reflect the distributed risk and associated priority for a landslide or subsidence event. A summary is provided in **Table 19**.

Table 19: CPRI for Land subsidence, Landslide and FEH

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Andrews	Unlikely	Negligible	< 6 hours	< 6 hours	Low
City of Huntington	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Markle	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Mount Etna	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Roanoke	Unlikely	Negligible	< 6 hours	< 6 hours	Low
Town of Warren	Unlikely	Negligible	< 6 hours	< 6 hours	Low

Assessing Vulnerability

Although Huntington County has no known presence of Karst geology and is at a low risk of land subsidence or sink holes, the portions of the county are considered at relatively high risk according to the National Risk Index. The risk index considers expected annual loss as well as vulnerabilities by census tract and community resilience. The Risk Index for Landslide in Huntington County is shown in **Figure 44**. The Risk index varies from Relatively low on the northern and southern portions of the county with the majority of the central portion of the county having a relatively moderate risk. The only census tract considered to be relatively high is the southern portion of the City of Huntington. This rating is related to the social vulnerability of the community living in the area. The planning committee rated the Landslide, Land Subsidence and Fluvial Erosion Hazard as "Unlikely" according to the Planning Committee with "Negligible" severity.

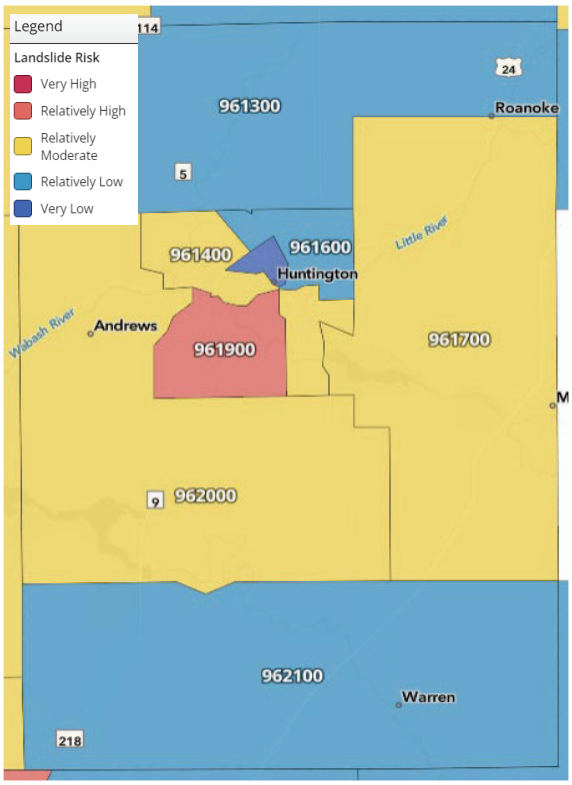


Figure 44 Risk Index for Landslide in Huntington County

Within Huntington County, direct and indirect effects may include:

Direct Effects:

- Damages to infrastructure (power lines, roads, bridges)
- Damages to individual properties (homes, cars)
- Loss of cropland immediately adjacent to the rivers

Indirect Effects:

- Increased response time for emergency vehicles
- Losses associated with affected land (crop loss)
- Potential contamination of groundwater resources
- Loss of business due to roadway access and power loss.

Estimating Potential Losses

According to the National Risk Index, expected annual losses have been calculated for the areas in Huntington County which are at risk of damage including temporary or permanent loss of function. The greatest factor involving the higher risk rating is the potential for larger segments of the population to be exposed to the potential hazard.

In addition, areas where FEH meander belt widths (FEH Zones) have been identified, may be at a higher risk of property damage caused by such events. To prepare a community based basic "what-if" scenario, the Indiana FEH GIS layers were overlaid onto parcel data provided by the County. **Table 20** identifies the number of structures and potential damage within the FEH areas.

Table 20: Summary of Parcels and Essential Structures in the FEH Zone

Community	Potential Damages	
	# Parcels	# Essential Facilities
Huntington County	120	0
City of Huntington	1	4
Town of Andrews	13	0
Town of Markle	0	0
Town of Mount Etna	0	0
Town of Roanoke	3	1
Town of Warren	1	0

Future Considerations

As the populations of the communities in Huntington County grow, it can be anticipated that the number of critical and non-critical structures will also increase. To reduce the vulnerability for damages resulting from a landslide or land subsidence, FEH area GIS layers along with the floodplain information should be integrated into the building permit or approval process. In recent years, no significant development has occurred within these areas of Huntington County. However, depending on the location, any development may increase the vulnerability to this hazard.

As future growth takes place, the indirect effects resulting from a landslide or land subsidence event can cause challenges for the community if transportation routes are damaged, and businesses must close due to access issues and loss of power. Cascading impacts in smaller counties can have long lasting effects on the local economy, community growth, health and welfare.

Relationship to Other Hazards

A landslide, subsidence event or FEH event may be the precursor for other hazards. Depending on the location of the event, material storage containers can become damaged resulting in a spill or release of materials and potentially contaminating groundwater reserves. Dam failures may occur in much the same fashion if located in the potential hazard areas, or resulting from heavy saturation following a rainstorm, heavy snow, or rapid snow melt. FEH may result in flooding in areas previously not impacted by flood due to debris clogging drainage ways and loss of earthen berms near the waterways.

Similarly, these types of events may be caused by hail, thunder, or windstorms and their effects on the soils; an earthquake may release the ground enough to set a slide in motion; or a flood may add

increased soil saturation or weight to at-risk areas increasing the potential for an event and resulting damages.

3.2.8 Tornado

Overview

Tornadoes are defined as violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground. However, the funnel cloud may reach the ground very quickly – becoming a tornado. If there is debris lifted and blown around by the "funnel cloud," then it has reached the ground and is a tornado.

Figure 45 Funnel Cloud During Lightning Storm at Night

A tornado is generated when conditions in a strong cell are produced that exhibit a wall of cool air that overrides a layer of warm air. The underlying layer of warm air rapidly rises, while the layer of cool air drops – sparking the swirling action. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally from April through June in Indiana, although tornadoes can occur at any time of year. Tornadoes tend to occur in the afternoons and evenings; over 80 percent of all tornados strike between 3:00 pm and 9:00 pm but can occur at any time of day or night as shown in **Figure 45.** Tornadoes occur most frequently in the United States east of the Rocky Mountains. In Indiana, tornadoes generally come from the southwest to the northeast and/or from west to east. While most tornadoes (69%) have winds of less than 100 mph, they can be much stronger. Although violent tornadoes (winds greater than 205 mph) account for only 2% of all tornadoes, they cause 70% of all tornado deaths. In 1931, a tornado in Minnesota lifted an 83-ton rail car with 117 passengers and carried it more than 80 feet. In another instance, a tornado in Oklahoma carried a motel sign 30 miles and dropped it in Arkansas. In 1975, a Mississippi tornado carried a home freezer more than a mile. Tornado debris can be clearly seen in **Figure 46.** According to an article in the New York Times, researchers say that in recent years tornadoes seem to be occurring in greater "clusters," and that the region known as tornado alley in the Great Plains, where most tornadoes occur, appears to be shifting eastward. This shift brings greater numbers and more intense tornadic storms to Indiana. The actual number of tornadoes nationwide appears to remain constant near 1,200, but tornadoes are occurring more frequently in traditionally "quiet" cooler months.

Figure 46 Debris Flying as Tornado Destroys Apartments under Construction

Recent Occurrences

The classification of tornadoes utilizes the Enhanced Fujita Scale of tornado intensity and damage. Tornado intensity ranges from low intensity (EF0) tornadoes with effective wind speeds of 65-85 mph to high intensity (EF5+) tornadoes with effective wind speeds

of 200+ mph. (**Table 21**) According to the NCDC, Huntington County experienced 0 tornados between January 1, 2018, and December 31, 2023.

Table 21: Enhanced Fujita Scale for Tornados

EF-Scale	Windspeed, mph	Character of Damage	Relative Frequency	Typical Damages
EF0	65-85	Light damage	29%	Shallow rooted trees blown over; damage to roofs, gutters, siding
EF1	86-110	Moderate damage	40%	Mobile homes overturned, roofs stripped, windows broken
EF2	111-135	Considerable damage	24%	Large trees snapped, light-object missiles generated, cars lifted
EF3	136-165	Severe damage	6%	Severe damages to large buildings, trains overturned
EF4	166-200	Devastating damage	2%	Whole houses destroyed; cars thrown
EF5	200+	Incredible damage	<1%	High-rise buildings significantly damaged, strong framed homes blown away

The Committee estimated the probability of a tornado occurring in Huntington County would be "Possible" and the magnitude and severity of such an event to be "Limited" to "Significant". The overall risk index is "Elevated" throughout the county. As with many hazardous events, the Committee anticipated a short warning time of typically less than six hours, and a short duration, also less than six. The summary is shown in **Table 22.**

Table 22: CPRI for Tornado

	Probability	Magnitude / Severity	Warning Time	Duration	CPRI
Huntington County	Possible	Limited	< 6 hours	< 6 hours	Elevated
Town of Andrews	Possible	Limited	< 6 hours	< 6 hours	Elevated
City of Huntington	Possible	Significant	< 6 hours	< 6 hours	Elevated
Town of Markle	Possible	Limited	< 6 hours	< 6 hours	Elevated
Town of Mount Etna	Possible	Limited	< 6 hours	< 6 hours	Elevated
Town of Roanoke	Possible	Significant	< 6 hours	< 6 hours	Elevated
Town of Warren	Possible	Significant	< 6 hours	< 6 hours	Elevated

The Indiana State Climate Office estimates that throughout Indiana, there is an average of 20 tornado touchdowns per year. Based on the number of tornado touchdowns previously reported through the NCDC and local weather agencies, the Committee determined the general probability of a future tornado occurring in Huntington County is "Possible" (within the next five years).

Assessing Vulnerability

As the path of a tornado is not pre-defined, it is difficult to isolate specific critical infrastructure and non-critical structures, or areas of Huntington County that would be vulnerable to a tornado. Direct and indirect effects from a tornado may include:

Direct Effects:

- Increase damage to older construction including residential and business structures, mobile homes, and accessory structures (pole barns, silos, sheds, etc.)
- Damage to structures in the immediate pathway.(businesses, residences, warehouses, etc.)

- Loss of alternative housing stock nearby.
- Damages to above ground utility lines and structures

Indirect Effects:

- Loss of revenue for affected businesses.
- Expenses related to community clean-up and debris removal from public rights of way and public facilities.
- Inability for property owners to work while addressing damages from the tornado and debris removal from high winds.
- Affected business owners may experience loss of revenue if they are unable to continue operations following the event. Similarly, if a business is affected and unable to operate, employees may experience a loss of wages during the period of recovery.

Estimating Potential Losses

Due to the unpredictability of this hazard, all critical and non-critical structures within the county are at risk of future damage or loss of function. Estimates of potential physical losses were determined through a hypothetical exercise where an EF2 intensity tornado traveled through portions of the county and the communities. This is intended to present a "what-if" scenario of a tornado incident and associated damages. Damage estimates were derived by assuming that 25% of all structures in the path of the tornado would be completely destroyed, 35% of the structures would be 50% damaged, and 40% of the structures would sustain 25% damage. These estimations were also determined utilizing three wind speed zones based on distance from the tornado path. Zone 1 is nearest the center of the tornado path, while Zone 3 is the farthest from the path and with a theoretically lower wind speed. **Table 23** provides summary data for the hypothetical tornado, which is identified on **Exhibit 3**.

Table 23: Summary of Hypothetical Tornado Damages

	Zone 1		Zone 2		Zone 3		Total	
	#	$, Million	#	$, Million	#	$, Million	#	$, Million
Huntington County	68	$10.30	28	$2.97	38	$4.74	134	18.01
City of Huntington	398	$43.92	315	$33.33	302	$31.18	1,015	108.43
Town of Roanoke	149	$15.75	66	$6.66	79	$7.27	294	29.68
Totals	615	$69.97	409	$42.96	419	$43.19	1,443	$1,443

Utilizing the same GIS information and process, critical infrastructure within each of the hypothetical tornado zones are included in **Table 24.** These buildings are included in the above table showing the number of structures and damage estimate information.

Table 24: Critical Infrastructure within Hypothetical Tornado

Community	Zone 1	Zone 2	Zone 3
Huntington County	Indiana Michigan Power Sorenson Substation	Charity Baptist Church	Pleasant Grove UMC
City of Huntington	New Life Fellowship Church, Huntington City Hall, Huntington County Courthouse, Bike Depot, River Greenway, Huntington	First Baptist Church of Huntington, Trinity United Methodist Church, Huntington City/Township Library, Downtown Dental,	Huntington Church of the brethren,

Community	Zone 1	Zone 2	Zone 3
	Police Dept., LaFontaine Center, 2 substations, Huntington Co-N15170, Bendix Commercial Vehicle Systems, Incipio Devices,	Elmwood Park, Huntington Post Office, Huntington Aluminum Inc.	
Town of Roanoke	The Angel Orchard Home Daycare, Roanoke Vol. Fire Dept., Roanoke Town Hall, Roanoke Library, Roanoke Town Marshall, Roanoke Elementary School	Roanoke Town Court, Roanoke Town Utilities, Roanoke Post Office	Christ's UMC, Roanoke United Methodist Childcare, Lassus Brothers Oil Station #34

Future Considerations

The communities of Huntington County host numerous events each year in addition to the regular tourist attractions and outdoor recreation opportunities which draw thousands of guests. Due to this, it is imperative that the EMA place continued importance on the need to maintain their outdoor warning siren coverage and/or support alternative notification methods for people who may not be tuned in to local media. Because of the dispersed population concentrations, coverage is limited to the more densely populated portions of the county. The existing siren locations are identified in **Figure 47.**

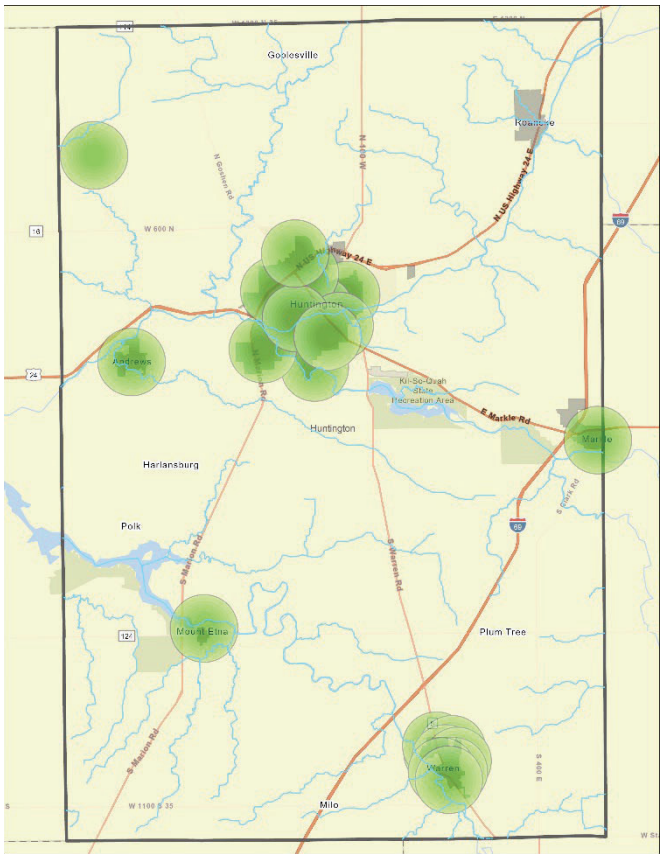


Figure 47 Siren Locations in Huntington County

While it can be anticipated that new construction associated with development may be stronger than older or existing construction, existing older structures, barns, pole buildings, silos and mobile homes remain threatened by tornados. The unincorporated portions of Huntington County will remain vulnerable, especially where the outdoor warning siren coverage is not present. It is impossible to predict the path of a tornado and therefore all current and future development will continue to be at risk for damage. Risks to the citizens of Huntington County may be lessened through participation in mass notification programs, use of weather radios, and turning on the emergency alert feature on cell phones. Having multiple means of warning citizens, businesses and visitors of incoming weather events is critical to continued economic growth and well-being of the communities and the county.

Relationship to Other Hazards

Tornadoes may result in a hazardous materials incident. Material storage containers can become damaged by high winds and debris can result in a spill or release of materials. As wind speeds increase, the potential for damage to above ground storage containers also increases. Tankers and other transportation vehicles carrying hazardous materials are also at an increased risk while on the road or rail.

Tornadoes may also result in a dam failure as the increased wind speeds, and debris caused by the tornado, may directly impact the dam, or cause indirect damage by clogging outlet structures and/or emergency spillways. In addition, tornadoes may lead to structural fires as the destruction path is sometimes long and broad, leading to an increased number of potentially damaged homes, exposed power lines, gas leaks and substantial amounts of debris.

3.2.9 Winter Storm and Ice

Overview

A winter storm can range from moderate snow over a few hours to blizzard conditions with high winds, ice storms, freezing rain or sleet, heavy snowfall with blinding wind-driven snow, and extremely cold temperatures that can last for several days. Some winter storms may be large enough to affect several states while others may affect only a single community. Winter storms are typically accompanied by cold temperatures and blowing snow, which can severely reduce visibility. A winter storm is defined as one that drops four or more inches of snow during a 12-hour period, or six or more inches during a 24-hour span. An ice storm occurs when freezing rain falls from clouds and freezes immediately on contact with a variety of surfaces. All winter storms make driving and walking extremely hazardous. The aftermath of a winter storm can affect a community or region for days, weeks, and even months.

Figure 49 Ice Covered Powerlines

Storm effects such as extreme cold, flooding, and snow and ice accumulation can cause hazardous conditions and hidden problems for people in the affected area. **Figure 48** shows the added weight on trees and ice coated powerlines. People can become stranded on the road or trapped at home, without utilities or other services, including food, water, and fuel supplies. The conditions may overwhelm the capabilities of a local jurisdiction. Winter storms are considered deceptive killers as they may indirectly cause transportation accidents, and injury and death resulting from exhaustion/overexertion, hypothermia and frostbite from wind chill, and asphyxiation. House fires occur more frequently in the winter due to the use of alternative heat sources, such as space heaters, and lack of proper safety precautions.

Wind chill is a calculation of how cold it feels outside when the effects of temperature and wind speed are combined. On November 1, 2001, the NWS implemented a replacement Wind Chill Temperature (WCT) index for the 2001/2002 winter season. The reason for the change was to improve upon the current WCT Index, which was based on the 1945 Siple and Passel Index.

A winter storm watch indicates that severe winter weather may affect your area. A winter storm warning indicates that severe winter weather conditions are on the way. In the event of a blizzard, a winter storm warning will be issued and include the details of the blizzard - that large amount of falling or blowing snow and sustained winds of at least 35 mph are expected for several hours. Being in Northern Indiana, winter storms are somewhat common in Huntington

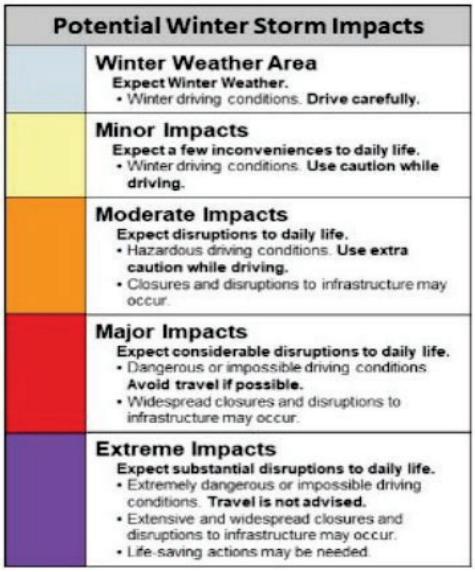


Figure 48 Winter Storm Impacts

County and the surrounding region. Such conditions can result in substantial personal and property damage, even death. The National Weather Service recently (October 15, 2018) consolidated their watch and warning products. In doing so, blizzards and lake effect snows are no longer separate watches and warnings, but instead are detailed as a part of winter storm watches and warnings. A large number of winter storm products are available on the internet from the National Weather Service. One is The Winter Storm Severity Index (WSSI). When a storm is forecast, the NWS can help communities better understand the potential impacts of storm using WSSI. **Figure 49** shows the description of the WSSI impacts. More detailed information with regards to the timing of the storms, etc., is provided as the event gets closer to the forecast area.

Recent Occurrences

Since January 1, 2018 the NCDC has recorded 12 winter weather events, 0 ice storms, 1 heavy snow event, and 5 winter storms. NCDC reports indicated no property damage, no additional crop damage and no injuries, or deaths associated with any of the events. Many narrative descriptions indicated poor travel conditions, lots of power outages and debris associated with the winter weather events.

The probability, magnitude, warning times, and duration of a snowstorm or ice storm causing disruption to residents and businesses in Huntington County, as determined by the Planning Committee, is expected to be mostly consistent throughout the county and communities. It is "Highly Likely" that this type of hazard will occur in the area and will typically affect the entire county, and possibly several surrounding counties at one time, resulting in primarily "Limited" to "Significant" damage. The typical warning time for severe temperatures or several inches of snow associated with a winter storm is usually greater than 24 hours while the duration of the incident is anticipated to be less than one week. A summary is shown in **Table 25.**

Table 25: CPRI Summary for Winter Storms and Ice

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Highly Likely	Significant	> 24 hours	< 1 week	Severe
Town of Andrews	Highly Likely	Limited	> 24 hours	< 1 week	Elevated
City of Huntington	Highly Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Markle	Highly Likely	Significant	> 24 hours	< 1 week	Severe
Town of Mount Etna	Highly Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Roanoke	Highly Likely	Limited	> 24 hours	< 1 week	Elevated
Town of Warren	Highly Likely	Significant	> 24 hours	< 1 week	Severe

The Planning Committee determined that the probability for a snowstorm or ice storm to occur in Huntington County and the communities within is "Highly Likely" or may occur within the calendar year. Based on historical data and the experience of the Planning Committee, snowstorms have become less common in Huntington County with the changing climate, however, ice storms bring more extensive challenges to the communities. Actions have been taken to mitigate many impacts from snow and ice storms. Lake effect snowstorms can be less predictable, depositing greater amounts of snow in a contiguous county and lesser amounts in Huntington County or the opposite. The Committee considered only the larger, more detrimental events for this effort.

Assessing Vulnerability

A snowstorm typically affects a large regional area with potential for physical, economic, and/or social losses. Direct and indirect effects of a snowstorm or ice storm within Huntington County may include:

Direct Effects:

- A higher number of businesses rely on the outside workforce and may experience loss of production as employees may not be able to get to work. The high number of residents traveling to other areas for work results in loss of income due to the inability to reach their normal worksites.
- Rural (County) roads may impassable
- Expenses related to snow removal or brine/sand applications.
- Weight of ice and wet snow impacts older structures roofs as well as powerlines.
- Large ice and snow events interrupt economic activity within the community.

Indirect Effects:

- Loss of revenue as businesses are closed.
- Increased emergency response times based on safety of roads.
- Loss of income if workers are unable to get to their place of employment.
- Delayed impacts due to supply chain disruptions – products not received or shipped on time cause lost wages and revenues.
- Cancellation of special events and reduced tourist activities impact the local economy.

Figure 50 Travel Impacted During Snowstorm

Estimating Potential Losses

Given the nature and complexity of a regional hazard such as a snowstorm, it is difficult to quantify potential losses to property and infrastructure. As a result, all critical and non-critical structures and infrastructure are at risk from snowstorm and ice storm incidents.

For planning purposes, information collected in snowstorms impacting other communities around the nation is also useful in assessing the potential social, physical, and economic impact that a winter storm could have on communities. For example, a March 2003 snowstorm in Denver, Colorado dropped approximately 31 inches of snow and caused an estimated $34M in total damage. In addition, a February 2003 winter storm dropped an estimated 15-20 inches of snow in parts of Ohio. The Federal and Ohio Emergency Management Agencies and U.S. Small Business Administration surveyed damaged areas and issued a preliminary assessment of $17M in disaster related costs. These costs included snow and debris removal, emergency loss prevention measures, and public utilities repair. The agencies found over 300 homes and businesses either damaged or destroyed in six counties. Snowstorms and blizzards also make road travel difficult and dangerous, as seen in **Figure 50**.

Looking a bit closer to home, In December 2008, Allen County had a wintry combination of freezing rains, snow and ice. This storm was the largest disaster for Indiana Michigan Power with 110,000

Allen County customers without power. One thousand six hundred (1,600) additional crew members were brought in to restore electrical service to the county. According to the Journal Gazette $10 – $12 million was spent to clean up the debris, make repairs and labor costs for this event.

While the above examples indicate the wide-ranging and large-scale impact that winter storms can have on a community or region, winter storms generally tend to result in less direct economic impacts than many other natural hazards. According to the Workshop on the Social and Economic Impacts of Weather, which was sponsored by the U.S. Weather Research Program, the American Meteorological Society, the White House Subcommittee on Natural Disaster Relief, and others, winter storms resulted in an average of 47 deaths and more than $1B in economic losses per year between 1988 and 1995. However, these totals account for only 3% of the total weather-related economic loss and only 9% of fatalities associated with all weather-related hazards over the same period.

Future Considerations

As populations increase and communities continue to grow, the need to respond to snowstorms or ice storms will remain an important municipal effort. As new construction or re-development occurs, especially new or existing critical infrastructure, it is important to ensure that these new structures are equipped to deal with the potential risks associated with this hazard. Those may include lengthy power outages and potentially impassable transportation routes, making it difficult to obtain supplies or for passage of response vehicles. These hazard events will typically affect the entire county, perhaps multiple counties, and therefore all development, current and future, will be at risk for damage associated with snow and ice storms. In addition, there will be a need for additional warming shelters for the underserved populations to take refuge and get warm and safe respite for stranded commuters on their way to or from work. This not only includes daytime available spaces but also overnight accommodation as the winter storms are often accompanied by very cold temperatures and wind chills.

Winter storms can also result in substantial indirect costs. Increased emergency response times, loss of work or the inability to get to work, as well as business interruption, are possible indirect effects of a winter storm. According to a report by the National Center for Environmental Predictions, the cold and snowy winter in late 1977 and early 1978, which impacted several heavily populated regions of the country, was partially responsible for reducing the nation's Gross Domestic Product (GDP) from an estimated growth rate of between 6% and 7% during the first three quarters of 1977 to approximately -1% in the last quarter of 1977 and 3% during the first quarter of 1978.

Figure 51 Flooding Caused by Snow Melt

Relationship to Other Hazards

Winter storms and ice storms can lead to flooding as the precipitation melts and enters local receiving waters. This increased volume of water on already saturated, or still frozen ground can quickly result in flood-related damage to structures and properties (**Figure 51)** as

well as within the stream or river channel. Huntington County has an increased risk of flooding following heavy precipitation events. The increased flooding may then lead to a dam failure within the same area, further exacerbating the damage.

Hazardous materials incidents may be caused by poor road conditions during winter storms or ice storms. Many hazardous materials are transported by rail or by tanker over highways and interstates. In the more rural areas of Huntington County, or where open areas are more susceptible to snow drifts on roads, the possibility of a traffic related hazardous materials incident may increase due to road obstruction and lack of visibility.

Power outages and other infrastructure failures may also occur during a winter storm. Weight from snow and ice accumulations can directly or indirectly cause power lines to fail. During extreme cold temperatures, power outages may prove deadly for certain populations such as the homeless, the elderly or ill. Power outages in the winter are especially dangerous as families try to generate heat using alternative heat sources. Alternative heating sources may not be safely used or may be placed too close to combustible materials resulting in fires and burn injuries or death.

3.2.10 Dam and Levee Failure

Overview

A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is a collapse, breach, or other failure resulting in downstream flooding.

A dam impounds water in the upstream area, referred to as the reservoir. The amount of water impounded is measured in acre-feet. An acre-foot is the volume of water that covers an acre of land to a depth of one foot. As a function of upstream topography, even a small dam may impound or detain many acre-feet of water. Two factors influence the potential severity of a full or partial dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream.

Of the approximately 80,000 dams identified nationwide in the National Inventory of Dams, the majority are privately owned. Each regulated dam is assigned a downstream hazard classification based on the potential loss of life and damage to property should the dam fail. The three classifications are high, significant, and low. With changing demographics and land development in downstream areas, hazard classifications of regulated are updated continually. The following definitions of hazard classification currently apply to dams in Indiana:

- High Hazard Dam: a structure, the failure of which may cause the loss of life and severe damage to homes, industrial and commercial buildings, public utilities, major highways, or railroads.
- Significant Hazard Dam: a structure, the failure of which, may damage isolated homes and highways or cause the temporary interruption of public utility services.
- Low Hazard Dam: a structure, the failure of which, may damage farm buildings, agricultural land, or local roads.

In Indiana, not all dams are regulated. To be regulated by the Indiana Department of Natural Resources (DNR), To be a jurisdictional structure, the dam must meet at least one of the following criteria:

- Have a drainage area above the dam of more than one square mile.
- The dam is 20 feet in height or greater.
- The dam impounds a volume of more than 100 acre-feet of water.

A dam's classification may be changed to a High-hazard classification through a successful petition by a downstream property owner. Federally owned and operated dams are not under Indiana DNR's jurisdiction. Examples of Federally regulated dams include Federal Energy Regulatory Commission (FERC) and US Army Corps of Engineers (USACE) structures. Although regulations are similar, there are additional requirements based on the regulating agency.

A levee is a flood control structure engineered and designed to hold water away from a building. Levees protect buildings from flooding as well as from the force of water, from scour at the foundation, and from impacts of floating debris. Flood protection levees principle causes of levee failure, like those associated with dam failure, include overtopping, surface erosion, internal erosion, and slides within the levee embankment or the foundation walls. Levees are designed to protect against a particular flood level and may be overtopped in a more severe event. When a levee system fails or is overtopped, the result can be catastrophic and often more damaging than if the levee were not there, due to increased elevation differences and water velocity. The water flowing through the breach continues to erode the levee and increases the size of the breach until it is repaired or water levels on the two sides of the levee have equalized. The FEMA and US Army Corps of Engineers

(USACE) remind people living and working behind levees that there is always a residual risk when living or working in a facility located behind a levee. Levees reduce the risk of a flood, but do not completely eliminate that risk.

Recent Occurrences

Within Huntington County, there are 9 structures listed in the DNR dams list. Of the 9 in Huntington County, one is classified as a high hazard dam, two are classified as low hazard dams, one is a significant hazard dams and one is a low hazard lake control structure. The remaining 3 structures listed are low head dams, of which 2 are decommissioned**. Table 26** shows all the structures listed on the National Inventory of Dams (NID). According to local information, there have not been any recent dam failures within Huntington County.

Table 26: Dams in Huntington County

Dam Name	Owner Types	State Regulated Dam	Hazard Potential Classification	IEAP Prepared	Notes
Wahl-Shin-Cah Lake	State	Yes	Low	No	
Huntington College Lake Dam	Private	No	Significant	No	
Timber Lake Dam	Private	No	Low	No	
J. Edward Roush Lake Dam	Federal	No	High	Yes	
Clear Creek Dam	Private	No	Low	No	Decommissioned
Lake Clare - Lake Control Structure	Local Government	No	Low	No	Lake Control Structure
Salamonie River Dam	Private	No	Low	N/A	Low Head Dam - Decommissioned
Little Wabash River Dam	Unknown	No	Low	N/A	Low Head Dam - Decommissioned
Bellville Mill Dam	Private	Yes	Low	N/A	Low Head Dam

According to the National Levee Database (NLD) managed by the USACE, there are no certified levees systems within Huntington County. The Indiana Silver Jackets Team completed a survey of levee like features also known as non-levee embankments. The non-levee embankments are not certified or engineered structures. They are earthen structures which act like levees, however, are not capable of protecting the features behind the structures adequately. In fact, non-levee embankments impose lateral constraints on flood flows, reducing the floodplain storage capacity and increasing the flood velocity. These non-levee embankments can cause stream erosion and downstream flooding. Some farms along the rivers and streams rely on these embankments to keep flood waters out of their fields. **Figure 52** shows the

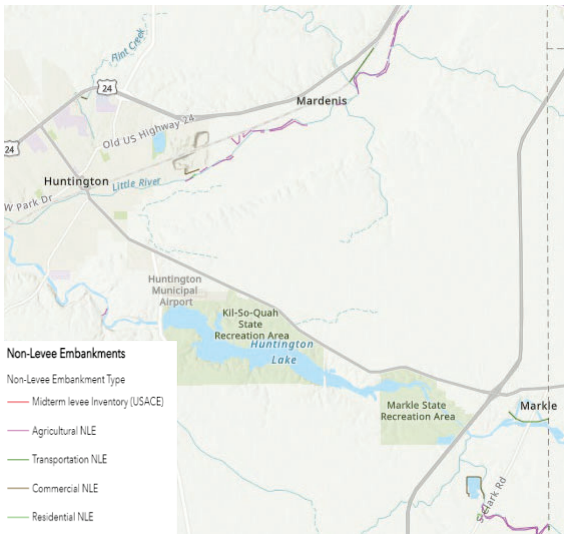


Figure 52 Non-Levee Embankments in Huntington County

location of some of the non-levee embankments in Huntington County.

Based on the information provided to them and their local knowledge, experience, and expertise, the Committee determined the probability of a dam failure is "Unlikely." The magnitude of a dam failure can have "Critical" damages. The warning time is under 6 hours. **Table 27** provides a summary of the Planning Committee's expectations during a dam failure.

Table 27: CPRI Summary for Dam and Levee Failure

	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI
Huntington County	Unlikely	Critical	< 6 hours	< 1 week	Elevated
Town of Andrews	Unlikely	Critical	< 6 hours	< 1 week	Elevated
City of Huntington	Unlikely	Critical	< 6 hours	< 1 week	Elevated
Town of Markle	Unlikely	Critical	< 6 hours	< 1 week	Elevated
Town of Mount Etna	Unlikely	Critical	< 6 hours	< 1 week	Elevated
Town of Roanoke	Unlikely	Critical	< 6 hours	< 1 week	Elevated
Town of Warren	Unlikely	Critical	< 6 hours	< 1 week	Elevated

Assessing Vulnerability

The actual magnitude and extent of damage due to a dam failure depends on the nature of the breach, the volume of water that is released, and the width of the floodplain valley to accommodate the flood wave. Due to the conditions beyond the control of the dam owner or engineer, there may be unforeseen structural problems, natural forces, mistakes in operation, negligence, or vandalism that may cause a structure to fail. The high hazard dam, owned by USACE, has developed an Emergency Action Plans (EAP). **Figure 53** shows the inundation areas during a worst-case scenario breach of the dam under full maximum pool conditions.

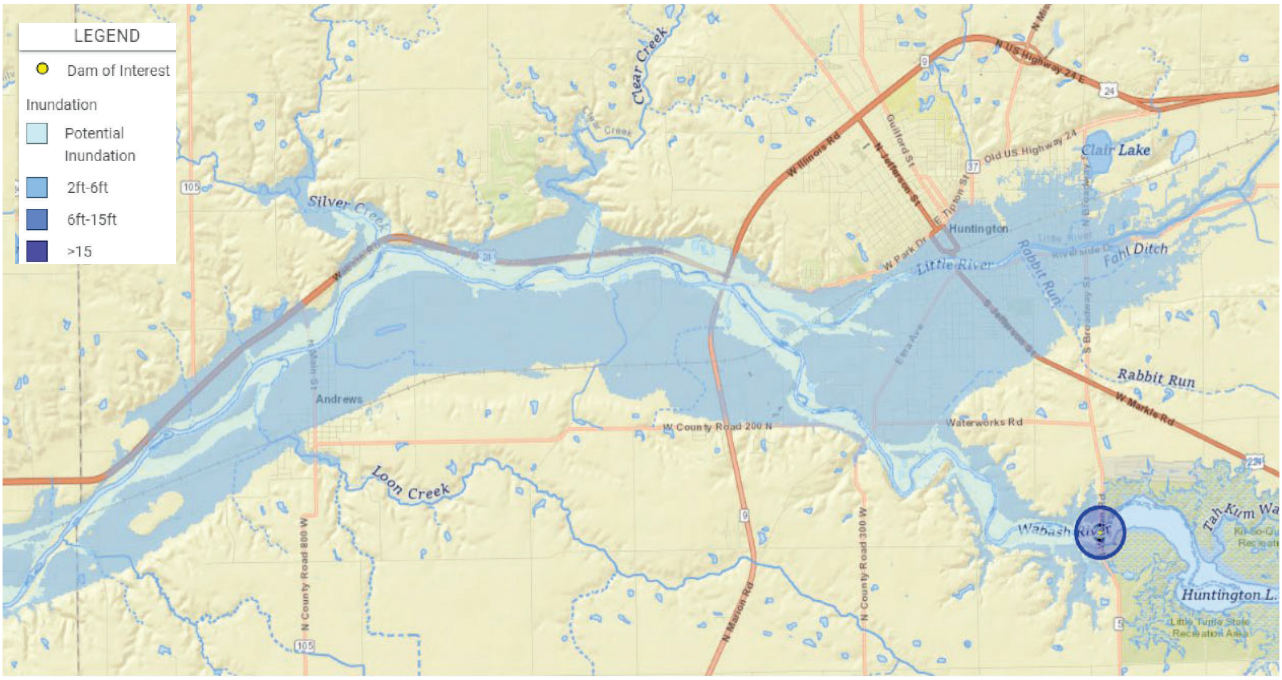


Figure 53 Inundation Map - Worst Case Scenario Breach at J. Edward Roush Dam

Incident and Emergency Action Plans (IEAPs) are now required for all high hazard dams by state law, however, these plans are not mandated for the low hazard structures. Dam owners are, however, encouraged to prepare an IEAP to help identify whom to notify and what actions may need to take place in the event of an incident or emergency event affecting the dam. For the state regulated high hazard dams, the Indiana DNR dam safety webpage shows areas which areas would be inundated during a dam failure.

Within Huntington County, direct and indirect effects from a dam failure may include:

Direct Effects:

- Potential loss of life and severe damage to downstream homes, industrial and commercial buildings, public utilities, major highways, or railroads
- Loss of use of reservoirs for flood control, recreation, and water supply

Indirect Effects:

- Loss of land in the immediate scour area
- Increased response times due to damaged or re-routed transportation routes and/or bridges
- Long lasting economic impacts on the community due to business closures, and relocation of impacted property owners.

Estimating Potential Losses

As of July 1, 2022, the State of Indiana is requiring High Hazard dams to have Incident and Emergency Action Plans (IEAPs) developed. These plans have detailed potential dam failure inundation areas identified along with at-risk structures identified. The actual magnitude and extent of damage depends on the type of dam break, the volume of water that is released, and the width of the floodplain valley to accommodate the dam break flood wave. All dam owners are encouraged to develop an IEAP.

The greatest impact for Huntington County is a breach of the J. Edward Roush Dam, a high hazard dam. The USACE Breach Analysis reviews various scenarios at a variety of times to estimate impacts upon the inundated community. **Figure 54** shows a few of the scenarios and the impacts anticipated.

Consequence Estimates

Scenario	Type	Daytime People at Risk	Nighttime People at Risk	Buildings at Risk	Economic Cost
Maximum High Pool - BREACH	Maximum High Pool Breach	39,047	40,510	17,110	$4,540,685,706
Intermediate High Pool - BREACH	Intermediate High Pool Breach	26,701	28,457	12,703	$2,682,017,213
Normal High Pool - BREACH	Normal High Pool (10% EDP) Breach	230	182	103	$9,508,428

Figure 54 USACE Dam Breach Consequence Estimates

Utilizing GIS maps and orthoimagery, the infrastructure and other features below this dam can be identified. This imagery will show properties that would be isolated due to the inundation of the roadways leading in and out of the area as well as those properties which would be inundated.

Future Considerations

As areas near existing dams continue to grow in population, it can be anticipated that the number of critical and non-critical structures could also increase accordingly. Location of these new facilities should be carefully considered, and precautions should be taken to ensure that schools, medical facilities, municipal buildings, and other critical infrastructure are located outside of the delineated or estimated dam failure inundation areas. Also, flood-free access should be provided for these facilities. Large areas of new development have not yet occurred downstream of the dams in Huntington County. Until such development or re-development downstream of a dam is prohibited, those areas remain vulnerable to losses and damage associated with a failure of that structure.

It is also particularly important to all downstream communities and property owners that dam IEAPs are developed, kept up-to-date, and routinely exercised to ensure the greatest safety to those within the hazard area. Although not mandated, this is a best management practice for Significant and Low Hazard dams as well.

Relationship to Other Hazards

With the potentially large volumes and velocities of water released during a breach, it can be expected that such a failure would lead to flooding and debris flow within the inundation areas downstream of the dam. Nearby bridges and roads are also in danger of being destroyed or damaged due to a dam failure. Bridges may become unstable, and portions of road surfaces may be washed away. Entire roads may be undermined by the forces of the water and debris. Other infrastructure such as utility poles and lines may be damaged as the water and debris flows along. Buried utility pipes may become exposed due to scouring; all of which may lead to utility failures within the area downstream of the dam failure.

Due to flood and debris flow damages, hazardous materials facilities and transportation routes may be damaged resulting in releases. If LP gas tanks are located nearby, they may be torn from their mountings and would become part of the flowing debris as well as leaking their contents from the ruptured service lines.

3.2.11 Hazardous Materials Incident

Overview

Hazardous materials are substances that pose a potential threat to life, health, property, and the environment if they are released. Examples of hazardous materials include corrosives, explosives, flammable materials, radioactive materials, poisons, oxidizers, and dangerous gases. Despite precautions taken to ensure careful handling during manufacture, transport, storage, use, and disposal, accidental releases are bound to occur. These releases create a serious hazard for workers, neighbors, and emergency response personnel. Emergency response to a release may require fire, safety/law enforcement, search and rescue, and hazardous materials response units.

Figure 55 Potentially Hazardous Waste Drums

As materials are transported for treatment, disposal, or transport to another facility, all infrastructure, facilities, and residences near the transportation routes are at an elevated risk of being affected by a hazardous materials release. Often these releases can cause serious harm to Huntington County and its residents if proper and immediate actions are not taken. Most releases are the result of human error or improper storage (Figure *54*), and corrective actions to stabilize these incidents may not always be feasible or practical in nature.

Railways often transport materials that are classified as hazardous and preparations need to be made and exercised for situations such as derailments, train/vehicle crashes, and/or general leaks and spills from transport cars.

Figure 56 Transportation Map - Huntington County

Recent Occurrences

During conversations with Committee members and through information provided by local news outlets, it was noted that numerous small and moderately sized incidents involving manufacturing facilities and transportation routes have occurred since the development of the original MHMP. However, the number of SARA Title III Tier II facilities utilizing, storing, and/or manufacturing chemicals has decreased over the years as facilities reduce the amount hazardous materials on site. Both Tier II and other chemical facilities as well as businesses and industries rely on just in time delivery which results in an increase in the number of delivery vehicles transporting hazardous materials across the county. Vehicular traffic on Interstate 69 carries materials from Port Huron in Michigan, at the Canadian border, southward to Mexico. As segments are being completed south of Indianapolis, traffic is increasing along this international corridor. US 24 crosses Huntington County connecting Minturn Colorado at I-70 with Independence Township at I-75. With two major transportation arteries

through the county, local roadways and state roads are often used to avoid traffic accidents, and slowdowns. The volume of traffic increases the potential for incident. **(**Error! Reference source not found.) Huntington County does have a hazardous materials response capacity and has mutual aid hazardous materials response capabilities in nearby Allen County's Ft. Wayne Fire Department. Huntington County has worked with local industry to augment the response capabilities and training.

According to the Committee, the probability of a hazardous materials release or incident is "Possible" in all areas due to the number transportation routes within and through county. "Negligible" damages are anticipated to result from an incident. The level of damage is dependent upon the location of the event. As with hazards of this nature, a short warning time of less than six hours and a short duration, less than a day_is anticipated in the event of a hazardous materials incident. A summary is shown in **Table 28.**

Table 28: CPRI Summary for Hazardous Materials

	Probability	Magnitude / Severity	Warning Time	Duration	CPRI
Huntington County	Possible	Negligible	< 6 hours	< 1 day	Low
Town of Andrews	Possible	Negligible	< 6 hours	< 1 day	Low
City of Huntington	Possible	Negligible	< 6 hours	< 1 day	Low
Town of Markle	Possible	Negligible	< 6 hours	< 1 day	Low
Town of Mount Etna	Possible	Negligible	< 6 hours	< 1 day	Low
Town of Roanoke	Possible	Negligible	< 6 hours	< 1 day	Low
Town of Warren	Possible	Negligible	< 6 hours	< 1 day	Low

Relatively small hazardous materials incidents have occurred throughout Huntington County in the past and may, according to the Committee, occur again. As the number of hazardous materials producers, users, and transporters increase within or surrounding Huntington County, it can be anticipated that the likelihood of a future incident will also increase. Additionally, as the I-69 corridor segments are joined together, the international shipments will continue to increase, enhancing the potential for accidents.

Assessing Vulnerability

Within Huntington County, direct and indirect effects from a hazardous materials incident may include:

Direct Effects:

- Acute or chronic health issues due to chemical exposure.
- Closure of impacted railroad crossings.
- Possible crop or livestock damage from chemical exposure.
- Damage to infrastructure from leaks, accidents, or recovery operations.
- Expense of decontamination and reconstruction of affected structures.

Indirect Effects:

- Loss of revenue or production while testing, recovery and/or reconstruction occurs.
- Anxiety or stress related to the event.
- Potential evacuation of neighboring structures or facilities.
- Evacuation and/or relocation of homeless persons living in the impacted area.
- Added expenses detouring traffic around incident location.

- Expenses incurred due to response, testing, and cleaning of the affected areas.

Figure 57 Hazardous Materials Incident

While the possibility of an incident occurring may be possible, the vulnerability of Huntington County has been lowered due to the enactment of Superfund Amendments and Reauthorization Act (SARA) Title III national, state, and local requirements. SARA Title III, also known as the Emergency Planning and Community Right to Know Act (EPCRA), establishes requirements for planning and training at all levels of government and industry. EPCRA also establishes provisions for citizens to have access to information related to the type and quantity of hazardous materials being utilized, stored, transported, or released within their communities.

One local result of SARA Title III is the formation of the Local Emergency Planning Committee (LEPC). This committee has the responsibility for preparing and implementing emergency response plans, cataloging Safety Data Sheets (SDS) formerly known as Material Safety Data Sheets (MSDS), creating chemical inventories of local industries and businesses, and reporting materials necessary for compliance.

In Huntington County, facilities are subject to SARA Title III provisions due to the presence of listed hazardous materials in quantities at or above the minimum threshold established by the Act. These facilities are also required to create and distribute emergency plans and facility maps to local emergency responders such as the LEPC, fire departments, and police departments. With this knowledge on hand, emergency responders and other local government officials can be better prepared to plan for an emergency and the response it would require, and to better prevent serious effects to the community involved.

Estimating Potential Losses

In addition, the very nature of these events makes predicting the extent of their damage very difficult. A small-scale spill or release might have a minor impact and would require only minimal response efforts. Another slightly larger incident might result in the disruption of business or traffic patterns, and in this situation, might require active control response measures to contain a spill or release. However, even small, or moderate events could potentially grow large enough that mass evacuations or shelter in place techniques are needed, multiple levels of response are utilized, and additional hazards such as structural fires and/or additional hazardous materials releases (or explosions) may occur. Given the unpredictable nature of hazardous materials incident, an estimate of potential losses was not generated.

Future Considerations

Additional facilities, both critical and non-critical in nature may be affected if a hazardous materials release were to occur along a transportation route. All of the state roads are traveled by carriers of hazardous materials. As businesses and industries increase in the area, the increased use of these routes will increase the number of transportation related incidents.

By restricting development within the known hazardous materials facility buffer zones, future losses associated with a hazardous materials release can be reduced. Critical infrastructure should be especially discouraged from being located within these areas. Further, by restricting construction in

these zones, the number of potentially impacted residents may also be reduced, lowering the risk for social losses, injuries, and potential deaths. Future construction of hazardous materials facilities should be located away from critical infrastructure such as schools, medical facilities, municipal buildings, and daycares. Such construction would likely reduce the risk to highly populated buildings and populations with physical or social, emotional, or behavioral challenges or considerations such as children, elderly, and medically fragile individuals.

Many facilities constructed within close proximity to a hazardous materials facility are similar due to local zoning ordinances. This reduces the risk and vulnerability of some populations. However, there are several facilities and numerous transportation routes located throughout each of the communities making current and future development at risk for losses associated with a hazardous materials release.

Relationship to Other Hazards

Dependent on the nature of the release, conditions may exist where a fire or spark ignites a flammable or explosive substance. As the fire spreads throughout the facility or the area, structural and/or property damage will increase. If the hazardous substances are in enclosed containers such as railroad tank cards, cylinders or other containers, near heat generating events such as a fire, explosion becomes a risk as well. Response times to a hazardous materials incident may be prolonged until all necessary information is collected detailing the type and amount of chemicals potentially involved in the incident. Depending on the nature of the incident, further delays may take place until qualified Hazardous Materials Responders with the appropriate response and monitoring equipment can be transported to the incident location. While this may increase structural losses, it may decrease social losses such as injuries or even deaths.

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3.3 Hazard Summary

For the development of this MHMP, the Committee utilized the CPRI method to prioritize the hazards they felt affected Huntington County. Hazards were assigned values based on the probability or likelihood of occurrence, the magnitude or severity of the incident, as well as warning time and duration of the incident itself. A weighted CPRI was calculated based on the percent of the county's population present in the individual communities. **Table 29** summarizes the CPRI values for the various hazards studied within this MHMP.

Table 29: All CPRI Scores Combined

Type of Hazard	List of Hazards	Weighted Average CPRI
Natural	Drought	
	Earthquake	
	Extreme Temperatures	
	Fire/Wildfire	
	Flood – Flash	
	Flood – Riverine	
	Hail/Thunder/Windstorm	
	Landslide/Subsidence	
	Tornado	
	Winter Storm/Ice	
Technological	Dam & Levee Failure	
	Hazardous Materials Incident	

It is important to understand the cause-and-effect relationship between the hazards selected by the Committee. **Table 30** can be utilized to identify those relationships. For example, a winter storm (along the side of the table) can result in a flood (along the top of the table). In a similar fashion, a hazardous materials incident (along the top of the table) can be caused by an earthquake; flood; tornado; or a winter storm or ice storm (along the side of the table).

Table 30: Hazard Reference Table

EFFECT → / CAUSE ↓	Drought	Earthquake	Extreme Temperature	Fires and Wildfire	Flood	Hailstorm/ Thunderstorm/ Windstorm	Landslide / Subsidence	Tornado	Winter Storm / Ice	Dam & Levee Failure	Hazardous Materials
Drought				X							
Earthquake				X			X			X	X
Extreme Temperature											X
Fires and Wildfire											X
Flood							X			X	X
Hailstorm/ Thunderstorm / Windstorm				X	X		X			X	X
Landslide / Subsidence/ FEH					X						X
Tornado				X						X	X
Winter Storm/ Ice					X					X	X
Dam & Levee Failure					X		X				X
Hazardous Materials				X							

As a method of better identifying the potential relationships between hazards, the community exhibits can be referenced to indicate the proximity of one or more known hazard areas such as the delineated floodplains and the locations of EHS facilities. For this reason, many of the communities in Huntington County may be impacted by more than one hazard at a time, depending on certain conditions. It can be anticipated that if a flood were to occur within these areas, there would be a potentially increased risk of a facility experiencing a hazardous materials incident. These areas may also be at a greater risk of a dam or non-levee embankment failure.

Future development in areas where multiple known hazard areas (dam failure inundation areas, floodplains and surrounding hazardous materials facilities) overlap should undergo careful design, review, and construction protocol to reduce the risk of social, physical, and economic losses due to a hazard incident. While it may certainly be difficult, critical infrastructure should not be constructed within these regions.

4.0 MITIGATION GOALS AND PRACTICES

This section identifies the overall goal for the development and implementation of the Huntington County MHMP. A summary of existing and proposed mitigation practices discussed by the Committee is also provided.

4.1 MITIGATION GOAL

REQUIREMENT §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.

The Committee reviewed the mitigation goals as outlined within the 2018 Huntington County MHMP and determined that the goals remain valid and effective. In summary, the overall goal of the Huntington County MHMP is to reduce the social, physical, and economic losses associated with hazard incidents through emergency services, natural resource protection, prevention, property protection, public information, and structural control mitigation practices.

4.2 MITIGATION PRACTICES

REQUIREMENT §201.6(c)(3)(ii):

[The mitigation strategy shall include a] section that identifies and analyzed 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.

REQUIREMENT §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.

In 2005, the Multi-Hazard Mitigation Council conducted a study about the benefits of hazard mitigation. This study examined grants over a 10-year period (1993-2003) aimed at reducing future damages from earthquakes, wind, and flood. It found that mitigation efforts were cost-effective at reducing future losses; resulted in significant benefits to society; and represented significant potential savings to the federal treasury in terms of reduced hazard-related expenditures. This study found that every $1 spent on mitigation efforts resulted in an average of $4 savings for the community. The study also found that FEMA mitigation grants are cost-effective since they often lead to additional non-federally funded mitigation activities and have the greatest benefits in communities that have institutionalized hazard mitigation programs.

A more recent (2017) study by the National Institute of Building Sciences, reviewed over 20 years of federally funded mitigation grants, not only from FEMA but also from the US Economic Development Administration (EDA) and the US Department of Housing and Urban Development (HUD). From this broadened review, it has been determined that for every $1 spent on mitigation, $6 is saved on disaster costs. In addition, by designing and construction buildings which exceed select items in the 2015 International Code, $4 can be saved for every $1 invested in those changes.

Six primary mitigation practices defined by FEMA are:

- **Emergency Services** – measures that protect people during and after a hazard.
- **Natural Resource Protection** – opportunities to preserve and restore natural areas and their function to reduce the impact of hazards.
- **Prevention** – measures that are designed to keep the problem from occurring or getting worse.
- **Property Protection** – measures that are used to modify buildings subject to hazard damage rather than to keep the hazard away.
- **Public Information** – those activities that advise property owners, potential property owners, and visitors about the hazards, ways to protect themselves and their property from the hazards.
- **Structural Control** – physical measures used to prevent hazards from reaching a property.

4.2.1 Existing Mitigation Practices

As part of this planning effort, Committee members were forwarded a copy of the prior MHMP's mitigation actions. Team members reviewed those actions and were asked to consider any and all other mitigation actions based on the hazards discussed in meeting #1. At the second planning team meeting, the Committee discussed the strengths and weaknesses of existing mitigation practices and made recommendations for improvements, as well as suggested new practices. The committee also examined practices employed by neighboring communities assessing the viability of those actions within Huntington County. The following is a summary of existing hazard mitigation practices within Huntington County. Mitigation measures that were included in the 2018 Huntington County MHMP are noted as such. A list of the former mitigation actions included in the 2018 MHMP and their status may be found in Appendix 12.

Emergency Services

- Three stream gages are utilized for flood monitoring, forecasting, and flood warnings for the various streams in the county.
- Training and table-top exercises are conducted by the LEPC and include response agencies such as police, fire, and local EMS agencies.
- The county has outdoor warning sirens located to cover all areas where there are concentrations of people (cities towns and census designated places) and maintains them in operational condition. The sirens are operated and are regularly tested using a centralized system.

Natural Resource Protection

- Nine homes were acquired in the Little Wabash River floodplain.
- Current facility maps and response plans are on file for all Tier II HazMat facilities.

Prevention

- Huntington County LEPC provides training regarding the proper storage, transport, and disposal of hazardous materials.
- Information related to natural hazards has been incorporated into plans and guidance materials to better guide future growth and development.
- The county is using the FEMA RAPT tool to identify areas of special needs populations within the county.

Property Protection

- Drainage system maintenance, including repair and replacement of culverts, occurs routinely throughout the county.
- A countywide flood response plan was developed and implemented in 2019.
- Reduced the frequency of nuisance flooding through the removal of the low head dam in Huntington.
- Critical facilities have been moved to Victory Noll Hill.

Public Information

- Outreach materials and hazard preparedness materials are routinely provided online, within offices and agencies in Huntington County, at large public events, speaking opportunities within schools, etc.*)*
- The EMA and response agencies utilize websites and social media to convey messages to the public prior to, during and following hazardous events.
- Huntington County communities utilize applications and social media pages to keep the community members informed.
- The EMA presented at the Huntington University Emergency Management Program.
- The EMA staff worked with local Boy Scout Troops to help them earn their emergency management badges.

Structural Control

- County drainage ditches are cleared and are maintained to prevent localized flooding, increased erosion, and material deposition because of rainfall or snowmelt.
- Utilities throughout the county perform routine tree canopy maintenance along rights of way to reduce damages from trees to electrical lines as well as nearby structures.
- Utilities have been burying lines in new developments and new construction to reduce the impact of hazards.

4.2.2 Proposed Mitigation Practices

After reviewing existing mitigation practices, the Committee reviewed mitigation ideas for each of the hazards studied and identified which of these they felt best met their needs as a community according to selected social, technical, administrative, political, and legal criteria. The following identifies the key considerations for each evaluation criteria:

- **Social** – mitigation projects will have community acceptance, they are compatible with present and future community values, and do not adversely affect one segment of the population.
- **Technical** – mitigation projects will be technically feasible, reduce losses in the long-term, and will not create more problems than they solve.
- **Administrative** – mitigation projects may require additional staff time, alternative sources of funding, and have some maintenance requirements.
- **Political** – mitigation projects will have political and public support.
- **Legal** – mitigation projects will be implemented through the laws, ordinances, and resolutions that are in place.
- **Economic** – mitigation projects can be funded in current or upcoming budget cycles.

- **Environmental** – mitigation projects may have negative consequences on environmental assets such as wetlands, threatened or endangered species, or other protected natural resources.

Table 31 lists a summary of all proposed mitigation practices identified for all hazards, as well as information on the local status, local priority, benefit-cost ratio, project location, responsible entities, and potential funding sources, associated with each proposed practice. The proposed mitigation practices are listed in order of importance to Huntington County for implementation. Projects identified by the Committee to be of "high" local priority may be implemented within five years from final Plan adoption. Projects identified to be of "moderate" local priority may be implemented within 5-10 years from final Plan adoption, and projects identified by the Committee to be of "low" local priority may be implemented within 10+ years from final Plan adoptions. However, depending on availability of funding, some proposed mitigation projects may take longer to implement.

As part of the process to identify potential mitigation projects, the Planning Committee weighed the benefit derived from each mitigation practice against the estimated cost of that practice. This basic benefit-cost ratio was based on experience and professional judgement and was utilized to identify the mitigation practices as having a high, moderate, or low benefit-cost ratio. Preparing detailed benefit-cost ratios was beyond the scope of this planning effort and the intent of the MHMP.

The update of this MHMP is a necessary step of a multi-step process to implement programs, policies, and projects to mitigate the effect of hazards in Huntington County. The intent of this planning effort was to identify the hazards and the extent to which they affect Huntington County and to determine what type of mitigation strategies or practices may be undertaken to mitigate these hazards. A FEMA-approved MHMP is required to apply for and/or receive project grants under the BRIC, HMGP, and FMA. Although this MHMP meets the requirements of DMA 2000 and eligibility requirements of these grant programs additional detailed studies may need to be completed prior to applying for these grants. **Section 5.0** of this plan includes an implementation plan for all high priority mitigation practices identified by the Committee.

The CRS program credits NFIP communities a maximum of 97 points for setting goals to reduce the impact of flooding and other known natural hazards (2 points); identifying mitigation projects that include activities for prevention, property protection, natural resource protection, emergency services, structural control projects, and public information (up to 95 points).

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Table 31: Proposed Mitigation Measures

Mitigation Practice	Mitigation Strategy	Hazard Addressed	Lifeline Addressed	Status	Priority	Benefit-Cost Ratio	Responsible Entity	Funding Source
Emergency Preparedness and Warning 1. Develop a database of special needs populations (2018 measure)	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☒ Public Information ☐ Structural Control	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☒ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1 **Proposed Enhancements –** 1. Encourage participation in the development of a database or listing of special needs / medically fragile households where additional assistance may be needed during disasters.	High # 1,	High to Moderate	EMA 911/ Communication Center Township, City, and Town Fire Chiefs	General Budget Community Foundation Grants Special Interest Groups/ Fraternal Organizations
Power Back Up Generators 1. Procure back-up generators for critical facilities (2018 measure)	☒ Emergency Services ☐ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☐ Public Information ☐ Structural Control	☐ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☒ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1. Most shelters and government facilities now have generators. **Proposed Enhancements –** 1. Identify any public and private critical facilities that do not have generator power back up and encourage the acquisition and installation of a generator to serve all the facility's needs during a disaster event.	High	Moderate	EMA County Health Dept.	FEMA BRIC Grants State Revolving Loan Funds General Budget Donations
Stormwater 1. Educate community leadership as well as planning and zoning boards about the importance of storm water detention and compensatory storage and the need to include both in new projects such as sub-division plats, etc. 2. Determine the viability of implementing storm water separation program requirements proactively. Prioritize community efforts and seek funding to implement priorities.	☐ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☐ Public Information ☒ Structural Control	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1. **Proposed Enhancements –** 1. Educate community leadership as well as planning and zoning boards about the importance of storm water detention and compensatory storage and the need to include both in new projects such as sub-division plats, etc. 2. Determine the viability of implementing storm water separation program requirements proactively. Prioritize community efforts and seek funding to implement priorities.	High #1 Medium #2	Moderate to High	County and City Floodplain Managers County Highway Dept City Street Dept. City Utilities Dept.	General Budget Stormwater Utility Fund
Communications 1. Enhance communication between Cities and Towns and the County Planning Commission regarding the need to enforce the local planning ordinances encouraging community resilience. 2. Secondary Backup Dispatch Mobile Command Center	☐ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☐ Public Information ☒ Structural Control	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1. **Proposed Enhancements –** 1. Enhance communication between Cities and Towns and the County Planning Commission regarding the need to enforce the local planning ordinances encouraging community resilience. 2. Update the software in the mobile command center to accommodate utilization by dispatch during large events and when the primary dispatch location is not able to be used.	High #1 Medium #2	High	Huntington, Andrews, Markle, Mt. Etna, Roanoke and Warren planning staff 911 and EMA	Community budgets IPSIC FEMA HS grant funding

Emergency Response and Recovery 1. Determine the number of MDTS needed for the mobile command center, determine potential funding sources and procure the needed units.	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☐ Property Protection ☒ Public Information ☐ Structural Control	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** **Proposed Enhancements –** 1. Determine the number of MDTS needed for the mobile command center, determine potential funding sources and procure the needed units.	High #1	High	EMA All County Fire Chiefs Police Chiefs and Sherriff County Communication Committee	Health Grants Assistance to Firefighter Grants Foundation Grants IPSIC(State Communication Lead)

Mitigation Practice	Mitigation Strategy	Hazard Addressed	Lifeline Addressed	Status	Priority	Benefit-Cost Ratio	Responsible Entity	Funding Source
Floodplain Management 1. Study to resolve Agricultural Flooding Near N Clark and N600 N90 2. Construct additional retention facilities for Roanoke and East of Roanoke, near confluence of 8-mile Ditch and the Little River. 3. Institute a buy-out plan for homes along the Wabash River and Little Wabash River 4. Construct additional retention facilities for Roanoke and East of Roanoke, near confluence of 8-mile Ditch and the Little River. 5. Remove old utility tower bases from river to reduce debris backups.	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☒ Public Information ☒ Structural Control	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☒ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☐ Health & Medical ☐ Energy ☐ Communications ☒ Transportation ☐ Hazardous Materials	**Ongoing –** **Proposed Enhancements –** 1. Implement engineering study recommendations and acquire flood prone properties in Markle. 2. Encourage the enforcement of the local floodplain ordinance and the stormwater detention requirements for new construction. 3. Continue acquiring flood prone properties along the Wabash and Little Wabash River floodplains. 4. Add a defined detention area to address the flashy flooding issues in Roanoke. **5.** Partner with the Wabash River Commission to restore the river, removing the concrete stumps which act as obstructions to regular river flow and capture debris adding to flooding concerns.	High #1-2 Medium #3-5	High to Moderate	County Floodplain Administrator County Surveyor Mayor of Markle Mayor of Roanoke	INAFSM USDA DNR OCRA Surveyor Budget

Mitigation Practice	Mitigation Strategy	Hazard Addressed	Lifeline Addressed	Status	Priority	Benefit-Cost Ratio	Responsible Entity	Funding Source
Public Education and Outreach 1. Develop a public education program to inform residents of potential hazards and emergency plans. 2. Develop family emergency plans during severe weather week in schools. 3. Distribute literature advising residents, schools, healthcare facilities, and other critical facilities bolt bookshelves to walls and secure water heaters.	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☒ Public Information ☐ Structural Control	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing** – 1. The EMA provides year-round outreach materials through social media. **Proposed Enhancements –** 1a. Conduct public education and outreach programs to inform residents of local hazards and emergency plans to address those hazards. 1b. Conduct outreach efforts to inform community members of the texting and other notification applications used within each community and the county. 1c. Encourage participation in emergency notification applications at various public events and social media. 2. Work with the Boy and Girls Club and local school systems to educate children and young adults about family emergency plans for severe weather, and other disasters. 3. Distribute information to households about the benefits of securing bookshelves, large screen televisions, water heaters etc. for both stability in disasters and accident prevention with children and elderly family members.	High #1a – 1c Medium #3 Low #2	Moderate	EMA County EMS Health Dept. and Hospital	FEMA HMGP Grants and Materials District Health Coalition Donations Foundation Grants
Hazardous Materials 1. Increase school training regarding hazmat response and evacuation. 2. Explore viable solutions for clean drinking water supply for the Town of Andrews	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☒ Public Information ☐ Structural Control	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☒ Health & Medical ☐ Energy ☐ Communications ☒ Transportation ☒ Hazardous Materials	**Ongoing –** **Proposed Enhancements –** 1. Continue to provide education and outreach opportunities to young adults and youth at schools, universities, and community-based organizations regarding hazardous materials, haz mat responses, and evacuations. Incorporate the school-based programs - ALICE and RAPTOR - into the lessons. 2. Explore viable solutions for clean drinking water supply for the Town of Andrews.	Medium	High	LEPC Chair EMA County Hazardous Materials Team Town of Andrews Council	HMEP Grants FEMA Training RAPTOR and ALICE Programs OCRA grant funding
Building Protection 1. Install modern fire suppression systems in older downtown buildings and ensure new buildings are fire safe. Administer Fire Building Codes 2. Strategic acquisitions along Little River. 3. Harden, relocate, or reconstruct critical facilities especially fire stations and schools, and shelters and trailer parks throughout the county	☒ Emergency Services ☒ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☐ Public Information ☒ Structural Control	☐ Drought ☒ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☒ Hail/Thunder/Wind ☐ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	☒ Safety and Security ☐ Food, Water, Shelter ☒ Health & Medical ☒ Energy ☒ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** **Proposed Enhancements –** 1. Encourage the installation /retrofitting of modern fire suppression and notification systems in the older downtown buildings. 2. Identify and acquire additional properties within the 100-year floodplain which have the greatest risk for flood damage. 3. Move Markle FD to a new location outside of the floodplain and include a tornado shelter in the new building plans.	Medium #	Moderate	EMA 911 Center Town of Markle	General Budget Insurance Company (refunds) IDHS HMGP Grants Assistance to Fire Dept. Grants

Mitigation Practice	Mitigation Strategy	Hazard Addressed	Lifeline Addressed	Status	Priority	Benefit-Cost Ratio	Responsible Entity	Funding Source
Management of High Hazard Dams 1. Routine low hazard dam inspections.	☒ Emergency Services ☐ Nat. Res. Protection ☒ Prevention ☒ Property Protection ☐ Public Information ☒ Structural Control	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☒ Dam Failure ☐ HazMat Incident	☒ Safety and Security ☐ Food, Water, Shelter ☐ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1. **Proposed Enhancements –** 1. Monitor dam inspection reports for all dams.. 2. Consider removal of remaining low head dams which are no longer serving a purpose for the community. Pursue funding where available	Low	High	EMA County Commissioners	General Budget DNR Grant for IEAP
Safer Rooms and Community Shelters 1. Establish new shelters and warming/cooling centers	☒ Emergency Services ☐ Nat. Res. Protection ☐ Prevention ☐ Property Protection ☐ Public Information ☒ Structural Control	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	☒ Safety and Security ☒ Food, Water, Shelter ☐ Health & Medical ☐ Energy ☐ Communications ☐ Transportation ☐ Hazardous Materials	**Ongoing –** 1. The fire departments are set up for short term shelters. **Proposed Enhancements –** 1. Establish a list of potential shelters and warming/cooling centers. Include both normal working hours and overnight facilities	Low	Moderate	EMA Building Commissioner City and County	General Budget Churches/ Shelter Locations Donations

5.0 IMPLEMENTATION PLAN

The following is a proposed plan for implementing all high priority mitigation practices identified in this Plan. It should be noted that implementation of each of these proposed practices may involve several preparatory or intermediary steps. However, to maintain clarity, not all preparatory or intermediary steps are included. Medium and low priority categories are listed but will not show implementation steps. Implementation steps for the medium and low priority actions will be developed as the actions draw closer to execution.

5.1 EMERGENCY PREPAREDNESS AND WARNING

Encourage participation in the development of a database or listing of special needs / medically fragile households where additional assistance may be needed during disasters.

- Working with EMS, Senior Citizen Organizations, Special needs organizations create a task group to create a survey of community members to best understand any barriers to creating the database.
- Determine best methods to distribute survey (radio PSA, social media, local gathering places, churches, door to door in person visits, etc.)
- Evaluate responses and prepare materials to educate potential participants about the benefits of participating in such a database.

5.2 ENERGY SECURITY - POWER BACKUP GENERATORS

Identify any public and private critical facilities that do not have generator power back up and encourage the acquisition and installation of a generator to serve all the facility's needs during a disaster event.

- Using the listing of critical and essential facilities, determine the best mechanism to identify local contacts and best method to determine generator need.
- Prepare and distribute information on the importance of having power backup capacity at the essential/critical facility. Also prepare and distribute an inventory questionnaire to include whether the facility has the necessary switches and connections for generator support. Ask if the facility has a generator and its current status.
- Follow up with those organizations that do not respond to the request for information and prioritize the facilities based on criticality of having power and any life safety concerns.
- Make available information on how to get power backup capacity installed and a listing of generator suppliers and potential funding means.

5.3 STORMWATER

Educate community leadership as well as planning and zoning boards about the importance of storm water detention and compensatory storage and the need to include both in new projects such as sub-division plats, etc.

- Identify benefits of stormwater detention and compensatory. Assemble case studies of systems working in communities of similar size and nature.

- Present information during a public meeting where community members as well as leadership and the planning and zoning board members will be present. (it may be multiple meetings)
- Build a case for community savings by including and enforcing storm water detention requirements and compensatory storage.

5.4 COMMUNICATIONS

Enhance communication between Cities and Towns and the County Planning Commission regarding the need to enforce the local planning ordinances encouraging community resilience.

- Identify the current communication challenges and the tangible benefits of enhancing the relationship between the incorporated communities and the County Planning Commission.
- Have an informal facilitated meeting between the community leaders and the planning commission to identify reasons why communities do not enforce planning ordinances. Create a cost benefit analysis of enforcement of planning ordinances. Costs and benefits must not only reflect on the county, but the incorporated community as well.
- Create helpful aids which encourage better enforcement of the planning ordinances.

5.5 EMERGENCY RESPONSE AND RECOVERY

Determine the number of MDTs (Mobile Data Terminals) needed for the mobile command center, potential funding sources and procure the needed units.

- Identify capacity limitations such as electrical supply, potential heat generation, controlled environment needs, etc. This will identify the upper bounds on the number of units.
- Create a list of Mobile Data Terminal users, their roles, and identify which operators would need to be present simultaneously in the mobile command center.
- Identify any special needs for the MDTs, identify cost per unit and any installation costs, setup costs, etc. Create an anticipated budget for the project and potential funding sources.
- Based on funding availability, procure and install units. The procurement may need to be phased depending on funding sources and timing.

5.6 FLOODPLAIN MANAGEMENT

Implement engineering study recommendations and acquire flood prone properties in Markle.

- Identify the flood prone properties to be acquired and determine if the property owners are interested in participating in an acquisition process.
- Assure that the Town of Markle is willing to sponsor and acquisition and is willing to accept the responsibility for maintaining the properties in perpetuity.
- Apply for grants with IDHS to acquire flood prone properties.
- Identify actions recommended in the engineering study and determine the proper implementation steps that would need to be completed. Locate funding and apply for assistance to complete.

Encourage the enforcement of the local floodplain ordinance and the stormwater detention requirements for new construction.

- Create and provide tools to assist in making enforcement decisions easier. Provide viable options for most common enforcement issues.
- Identify meaningful incentives that would encourage enforcement of the ordinances.
- Celebrate the successes and positive steps toward complete enforcement.

5.7 PUBLIC EDUCATION AND OUTREACH

Conduct public education and outreach programs to inform residents of local hazards and emergency plans to address those hazards.

- Create a calendar and identify key times for outreach efforts. List all hazards impacting the community, challenges for each hazard, and need for further information. Prioritize the top 3 or 4 hazards to be addressed.
- Identify the target audiences for the outreach efforts including disadvantaged and underserved populations. Identify creative ways to help inform local residents. Maps, games, posters, coloring sheets , flyers, etc. Utilize consistent messages over a variety of outreach tools.
- Roll out the tools and topics at a variety of events such as back to school nights, county fair, local festivals, senior citizen centers, etc.

Conduct outreach efforts to inform community members of the texting and other notification applications used within each community and the county.

- Work with community communications leaders from city and county agencies. Identify the most effective communications tools to utilize.
- Have sample methods available to demonstrate ease of use and best ways to access the tool(s).
- Prepare reminder sheets/flyers or cards that explain how to access the tools and what to expect. Make information available in English and consider another primary language used in the community.

Encourage participation in emergency notification applications at various public events and social media.

- Examine options for outreach methods to employ for this effort. Consider in-person as well as self-serve methods such as in person demonstrations, video recording, surveys, etc.
- Set up a trial site where people can try out the application. Also have people present to troubleshoot installation of the app, etc. for those who may be technically challenged.
- Identify a bonus benefit for signing up for the emergency notification application. (Coupons for local eatery, early access to special events or something of that sort.)

5.8 HAZARDOUS MATERIALS

This category is a medium priority. Implementation steps will be identified when the community is ready to proceed with the mitigation action.

5.9 BUILDING PROTECTION

This category is a medium priority. Implementation steps will be identified when the community is ready to proceed with the mitigation action.

5.10 MANAGEMENT OF HIGH HAZARD DAMS

This category is a low priority. Implementation steps will be identified when the community is ready to proceed with the mitigation action.

5.11 SAFE ROOMS AND SHELTERS

This category is a low priority. Implementation steps will be identified when the community is ready to proceed with the mitigation action.

6.0 PLAN MAINTENANCE PROCESS

6.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

REQUIREMENT §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.

To effectively reduce social, physical, and economic losses in Huntington County, it is important that implementation of this MHMP be monitored, evaluated, and updated. The EMA Director is ultimately responsible for the MHMP. As illustrated in Section 4.2 Mitigation Practices, this Plan contains mitigation program, projects, and policies from multiple departments within each incorporated community. Depending on grant opportunities and fiscal resources, mitigation practices may be implemented independently, by individual communities, or through local partnerships. Therefore, the successful implementation of this MHMP will require the participation and cooperation of the entire Committee to successfully monitor, evaluate, and update the Huntington County MHMP.

The EMA Director will reconvene the MHMP Committee on an annual basis and following a significant hazard incident. The team will examine each mitigation within the plan to evaluate its effectiveness answering the following questions:

- Has the nature, magnitude, and/or type of risk changed? If so, what new mitigation actions are needed to address this change?
- Are the current resources appropriate for implementation? If not, what additional resources are needed to address the shortfall?

- Are there implementation problems, such as technical, political, legal, or coordination issues with other agencies? How can these issues be addressed?
- Have the outcomes occurred as expected? If not, is something else needed to achieve the desired outcome?
- Have the agencies and other partners participated as originally proposed? IF not, determine why and how the action outcomes can be met?

During the annual meetings, the Implementation Checklist provided in **Appendix 10** will be helpful to track any progress, successes, and problems experienced. This will also be a tool to follow up on the progress made and effectiveness of the planned actions.

The data used to prepare this MHMP was based on "best available data" or data that was readily available during the development of this Plan. Because of this, there are limitations to the data. As more accurate data becomes available, updates should be made to the list of essential facilities and infrastructure, the risk assessment, and vulnerability analysis.

DMA 2000 requires local jurisdictions to update and resubmit their MHMP within five years (from the date of FEMA approval) to continue to be eligible for mitigation project grant funding. In Huntington County, the EMA Director will once again reconvene the MHMP Committee for a series of meetings designed to replicate the original planning process. Information gathered following individual hazard incidents and annual meetings will be utilized along with updated vulnerability assessments to assess the risks associated with each hazard common in Huntington County. These hazards, and associated mitigation goals and practices will be prioritized and detailed as in Section 3.0 this MHMP. Sections 4.0 and 5.0 will be updated to reflect any practices implemented within the interim as well as any additional practices discussed by the Committee during the update process. The plan update process will incorporate new planning guidance and best practices as planning requirements are updated.

Prior to submission of the updated MHMP, at a public meeting, such as the county commissioners meeting, a representative of the planning team will present information about the plan to residents of Huntington County and will provide them an opportunity for review and comment of the draft MHMP. A media release will be issued providing information related to the update, the planning process, and details of the public invitation to review and comment on the plan update.

6.2 INCORPORATION INTO EXISTING PLANNING MECHANISMS

REQUIREMENT §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 the comprehensive or capital improvements, when appropriate.

Many of the mitigation practices identified as part of this planning process are ongoing with some enhancement needed. Where needed, modifications will be proposed for each NFIP communities' planning documents and ordinances during the regularly scheduled update including comprehensive plans, floodplain management plans, zoning ordinances, site development regulations, and permits. Modifications include discussions related to hazardous material facility buffers, floodplain areas, and discouraging development of new essential facilities and infrastructure in known hazard areas. In Huntington County this is a similarly timed process. As

the county embarks upon their ordinance updates, information is shared with the City of Huntington and the incorporated communities. Each community, then, evaluates the materials provided by the County and will seek adoption or incorporation on a similar schedule. This process has worked well in the past and is the anticipated method of future incorporation of materials into plan and ordinance updates. In a similar fashion the updating of comprehensive community plan, parks plans, etc. will be able to incorporate at risk population information as well as mitigation action opportunities.

6.3 CONTINUED PUBLIC INVOLVEMENT

REQUIREMENT §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.

Continued public involvement is critical to the successful implementation of the Huntington County MHMP. Comments gathered from the public on the MHMP will be received by the EMA Director and forwarded to the MHMP Committee for discussion. Education efforts for hazard mitigation will be the focus of the annual Severe Weather Awareness Week as well as incorporated into existing stormwater planning, land use planning, and special projects/studies efforts. Once adopted, a copy of this Plan will be available for the public to review in the EMA Office and the Huntington County website. Periodic reminder notices will be placed on social media to continue to solicit feedback and input on changes for the future plans.

Updates or modifications to the Huntington County MHMP require a public notice, reconvening the planning committee in accordance with FEMA local mitigation planning guidance and meeting with the incorporated community leaders prior to submitting revisions to the individual jurisdictions for approval and re-adoption.

The CRS program credits NFIP communities a maximum of 28 points for adopting the Plan (2 points); establishing a procedure for implementation, review, and updating the Plan; and submitting an annual evaluation report (up to 26 points).

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Map ID	Facility Name
1	Huntington Municipal Airport
2	Mt. Etna UMC
3	First Church of the Nazarene
4	Evangelical United Methodist Church
5	Central Christian Chruch
6	St. Peter Evangelical Lutheran Church
7	St. Peter & Paul Catholic Church
8	First Presbyterian Church
9	First Baptist Church of Huntington
10	Trinity United Methodist Church
11	HOPE RISING
12	Mission House Ministries
13	St. Peter's First Community Church
14	Bethel Assembly of God
15	Huntington Church of Christ
16	Huntington Baptist Church
17	Bible Baptist Church
18	The Church of Jesus Christ of Latter-Day Saints
19	Loon Creek Church of Brethren
20	Turnpointe Community Church
21	Christian Life Tabernacle
22	Gethsemane Ministries Church
23	Heritage Church of Christ
24	Warren First Baptist Church
25	Warren Wesleyan Church
26	Warren Church of Christ
27	Solid Rock UMC
28	United Church of Christ
29	Hillcrest Church-the Nazerene
30	Faith Community Church of God
31	New Hope United Church-Christ
32	St. Joseph Catholic Church
33	Zion UMC
34	The Applegate Chapel
35	Pilchers Chapel UMC
36	Faith Chapel UMC
37	Bippus Calvary UMC
38	Bethel UMC
39	Andrews UMC
40	Pleasant Chapel UMC
41	Seminary UMC
42	Cornerstone Alliance Church
43	Roanoke Brethren Church
44	Faith Evangelical Lutheran Church
45	First Brethern Church
46	St. Paul's County Line Church
47	College Park United Brethern
48	Markle UMC
49	Salamonie Churhc of the Brethren
50	Lancaster Wesleyan
51	New Hope United Brethren Church
52	Jehovah's Witnesses
53	St. Mary's Catholic Church
54	Charity Baptist Church
55	First Freewill Baptist
56	Christ the King Episcopal Church
57	Life Church
58	Clear Creek Church
59	Risen Savior Anglican Church
60	Bethesda Freewill Baptist
61	Wabash Primitive Baptist
62	New Life Fellowship Church
63	Huntington Church of The Brethren
64	Andrews Church of The Brethren
65	Northview Church of Christ
66	Monument Chapel
67	Victory Tabernacle
68	Liberty Christian Fellowship
69	Union Church
70	The Awakening Community Church
71	The Well
72	Christ's UMC
73	The Field Church
74	Pleasant Grove UMC
75	Banquo Christian Church
76	Pathfinders Kids Kampus
77	Little Blessings Child Care Ministry, Inc.
78	Boys & Girls Club
79	Huntington Head Start
80	Life's Little Treasures Daycare
81	Three Amigas Childcare, LLC
82	Heritage Pointe Childcare Ministry
83	St. Paul's Childcare Ministry
84	Little Sprouts Childcare Ministry
85	Roanoke United Methodist Childcare
86	The Angel Orchard Home Daycare
87	Dee's Playhouse
88	Huntington YMCA
89	BRIGHT BEGINNINGS
90	FAITH LUTHERAN PRESCHOOL AND DAYCARE
91	Emergency Management Agencvy
92	Etna Avenue Fire Station
93	Roanoke Voluntary Fire Department
94	Andrews/Dallas Twp Voluntary Fire Dept
95	Mt. Etna Voluntary Fire Department
96	East Side Fire Station
97	Bippus Fire Department East Station
98	Bippus Fire Department West Station
99	Markle Voluntary Fire Department
100	Warren Fire Department
101	Huntington City Hall
102	Huntington County Courthouse
103	Huntington County Annex Building
104	Huntington County Jail
105	Huntington City Street Department
106	Instructional Services Center
107	Huntington City Parks Department
108	Huntington County Highway Department
109	Roanoke Town Hall
110	Roanoke Town Court
111	Roanoke Town Utilities
112	Andrews Town Hall
113	Warren Town Utilities
114	Warren Town Hall
115	Markle Town Hall
116	Huntington County School Bus Barn
117	Andrews Street Department
118	Mt. Etna Town Hall
119	Bippus Sewer District Building
120	Bippus Community Building
121	Salamonie Reservoir Visitor Center
122	Huntington County Highway Depar Salt
123	Bike Depot
124	Huntington City/Township Library
125	Roanoke Library
126	Warren Public Library
127	Andrews/Dallas Township Library
128	Markle Public Library
129	Parkview Huntington Hospitial
130	RediMed
131	Parkview Medical Group
132	Beltone Hearing Center
133	Gayed Nabil MD
134	Womens Healthcare
135	Pediatric Medical Group
136	Parkview Occupational Health
137	Fresenius Medical Care
138	Bowen Center
139	Sears Optical
140	Markle Medical Center
141	Owen's North
142	Walgreen's
143	CVS Pharmacy
144	Wal-Mart Pharmcy
145	Huntington Medical Group
146	Downtown Dental
147	Dr. Host
148	Advantage Home Care
149	Huntington General Practice
150	Warren Family Clinic
151	Warren Family Dentistry
152	DaVita Renal Care
153	John Kay Medical Building

Map ID	Facility Name
154	Huntington Dental Group
155	Warren Estates LLC
156	Vernon Manor
157	Antioch Mobile Home Park
158	Roanoke Place
159	Wall's Mobile Home Park
160	N/A
161	Posey Hill Mobile Home Park
162	HILLSIDE ESTATES MHP LLC
163	Evergreen Manor
164	Riverside Mobile Home Park
165	Walls Mobile Home Court
166	Edgewild Hills
167	Valley View Estates
168	River Greenway
169	General Slack Park
170	Yeoman Park
171	Erie Park
172	Laurie Park
173	Lake Clare Township Park
174	Memorial Park
175	Sunken Gardens
176	Elmwood Park
177	Drovertown Park
178	Hier's Park
179	Roanoke Town Park
180	Andrews Town Park
181	Tower Park
182	Neighborhood Recreation Center
183	Veterans Park
184	Mt Etna State Recreational Area
185	Lost Bridge West
186	Lost Bridge East
187	Little Turtle State Recreational Area
188	Kil-So-Quah State Recreational Area
189	Huntington Police Department
190	Andrews Town Marshall
191	Roanoke Town Marshall
192	Warren Town Marshall
193	Roanoke Post Office
194	Warren Post Office
195	Huntington Post Office
196	Bippus Post Office
197	Andrews Post Office
198	Markle Post Office
199	Huntington Water Plant
200	Andrews Water Plant
201	Roanoke Water Plant
202	Huntington Water Plant
203	Heritage Pointe
204	The Heritage of Huntington
205	Miller's Merry Manor
206	Oakbrook Village
207	Hickory Creek
208	Tipton House
209	Norwood
210	LaFontaine Center
211	Pathfinder Services
212	Huntington Catholic
213	Crestview Middle School
214	Huntington University
215	Huntington North High School
216	Horace Mann Elementary School
217	Riverview Middle School
218	Lincoln Elementary School
219	Flint Springs Elementary School
220	Roanoke Elementary School
221	Andrews Elementary School
222	Lancaster Elementary School
223	Salamonie Elementary/Middle School
224	Northwest Elementary School
225	Huntington Catholic School
226	Huntington Junction Substation
227	Sorenson Substation
228	Rock Creek Substation
229	Substation
230	Substation
231	Substation
232	Substation
233	Substation
234	Substation
235	Substation
236	Substation
237	CF Industries Distribution Facilities
238	HUNTINGTON CO- N15170
239	ANDREWS CDO - N15160
240	Lassus Bros. Terminal, Inc.
241	Lassus Bros. Oil Station 34
242	Ferrellgas Incorporated
243	General Aluminum Manufacturing Company
244	Isolatek International
245	Nutrien Ag Solutions 595
246	MPLXT - Huntington Terminal
247	Continental Structural Plastics
248	Huntington Terminal Citgo Petroleum Corporation
249	Irving Materials, Inc.
250	E & B Paving Incorporated
251	Huntington Sheet Metal Incorporated
252	Ceres Solutions Cooperative 90002
253	Ceres Solutions Cooperative
254	Gerdau Macsteel Heat Treating Division
255	Bendix Commercial Vehicle Systems LLC
256	Ceres Solutions Cooperative 10070
257	Indiana Michigan Power Company Sorenson Station
258	Bendix Commercial Vehicle Systems LLC
259	BENDIX COMMERCIAL VEHICLE SYSTEMS LLC
260	Sunoco Partners Marketing & Terminals LP
261	Bendix Brakes
262	DENNIS GRAIN COMPANY
263	Our Sunday Visitor, Inc.
264	Irving Materials, Inc.
265	Helena Agri-Enterprises Huntington Terminal
266	Huntington BDL
267	Koch Fertilizer, LLC - Huntington Terminal
268	Gladieux Trading & Marketing
269	Huntington Aluminum Incorporated
270	Warren 7628
271	Huntington 7628
272	FTW Service Center
273	Suiza Dairy Group
274	Schneider Electric Huntington
275	Praxair Distribution Inc
276	AutoTruck Group Huntington
277	Echo Lake Huntington
278	Huntington WPC
279	Parkview Huntington Hospital
280	Andrews Substation
281	Huntington 138 KV Substation
282	Huntington North Substation
283	Ground Effects LLC (Fort Wayne Facility)
284	M&S
285	Huntington South Water Plant
286	Huntington North Water Plant
287	Huntington
288	Onward Manufacturing
289	Ecolab Inc.
290	Ecolab Inc.
291	Bendix Commercial Vehicle Systems LLC
292	Incipio Devices
293	Huntington Riverfork
294	KEYSTONE - IDC (INDIANA DISTRIBUTION CENTER)
295	Warren Service & Supply Incorporated
296	Huntington Water Pollution Control Plant
297	Roanoke Water Pollution Control Plant
298	Andrews Water Pollution Control Plant
299	Markle Water Pollution Control Plant
300	Mt. Etna Municipal WWTP
301	Water Tower (Roanoke)
302	Water Tower (Andrews)
303	Water Tower (Warren)
304	Water Tower (County)
305	Water Tower (Huntington)

Map ID	Dam Name
d1	HUNTINGTON COLLEGE LAKE DAM
d2	J. EDWARD ROUSH LAKE DAM
d3	LAKE CLARE CONTROL STRUCTURE
d4	TIMBER LAKE DAM
d5	WAHL-SHIN-CAH LAKE

Map ID	Low Head Dam Name
d6	BELLEVILLE MILL DAM (IN-CHANNEL)
d7	SALAMONIE RIVER DAM (IN-CHANNEL)
d8	Wabash River Water Plant dam
d9	LITTLE WABASH RIVER DAM (IN-CHANNEL)
d10	Little River Dam No. 2

Map ID	Large Employer
e1	Alh Building Systems Inc
e3	Dean Foods
e2	Crestview Middle School
e4	Heritage of Huntington
e5	Huntington North High School
e6	Huntington Sheet Metal
e8	M & S Indl Metal Fabricators
e9	Miller's Merry Manor

Map ID	Large Employer
e11	Parkview Huntington Hospital
e10	Parkview Huntington Family YMC
e12	Pathfinder Services Inc
e15	Transwheel Corp
e16	Walmart Supercenter
e14	Ppg-Family Medicine
e13	PHD Inc-Machining Group

Sources of Data:
1. Federal Emergency Management Agency
2. National Hydrography Dataset
3. National Climatic Data Center
4. United States Geological Survey
5. Indiana Department of Homeland Security
6. Indiana Department of Natural Resources
7. Indiana Department of Environmental Management
8. Indiana Office of Technology
9. Huntington County Emergency Management Agency
10. Large Employers: http://www.hoosierdata.in.gov/buslookup/BusLookup.aspx

- Airport
- Church
- Daycare
- Emergency Operations
- Fire Station
- Government Office
- Library
- Health Care/Hospital
- Mobile Home Park
- Park
- Police Station
- Post Office
- Potable Water Plant
- Retirement Facility
- School
- Substation
- Tier II
- Wastewater Treatment Plant
- Water Tower
- Low Head Dams
- Dams
- Large Employer

N

0 1 2 4
Miles

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT: Multi-Hazard Mitigation Plan Updates Huntington County, Indiana
PROJECT NO.: 23-0195
APPROX SCALE: As Shown
DATE: 04/2024
TITLE: Essential Facilities
EXHIBIT: 1

Sources of Data:
1. Federal Emergency Management Agency
2. National Hydrography Dataset
3. National Climatic Data Center
4. United States Geological Survey
5. Indiana Department of Homeland Security
6. Indiana Department of Natural Resources
7. Indiana Department of Environmental Management
8. Indiana Office of Technology
9. Huntington County Emergency Management Agency
10. Large Employers: http://www.hoosierdata.in.gov/buslookup/BusLookup.aspx

Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

- Airport
- Church
- Daycare
- Emergency Operations
- Fire Station
- Government Office
- Library
- Health Care/Hospital
- Mobile Home Park
- Park
- Police Station
- Post Office
- Potable Water Plant
- Retirement Facility
- School
- Substation
- Tier II
- Wastewater Treatment Plant
- Water Tower
- Dams
- Low Head Dams
- Large Employer

Flood Zone
- Floodway
- 1.0% Annual Exceedance Probability
- 0.2% Annual Exceedance Probability
- Unnumbered Zone A

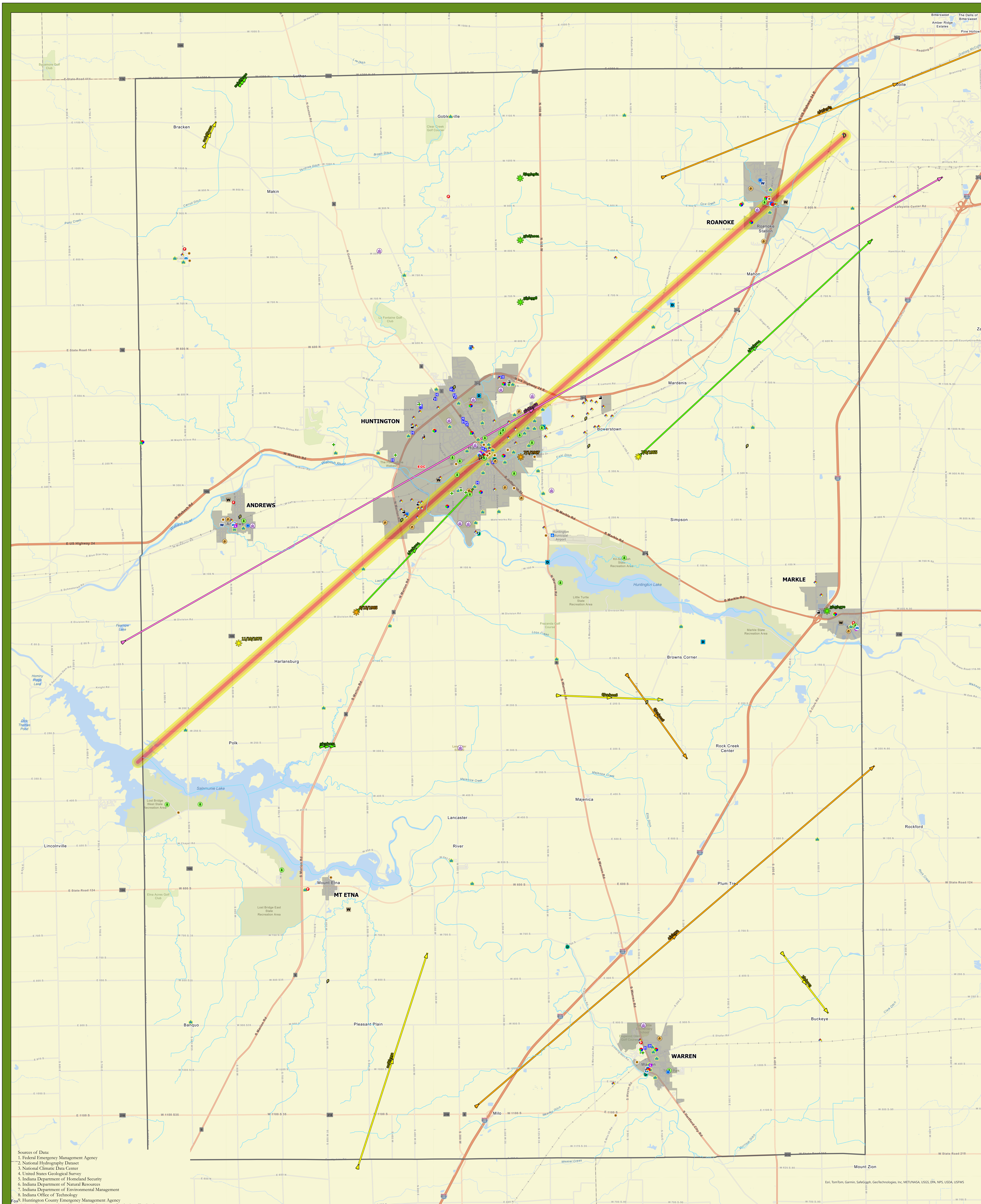
Gage Description
- AHPS - Forecasts Available
- AHPS - Observations Only
- AHPS - Probability and Forecasts Available

N

0 1 2 4
Miles

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT:	PROJECT NO.	APPROX SCALE:
Multi-Hazard Mitigation Plan Updates Huntington County, Indiana	23-0195	As Shown
		DATE: 04/2024
TITLE: FEMA Flood Zones, USGS Stream Gages, Dams		EXHIBIT: 2



Sources of Data:
1. Federal Emergency Management Agency
2. National Hydrography Dataset
3. National Climatic Data Center
4. United States Geological Survey
5. Indiana Department of Homeland Security
6. Indiana Department of Natural Resources
7. Indiana Department of Environmental Management
8. Indiana Office of Technology
9. Huntington County Emergency Management Agency
10. Large Employers: http://www.hoosierdata.in.gov/buslookup/BusLookup.aspx

Airport
Church
Daycare
Emergency Operations
Fire Station
Government Office
Library
Health Care/Hospital
Mobile Home Park
Park
Police Station
Post Office
Potable Water Plant
Retirement Facility
School
Substation
Tier II
Wastewater Treatment Plant
Water Tower
Low Head Dams
Dams
Large Employers

Tornado Paths (Magnitude)
EF0, F0
EF1, F1
EF2, F2
F3

Tornado Touchdowns (Magnitude)
EF0, F0
F1
F2

Tornado Damage Zones (Hypothetical)
Zone A (75 yards)
Zone B (150 yards)
Zone C (225 yards)

CBB BURKE
Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT:	PROJECT NO.	APPROX SCALE:
Multi-Hazard Mitigation Plan Updates Huntington County, Indiana	23-0195	As Shown
TITLE: Historical Tornadoes and Hypothetical Tornado Zones		DATE: 04/2024
		EXHIBIT: 3

APPENDIX 1: ACRONYMS

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AEP	Annual Exceedance Probability
AHPS	Advanced Hydrologic Prediction Service
AICP	American Institute of Certified Planners
BRIC	Building Resilient Infrastructure and Communities
CBBEL	Christopher B. Burke Engineering, LLC
CFM	Certified Floodplain Manager
COAD	Community Organizations Active in Disaster
CPRI	Calculated Priority Risk Index
CRS	Community Rating System
DFIRMs	Digital Flood Insurance Rate Maps
DHS	Department of Homeland Security (US)
DMA	Disaster Mitigation Act
EHS	Extremely Hazardous Substance
EMA	Emergency Management Agency
EPCRA	Emergency Planning and Community Right to Know Act
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Act
FRP	Flood Response Plan
GIS	Geographic Information System
HAZUS-MH	Hazard US – Multi-Hazard
HMGP	Hazard Mitigation Grant Program
MHMP	Multi-Hazard Mitigation Plan
HMRT	Hazardous Materials Response Team
HUC	Hydrologic Unit Code

IDEM	Indiana Department of Environmental Management
IDHS	Indiana Department of Homeland Security
IDNR	Indiana Department of Natural Resources
IEAP	Incident and Emergency Action Plan
INAFSM	Indiana Association of Floodplain and Stormwater Managers
LEPC	Local Emergency Planning Commission
MHMP	Multi-Hazard Mitigation Plan
MPH	Miles Per Hour
MRCC	Midwestern Regional Climate Center
MSDS	Material Safety Data Sheet
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NLD	National Levee Database
NOAA	National Oceanic Atmospheric Administration
NRCS	National Resource Conservation Service
NWS	National Weather Service
OSHA	Occupational Safety and Health Administration
RFC	Repetitive Flood Claims
SARA	Superfund Amendment Reauthorization Act
SFHA	Special Flood Hazard Area
SRL	Severe Repetitive Loss
USDA	United States Department of Agriculture
US DHS	United States Department of Homeland Security
USGS	United States Geological Service
WCT	Wind Chill Temperature

APPENDIX 2: PLANNING COMMITTEE MEETING AGENDAS AND SUMMARIES

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Huntington County Multi-Hazard Mitigation Plan Update

Project Team Meeting

Huntington Public Library
255 W Park Dr.
Huntington, IN

August 2, 2023
9 am

AGENDA

1. Welcome and Introductions

2. Approach for the MHMP Update/Meeting Purpose

3. Hazard Risk Assessment:

    a) Review Hazard Data
    b) Discuss Vulnerability to Hazards
    c) Determine Probability & Severity

4. Next Steps

5. Adjournment

CALCULATED PRIORITY RISK INDEX

The CPRI evaluates each hazard based on its probability of occurrence, severity, prior warning time, and duration. Thus, the CPRI provides a means to assess a hazard relative to others for a community. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability, magnitude/severity, warning time, and duration of event.
CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

PROBABILITY

1. **Unlikely** – **event is possible within the next 10 years**; up to 1 in 10 years chance of occurring (10%); historic events is less than or equal to 10% likely per year
2. **Possible** – **event is possible within the next 5 years**; up to 1 in 5 years chance of occurring (20%); historic events is greater than 10% but less than or equal to 20% likely per year
3. **Likely** – **event if probable within the next 3 years**; up to 1 in 3 years chance of occurring (33%); historic events greater than 20% but less than or equal to 33% likely per year.
4. **Highly Likely** – **event is probable within the calendar year**; up to 1 in 1 year chance of occurring (100%); historic events greater than 33% likely per year.

MAGNITUDE/SEVERITY

1. **Negligible** – few injuries OR shutdown of critical facilities and services for 24 hours or less OR less than 10% of property is severely damaged OR average response duration of less than 6 hours.
2. **Limited** – few injuries OR complete shutdown of critical facilities and services for more than 1 week OR more than 10% of property is severely damaged OR average response duration of less than 1 day.
3. **Significant** – multiple injuries OR complete shutdown of critical facilities and services for at least 2 weeks OR more than 25% of property is severely damaged OR average response duration of less than 1 week.
4. **Critical** – multiple deaths OR complete shutdown of critical facilities and services for 30+ days OR more than 50% of property is severely damaged OR average response duration time of less than 1 month.

WARNING TIME

1. >24 hrs
2. 12-24 hrs
3. 6-12 hrs
4. < 6 hrs

DURATION OF EVENT

1. < 6 hrs
2. < 1 day
3. < 1 wk
4. > 1 wk

Assumptions for Estimating Potential Losses

90% mean assessed value for structures (County GIS) x # structures x replacement

25% of structures=100% damage 35% of structures=50% damage 40% of structures=25% damage

Huntington County Multi-Hazard Mitigation Plan Update

Project Team Meeting

Huntington Public Library
255 W Park Drive
Huntington, IN

August 2, 2023
9 am

AGENDA

1. Welcome and Introductions
    . EMA Director, Bob Jeffers, welcomed all those in attendance and discussed the plan update requirements briefly with team members. He then introduced Manuela Johnson, Christopher Burke, who would be moderating the planning team discussion. All the team members were asked to introduce themselves and highlight one great thing or one challenge they face in their community.

2. Approach for the MHMP Update/Meeting Purpose
    . Manuela presented the process that would be utilized for the assessment of the hazards and risks for Huntington County. She also presented some basic demographic information about the county, commuting trends and the shrinking of the population over the past 10 years. The term underserved population was also introduced to the team and communities of underserved populations were identified. Additionally, changing climate and general trends in precipitation and temperature were discussed.

3. Hazard Risk Assessment:
    a) Review Hazard Data – Hazard data for each specific hazard was presented for the past 5 years. This data included frequency and impacts as available from a variety of data sources.
    b) Discuss Vulnerability to Hazards – The team discussed how hazard events have impacted the community in the past including the school system, water utilities, public health and the general public. The team also spoke about challenges they anticipate in the future.
    c) Determine Probability & Severity – Using the CPRI model, probability, severity, warning time and duration were assigned through the consensus of the team and the community specific representatives. The score was calculated and then an overall risk level was assigned using the score. All team members used the CPRI score guidance sheet, found on the reverse side of the agenda and included here, to guide the determinations.

4. Next Steps
    . The team discussed the next steps in the process including verifying critical facilities in the county and the individual communities as well as preparing for the second meeting when the team will discuss opportunities for mitigating the hazards and risks. The team will examine the projects they have completed as well as look at innovative projects and community needs based on recent events. The team will also be looking for any photographs to

include with the planning documents. Manuela reminded the team members that during the next meeting the team will be focusing on mitigation needs of the underserved populations in the community based on Social Vulnerability Index maps as well as the National Risk Index map tool and other screening tools. Team members were encouraged to bring other community members to the table to discuss the upcoming mitigation actions at meeting #2…

5. Adjournment
    - Director Jeffers thanked all the community members for attending the meeting and reminded team members of the email with meeting 2 schedule that would be sent out. Meeting #2 will be held at the Public Library. Refreshments will be available.

CALCULATED PRIORITY RISK INDEX

The CPRI evaluates each hazard based on its probability of occurrence, severity, prior warning time, and duration. Thus, the CPRI provides a means to assess a hazard relative to others for a community. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability, magnitude/severity, warning time, and duration of event.
CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

PROBABILITY

1. Unlikely – event is possible within the next 10 years; up to 1 in 10 years chance of occurring (10%); historic events is less than or equal to 10% likely per year
2. Possible – event is possible within the next 5 years; up to 1 in 5 years chance of occurring (20%); historic events is greater than 10% but less than or equal to 20% likely per year
3. Likely – event if probable within the next 3 years; up to 1 in 3 years chance of occurring (33%); historic events greater than 20% but less than or equal to 33% likely per year
4. Highly Likely – event is probable within the calendar year; up to 1 in 1 year chance of occurring (100%); historic events greater than 33% likely per year

MAGNITUDE/SEVERITY

1. Negligible – few injuries; shutdown of critical facilities and services for 24 hours or less; less than 10% of property is severely damaged; average response duration of less than 6 hours
2. Limited – few injuries; complete shutdown of critical facilities and services for more than 1 week; more than 10% of property is severely damaged; average response duration of less than 1 day
3. Significant – multiple injuries; complete shutdown of critical facilities and services for at least 2 weeks; more than 25% of property is severely damaged; average response duration of less than 1 week.
4. Critical – multiple deaths; complete shutdown of critical facilities and services for 30+ days; more than 50% of property is severely damaged; average response duration time of less than 1 month.

WARNING TIME

5. >24 hrs
6. 12-24 hrs
7. 6-12 hrs
8. < 6 hrs

DURATION OF EVENT

5. < 6 hrs
6. < 1 day
7. < 1 wk
8. > 1 wk

Assumptions for Estimating Potential Losses

90% mean assessed value for structures (Brown County GIS) x # structures x replacement
25% of structures=100% damage, 35% of structures=50% damage, 40% of structures=25% damage

Huntington County Multi-Hazard Mitigation Plan Update

Project Team Meeting

Huntington Public Library
255 W Park Drive
Huntington, IN 46750

November 28, 2023
9 am

AGENDA

1. Welcome and Introductions

2. Review Approach for the Multi-Hazard Mitigation Plan (MHMP) Update/Meeting Purpose

3. Review Hazard Risk Assessment/CPRI

4. Review and Prioritize Proposed Mitigation Measures

5. Next Steps

6. Adjournment

Huntington County Multi-Hazard Mitigation Plan Update

Project Team Meeting

Huntington Public Library
255 W Park Drive
Huntington, IN 46750

November 28, 2023
9 am

AGENDA

1. Welcome and Introductions
   EMA Director Bob Jeffers welcomed all the team members and new participants to the second of two planning meetings. He briefly discussed the planning process and the requirement to update the plan every five years. Director Jeffers then introduced Manuela Johnson who would be moderating the remainder of the meeting.

2. Review Approach for the Multi-Hazard Mitigation Plan (MHMP) Update/Meeting Purpose
   Manuela thanked all in attendance. Everyone reintroduced themselves to ensure that all in attendance were familiar with the fellow participants. The team then discussed the order of business for meeting #2.

3. Review Hazard Risk Assessment/CPRI
   Manuela presented to the team a summary of the CPRI scores as well as a summary of the local fire responses. The CPRI scores seemed appropriate with the exception of one – Fire. Due to the recent fires and smoke coming from Canada, the team members felt the score for Fire was a bit high. Manuela reviewed the past fire data with the team and all the members present rescored the Fire CPRI. Only the final score will be reflected in the plan. It is not uncommon that recent events tend to impact how people score the event because the memories and the impact appear to be more significant than events that are either very common or those events that occur infrequently.

4. Review and Prioritize Proposed Mitigation Measures
   Prior to the meeting a worksheet was emailed to the participants with the prior plan mitigation actions. Team members were asked to review the prior actions and note any completions, ongoing needs and new actions they would like to undertake to increase community resilience.

   Each of the 2018 actions was reviewed. It was noted if the actions was completed, if the team wanted to continue with the action or if the team felt the action was no longer a priority for the community. For all actions ended or continued, any enhancements or changes were identified and then a priority was assessed for the mitigation action.

After completing the list of 2018 actions, the team was asked to identify new actions or needs. Those actions were documented, the team identified the priority and any needed details for the actions to be properly documented.

5. Next Steps
   Upon completing the discussion of mitigation actions, Manuela discussed with the team the next steps. Compilation of the actions and integration of the information into the plan. Team members were encouraged to notify the EMA Director should they have any last-minute additions from their community. Committee members were reminded that they will be invited to review the draft plan for their input and any necessary changes. The plan will then be available for public comments. Upon completion of the comment period, the plan will be available for adoption. IF adoptions take place during the FEMA and IDHS reviews, the adoption will include a provisional statement accepting any edits required by FEMA. The five-year renewal period begins with the first adoption. All communities must adopt within 12 months of the first adoption.

6. Adjournment
   All the committee members were thanked for their participation by Director Jeffers. Director Jeffers reminded everyone of the need for their review and assistance in getting the plan adopted in a timely manner. The meeting was then adjourned.

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APPENDIX 3: Public Participation and Involvement of Other Interested Parties

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MEDIA RELEASE

For Immediate Release
Media Release Date: June 7, 2024
Contact: Robert Jeffers, Huntington County EMA ((260) 358-4870)

Public Presentation of the Huntington County Multi-Hazard Mitigation Plan Update

Huntington, IN (June 7, 2024) – Huntington County, in cooperation with City of Huntington and the Towns of Andrews, Markle, Mt. Etna, Roanoke, and Warren have prepared an update to the Huntington Multi-Hazard Mitigation Plan (MHMP) to address the risk and vulnerability of communities in the county which may be affected by known natural, man-made and technological hazards.

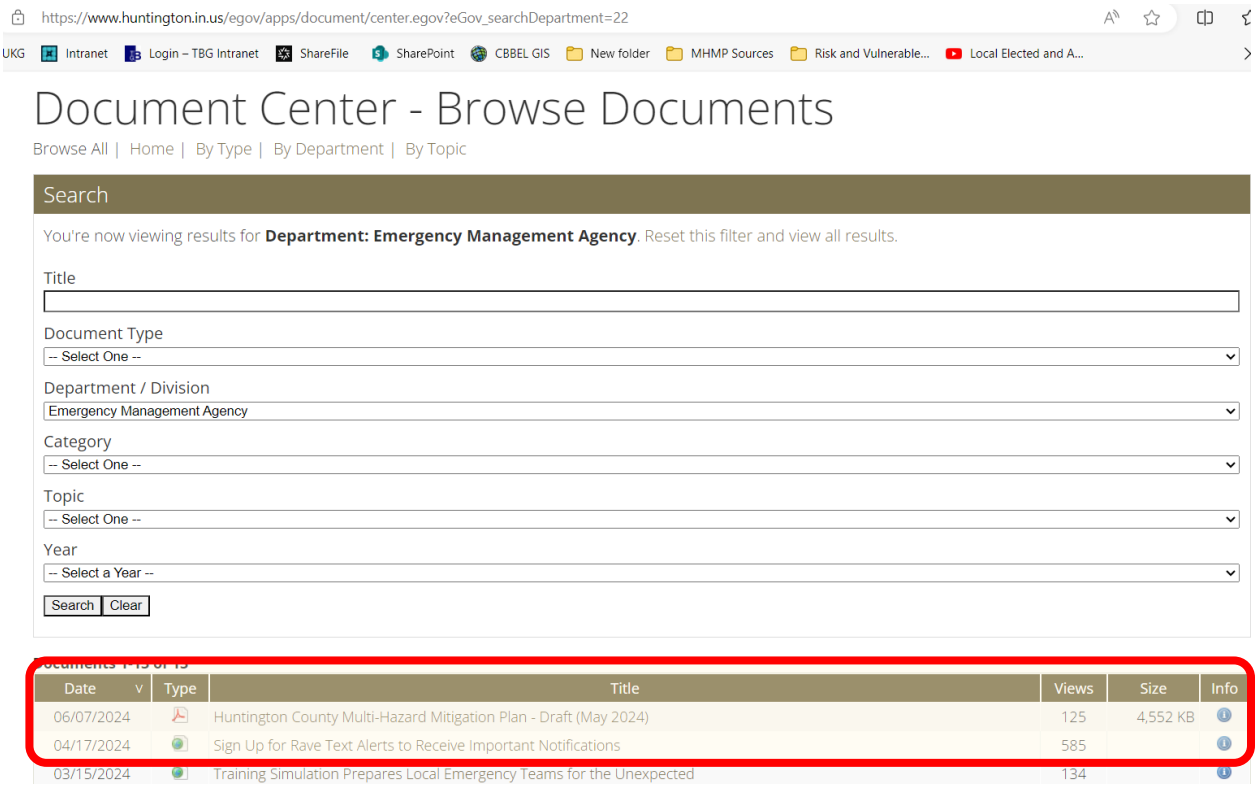
The Disaster Mitigation Act of 2000 (DMA 2000) requires communities to update their MHMP every five years in order to be eligible for any future mitigation funding through the Indiana Department of Homeland Security and the Federal Emergency Management Agency. The intent of the MHMP is to plan for a disaster before it occurs in order to reduce the physical, social and economic impact of that disaster.

The draft Huntington County MHMP Update may be accessed at https://www.huntington.in.us/county/department/index.php?structureid=22 at your convenience. Topics covered in the update include: an overview of the planning requirements; a summary of the risk assessment and vulnerability analysis; and proposed mitigation projects for prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

Comments will be accepted through Friday, June 28, 2024. Please submit comments to EMA Director at (260) 358-4870 or Robert.Jeffers@huntington.in.us

---END---

Web Posting



- 125 views of the MHMP
- No comments

APPENDIX 4: CRITICAL INFRASTRUCTURE BY COMMUNITY

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Map ID	Airport	Community
1	Huntington Municipal Airport	

Map ID	Church	Community
2	Mt. Etna UMC	
3	First Church of the Nazarene	
4	Evangelical United Methodist Church	
5	Central Christian Church	
6	St. Peter Evangelical Lutheran Church	
7	St. Peter & Paul Catholic Church	
8	First Presbyterian Church	
9	First Baptist Church of Huntington	
10	Trinity United Methodist Church	
11	HOPE RISING	
12	Mission House Ministries	
13	St. Peter's First Community Church	
14	Bethel Assembly of God	
15	Huntington Church of Christ	
16	Huntington Baptist Church	
17	Bible Baptist Church	
18	The Church of Jesus Christ of Latter-Day Saints	
19	Loon Creek Church of Brethren	
20	Turnpointe Community Church	
21	Christian Life Tabernacle	
22	Gethsemane Ministries Church	
23	Heritage Church of Christ	
24	Warren First Baptist Church	
25	Warren Wesleyan Church	
26	Warren Church of Christ	
27	Solid Rock UMC	
28	United Church of Christ	
29	Hillcrest Church-the Nazarene	
30	Faith Community Church of God	
31	New Hope United Church-Christ	
32	St. Joseph Catholic Church	
33	Zion UMC	
34	The Applegate Chapel	
35	Pilchers Chapel UMC	
36	Faith Chapel UMC	
37	Bippus Calvary UMC	
38	Bethel UMC	
39	Andrews UMC	
40	Pleasant Chapel UMC	
41	Seminary UMC	
42	Cornerstone Alliance Church	
43	Roanoke Brethren Church	

Map ID	Church	Community
44	Faith Evangelical Lutheran Church	
45	First Brethren Church	
46	St. Paul's County Line Church	
47	College Park United Brethren	
48	Markle UMC	
49	Salamonie Church of the Brethren	
50	Lancaster Wesleyan	
51	New Hope United Brethren Church	
52	Jehovah's Witnesses	
53	St. Mary's Catholic Church	
54	Charity Baptist Church	
55	First Freewill Baptist	
56	Christ the King Episcopal Church	
57	Life Church	
58	Clear Creek Church	
59	Risen Savior Anglican Church	
60	Bethesda Freewill Baptist	
61	Wabash Primitive Baptist	
62	New Life Fellowship Church	
63	Huntington Church of The Brethren	
64	Andrews Church of The Brethren	
65	Northview Church of Christ	
66	Monument Chapel	
67	Victory Tabernacle	
68	Liberty Christian Fellowship	
69	Union Church	
70	The Awakening Community Church	
71	The Well	
72	Christ's UMC	
73	The Field Church	
74	Pleasant Grove UMC	
75	Banquo Christian Church	

Map ID	Daycare	Community
76	Pathfinders Kids Kampus	
77	Little Blessings Child Care Ministry, Inc.	
78	Boys & Girls Club	
79	Huntington Head Start	
80	Life's Little Treasures Daycare	
81	Three Amigas Childcare, LLC	
82	Heritage Pointe Childcare Ministry	
83	St. Paul's Childcare Ministry	
84	Little Sprouts Childcare Ministry	
85	Roanoke United Methodist Childcare	
86	The Angel Orchard Home Daycare	

Map ID	Daycare	Community
87	Dee's Playhouse	
88	Huntington YMCA	
89	Bright Beginnings	
90	Faith Lutheran Preschool and Daycare	

Map ID	Emergency Operations Center	Community
91	Emergency Management Agency	

Map ID	Energy	Community
226	Huntington Junction Substation	
227	Sorenson Substation	
228	Rock Creek Substation	
229	Substation	
230	Substation	
231	Substation	
232	Substation	
233	Substation	
234	Substation	
235	Substation	
236	Substation	

Map ID	Fire Stations/EMS	Community
92	Etna Avenue Fire Station	
93	Roanoke Voluntary Fire Department	
94	Andrews/Dallas Twp Voluntary Fire Dept	
95	Mt. Etna Voluntary Fire Department	
96	East Side Fire Station	
97	Bippus Fire Department East Station	
98	Bippus Fire Department West Station	
99	Markle Voluntary Fire Department	
100	Warren Fire Department	

Map ID	Government	Community
101	Huntington City Hall	
102	Huntington County Courthouse	
103	Huntington County Annex Building	
104	Huntington County Jail	
105	Huntington City Street Department	
106	Instructional Services Center	

Map ID	Government	Community
107	Huntington City Parks Department	
108	Huntington County Highway Department	
109	Roanoke Town Hall	
110	Roanoke Town Court	
111	Roanoke Town Utilities	
112	Andrews Town Hall	
113	Warren Town Utilities	
114	Warren Town Hall	
115	Markle Town Hall	
116	Huntington County School Bus Barn	
117	Andrews Street Department	
118	Mt. Etna Town Hall	
119	Bippus Sewer District Building	
120	Bippus Community Building	
121	Salamonie Reservoir Visitor Center	
122	Huntington County Highway Depar Salt	
123	Bike Depot	

Map ID	Library	Community
124	Huntington City/Township Library	
125	Roanoke Library	
126	Warren Public Library	
127	Andrews/Dallas Township Library	
128	Markle Public Library	

Map ID	Medical	Community
129	Parkview Huntington Hospital	
130	RediMed	
131	Parkview Medical Group	
132	Beltone Hearing Center	
133	Gayed Nabil MD	
134	Womens Healthcare	
135	Pediatric Medical Group	
136	Parkview Occupational Health	
137	Fresenius Medical Care	
138	Bowen Center	
139	Sears Optical	
140	Markle Medical Center	
141	Owen's North	
142	Walgreen's	
143	CVS Pharmacy	
144	Wal-Mart Pharmacy	
145	Huntington Medical Group	
146	Downtown Dental	

Map ID	Medical	Community
147	Dr. Host	
148	Advantage Home Care	
149	Huntington General Practice	
150	Warren Family Clinic	
151	Warren Family Dentistry	
152	DaVita Renal Care	
153	John Kay Medical Building	
154	Huntington Dental Group	

Map ID	Mobile Home Park	Community
155	Warren Estates LLC	
156	Vernon Manor	
157	Antioch Mobile Home Park	
158	Roanoke Place	
159	Wall's Mobile Home Park	
160	N/A	
161	Posey Hill Mobile Home Park	
162	HILLSIDE ESTATES MHP LLC	
163	Evergreen Manor	
164	Riverside Mobile Home Park	
165	Walls Mobile Home Court	
166	Edgewild Hills	
167	Valley View Estates	

Map ID	Parks	Community
168	River Greenway	
169	General Slack Park	
170	Yeoman Park	
171	Erie Park	
172	Laurie Park	
173	Lake Clare Township Park	
174	Memorial Park	
175	Sunken Gardens	
176	Elmwood Park	
177	Drovertown Park	
178	Hier's Park	
179	Roanoke Town Park	
180	Andrews Town Park	
181	Tower Park	
182	Neighborhood Recreation Center	
183	Veterans Park	
184	Mt Etna State Recreational Area	
185	Lost Bridge West	

Map ID	Parks	Community
186	Lost Bridge East	
187	Little Turtle State Recreational Area	
188	Kil-So-Quah State Recreational Area	

Map ID	Police Department	Community
189	Huntington Police Department	
190	Andrews Town Marshall	
191	Roanoke Town Marshall	
192	Warren Town Marshall	

Map ID	Post Office	Community
193	Roanoke Post Office	
194	Warren Post Office	
195	Huntington Post Office	
196	Bippus Post Office	
197	Andrews Post Office	
198	Markle Post Office	

Map ID	Potable Water	Community
199	Huntington Water Plant	
200	Andrews Water Plant	
201	Roanoke Water Plant	
202	Huntington Water Plant	

Map ID	Retirement Facility	Community
203	Heritage Pointe	
204	The Heritage of Huntington	
205	Miller's Merry Manor	
206	Oakbrook Village	
207	Hickory Creek	
208	Tipton House	
209	Norwood	
210	LaFontaine Center	
211	Pathfinder Services	

Map ID	School	Community
212	Huntington Catholic	
213	Crestview Middle School	

Map ID	School	Community
214	Huntington University	
215	Huntington North High School	
216	Horace Mann Elementary School	
217	Riverview Middle School	
218	Lincoln Elementary School	
219	Flint Springs Elementary School	
220	Roanoke Elementary School	
221	Andrews Elementary School	
222	Lancaster Elementary School	
223	Salamonie Elementary/Middle School	
224	Northwest Elementary School	
225	Huntington Catholic School	

Map ID	Tier II	Community
237	Cf Industries Distribution Facilities	
238	Huntington Co- N15170	
239	Andrews CDO - N15160	
240	Lassus Bros. Terminal, Inc.	
241	Lassus Bros. Oil Station 34	
242	Ferrellgas Incorporated	
243	General Aluminum Manufacturing Company	
244	Isolatek International	
245	Nutrien Ag Solutions 595	
246	Mplxt - Huntington Terminal	
247	Continental Structural Plastics	
248	Huntington Terminal Citgo Petroleum Corporation	
249	Irving Materials, Inc.	
250	E & B Paving Incorporated	
251	Huntington Sheet Metal Incorporated	
252	Ceres Solutions Cooperative 90002	
253	Ceres Solutions Cooperative	
254	Gerdau Macsteel Heat Treating Division	
255	Bendix Commercial Vehicle Systems LLC	
256	Ceres Solutions Cooperative 10070	
257	Indiana Michigan Power Company Sorenson Station	
258	Bendix Commercial Vehicle Systems LLC	
259	Bendix Commercial Vehicle Systems LLC	
260	Sunoco Partners Marketing & Terminals LP	
261	Bendix Brakes	
262	Dennis Grain Company	
263	Our Sunday Visitor, Inc.	
264	Irving Materials, Inc.	
265	Helena Agri-Enterprises Huntington Terminal	
266	Huntington BDL	
267	Koch Fertilizer, LLC - Huntington Terminal	

Map ID	Tier II	Community
268	Gladieux Trading & Marketing	
269	Huntington Aluminum Incorporated	
270	Warren 7628	
271	Huntington 7628	
272	Ftw Service Center	
273	Suiza Dairy Group	
274	Schneider Electric Huntington	
275	Praxair Distribution Inc	
276	Autotruck Group Huntington	
277	Echo Lake Huntington	
278	Huntington WPC	
279	Parkview Huntington Hospital	
280	Andrews Substation	
281	Huntington 138 Kv Substation	
282	Huntington North Substation	
283	Ground Effects LLC (Fort Wayne Facility)	
284	M&S	
285	Huntington South Water Plant	
286	Huntington North Water Plant	
287	Huntington	
288	Onward Manufacturing	
289	Ecolab Inc.	
290	Ecolab Inc.	
291	Bendix Commercial Vehicle Systems LLC	
292	Incipio Devices	
293	Huntington Riverfork	
294	Keystone - IDC (Indiana Distribution Center)	
295	Warren Service & Supply Incorporated	

Map ID	Wastewater Treatment Plant	Community
296	Huntington Water Pollution Control Plant	
297	Roanoke Water Pollution Control Plant	
298	Andrews Water Pollution Control Plant	
299	Markle Water Pollution Control Plant	
300	Mt. Etna Municipal WWTP	

Map ID	Water Tower	Community
301	Water Tower (Roanoke)	
302	Water Tower (Andrews)	
303	Water Tower (Warren)	
304	Water Tower (County)	
305	Water Tower (Huntington)	

Map ID	Dams	Community
d1	Huntington College Lake Dam	
d2	J. Edward Roush Lake Dam	
d3	Lake Clare Control Structure	
d4	Timber Lake Dam	
d5	Wahl-Shin-Cah Lake	
d6	Belleville Mill Dam (In-Channel)	
d7	Salamonie River Dam (In-Channel)	
d8	Wabash River Water Plant Dam	
d9	Little Wabash River Dam (In-Channel)	
d10	Little River Dam No. 2	

Map ID	Large Employers	Community
e1	Alh Building Systems Inc	
e3	Dean Foods	
e2	Crestview Middle School	
e4	Heritage of Huntington	
e5	Huntington North High School	
e6	Huntington Sheet Metal	
e8	M & S Indl Metal Fabricators	
e9	Miller's Merry Manor	
e11	Parkview Huntington Hospital	
e10	Parkview Huntington Family YMC	
e12	Pathfinder Services Inc	
e15	Transwheel Corp	
e16	Walmart Supercenter	
e14	Ppg-Family Medicine	
e13	PHD Inc-Machining Group	

APPENDIX 5: USGS STREAM GAGE LOCATIONS, MAJOR WATERWAYS

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Stream Gage Location	
Site Number	**Site Name**
3323090	Wabash River at Markle, IN
3323500	Wabash River at Huntington, IN
3324000	Little River near Huntington, IN
3324095	Wabash River at Andrews, IN
3324300	Salamonie River Near Warren, IN
Lake Gage Location	
3323450	J. Edward Roush Lake near Huntington, IN

Major Waterways		
Huntington River	Wabash River	Little River
Salamonie River	Stevens Ditch	Palmer Ditch
Rock Creek	Elkenberry Ditch	Tah-Kum-Wah Creek
Aboite Creek	Calf Creek	Cow Creek
Eightmile Creek	Flat Creek	Bull Creek
Mud Creek	Flint Creek	Clear Creek
West Branch	Brown Ditch	Neiman Creek
Silver Creek	Loon Creek	Morrison Ditch
Black Creek	Weasel Creek	Dore Ditch
Richland Creek	Prairie Creek	Pond Creek
Majenica Creek	Little Majenica Creek	Rush Creek
Logan Creek	Pony Creek Drain	Pony Creek Drain
Stoffel-Morrow-Miller Drain	Seigmund-Herman-Baker Drain	George Telfer Drain
Linda Stephan Drain	John McKee Drain	John McCombs Drain
Carl Nieman Drain	Thomas Detamore Drain	William Brown Drain
Mundy Drain	William Sutton Drain	Arford-Jackson Drain
Joel Cramer Drain	William Vanarsdalen Drain	Joseph Beck North Drain
Mary McKoever Drain	Elias Marsh Drain	Joseph Beck South Drain
Logan-Charles Drain	Charles Wolverton Drain	Flint Creek Drain
S. H. Eviston Drain	Lewis Houser Drain	McGrillus Brooks Drain
Fisher Smelser Drain	Moses and John Kimmel Drain	Palmer-McPherson Drain
John Campbell Drain	Hurst, Hahn, Fry Barger-Srevens Drain	Jacob Neff Drain
Hoboken-Harrell-Parrott Drain	George Favorite Drain	Trout Drain
Henry Callentine Drain	Charles McClurg Drain	Joseph Stevens Drain
T. J. Watson Drain	McCulloch-Roche Drain	King-Clampitt -Redding Drain
William Eikenberry Drain	Carroll-Young Drain	John Brown Drain
George Sloan Drain	Robecca Knight Drain	Eli Burket Drain
Jones- Thomas Drain	Smith-Limer Drain	Flat Creek
Gard-Old Gard Drain		

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APPENDIX 6: NCDC HAZARD DATA

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The following data tables indicate those events that have impacted Huntington County and the communities within. Please note that these tables only provide the information for those incidents where deaths, injuries, or property and/or crop damages were reported through the NCDC for this planning period. For complete tables listing all incidents impacting Huntington County, please visit:

Http://www.NCDC.NOAA.gov/Stormevents/Choosedates.Jsp?Statefips=18%2cindiana

Location	Date	Type	Death	Injury	Property Damage	Crop Damage
Huntington County	1/29/2019	Extreme Cold/Wind Chill	0	0	0	0
Huntington County	12/23/2022	Extreme Cold/Wind Chill	0	0	0	0
Huntington County	1/14/2024	Extreme Cold/Wind Chill	0	0	0	0
Totals:3			**0**	**0**	**$0**	**$0k**

Location	Date	Type	Death	Injury	Property Damage	Crop Damage
Mardenis	5/16/2019	Hail	0	0	0	0
Andrews	5/16/2019	Hail	0	0	0	0
Huntington	5/16/2019	Hail	0	0	0	0
Huntington	5/16/2019	Hail	0	0	0	0
Huntington	5/16/2019	Hail	0	0	0	0
Goblesville	5/16/2019	Hail	0	0	0	0
Markle	5/16/2019	Hail	0	0	0	0
Roanoke	5/16/2019	Hail	0	0	0	0
Mt Etna	5/27/2019	Hail	0	0	0	0
Huntington Muni Arpt	5/27/2019	Hail	0	0	0	0
Huntington	5/28/2019	Hail	0	0	0	0
Andrews	5/28/2019	Hail	0	0	0	0
Huntington	5/28/2019	Hail	0	0	0	0
Huntington	5/28/2019	Hail	0	0	0	0
Mt Etna	5/28/2019	Hail	0	0	0	0
Mt Etna	5/28/2019	Hail	0	0	0	0
Majenica	5/28/2019	Hail	0	0	0	0
Lancaster	5/28/2019	Hail	0	0	0	0
Huntington	9/8/2020	Hail	0	0	0	0
Mardenis	9/8/2020	Hail	0	0	0	0
Andrews	3/31/2023	Hail	0	0	2000	0
Goblesville	8/17/2023	Hail	0	0	500	0
Totals: 4			**0**	**0**	**$2.5k**	**$0k**

Location	Date	Type	Death	Injury	Property Damage	Crop Damage
Huntington County	2/24/2019	High Wind	0	0	0	0
Huntington County	11/27/2019	High Wind	0	0	0	0
Huntington County	12/11/2021	Strong Wind	0	0	0	0
Huntington	6/18/2018	Thunderstorm Wind	0	0	0	0
Monument City	8/8/2018	Thunderstorm Wind	0	0	0	0
Monument City	8/20/2018	Thunderstorm Wind	0	0	0	0
Andrews	8/20/2018	Thunderstorm Wind	0	0	0	0
Mahon	5/19/2019	Thunderstorm Wind	0	0	0	0
Huntington Muni Arpt	5/19/2019	Thunderstorm Wind	0	0	0	0
Goblesville	5/19/2019	Thunderstorm Wind	0	0	0	0
Mt Etna	5/23/2019	Thunderstorm Wind	0	0	0	0
Huntington	5/23/2019	Thunderstorm Wind	0	0	0	0
Goblesville	5/23/2019	Thunderstorm Wind	0	0	0	0
Mt Etna	5/23/2019	Thunderstorm Wind	0	0	0	0
Roanoke	5/23/2019	Thunderstorm Wind	0	0	0	0
Huntington	5/23/2019	Thunderstorm Wind	0	0	0	0
Mt Etna	5/23/2019	Thunderstorm Wind	0	0	0	0
Huntington Muni Arpt	6/1/2019	Thunderstorm Wind	0	0	0	0
Toledo	6/1/2019	Thunderstorm Wind	0	0	0	0
Toledo	8/8/2019	Thunderstorm Wind	0	0	0	0
Mardenis	9/13/2019	Thunderstorm Wind	0	0	0	0
Mahon	9/13/2019	Thunderstorm Wind	0	0	0	0
Huntington	6/9/2020	Thunderstorm Wind	0	0	0	0
Huntington	6/9/2020	Thunderstorm Wind	0	0	0	0
Andrews	6/10/2020	Thunderstorm Wind	0	0	0	0
Andrews	6/10/2020	Thunderstorm Wind	0	0	0	0
Monument City	6/10/2020	Thunderstorm Wind	0	0	0	0
Goblesville	6/10/2020	Thunderstorm Wind	0	2	0	0
Luther	6/10/2020	Thunderstorm Wind	0	0	0	0
Plum Tree	7/7/2020	Thunderstorm Wind	0	0	0	0
Plum Tree	7/7/2020	Thunderstorm Wind	0	0	0	0
Huntington	7/19/2020	Thunderstorm Wind	0	0	0	0
Milo	7/21/2020	Thunderstorm Wind	0	0	0	0
Goblesville	8/10/2020	Thunderstorm Wind	0	0	0	0
Goblesville	8/10/2020	Thunderstorm Wind	0	0	0	0
Mahon	8/10/2020	Thunderstorm Wind	0	0	0	0

Location	Date	Type	Death	Injury	Property Damage	Crop Damage
Huntington	8/10/2020	Thunderstorm Wind	0	0	0	0
Roanoke	8/10/2020	Thunderstorm Wind	0	0	0	0
Roanoke	8/10/2020	Thunderstorm Wind	0	0	0	0
Simpson	8/10/2020	Thunderstorm Wind	0	0	0	0
Roanoke	8/10/2020	Thunderstorm Wind	0	0	0	0
Roanoke	8/10/2020	Thunderstorm Wind	0	0	0	0
Huntington	9/8/2020	Thunderstorm Wind	0	0	0	0
Huntington	9/8/2020	Thunderstorm Wind	0	0	0	0
Huntington	9/8/2020	Thunderstorm Wind	0	0	0	0
Markle	9/8/2020	Thunderstorm Wind	0	1	0	0
Roanoke	6/20/2021	Thunderstorm Wind	0	0	0	0
Roanoke	6/20/2021	Thunderstorm Wind	0	0	500	0
Roanoke	8/10/2021	Thunderstorm Wind	0	0	1000	0
Lancaster	9/14/2021	Thunderstorm Wind	0	0	0	0
Huntington	3/6/2022	Thunderstorm Wind	0	0	0	0
Huntington Muni Arpt	3/6/2022	Thunderstorm Wind	0	0	0	0
Huntington Muni Arpt	3/6/2022	Thunderstorm Wind	0	0	0	0
Roanoke	6/13/2022	Thunderstorm Wind	0	0	0	0
Huntington	6/13/2022	Thunderstorm Wind	0	0	0	0
Roanoke	6/13/2022	Thunderstorm Wind	0	0	0	0
Roanoke	7/5/2022	Thunderstorm Wind	0	0	10000	0
Huntington	8/29/2022	Thunderstorm Wind	0	0	0	0
Mahon	3/31/2023	Thunderstorm Wind	0	0	5000	0
Majenica	6/3/2023	Thunderstorm Wind	0	0	10000	0
Huntington	2/28/2024	Thunderstorm Wind	0	0	4000	0
Totals: 61			**0**	**0**	**$30.5k**	**$0k**

Location	Date	Type	Death	Injury	Property Damage	Crop Damage
Huntington County	1/19/2019	Winter Storm	0	0	0	0
Huntington (Zone)	1/30/2021	Winter Storm	0	0	0	0
Huntington (Zone)	2/15/2021	Winter Storm	0	0	0	0
Huntington (Zone)	2/2/2022	Winter Storm	0	0	0	0
Huntington (Zone)	12/22/2022	Winter Storm	0	0	0	0
Huntington (Zone)	1/24/2018	Winter Weather	0	0	0	0
Huntington (Zone)	2/5/2018	Winter Weather	0	0	0	0

Huntington (Zone)	1/12/2019	Winter Weather	0	0	0	0
Huntington (Zone)	2/12/2019	Winter Weather	0	0	0	0
Huntington (Zone)	2/20/2019	Winter Weather	0	0	0	0
Huntington (Zone)	11/11/2019	Winter Weather	0	0	0	0
Huntington (Zone)	2/26/2020	Winter Weather	0	0	0	0
Huntington (Zone)	1/1/2021	Winter Weather	0	0	0	0
Huntington (Zone)	4/20/2021	Winter Weather	0	0	0	0
Huntington (Zone)	1/17/2022	Winter Weather	0	0	0	0
Huntington (Zone)	2/24/2022	Winter Weather	0	0	0	0
Totals: 16			**0**	**0**	**$0**	**$0k**

APPENDIX 7: POTENTIAL FUNDING SOURCES

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Assistance to Firefighters Grant

The Assistance to Firefighters Grant (AFG) is a competitive grant opportunity for local fire departments and Emergency Medical Service (EMS) organizations that are not affiliated with a hospital.

Previous Activities Funded: The AFG funds activities such as purchasing firefighting equipment, personal protection equipment, training, firefighting vehicles, and firefighter/first responder safety projects.

https://www.fema.gov/grants/preparedness/firefighters

Challenge 21, Floodplain

Challenge 21, the Army Corps' flood hazard mitigation and riverine ecosystem restoration initiative, will focus on more sustainable approaches. Through its focus on non-structural alternatives to flood protection, it will, where appropriate, move families and businesses out of harm's way and strive to return the floodplains of rivers and creeks to a condition where they can naturally moderate floods as well as provide other benefits to communities and the environment. Watershed by watershed, Challenge 21 builds on existing programs and initiates and expands partnerships with other Federal agencies and non-Federal national and local entities. Key Federal partners include the FEMA, the Department of Agriculture, the Department of Interior and the EPA.

Previous Activities Funded: A project might include the relocation of threatened homes or businesses, conservation or restoration of wetlands and natural floodwater storage areas and planning for responses and solutions to potential future floods

http://www.americanrivers.org/site/PageServer?pagename=AMR_content_d156

Clean Water State Revolving Loan Fund

Clean Water State Revolving Loan Fund (CWSRLF) programs operate much like environmental infrastructure banks that are capitalized with federal and state contributions. CWSRLF monies are loaned to communities and loan repayments are recycled back into the program to fund additional water quality protection projects. The revolving nature of these programs provides for an ongoing funding source that will last far into the future.

Previous Activities Funded: The CWSRF funds a broad range of projects—from wastewater systems and nonpoint source pollution control to estuary management and a range of projects focusing on water quality. Funding is typically directed to state-identified high priority projects based on several factors, including: public health protection; condition of impacted waters; and communities' regulatory compliance status.

https://www.epa.gov/cwsrf

Community Development Block Grants

Communities receiving Community Development Block Grants (CDBG) funds from the State may use the funds for many kinds of community development activities including, but not limited to property acquisition, public services, planning activities, and community development activities.

Previous Activities Funded: Funds have been used in Indiana for purposes such as Public facility improvements, flood and drainage facilities, Fire stations and equipment, and various community related activities and facilities.
https://www.in.gov/ocra/cdbg.htm

Community Facilities Grants and Loans

The Rural Development (RD) of the Department of Agriculture offers loans and grants to create jobs and support economic development and essential services such as housing; health care; first responder services and equipment; and water, electric and communications infrastructure.

Previous Activities Funded: Priority for funding will be given to those projects that will enhance public safety such as fire, police, rescue, and ambulance services, and projects for health care facilities. The fire service can use the funding for fire stations, fire trucks and rescue vehicles.
https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program

Community Rating System

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

Previous Activities Funded: While the CRS does not provide direct funding, reductions in insurance premiums can be significant for participants.

https://www.fema.gov/flood-insurance/rules-legislation/community-rating-system

Conservation Reserve Program

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, landowners can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland to reduce soil erosion, and potential flood loss and damage.

Previous Activities Funded: Filter Strip Establishment, Wetland Restoration, Riparian Buffer Establishment

https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/

Department of Interior Rural Fire Assistance Program

The Department of Interior (DOI) Rural Fire Assistance Program is aimed at enhancing the fire protection capabilities of rural fire districts in the wildland urban interface. The rural fire department must serve a community with a population of 10,000 or less and must have a statewide agreement

with the state forester who maintains cooperative agreements with the rural fire departments or volunteer fire departments or a cooperative fire agreement with an agency in the DOI.

Previous Activities Funded: The program assists with training, equipment purchase, and prevention activities, on a 90/10 cost-share basis.

http://www.nifc.gov/rfa/steps.html

Disposal of Federal Surplus Real Property for Parks, Recreation, and Historic Monuments

Surplus real property may be conveyed for public park and recreation use at discounts up to 100 percent of fair market value and for historic purposes without monetary consideration. Property conveyed for park and recreation use or historic purposes must be used for these purposes in perpetuity or be reverted to Federal ownership.

Previous Activities Funded: Property, either real or land, varies with time with items available for public sale, lease or extended use in perpetuity.

http://www.federalgrantswire.com/disposal_of_federal_surplus_real_property_for_parks_recreation_and_historic_monuments.html

Emergency Conservation Program

The United States Department of Agriculture (USDA) Farm Service Agency's (FSA) Emergency Conservation Program (ECP) provides emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland damaged by natural disasters and for carrying out emergency water conservation measures in periods of severe drought.

Previous Activities Funded: This assistance is in the form of a direct payment to affected eligible landowners and is administered through the Farm Service Agency.

http://disaster.fsa.usda.gov/ecp.htm

Environmental Quality Incentive Program

The Environmental Quality Incentive Program (EQIP) offers contracts with a minimum term that ends one year after the implementation of the last scheduled practices and a maximum term of ten years. These contracts provide incentive payments and cost-shares to implement conservation practices. Persons who are engaged in livestock or agricultural production on eligible land may participate in the EQIP program. EQIP activities are carried out according to an environmental quality incentives program plan of operations developed in conjunction with the producer that identifies the appropriate conservation practice or practices to address the resource concerns. The practices are subject to Natural Resources Conservation Service (NRCS) technical standards adapted for local conditions. The local conservation district approves the plan.

Previous Activities Funded: Cost sharing may pay up to 75 percent of the costs of certain conservation practices, such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, and other practices important to improving and maintaining the health of natural resources in the area.

http://www.nrcs.usda.gov/programs/eqip/

Emergency Rehabilitation of Flood Control Works

Assistance does not extend to major improvements of flood control or federally authorized coastal protection structures, nor to reimbursement of individuals or communities for funds expended in repair or rehabilitation efforts.

Previous Activities Funded: Authorized assistance includes emergency repair or rehabilitation of flood control works damaged by flood, and restoration of federally authorized coastal protection structures damaged by extraordinary wind, wave, or water action.

http://www.federalgrantswire.com/emergency_rehabilitation_of_flood_control_works_or_federally_authorized_coastal_protection_works.html

Emergency Watershed Protection Program

The Emergency Watershed Protection Program (EWPP) work is not limited to any one set of prescribed measures. A case by case investigation of the needed work is made by NRCS.

Previous Activities Funded: EWPP work can include: removing debris from stream channels, road culverts, and bridges; reshaping and protecting eroded banks; correcting damaged drainage facilities; repairing levees and structures; reseeding damaged areas; and purchasing floodplain easements.

http://www.nrcs.usda.gov/programs/ewp/questions.html

Farmland Protection Program

The Farmland Protection Program provides funds to help purchase development rights to keep productive farmland in agricultural uses. To qualify, farmland must: be part of a pending offer from a State, tribe, or local farmland protection program; be privately owned; have a conservation plan; be large enough to sustain agricultural production; be accessible to markets for what the land produces; have adequate infrastructure and agricultural support services; and have surrounding parcels of land that can support long-term agricultural production. Depending on funding availability, proposals must be submitted by the government entities to the appropriate NRCS State Office during the application window.

Previous Activities Funded: Working through existing programs, USDA joins with State, tribal, or local governments to acquire conservation easements or other interests from landowners. USDA provides up to 50 percent of the fair market easement value.

http://www.info.usda.gov/nrcs/fpcp/fpp.htm

Fire Prevention & Safety Grant

The purpose of these grants is to enhance the safety of the public and firefighters with respect to fire and fire-related hazards. The primary goal of the Assistance to Firefighters Grant (AFG) Program's Fire Prevention and Safety Grant (FP&S) is to reach high-risk target groups in order to mitigate the high incidences of death and injuries. Additionally for Fiscal Year (FY) 2005 Congress amended the authorization to include funding for Firefighter Safety Research and Development. This guidance provides details for applying for either of these financial assistance instruments. There is no cost share requirement for the FY 2005 Fire Prevention and Safety grants.

Previous Activities Funded: Grants have been awarded to assist with the costs associated with training, equipment, vehicles for fire departments and firefighter safety research.

https://www.fema.gov/grants/preparedness/firefighters/safety-awards

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) program provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses.

Previous Activities Funded: A few examples of eligible FMA projects include: the elevation, acquisition, and relocation of NFIP-insured structures.

http://www.fema.gov/fima/mitgrant.shtm

Hazards Mitigation Grant Program

Authorized under Section 404 of the Stafford Act, the Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Previous Activities Funded: Acquisition of hazard-prone property; stormwater management, elevation of flood-prone structures, and infrastructure protection measures are all considered eligible projects and have been funded in the past.

http://www.fema.gov/fima/mitgrant.shtm

Hazardous Materials Emergency Preparedness Grant

The Hazardous Materials Emergency Preparedness (HMEP) grant program is intended to provide financial and technical assistance as well as national direction and guidance to enhance State, Territorial, Tribal, and local hazardous materials emergency planning and training. The HMEP Grant Program distributes fees collected from shippers and carriers of hazardous materials to emergency responders for hazmat training and to Local Emergency Planning Committees (LEPCs) for hazmat planning.

Previous Activities Funded: These grants have been used for developing, improving, and implementing emergency plans, and training public sector employees to respond safely and efficiently to accidents and incidents involving the transportation of hazardous materials.

http://hazmat.dot.gov/training/state/hmep/hmep.htm

Indiana Family and Social Services Administration

The Family and Social Services Administration provides services to help keep children healthy and safe and help families to self-sufficient.

Previous Activities Funded: The agency may provide programs related to heating/cooling of residential buildings, temporary housing, and other important contacts in the event of an emergency or disaster.

http://www.in.gov/fssa/families/

Indiana Resource Conservation & Development Districts

The purpose of the Resource Conservation and Development (RC&D) program is to accelerate the conservation, development and utilization of natural resources, improve the general level of economic activity, and to enhance the environment and standard of living in designated RC&D areas. It improves the capability of State, tribal and local units of government and local nonprofit organizations in rural areas to plan, develop and carry out programs for resource conservation and development. The program also establishes or improves coordination systems in rural areas.

Previous Activities Funded: Forestry projects, wetland development, Community training projects, and other projects related to community and natural resource enhancement and protection.

http://www.in.nrcs.usda.gov/programs/RC&D/RC&Dhomepage.html

Indiana Rural Development Council

The Indiana Rural Development Council (IRDC) is a partnership of local, state, federal, profit and not-for-profit stakeholders that serve Indiana communities. The IRDC's purpose is to coordinate efforts of citizens and governments to meet the economic and social needs of rural Indiana.

Previous Activities Funded: These funds will be utilized to address a variety of rural issues in the areas of economic/community development, planning, leadership, infrastructure, health, telecommunication/education, workforce development, agriculture, and rural regional development initiatives.

http://www.in.gov/irdc/index.html

Indiana State Revolving Loan Fund

The Indiana State Revolving Fund (SRF) Loan Program provides low-interest loans to Indiana communities for projects that improve wastewater and drinking water infrastructure. The Indiana Department of Environmental Management (IDEM) and the Indiana State Budget Agency work together to administer this program and to protect public health and the environment. Recently, SRF has implemented a program to fund nonpoint source projects, as well.

Previous Activities Funded: Activities include Treatment plant improvements and upgrades, Riparian Buffers and Conservation Easements, and Wetland protection and restoration measures.

http://www.in.gov/idem/srf/factsht0704.doc

Indiana Transportation Enhancements Program

Transportation enhancements (TE) are transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the Nation's inter-modal transportation system.

Previous Activities Funded: The transportation enhancements program provides for the implementation of a variety of non-traditional projects, with examples ranging from Acquisition of scenic easements, landscaping and scenic beautification, and to the mitigation of water pollution from highway runoff all of which could be utilized as measures to control or mitigate flood damage.

http://www.enhancements.org/statecontacts_TE.asp

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States.

Previous Activities Funded: Funds have been widely utilized for land acquisition, open space/greenspace development, which can include wetland development, critical seeding areas and other projects that can reduce the impacts of flooding.

http://www.nps.gov/lwcf/

Low Interest Loan Incentives

Loan amounts up to $700,000 with interest rates of 2.5 percent to 3.0 percent are available to cities, towns and counties. The loan pays for the cost of remediation and/or demolition at identified brownfield sites.

Previous Activities Funded: Eligible activities include: soil and groundwater cleanup, demolition activities, asbestos/lead paint abatement, and additional investigations.

http://www.idfabrownfields.com/assistance.aspx#LILI

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a Federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. Participation in the NFIP is based on an agreement between local communities and the Federal Government that states if a community will adopt and enforce a floodplain management ordinance

to reduce future flood risks to new construction in Special Flood Hazard Areas, the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

Previous Activities Funded: Flood insurance is made available within the community as a financial protection against flood losses.

http://www.fema.gov/nfip/intnfip.shtm

Office for Domestic Preparedness Terrorism Formula Grants

The Office for Domestic Preparedness (ODP) provides funding through the states awards to enhance the capacity of emergency responders to prevent, deter, or respond to terrorist incidents involving weapons of mass destruction. The funding is awarded to a point of contact in each state and then distributed within the state.

Previous Activities Funded: Activities have included training, technical assistance, equipment, planning and exercises related to domestic terrorism events.
http://www.ojp.gov/state.htm

Petroleum Remediation Grant Incentive

Grant amounts up to $250,000 per applicant and per funding round are available to cities, towns and counties. The grant pays for the cost of petroleum remediation at identified brownfield sites.

Previous Activities Funded: Eligible activities include: underground storage tank removal, Corrective Action Plan preparation, IDEM approved remediation and monitoring.
http://www.idfabrownfields.com/assistance.aspx#PRGI

http://www.fema.gov/fima/mitgrant.shtm

Public Assistance Grant Program

FEMA's Public Assistance (PA) Grant Program allows State and Local governments and Non-Profit Organizations to respond to disasters, to recover from their impact and to mitigate impact from future disasters. The PA Program provides the basis for consistent training and credentialing of staff who administer the program; more accessible and understandable guidance and policy for participating in the grant program; improved customer service through a more efficient grant delivery process, applicant-centered management, and better information exchange; and continuing performance evaluations and program improvements.

Previous Activities Funded: Debris removal from public roads and rights-of-way, Emergency protective measures including search and rescue, warning of hazards, and demolition of unsafe structures, Utility Distribution Systems, such as water treatment and delivery systems; and sewage collection and treatment facilities and public parks.

http://www.fema.gov/rrr/pa/

Purdue Cooperative Extension Service

Purdue Cooperative Extension Service provides valuable educational materials and training programs to assist in the event of a disaster or emergency

Steve Cain
Disaster Communication Specialist
615 W. State Street
Purdue University
West Lafayette, IN 47907
765-494-8410

Previous Activities Funded: Activities are educational in nature and not generally monetary offerings.

http://www.ces.purdue.edu/eden/index.html

Severe Repetitive Loss

This purpose of this FEMA program is to reduce or eliminate claims under the NFIP. This program applies to residential properties covered under an NFIP flood insurance police and has at least 4 NFIP claim payments over $5,000 each and a cumulative amount exceeds $20,000 OR for which 2 separate claims payments have been made with the cumulative amount of the building portion exceeding the market value of the building.

Previous Activities Funded: Acquisition and demolition or relocation of at risk structures and conversion of the land to open space; elevation of existing structures to at least the Base Flood Elevation (BFE); minor physical localized flood reduction projects; and dry floodproofing for historic properties only.

http://www.fema.gov/government/grant/srl/index.shtm

Staffing for Adequate Fire and Emergency Response Grants

The purpose of the Staffing for Adequate Fire and Emergency Response (SAFER) grants is to award grants directly to volunteer, combination, and career fire departments to help the departments increase their cadre of firefighters. Ultimately, the goal is for SAFER grantees to enhance their ability to attain 24-hour staffing and thus assuring their communities have adequate protection from fire and fire-related hazards.

Previous Activities Funded: The SAFER grants have two activities that will help grantees attain this goal: 1) hiring of firefighters and 2) recruitment and retention of volunteer firefighters.

http://www.firegrantsupport.com/safer/

Volunteer Fire Assistance Program

The purpose of the Volunteer Fire Assistance (VFA) Program, formerly known as the Rural Community Fire Protection (RCFP) Program, is to provide Federal financial, technical, and other assistance to State foresters to train, and equip fire departments in rural areas and rural communities to prevent and suppress fires. A rural community is defined as having 10,000 or less population. This 10,000-population limit for participation in the VFA Program facilitates distribution of available VFA funding to the most needy fire departments. The funding must be matched on a 50-50% basis by non-federal dollars or in-kind.

Previous Activities Funded: Purchase of Self-Contained Breathing Apparatus, Protective clothing, installation of dry hydrants, and training for volunteer fire fighters.

www.fs.fed.us/fire/planning/vfa

Weatherization Assistance Program

Indiana's Weatherization Assistance Program provides residential energy conservation services to the low-income citizens of Indiana. Funding comes from federal sources and is allocated to Community Action Agencies (CAA) to provide services in each of Indiana's 92 counties. The CAAs use their own crews or private contractors to provide comprehensive energy conservation services.

Previous Activities Funded: A thorough evaluation of the structures, including the safe and efficient operation of the furnace and water heater, is included in the treatment of each home.

http://www.in.gov/fssa/families/housing/wap.html

Wetland Reserve Program

The Wetlands Reserve Program (WRP) is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The NRCS goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection.

Previous Activities Funded: The USDA Natural Resources Conservation Service (NRCS) provides technical and financial support to help landowners with their wetland restoration efforts.

http://www.nrcs.usda.gov/programs/wrp/

Wildlife Habitat Incentive Program

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through WHIP USDA's Natural Resources Conservation Service provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed.

Previous Activities Funded: Development of areas primarily targeted for wildlife habitat also serve as beneficial areas for flood mitigation activities such as wetland construction/restoration, native grass plantings, and filter area establishment.

http://www.nrcs.usda.gov/programs/whip/

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APPENDIX 8: CRS CHECKLIST

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CRS 10-Step Planning Process	Max. Points	Est. Points	Comments
1. Organize and Prepare the Plan	**15**	**13**	
Involvement of office responsible for community planning	4	4	Table 1-1 lists Planning Committee name, title, and department/agency represented
Planning committee of department staff	9	9	Table 1-1 lists Planning Committee name, title, and department/agency represented
Process formally created by the community's governing board	2	0	
2. Involve the Public	**120**	**60**	
Planning process conducted through a planning committee	60	30	Appendix 2 contains Planning Committee meeting agendas and summaries; Planning Committee reviewed draft MHMP, assisted with public review, and assisted with local adoption
Public meetings held at the beginning of the planning process	15	0	
Public meeting held on the draft plan	15	15	Full draft presented to the public; draft plan made available for public review on webpage, EMA office, Planning Office
Other public information activities to encourage input	30	15	Plan posted to website, press release; outreach flyer
3. Coordinate with Other Agencies	**35**	**25**	
Review of existing studies and plans (**required**)	5	5	Conducted a Community Capability Assessment to better understand existing mitigation programs, policies, and projects
Coordinating with communities and other agencies	30	20	Appendix 3 includes the invitation sent to the surrounding County EMA Directors; IDNR, FEMA and IDHS involved in planning process
4. Assess the Hazard	**35**	**35**	
Map of known flood hazards	5	5	Exhibit illustrates FIRM floodplains as well as the location of critical facilities.
Description of known flood hazards	5	5	Section 3 discusses areas with a known localized flooding issue as well as floodplains; Table shows potential losses of structures located within floodplains
Discussion of past floods	5	5	Section provides an overview of the most recent floods of note as identified by the Planning Committee, local media sources, and NCDC data; Table shows Repetitive Loss numbers; Table shows flood insurance claims
Plan includes assessment of less frequent floods	10	10	Section 3 discusses areas with a known localized flooding issue as well as floodplains; Table shows potential losses of structures located within floodplains
Plan includes assessment of areas likely to flood	5	5	Section 3 discusses areas with a known localized flooding issue as well as floodplains; Table shows potential losses of structures located within floodplains
Describes other natural hazards (required DMA)	5	5	Section 3 includes information related to Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials
5. Assess the Problem	**52**	**34**	
Summary of hazard and impact on community (**required**)	2	2	Section 3.0 includes a Vulnerability Assessment for each hazard (Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials) that specifies (where possible) the number of critical facilities that would be impacted
Impact on life, safety, health, procedures for warning and evacuation	5	5	Section 3.0 includes a Vulnerability Assessment for each hazard (Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials) that specifies (where possible) the number of critical facilities that would be impacted
Impact on public health including health hazards to floodwater/mold	5		

CRS 10-Step Planning Process	Max. Points	Est. Points	Comments
Impact on critical facilities and infrastructure	5	5	Section 3.0 includes a Vulnerability Assessment for each hazard (Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials) that specifies (where possible) the number of critical facilities that would be impacted
Impact on community's economy and tax base	5	0	
Number and types of buildings subject to the hazards	5	5	Section 3.0 includes a Vulnerability Assessment for each hazard (Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials) that specifies (where possible) the number of critical facilities that would be impacted
Review of all flood insurance claims	5	5	Table list flood insurance claims
Natural and beneficial function of natural areas	5	5	Section 3 discusses the natural and beneficial function of floodplains for flood storage
Development, redevelopment, and population trends	7	7	Section2 discusses population and demographics
6. Set Goals (required)	**2**	**2**	Section 4.1 list goal for MHMP - to reduce social, physical, and economic losses from hazards
7. Review Possible Activities	**35**	**35**	
Preventive activities	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Preventive
Floodplain management regulatory/current and future conditions	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Property Protection
Property protection activities	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Property Protection
Natural resource protection activities	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Natural Resource Protection
Emergency services activities	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Emergency Services
Structural projects	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Structural Projects
Public information activities	5	5	Section 4.2.1 discusses existing Mitigation Practices; Table 4-1 lists proposed Mitigation Practices for Public Information
8. Draft Action Plan	**60**	**60**	
Recommendations for activities 2 of 6 categories from #7 (prioritized)	10	0	
Recommendations for activities 3 of 6 categories from #7 (prioritized)	20	0	
Recommendations for activities 4 of 6 categories from #7 (prioritized)	30	0	
Recommendations for activities 5 of 6 categories from #7s (prioritized)	45	45	Table 4-1 lists and prioritizes proposed Mitigation Practices for all 6 possible activities (Prevention, Property Protection, Natural Resource Protection, Emergency Services, Structural Projects, and Public Information); Section 5.0 includes an Implementation Plan for High Priority Mitigation Practices
Post-disaster mitigation policies and procedures	10	10	Section 6.1 recommends the EMA Director reassemble the Planning Committee following a significant hazard incident to review the effectiveness of existing Mitigation Practices and make recommendations for improvement
Action items for mitigation other hazards	5	5	Table 4-1 includes Mitigation Practices for Drought, Earthquake; Extreme Temperature; Fire; Flood; Hailstorm, Thunderstorm, and Windstorm; Land Subsidence; Tornado; Winter Storm and Ice; Dam Failure; Hazardous Materials Section 5.0 includes an Implementation Plan for High Priority Mitigation Practices
9. Adopt the Plan	**2**	**2**	
10. Implement, Evaluate and Revise	**26**	**26**	
Procedures to monitor and recommend revisions (**required**)	2	2	Section 6.1 includes a process to monitor, evaluate, and update the MHMP; effort to be led by EMA Director
Plan evaluated by same (or equally qualified) planning committee	24	24	Section 6.1 acknowledges that the successful implementation of the Mitigation Practices identified in this MHMP will require cooperation and participation of entire Planning Committee.
TOTAL	**382**	**292**	

APPENDIX 9: COMMUNITY CAPABILITY ASSESSMENT

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Plans	Comprehensive Plan	Local Emergency Plan	Economic Development	Plan Commission	Watershed Plan
Huntington County	Huntington County Comprehensive Plan 2040 adopted December 10, 2018	Huntington County MHMP – 2018 and 2024 serves as a multi-jurisdictional approach to emergency planning. Huntington County Emergency Operations Plan	Huntington County United Economic Development Eric Fawcett, Board President	Kim Hostetler, Executive Director	Upper Wabash River WMP Phase III 25874 Upper Middle Eel River WMP 6-3 Lower Salamonie River WMP 3-9
City of Huntington	Comprehensive Plan 1975				
Town of Andrews	Comprehensive Plan, 1997				
Town of Markle					
Town of Mount Etna					
Town of Roanoke			Huntington County United Economic Development Eric Fawcett, Board President		
Town of Warren					

Ordinances	Zoning Ordinance	Subdivision Control Ordinance	Stormwater Ordinance	Flood Ordinance	Burning Ordinance	Water Conservation Ordinance
Huntington County	Reference Book update 2021	Subdivision Code Reference Book updated 5-24-21	Ordinance 1998-05	Ordinance No. 2022-09		
City of Huntington	Ord. 8-C-93	Ord. 14-C-00	Ord. 3-C-05	Ord. 8-C-22	Ord. 12-C-00	
Town of Andrews	Chapter 155	Chapter 154	Chapter 54	Chapter 151		
Town of Markle	Chapter 150.01	Chapter 150.15				
Town of Mount Etna				Ordinance No. 2022-6		
Town of Roanoke	Chapter 150.04	Chapter 150.03		Chapter 150.02		
Town of Warren	Chapter 155	Chapter 154		Chapter 151		

Programs	NFIP	CRS	Tree City	Storm Ready	Mutual Aid Agreements
Huntington County	180438A	Yes		Yes	Yes Fire, Police, EMS
City of Huntington	180094A	Yes	Yes, 27 years		
Town of Andrews	180097A	Yes			
Town of Markle	180457A				
Town of Mount Etna	180461A				
Town of Roanoke	180096A	Yes			
Town of Warren	180095A	Yes			

Studies/Maps	FIRMs	Effective Date	Evacuation Routes	Vulnerable Populations	At-Risk Structures	River Basin Partnership
Huntington County		06/02//2015	HazMat		No	No
City of Huntington	18069C0142D 18069C0143D 18069C0144D 18069C0161D 18069C0163D 18069C0165D 18069C0231D 18069C0232D 18069C0251D	06/02/2015 06/02/2015 06/02/2015 06/02/2015 06/02/2015 06/02/2015 06/02/2015 06/02/2015 06/02/2015			No	No
Town of Andrews	18069C0226D				No	No
Town of Markle	18069C0278D 18069C0279D	06/02/2015 06/02/2015			No	No
Town of Mount Etna	18069C0330D 18069C0335D	06/02/2015 06/02/2015			No	No
Town of Roanoke	18069C157D 18069C0159D 18069C0176D 18069C0178D	06/02/2015 06/02/2015 06/02/2015 06/02/2015			No	No
Town of Warren	18069C0355D 18069C0358D 18069C366D	06/02/2015 06/02/2015 06/02/2015			No	No

Staffing	Commissioners/Mayor Town Manager	Building/ Planning	GIS	Engineer / Surveyor	Street/ Highway	Floodplain Admin
Huntington County	Terry Stoffel Rob Miller Tom Wall	Kim Hostetler, Executive Director	Dathen Strine	Jerry Meehan, Jr., Surveyor	Troy Hostetler, Superintendent	Kim Hostetler
City of Huntington	Richard Strick - Mayor	Shad Paul, Building Commissioner	Mike Snelling, GIS Coordinator	Adam Cuttriss, Director of Public Works & Engineering Services	Tim Bischoff, City Services Superintendent	Bryan Keplinger
Town of Andrews	Laura Dillon, President Town Council	Kim Hostetler, Executive Director				Kim Hostetler
Town of Markle	Mike Grant, Town Manager				Rick Asher, Town Supervisor	
Town of Mount Etna						
Town of Roanoke						
Town of Warren	Steve Buzzard, President					

APPENDIX 10: IMPLEMENTATION CHECKLIST

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MITIGATION PRACTICE	HAZARD ADDRESSED	STATUS	PRIORITY	2029 STATUS
Emergency Preparedness and Warning Develop a database of special needs populations (2018 measure)	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	**Ongoing –** 1 **Proposed Enhancements –** 1. Encourage participation in the development of a database or listing of special needs / medically fragile households where additional assistance may be needed during disasters.	High # 1,	
Power Back Up Generators Procure back-up generators for critical facilities (2018 measure)	☐ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	**Ongoing –** 1. Most shelters and government facilities now have generators. **Proposed Enhancements –** 1. Identify any public and private critical facilities that do not have generator power back up and encourage the acquisition and installation of a generator to serve all the facility's needs during a disaster event.	High	
Stormwater **1.** Educate community leadership as well as planning and zoning boards about the importance of storm water detention and compensatory storage and the need to include both in new projects such as sub-division plats, etc. Determine the viability of implementing storm water separation program requirements proactively. Prioritize community efforts and seek funding to implement priorities.	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	**Ongoing –** 1. **Proposed Enhancements –** 1. Educate community leadership as well as planning and zoning boards about the importance of storm water detention and compensatory storage and the need to include both in new projects such as sub-division plats, etc. 2. Determine the viability of implementing storm water separation program requirements proactively. Prioritize community efforts and seek funding to implement priorities.	High #1 Medium #2	
Communications 1. Enhance communication between Cities and Towns and the County Planning Commission regarding the need to enforce the local planning ordinances encouraging community resilience. Secondary Backup Dispatch Mobile Command Center	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	**Ongoing –** 1. **Proposed Enhancements –** 1. Update the software in the mobile command center to accommodate utilization by dispatch during large events and when the primary dispatch location is not able to be used.	High #1 Medium #2	

MITIGATION PRACTICE	HAZARD ADDRESSED	STATUS	PRIORITY	2029 STATUS
Emergency Response and Recovery Determine the number of MDTS needed for the mobile command center, determine potential funding sources and procure the needed units.	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	**Ongoing –** **Proposed Enhancements –** 1. Determine the number of MDTS needed for the mobile command center, determine potential funding sources and procure the needed units.	High #1	
Floodplain Management 1. Study to resolve Agricultural Flooding Near N Clark and N600 N90 2. Construct additional retention facilities for Roanoke and East of Roanoke, near confluence of 8-mile Ditch and the Little River. 3. Institute a buy-out plan for homes along the Wabash River and Little Wabash River 4. Construct additional retention facilities for Roanoke and East of Roanoke, near confluence of 8-mile Ditch and the Little River. 5. Remove old utility tower bases from river to reduce debris backups.	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☒ Flood ☐ Hail/Thunder/Wind ☒ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	**Ongoing –** **Proposed Enhancements –** 1. Implement engineering study recommendations and acquire floodprone properties in Markle. 2. Encourage the enforcement of the local floodplain ordinance and the stormwater detention requirements for new construction. 3. Continue acquiring floodprone properties along the Wabash and Little Wabash River floodplains. 4. Add a defined detention area to address the flashy flooding issues in Roanoke. 5. Partner with the Wabash River Commission to restore the river, removing the concrete stumps which act as obstructions to regular river flow and capture debris adding to flooding concerns.	High #1-2 Medium #3-5	
Public Education and Outreach 1. Develop a public education program to inform residents of potential hazards and emergency plans. 2. Develop family emergency plans during severe weather week in schools. 3. Distribute literature advising that residents, schools, healthcare facilities, and other critical facilities bolt bookshelves to walls and secure water heaters.	☒ Drought ☒ Earthquake ☒ Extreme Temperature ☒ Fire ☒ Flood ☒ Hail/Thunder/Wind ☒ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☒ Dam Failure ☒ HazMat Incident	**Ongoing** – 1. The EMA provides year-round outreach materials through social media. **Proposed Enhancements –** 1a. Conduct public education and outreach programs to inform residents of local hazards and the emergency plans to address those hazards. 1b. Conduct outreach efforts to inform community members of the texting and other notification applications used within each community and the county. 1c. Encourage participation in the emergency notification applications at various public events and social media 2. Work with the Boy and Girls Club and local school systems to educate children and young adults about family emergency plans for severe weather, and other disasters. 3. Distribute information to households about the benefits of securing bookshelves, large screen televisions, water heaters etc. for both stability in disasters and accident prevention with children and elderly family members.	High #1a – 1c Medium #3 Low #2	

MITIGATION PRACTICE	HAZARD ADDRESSED	STATUS	PRIORITY	2029 STATUS
Hazardous Materials 1. Increase school training regarding hazmat response and evacuation	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☐ Dam Failure ☒ HazMat Incident	**Ongoing –** **Proposed Enhancements –** 1. Continue to provide education and outreach opportunities to young adult and youth at schools, universities and community-based organizations regarding hazardous materials, haz mat responses, and evacuations. Incorporate the school-based programs - ALICE and RAPTOR into the lessons.	Medium #1	
Building Protection 1. Install modern fire suppression systems in older downtown buildings and ensure new buildings are fire-safe Administer Fire Building Codes 2. Strategic acquisitions along Little River. 3. Harden, relocate, or reconstruct critical facilities—especially fire stations and schools—and shelters and trailer parks throughout the county	☐ Drought ☒ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☒ Hail/Thunder/Wind ☐ Landslide/Subsidence ☒ Tornado ☒ Winter Storm/Ice ☐ Dam Failure ☐ HazMat Incident	**Ongoing –** **Proposed Enhancements –** 1. Encourage the installation /retrofitting of modern fire suppression and notification systems in the older downtown buildings. 2. Identify and acquire additional properties within the 100-year floodplain which have the greatest risk for flood damage. 3. Move Markle FD to a new location outside of the floodplain and include a tornado shelter in the new building plans.	Medium # 1 - 3	
Management of High Hazard Dams 1. Routine low hazard dam inspections. 1.	☐ Drought ☐ Earthquake ☐ Extreme Temperature ☐ Fire ☐ Flood ☐ Hail/Thunder/Wind ☐ Landslide/Subsidence ☐ Tornado ☐ Winter Storm/Ice ☒ Dam Failure ☐ HazMat Incident	**Ongoing –** 1. **Proposed Enhancements –** 1. Monitor dam inspection reports for all dams.. 1. Consider removal of remaining low head dams which are no longer serving a purpose for the community. Pursue funding where available	Low #1 - 2	

APPENDIX 11: Underserved and Disadvantaged Populations

CDC Social Vulnerability Index

CDC/ATSDR Social Vulnerability Index 2022

HUNTINGTON COUNTY, INDIANA

Overall Social Vulnerability[1]

Highest (Top 4th) — Vulnerability (SVI 2022)[2] — Lowest (Bottom 4th)

Data Unavailable[3]

0 1.25 2.5 5 7.5
Miles

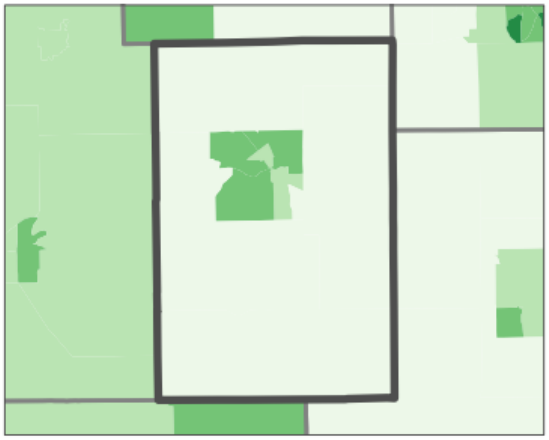
Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The **CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI 2022)[4] County Map** depicts the social vulnerability of communities, at census tract level, within a specified county. CDC/ATSDR SVI 2022 groups **sixteen census-derived factors** into **four themes** that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability combines all the variables to provide a comprehensive assessment.

ATSDR Agency for Toxic Substances and Disease Registry

GRASP Geospatial Research, Analysis, and Services Program

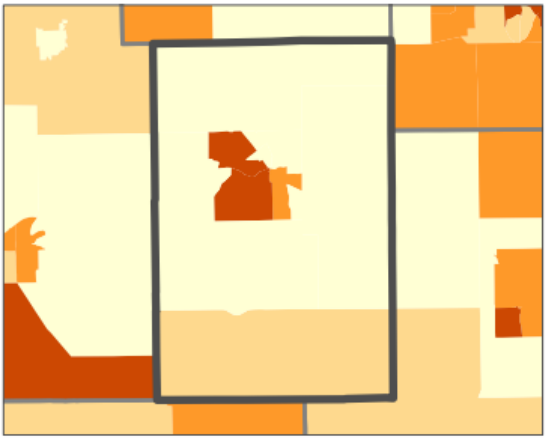
CDC/ATSDR SVI Themes

Socioeconomic Status[5]



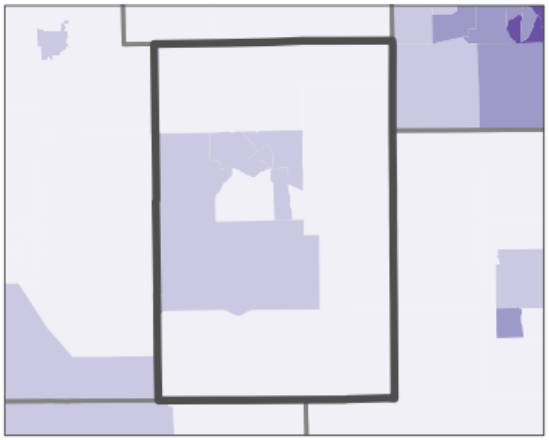
Highest (Top 4th) | Vulnerability (SVI 2022)[2] | Lowest (Bottom 4th)

Household Characteristics[6]



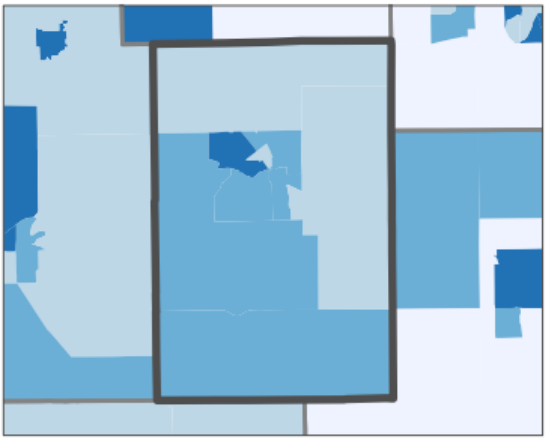
Highest (Top 4th) | Vulnerability (SVI 2022)[2] | Lowest (Bottom 4th)

Racial and Ethnic Minority Status[7]



Highest (Top 4th) | Vulnerability (SVI 2022)[2] | Lowest (Bottom 4th)

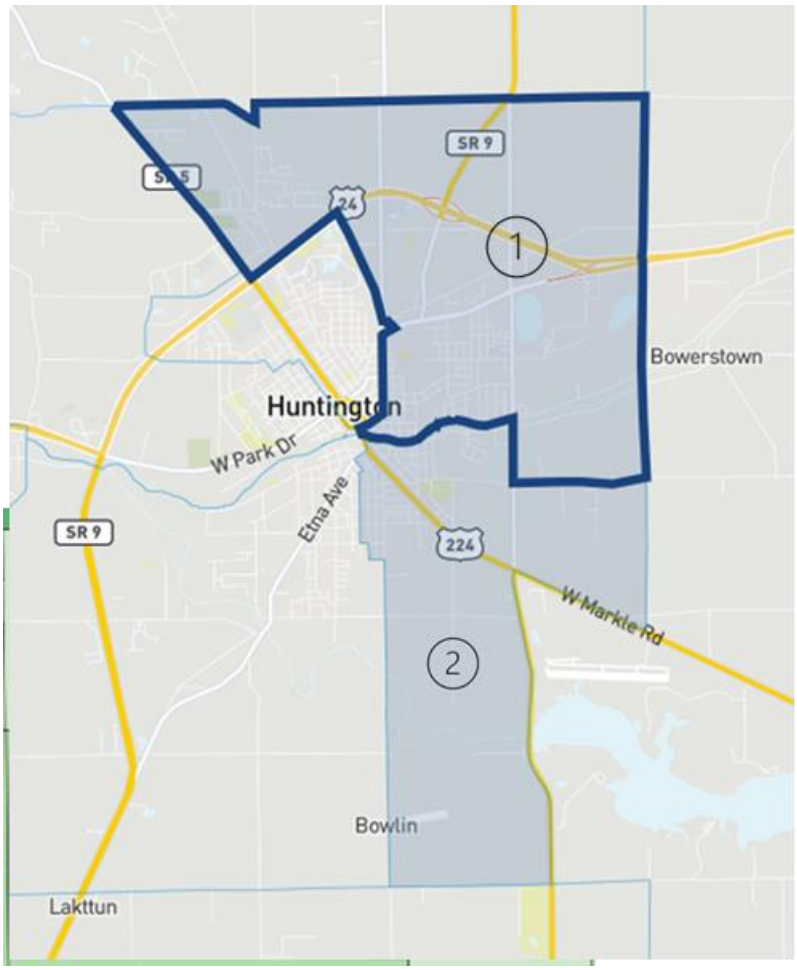
Housing Type/Transportation[8]



Highest (Top 4th) | Vulnerability (SVI 2022)[2] | Lowest (Bottom 4th)

Data Sources: [3]CDC/ATSDR/GRASP, U.S. Census Bureau, ArcGIS StreetMap Premium.
Notes: [1]Overall Social Vulnerability: All 16 variables. [3]One or more variables unavailable at census tract level. [4]The CDC/ATSDR SVI combines percentile rankings of U.S. Census American Community Survey (ACS) 2018-2022 variables, for the state, at the census tract level. [5]Socioeconomic Status: Below 150% Poverty, Unemployed, Housing Costs Burden, No High School Diploma, No Health Insurance. [6]Household Characteristics: Aged 65 and Older, Aged 17 and Younger, Civilian with a Disability, Single-Parent Household, English Language Proficiency. [7]Race/Ethnicity: Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino. [8]Housing Type/Transportation: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters.
Projection: NAD 1983 StatePlane Indiana East FIPS 1301.
References: Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).
CDC/ATSDR SVI web page: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.

Climate and Environmental Justice Screening Tool



① population of 3,969.

It is deemed disadvantaged because the community has been identified to be in the **79th percentile of low income**. Low income is defined as "People in households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher ed."

In addition, the community is listed due to **Legacy Pollution**. In this case the proximity to risk management plan facilities is in the **96th percentile.**

② population of 3,014

It is identified as disadvantaged due to being in the **69th percentile for low income** as well as 3 additional burdens: a) **Housing** – the share of homes likely to have lead paint is in the **94th percentile**, b) **Legacy Pollution** – The County of risk management plan facilities within 5 kilometers is in the **97th percentile**, and c) **Water and Wastewater** – Underground Storage Tanks and releases is listed at the **91st percentile**.

County Population – 36,804

City of Huntington Population – 17,033

Disadvantage Population – 6,983 Which is 41% of the City of Huntington, or 19% of the overall population of Huntington County.

APPENDIX 12: 2018 Mitigation Actions Status

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	2018 Action	Status	Status Comments
1	Establish a Flood Response and Evacuation Plan	Completed	A countywide flood response plan was created in 2019
2	Institute a buy-out plan for homes along the Wabash River and Little Wabash River	Ongoing	Acquired 9 homes in the Little Wabash River floodplain. An additional 9 homes were acquired along the Wabash River using grant funds.
3	Develop a public education program to inform residents of potential hazards and emergency plans	Ongoing	The Town of Markle has an app. The City of Huntington has outreach office. The County has stopped using Code Red and will be changing over to RAVE as well as using IPAWS
4	Procure back-up generators for critical facilities	Ongoing	
5	Distribute literature advising that residents, schools, healthcare facilities, and other critical facilities bolt bookshelves to walls and secure water heaters	Ongoing	
6	Develop a database of special needs populations	Ongoing	Currently use FEMA RAPT to identify areas of special needs populations within the county
7	Install modern fire suppression systems in older downtown buildings and ensure new buildings are fire-safe Administer Fire Building Codes	Ongoing	
8	Study to resolve Agricultural Flooding Near N Clark and N600 N90	Ongoing	This is a Markle only project
9	Increase size of Storm Sewer in Town of Markle	Completed	
10	Strategic acquisitions along Little River	Ongoing	Acquired 9 properties with 6-7 houses in the Little Wabash River floodplain. Due to the removal of the low head dam, the frequent seasonal flash flooding is no longer taking place. The 100 year floodplain is still at risk, but not as frequent as the previous ones.
11	Secondary Backup Dispatch Mobile Command Center	Ongoing	Electrical hook up is now available at the Huntington north Water Tower.
12	Conduct stream maintenance	Ongoing	

	2018 Action	Status	Status Comments
13	Establish a hazmat team and procure equipment	End	The County EMA cannot establish a hazmat team due to legal and issues. The City of Huntington is expanding their team to deal with basic spills and some industry specific responses. All other responses are mutual aid.
14	Construct additional retention facilities for Roanoke and East of Roanoke, near confluence of 8-mile Ditch and the Little River.	Ongoing	Private land owners have recently added detention ponds to address flooding and to use soils for onsite fill.
15	Harden, relocate, or reconstruct critical facilities—especially fire stations and schools—and shelters and trailer parks throughout the county	End	The county jail which once housed the dispatch center and other services is located between the railroad tracks and a levee. The dispatch center has moved to Victory Noll Hill and is no longer at risk from flooding. The jail expanded and most likely will not be moved. All of Roanoke is in a floodplain and is prone to flashy flooding events. Damage is typically limited to basements.
16	Install inertial valves at critical facilities	End	
17	Establish new shelters and warming/cooling centers	Ongoing	Transient homeless population is increasing and is in need of sheltering. Although feeding operations do exist, there is no sheltering beyond the one night hotel accommodations, most are transported to Allen County for long term assistance. Funding is not currently available for an in county solution.
18	Increase school training regarding hazmat response and evacuation	Ongoing	EMA presented at Huntington University Emergency Management Program and worked with Boy Scout Troops working on the Emergency Management badges
19	Remove old utility tower bases from river to reduce debris backups.	Ongoing	Attempted to remove and IDNR denied removal of the concrete bases from the river. These bases still collect debris.
20	Routine low hazard dam inspections		

	2018 Action	Status	Status Comments
21	Install storm shelters in key locations (i.e.. Near mobile home parks)	End	Duplicate of #17
22	Identify current and establish new alternate approved routes for transporting hazardous materials	End	Not within the community's legal jurisdiction
23	Develop family emergency plans during severe weather week in schools	Ongoing	
24	Request Tree Trimming Schedule from Duke Energy	End	Duke has a contract firm which does all the tree trimming in the Duke right of way
25	Develop an ordinance to require that new subdivisions bury power lines	End	Most utilities are burying their infrastructure in new housing developments and new construction.
26	Clean up or destroy homes or a residence that the health department has deemed unsafe	End	