



**MULTI-JURISDICTIONAL
HAZARD MITIGATION
PLAN UPDATE**

2020

**HUNTINGDON
COUNTY**

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Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

Certification of Annual Review Meetings

The Huntingdon County Hazard Mitigation Planning Team (HMPT) has reviewed this Multi-Jurisdictional Hazard Mitigation Plan. See Section 8 for further details regarding this form. The director of the HMPT hereby certifies the review.

YEAR	DATE OF MEETING	PUBLIC OUTREACH ADDRESSED?*	SIGNATURE
2015	N/A	N/A	To the best knowledge of the Huntingdon County HMPT, no HMP progress reports were submitted from municipalities for the period from 2015-2020 although some mitigation actions were accomplished in this period. Progress on actions is discussed in detail in Section 6.1 of this plan.
2016	N/A	N/A	
2017	N/A	N/A	
2018	N/A	N/A	
2019	N/A	N/A	
2020			
2021			
2022			
2023			
2024			

**Confirm yes here annually and describe on record of changes page.*

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

Record of Changes

DATE	DESCRIPTION OF CHANGE MADE, MITIGATION ACTION COMPLETED, OR PUBLIC OUTREACH PERFORMED	CHANGE MADE BY (PRINT NAME)	CHANGE MADE BY (SIGNATURE)
2015-2019	To the best knowledge of the Huntingdon County HMPT, no HMP progress reports were submitted from municipalities for the period from 2015-2019 although some mitigation actions were accomplished in this period. Progress on actions is discussed in detail in Section 6.1 of this plan.	N/A	N/A

REMINDER: Please attach all associated meeting agendas, sign-in sheets, handouts, and minutes.

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Table of Acronyms			
ACRONYM	FULL NAME	ACRONYM	FULL NAME
CFR	Code of Federal Regulations	NFIP	National Flood Insurance Program
CKCOG	Central Keystone Council of Governments	NFPA	National Fire Protection Association
CRS	Community Ratings System	NHC	National Hurricane Center
DCED	Department of Community and Economic Development	NIDIS	National Integrated Drought Information System
DCNR	Department of Conservation and Natural Resources	NOAA	National Oceanic and Atmospheric Association
DCNR-BOF	Department of Conservation and Natural Resources-Bureau of Forestry	NWS	National Weather Service
DMA	Disaster Mitigation Act	PEIRS	Pennsylvania Emergency Incident Reporting System
EOP	Emergency Operations Plan	PA DEP	Pennsylvania Department of Environmental Protection
EOC	Emergency Operations Center	PaGWIS	Pennsylvania Groundwater Information System
EMC	Emergency Management Coordinator	PASDA	Pennsylvania Spatial Data Access
EPA	Environmental Protection Agency	PDM	Pre-Disaster Mitigation Assistance Program
FEMA	Federal Emergency Management Agency	PDSI	Palmer Drought Severity Index
FIRM	Flood Insurance Rate Map	PEMA	Pennsylvania Emergency Management Agency
FMA	Flood Mitigation Assistance Program	PennDOT	Pennsylvania Department of Transportation
HMGP	Hazard Mitigation Grant Program	RF	Risk Factor
HMPT	Hazard Mitigation Planning Team	SALDO	Subdivision and Land Development Ordinance
HMPU	Hazard Mitigation Plan Update	SFHA	Special Flood Hazard Area

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Table of Acronyms			
ACRONYM	FULL NAME	ACRONYM	FULL NAME
HVA	Hazards Vulnerability Analysis	SOG	Standard Operating Guide
ICC	International Code Council	UCC	Universal Construction Code
IBC	International Building Code	US DOT	United States Department of Transportation
NCDC	National Climatic Data Center	USACE	United States Army Corps of Engineers
NDIS	National Drought Information System	USDA	United States Department of Agriculture
NDMC	National Drought Mitigation Center	USGS	United States Geological Survey

1. Introduction

1.1. Background

This Plan is an update of the *2015 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Update*. The 2015 plan was updated by Huntingdon County Pennsylvania and the 48 jurisdictions within the County and was approved and adopted for implementation in 2015.

Huntingdon County is at-risk of damage from a variety of hazards: drought; extreme temperatures; flood, flash flood, and ice jams; hailstorm; hurricane, tropical storm, and nor'easter; invasive species; landslide; pandemic and infectious disease; subsidence and sinkhole; tornado and windstorm; wildfire; winter storm; civil disturbance; cyber terrorism; dam failure; environmental hazards; terrorism; transportation accidents; urban fire and explosion; and utility interruption. This Plan explains a rigorous analysis of the potential impacts of these natural and human-made hazards on people, structures, and infrastructure within Huntingdon County and proposes hazard mitigation measures to reduce the risk of a natural or human-made hazard leading to a disaster with property loss, business disruption, or even loss of life.

The emergency management community, citizens, elected officials, and others in Huntingdon County recognize the potential impacts of hazards on their community and have developed this plan to mitigate potential damages and reduce future losses. Hazard mitigation actions reduce the potential for loss of life and destruction of property. Mitigation actions are taken in advance of the occurrence of a potential hazard and are essential for breaking the disaster cycle of damage, reconstruction, and repeated damage.

Accordingly, the Huntingdon County Hazard Mitigation Planning Team (HMPT), composed of government leaders from Huntingdon County, in cooperation with elected officials of the County and its municipalities have prepared this Hazard Mitigation Plan Update. The plan is the result of work by citizens of the County to develop a pre-disaster, multi-hazard mitigation plan that will not only guide the County towards greater disaster resistance, but it will also respect the character and needs of the community.



**Huntingdon County
Emergency
Management
Agency (EMA) takes
an all-hazards
approach to
community
preparedness,
response, recovery
and mitigation
processes through
its day to day
operations.**

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1.2. Purpose

This plan was developed for the purpose of:

- Providing a blueprint for reducing property damage and saving lives from the effects of future natural and human-made hazards in Huntingdon County;
- Complying with state and federal legislative requirements for County mitigation in order for the County to be eligible for federal and technical assistance from State and Federal hazard mitigation programs;
- Identifying, introducing, and implementing cost-effective hazard mitigation measures in order to accomplish County goals and objectives and to raise awareness and acceptance of hazard mitigation; and
- Improving community resiliency following a disaster event.

Adoption of this Plan ensures that Huntingdon County and participating jurisdictions continue to be eligible to apply for and receive certain federal grant funds that are administered by the Commonwealth of Pennsylvania for the Federal Emergency Management Agency (FEMA). This Plan complies with the requirements of the Disaster Mitigation Act of 2000 and its implementing regulations published in Title 44 of the Code of Federal Regulations (CFR) Section 201.6.

1.3. Scope

The Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update has been prepared to meet requirements set forth by FEMA and the Pennsylvania Emergency Management Agency (PEMA) in order for the County to be eligible for funding and technical assistance from state and federal hazard mitigation programs. It will be updated and maintained to continually address hazards determined to be of significant risk to the County and/or its local municipalities. Updates will take place following significant disasters or at a minimum, every five years.

1.4. Authority and References

Authority for this plan originates from the following federal sources:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended;
- CFR, Title 44, Parts 201 and 206;
- Disaster Mitigation Act of 2000, Public Law 106-390, as amended; and
- National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq.*

Authority for this plan originates from the following Commonwealth of Pennsylvania sources:

- Pennsylvania Emergency Management Services Code. Title 35, Pa C.S. Section 101;
- Pennsylvania Municipalities Planning Code of 1968, Act 247 as reenacted and amended by Act 170 of 1988; and
- Pennsylvania Stormwater Management Act of October 4, 1978. P.L. 864, No. 167.

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The following FEMA guides and reference documents were used to prepare this document:

- FEMA 386-1: *Getting Started*. September 2002.
- FEMA 386-2: *Understanding Your Risks: Identifying Hazards and Estimating Losses*. August 2001.
- FEMA 386-3: *Developing the Mitigation Plan*. April 2003.
- FEMA 386-4: *Bringing the Plan to Life*. August 2003.
- FEMA 386-5: *Using Benefit-Cost Review in Mitigation Planning*. May 2007.
- FEMA 386-6: *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*. May 2005.
- FEMA 386-7: *Integrating Manmade Hazards into Mitigation Planning*. September 2003.
- FEMA 386-8: *Multijurisdictional Mitigation Planning*. August 2006.
- FEMA 386-9: *Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects*. August 2008.
- FEMA: *Local Mitigation Planning Handbook*. March 2013.
- FEMA: *Local Mitigation Plan Review Guide*. October 2011.
- FEMA: *National Fire Incident Reporting System 5.0: Complete Reference Guide*. January 2008.
- FEMA: *Hazard Mitigation Assistance Unified Guidance*. February 2015.
- FEMA: *Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials*. March 2013
- FEMA: *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. January 2013.

The following Pennsylvania Emergency Management Agency (PEMA) guides and reference documents were used prepare this document:

- PEMA: *Hazard Mitigation Planning Made Easy!*
- PEMA *Mitigation Ideas: Potential Mitigation Measures by Hazard Type; A Mitigation Planning Tool for Communities*. March 2009.
- PEMA: *Pennsylvania's Hazard Mitigation Planning Standard Operating Guide*. October 2013.

The following additional guidance document produced by the National Fire Protection Association (NFPA) was used to update this plan:

- NFPA 1600: *Standard on Disaster/Emergency Management and Business Continuity Programs*. 2007

2. Community Profile

This section includes a profile of Huntingdon County and its municipalities. Information on the County's geographic profile, climate, demographic profile, and employment and industry profile are included below. While some information such as the study area boundaries and geography have remained unchanged, and derived from the 2015 Plan, other information such as the demographic and employment and industry information has been developed using the latest U.S. Census, the Comprehensive Regional Plan, and other recent Economic Development Strategy and Planning documents.

2.1. *Geography and Environment*

Huntingdon County is a rural community located in the Appalachian Region of the heart of Pennsylvania. The County consists of 48 municipalities. Huntingdon, a showcase of Federal and Victorian architecture, is the Huntingdon County government seat. Adjacent counties include Mifflin and Juniata Counties to the east, Centre County to the north, Fulton and Franklin Counties to the south, Bedford County to the southwest, and Blair County to the west (See Figure 2.1-1: Huntingdon County Base Map). The County covers approximately 874.64 square miles and 14.63 square miles of water. Huntingdon County takes pride in its scenic beauty and natural resources. It is home to Raystown Lake, the largest lake within Pennsylvania containing over 8,300 acres of water, operated and maintained by the Army Corps of Engineers. Raystown Lake also offers 29,000 acres of beach, providing many opportunities for outdoor recreation. There are four state parks in the County: Greenwood Furnace State Park, Trough Creek State Park, Whipple Dam State Park, and Canoe Creek State Park (Huntingdon County Chamber of Commerce, 2019).



View from Raystown Lake Dam in Huntingdon County.

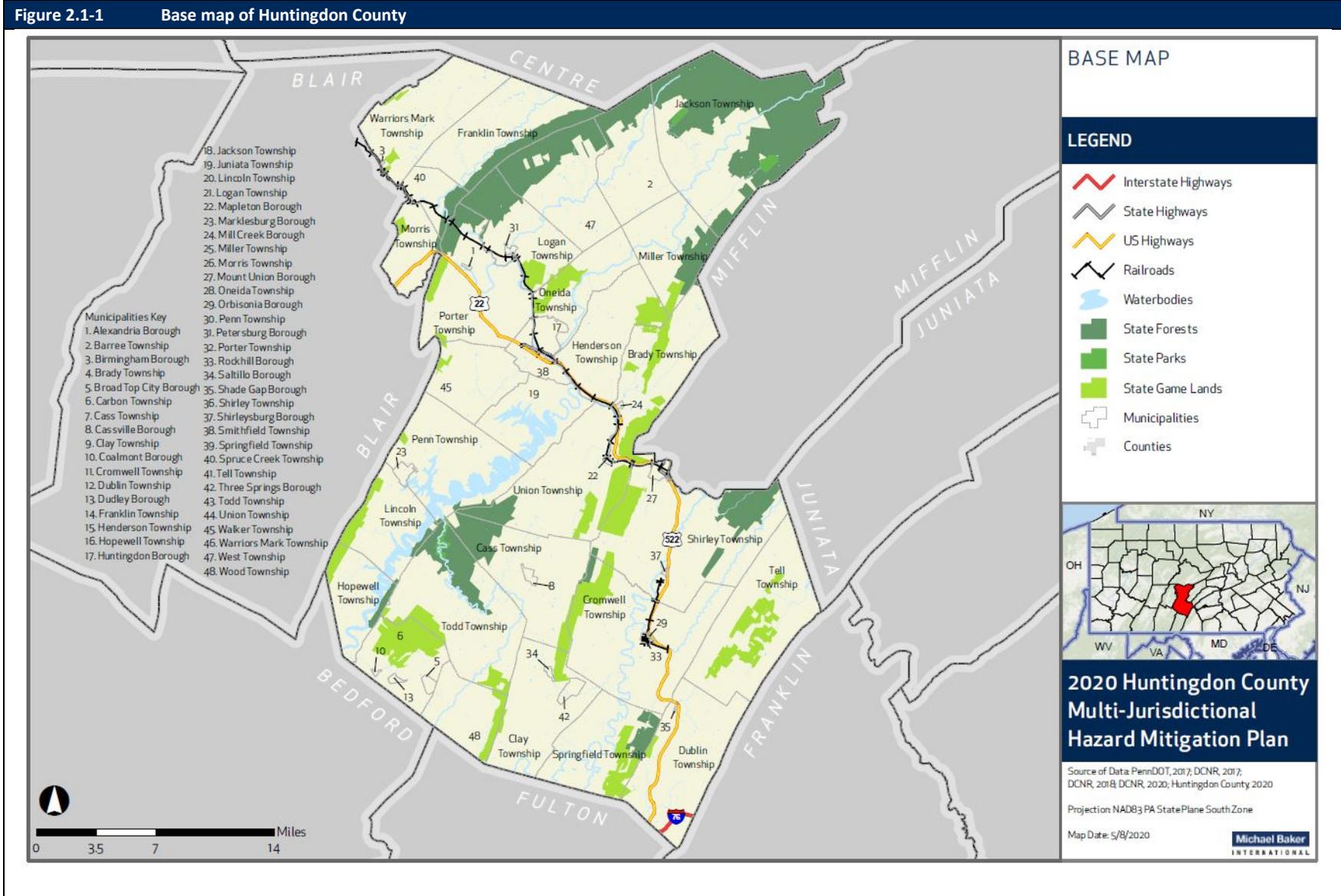
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All of Huntingdon County is in the Juniata Sub basin of the Susquehanna River Watershed. Figure 2.1-2 shows the locations of watersheds throughout the County. The County is within the Ridge and Valley Physiographic Province within the Appalachian Mountain Section (DCNR, 2018). A large portion of northern Huntingdon County is located within Rothrock State Forest.

U.S. Routes 22 and 522 extend through the County, as well as the Pennsylvania Turnpike from Fort Littleton to Willow Hill. The locations of highways, boroughs, and townships are provided in the map below. Additionally, Norfolk Southern's main East-West Line travels through Huntingdon County (Huntingdon County Chamber of Commerce, 2019).

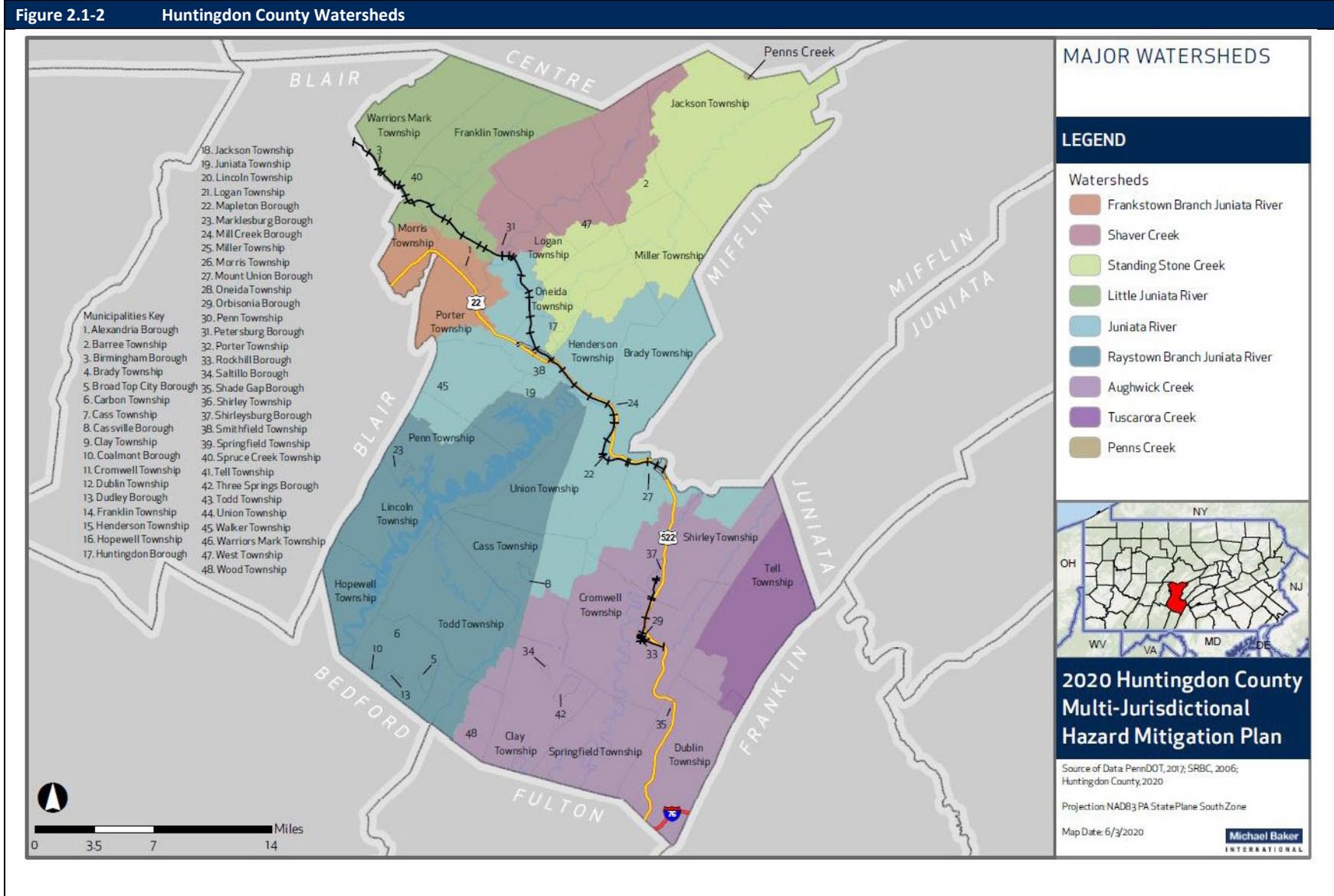
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Figure 2.1-1 Base map of Huntingdon County



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Figure 2.1-2 Huntingdon County Watersheds



2.2. Community Facts

Huntingdon County was formed on September 20, 1787, from part of Bedford County. It has a total area of 874.4 square miles, making it the 17th largest county in Pennsylvania. The County consists of thirty townships and eighteen boroughs, which are listed in Section 2.1 above (Huntingdon County, 2020). There are six school districts throughout the County: Tyrone Area, Juniata Valley, Huntingdon Area, Mount Union Area, Tussey Mountain, and Southern Huntingdon County educating nearly 8,000 students. There is one private liberal arts college, Juniata College, and one vocational school, the Huntingdon County Career and Technology Center. The Grier School, founded in 1853, is an exceptional all-female college-preparatory school located in Birmingham. (Alleghenies Ahead, 2018; Huntingdon County Chamber of Commerce, 2019).

2.3. Population and Demographics

The demographics of a community – population, labor force, employment, and housing reflect how a community has evolved in the past and has a direct bearing on how and where a community wants to develop in the future. The past population trends and projections as well as the employment characteristics help us to better understand the socio-economic characteristics that have and will continue to shape the future of this County.

According to the U.S. Census, the population of Huntingdon County in 2010 was 45,830. The U.S. Census Bureau estimates that in 2018, Huntingdon County’s population decreased to 45,421. The following table provides a distribution of County population by municipality obtained from the U.S. Census Bureau’s American Community Survey (ACS). As shown in Table 2.3-1, the population decreased by 0.9% between 2010 and 2018, with Cassville Borough and Orbisonia Borough experiencing the greatest population decline during this timeframe.

The population of Huntingdon County is concentrated in Huntingdon Borough and Mount Union Borough. The population in the County grew from 45,586 in 2000 to 45,830 in 2010 and declined to 45,421 in 2018 (U.S. Census Bureau, 2018). The County’s population has aged at a rapid pace since 2000, more than the rest of the United States. The County has seen a decline in the 18 and under population, as well as an increase in the 65 and older population, with a median age of 43

Huntingdon County was incorporated as a County over 230 years ago.



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(Alleghenies Ahead, 2018). As seen in Table 2.3-1, 36 municipalities within the County have a population below 1,000.

Table 2.3-1 Population in Huntingdon County by municipality (U.S. Census Bureau, 2018)			
MUNICIPALITY	2010 POPULATION	2018 POPULATION	PERCENT CHANGE (%)
Alexandria Borough	397	332	-19.58%
Barree Township	541	413	-30.99%
Birmingham Borough	102	139	26.62%
Brady Township	1,285	1,020	-25.98%
Broad Top City Borough	325	482	32.57%
Carbon Township	412	314	-31.21%
Cass Township	1,241	1,017	-22.03%
Cassville Borough	189	120	-57.50%
Clay Township	1,029	757	-35.93%
Coalmont Borough	59	92	35.87%
Cromwell Township	1,195	1,619	26.19%
Dublin Township	1,248	1,263	1.19%
Dudley Borough	153	208	26.44%
Franklin Township	516	424	-21.70%
Henderson Township	727	1,064	31.67%
Hopewell Township	482	497	3.02%
Huntingdon Borough	7,067	6,987	-1.14%
Jackson Township	808	866	6.70%
Juniata Township	524	415	-26.27%
Lincoln Township	286	302	5.30%
Logan Township	676	671	-0.75%
Mapleton Borough	572	417	-37.17%
Marklesburg Borough	202	250	19.20%
Mill Creek Borough	260	356	26.97%
Miller Township	410	480	14.58%
Morris Township	524	439	-19.36%
Mount Union Borough	2,553	2,401	-6.33%
Oneida Township	1,228	890	-37.98%
Orbisonia Borough	786	446	-76.23%
Penn Township	899	874	-2.86%

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Table 2.3-1 Population in Huntingdon County by municipality (U.S. Census Bureau, 2018)

MUNICIPALITY	2010 POPULATION	2018 POPULATION	PERCENT CHANGE (%)
Petersburg Borough	537	458	-17.25%
Porter Township	2,011	1,971	-2.03%
Rockhill Borough	368	432	14.81%
Saltillo Borough	319	302	-5.63%
Shade Gap Borough	78	83	6.02%
Shirley Township	2,520	2,554	1.33%
Shirleysburg Borough	118	150	21.33%
Smithfield Township	4,415	4,458	0.96%
Springfield Township	705	688	-2.47%
Spruce Creek Township	266	260	-2.31%
Tell Township	664	585	-13.50%
Three Springs Borough	371	672	44.79%
Todd Township	1,010	885	-14.12%
Union Township	1,058	923	-14.63%
Walker Township	1,828	2,391	23.55%
Warriors Mark Township	1,910	2,001	4.55%
West Township	437	430	-1.63%
Wood Township	519	623	16.69%
TOTAL	45,830	45,421	-0.90%

The median income of households in Huntingdon County is \$48,597. This is approximately \$11,000 less than the national median household income (U.S. Census Bureau, 2018). Just over thirteen percent of the Huntingdon County population lives in poverty; 20.3% of children under 18 are below the poverty line, compared with 8.2% of people 65 years or older. The median age of the County population is 43.5 years with 18.5% of the population under 18 years of age and 20.0% of the population aged 65 years or older. Approximately 78.4% of housing units in the County are single-unit structures, 8.4% are multi-unit structures, and 13.2% are mobile homes. The median monthly housing costs are \$1,111 for mortgaged home-owners and \$401 for non-mortgaged owners. The median rent is \$625 per month. The majority, 91.7%, of the County population is White, 5.5% is African-American, 1.9% is Hispanic, and 0.5% is Asian (U.S. Census Bureau, 2018). Based on the U.S. Census Bureau (2018), the top five reported ancestries are: American, German, Irish, Italian, and English.

2.4. Land Use and Development

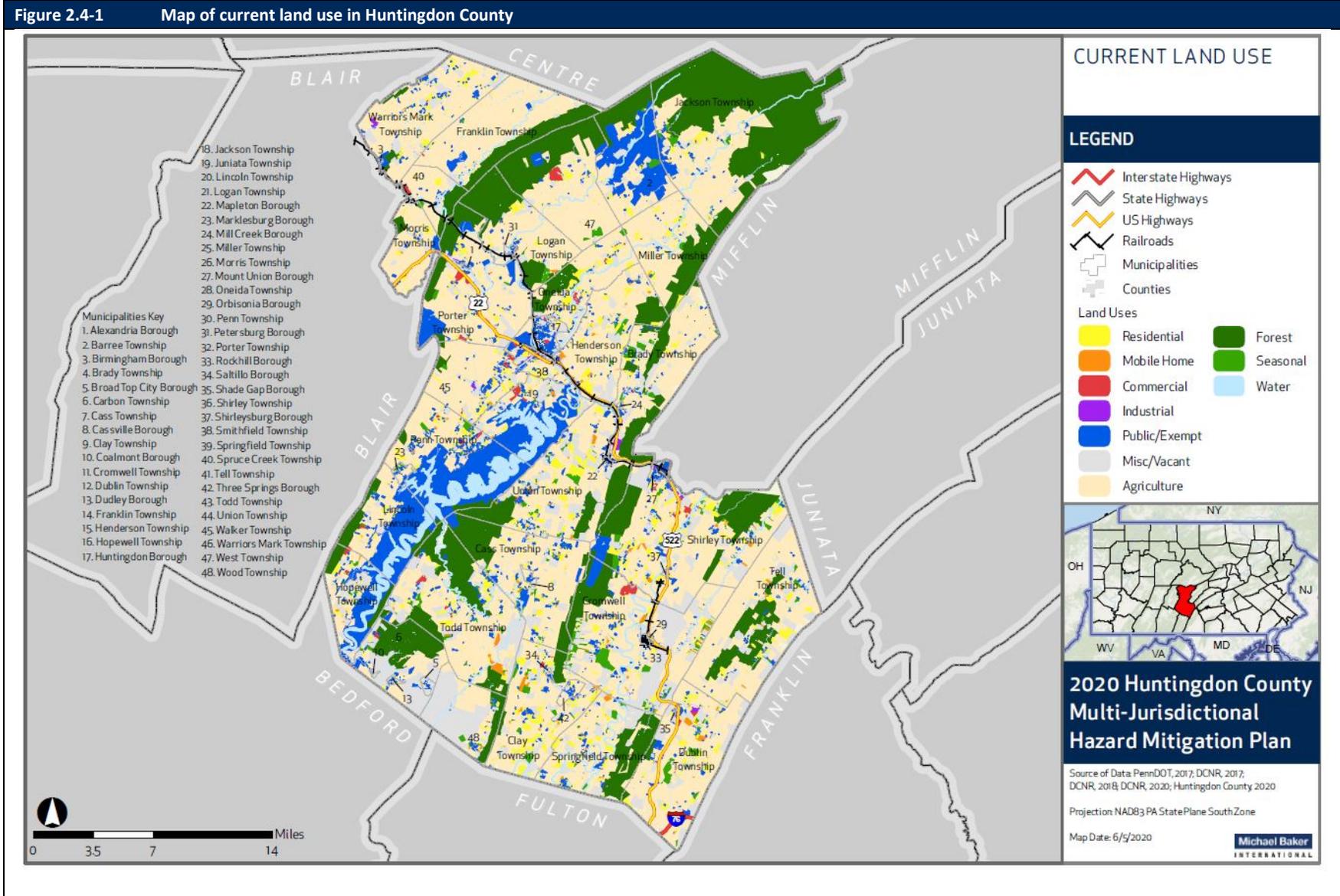
Land use in the County is classified as agricultural, commercial, forested, industrial, seasonal, public space, residential, mobile homes, water, or vacant land. The majority of the land in Huntingdon County is

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agricultural and forest. Most development is concentrated in and around Huntingdon Borough. The table below summarizes land use by acres and percentage of the area of the County. Seven municipalities in the County have local zoning ordinances and fourteen municipalities have a local comprehensive plan (Alleghenies Ahead, 2018). Figure 2.4-1 illustrates the existing general land use in the County.

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Figure 2.4-1 Map of current land use in Huntingdon County



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According to the 2018 Comprehensive Plan for the Southern Alleghenies Region, the region and the County's population has been aging at an increased rate than the rest of the U.S. since 2000. Poverty rates have also increased, especially in children and younger generations. Other important stability and growth factors to the County include its large seasonal home market and its proximity to State College (Alleghenies Ahead, 2018).

According to the 2019 Annual Report produced by the Huntingdon County Planning Commission, 88 new lots were sold in 2019, an overall 1% decrease from the 89 lots that were sold in 2018. Furthermore, the Huntingdon County Mapping Department issued 88 new residential addresses, with a total of 12 addresses for seasonal housing and 76 addresses for permanent housing, respectively. The most development activity within the County has occurred in Walker and Warriors Mark Townships (Huntingdon County Planning Commission, 2019).

The Southern Alleghenies Rural Planning Organization (RPO) Long Range Transportation Plan (LRTP) identifies the need to retain current rural land use within Huntingdon County, while also developing a high-quality arterial highway system to connect the County with other parts of Pennsylvania through the year 2041. The LRTP also outlines the need to design collector and local streets that are consistent with the land use within the County (SAP&DC, 2017).

An additional discussion of future land development and how it interacts with hazards is provided in Section 4.4.4.

2.5. Data Sources and Limitations

Gathering and analyzing new data about natural hazards and the community was critical to the process of updating the Plan. The Huntingdon County Mapping Department provided the following spatial data sources used in the Plan:

- Critical facilities (Chemical Facilities, Churches, Community Centers, Dams, Sewer Facilities, Water Suppliers, Fire Companies, EMS, Medical Facilities, Government Facilities, Police, Nursing Homes, Telecommunications, Pipelines, Shelters/Red Cross)
- Cemeteries
- Libraries
- Historic Resources
- Structures
- Bridges
- Streams and water bodies
- Current land use
- Zoning Districts
- Parcels
- Transportation routes and active railways

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Huntingdon County's Preliminary Flood Insurance Rate Map (FIRM) (issued on May 2, 2018) was downloaded in January 2020 from FEMA's Flood Map Service Center. This data provides flood frequency and elevation information used in the flood hazard risk assessment. Additional base map data was provided by PA Game Commission, PA DCNR, and PennDOT. Population data from the 2010 Census and 2018 estimated populations were obtained from the U.S. Census Bureau (2018).

Additional information used to complete the risk assessment for this Plan was taken from various government agency and non-government agency sources. Those sources are cited where appropriate throughout the Plan and on each map with full references listed in **Appendix A – Bibliography**. It should be noted that numerous GIS datasets were obtained from Pennsylvania Spatial Data Access (PASDA), which is the official public access geospatial information clearinghouse for the Commonwealth of Pennsylvania. PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of Administration, Office for Information Technology, Geospatial Technologies Office and the Penn State Institutes of Energy and the Environment of the Pennsylvania State University.

In order to assess the vulnerability of different jurisdictions to the hazards, hazard data from the National Centers for Environmental Information (NCEI) database was utilized. NCEI is a division of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). Information on hazard events is compiled by NCEI from data gathered by the National Weather Service (NWS), another division of NOAA. NCEI then presents it on its website in various formats. The data used for this Plan came from the U.S. Storm Events database, which "documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce" (NOAA NCEI, 2019). The database currently contains hazard event data from January 1950 to May 2020. Other federal datasets came from USGS, the National Hurricane Center, and NOAA's Storm Prediction Center.

Hazus is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane winds, and earthquakes. In Hazus, current scientific and engineering knowledge is coupled with the latest GIS technology to produce estimates of hazard-related damage before or after a disaster occurs. Version 4.0 of this software was used to estimate losses for floods in Huntingdon County. For more information about the methodology employed to prepare the Hazus model and estimate losses, see **Appendix F**.

This 2020 Multi-Jurisdictional Hazard Mitigation Plan Update evaluates the vulnerability of the County's critical facilities. For the purposes of this Plan, critical facilities are those entities that are essential to the health and welfare of the community. The list of critical facilities was developed in conjunction with the Huntingdon County Emergency Management Agency, Huntingdon County Planning Department, and the Huntingdon County Mapping Department. Critical facilities have been identified in Huntingdon County to include chemical facilities, fire stations, police stations, and municipal and county office buildings, dams, pipelines, telecommunications, as well as facilities where a number of people might require special attention or evacuation should an identified natural hazard occur. Table 2.5-1 summarizes the critical facilities in Huntingdon County by type and by municipality, which can be found in **Appendix E**.

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Throughout the risk and vulnerability assessment included in Section 4, descriptions of limited data indicate some areas in which the County and municipalities can improve their ability to identify vulnerable structures and improve loss estimates. As the County and municipal governments work to increase their overall technical capacity and implement comprehensive planning goals, they will also attempt to improve the ability to identify areas of increased vulnerability.

3. Planning Process

3.1. *Update Process and Participation Summary*

This Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan was originally developed and adopted in 2004, and then updated and adopted for implementation in 2008 and 2013-2015.

The 2004 plan, 2008 plan, 2015 plan, and this updated 2020 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan represent the work of citizens, elected and appointed government officials, business leaders, and volunteers of non-profit organizations in developing a blueprint for protecting community assets, preserving the economic viability of the community, and saving lives.

An update to the 2015 Plan was initiated in September 2019. Huntingdon County engaged in the Plan Update initiative in 2019, several months early in the five-year plan update cycle, as funding support was available from the Pennsylvania Emergency Management Agency and the Federal Emergency Management Agency. Michael Baker International, a full-service engineering firm that provides hazard mitigation planning guidance and technical support, assisted the County throughout the update process. The Huntingdon County 2020 Multi -Jurisdictional Hazard Mitigation Plan Update was completed in August 2020.

The 2020 Multi-Jurisdictional Hazard Mitigation Plan Update follows an outline developed by the Pennsylvania Emergency Management Agency in 2013 which provides a standardized format for all local hazard mitigation plans in the Commonwealth of Pennsylvania. The Plan Update was led by the Hazard Mitigation Plan Steering Committee (HMPSC) and informed by the Hazard Mitigation Planning Team (HMPT). Each member of the 2015 HMPT as well as other community leaders and stakeholders were invited by Huntingdon County's Emergency Management Coordinator to actively participate in updating the Plan. Those who accepted the invitation comprise the current Hazard Mitigation Planning Team members, listed further in this section.

The 2020 planning process began with a kickoff meeting with representatives from municipalities, county agencies, non-profit groups, and other stakeholders. All potential participants were mailed an invitation to attend the meeting. In addition, officials of Centre, Mifflin, Juniata, Franklin, Fulton, Bedford, and Blair Counties were notified via mail and invited to participate in the planning process. Furthermore, each is aware of the planning effort as Huntingdon County has existing mutual aid agreements with each of these adjacent Counties and works with representatives regularly on updating Emergency Operations Plans. Juniata County participated in the planning process.

Contact information was obtained from all meeting attendees and used to create a HMPT mailing list. Section 3.2 provides a discussion of the HMPT as well as a table of members with their corresponding organization(s).

In March 2020, COVID-19 became widespread in Pennsylvania, and Governor Wolf's stay-at-home order was enforced in all 67 counties. Due to the stay-at-home order and the risks imposed by COVID-19, no in person meetings were held. In addition, due to the 2015 Plan expiring in April 2020, an abbreviated update

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process was initiated. Although in-person contact was limited during the planning process, a variety of outreach methods were utilized to ensure robust participation, including paper and electronic correspondence, virtual and in-person tools, and individual/one-on-one calls.

Municipal officials and other stakeholders continued to receive notification regarding all meetings via telephone, letter, email, or some combination. A brief description of each meeting that was held is available in Section 3.3. In addition, detailed meeting summaries describing events of each meeting are available in **Appendix C – Meeting and Other Participation Documentation**.

In order to obtain information from municipalities and other stakeholders, forms and surveys were distributed and collected throughout the planning process. Some of the forms were completed during planning meetings while others were sent via email or were posted to the Plan website, https://www.pennsylvaniiahmp.com/huntingdon_county_hmp. These forms were completed and returned in between scheduled meetings. All municipalities were required to have a representative attend at least one meeting and provide pertinent information for the Plan Update. Table 3.1-1 lists each municipality along with their specific participation and contributions to the planning process. Sign-in sheets for each meeting with individual names are available in **Appendix C – Meeting and Other Participation Documentation** along with all completed forms and surveys. All 48 municipalities participated in the Plan Update by either attending meetings, providing information, or submitting a new mitigation action resulting in 100% participation across the County.

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Table 3.1-1 Summary of participation from local municipalities during the 2020 Huntingdon County MJHMP Update.

MUNICIPALITY	MEETING			WORKSHEETS/SURVEYS/FORMS				
	HAZARD MITIGATION PLAN UPDATE KICK-OFF MARCH 5, 2020	RISK ASSESSMENT AND MITIGATION SOLUTIONS WORKSHOP MAY 13, 2020 MAY 20, 2020 MAY 26, 2020	DRAFT PLAN REVIEW MEETING JULY 15, 2020	RISK ASSESSMENT SURVEY	CAPABILITY ASSESSMENT	NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SURVEY	MITIGATION ACTION PROGRESS REPORT	NEW MITIGATION ACTION FORM
Alexandria Borough		✓					✓	✓✓✓✓✓
Barree Township		✓					✓	✓
Birmingham Borough		✓					✓	✓
Brady Township		✓					✓	✓
Broad Top City Borough		✓						
Carbon Township		✓					✓	
Cass Township	✓	✓		✓				✓
Cassville Borough	✓	✓		✓				✓
Clay Township	✓			✓	✓			✓
Coalmont Borough		✓					✓	✓
Cromwell Township		✓						✓
Dublin Township	✓			✓	✓			✓
Dudley Borough		✓					✓	✓
Franklin Township	✓			✓				✓

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Table 3.1-1 Summary of participation from local municipalities during the 2020 Huntingdon County MJHMP Update.

MUNICIPALITY	MEETING			WORKSHEETS/SURVEYS/FORMS				
	HAZARD MITIGATION PLAN UPDATE KICK-OFF MARCH 5, 2020	RISK ASSESSMENT AND MITIGATION SOLUTIONS WORKSHOP MAY 13, 2020 MAY 20, 2020 MAY 26, 2020	DRAFT PLAN REVIEW MEETING JULY 15, 2020	RISK ASSESSMENT SURVEY	CAPABILITY ASSESSMENT	NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SURVEY	MITIGATION ACTION PROGRESS REPORT	NEW MITIGATION ACTION FORM
Henderson Township		✓						✓✓✓
Hopewell Township		✓						✓
Huntingdon Borough		✓					✓	✓
Jackson Township		✓					✓	✓
Juniata Township		✓						
Lincoln Township		✓						✓
Logan Township		✓					✓	✓
Mapleton Borough		✓					✓	✓✓
Marklesburg Borough		✓					✓	✓
Mill Creek Borough		✓						✓
Miller Township		✓						
Morris Township	✓	✓		✓	✓	✓	✓	✓
Mount Union Borough		✓						✓
Oneida Township		✓						✓✓✓

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Table 3.1-1 Summary of participation from local municipalities during the 2020 Huntingdon County MJHMP Update.

MUNICIPALITY	MEETING			WORKSHEETS/SURVEYS/FORMS				
	HAZARD MITIGATION PLAN UPDATE KICK-OFF MARCH 5, 2020	RISK ASSESSMENT AND MITIGATION SOLUTIONS WORKSHOP MAY 13, 2020 MAY 20, 2020 MAY 26, 2020	DRAFT PLAN REVIEW MEETING JULY 15, 2020	RISK ASSESSMENT SURVEY	CAPABILITY ASSESSMENT	NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SURVEY	MITIGATION ACTION PROGRESS REPORT	NEW MITIGATION ACTION FORM
Orbisonia Borough		✓						✓
Penn Township		✓						✓
Petersburg Borough		✓					✓	✓
Porter Township	✓	✓		✓	✓	✓	✓	✓
Rockhill Borough		✓					✓	✓
Saltillo Borough		✓						✓
Shade Gap Borough		✓					✓	✓
Shirley Township		✓						✓
Shirleysburg Borough		✓						✓
Smithfield Township	✓	✓	✓	✓✓✓	✓	✓	✓	✓
Springfield Township	✓			✓	✓			✓
Spruce Creek Township	✓			✓			✓	✓
Tell Township		✓		✓	✓	✓	✓	✓
Three Springs Borough	✓			✓	✓	✓	✓	✓✓

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Table 3.1-1 Summary of participation from local municipalities during the 2020 Huntingdon County MJHMP Update.

MUNICIPALITY	MEETING			WORKSHEETS/SURVEYS/FORMS				
	HAZARD MITIGATION PLAN UPDATE KICK-OFF MARCH 5, 2020	RISK ASSESSMENT AND MITIGATION SOLUTIONS WORKSHOP MAY 13, 2020 MAY 20, 2020 MAY 26, 2020	DRAFT PLAN REVIEW MEETING JULY 15, 2020	RISK ASSESSMENT SURVEY	CAPABILITY ASSESSMENT	NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SURVEY	MITIGATION ACTION PROGRESS REPORT	NEW MITIGATION ACTION FORM
Todd Township		✓					✓	✓
Union Township		✓					✓	✓
Walker Township	✓	✓	✓	✓	✓	✓	✓	✓
Warriors Mark Township	✓	✓		✓	✓	✓	✓	✓
West Township		✓					✓	✓
Wood Township	✓	✓		✓				✓
Huntingdon County	✓	✓	✓	✓✓✓	✓	✓	✓	✓

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3.2. The Planning Team

Members of the HMPSC are listed below in Table 3.2-1. The HMPSC met prior to the Kick-Off Meeting to discuss the Plan Update process including FEMA and PEMA requirements and guidance, a schedule for deliverables and meetings, participation and contacts for the HMPT, and currently available data and documentation to inform the 2020 update.

Table 3.2-1 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Steering Committee.	
PARTICIPANT	TITLE
Joe Thompson, ENP	Director, Huntingdon County Emergency Management Agency
Commissioner Scott Walls	Huntingdon County
James P. Lettiere, AICP	Planning Director, Huntingdon County Planning and Development Department
Deb Fleagle	Chair, Local Emergency Planning Committee; Pre-Hospital Coordinator, JC Blair Memorial Hospital

The Hazard Mitigation Planning Team included municipal officials, Huntingdon County government representatives, non-profit organizations, and other stakeholders such as regional police departments and regional government councils. The HMPT was organized by the County Emergency Management Coordinator, Joe Thompson, with assistance from Michael Baker International Planner, to plan meetings, collect information, and conduct public outreach. All invited stakeholders are listed in **Appendix C**. These individuals were invited to participate in the Plan Update process. The stakeholders listed in Table 3.2-2 served on the 2020 countywide HMPT and actively participated in the planning process through attendance at meetings, completion of assessment surveys, and/or submission of comments.

Table 3.2-2 Stakeholders who participated in the planning process.	
MUNICIPALITY/ORGANIZATION	PARTICIPANT(S)
Alexandria Borough	Sam Miller, Judy Scott
Barree Township	Todd Musser, Danielle Taylor
Birmingham Borough	Lee Pryer
Brady Township	Stanley Gresko
Broad Top City Borough	Roy McCabe
Carbon Township	Penny Brode
Cass Township	Ron Hicks
Cassville Borough	Ron Hicks
Clay Township	Randy Anderson

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Table 3.2-2 Stakeholders who participated in the planning process.	
MUNICIPALITY/ORGANIZATION	PARTICIPANT(S)
Coalmont Borough	Dolly Ford, Peggy Hoover
Cromwell Township	David L. Brenneman, Kenneth Leidy
Dublin Township	Randy Anderson
Dudley Borough	Kim Fessler
Franklin Township	Vince Lombardi
Henderson Township	Robert Coffelt, Dave Howe
Hopewell Township	Brian Hunsicker, Roy Smuda
Huntingdon Borough	Andy Young
Jackson Township	Steve Fleck
Juniata Township	Gregory Stein
Lincoln Township	Brian Hunsicker
Logan Township	Clint Mowrer
Mapleton Borough	Chris Corbin, Michael Corbin
Marklesburg Borough	Brian Hunsicker
Mill Creek Borough	Jason Chilcote, Wayne Cohenour, Michael Finkle
Miller Township	Jessica Couch
Morris Township	Crist Fellman,
Mount Union Borough	Timothy Allison
Oneida Township	Shaun Magill
Orbisonia Borough	Stephen Scott
Penn Township	Brian Hunsicker
Petersburg Borough	Steven Dunmire, Jacqueline Hardy
Porter Township	Crist Fellman
Rockhill Borough	Sandra Snyder-Shoop
Saltillo Borough	Denise Doyle
Shade Gap Borough	Jessica Kiefer
Shirley Township	David McGarvey, Kathy Jo Varner

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Table 3.2-2 Stakeholders who participated in the planning process.	
MUNICIPALITY/ORGANIZATION	PARTICIPANT(S)
Shirleysburg Borough	David McGarvey, Kathy Jo Varner
Smithfield Township	John Cirko
Springfield Township	Randy Anderson
Spruce Creek Township	Vince Lombardi
Tell Township	Terry Lee Kennedy, Sr.
Three Springs Borough	Karen Flasher
Todd Township	Matthew Barnett
Union Township	Robert Freeman
Walker Township	Bill Leidy
Warriors Mark Township	Vince Lombardi, Stewart Neff, Peter Liese
West Township	Danielle Taylor
Wood Township	Laurie Nearhood, Roy McCabe
BJJS Youth Forestry Camp	Mylea Fortson, George Rajkowski
Pennsylvania Emergency Management Agency	Laura Laucks
Huntingdon County Planning and Development Department	Laurie Nearhood
Pennsylvania Department of Transportation	Kelli Scalia
SCI – Huntingdon	Anthony Scalia
Huntingdon County COG	Katie Unger
The Daily News	Kylee Hawn
Juniata County Planning and Development	Bradley Kerstetter
Future Edge Consulting	Bill Corbin
Huntingdon County Emergency Management Agency	Hannah Ormsby
Huntingdon County Commissioners	Heather Fellman

3.3. Meetings and Documentation

The following meetings were held during the plan update process. Invitations, agendas, sign-in sheets, and minutes for these meetings are included in **Appendix C**.

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March 5, 2020 – Multi-Jurisdictional Hazard Mitigation Plan Update Kick-Off Meeting held at the Bailey Building in Huntingdon, PA to discuss project scope, schedule, goals, the planning process, participation and engagement, and next steps. Hazards from the 2015 Plan were reviewed with the HMPT at the kick-off. During this meeting, county staff, municipal representatives, and interested stakeholders provided vital information on changes in hazard risk and local capabilities to mitigate those risks since the last MJHMP update. Municipal attendees completed an “Evaluation of Hazards and Risk Form” to identify their jurisdictional risk to each hazard. Capability Assessment Surveys and National Flood Insurance Program Worksheets were also completed by municipal attendees.

May 13, 2020, May 20, 2020, and May 26, 2020 – Risk Assessment and Mitigation Solutions Workshop held virtually through Cisco WebEx to discuss Huntingdon County’s hazard vulnerability and new hazards to be profiled in the 2020 MJHMP. These meetings were held virtually due to social distancing restrictions as a result of the ongoing COVID-19 pandemic. Participants were provided meeting materials prior to the meeting with the option of receiving hard copy mailed meeting materials or electronic meeting materials. Meeting materials were also posted to the Huntingdon County MJHMP website https://www.pennsylvaniiahmp.com/huntingdon_county_hmp one month in advance of the May 13 meeting. The website was also linked and available to all county and municipal officials in several corresponding emails in preparation for these meetings. Michael Baker and Huntingdon County both provided one-on-one calls with municipal officials that needed additional support prior to these meetings, as well as follow up assistance with mitigation actions. Three meeting dates were provided to ensure all county and municipal officials and additional stakeholders could participate in the planning process. During these meetings, participants discussed progress of mitigation actions from the 2015 Plan Update and identified additional mitigation actions that would help reduce or eliminate potential losses.

July 15, 2020 – Draft Plan Review Meeting held at the Bailey Building in Huntingdon, PA to update the public about the plan update process and findings. The meeting was also held virtually through GoToMeeting for any individuals that were uncomfortable meeting in-person or in a high-risk group. The meeting was advertised in the County newspaper, *The Daily News*. Copies of the newspaper notice are included in **Appendix C: Meeting and Other Participation Documentation**. Attendees were asked to review the entire Plan on the County’s MJHMP website https://www.pennsylvaniiahmp.com/huntingdon_county_hmp and provide written comments by August 13, 2020. No comments were received during the Draft Plan review period.

No comments were received from the general public at any point in the update.

3.4. Public & Stakeholder Participation

Each municipality was given multiple opportunities to participate in the plan update process through invitation to meetings, review of risk assessment results and mitigation actions, and an opportunity to comment on a final draft of the 2020 Multi-Jurisdictional Hazard Mitigation Plan Update. The tools listed below were distributed with meeting invitations, at meetings, and on the plan update website to solicit information, data, and comments from both local municipalities and other key stakeholders in

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Huntingdon County. Responses to these worksheets and surveys are included in **Appendix C: Meeting and Other Participation Documentation**.

- **Capability Assessment Survey:** Collects information on local planning, regulatory, administrative, technical, fiscal, political, and resiliency capabilities that can be included in the plan's Capability Assessment section.
- **Evaluation of Hazards and Risk Form:** Collects information from the HMPT regarding whether there have been changes to the frequency of occurrence, magnitude of impact, or geographic extent of hazards identified in the 2014 plan. In addition, the form asks members of the HMPT to select any additional hazards they believe should be considered for inclusion in the 2020 MJHMP.
- **National Flood Insurance Program Survey:** Collects information on each municipality's participation in and continued compliance with the NFIP and identifies areas for improvement that could be potential mitigation actions.
- **Mitigation Progress Report:** Because many municipalities had actions or projects in the 2015 Plan, they were asked to evaluate the status of projects submitted in the previous planning process, indicating if there had been progress, if a project had been discontinued or completed, and whether each project should be carried over into the 2020 MJHMP.
- **Risk Ranking Evaluation:** Identifies the hazards being profiled in the 2020 MJHMP in terms of probability, severity, spatial extent, warning time, and duration. This form provides an additional opportunity for municipalities and additional stakeholders to provide feedback on the hazard ranking.
- **New Mitigation Action Form:** This form was provided to communities that wanted to include a new action in the MJHMP. The purpose was to collect details about the action, including priority, responsible parties, potential partners, potential funding sources, implementation timeframe, and more.

Community participation and comment was encouraged throughout the planning process, particularly through the project website, website https://www.pennsylvaniiahmp.com/huntingdon_county_hmp. This site acted as a repository for the entire planning process, including presentations, agendas, minutes, and worksheets from each meeting as well as promulgating meeting dates, times, and important announcements. The public was also encouraged to provide images and stories to Michael Baker International on the effects of the identified hazards in their communities.

Huntingdon County posted the 2020 Draft Multi-Jurisdictional Hazard Mitigation Plan Update on the plan update website (https://www.pennsylvaniiahmp.com/huntingdon_county_hmp) for review and comment on June 30, 2020. In addition, an invitation to the public to review and comment on the draft plan was

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posted on the home page of the project website. Comments were to be submitted in writing to Joe Thompson of the Huntingdon County Emergency Management Agency or to Troy Truax of Michael Baker International by mail or email.

4. Risk Assessment

4.1. Update Process Summary

To reduce the potential for damage due to hazards, it is necessary to identify hazards that may affect the County. This risk assessment provides a factual basis for activities proposed by the County in its mitigation strategy. Hazards that may affect Huntingdon County are identified and defined in terms of location and geographic extent, magnitude of impact, previous events and likelihood of future occurrence. All information from the previous plan has been included or updated in the 2020 Multi-Jurisdictional Hazard Mitigation Plan Update, unless otherwise indicated.

Hazard profiles in the 2020 MJHMP include the following Natural and Human-Made Hazards:

- Dam Failure
- Drought
- Extreme Temperatures
- Flood, Flash Flood, Ice Jam
- Hailstorm
- Hurricane, Tropical Storm, Nor'easter
- Invasive Species
- Landslide
- Pandemic/Infectious Disease
- Subsidence and Sinkhole
- Tornado and Windstorm
- Wildfire
- Winter Storm
- Civil Disturbance
- Cyber Terrorism
- Environmental Hazards-Hazardous Materials Release
- Terrorism
- Transportation Accidents
- Urban Fire and Explosion
- Utility Interruption

The Huntingdon County HMPT reviewed the hazards profiled in the 2015 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Update during the March 5 Kick-Off Meeting. The HMPT determined that 19 of the existing hazards should be continued into the plan update and decided that one additional hazard should be profiled in the 2020 plan update: Invasive Species. The HMPT decided not to carry six of the 2015 hazard profiles forward: Earthquake, Lightning Strike, Mineral Mining, Nuclear Incidents, Radon Exposure, and Volcanic Event. The HMPT decided to eliminate the hazard profiles that were deemed least relevant to Huntingdon County and instead focus on those that truly reflect the challenges that the County faces in terms of how common and/or potentially devastating each hazard is considered. The HMPT indicated that the threat posed by invasive species had increased in recent years and should be added to the MJHMP, resulting in a total of 20 hazard profiles in the 2020 plan update. The hazards selected by the HMPT were then reviewed at the May 13 Risk Assessment and Mitigation Solutions Workshop. The municipalities completed an Evaluation of Hazards and Risk Form to indicate their jurisdictional risk to each hazard that would be profiled in the 2020 plan.

Hazard profiles were then developed in order to define the characteristics of each hazard as it applies to Huntingdon County. This process was completed using published information and web sites that address hazards globally, nationally, within Pennsylvania, or specifically within Huntingdon County as well as anecdotal information provided by members of the HMPT.

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Following hazard identification and profiling, a vulnerability assessment was performed to identify the impact of natural hazard events on people, buildings, infrastructure, and the community. Each natural hazard is discussed in terms of its potential impact on individual communities in Huntingdon County, including the types of parcels and critical facilities that may be at risk. The assessment allows the County and its municipalities to focus mitigation efforts on areas most likely to be damaged or most likely to require early response to a hazard event. A vulnerability analysis was performed which identifies structures, critical facilities, or people that may be impacted by hazard events and describes what those events can do to physical, social, and economic assets. Depending upon data availability, assessment results consist of an inventory of vulnerable structures or populations.

4.2. Hazard Identification

4.2.1. Table of Presidential Disaster Declarations

In the past, natural hazards have led to costly disasters in Huntingdon County resulting in a Presidential Declaration of Major Disaster or a Gubernatorial Proclamation of Extreme Emergency. Presidential Disaster and Emergency Declarations are issued when it has been determined that State and local governments need assistance in responding to a disaster event. Table 4.2.1-1 identifies Presidential Disaster and Emergency Declarations issued between 1953 through 2020 that have affected Huntingdon County. The most current declaration in Huntingdon County is the Pennsylvania COVID-19 Pandemic, ongoing since March 30, 2020. Additional declarations beyond 2020 can be found on the FEMA website at: <https://www.fema.gov/disasters/grid/state-tribal-government/44>.

DECLARATION NUMBER	DATE	EVENT
4506	March 2020	COVID-19 Pandemic
4149	October 2013	Severe Storms, Tornadoes, and Flooding
4099	January 2013	Hurricane Sandy
3356	October 2012	Proclamation of Emergency – Hurricane Sandy
4030	September 2011	Tropical Storm Lee
3340	September 2011	Proclamation of Emergency – Remnants of Tropical Storm Lee
1898	April 2010	Severe Winter Storms and Snowstorms
3235	September 2005	Proclamation of Emergency – Hurricane Katrina
1557	September 2004	Tropical Depression Ivan
1555	September 2004	Severe Storms and Flooding associated with Tropical Depression Frances
3180	March 2003	Proclamation of Emergency – Snowstorm
1138	September 1996	Hurricane Fran
1093	January 1996	Flooding
1085	January 1996	Blizzard
3105	March 1993	Proclamation of Emergency – Severe Snowfall and Winter Storm
340	June 1972	Tropical Storm Agnes

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In addition to these Presidentially declared events, 32 events warranted Gubernatorial Disaster Declarations or Proclamations. Table 4.2.1-2 lists Gubernatorial Disaster Declarations or Proclamations that have been issued for Huntingdon County between 1955 and 2020.

Table 4.2.1-2 Gubernatorial Disaster Declarations or Proclamations affecting Huntingdon County (PEMA, 2020).	
DATE	EVENT
March 2020	Coronavirus (COVID-19) Emergency Disaster Declaration
January 2019	Proclamation of Emergency – Severe Winter Event
August 2018	Proclamation of Disaster Emergency – Severe Storms and Flooding
January 2018	Proclamation of Emergency – Opioid Crisis
March 2017	Proclamation of Emergency – Severe Winter Storm
March 2017	Proclamation of Emergency – Severe Winter Storm
January 2016	Proclamation of Emergency – Severe Winter Storm
August 2015	Proclamation of Emergency – Severe Storms
January 2015	Proclamation of Emergency – Severe Winter Storms
February 2014	Proclamation of Disaster Emergency – Severe Winter Storm
February 2014	Proclamation of Disaster Emergency – Severe Winter Storm
February 2014	Proclamation of Disaster Emergency – Severe Winter Storm
February 2014	Proclamation of Disaster – Extreme Weather, Utility Interruption
June 2013	Proclamation of Emergency - High Winds, Thunderstorms, Heavy Rain, Tornado, Flooding
October 2012	Proclamation of Emergency – Hurricane Sandy
April 2012	Proclamation of Emergency – Spring Winter Storms
January 2011	Proclamation of Emergency – Severe Winter Storm
September 2011	Proclamation of Emergency – Severe Storms and Flooding (Lee/Irene)
February 2010	Proclamation of Emergency – Severe Winter Storm
April 2007	Proclamation of Emergency – Severe Storm
April 2007	Proclamation of Emergency – Severe Winter Storm
February 2007	Proclamation of Emergency – Severe Winter Storm
February 2007	Proclamation of Emergency - Regulations
September 2006	Proclamation of Emergency – Tropical Depression Ernesto
September 2005	Proclamation of Emergency – Hurricane Katrina
February 2002	Drought and Water Shortage
July 1999	Drought
January 1978	Heavy Snow
February 1978	Blizzard
February 1972	Heavy Snow
January 1966	Heavy Snow
March 1963	Ice Jam

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4.2.2. Summary of Hazards

Table 4.2.2-1 summarizes hazards identified in the 2015 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Update.

Table 4.2.2-1 Hazards identified in the Huntingdon County 2015 MJHMP Update.		
HAZARDS		
Civil Disturbance	Hurricane, Tropical Storm, Nor'easter	Tornado and Windstorm
Cyber Terrorism	Landslide	Transportation Accidents
Dam Failure	Lightning Strike	Urban Fire and Explosion
Drought	Mineral Mining*	Utility Interruption
Earthquake	Nuclear Incidents	Volcanic Event*
Environmental Hazards – Hazardous Materials Release	Pandemic/Infectious Disease	Wildfire
Extreme Temperatures	Radon Exposure	Winter Storm
Flood, Flash Flood, and Ice Jam	Subsidence and Sinkhole	
Hailstorm	Terrorism	
*Hazards not included in PEMA SOG.		

Nineteen hazards identified in the 2015 plan were included in the 2020 MJHMP update. The hazards were reviewed by the HMPT at the March 5, 2020 Kick-Off Meeting. Each municipal attendee was provided with an *Evaluation of Hazards and Risk Form* and the PEMA Standard List of Hazards which is a comprehensive list of all hazards to be considered for evaluation in the 2012 plan. This list was obtained primarily from the 2007 Edition of the National Fire Protection Association’s *NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs* (NFPA, 2007).

Table 4.2.2-2 Following review of this hazards list and completion of the <i>Evaluation of Hazards and Risk Form</i> , the HMPT determined that one new hazard would be included in the 2020 MJHMP Update: Invasive Species. Table 4.2.2-2 contains a complete list of all potential hazards in Huntingdon County identified through the risk assessments and planning meetings. Hazard profiles are included in Section 4.3 for each of these hazards. List and description of natural and manmade hazards profiled in the 2020 Hazard Mitigation Plan Update. (PA 2020 Standard Operating Guide)	
HAZARD	HAZARD DESCRIPTION
NATURAL HAZARDS	

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HAZARD	HAZARD DESCRIPTION
 <p data-bbox="259 577 402 619">Drought</p>	<p data-bbox="475 415 1469 573">Drought is defined as a deficiency of precipitation experienced over an extended period of time, usually a season or more. Droughts increase the risk of other hazards, like wildfires, flash floods, and landslides or debris flows. This hazard is of particular concern in Pennsylvania due to the prevalence of farms and other water-dependent industries, water-dependent recreation uses, and residents who depend on wells for drinking water.</p>
 <p data-bbox="259 808 402 871">Extreme Temperature</p>	<p data-bbox="475 667 1469 888">Extreme heat often results in the highest number of annual deaths of all weather-related hazards. In most of the United States, extreme heat is defined as a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. (Ready.gov, 2018). Extremely cold air comes every winter in at least part of the country and affects millions of people across the United States. The arctic air, together with brisk winds, can lead to dangerously cold wind chill values. People exposed to extreme cold are susceptible to frostbite and hypothermia in a matter of minutes.</p>
 <p data-bbox="259 1134 402 1176">Floods</p>	<p data-bbox="475 940 1469 1224">Flooding is the temporary condition of partial or complete inundation of normally dry land, and it is the most frequent and costly of all natural hazards in Pennsylvania. Flash flooding is usually a result of heavy localized precipitation falling in a short time period over a given location, often along mountain streams and in urban areas where much of the ground is covered by impervious surfaces. Winter flooding can include ice jams which occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of a river. The ice layer often breaks into large chunks, which float downstream, piling up in narrow passages and near other obstructions such as bridges and dams.</p>
 <p data-bbox="259 1449 402 1491">Hailstorms</p>	<p data-bbox="475 1297 1469 1486">Hailstorms occur when ice crystals form within a low-pressure front due to the rapid rise of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation in the form of balls or irregularly shaped masses of ice greater than 0.75 inches in diameter. Hailstorms can cause significant damage to homes, vehicles, livestock, and people.</p>
 <p data-bbox="259 1701 402 1743">Hurricanes</p>	<p data-bbox="475 1549 1469 1738">Hurricanes, tropical storms, and nor'easters are classified as cyclones and are any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise (in the Northern Hemisphere) and whose diameter averages 10-30 miles across. Potential threats from hurricanes include powerful winds, heavy rainfall, storm surges, coastal and inland flooding, rip currents, tornadoes, and landslides. The Atlantic hurricane season runs from June 1 to November 30.</p>

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HAZARD	HAZARD DESCRIPTION
	<p>An invasive species is a species that is not indigenous to the ecosystem under consideration and whose introduction causes or is likely to cause economic, environmental, or human harm. These species can be any type of organism: plant, fish, invertebrate, mammal, bird, disease, or pathogen.</p>
	<p>In a landslide, masses of rock, earth or debris move down a slope. Landslides can be caused by a variety of factors, including earthquakes, storms, fire, and human modification of land. Areas that are prone to landslide hazards include previous landslide areas, areas on or at the base of slopes, areas in or at the base of drainage hollows, developed hillsides with leach field septic systems, and areas recently burned by forest or brush fires.</p>
	<p>A pandemic is a global outbreak of disease that occurs when a new virus emerges in the human population, spreading easily in a sustained manner, and causing serious illness. An epidemic describes a smaller-scale infectious outbreak, within a region or population, that emerges at a disproportional rate. Infectious disease outbreaks may be widely dispersed geographically, impact large numbers of the population, and could arrive in waves lasting several months at a time.</p>
	<p>Land subsidence is a gradual settling or sudden sinking of the ground surface due to the movement of subsurface materials. A sinkhole is a subsidence feature resulting from the sinking of surficial material into a pre-existing subsurface void. Subsidence and sinkholes are geologic hazards that can impact roadways and buildings and disrupt utility services. Subsidence and sinkholes are most common in areas underlain by limestone and can be exacerbated by human activities such as water, natural gas, and oil extraction.</p>
	<p>A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. About 1,250 tornadoes hit the U.S. each year, with about 16 hitting Pennsylvania. Damaging winds exceeding 50-60 miles per hour can occur during tornadoes, severe thunderstorms, winter storms, or coastal storms. These winds can have severe impacts on buildings, pulling off the roof covering, roof deck, or wall siding and pushing or pulling off the windows.</p>

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HAZARD	HAZARD DESCRIPTION
	<p>A wildfire is an unplanned fire that burns in a natural area. Wildfires can cause injuries or death and can ruin homes in their path. Wildfires can be caused by humans or lightning, and can happen anytime, though the risk increases in period of little rain. In Pennsylvania, 98% of wildfires are caused by people.</p>
	<p>A winter storm is a storm in which the main types of precipitation are snow, sleet, or freezing rain. A winter storm can range from a moderate snowfall or ice event over a period of a few hours to blizzard conditions with wind-driven snow that lasts for several days. Most deaths from winter storms are not directly related to the storm itself, but result from traffic accidents on icy roads, medical emergencies while shoveling snow, or hypothermia from prolonged exposure to cold.</p>
HUMAN MADE HAZARDS	
	<p>A civil disturbance is defined by FEMA as a civil unrest activity (such as a demonstration, riot, or strike) that disrupts a community and requires intervention to maintain public safety.</p>
	<p>Cyber terrorism refers to acts of terrorism committed using computers, networks, and the Internet. The most widely cited definition comes from Denning’s Testimony before the Special Oversight Panel on Terrorism: “Cyberterrorism...is generally understood to mean unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. Further, to qualify as cyberterrorism, an attack should result in violence against persons or property, or at least cause enough harm to generate fear.”</p>
	<p>Dam failure is the uncontrolled release of water (and any associated wastes) from a dam. This hazard often results from a combination of natural and human causes, and can follow other hazards such as hurricanes, earthquakes, and landslides. The consequences of dam failures can include property and environmental damage and loss of life.</p>

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HAZARD	HAZARD DESCRIPTION
 <p>Hazardous Materials</p>	<p>Hazardous material releases can contaminate air, water, and soils and have the potential to cause injury or death. Dispersion can take place rapidly when transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events.</p>
 <p>Terrorism</p>	<p>Terrorism is use of force or violence against persons or property with the intent to intimidate or coerce. Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber-attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. Cyber-attacks have become an increasingly pressing concern.</p>
 <p>Transport. Accidents</p>	<p>Transportation accidents are technological hazards involving the nation's system of land, sea, and air transportation infrastructure. A flaw or breakdown in any component of this system can and often does result in a major disaster involving loss of life, injuries, property and environmental damage, and economic consequences.</p>
 <p>Urban Fire /Explosion</p>	<p>Urban fire and explosion hazards include vehicle and building/structure fires as well as overpressure rupture, overheat, or other explosions that do not ignite. This hazard occurs in denser, more urbanized areas statewide and most often occurs in residential structures. Nationally, fires cause over 3,000 deaths and approximately 16,000 injuries each year.</p>
 <p>Utility Interruption</p>	<p>Utility interruption hazards are hazards that impair the functioning of important utilities in the energy, telecommunications, public works, and information network sectors. Utility interruption hazards include the following:</p> <ul style="list-style-type: none"> • Geomagnetic Storms • Fuel or Resource Shortage • Electromagnetic Pulse • Information Technology Failure • Ancillary Support Equipment • Public Works Failure • Telecommunications System Failure • Transmission Facility or Linear Utility Accident • Major Energy, Power, Utility Failure

4.3. Hazard Profiles and Vulnerability Analysis

NATURAL HAZARDS

4.3.1. Drought

4.3.1.1. Location and Extent

Drought is defined as the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. Droughts are regional climatic events, so they typically impact all communities in a relatively uniform fashion with only minor localized variations in rainfall events. Droughts often occur across county boundaries, affecting large areas of Pennsylvania at the same time. Therefore, a drought would affect all of Huntingdon County, with the largest impact being on areas of the County with extensive agriculture uses.

Locations of droughts nationwide are monitored continuously by the USGS, and the Pennsylvania Department of Environmental Protection monitors conditions throughout the state. Maps showing locations currently experiencing drought conditions are posted on various websites (including <http://waterwatch.usgs.gov>) and show locations where stream flow is below normal and where drought conditions exist or are emerging. As this Plan was being developed between February 2020 to July 2020, no locations in Pennsylvania were experiencing a drought.

4.3.1.2. Range of Magnitude

The Pennsylvania Department of Environmental Protection determines drought conditions by monitoring precipitation, stream flows, ground water levels, and the Palmer Drought Severity Index to monitor drought conditions.

The Palmer Drought Severity Index (PDSI) is used to describe abnormally wet to abnormally dry conditions. Zero represents normal rainfall and temperature conditions; drought condition indices are described in the table below.



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INDEX	DESCRIPTION OF CONDITIONS
4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.5 to -0.99	Incipient dry spell
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

Data provided by Cornell University shows that drought conditions in the South Central Mountains region of Pennsylvania have resulted in Palmer Drought Severity Index level as low as -7.13 in 1931. This was during a drought that lasted for a little over a year from 1930 - 1931.

Phases of drought preparedness in Pennsylvania in order of increasing severity are:

- **Drought Watch:** A period to alert government agencies, public water suppliers, water users, and the public regarding the potential for future drought-related problems. Drought Watches are invoked when three or more drought indicators are present for a county or group of counties. The focus is on increased monitoring, awareness, and preparation for response if conditions worsen. A request for voluntary water conservation is made. The objective of voluntary water conservation measures during a drought watch is to reduce water use by five percent in the affected areas. Due to varying conditions, individual water suppliers or municipalities may determine more stringent conservation actions.
- **Drought Warning:** This phase involves a coordinated response to imminent drought conditions and potential water supply shortages through concerted voluntary conservation measures to avoid or reduce shortages, relieve stressed sources, develop new sources, and if possible, forestall the need to impose mandatory water use restrictions. The objective of voluntary water conservation measures during a drought warning is to reduce overall water use by 10-15 percent in the affected areas. As with a Drought Watch, varying conditions may cause individual water suppliers or municipalities to determine more stringent conservation actions.

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The largest impact of drought would be on the County's agricultural land. Agricultural land makes up nearly 120,157 acres and approximately 56% of the County's total land area.

- Drought Emergency: This stage is a phase of concerted management operations to marshal all available resources to respond to actual emergency conditions, to avoid depletion of water sources, to assure at least minimum water supplies to protect public health and safety, to support essential and high priority water uses, and to avoid unnecessary economic dislocations. It is possible during this phase to impose mandatory restrictions on non-essential water uses that are provided in the Pennsylvania Code (Chapter 119), if deemed necessary and if ordered by the Governor of Pennsylvania. The objective of water use restrictions (mandatory or voluntary) and other conservation measures during this phase is to reduce consumptive water use in the affected area by fifteen percent, and to reduce total use to the extent necessary to preserve public water system supplies, to avoid or mitigate local or area shortages, and to assure equitable sharing of limited supplies.

- Local Water Rationing: Although not a drought phase, local municipalities may, with the approval of the PA Emergency Management Council, implement local water rationing to share a rapidly dwindling or severely depleted water supply in designated water supply service areas. These individual water rationing plans, authorized through provisions of the Pennsylvania Code (Chapter 120), will require specific limits on individual water consumption to achieve significant reductions in use. Under both mandatory restrictions imposed by the Commonwealth and local water rationing, procedures are provided for granting of variances to consider individual hardships and economic dislocations.

Environmental impacts of drought include:

- Hydrologic effects – lower water levels in reservoirs, lakes, and ponds; reduced streamflow; loss of wetlands; estuarine impacts; groundwater

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depletion and land subsidence; effects on water quality such as increases in salt concentration and water temperature.

- Damage to animal species – lack of feed and drinking water; disease; loss of biodiversity; migration or concentration; and reduction and degradation of fish and wildlife habitat.
- Damage to plant communities – loss of biodiversity; loss of trees from urban landscapes and wooded conservation areas.
- Increased number and severity of fires.
- Reduced soil quality.
- Air quality effects – dust and pollutants.
- Loss of quality in landscape.
- Loss of water for navigation and recreation.
- Increase in nitrate levels which can have health impacts on pregnant women and children.

4.3.1.3. Past Occurrence

On July 20, 1999, the Governor of Pennsylvania declared a drought emergency in almost all of Pennsylvania including, Huntingdon County, following extended dry weather through much of the summer. Precipitation deficits for the months of May through July averaged between five and seven inches. Precipitation departures for the 365-day period ending in mid-July were more than one foot below normal in many places. This is about one-third of total annual normal precipitation in most areas. Streams were empty, wells dried up, and the Susquehanna River hit record low flows. The table below lists periods of drought in the Huntingdon County area showing a total of droughts between 1980 and 2017.

DATE	DROUGHT STATUS
November 18, 1980 – April 20, 1982	Emergency
April 26, 1985 – December 19, 1985	Watch
July 7, 1988 – August 24, 1988	Watch
August 24, 1988 – December 12, 1988	Warning
March 3, 1989 – May 15, 1989	Watch
June 28, 1991 – July 24, 1991	Warning
July 24, 1991 – April 20, 1992	Emergency
April 20, 1992 – September 11, 1992	Warning
September 11, 1992 – January 15, 1993	Watch
September 1, 1995 – September 20, 1995	Warning
September 20, 1995 – November 8, 1995	Warning
November 8, 1995 – December 18, 1995	Watch
July 17, 1997 – November 13, 1997	Watch
December 3, 1998 – December 14, 1998	Watch
December 14, 1998 – March 15, 1999	Warning

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DATE	DROUGHT STATUS
March 15, 1999 – June 10, 1999	Watch
June 10, 1999 – July 20, 1999	Warning
July 20, 1999 – September 30, 1999	Emergency
September 30, 1999 – December 16, 1999	Warning
December 16, 1999 – May 5, 2000	Watch
August 8, 2001 – December 5, 2001	Watch
December 5, 2001 – February 12, 2002	Warning
February 12, 2002 – May 13, 2002	Emergency
August 9, 2002 – November 7, 2002	Watch
April 11, 2006 – June 30, 2006	Watch
August 6, 2007 – September 5, 2007	Watch
September 16, 2010 – November 10, 2010	Warning
August 5, 2011 – September 2, 2011	Watch
June 17, 2015 – July 10, 2015	Watch
August 2, 2016 – September 6, 2016	Watch
September 6, 2016 – February 14, 2017	Watch

In addition, Cornell University has record of periods of extreme/severe droughts (lasting two or more months) that affected the South Central Mountains region of Pennsylvania. As shown in Figure 4.3.1-1, the South Central Mountains region includes Bedford, Blair, Cambria, Fulton, and Huntingdon counties. These periods of extreme/severe droughts are presented in the table below.

DROUGHT PERIOD	DURATION OF DROUGHT CONDITIONS	LOWEST PALMER DROUGHT SEVERITY INDEX
9/1895 – 5/1896	9 months	-4.81
11/1908 – 3/1909	5 months	-4.38
11/1909 – 12/1909	2 months	-3.99
11/1910 – 12/1910	2 months	-3.53
11/1922 – 4/1923	6 months	-4.29
7/1930 – 7/1931	13 months	-7.13
11/1931 – 2/1932	4 months	-3.95
11/1953 – 2/1954	4 months	-4.1
10/1963 – 12/1963	3 months	-4.12
10/1964 – 12/1964	3 months	-3.77

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Table 4.3.1-3 South Central Mountains Region Drought History (Cornell University, 2020).

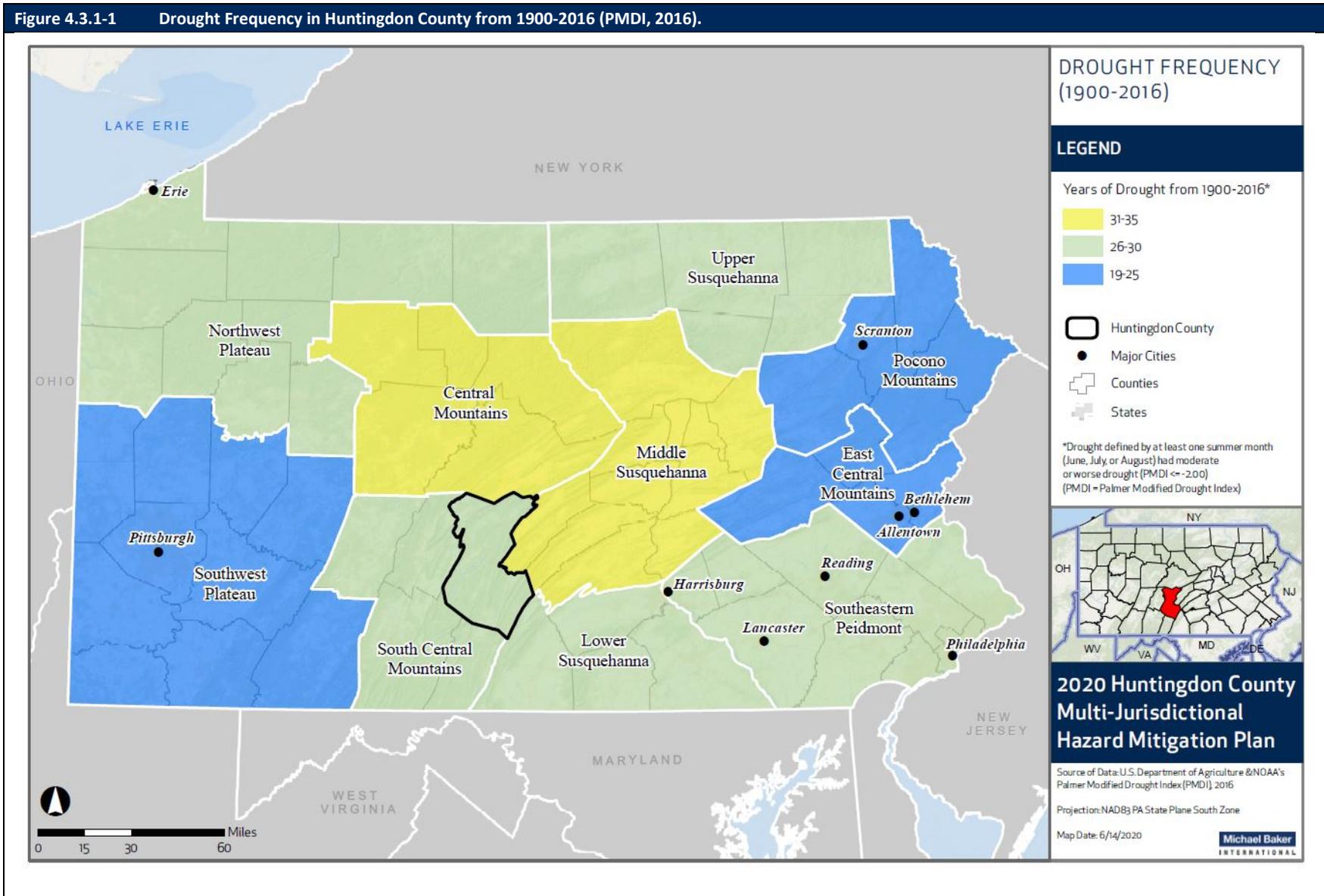
DROUGHT PERIOD	DURATION OF DROUGHT CONDITIONS	LOWEST PALMER DROUGHT SEVERITY INDEX
6/1965 – 2/1967	21 months	-5.32
4/1969 – 6/1969	3 months	-3.74
7/1991 – 6/1992	12 months	-5.13
11/1998 – 2/1999	4 months	-4.42
6/1999 – 8/1999	3 months	-3.92
12/1999 – 1/2000	2 months	-3.31
10/2001 – 2/2002	5 months	-5.43
11/2016 – 12/2016	2 months	-3.39

4.3.1.4. Future Occurrence

It is difficult to forecast the severity and frequency of future drought events. Based on data from 1895 to 1995, Pennsylvania can be divided into ten PDSI areas (see Figure 4.3.1-1). Each of these areas have been assigned a percent of time PDSI values are less than or equal to three, a value equivalent to a drought warning or drought emergency in Pennsylvania. Historically, Huntingdon County is under a drought warning or emergency between 10 and 15 percent of the time. This is equivalent to a PDSI value less than or equal to -3. The future occurrence of drought in Huntingdon County can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

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Figure 4.3.1-1 Drought Frequency in Huntingdon County from 1900-2016 (PMDI, 2016).



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4.3.1.5. Vulnerability Assessment

A drought in Huntingdon County can have significant detrimental effects on the domestic water supply, especially for well-water, agriculture, and water-dependent recreational activities. Economic effects in Huntingdon County would include crop loss. No structural damage due to drought is anticipated in Huntingdon County.

MUNICIPALITY	NUMBER OF REPORTED DOMESTIC WELLS	MUNICIPALITY	NUMBER OF REPORTED DOMESTIC WELLS
Alexandria Borough	0	Morris Township	45
Barree Township	42	Mount Union Borough	0
Birmingham Borough	0	Oneida Township	63
Brady Township	28	Orbisonia Borough	0
Broad Top City Borough	2	Penn Township	148
Carbon Township	29	Petersburg Borough	0
Cass Township	249	Porter Township	83
Cassville Borough	14	Rockhill Borough	0
Clay Township	175	Saltillo Borough	0
Coalmont Borough	5	Shade Gap Borough	0
Cromwell Township	165	Shirley Township	100
Dublin Township	172	Shirleysburg Borough	0
Dudley Borough	1	Smithfield Township	30
Franklin Township	81	Springfield Township	117
Henderson Township	67	Spruce Creek Township	38
Hopewell Township	59	Tell Township	68
Huntingdon Borough	14	Three Springs Borough	11
Jackson Township	72	Todd Township	197
Juniata Township	46	Union Township	82
Lincoln Township	64	Walker Township	77
Logan Township	22	Warriors Mark Township	106
Mapleton Borough	1	West Township	42
Marklesburg Borough	23	Wood Township	71
Mill Creek Borough	4	TOTAL	2,651
Miller Township	38		

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Negative impacts of drought would be experienced by agricultural interests, and the community would need to reduce its usage of water. Prolonged drought would affect the 714 farms located in Huntingdon County, which sold approximately \$92,132,000 in agricultural products in 2017 (USDA, 2017). The major crops in Huntingdon County are forage, corn for silage or greenchop, corn for grain, soybeans, and wheat with total acres of 29,854, 10,432, 10,346, 3,249, and 1,206 respectively (USDA, 2017). According to the USDA 2017 Census of Agriculture, the majority of sales to date came from livestock sales, totaling \$71,908,000 (78%). Crop sales made up the remaining 22%.

Huntingdon County residents that use private domestic wells are also vulnerable to droughts because their wells can dry up. There are 2,651 domestic wells in Huntingdon County, with at least one in every municipality with the exception of Alexandria, Birmingham, Mount Union, Orbisonia, Petersburg, Rockhill, Saltillo, Shade Gap, and Shirleysburg Boroughs. Table 4.3.1-4 shows the number of domestic wells per municipality as collected by the Pennsylvania Groundwater Information System (PaGWIS). According to this dataset, residents in Cass Township are the most vulnerable to water supply issues related to droughts because of the high number of wells that are reported there. It is important to note, however, that the well data collected by PaGWIS relies on voluntary submissions of well record data by well drillers; therefore, it is not a complete database of all domestic wells in the County.



4.3.2. Extreme Temperatures

4.3.2.1. Location and Extent

Extreme temperatures constitute extended periods of excessive cold or hot weather with serious impact to human and/or animal populations. Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the applicable region and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a dome of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can lead to dust storms and low visibility, as well as droughts. In addition, excessive heat can even result in loss of life by pushing the human body beyond its thermal regulation limits. In extreme heat and humidity, evaporation is slowed, and the body must work harder to maintain normal body temperatures. Most heat disorders can be attributed to overexposure or overexertion to heat.

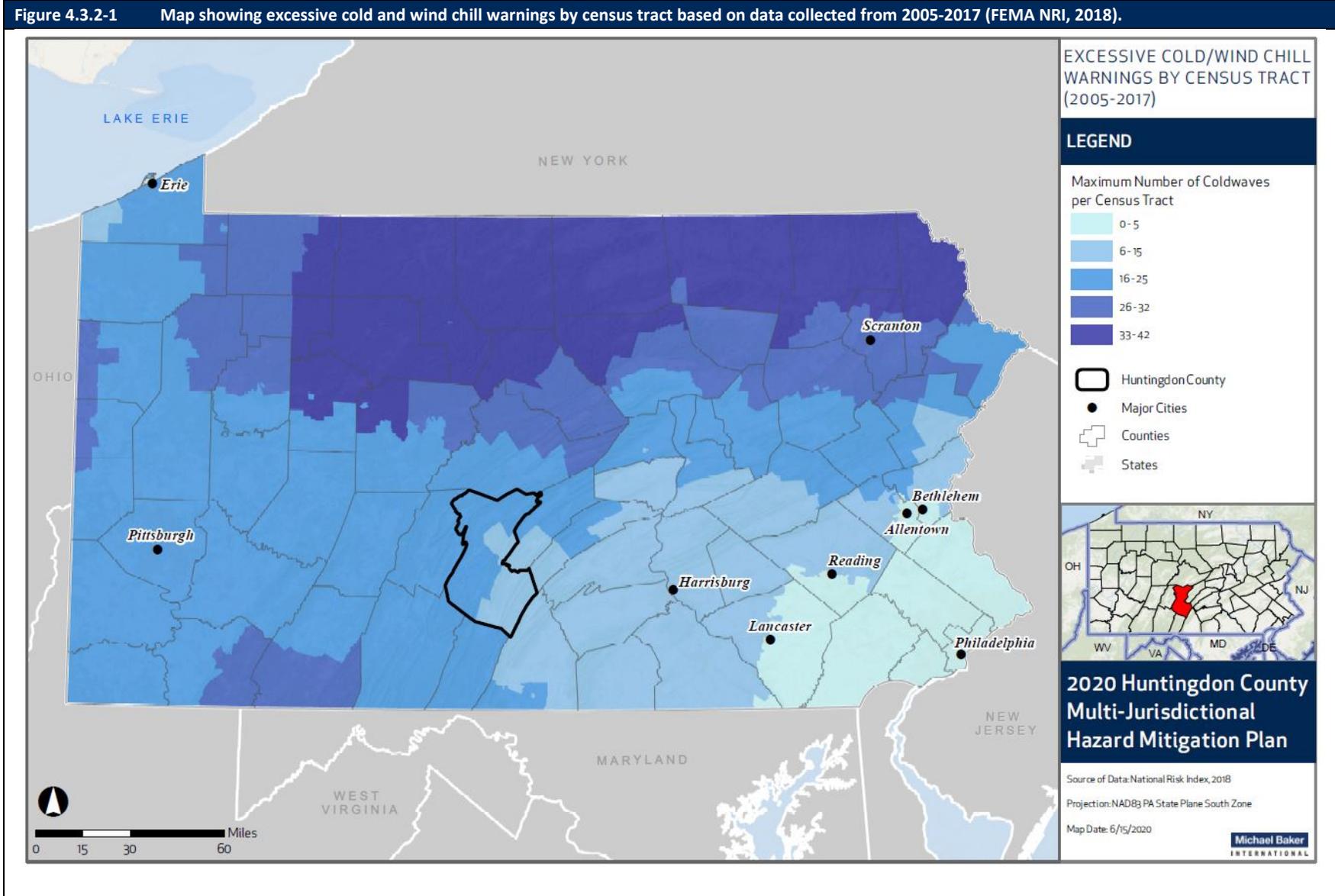
Conditions that can induce heat-related illness include stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of prolonged heat wave conditions than those living in rural areas. Materials such as asphalt and concrete store heat longer and gradually release heat at night, which does not allow for nighttime temperatures decreases. This phenomenon is known as the heat island effect.

Extreme cold is defined as temperatures at or below freezing for an extended period. Extreme cold events are usually part of winter storm events but can occur during any time of the year and have devastating effects on agricultural production. Due to the rising cost of heating for residential dwellings, people tend to keep their dwellings at a lower temperature than recommended, which may result in inadequate living conditions. Huntingdon County is at risk to both extreme cold in the winter and extreme heat in the summer.

Figure 4.3.2-1 and Figure 4.3.2-2 show the excessive cold/wind chill warnings and the heatwave warnings throughout Pennsylvania between 2005 and 2017. Huntingdon received between 6 and 25 cold wave warnings and 11 to 30 heat wave warnings between this time frame.

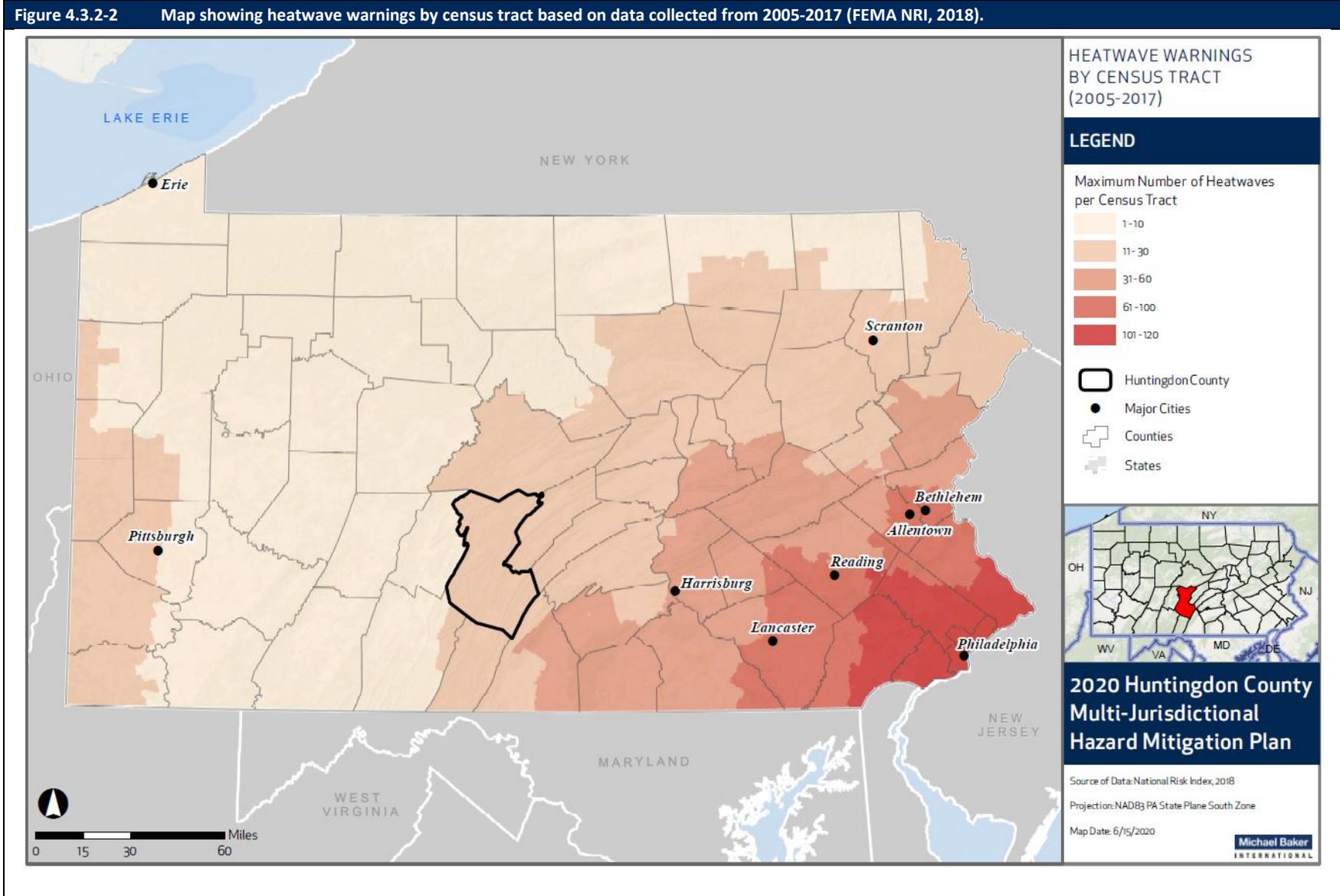
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Figure 4.3.2-1 Map showing excessive cold and wind chill warnings by census tract based on data collected from 2005-2017 (FEMA NRI, 2018).



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Figure 4.3.2-2 Map showing heatwave warnings by census tract based on data collected from 2005-2017 (FEMA NRI, 2018).

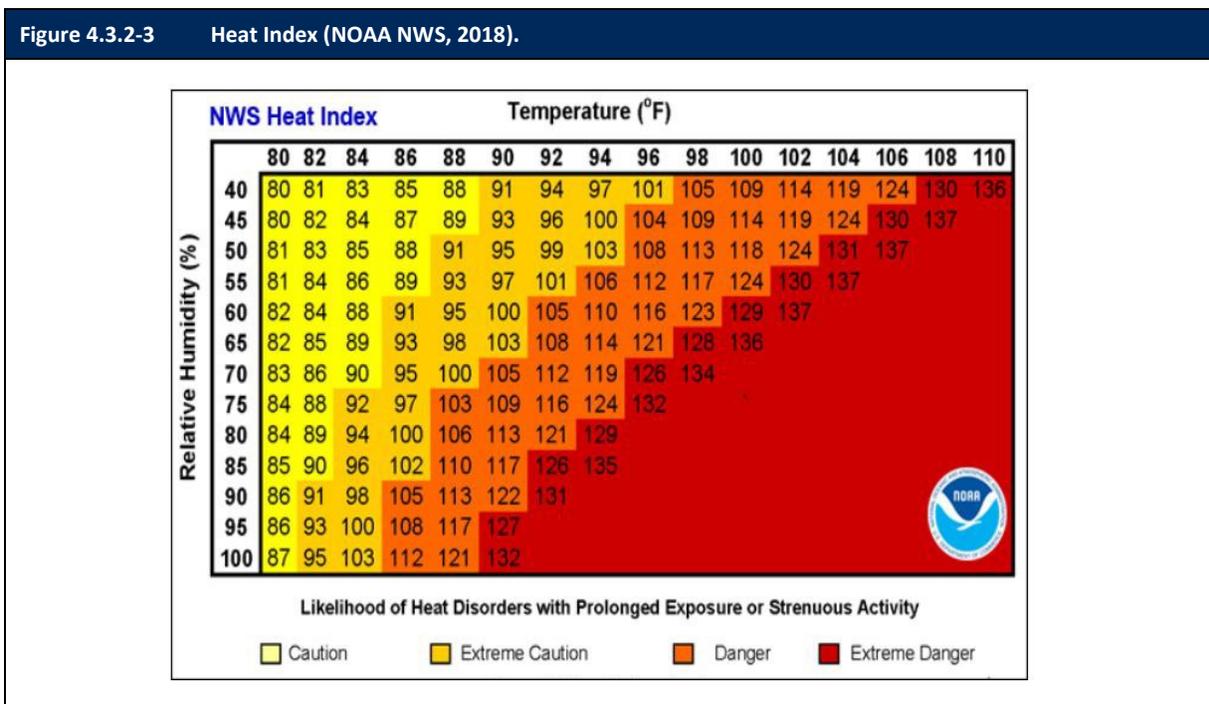


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4.3.2.2. Range of Magnitude

Extreme temperatures can result in elevated utility costs to consumers and can cause human risks. Extremely high temperatures cause heat stress. Major human risks for these temperatures include heat cramps, heat syncope, heat exhaustion, heatstroke, and death. The impacts of high temperatures will vary from person to person based on individual age, health, and other factors. The very old and the very young are most vulnerable to health-related impacts of extreme temperatures.

Temperature advisories, watches and warnings are issued by the National Weather Service relating the above impacts to the range of temperatures typically experienced in Pennsylvania. Exact thresholds vary across the Commonwealth, but in general *Heat Advisories* are issued when the heat index will be equal to or greater than 100°F, but less than 105°F, *Excessive Heat Warnings* are issued when heat indices will attain or exceed 105°F, and *Excessive Heat Watches*, are issued when there is a possibility that excessive heat warning criteria may be experienced within twelve to forty-eight hours. The heat index is a measurement that takes into account both the temperature and relative humidity and is calculated as shown in Figure 4.3.2-3 (NOAA NWS, 2018).



The heat index can be used to determine what effects the temperature and humidity can have on a given population. Figure 4.3.2-4 describes the adverse effects that prolonged heat exposure can have on individuals. The heat index values are devised for shady, light wind conditions and exposure to the sun can increase heat index values by up to 15 degrees. Strong winds and hot, dry air can be even more hazardous.

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Figure 4.3.2-4 Adverse Effects of Prolonged Heat Exposure (NOAA NWS, 2018).

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

Cold temperatures can be extremely dangerous to humans and animals exposed to the elements. Without heat and shelter, cold temperatures can cause hypothermia, frost bite, and death. Wind chill temperatures are often used in place of raw temperature values due to the effect of wind can have in drawing heat from the body under cold temperatures. These values represent what temperatures actually feel like to humans and animals under cold, windy conditions. Similar to high temperatures, the effect of cold temperatures will vary by individual. In Pennsylvania, *Wind Chill Warnings* are issued when wind chills drop to -25°F or lower. While this threshold applies to the entire state, the threshold for advisories vary based on regions. Wind Chill Advisories are issued in the south-central to northern sections of the Commonwealth when wind chills drop to -15°F (NOAA NWS, 2018).

A potential worst-case extreme temperature scenario would be if widespread areas of Huntingdon County experienced 90°F or higher temperatures for an extended number of days. The heat would overwhelm the power grid, causing widespread blackouts, essentially cutting off vital HVAC services for residents. This kind of event could create a public health hazard for the elderly and children and would result in heat cramps, sunstroke, heat exhaustion, and death.

4.3.2.3. Past Occurrence

Exposure to excessive heat can present several health risks. In a 40-year period from 1936 to 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died because of extreme heat exposure. There have been several extreme temperature events documented in Huntingdon County, listed in Table 4.3.2-1. To date, Huntingdon County has no fatalities attributed to extreme temperatures.

Table 4.3.2-1 Huntingdon County extreme temperature events from 1950 to 2018 (NCEI, 2019).

DATE(S)	EVENT
02/15/2015 – 02/16/2015	Extreme Cold/Wind Chill
01/06/2014 – 01/08/2014	Extreme Cold/Wind Chill
01/16/2009 – 01/17/2009	Extreme Cold/Wind Chill
02/10/2008 – 02/11/2008	Extreme Cold/Wind Chill
08/01/2008 – 08/02/2008	Heat Warning

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DATE(S)	EVENT
02/05/2007	Extreme Cold/Wind Chill
02/05/2007 – 02/06/2007	Extreme Cold/Wind Chill
07/17/2006	Heat Warning

The high annual normal temperature is 61.1 degrees Fahrenheit, while the low annual normal temperature is 37.2 degrees Fahrenheit, which is recorded at the Huntingdon, PA NOAA station (NCEI, 2010).

4.3.2.4. Future Occurrence

Extreme temperatures can affect a localized region or a widespread geographic area. Weather patterns and air movements within a particular area and time will affect the occurrences of extreme temperatures and the length of these occurrences. It is possible for prolonged periods (greater than one week in duration) of extreme hot or cold temperatures to occur within Huntingdon County.

4.3.2.5. Vulnerability Assessment

The NOAA National Weather Service (2001) preparedness guide titled “Winter Storms: The Deceptive Killers,” determined that 50 percent of injuries related to cold temperatures occur in people over 60 years old, more than 75 percent happen to males, and about 20 percent occur in the home. As discussed in Section 2.3, the County’s population has aged at a rapid pace since 2000, more than the rest of the United States. The County has seen a decline in the 18 and under population, as well as an increase in the 65 and older population, with a median age of 43 (Alleghenies Ahead, 2018). An estimated 27% of the population in Huntingdon County is age 60 and over, and 20% is age 65 and over (U.S. Census Bureau, 2018). Juniata Township has the most aged population with 43.9% aged 60 and older and 31.8% aged 65 and older (U.S. Census Bureau, 2018). Union Township follows close behind, with 43.7% aged 60 and older and 34.1% aged 65 and older (U.S. Census Bureau, 2018).

Hazardous temperatures may result in moderate structural damage to public facilities, little to no damage to private property, and potential serious injury or death to humans. Additional threats associated with extreme temperatures include civil unrest, explosion, fire, transportation accidents, and utility failure. Extreme temperatures were identified by the County as a *possible* risk. Even though this hazard was rated as moderate, serious planning efforts should be initiated when extreme temperatures are forecast.

4.3.3. Flood, Flash Flood, Ice Jam

4.3.3.1. Location and Extent

Flooding is the temporary condition of partial or complete inundation on normally dry land and it is the most frequent and costly of all natural hazards in Pennsylvania. Flooding occurs when excess water from snowmelt or rainfall fills a stream, causing it to overflow onto the stream banks and adjacent floodplains. Floodplains are lowlands adjacent to rivers, streams, and creeks that are subject to recurring floods.

Flash flood conditions can result from a large amount of rainfall over a short time span. Though, a small amount of rain can also result in floods in locations where the soil is frozen or saturated from a previous wet period or if the rain is concentrated in an area of impervious surfaces such as large parking lots, paved roadways, or other densely developed areas.

Snow melt combined with heavy rains can cause frozen rivers to swell, which can break the ice layer on top of a river. If this occurs, large chunks can float downstream, piling up in narrow passages and near other obstructions such as bridges and dams causing an **ice jam**.

All of Huntingdon County lies within the drainage basin of the Susquehanna River, which is the largest basin on the Atlantic Seaboard of the United States. The Susquehanna River drains directly into the Chesapeake Bay. In addition, Huntingdon County is part of the Juniata Sub basin (SRBC, 2006).

The various tributary streams and creeks generally flow west to east, from the foothills of the Appalachian Mountains towards the Susquehanna River. The Juniata River is the largest tributary in the County.

Of the 48 municipalities within Huntingdon County, Huntingdon Borough has suffered the most severe damage from flooding due to extensive development within the floodplain and its proximity to the Juniata River and tributaries.

Table 4.3.3-1 shows which major rivers and streams have the potential to lead to flooding in particular jurisdictions. There is the potential for flooding due to these major tributaries in 33 of the County's municipalities, although many smaller tributaries run through all municipalities within the County (see Figure 4.3.3-1).



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Table 4.3.3-1 Major Rivers and Streams by Jurisdiction in Huntingdon County (Huntingdon County Mapping Department, 2020)												
MUNICIPALITY	RIVERS AND STREAMS											
	AUGHWICK CREEK	BACKLOG CREEK	FRANKSTOWN BRANCH JUNIATA RIVER	GREAT TROUGH CREEK	JUNIATA RIVER	LITTLE JUNIATA RIVER	RAYSTOWN BRANCH JUNIATA RIVER	SHAVER CREEK	SIDLING HILL CREEK	SPRUCE CREEK	STANDING STONE CREEK	TUSCARORA CREEK
Alexandria Borough												
Barree Township								✓				
Birmingham Borough												
Brady Township					✓							
Broad Top City Borough												
Carbon Township												
Cass Township				✓								
Cassville Borough												
Clay Township									✓			
Coalmont Borough												
Cromwell Township	✓	✓										
Dublin Township												
Dudley Borough												
Franklin Township										✓		
Henderson Township					✓							
Hopewell Township							✓					
Huntingdon Borough					✓						✓	
Jackson Township								✓			✓	
Juniata Township					✓							
Lincoln Township							✓					
Logan Township			✓		✓	✓		✓				
Mapleton Borough					✓							
Marklesburg Borough							✓					
Mill Creek Borough					✓							

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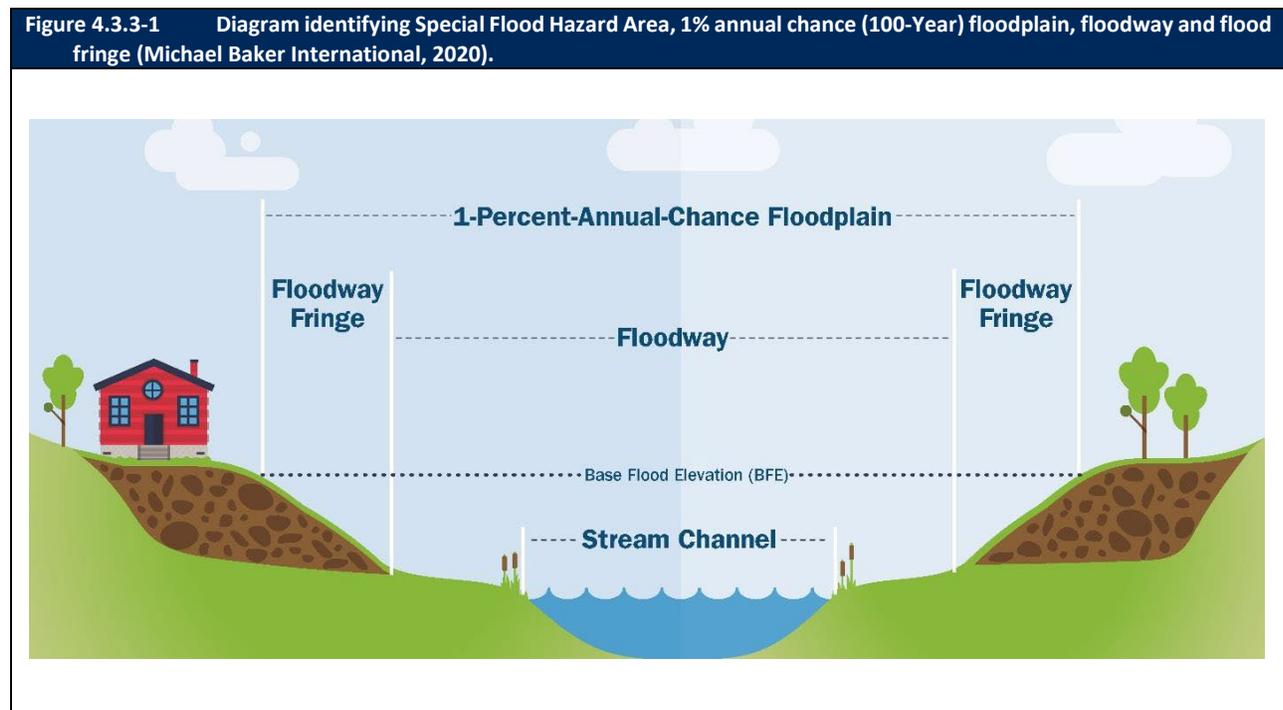
Table 4.3.3-1 Major Rivers and Streams by Jurisdiction in Huntingdon County (Huntingdon County Mapping Department, 2020)												
MUNICIPALITY	RIVERS AND STREAMS											
	AUGHWICK CREEK	BACKLOG CREEK	FRANKSTOWN BRANCH JUNIATA RIVER	GREAT TROUGH CREEK	JUNIATA RIVER	LITTLE JUNIATA RIVER	RAYSTOWN BRANCH JUNIATA RIVER	SHAVER CREEK	SIDLING HILL CREEK	SPRUCE CREEK	STANDING STONE CREEK	TUSCARORA CREEK
Miller Township											✓	
Morris Township			✓			✓						
Mount Union Borough					✓							
Oneida Township					✓						✓	
Orbisonia Borough												
Penn Township												
Petersburg Borough												
Porter Township			✓		✓	✓		✓				
Rockhill Furnace Borough		✓										
Saltillo Borough												
Shade Gap Borough												
Shirleysburg Borough	✓											
Shirley Township	✓	✓			✓							
Smithfield Township					✓							
Springfield Township	✓								✓			
Spruce Creek Township						✓				✓		
Tell Township												✓
Three Springs Borough												
Todd Township				✓			✓					
Union Township					✓							
Walker Township												
Warriors Mark Township						✓						
West Township								✓				
Wood Township				✓								

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Huntingdon County is prone to two types of floods:

- **Riverine Flood** – Occurs in the floodplain of a river or stream when the amount of water and the rate at which it is moving increases.
- **Flash Flood** – A type of riverine flood, this flood will occur after a heavy storm, when the ground cannot absorb the high amount of precipitation. This can occur when heavy precipitation falls on frozen or already saturated soil.

The size of the floodplain is described by the recurrence interval of a given flood. Flood recurrence intervals are explained in more detail in Section 4.3.3.4. However, in assessing the potential spatial extent of flooding it is important to know that a floodplain associated with a 10-percent-annual chance of occurring in a given year is smaller than the floodplain associated with a flood that has a 0.2-percent-annual chance of occurring. The National Flood Insurance Program (NFIP), for which Flood Insurance Rate Maps (FIRM) are published, identifies the risk associated with the 1-percent-annual chance flood. This 1-percent-annual chance flood event is used to delineate the *Special Flood Hazard Area (SFHA)* and to identify *Base Flood Elevations (BFE)*. Figure 4.3.3-2 illustrates these terms. The SFHA serves as the primary regulatory boundary used by FEMA and Huntingdon County governments when determining risk associated with flooding.



Countywide FIRMs and Flood Insurance Studies (FIS) were published for Huntingdon County on October 16, 2012 and map panels in some communities were updated on May 2, 2018. This best available data was used throughout this MJHMP Update. FIRMs and FIS reports for the entire County can be obtained from the FEMA Map Service Center (<http://www.msc.fema.gov>). These maps and reports can be used to identify the expected spatial extent and elevation of flooding from a 1-percent and 0.2-percent-annual chance event. All but three municipalities in the County have identified special flood hazard areas. These

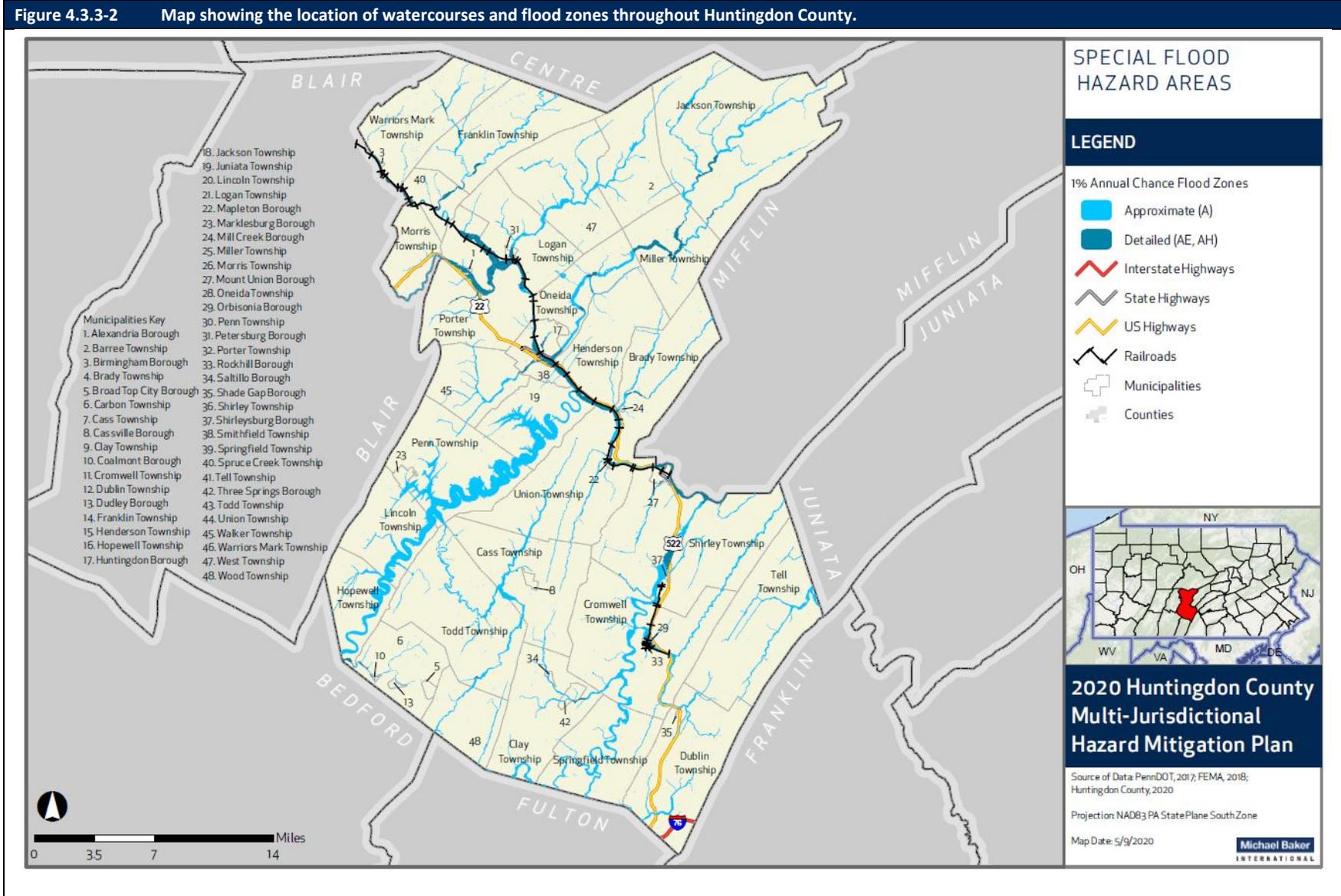
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municipalities include Broad Top City Borough, Cassville Borough, and Shade Gap Borough. Figure 4.3.3-3 shows the location of watercourses and flood zones in Huntingdon County. The location of approximate and detailed (which include Base Flood Elevations (BFEs)) SFHAs (1-percent-annual chance zones) are shown.

It should also be noted that flooding is not only caused by heavy rain events. Additionally, as described in Section 5.2.1, Huntingdon County has three high-hazard dams located within the County. If any one of these dams were to fail, there could be loss of life and property damage resulting from flooding within the dam inundation areas. Emergency Action Plans are on file at the Huntingdon County Emergency Management Agency for these dams which address procedures and actions to be taken both to prevent and respond to dam failure.

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Figure 4.3.3-2 Map showing the location of watercourses and flood zones throughout Huntingdon County.



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4.3.3.2. *Range of Magnitude*

Flooding in Huntingdon County has mainly been caused by heavy rainfall and can be exacerbated when heavy rain occurs in late winter by accelerating the melting of snow. Flooding can also be exacerbated locally by the presence of impermeable surfaces due to increased development of buildings and pavement or lack of appropriately sized flood water detention basins.

Hurricanes and Tropical Storms can also contribute to flooding in the County. A worst-case scenario for flooding occurred in June 1972, where Hurricane Agnes resulted in a flood stage of 12 feet in Huntingdon, with the Juniata River cresting at 20.03 feet (NOAA NWS, 2020). More recently, Tropical Storm Lee brought more than 10 inches of rain over the course of 3 days in 2011 and Hurricane Sandy impacted the entire Commonwealth of Pennsylvania in 2012.

The Mid-Atlantic River Forecasting Center (MARFC) is located in State College, Centre County. It is an office of the National Weather Service, part of the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce. MARFC maintains river forecasting points along waterways in the Juniata Sub-basin in Huntingdon County. These forecast points gather behavioral data to provide historical records of past behavior and allow for the timely and accurate prediction of both flood crest and flood duration. Data collected from these forecast points provides an analysis of these waterways. The Juniata River most recently crested at 14.94 feet on September 11, 2018 at Huntingdon Borough resulting in a major flood stage (See Figure 4.3.3-5). The Little Juniata River at Spruce Creek crested at 8.22 feet on March 29, 2020 resulting in a flood stage (NOAA NWS, 2020). The frequency of flooding at the forecasting points are the result of many factors, some of which may include precipitation amounts, geography, topography, and existing flood mitigation structures. Furthermore, in 2018 record rainfall averages were recorded in Huntingdon County, with 51.88 inches falling compared to an annual average of 37 inches (The Daily News, 2018).



Flooding is the most common and costly natural disaster in Huntingdon County, Pennsylvania, and the entire United States.

***Photograph courtesy of The Daily News, December 2018.**

Although floods can cause damage to property and loss of life, floods are naturally occurring events that benefit riparian systems. Such benefits include groundwater recharge and the

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introduction of nutrient rich sediment improving soil fertility. However, the destruction of riparian buffers through development, changes to land use and land cover throughout a watershed, and the introduction of chemical or biological contaminants which often accompany human presence cause environmental harm when floods occur. Hazardous material facilities are potential sources of contamination during flood events. Other negative environmental impacts of flooding include water-borne diseases, heavy siltation, damage or loss of crops, and drowning of both humans and animals.

4.3.3.3. Past Occurrence

The National Climatic Data Center has maintained a historical record of flooding in its Storm Event Database since 1993. This database measures all weather events from 1993-2012, except June-July 1993, which is missing. While this data differs slightly from that which was obtained from the MARFC, it allows for an analysis of the impact flooding has had on the County and its municipalities in recent years. According to the Storm Event Database, Huntingdon County has experienced 66 flood events since 1993. Of these, 35 events were categorized as flash floods and were caused by a variety of factors. The most significant occurrence of flooding is due to heavy rains. A summary of the flood history of Huntingdon County since January 1996 can be found in Table 4.3.3-2. Estimated property damages include every loss to any type of facility (residential, commercial, agricultural, or industrial) and include structure, content, and crop damages.

Table 4.3.3-2 Flood and flash flood events impacting Huntingdon County from 1993-2019 (NCEI, 2019). Note that property damage values are estimates based on best available information. "Countywide" indicates several locations in the County were affected.		
DATE	LOCATION & DESCRIPTION	ESTIMATED TOTAL DAMAGE (\$)
01/19/1996	Countywide; no additional details available.	<i>not provided</i>
01/19/1996	Countywide; no additional details available.	<i>not provided</i>
06/18/1996	Countywide; Small streams flooded across southern Huntingdon County, resulting in two road closures.	<i>not provided</i>
06/20/1996	Shirleysburg; Flooding in small streams resulted in several road closures.	<i>not provided</i>
07/02/1996	Countywide; Small stream and poor drainage flooding followed heavy rains across the northern Huntingdon County.	<i>not provided</i>
07/19/1996	Countywide; no additional details available.	<i>not provided</i>
09/06/1996	Shade Gap; Many areas were hard hit by heavy rains. Shade Gap received 3.6 inches of rain leaving cars stranded along roads.	<i>not provided</i>
09/13/1996	Countywide; Heavy rains caused small streams to flood and closed roads across the southeast part of Huntingdon County.	<i>not provided</i>
10/19/1996	Mount Union; Heavy rains caused road and small stream flooding throughout the County.	<i>not provided</i>
12/01/1996	Countywide; 2-4 inches of rain fell across the area, flooding many roads and low-lying areas. Small stream flooding was widespread over most of the region.	<i>not provided</i>
12/13/1996	Countywide; no additional details available.	<i>not provided</i>
06/18/1997	Huntingdon; Heavy rains of 1 to 2 inches in less than an hour flooded small streams and roads in Huntingdon and Mount Union.	<i>not provided</i>
11/07/1997	Countywide; Resulted in one death.	<i>not provided</i>
01/08/1998	Countywide; no additional details available.	<i>not provided</i>
04/19/1998	Countywide; no additional details available.	<i>not provided</i>

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Table 4.3.3-2 Flood and flash flood events impacting Huntingdon County from 1993-2019 (NCEI, 2019). Note that property damage values are estimates based on best available information. "Countywide" indicates several locations in the County were affected.		
DATE	LOCATION & DESCRIPTION	ESTIMATED TOTAL DAMAGE (\$)
04/26/1998	Countywide; From 2 to nearly 3 inches of rain fell across the central mountains, causing small stream and road flooding.	<i>not provided</i>
07/07/1998	Alexandria; A small stream overflowed a dike and flooded a house.	<i>not provided</i>
07/08/1998	Countywide; Several roads were closed due to heavy rains in the Northern portion of the County.	<i>not provided</i>
01/23/1999	Countywide; no additional details available.	5,000
07/28/2000	Huntingdon; Roads and small streams flooded.	<i>not provided</i>
05/28/2002	Dudley; Shoup Run and several smaller tributaries overflowed their banks when 1.5-2.5 inches of rain fell in less than an hour. Portions of a flood wall constructed after the 1996 flooding was washed away, and numerous basements and roads were inundated.	5,000
01/01/2003	Countywide; Rising waters in the Little Juniata River at Spruce Creek caused the river gauge to exceed its flood stage of 8.0 feet, cresting at 8.5 feet.	<i>not provided</i>
01/02/2003	Countywide; Rising waters on Aughwick Creek at Shirleysburg caused the river gauge to exceed its flood stage of 10.0 feet, cresting at 10.9 feet.	<i>not provided</i>
06/04/2003	Countywide; Heavy rainfall caused Aughwick Creek at Shirleysburg to exceed its flood stage of 10.0 feet. The creek exceeded flood stage at 01:00 EST on Wednesday, June 4 th , crested at 12.6 feet, and fell below flood stage in the evening.	<i>not provided</i>
09/27/2003	Spruce Creek; Heavy rain caused flooding across Huntingdon County. Roads were flooded in the communities of Robertsdale, Alexandria, and Spruce Creek.	<i>not provided</i>
11/19/2003	Countywide; Heavy rain caused rises in streams and produced flooding. This closed numerous roadways across the county.	<i>not provided</i>
11/19/2003	Countywide; Heavy rain caused the Little Juniata River at Spruce Creek to exceed flood stage. The creek rose above the flood stage of 8.0 feet at 16:00 EST on the 19 th , crested at 9.43 feet, and fell back below flood stage on the 20 th .	<i>not provided</i>
11/19/2003	Huntingdon; Heavy rain caused rapid rises in streams and produced flash flooding. This closed numerous roadways across the County.	<i>not provided</i>
11/20/2003	Countywide; Heavy rain caused Aughwick Creek at Shirleysburg to exceed flood stage. The creek rose above the flood stage at 10.0 feet at 01:00 EST on the 20 th , crested at 10.68 feet, and fell back below flood stage in the evening.	<i>not provided</i>
12/11/2003	Countywide; Heavy rainfall caused Aughwick Creek at Shirleysburg to exceed flood stage. The creek rose above its flood stage of 10.0 feet at 6:45 AM EST on the 11 th , crested at 13.50 feet, and fell back below flood stage on the 12 th .	<i>not provided</i>
09/08/2004	Countywide; no additional details available.	<i>not provided</i>
09/09/2004	Countywide; Heavy rain caused flooding along the Little Juniata River at Spruce Creek. The creek rose above flood stage of 8.0 feet at 01:00 EST on the 9 th , crested at 12.94 feet, and fell below flood stage in the evening.	<i>not provided</i>
09/09/2004	Countywide; Heavy rain caused flooding along the Juniata River at Huntingdon. The river rose above flood stage at 12.0 feet at 7:15 EST on the 9 th , crested at 13.45 feet, then fell back below flood stage in the evening.	<i>not provided</i>
09/09/2004	Countywide; Heavy rain caused flooding of the Aughwick Creek at Shirleysburg. The river rose above flood stage at 10.0 feet at 11:30 EST on the 9 th , crested at 10.79 feet, then fell back below flood stage in the evening.	<i>not provided</i>
09/17/2004	Countywide; no additional details available.	<i>not provided</i>
09/17/2004	Countywide; Heavy rain caused the Little Juniata River at Spruce Creek to exceed its flood stage of 8 feet. The river rose above flood stage at 20:15 EST on the 17 th , crested at 15.46 feet, and fell below flood stage in the evening.	<i>not provided</i>

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Table 4.3.3-2 Flood and flash flood events impacting Huntingdon County from 1993-2019 (NCEI, 2019). Note that property damage values are estimates based on best available information. "Countywide" indicates several locations in the County were affected.		
DATE	LOCATION & DESCRIPTION	ESTIMATED TOTAL DAMAGE (\$)
09/18/2004	Heavy rain caused the Aughwick Creek at Shirleysburg to exceed its flood stage of 10 feet. The river rose above flood stage at 00:00 EST on the 18 th , crested at 18.5 feet, and fell below flood stage on the 19 th .	<i>not provided</i>
09/18/2004	Heavy rain caused the Juniata River at Huntingdon to exceed its flood stage of 12 feet. The river rose above flood stage at 00:30 EST on the 18 th , crested at 17.78 feet, and fell below flood stage on the 19 th .	<i>not provided</i>
09/18/2004	Heavy rain caused the Juniata River at Mapleton Depot to exceed its flood stage of 20 feet. The river rose above flood stage at 6:00 EST on the 18 th , crested at 23.76 feet, and fell below flood stage on the 19 th .	<i>not provided</i>
01/06/2005	Countywide; no additional details available.	<i>not provided</i>
03/28/2005	Countywide; no additional details available.	<i>not provided</i>
03/28/2005	Countywide; Heavy rain caused Aughwick Creek at Shirleysburg to flood. The creek exceeded flood stage of 10 feet at 23:00 EST on the 28 th , crested at 12.52 feet, then fell back below flood stage on the 29 th .	<i>not provided</i>
11/29/2005	Countywide; Heavy rain caused the Little Juniata River at Spruce Creek to flood. The river exceeded flood stage of 8 feet at 20:15 EST on the 29 th , crested at 8.74 feet, then fell back below flood stage on the 30 th .	<i>not provided</i>
11/30/2005	Countywide; Heavy rain caused Aughwick Creek at Shirleysburg to flood. The creek exceeded flood stage of 10 feet at 00:30 EST on the 30 th , crested at 12.15 feet, then fell back below flood stage in the evening.	<i>not provided</i>
06/27/2006	Huntingdon; Heavy rain caused flash flooding in Huntingdon County, resulting in numerous mud slides and road closures.	<i>not provided</i>
11/16/2006	Huntingdon; Heavy rain caused flash flooding throughout Huntingdon County. Flooded roads and basements were reported in Huntingdon and near Shade Gap.	<i>not provided</i>
03/04/2008	Countywide; Heavy rain produced widespread urban, small stream and river flooding over much of Central Pennsylvania during the late evening hours of March 4 th into the morning of March 5 th . This flooding resulted in several road closures within Walker Township.	<i>not provided</i>
05/28/2009	Colfax; Several thunderstorms with heavy rain caused flash flooding in central portions of Huntingdon County. A rockslide occurred in Smithfield and Juniata Townships, resulting in a 200-yard-wide area of geological subsidence. In total, approximately 120 homes reported basement flooding.	250,000
03/13/2010	Shade Gap; Heavy rainfall between 1 and 2.5 inches combined with snow melt produced extensive areal and river flooding. Flood occurred along the Main Stem and Little Juniata River, Stone Creek, Spruce Creek, and Aughwick Creek. Approximately 20 secondary roads were closed throughout the County.	<i>not provided</i>
05/23/2010	Maddensville; Heavy rains caused small streams to rise and inundate several roads southeastern Huntingdon County. Two bridges were flooded, and a small earthen dam located on private property was breached.	5,000
12/01/2010	Spruce Creek; Rainfall amounts between 2 and 4 inches produced significant flooding. The Little Juniata River at Spruce Creek crested just over 11 feet resulting in moderate flooding. The Aughwick Creek at Shirleysburg also created over moderate flood stage just over 12 feet.	10,000
03/10/2011	Joller; Flooding resulted in the need for a water rescue for a stranded motorist near Eagle Foundry in Todd Township.	<i>not provided</i>

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Table 4.3.3-2 Flood and flash flood events impacting Huntingdon County from 1993-2019 (NCEI, 2019). Note that property damage values are estimates based on best available information. "Countywide" indicates several locations in the County were affected.		
DATE	LOCATION & DESCRIPTION	ESTIMATED TOTAL DAMAGE (\$)
03/10/2011	Shirleysburg; Flooding resulted in an evacuation support request in Shirley Township. Approximately 15 homes became effectively isolated. All homes were visited, and one elderly couple required transportation and housing. Mount Union Fire Department/Ambulance assisted with relocation and the Red Cross supported accommodations.	<i>not provided</i>
03/10/2011	Shirleysburg; Aughwick Creek at Shirleysburg crested at 13.43 feet at 4:00 AM on March 11 th . Moderate flooding raised waters from Aughwick Creek to 12 feet, resulting in several flooded roads throughout Shirley Township.	<i>not provided</i>
04/16/2011	Orbisonia; Aughwick Creek at Shirleysburg reached moderate flood stage. Flood waters covered several roads in Shirley Township.	<i>not provided</i>
05/03/2011	Center Union; Severe thunderstorms caused flash flooding. Inundated roads resulted in closures throughout Henderson Township.	<i>not provided</i>
09/27/2011	Todd; Heavy rain resulted in flash flooding in Cass Township. Several structures were flooded throughout the Township.	<i>not provided</i>
11/23/2011	Shirleysburg; Heavy rainfall between 2 and 2.5 inches caused the Aughwick Creek at Shirleysburg to crest over moderate flood stage (12 feet). The creek exceeded its banks and affected several homes. The flood waters also covered several roads in Shirley Township.	<i>not provided</i>
05/16/2014	Seven Stars; Heavy rainfall between 2 and 4 inches caused widespread minor flooding with several secondary road closures or one-lane restrictions. The Aughwick Creek at Shirleysburg exceeded moderate flood stage, impacting several roads in Shirley Township.	<i>not provided</i>
03/11/2014	Cottage; An ice jam prompted a flood advisory for northwestern Huntingdon County, when minor flooding occurred along Shavers Creek in Petersburg Borough. The ice jam resulted in several road closures.	<i>not provided</i>

In addition to the aforementioned past flood events, the NFIP identifies properties that experience frequent flooding and can be used to determine areas of higher risk. These properties are identified through the NFIP when receive more than one payment for flood damages. A **Repetitive Loss** property is a structure that:

- (a) Is covered by a contract for flood insurance made available under the NFIP; and
- (b) Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
- (c) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage. (Please note: Homes are eligible for ICC coverage after first loss, however cost for ICC is part of all policies.)

A **Severe Repetitive Loss** property is a structure that:

- (a) Is covered under a contract for flood insurance made available under the NFIP; and

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(b) Has incurred flood related damage (i) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or (ii) For which at least two separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Table 4.3.3-3 displays repetitive loss properties by jurisdiction and type in Huntingdon County. The County has 59 existing repetitive loss properties. Alexandria Borough has the most repetitive loss properties (12). The Township of Smithfield has the highest total paid (\$2,688,912.25) due to flooding of a condo. Of these 59 repetitive loss structures properties in the County, the most are single family homes (50). There are also four severe repetitive loss properties in Huntingdon County, based on data from the PA RL and SRL Inventory as of January 2018. There are two in Alexandria Borough, one in Oneida Township, and one in Shirley Township. Three of these are single family homes, and one in Alexandria Borough is a 2-4 family home.

Figure 4.3.3-3 The aftermath of Hurricane Ivan in Alexandria Borough (Photograph courtesy of Huntingdon County EMA, 2004).



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Table 4.3.3-3 Repetitive Loss Summary (PEMA, January 2021).					
MUNICIPALITY	RL Properties	Total Losses	Total Building Payments	Total Contents Payments	Total Payments
Alexandria Borough	12	31	\$630,676.39	\$67,511.59	\$698,187.98
2-4 FAMILY	2	5	\$132,925.28	\$-	\$132,925.28
OTHR-NONRES	1	4	\$93,820.27	\$17,340.34	\$111,160.61
SINGLE FMLY	9	22	\$403,930.84	\$50,171.25	\$454,102.09
Brady Township	1	2	\$55,478.65	\$27,769.35	\$83,248.00
SINGLE FMLY	1	2	\$55,478.65	\$27,769.35	\$83,248.00
Cromwell Township	2	5	\$113,059.44	\$0.00	\$113,059.44
SINGLE FMLY	2	5	\$113,059.44	\$0.00	\$113,059.44
Franklin Township	1	2	\$11,067.65	\$1,369.74	\$12,437.39
SINGLE FMLY	1	2	\$11,067.65	\$1,369.74	\$12,437.39
Henderson Township	5	11	\$209,738.17	\$20,257.42	\$229,995.59
SINGLE FMLY	5	11	\$209,738.17	\$20,257.42	\$229,995.59
Huntingdon Borough	7	16	\$222,991.89	\$201,245.53	\$424,237.42
BUSI-NONRES	1	2	\$13,300.00	\$100,650.58	\$113,950.58
OTHR-NONRES	2	6	\$159,662.06	\$89,672.50	\$249,334.56
SINGLE FMLY	4	8	\$50,029.83	\$10,922.45	\$60,952.28
Juniata Township	1	2	\$6,804.93	\$6,207.38	\$13,012.31
SINGLE FMLY	1	2	\$6,804.93	\$6,207.38	\$13,012.31
Liberty Township	1	3	\$116,281.74	\$60,452.11	\$176,733.85
BUSI-NONRES	1	3	\$116,281.74	\$60,452.11	\$176,733.85
Logan Township	1	2	\$3,900.07	\$1,246.50	\$5,146.57
SINGLE FMLY	1	2	\$3,900.07	\$1,246.50	\$5,146.57
Mapleton Borough	1	2	\$12,451.68	\$0.00	\$12,451.68
SINGLE FMLY	1	2	\$12,451.68	\$0.00	\$12,451.68
Mill Creek Borough	1	2	\$76,737.10	\$13,500.00	\$90,237.10

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Table 4.3.3-3 Repetitive Loss Summary (PEMA, January 2021).					
MUNICIPALITY	RL Properties	Total Losses	Total Building Payments	Total Contents Payments	Total Payments
BUSI-NONRES	1	2	\$76,737.10	\$13,500.00	\$90,237.10
Mount Union Borough	1	2	\$1,846.53	\$1,574.57	\$3,421.10
SINGLE FMLY	1	2	\$1,846.53	\$1,574.57	\$3,421.10
Oneida Township	2	11	\$62,229.86	\$32,733.63	\$94,963.49
SINGLE FMLY	2	11	\$62,229.86	\$32,733.63	\$94,963.49
Petersburg Borough	6	17	\$260,759.40	\$37,828.22	\$298,587.62
SINGLE FMLY	6	17	\$260,759.40	\$37,828.22	\$298,587.62
Porter Township	7	22	\$322,000.80	\$55,648.41	\$377,649.21
SINGLE FMLY	7	22	\$322,000.80	\$55,648.41	\$377,649.21
Shirley Township	3	10	\$146,527.38	\$26,553.62	\$173,081.00
SINGLE FMLY	3	10	\$146,527.38	\$26,553.62	\$173,081.00
Smithfield Township	2	9	\$1,175,677.88	\$1,513,234.37	\$2,688,912.25
ASSMD CONDO	1	7	\$1,159,535.41	\$1,509,504.88	\$2,669,040.29
SINGLE FMLY	1	2	\$16,142.47	\$3,729.49	\$19,871.96
Walker Township	5	10	\$125,368.01	\$34,885.40	\$160,253.41
SINGLE FMLY	5	10	\$125,368.01	\$34,885.40	\$160,253.41
Grand Total	59	159	\$3,553,597.57	\$2,102,017.84	\$5,655,615.41

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Floods are the most common and costly natural catastrophe in the United States. In terms of economic disruption, property damage, and loss of life, floods are “nature’s number-one disaster” (FEMA, 2019). For that reason, flood insurance is a critical way for citizens to protect their property against flood loss. Home and business owners can purchase flood insurance through private insurers or through the National Flood Insurance Program.

Congress established the NFIP in 1968 to help control the growing cost of federal disaster relief. The NFIP, administrated through FEMA, offers federally backed flood insurance at discounted rates when communities adopt and enforce effective floodplain management ordinances to reduce future flood losses based on flood maps. The NFIP is based on voluntary participation of communities but is required in order for communities to receive federal disaster relief funding.

Table 4.3.3-4 lists the Huntingdon County municipalities participating in the NFIP.

The minimum floodplain management requirements to be a community in good standing in the NFIP include:

- Review and permit all development in the Special Flood Hazard Area (SFHA);
- Elevate new and substantially improved residential structures above the Base Flood Elevation;
- Elevate or dry floodproof new and substantially improved non-residential structures;
- Limit development in floodways;
- Locate or construct all public utilities and facilities so as to minimize or eliminate flood damage; and
- Anchor foundation or structure to resist floatation, collapse, or lateral movement.

In addition, communities are eligible to participate in the NFIP’s Community Rating System (CRS). Under the CRS, policyholders can receive premium discounts of five- to 45-percent as their cities and towns adopt more comprehensive flood mitigation measures. Currently, all municipalities except for Birmingham Borough, Lincoln Township, and Shade Gap Borough participate in the NFIP in Huntingdon County. There are no CRS municipalities in Huntingdon County.



Huntingdon County’s flood zones are viewable on FEMA’s National Flood Hazard Layer: www.fema.gov/national-flood-hazard-layer-nfhl

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Table 4.3.3-4 Huntingdon County Municipal Participation in the National Flood Insurance Program (FEMA, 2014).				
COMMUNITY	PARTICIPATION STATUS	CID	INITIAL FIRM IDENTIFIED	CURRENT EFFECTIVE MAP DATE
Alexandria Borough	PARTICIPATING	420481	02/01/1980	10/16/2012
Barree Township	PARTICIPATING	421683	09/10/1984	10/16/2012
Birmingham Borough	NOT PARTICIPATING	420482	10/16/2012	05/02/2018
Brady Township	PARTICIPATING	421684	02/17/1989	10/16/2012
Broad Top City Borough*	PARTICIPATING	420483	10/16/2012	10/16/2012
Carbon Township	PARTICIPATING	421685	06/19/1989	10/16/2012
Cass Township	PARTICIPATING	421686	11/01/1985	10/16/2012
Cassville Borough*	PARTICIPATING	422703	10/16/2012	10/16/2012
Clay Township	PARTICIPATING	421687	08/16/1988	10/16/2012
Coalmont Borough	PARTICIPATING	420484	08/03/1989	10/16/2012
Cromwell Township	PARTICIPATING	421688	12/04/1985	10/16/2012
Dublin Township	PARTICIPATING	421689	12/04/1985	10/16/2012
Dudley Borough	PARTICIPATING	421681	09/24/1984	10/16/2012
Franklin Township	PARTICIPATING	422573	02/17/1989	05/02/2018
Henderson Township	PARTICIPATING	420960	08/03/1989	10/16/2012
Hopewell Township	PARTICIPATING	421690	08/15/1989	10/16/2012
Huntingdon Borough	PARTICIPATING	420486	09/29/1978	10/16/2012
Jackson Township	PARTICIPATING	421691	08/03/1989	10/16/2012
Juniata Township	PARTICIPATING	421692	02/17/1989	10/16/2012
Lincoln Township	NOT PARTICIPATING	421693	10/16/2012	10/16/2012
Logan Township	PARTICIPATING	421694	08/03/1989	10/16/2012
Mapleton Borough	PARTICIPATING	420487	07/05/1977	10/16/2012
Marklesburg Borough	PARTICIPATING	422574	10/16/2012	10/16/2012
Mill Creek Borough	PARTICIPATING	420488	03/02/1989	10/16/2012
Miller Township	PARTICIPATING	421695	03/02/1989	10/16/2012
Morris Township	PARTICIPATING	421696	12/04/1985	05/02/2018
Mount Union Borough	PARTICIPATING	420489	07/18/1977	10/16/2012
Oneida Township	PARTICIPATING	421697	03/02/1989	10/16/2012
Orbisonia Borough	PARTICIPATING	421682	12/31/1982	10/16/2012
Penn Township	PARTICIPATING	421698	11/15/1985	10/16/2012
Petersburg Borough	PARTICIPATING	420490	08/15/1989	10/16/2012
Porter Township	PARTICIPATING	421699	03/16/1981	10/16/2012
Rockhill Borough	PARTICIPATING	422575	07/03/1990	10/16/2012
Saltillo Borough	PARTICIPATING	420492	10/15/1985	10/16/2012
Shade Gap Borough*	NOT PARTICIPATING	422705	10/16/2012	10/16/2012
Shirley Township	PARTICIPATING	421700	08/15/1989	10/16/2012
Shirleysburg Borough	PARTICIPATING	420493	04/15/1986	10/16/2012

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COMMUNITY	PARTICIPATION STATUS	CID	INITIAL FIRM IDENTIFIED	CURRENT EFFECTIVE MAP DATE
Smithfield Township	PARTICIPATING	420494	03/15/1977	10/16/2012
Springfield Township	PARTICIPATING	421701	12/04/1985	10/16/2012
Spruce Creek Township	PARTICIPATING	422621	03/02/1989	05/02/2018
Tell Township	PARTICIPATING	421702	06/11/1982	10/16/2012
Three Springs Borough	PARTICIPATING	422576	10/01/1982	10/16/2012
Todd Township	PARTICIPATING	421703	08/15/1989	10/16/2012
Union Township	PARTICIPATING	421704	03/02/1989	10/16/2012
Walker Township	PARTICIPATING	422577	09/10/1984	10/16/2012
Warriors Mark Township	PARTICIPATING	421705	03/02/1989	05/02/2018
West Township	PARTICIPATING	421706	12/04/1985	10/16/2012
Wood Township	PARTICIPATING	421707	11/01/1985	10/16/2012
<i>*No identified SFHAs</i>				

4.3.3.4. Future Occurrence

In this Plan, the term “Special Flood Hazard Area” is used rather than floodplain to clarify that the area under consideration is identified on the FIRMs as having at least a 1-percent chance of flooding in any given year. Historically, the area with a 1-percent chance of flooding in any given year has been called the “100-year floodplain” or the “base flood” and the area with a 0.2-percent chance of flooding in any given year has been called the “500-year floodplain.” As these terms can be misleading by suggesting that there will be a flood only every 100 or 500 years respectively, FEMA is moving away from this terminology, and they are not used in this Plan. The 1- and 0.2 percent-annual-chance-floods are delineated on a community’s FIRM. Areas subject to 2 percent- and 10 percent-annual-chance-events are not shown on FIRMs, however, water surface elevations associated with these events are included in the flood source profiles contained in the Flood Insurance Study Report. The most recent Flood Insurance Study for each county in Pennsylvania is available from the FEMA Map Service Center (<http://www.msc.fema.gov>).

Table 4.3.3-5 shows a range of flood recurrence intervals and associated probabilities of occurrence.

Recurrence Interval (Years)	Annual Exceedance Probability (%)
2	50
5	20
10	10
25	4
50	2
100	1
200	0.5
500	0.2

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In Huntingdon County, flooding occurs commonly and can occur during any season. Within the flood-susceptible areas of Huntingdon County, it is expected that the character of flooding will remain essentially unchanged from what has been experienced for many years. However, some increase in the severity and frequency of flooding may result due to planned or recent development within the floodplains of the various county streams and lakes, as well as a future conditions and increased intensity and frequency of rain events. Therefore, the future occurrence of floods in Huntingdon County can be characterized as *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.3.5. *Vulnerability Assessment*

Flooding can lead to property loss as well as to loss of life. Flooding damages structures, including homes and businesses, vehicles, and infrastructure, including roadways. People who are surrounded by flood waters may at some point require evacuation, placing their lives and the lives of rescuers in danger. Flooding can disrupt the operation of businesses and schools. Recovery from flood damages can be time consuming and costly.

Flood vulnerability is described in terms of what community assets, structures, and infrastructure are situated in locations where flooding is anticipated. For purposes of assessing vulnerability, this plan focuses on those that are located in the SFHA. Please note that while other floods are possible, information about the extent and depths for the flood frequencies likely to be seen in this floodplain are available for all municipalities countywide, thus providing a consistent basis for analysis. Flood vulnerability maps for each applicable local municipality, showing the SFHA, addressable structures, critical facilities and transportation routes within it, are included in **Appendix D**. These maps were created using FEMA Countywide data from the current effective FIRMS. Table 4.3.3-7 displays the 2010 population per municipality that lives within the SFHA. Huntingdon Borough has the most people living in the SFHA (546) and Rockhill Borough has the largest percentage of people living in the SFHA (56.79%).

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Figure 4.3.3-4 Flooding in Huntingdon Borough on September 10, 2018, that led to the closure of Fourth Street (Photograph courtesy of Tim Schrack, September 10, 2018).



Structures are at risk of flood damage in each participating municipality except for Broad Top City Borough, Cassville Borough, Coalmont Borough, Marklesburg Borough, and Shirleysburg Borough. In addition, structures are at risk of flood damage in one non-participating municipality, Lincoln Township. Table 4.3.3-7 also displays the total number of structures and critical facilities located within the SFHA. Approximately 5.4% of all addressable structures (1,325 structures) in Huntingdon County are located in the SFHA and are most vulnerable to flood losses. Alexandria Borough also has the most structures located in the SFHA (62.4%) and is therefore most vulnerable to the 1%-annual-chance flood event. Thirty-one municipalities in Huntingdon County have 5% or less of their structures located in the SFHA.

A total of 542 NFIP claims for flood damages have been made since 1978 for structures within Huntingdon County. In 2019, there were 342 NFIP policies in force in the County. Cumulative NFIP payments for flood damages have exceeded \$9.4 million (Michael Baker International, 2018).

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The East Broad Top Railroad Historical Landmark in Huntingdon County operated from 1871 to 1956.



Historic resources including landmark buildings, historic structures and sites, commercial and residential districts, rural resources, archaeological and cultural sites, and the historic environment can be impacted by disaster events. There are 102 historic resources identified by Huntingdon County, 36 of which are located in the flood zone (see Table 4.3.3-6). Currently, Huntingdon County has 43 entries on the National Register of Historic Places (NRHP), including 29 sites, two landmarks, and 12 districts. Thirteen entries on the NRHP are within the SFHA including: St. Mary's Covered Bridge in Cromwell Township, Minersville Coke Ovens in Carbon Township, and Shaver's Creek Railroad Bridge in Logan Township. The table below shows the number of historical buildings, district, and structures contained in each municipality throughout the County (this includes places both listed and not listed on the NRHP).

Some historic and cultural resources also have unique vulnerabilities to hazard events. Depending on the resource, vulnerability to certain hazards may be greater and/or less than that of other assets in the County. For example, historic paper documents may not be impacted by an earthquake or severe winter storms, but historic properties have the potential to be more significantly impacted by these events than newer structures constructed to comply with modern building codes and development regulations. Similarly, flooding may have a more significant impact on a historic property than other properties, but there may be less of an impact on historic sites such as monuments or cemeteries.

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Table 4.3.3-6 Number of Flood-Prone Historical Sites by Municipality (Huntingdon County Mapping Department, 2020).				
COMMUNITY	Buildings	Districts	Structures	Total
Alexandria Borough	0	1	0	1
Barree Township	0	0	1	1
Birmingham Borough	0	0	0	0
Brady Township	0	0	0	0
Broad Top City Borough	0	0	0	0
Carbon Township	0	0	1	1
Cass Township	0	0	0	0
Cassville Borough	0	0	0	0
Clay Township	0	0	0	0
Coalmont Borough	0	0	0	0
Cromwell Township	0	0	1	1
Dublin Township	0	0	0	0
Dudley Borough	0	1	0	1
Franklin Township	0	0	1	1
Henderson Township	0	0	0	0
Hopewell Township	0	0	0	0
Huntingdon Borough	1	1	2	4
Jackson Township	0	2	1	3
Juniata Township	0	0	3	3
Lincoln Township	0	0	0	0
Logan Township	0	0	1	1
Mapleton Borough	0	0	0	0
Marklesburg Borough	0	0	0	0
Mill Creek Borough	0	0	0	0
Miller Township	0	0	0	0
Morris Township	0	1	0	1
Mount Union Borough	0	1	0	1
Oneida Township	0	0	0	0
Orbisonia Borough	0	0	0	0
Penn Township	2	0	2	4
Petersburg Borough	0	0	0	0
Porter Township	0	1	2	3
Rockhill Borough	0	0	0	0
Saltillo Borough	0	0	0	0
Shade Gap Borough	0	0	0	0
Shirley Township	0	0	1	1
Shirleysburg Borough	0	0	0	0

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Table 4.3.3-6 Number of Flood-Prone Historical Sites by Municipality (Huntingdon County Mapping Department, 2020).				
COMMUNITY	Buildings	Districts	Structures	Total
Smithfield Township	0	0	0	0
Springfield Township	0	0	1	1
Spruce Creek Township	1	2	0	3
Tell Township	0	0	0	0
Three Springs Borough	0	0	0	0
Todd Township	0	0	1	1
Union Township	0	0	0	0
Walker Township	0	0	0	0
Warriors Mark Township	0	1	1	2
West Township	0	0	0	0
Wood Township	0	2	0	2
TOTAL	4	13	19	36

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Table 4.3.3-7 Community Flood Vulnerability for Huntingdon County (Huntingdon County Mapping Department, 2020; U.S. Census Bureau, 2018)									
Municipality	Total Structures in Municipality	Structures in SFHA	Percent of Structures in SFHA	Total Critical Facilities in Municipality	Total Critical Facilities in SFHA	Percent Critical Facilities in SFHA	Total 2010 Population	2010 Population in SFHA*	Percent Population in SFHA
Alexandria Borough	157	98	62.4	5	2	40.0	397	188	47.36%
Barree Township	284	1	0.35	2	0	0	541	4	0.74%
Birmingham Borough	64	0	0	1	0	0	102	0	0.00%
Brady Township	503	27	5.37	5	0	0	1,285	71	5.53%
Broad Top City Borough	207	0	0	6	0	0	325	0	0.00%
Carbon Township	222	1	0.45	5	0	0	412	12	2.91%
Cass Township	689	8	1.16	8	0	0	1,241	55	4.43%
Cassville Borough	90	0	0	4	0	0	189	0	0.00%
Clay Township	593	12	2.02	11	0	0	1,029	29	2.82%
Coalmont Borough	53	0	0	2	0	0	59	11	18.64%
Cromwell Township	1,013	26	2.57	10	2	20.0	1,195	99	8.28%
Dublin Township	750	4	0.53	10	0	0	1,248	32	2.56%
Dudley Borough	107	1	0.93	1	0	0	153	0	0.00%
Franklin Township	334	59	17.7	1	0	0	516	24	4.65%
Henderson Township	653	85	13.0	2	0	0	727	78	10.73%
Hopewell Township	484	26	5.37	2	0	0	482	55	11.41%

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Table 4.3.3-7 Community Flood Vulnerability for Huntingdon County (Huntingdon County Mapping Department, 2020; U.S. Census Bureau, 2018)									
Municipality	Total Structures in Municipality	Structures in SFHA	Percent of Structures in SFHA	Total Critical Facilities in Municipality	Total Critical Facilities in SFHA	Percent Critical Facilities in SFHA	Total 2010 Population	2010 Population in SFHA*	Percent Population in SFHA
Huntingdon Borough	2,784	252	9.05	34	3	8.82	7,067	546	7.73%
Jackson Township	788	27	3.43	7	0	0	808	75	9.28%
Juniata Township	445	26	5.84	2	0	0	524	9	1.72%
Lincoln Township	336	7	2.08	5	0	0	286	0	0.00%
Logan Township	348	20	5.75	5	0	0	676	108	15.98%
Mapleton Borough	215	12	5.58	4	0	0	572	45	7.87%
Marklesburg Borough	168	0	0	4	0	0	202	0	0.00%
Mill Creek Borough	194	7	3.61	4	0	0	260	6	2.31%
Miller Township	308	10	3.25	2	0	0	410	34	8.29%
Morris Township	212	7	3.30	1	0	0	524	0	0.00%
Mount Union Borough	1,224	4	0.33	21	0	0	2,553	33	1.29%
Oneida Township	556	19	3.42	3	0	0	1,228	41	3.34%
Orbisonia Borough	234	10	4.27	5	0	0	786	42	5.34%
Penn Township	878	8	0.91	6	0	0	899	0	0.00%
Petersburg Borough	193	20	10.4	5	1	20.0	537	38	7.08%

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Table 4.3.3-7 Community Flood Vulnerability for Huntingdon County (Huntingdon County Mapping Department, 2020; U.S. Census Bureau, 2018)									
Municipality	Total Structures in Municipality	Structures in SFHA	Percent of Structures in SFHA	Total Critical Facilities in Municipality	Total Critical Facilities in SFHA	Percent Critical Facilities in SFHA	Total 2010 Population	2010 Population in SFHA*	Percent Population in SFHA
Porter Township	1,078	129	12.0	11	2	18.2	2,011	232	11.54%
Rockhill Borough	200	89	44.5	4	2	50.0	368	209	56.79%
Saltillo Borough	169	8	4.73	2	0	0	319	42	13.17%
Shade Gap Borough	43	0	0	1	0	0	78	0	0.00%
Shirley Township	1,512	77	5.09	13	1	7.69	2,520	105	4.17%
Shirleysburg Borough	75	0	0	3	0	0	118	6	5.08%
Smithfield Township	839	62	7.39	18	0	0	4,415	68	1.54%
Springfield Township	474	7	1.48	3	0	0	705	21	2.98%
Spruce Creek Township	178	35	19.7	2	1	50.0	266	34	12.78%
Tell Township	400	25	6.25	6	1	16.7	664	74	11.14%
Three Springs Borough	242	3	1.24	8	1	12.5	371	4	1.08%
Todd Township	781	13	1.67	9	0	0	1,010	15	1.49%
Union Township	834	20	2.40	7	0	0	1,058	38	3.59%
Walker Township	963	18	1.87	10	0	0	1,828	21	1.15%
Warriors Mark Township	870	30	3.45	8	0	0	1,910	57	2.98%
West Township	321	22	6.85	4	1	25.0	437	82	18.76%

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Table 4.3.3-7 Community Flood Vulnerability for Huntingdon County (Huntingdon County Mapping Department, 2020; U.S. Census Bureau, 2018)									
Municipality	Total Structures in Municipality	Structures in SFHA	Percent of Structures in SFHA	Total Critical Facilities in Municipality	Total Critical Facilities in SFHA	Percent Critical Facilities in SFHA	Total 2010 Population	2010 Population in SFHA*	Percent Population in SFHA
Wood Township	453	10	2.21	10	0	0	519	5	0.96%
TOTAL	24,518	1,325	5.40	302	17	5.63	45,830	2,648	5.78%

**Calculated by selecting the 2010 census block centroids that intersect the SFHAs in order to provide an approximation of populations living near the SFHA.*

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A number of critical facilities are located in flood-prone areas. These include fire stations, police stations, and municipal buildings. Some facilities including American Red Cross shelters and medical facilities that may also require special attention during times of flooding for evacuation purposes are also located in flood-prone areas. Table 4.3.3-7 also shows the number of critical facilities located in the SFHA. Out of 302 critical facilities identified throughout Huntingdon County, 17, or 5.6%, are located in the 1%-annual-chance floodplain. Huntingdon Borough contains the most critical facilities with a total of 34, but only 3 are located in the 1%-annual-chance floodplain. **Appendix E** highlights the 17 critical facilities located in the SFHA.

Additional information on flood vulnerability and losses in Huntingdon County, including the 1%-annual-chance flood event results from Hazus, FEMA's loss estimation software, is provided in Section 4.4.3: Potential Loss Estimates.

4.3.4. Hailstorm



4.3.4.1. Location and Extent

Hailstorm events can occur in all areas of Huntingdon County. Neither the duration of the storm nor the extent of the area affected by such an occurrence can be predicted. Hail precipitation is often produced at the front of a severe thunderstorm or in conjunction with a tornado event. Hailstorms occur when ice crystals form within a low pressure front due to the rapid rise of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation in the form of balls or irregularly shaped masses of ice. Hailstones are formed most commonly in thunderstorms with intense updraft, high liquid water content, large vertical extent, large water droplets, and cloud layers below freezing (NOAA NSSL, 2020).

4.3.4.2. Range of Magnitude

Hail is described qualitatively and quantitatively by its size and can range from 0.2 inches to 4.5 inches; as shown in Table 4.3.4-1. The size of hail is dependent on the strength of the upward air movement along the front of a thunderstorm, called the updraft. Hailstone nuclei are buoyed or lifted by the updraft and increase in size the longer the stone is held aloft. Weaker updrafts create smaller hailstones while strong updrafts provide a longer amount of time for hailstone nuclei to grow in diameter (NOAA NSSL, 2020). Huntingdon County has experienced hail ranging in size from 0.75 to 1.75 inches in diameter (NOAA NCEI, 2019).

Table 4.3.4-1 Hailstone size and relationship to updraft speed (NOAA NSSL, 2020).

HAILSTONE SIZE	MEASUREMENT (INCHES)	UPDRAFT SPEED (MPH)
BB	< 0.25	< 24
Pea	0.25	24
Marble	0.50	35
Dime	0.70	38
Penny	0.75	40
Nickel	0.88	46
Quarter	1.00	49
Half Dollar	1.25	54
Walnut	1.50	60
Golf Ball	1.75	64
Hen Egg	2.00	69
Tennis Ball	2.50	77
Baseball	2.75	81
Teacup	3.00	84
Grapefruit	4.00	98
Softball	4.50	103

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Hailstorms can cause significant damage to crops, livestock and property, depending on the size, duration, and intensity of hail precipitation. Automobiles and aircraft are particularly susceptible to damage. Also, people are at risk for serious injury if they don't seek immediate shelter. Since hail precipitation usually occurs during thunderstorm events, the impacts of other hazards associated with thunderstorms (i.e. strong winds, intense precipitation, etc.) often occur simultaneously (NOAA NSSL, 2020).

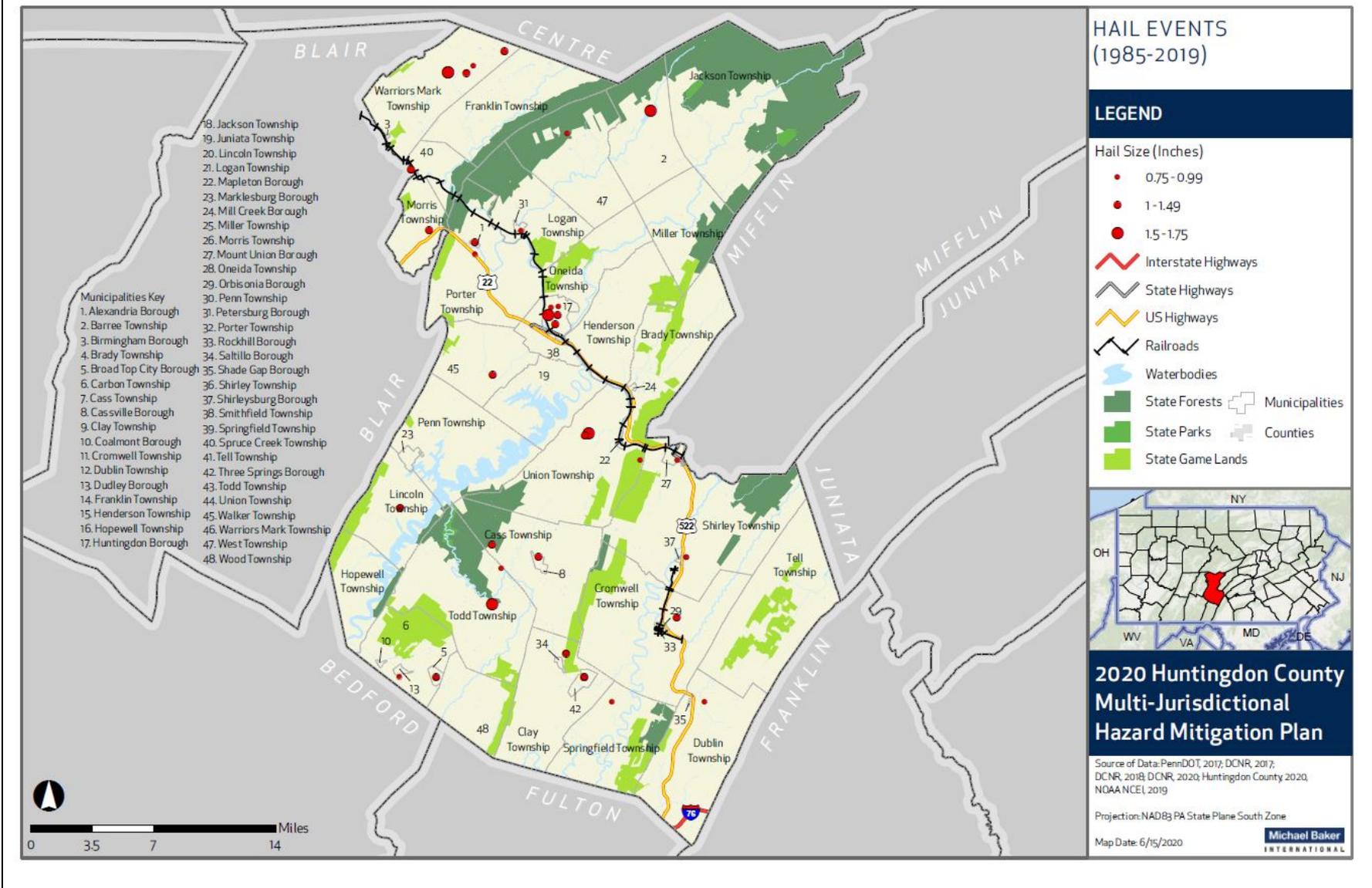
A potential worst-case scenario of a hailstorm would be if a storm carrying hail of over two inches were to occur over a prolonged period in a predominantly agricultural area. Because hail can cause significant crop damage, a storm of this magnitude would potentially destroy agricultural yields and result in significant lost revenue, as well as property damage and injuries.

4.3.4.3. Past Occurrence

Figure 4.3.4-1 shows a map of the number of recorded hailstorm events in Huntingdon County between 1985 and 2019. A hailstorm event is defined as a storm with hail of $\frac{3}{4}$ inches or greater in diameter. According to PEMA, approximately 96 percent of hailstorm events occurred during the months of April, May, June, July, August, and September. In addition, most of the historic events occurred during the afternoon or evening. Both results are consistent with the relationship between hail and thunderstorms, which most often occur during late spring, summer, and early fall months.

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Figure 4.3.4-1 Number of hailstorm events in Huntingdon County from 1985-2019 (NOAA NCEI, 2019).



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NOAA reports 40 hail events in Huntingdon County from 1950-2019. This includes damage estimates for all hailstorms reported by local field offices. A list of all damages aggregated to the municipal scale is provided in the table below. Property damages have only been reported for one occurrence in 1991, estimated to be \$20,000.

Table 4.3.4-2 Previous hail events in Huntingdon County between 1950 and 2019 (NOAA NCEI, 2019). Note that countywide notes the event occurred in multiple locations.			
LOCATION	DATE	ESTIMATED MAGNITUDE (inches)	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	06/03/1985	1.50	<i>not provided</i>
Countywide	06/16/1985	0.75	<i>not provided</i>
Countywide	07/12/1985	1.00	<i>not provided</i>
Countywide	07/13/1987	1.75	<i>not provided</i>
Countywide	05/06/1991	0.75	<i>not provided</i>
Cassville/Orbisonia	07/07/1991	1.00	<i>not provided</i>
Alexandria	07/07/1991	1.75	<i>not provided</i>
Countywide	09/18/1991	1.75	\$20,000
Huntingdon	06/20/1994	0.75	<i>not provided</i>
Saltillo	08/12/1994	1.00	<i>not provided</i>
Three Springs	08/13/1994	1.00	<i>not provided</i>
Dudley	03/29/1997	0.75	<i>not provided</i>
Three Springs	07/09/1997	0.75	<i>not provided</i>
Water Street (Morris)	05/04/1998	1.25	<i>not provided</i>
Shirleysburg	05/12/1999	0.75	<i>not provided</i>
Shirleysburg	05/12/1999	0.75	<i>not provided</i>
Huntingdon	07/17/1999	1.00	<i>not provided</i>
Spruce Creek	04/09/2001	1.00	<i>not provided</i>
Huntingdon	05/26/2001	0.88	<i>not provided</i>
Huntingdon	07/10/2001	1.75	<i>not provided</i>
Orbisonia	04/28/2002	1.00	<i>not provided</i>
Petersburg	05/07/2003	0.88	<i>not provided</i>
Shade Gap	06/06/2005	0.88	<i>not provided</i>
Saltillo	07/09/2006	0.75	<i>not provided</i>
Mapleton	07/18/2006	0.88	<i>not provided</i>
Broad Top City	05/10/2007	0.88	<i>not provided</i>
Warriors Mark	08/30/2007	0.75	<i>not provided</i>
Three Springs	06/22/2008	1.00	<i>not provided</i>
Entriken (Lincoln)	06/22/2008	1.00	<i>not provided</i>
Alexandria	07/24/2008	0.88	<i>not provided</i>
Mount Union	06/10/2009	0.75	<i>not provided</i>
Todd	05/27/2011	1.75	<i>not provided</i>

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Table 4.3.4-2 Previous hail events in Huntingdon County between 1950 and 2019 (NOAA NCEI, 2019). Note that countywide notes the event occurred in multiple locations.

LOCATION	DATE	ESTIMATED MAGNITUDE (inches)	ESTIMATED PROPERTY DAMAGE (\$)
Cassville	05/27/2011	1.25	<i>not provided</i>
Huntingdon	05/29/2012	1.00	<i>not provided</i>
Broad Top City	07/18/2012	1.00	<i>not provided</i>
McConnellstown (Walker)	07/27/2014	1.00	<i>not provided</i>
Warriors Mark	04/20/2015	1.00	<i>not provided</i>
Alexandria	05/30/2017	1.00	<i>not provided</i>
Todd	05/03/2019	0.88	<i>not provided</i>
Dungarvin (Warriors Mark)	05/23/2019	1.00	<i>not provided</i>
Neffs Mills (West)	05/23/2019	1.75	<i>not provided</i>

4.3.4.4. Future Occurrence

It is not possible to predict the formation of a hailstorm with more than a few days' lead time. The past occurrences in the County described above, however, indicate that this event is one that can happen several times in any given year, most likely during the late spring and summer months. Based on prior occurrences, the County can expect a 1-49.9% probability of hailstorms occurring annually. Therefore, the future occurrence of hailstorms in Huntingdon County can be considered *possible* as defined by the Risk Factor methodology probability criteria (See Table 4.4.1-1).

4.3.4.5. Vulnerability Assessment

All of Huntingdon County, including all critical infrastructure, is vulnerable to the effects of hail, as the storm cells that produce this hazard are spread over a large (multi-county) area. The area of damage due to these storms is relatively small, in that a single storm does not cause widespread devastation but may cause damage in a focused area of the storm.

As a hazard, damage to crops and vehicles are typically the most significant impacts of hailstorms. Damage to trees, shrubbery, and other vegetation may occur during hailstorm events through defoliation. Unless there are compounding stresses, natural vegetation can typically recover over time following the event. However, crops such as corn and soybeans can be damaged to the point of total loss, particularly if an event occurs later in the growing season.

Potential losses from a hailstorm event can be derived from agricultural sales information as reported in the Drought hazard profile, Section 4.3.1. There are 714 farms located in Huntingdon County. These businesses sold approximately \$92,132,000 in agricultural products in 2017, with \$20,224,000 (22%) coming from crop sales.



Hurricanes, tropical storms, and nor'easters are regional events that can impact areas as large as hundreds or thousands of miles across through the life of the storm. Therefore, all communities within Huntingdon County are equally subject to the impacts of hurricanes, tropical storms, and nor'easters that track through or near the region.

4.3.5. Hurricane, Tropical Storm, Nor'easter

4.3.5.1. Location and Extent

Hurricanes, tropical storms, and nor'easters are classified as cyclones and are any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise. Tropical storms impacting Huntingdon County develop in tropical or sub-tropical waters found in the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea. Cyclones with maximum sustained winds of less than 39 miles per hour are called tropical depressions. A tropical storm is a cyclone with maximum sustained winds between 39-74 mph. These storms sometimes develop into hurricanes with wind speeds in excess of 74 mph. Although Huntingdon County is located over 100 miles inland from the Atlantic Coast, tropical storms and hurricanes can track inland causing heavy rainfall and strong winds.

Nor'easters are extra-tropical storms which typically develop from low-pressure centers off the Atlantic Coast during the winter months. Extra-tropical is a term used to describe a hurricane or tropical storm with a cyclone that has lost its 'tropical' characteristics. While an extra-tropical storm denotes a change in weather pattern and how the storm is gathering energy, it may still have northeast winds that are tropical storm or hurricane force. Nor'easters can also produce heavy precipitation in the form of rain, snow, or ice.

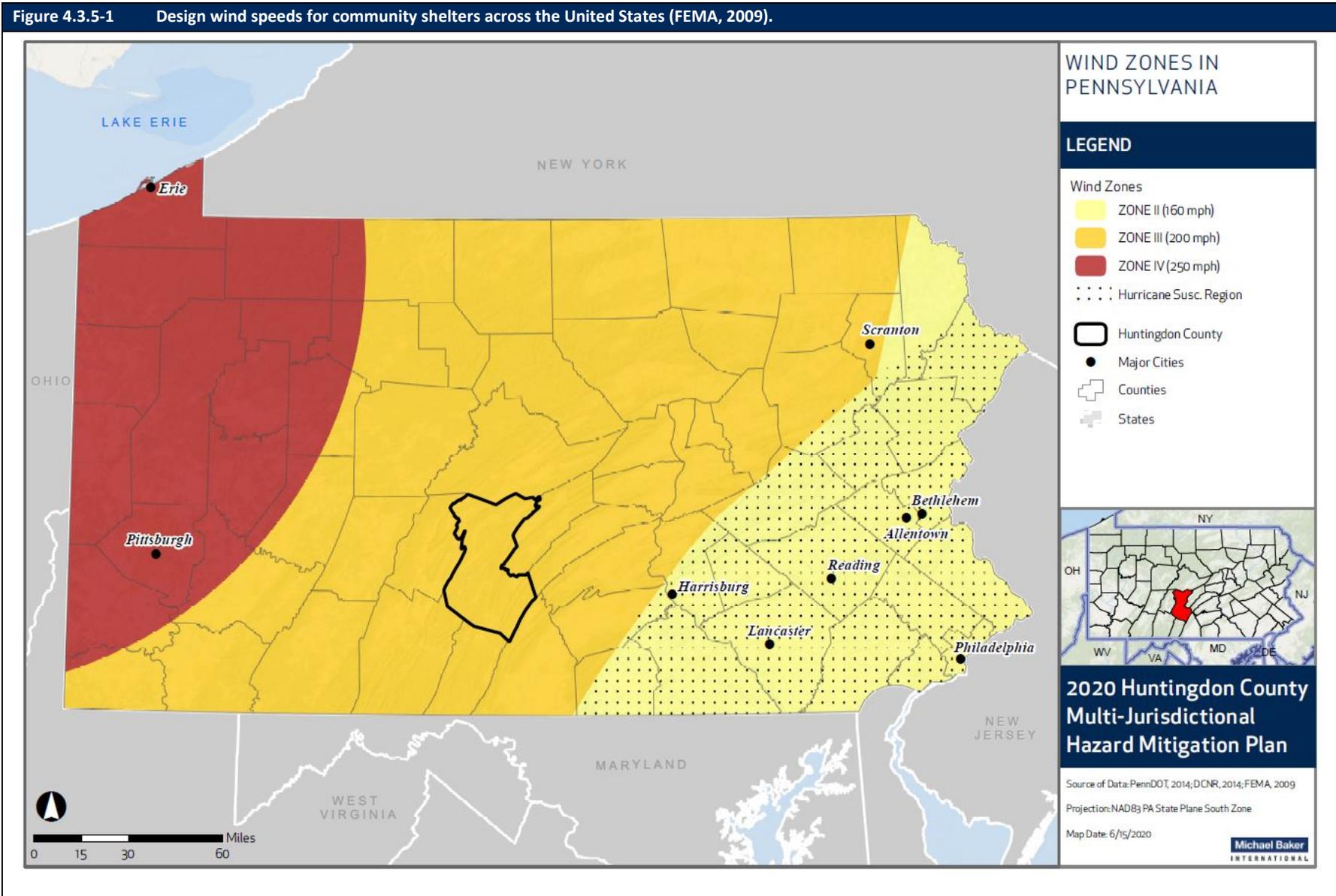
Hurricanes, tropical storms, and nor'easters are regional events that can impact areas as large as hundreds or thousands of miles across through the life the storm. Therefore, all communities within Huntingdon County are equally subject to the impacts of hurricanes, tropical storms, and nor'easters that track through or near the region. Areas in Huntingdon County which are subject to flooding, wind, and winter storm damage are particularly vulnerable in these situations.

The map below shows wind speed zones developed by the American Society of Civil Engineers. This information is based on 40 years of tornado history and over 100 years of hurricane history. It identifies wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities.

Huntingdon County falls within Zone III, meaning design wind speeds for shelters and critical facilities should be able to withstand a three second gust of up to 200 mph, regardless of whether the gust is the result of a tornado, hurricane, tropical storm, or windstorm event.

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Figure 4.3.5-1 Design wind speeds for community shelters across the United States (FEMA, 2009).



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4.3.5.2. Range of Magnitude

The impacts associated with hurricanes and tropical storms are primarily wind damage and flooding. It is not uncommon for tornadoes to develop during these events. Historical tropical storm and hurricane events have brought intense rainfall that can lead to damaging floods, and northeast winds, which, when combined with waterlogged soils can cause trees and utility poles to fall. Nor'easters can also bring damaging rain and wind but because they often occur during the winter months, they bring the additional threat of snow and ice associated with winter storms. Heavy snow can cause roof collapse in older homes, and ice presents a threat of slipping and tree branch collapse. More information on the range of magnitude of winter storms can be found in Section 4.3.12.2.

The impact tropical storm or hurricane events have on an area is typically measured in terms of wind speed. Expected damage from hurricane force winds is measured using the Saffir-Simpson Scale. The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, barometric pressure, and storm surge potential (characteristic of tropical storms and hurricanes), which are combined to estimate potential damage. The table below lists Saffir-Simpson Scale categories with associated wind speeds and expected damages. Categories 3, 4, and 5 are classified as “major” hurricanes. While major hurricanes comprise only 20 of all tropical cyclones making landfall, they account for over 70 percent of the damage in the United States. The intensity of a storm is also impacted by its orientation, location of landfall, and speed. The likelihood of these damages occurring in Huntingdon County is assessed in Section 4.3.5.4, Future Occurrence.

STORM CATEGORY	WIND SPEED (mph)	DESCRIPTION OF DAMAGES
1	74-95	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3	111-129	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	130-156	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	>157	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

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It is important to recognize the potential for flooding events during hurricanes, tropical storms, and nor'easters; the risk assessment and associated impact for these events is included Section 4.3.3. Wind impacts in Huntingdon County generally include downed trees and utility poles, which can spark widespread utility interruptions. Wind impacts are particularly an issue for mobile homes and other manufactured housing; these structures are often not well-anchored and are highly susceptible to wind damage in a hurricane, tropical storm, or nor'easter.

The worst-case scenario for a hurricane, tropical storm, or nor'easter event in Huntingdon County was Hurricane Agnes, which struck the Susquehanna Valley in June 1972 and caused over 16 inches in rain. The Susquehanna River reached a depth of 34.23 feet.

4.3.5.3. Past Occurrence

The National Oceanic and Atmospheric Administration's Coastal Services Center maintains records of all coastal storms occurring in the United States since the 1850s. The following table lists all coastal storms having centers of circulation to pass through or within 30 nautical miles of Huntingdon County. Typically, when these storms reach Huntingdon County, they have lost their hurricane speed winds, so structural damage is usually not as bad as coastal communities may experience.

YEAR	EVENT	STRENGTH IN/NEAR HUNTINGDON COUNTY
1876	Not Named	Tropical Storm
1888	Not Named	Tropical Storm
1893	Not Named	Hurricane
1928	Not Named	Extratropical Storm
2012	Sandy	Hurricane

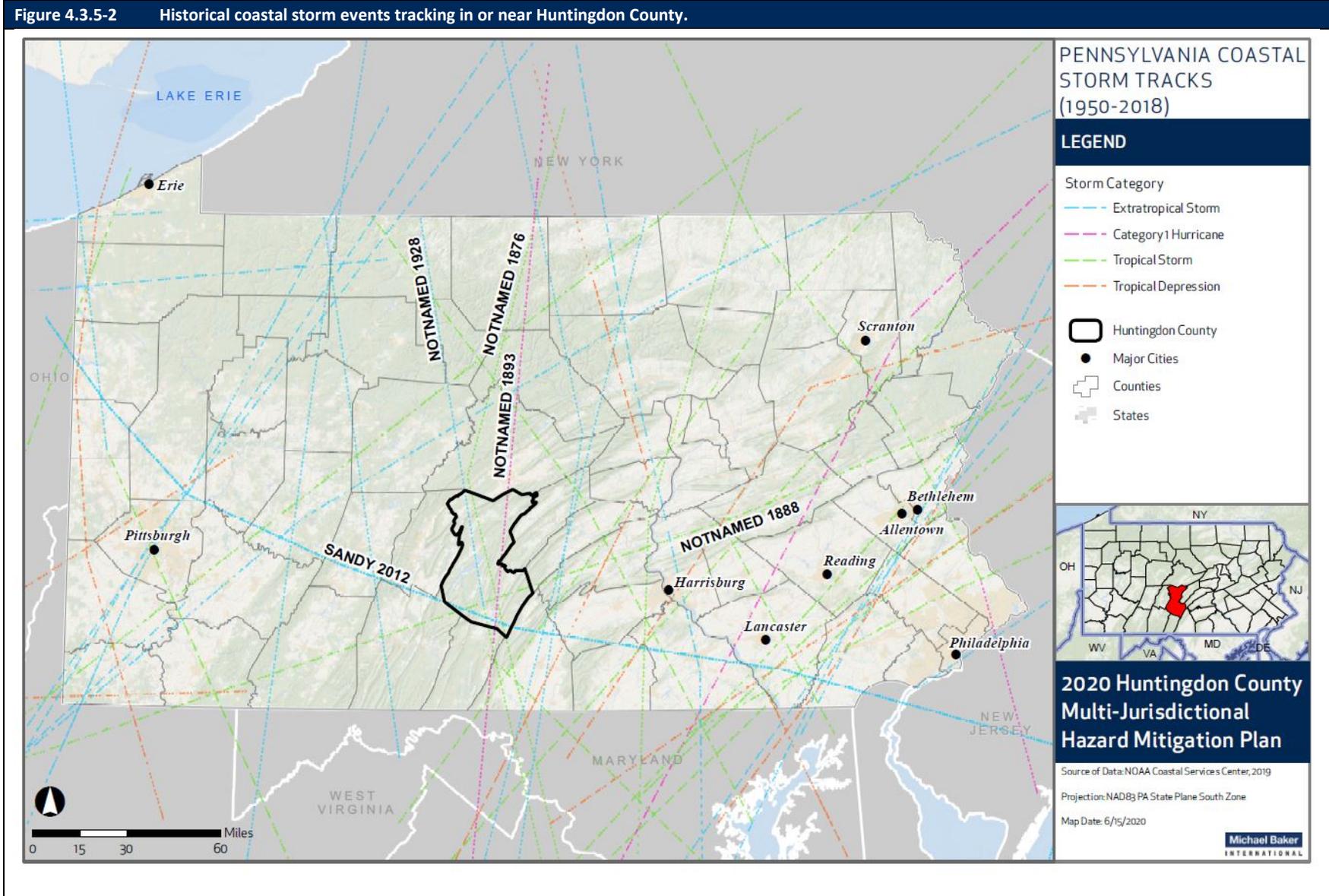
The next map shows the tracking of some of these storm events in or near Huntingdon County. It is important to note that a number of hurricane and tropical storm events have impacted the County without tracking through or near it; these storm events include Tropical Storm Lee (2011), Hurricane Irene (2011), Hurricane Katrina (2005), and Tropical Depression Ivan (2004). Each of these storm events resulted in a Presidential Disaster Declaration. The storms occurred just two weeks apart, which added to post disaster complications. Tropical Storm Lee had an average rainfall of ten inches of rain over three days, and the Susquehanna River crested at a record level of 42.66 feet. In addition, Hurricane Agnes (1972) did not track in or near Huntingdon County but resulted in significant flooding as described in Section 4.3.4.2 above. These examples indicate that Huntingdon County is vulnerable to damage from flooding and heavy winds when hurricanes and tropical storms come near the region. The following map highlights storms that have tracked through Huntingdon County while also showing the storms that have tracked through the remaining parts of Pennsylvania. The NOAA NCEI database does not track nor'easters as a separate weather event; they are tracked as high wind, heavy snow, and/or coastal flooding events, so a complete listing is not available. However, other sources provide record that some of the winter storms listed in Section 4.3.12.3 were nor'easters. For instance, a nor'easter affected much of Pennsylvania and several other states between Washington, D.C. and Boston, Massachusetts from January 6-8, 1996, resulting in

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Presidential Disaster Declaration 1085. Blizzard conditions included heavy snow, strong winds, and very cold temperatures (NWS, 1996). About a week later, unseasonably high temperatures and rainfall melted the thick snowpack left by the Nor'easter and resulted in Presidential Disaster Declaration 1093 for flooding (NCEI, 2014). More recently, there was a nor'easter that took place on October 29, 2011 and brought 3-9" of snow accumulation with 10-12" of accumulation in higher elevations. The heavy, wet snow brought tree and utility damage, causing half a million power outages state-wide (NCEI, 2014).

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Figure 4.3.5-2 Historical coastal storm events tracking in or near Huntingdon County.



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4.3.5.4. Future Occurrence

Although hurricanes, tropical storms, and nor'easters can cause flood events consistent with 1 percent- and 0.2 percent- level frequency, their probability of occurrence is measured relative to wind speed. The future occurrence of hurricanes, tropical storms, and nor'easters can be considered *possible*, as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1). It is difficult to assign a probability to the future occurrence of nor'easters in Huntingdon County; however, the storms are possible in the County. Although Huntingdon County is not likely to experience the severe high winds faced in more coastal communities during a nor'easter, the County is subject to heavy snow, ice, and blizzard conditions.

4.3.5.5. Vulnerability Assessment

A vulnerability assessment for hurricanes, tropical storms, and nor'easters focuses on the impacts of flooding and severe wind. Therefore, the assessment for flood-related vulnerability is addressed in Section 4.3.3.5. In addition, mobile/manufactured homes are vulnerable to hurricanes, tropical storms, and nor'easters. Section 4.3.10.5 discusses vulnerability to wind damage. The County is also vulnerable to severe winter weather impacts caused by nor'easters which are evaluated in 4.3.12.5.

4.3.6. Invasive Species

4.3.6.1. Location and Extent

An invasive species is a species that is not indigenous to a given ecosystem and that, when introduced to a non-native environment, is likely to cause economic or environmental harm, or pose a hazard to human health. The Commonwealth of Pennsylvania is host to several invasive pathogens, insects, plants, invertebrates, fish, and higher mammals. These species have largely been introduced by the actions of humans. Common pathways for invasive species threats include unintentional release of species, the movement of goods and equipment that may unknowingly harbor species, smuggling, ship ballast, hull fouling, and escape from cultivation (PISC, 2016). Invasive species threats are generally divided into two main subsets (Michael Baker International, 2018):



- **Aquatic Invasive Species** are nonnative viruses, invertebrates, fish, and aquatic plants that threaten the diversity or abundance of native species, the ecological stability of the infested waters, human health and safety, or commercial, agriculture, aquaculture, or recreational activities dependent on such waters.
- **Terrestrial Invasive Species** are nonnative arthropods, vascular plants, higher vertebrates, or pathogens that complete their lifecycle on land instead of in an aquatic environment and whose introduction does or is likely to cause economic or environmental harm or harm to human health. The Governor’s Invasive Species Council of Pennsylvania (PISC), the lead organization for invasive species threats, identified species threats that have the potential to become significant in Pennsylvania, or have already become quite significant. These threats are not prioritized or ranked. These species are listed in Table 4.3.6-1.

Table 4.3.6-1 Confirmed and approximate presence of invasive species in Huntingdon County (PA iMapInvasives, 2020).	
Aquatic Invasive Species	
Common Carp	Greenside Darter
Curly-Leaf Pondweed	Rainbow Smelt
Asiatic Clam	Quagga Mussel
Brazilian Waterweed	Freshwater Jellyfish
Eurasian Water-milfoil	Hydrilla
Rusty Crayfish	Chinese Mysterysnail
Terrestrial Invasive Species	
Great Hedge Bedstraw	Mile-a-minute weed
Common Velvetgrass	Scribner’s Bluegrass
Greater Celandine	European Lily-of-the-valley
Kentucky Bluegrass	Japanese Siltgrass
Tree-of-Heaven	Giant-chickweed
Japanese Barberry	Chinese Bushclover
Hemlock Woolly Adelgid	Garlic Mustard
Japanese Angelica Tree	Spotted Lanternfly

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The location and extent of these invasive threats depends on the preferred habitat of the species as well as the species' ease of movement and establishment. For example, kudzu vine is an aggressive vascular plant; with its wide ecological parameters and ease of spread, the vine is a more widespread invasive species threat. Other species' spread has been limited by state agency activity, like the spotted lanternfly. First discovered in Berks County in 2014, this Asian plant hopper was placed under a quarantine by the Pennsylvania Department of Agriculture in thirteen counties: Berks, Bucks, Carbon, Chester, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Philadelphia, and Schuylkill. Overall, though, consistent with their invasive nature, these threats can infiltrate most areas of the Commonwealth.

Most new introductions of invasive species occur because of human activity. There are a few key pathways to introduction into Pennsylvania:

- Contamination of internationally traded products
- Hull fouling
- Ship ballast water release
- Discarded live fish bait
- Intentional release
- Escape from cultivation
- Movement of soil, compost, wood, vehicles, or other materials and equipment
- Unregulated sale of organisms
- Smuggling activities
- Hobby trading or specimen trading

4.3.6.2. *Range of Magnitude*

The magnitude of invasive species threats ranges from nuisance to widespread killer. Some invasive species like the Brown Marmorated Stink Bugs are not considered an agricultural pest and do not harm humans. Other invasive species can cause significant changes in the composition of Pennsylvania ecosystems. For example, the spotted lanternfly will inflict weeping wounds on trees, and the sap will attract other insects, especially ants and wasps. Another insect originally from Asia, the Emerald Ash Borer, has a 99% mortality rate for any ash tree it infects. Didymo, an aggressive form of algae, can clog waterways and smother native aquatic plants and animals. Microbial species can also be invasive and can cause widespread illness or death in humans. Among the animal invasive pathogens profiled by the USDA's National Invasive Species Information Center are Avian Influenza, West Nile Virus, and Zika Virus Disease.

The magnitude of an invasive species threat is generally amplified when the ecosystem or host species is already stressed, such as in times of drought. The already weakened state of the native ecosystem causes it to more easily succumb to an infestation. A possible worst-case scenario would be if the spotted lanternfly spread to the rest of the Commonwealth, and then ultimately, to the rest of the country. Though the spotted lanternfly isn't known to kill trees, the insect has caused major damage to agriculture in other countries, especially South Korea. If the insect spreads, it could seriously affect the grape, hops, and

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logging industries. With the weeping wounds the spotted lanternfly creates on trees, more unwanted insects will flock to feed on the tree sap.

4.3.6.3. Past Occurrence

The spotted lanternfly is native to Asia and poses a significant threat to Pennsylvania's agricultural sector due to its effect on grapes, hardwood, and tree fruits. These industries alone contribute largely to Pennsylvania's economy, approximately \$18 billion every year. The spotted lanternfly is extremely damaging to plants due to its ability to excrete honeydew, which in turn attracts other pest and promotes the growth of mold. Consequently, the state of Pennsylvania has enforced a quarantine for counties where spotted lanternfly is present in an effort to mitigate its spread. This quarantine was enforced in 2014, and Huntingdon County was added to the quarantine in 2020. Huntingdon Borough has been identified as an infested area within Huntingdon County (The Pennsylvania State University, 2018; PA Department of Agriculture, 2020). In June 2019, it was reported that spotted lanternflies were found on *Ailanthus altissima* trees, commonly known as the tree of heaven. Researchers believe that symbiotic fungi living in both the soil and *A. altissima* may be responsible for killing mass quantities of the spotted lanternfly. Although not extensively studied, researchers plan on continuing to observe this potential mitigation measure (Barr, 2019).

Figure 4.3.6-2 Life cycle of the spotted lanternfly (top) and a spotted lanternfly infested branch (bottom) (Photographs courtesy of The Pennsylvania State University, 2018).



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The PISC has begun tackling human and animal pathogens, aquatics, insects, mammals, plant pathogens, and vascular plants through management programs between the PA Fish and Boat Commission, the Game Commission, the Department of Agriculture, and DCNR. Notably, the PISC lists management programs for feral swine, kudzu, giant hogweed, mile-a-minute, emerald ash borer, plum pox virus, zebra and quagga mussels, and viral hemorrhagic septicemia under its “completed actions.” This does not mean that these threats have been eliminated; rather, it indicates that there is an active management plan in place to reduce future occurrences.

4.3.6.4. *Future Occurrence*

According to the PISC, the probability of future occurrence for invasive species threats is on the rise because of the growing volume of transported goods, increasing technology, efficiency and speed of transportation and expanding international trade agreements. Expanded global trade has created opportunities for many organisms to be transported to and establish themselves in new countries and regions. Furthermore, climate change is another contributing factor to the introduction of new invasive species. As maximum and minimum seasonal temperatures change and growing seasons lengthen, pests are able to establish themselves in areas with previously inhospitable climates. The longer growing season also gives introduced species an earlier start and more time to outcompete native species. This may shift the dominance of ecosystems in favor of nonnative species over time. Therefore, the future occurrence of invasive species in Huntingdon County can be considered *highly likely*, as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

Recent state actions to combat the growing threat of invasive species include a 2017 executive order to expand PISC, the 2017 Noxious Weed Act to help protect farms and properties from some of the most invasive plant species of concern, and the Invasive Species Management Plan released in April 2010. This plan outlines the Commonwealth’s goals for the management of the spread of nonnative invasive species and creates a framework for responding to threats through research, action, and public outreach and communication. Individual management plans by PISC member agencies and organizations will also help to reduce the number and/or magnitude of invasive species threats in the future.

4.3.6.5. *Vulnerability Assessment*

There is a wide range of environmental impacts caused by invasive species. The aggressive nature of many invasive species can cause significant reductions in biodiversity by crowding out native species. This can affect the health of individual host organisms as well as the overall well-being of the affected ecosystem. Beyond causing human, animal, and plant harm, there are secondary impacts of invasive species that go beyond harm to host species and ecosystems, particularly in the case of invasive species that invade forest ecosystems. Pennsylvania’s forests prevent soil degradation and erosion, protect watersheds, stabilize slopes, and absorb carbon dioxide emissions. The key role of forests in the hydrologic system means that if forest land is wiped out, the effects of erosion and flooding will be amplified. There is also an impact on agricultural harvests like honey, potatoes, and stone fruits. As Huntingdon County supports a strong agricultural population, invasive species remain a hazard for the economic livelihood of the County.

Areas with a high concentration of crops and trees are most vulnerable to these invasive species due to the overwhelming affect they can have on the ecosystem. Steps must be taken to protect food sources

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for the county as well as valuable forest land. Local river systems and water bodies are also vulnerable to invasive species, and preventative measures should be taken for the County's aquatic systems as well.

4.3.7. Landslide

4.3.7.1. Location and Extent

A landslide is a natural geologic process that has played a large part in shaping the landscape of Pennsylvania. Landslide is a general term for mass movement of soil, rock, or a combination of materials down a slope.

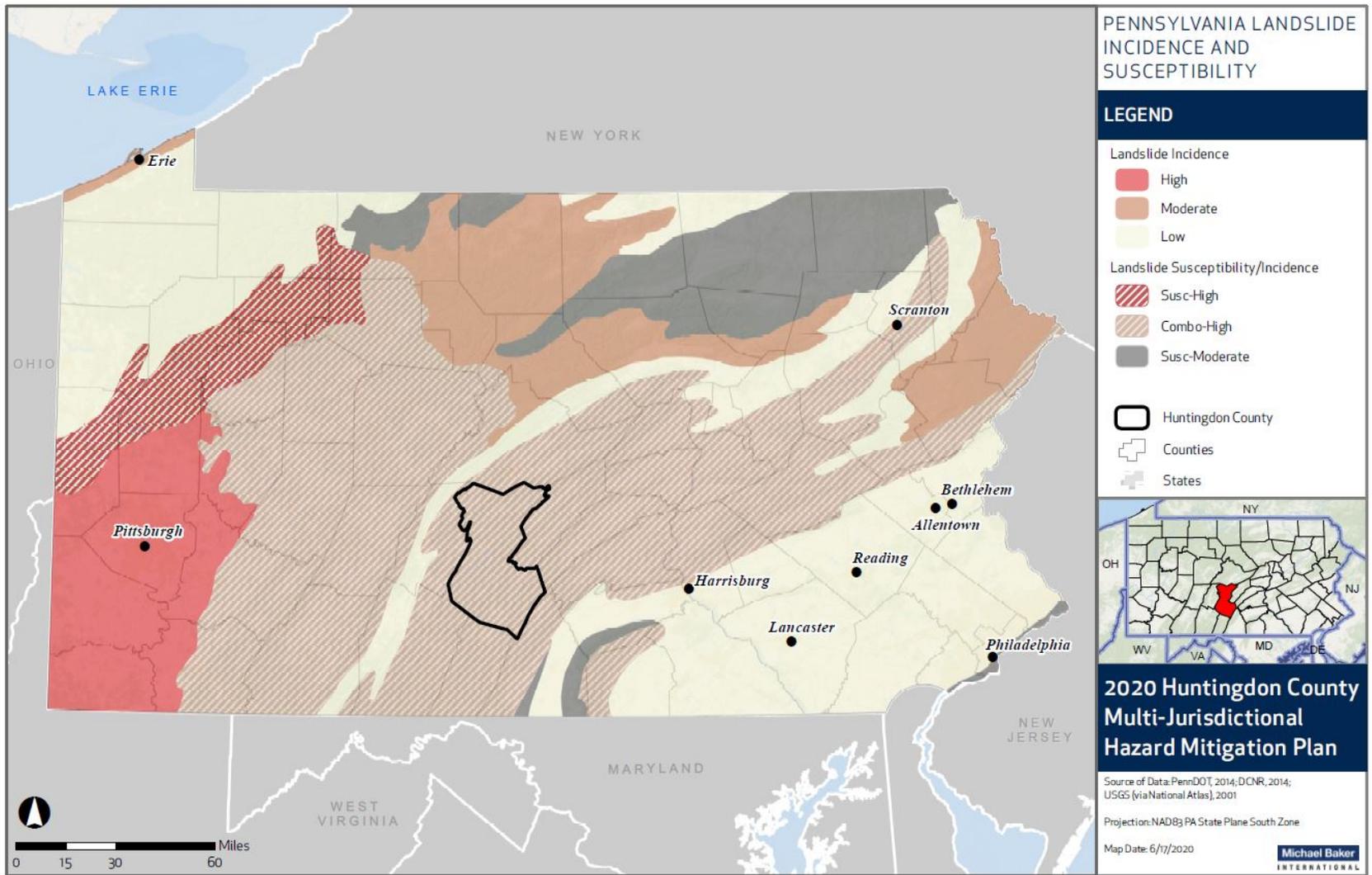
Landslides usually occur in areas of Huntingdon County with moderate to steep slopes and during high precipitation. Many slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms, or snowmelt events. Areas experiencing erosion, decline in vegetation cover, and earthquakes are also susceptible to landslides. Human activities that contribute to slope failure include altering the natural slope gradient, increasing soil water content, and removing vegetation cover. The geologic instabilities that cause landslides to occur are often exacerbated by highway projects in which the earth is cut, and soil is loosened.

The USGS identifies Huntingdon County as falling into a *Combo-High* zone of landslide susceptibility and incidence (Figure 4.3.7-1). This means that these areas have a high susceptibility to landslides with a moderate incidence of occurrence. A slope greater than 7% (approximately around 15 degrees) needs special considerations for building roads according to common engineering practice, and a slope of 15% (approximately around 25 degrees) is generally unstable and highly sensitive to surface changes. Slopes greater than 25% are very unstable.



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Figure 4.3.7-1 Map of general landslide hazard areas in Huntingdon County



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4.3.7.2. *Range of Magnitude*

Landslide velocity can vary from rapid to slow, and the amount of material moving in a landslide can range from a relatively small amount to a large amount. Landslides can include falling, sliding, or flowing of rocks and soil or a combination of these different types of motion.

The impact of landslides on the environment depends on the size and specific location of the event. In general, impacts include:

- Changes to topography
- Damage or destruction of vegetation
- Potential diversion or blockage of water in the vicinity of streams, rivers, etc.
- Increased sediment runoff both during and after event

Landslides in Huntingdon County have reportedly involved a small amount of rocks tumbling down a hillside; here, a small amount means an amount sufficient enough to fill the shoulder of a road for a linear distance of about 10 feet with rock, but not enough to block the entire roadway. A possible worst-case scenario could occur in Huntingdon County if a landslide occurred along one of the major interstates. The landslide could cause damage to vehicles and the roadway and injuries to people. In addition, the landslide would have secondary effects caused by shutting down the roadway.

4.3.7.3. *Past Occurrence*

A comprehensive inventory of landslides events in Pennsylvania does not exist. The NCDL database captures landslides as they occur in conjunction with severe storms; the NCDL database does not report any landslides in Huntingdon County. However, representatives of Hopewell Township have repeatedly experienced a reoccurring landslide on a Township road. More importantly, this road is a route used by Emergency Service Responders for the James Creek community. Currently, the Township road is too unstable to allow two lane traffic at the location of the landslide and is only open for one lane traffic. Hopewell Township has created a new mitigation action regarding this landslide hazard within their community (See Section 6.4).

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Figure 4.3.7-2 Landslide along Pine Ridge Road in Hopewell Township, Huntingdon County (Photographs courtesy of Geotechnical Consultants, 2011 and 2018).



4.3.7.4. *Future Occurrence*

Given that no severe damages due to landslide have been recorded in Huntingdon County, the future occurrence of landslides can be considered *unlikely* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1). However, there is the possibility of some rock falling from a steep slope, given that this occurred several times in the past. These events are not expected to be small, and cause little to no damage.

4.3.7.5. *Vulnerability Assessment*

A landslide might cause a structure to collapse or might cause minor damages such as broken windows. A landslide might cause a roadway to be temporarily blocked. Transportation routes throughout the County located at the base or crest of cliffs should be considered vulnerable to this hazard. A comprehensive inventory of these areas is not available, but transportation systems are mapped in Figure 4.3.18-1 in the Transportation Accidents hazard profile

4.3.8. Pandemic and Infectious Disease



4.3.8.1. Location and Extent

Pandemic is defined as a disease affecting or attacking the population of an extensive region, including several countries, and/or continent(s). It is further described as extensively epidemic. Generally, pandemic diseases cause sudden, pervasive illness in all age groups on a global scale. Infectious diseases are also highly virulent but are not spread person-to-person.

Pandemic and infectious disease events cover a wide geographical area and can affect large populations, potentially including the entire population of the County. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission and the amount of contact between infected and uninfected individuals. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. The transmission rate of infectious disease will depend on the mode of transmission of a given illness. Pandemic events can also occur after other natural disasters, particularly floods, when there is the potential for bacteria to grow and contaminate water.

Huntingdon County is primarily concerned with the possibility of a pandemic flu outbreak. Influenza, also known as “the flu”, is a contagious disease that is caused by the influenza virus and most commonly attacks the respiratory tract in humans. Influenza is considered to have pandemic potential if it is novel, meaning that people have no immunity to it, virulent, meaning that it causes deaths in normally healthy individuals, and easily transmittable from person-to-person. Different strands of influenza mutate over time and replace older stands of the virus and thus have drastically different effects. The H1N1 virus, colloquially known as swine flu, is of particular concern. This virus was first detected in people in the United States in April 2009. On June 11, 2009, the world health organization signaled that a pandemic of 2009 H1N1 flu was underway (CDC, 2009). Avian influenza, also known as bird flu, infects birds. A recent strain, H5N1, has caused concern due to its ability to pass from wild birds to poultry then on to people. This virus has killed more than half of the people infected with it, although the avian flu is less like to infect humans.

During the Multi-Jurisdictional Hazard Mitigation Plan Update process, a novel coronavirus spread into a worldwide pandemic. Named COVID-19, this type of coronavirus is a new virus that causes respiratory illness and is extremely contagious. Flu like in nature, symptoms of the virus include fever, cough, shortness of breath, and diarrhea. This virus became a great concern due to its high rates of transmission, in addition to so little being known about it. People were advised to practice social distancing; only leaving the house for essentials like grocery shopping, and no gathering even in small groups. Even when going on walks, people should remain six feet apart to slow the spread of transmission.

4.3.8.2. Range of Magnitude

The magnitude of a pandemic or infectious disease threat in Huntingdon County will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is easily transmitted from person-to-person, but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. The magnitude of a pandemic may be exacerbated

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by the fact that an influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available.

In terms of lives lost, the impact various pandemic influenza outbreaks have had globally over the last century has declined (see Table 4.3.8-1). The severity of illness from the 2009 H1N1 influenza flu virus varied, with the gravest cases occurring mainly among those considered at high risk. High risk populations considered more vulnerable include children, the elderly, pregnant women, and chronic disease patients with reduce immune system capacity. These populations are described in more detail in Section 4.3.8.5. Most people infected with swine flu in 2009 recovered without needing medical treatment. Unlike a regular flu season, according to the Centers for Disease Control (CDC) the majority of the people who died, as many as 77%, were 18 to 64 years old with up to 11% of the deaths estimated in those 17 years old and younger.

The 1918 Spanish flu pandemic was the worst-case pandemic event in the 20th century for both Pennsylvania and worldwide. County data is unavailable, and mortality figures were probably under-reported, it is recorded that 8,000 Pennsylvanians died from the flu or its complications in the first month alone. Infection rates were much worse in denser cities, which should be a high priority for response actions in future flu events.

It is believed that the COVID-19 virus originated in an open-air market in the Wuhan province of China in November 2019. Shortly afterwards, the virus began to spread to nearby countries like Japan and South Korea. By March 2020, the virus had reached almost every country worldwide, with the most cases in the US. At first, people were mostly concerned with people who might be infected due to recent travel. However, community infections soon began to crop up in many cities and towns. This led to a statewide shutdown of schools and businesses and the cancellation of large events for Spring and Summer 2020. Only life sustaining services were permitted to remain open, including medical facilities, pharmacies, and grocery stores. People were advised to remain home as much as possible in attempt to slow the transmission of COVID-19. State health officials note that the virus has infected all age ranges at about the same rate, and that no age group can be considered more or less vulnerable to infection.

4.3.8.3. Past Occurrence

The United States Department of Health and Human Services estimates that influenza pandemics have occurred for at least 300 years at unpredictable intervals. There have been several pandemic influenza outbreaks over the past 100 years. A list of events and worldwide deaths are shown in Table 4.3.8-1.

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Table 4.3.8-1 List of previous significant outbreaks of influenza over the past century (Global Security, 2009; CDC, 2018).

DATE	PANDEMIC	WORLDWIDE DEATHS (APPROXIMATE)
1918-1920	Spanish Flu / H1N1	50 million
1957-1958	Asian Flu / H2N2	1.5-2 million
1968-1969	Hong Kong Flu / H3N2	1 million
2009 - 2010	Swine Flu / A/H1N1	12,000

Confirmed flu cases have been on the rise in Huntingdon County over the past few years, with a slight decrease in the 2018/19 flu season. Table 4.3.8-2 lists the number of confirmed flu cases in Huntingdon County by flu season. According to the Pennsylvania Department of Health (DOH), there were 689 confirmed cases in the most recent influenza season from September 2019 to March 2020 (PA DOH, 2020).

The CDC marked the 2014-2015 flu season as severe, with approximately 710,000 hospitalizations. The CDC does not track national deaths in adults, but the organization reported 148 pediatric deaths from influenza. The 2017-2018 flu season was another severe season. The CDC reported that the H3N2 flu, along with other strains including H1N1, led to more cases, doctors' visits, hospital visits, and deaths than previous flu seasons. The CDC also noted that the flu became widespread in all states and jurisdictions at the same time. In January 2018, approximately halfway through the flu season, 37 pediatric deaths were reported. The CDC estimated that 34 million Americans were affected by the flu (CDC, 2018).

Table 4.3.8-2 Confirmed Flu Cases in Huntingdon County by Flu Season (PA DOH, 2020)

FLU SEASON	NUMBER OF CONFIRMED CASES
2014/15	248
2015/16	102
2016/17	875
2017/18	969
2018/19	496
2019/20	689

An avian flu outbreak in Pennsylvania occurred in 1983-1984, in which 17 million birds were lost. There has not been an outbreak since, although there have recently been outbreaks in the Midwest. In 1996-1997, a number of table-egg farms in Lancaster and Lebanon Counties tested positive for H7N2 avian influenza. As a result, nine flocks were lost, and PADA imposed a quarantine on a 75-square-mile area restricting movement of poultry or poultry products into or out of the area (Jacob et al., 1998).

The COVID-19 virus is believed to have reached the U.S. in late February 2020, and most counties in Pennsylvania were affected by March 2020. As of September 10, 2020, there were 137,803 confirmed cases in Pennsylvania, with 377 confirmed cases and 6 deaths reported in Huntingdon County. COVID-19 numbers in Pennsylvania peaked in April through May 2020 (DOH, 2020). The Commonwealth utilized a

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phased reopening plan to open counties back up. All 67 counties were in the ‘green’ phase by July 3, 2020, allowing all nonessential businesses to reopen. As other states reopen, some are experiencing record high increases in COVID-19 cases.

4.3.8.4. *Future Occurrence*

Future occurrences of pandemics and infectious diseases are unclear. The precise timing of pandemic influenza is uncertain, but occurrences are most likely when the Influenza Type A virus makes a dramatic change, or antigenic shift, that results in a new or “novel” virus to which the population has no immunity. This emergence of a novel virus is the first step toward a pandemic. Future pandemics may also emerge from other diseases, especially invasive pathogens that Pennsylvanians do not have natural immunity to. While it is unlikely that pandemics and infectious diseases will affect the County, this hazard occurred recently in Spring/Summer 2020. It is impossible to predict this type of hazard. The best form of county response is to expect that these events can occur at any time and to constantly evaluate resources and update emergency response plans.

Looking at the number of historical incidences of pandemic-potential diseases, the probability of future pandemic events can be considered *possible* according to the Risk Factor Methodology (see Table 4.4.1-1).

4.3.8.5. *Vulnerability Assessment*

Certain population groups are at higher risk of pandemic flu infection. This population group includes people 65 years and older, children younger than 5 years old, pregnant women, and people of any age with certain chronic medical conditions. Such conditions include but are not limited to diabetes, heart disease, asthma and kidney disease (CDC, 2015). Schools, colleges, convalescent centers, and other institutions serving those younger than 5 years old and older than 65 years old, are locations conducive to faster transmission of pandemic influenza since populations identified as being at high risk are concentrated at these facilities or because of a large number of people living in close quarters. In general, jurisdictions that are more densely populated are more vulnerable to disease threats when the disease is directly spread from human to human, but every jurisdiction in the Commonwealth has some vulnerability to pandemic and infectious disease threats.

There are some occupation-specific risks that may make some employees more vulnerable. For example, those working in direct patient care situations are more likely to be exposed to a pandemic disease.

There are no true environmental impacts of pandemics and infectious disease threats, but there can be significant economic and social costs beyond the possibility of disease-related deaths. Widespread illness may increase the likelihood of shortages of personnel to perform essential community services. In addition, high rates of illness and worker absenteeism occur within the business community, and these contribute to social and economic disruption. Social and economic disruptions could be temporary but may be amplified in today’s closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

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Jurisdictional losses in a pandemic or infectious disease outbreak stem from lost wages and productivity, not losses to buildings or land. Losses are difficult to estimate because the exact rates of absenteeism and cost of treating a widespread disease will depend on the virus or bacterium in question, the availability of vaccination or treatment, and the severity of symptoms. For historical context, though, the Asian and Hong Kong Flu pandemics killed over 1.5 million people worldwide and caused an estimated \$32 billion loss due to lost productivity and medical expenses. With Pennsylvania's economy so integral to the national economy, economic losses from a pandemic or infectious disease threat could be significant.

It is expected that there will be immense economic losses due to the COVID-19 pandemic. Thousands of individuals were laid off across the commonwealth at non-essential businesses were forced to close. In just one week, over three million Americans filed for unemployment; the greatest amount ever. There is specific concern for those who worked in service and hospitality industries. Construction projects and other businesses are were paused for several months, while many others decide to permanently close. However, the Commonwealth and the federal government have released relief packages for individuals and businesses. Huntingdon County keeps COVID-19 updates and resources current on their website (<http://www.huntingdoncounty.net/>). It is currently unknown how COVID-19 will impact the County long-term.

4.3.9. Subsidence and Sinkholes

4.3.9.1. Location and Extent

There are two common causes of subsidence in Pennsylvania. Dissolution of carbonate rock such as limestone or dolomite, and mining activity. In the first case, water passing through naturally occurring fractures and bedding planes dissolves bedrock leaving voids below the surface. Eventually, overburden on top of the voids collapses, leaving surface depressions resulting in karst topography. Characteristic structures associated with karst topography include sinkholes, linear depressions, and caves. Collapse sometimes occurs only after a large amount of activity, or when a heavy burden is placed on the overlying material. This type of subsidence is fairly localized in extent.

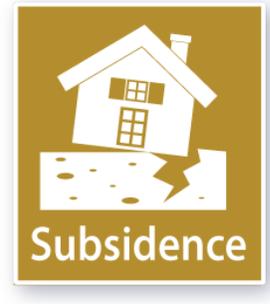
In Pennsylvania, research has shown that subsidence may occur, but will not necessarily occur, in areas underlain by carbonate bedrock. Figure 4.3.9-1 shows the majority of Huntingdon County is underlain by carbonate bedrock (i.e., limestone).

Subsidence and the appearance of sinkholes in Pennsylvania are also often due to subsurface mining. The Pennsylvania Department of Environmental Protection has a Mine Subsidence program and provides information about the risk of subsidence by zip code. As part of this planning process, all Huntingdon County zip codes were identified and examined for occurrences of mine subsidence. Several occurrences of mine subsidence were identified in Huntingdon County zip codes, most of which were concentrated in Broad Top City Borough, Carbon Township, Dudley Borough, Todd Township, and Wood Township.

Human activity can accelerate the creation of subsidence or sinkhole events. Leaking water pipes or structures that convey storm-water runoff may also result in areas of subsidence as the water dissolves substantial amounts of rock over time. Poorly managed stormwater may be an exacerbating factor in subsidence events. In some cases, construction, land grading, or earthmoving activities that cause changes in stormwater flow can trigger sinkhole events.

4.3.9.2. Range of Magnitude

No two subsidence areas or sinkholes are exactly alike. Variations in size and shape, time period under which they occur (i.e. gradually or abruptly), and their proximity to development ultimately determines the magnitude of damage incurred. Based on the geologic formations underlying parts of Huntingdon County, subsidence and sinkhole events may occur gradually or abruptly. Events could result in minor elevation changes or deep, gaping



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holes in the ground surface. Subsidence and sinkhole events can cause severe damage in urban environments, although gradual events can be addressed before significant damage occurs. Primarily, problems related to subsidence include the disruption of utility services and damages to private and public property including buildings, roads, and underground infrastructure. If long-term subsidence or sinkhole formation is not recognized and mitigation measures are not implemented, fractures or complete collapse of building foundations and roadways may result. If mitigation measures are not taken, the cost to fill in and stabilize sinkholes can be significant although sinkholes are limited in extent.

General recommendations have been published for site investigations prior to construction of buildings due to the potential for karst subsidence. These recommendations include thorough geotechnical investigations to identify un-collapsed karst features and potential excavation to solid rock prior to construction.

Groundwater in limestone and other similar carbonate rock formations can be easily polluted, because water moves readily from the Earth's surface down through solution cavities and fractures, thus undergoing very little filtration. Contaminants such as sewage, fertilizers, herbicides, pesticides, or industrial products are of concern.

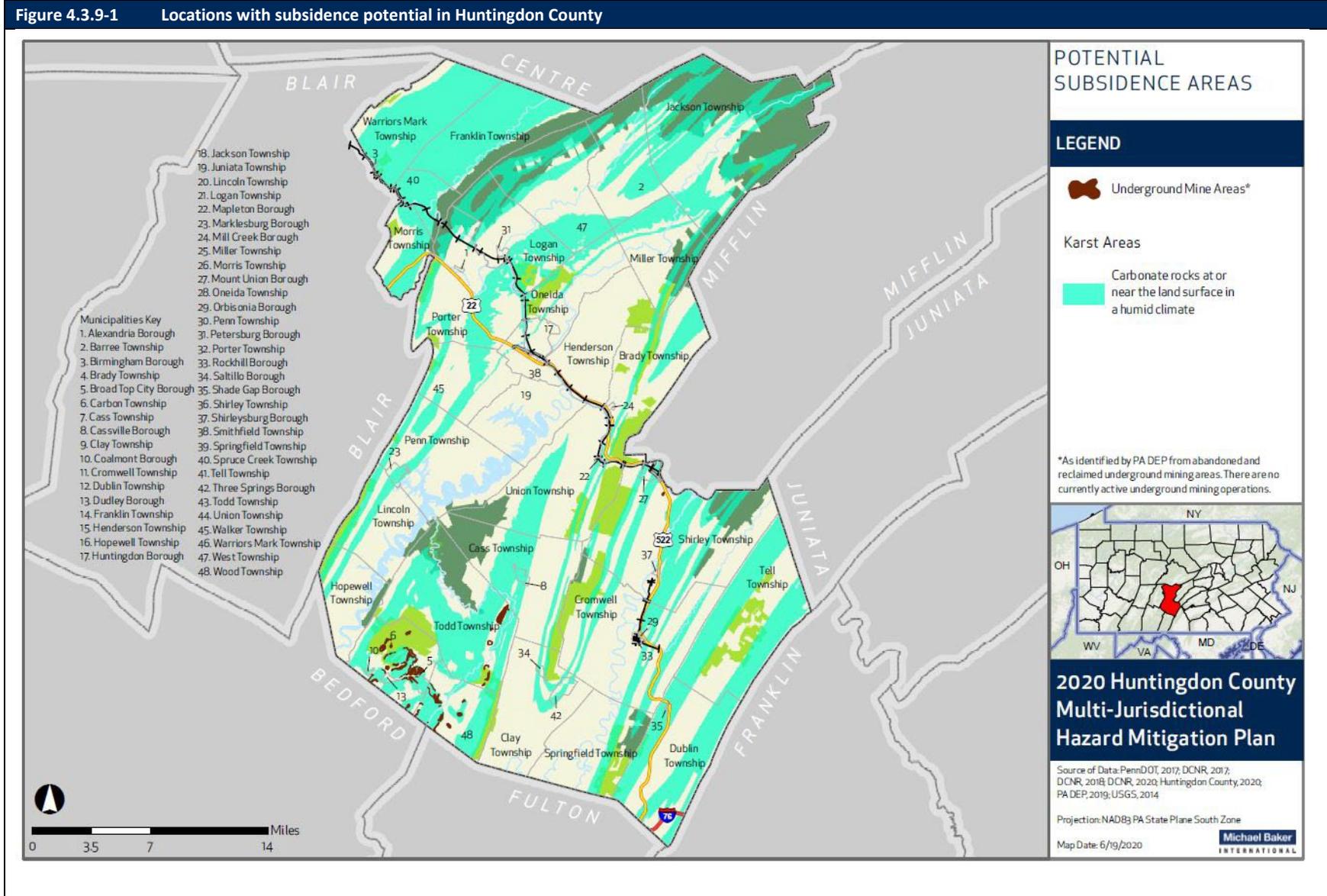
The magnitude of land subsidence and sinkholes in Huntingdon County can be moderate as there have been past occurrences of land subsidence. However, experience in Pennsylvania shows that subsidence may cause from a fraction of an inch to several feet of sagging of the surface of the earth and may occur within minutes or over several years.

According to the PADEP, structural damages due to subsidence range from slight damage requiring cosmetic repairs to severe damage requiring foundation replacement or other high cost repairs.

A worst-case scenario for subsidence and sinkholes would be if a sinkhole occurred under a critical facility such as a hospital. Not only could structural damage occur to the building, but there could also be injuries to people as well. In addition, part of the facility would have to be closed in order to repair the structural damage, and this would reduce the hospital's capacity and ability to treat people with other illnesses and injuries.

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Figure 4.3.9-1 Locations with subsidence potential in Huntingdon County



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4.3.9.3. *Past Occurrence*

The Pennsylvania Department of Conservation and Natural Resources maintains an online *Sinkhole Inventory Database* of sinkholes throughout the Commonwealth. There are several occurrences of subsidence or sinkholes that have been reported for Huntingdon County. Logan Township contains the most sinkhole occurrences.

4.3.9.4. *Future Occurrence*

Based on geological conditions, subsidence events may possibly occur in the future for the areas in Huntingdon County underlain by carbonate rock, or by mines. Sinkholes and surface depressions are dependent on several variables, including land use and water management. Changes in these variables can affect the likelihood and frequency of future subsidence events. Overall, though, the probability of future subsidence and sinkhole events can be considered *unlikely* according to the Risk Factor Methodology (see Table 4.4.1-1).

4.3.9.5. *Vulnerability Assessment*

The secondary effects of sinkhole formation have the potential to cause significant impacts in communities underlain by surface-level limestone and historical mines, including structural damage, damage to transportation systems, and damage to subsurface utility systems. Structures and critical facilities located over limestone and dolomite bedrock are considered vulnerable to sinkholes and are inventories in Table 4.3.9-1. Warriors Mark Township has the greatest number of structures on karst topography (734) with a total percentage of 84.37%. 100% of the structures in Shade Gap Borough (43) and Birmingham Borough (64). Dublin Township has the greatest number of critical facilities on karst topography (9), with a total percentage of 90%. 100% of the critical facilities in 11 municipalities are located on karst topography. There are no critical facilities located on underground mine areas.



Land subsidence may occur within minutes or over the course of several years!

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Table 4.3.9-1 Subsidence Vulnerability for Huntingdon County

MUNICIPALITY	TOTAL STRUCTURES IN MUNICIPALITY	TOTAL STRUCTURES ON KARST TOPOGRAPHY	PERCENT OF STRUCTURES ON KARST TOPOGRAPHY	TOTAL STRUCTURES ON UNDERGROUND MINE AREAS	PERCENT STRUCTURES ON UNDERGROUND MINE AREAS	TOTAL CRITICAL FACILITIES IN MUNICIPALITY	TOTAL CRITICAL FACILITIES ON STRUCTURES ON KARST TOPOGRAPHY	PERCENT CRITICAL FACILITIES ON KARST TOPOGRAPHY
Alexandria Borough	157	0	0.00%	0	0.00%	5	0	0.00%
Barree Township	284	38	13.38%	0	0.00%	2	0	0.00%
Birmingham Borough	64	64	100%	0	0.00%	1	1	100.00%
Brady Township	503	149	29.62%	0	0.00%	5	1	20.00%
Broad Top City Borough	207	204	98.55%	2	50.00%	6	6	100.00%
Carbon Township	222	136	61.26%	1	0.00%	5	3	60.00%
Cass Township	689	197	28.59%	0	25.00%	8	3	37.50%
Cassville Borough	90	89	98.89%	0	0.00%	4	4	100.00%
Clay Township	593	68	11.47%	0	0.00%	11	3	27.27%
Coalmont Borough	53	50	94.34%	0	0.00%	2	2	100.00%
Cromwell Township	1,013	214	21.13%	0	0.00%	10	2	20.00%
Dublin Township	750	465	62.00%	0	0.00%	10	9	90.00%
Dudley Borough	107	58	54.21%	0	0.00%	1	1	100.00%
Franklin Township	334	294	88.02%	0	0.00%	1	1	100.00%
Henderson Township	653	0	0.00%	0	0.00%	2	0	0.00%
Hopewell Township	484	38	7.85%	0	0.00%	2	0	0.00%
Huntingdon Borough	2,784	113	4.06%	0	0.00%	34	0	0.00%
Jackson Township	788	465	59.01%	0	0.00%	7	2	28.57%
Juniata Township	445	0	0.00%	0	0.00%	2	0	0.00%
Lincoln Township	336	80	23.81%	0	0.00%	5	1	20.00%
Logan Township	348	136	39.08%	0	0.00%	5	1	20.00%
Mapleton Borough	215	101	46.98%	0	0.00%	4	3	75.00%

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Table 4.3.9-1 Subsidence Vulnerability for Huntingdon County

MUNICIPALITY	TOTAL STRUCTURES IN MUNICIPALITY	TOTAL STRUCTURES ON KARST TOPOGRAPHY	PERCENT OF STRUCTURES ON KARST TOPOGRAPHY	TOTAL STRUCTURES ON UNDERGROUND MINE AREAS	PERCENT STRUCTURES ON UNDERGROUND MINE AREAS	TOTAL CRITICAL FACILITIES IN MUNICIPALITY	TOTAL CRITICAL FACILITIES ON STRUCTURES ON KARST TOPOGRAPHY	PERCENT CRITICAL FACILITIES ON KARST TOPOGRAPHY
Marklesburg Borough	168	83	49.40%	0	0.00%	4	4	100.00%
Mill Creek Borough	194	0	0.00%	0	0.00%	4	0	0.00%
Miller Township	308	92	29.87%	0	0.00%	2	2	100.00%
Morris Township	212	164	77.36%	0	0.00%	1	1	100.00%
Mount Union Borough	1,224	242	19.77%	0	0.00%	21	3	14.28%
Oneida Township	556	135	24.28%	0	0.00%	3	0	0.00%
Orbisonia Borough	234	22	9.40%	0	0.00%	5	1	20.00%
Penn Township	878	114	12.98%	0	0.00%	6	1	16.67%
Petersburg Borough	193	0	0.00%	0	0.00%	5	0	0.00%
Porter Township	1,078	232	21.52%	0	0.00%	11	1	9.09%
Rockhill Borough	200	0	0.00%	0	0.00%	4	0	0.00%
Saltillo Borough	169	41	24.26%	0	0.00%	2	0	0.00%
Shade Gap Borough	43	43	100.00%	0	0.00%	1	1	100.00%
Shirley Township	1,512	306	20.24%	0	0.00%	13	4	30.77%
Shirleysburg Borough	75	1	1.33%	0	0.00%	3	0	0.00%
Smithfield Township	839	9	1.07%	0	0.00%	18	0	0.00%
Springfield Township	474	34	7.17%	0	0.00%	3	0	0.00%
Spruce Creek Township	178	136	76.40%	0	0.00%	2	2	100.00%
Tell Township	400	263	65.75%	0	0.00%	6	5	83.33%
Three Springs Borough	242	170	70.25%	0	0.00%	8	4	50.00%
Todd Township	781	456	58.39%	1	25.00%	9	7	77.78%
Union Township	834	262	31.41%	0	0.00%	7	2	28.57%

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Table 4.3.9-1 Subsidence Vulnerability for Huntingdon County

MUNICIPALITY	TOTAL STRUCTURES IN MUNICIPALITY	TOTAL STRUCTURES ON KARST TOPOGRAPHY	PERCENT OF STRUCTURES ON KARST TOPOGRAPHY	TOTAL STRUCTURES ON UNDERGROUND MINE AREAS	PERCENT STRUCTURES ON UNDERGROUND MINE AREAS	TOTAL CRITICAL FACILITIES IN MUNICIPALITY	TOTAL CRITICAL FACILITIES ON STRUCTURES ON KARST TOPOGRAPHY	PERCENT CRITICAL FACILITIES ON KARST TOPOGRAPHY
Walker Township	963	154	15.99%	0	0.00%	10	1	10.00%
Warriors Mark Township	870	734	84.37%	0	0.00%	8	6	75.00%
West Township	321	94	29.28%	0	0.00%	4	0	0.00%
Wood Township	453	260	57.40%	0	0.00%	10	4	40.00%
TOTAL	24,518	7,006	28.57%	4	0.01%	302	92	30.46%

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There are a few measures that can reduce the overall vulnerability to subsidence and sinkholes. Municipal governments may determine guidelines for construction in high-subsidence areas. A community can reduce its vulnerability to subsidence or sinkholes by implementing solutions such as land use controls, insurance programs, subsidence-resistant designs, or in the case of mine-related subsidence, conduct selective support or mine filling. If a sinkhole occurs on private property, it is normally the responsibility of the property owner to initiate repairs. Homeowners' insurance often does not cover damages attributed to subsidence. Since 1987, sinkhole insurance has been available within Pennsylvania and may serve to eliminate the financial burdens placed on the homeowner.

Careful planning is the least-costly and most effective method for reducing vulnerability to subsidence hazards. Municipalities can minimize the potential for sinkhole development through proper maintenance and updating of water utility lines. Zoning laws can also be enacted to regulate development within highly karst areas.



4.3.10. Tornado and Windstorm

4.3.10.1. Location and Extent

Tornadoes and potentially damaging high winds occur throughout Pennsylvania. Tornadoes and high winds may be experienced at any location in Huntingdon County.

A tornado, a violently rotating funnel-like vortex, is an extraordinary feature of severe thunderstorms. A condensation funnel does not need to reach to the ground for a tornado to be present; a debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado, even in the total absence of a funnel. While the extent of tornado damage is usually localized, the extreme winds of this vortex can be among the most destructive on earth when they move through populated, developed areas.

Tornadoes can occur at any time during the day or night but are most frequent during late afternoon into early evening, the warmest hours of the day. May to August is the most likely time for tornadoes to occur in Pennsylvania. Tornado movement is characterized in two ways: direction and speed of the spinning winds and forward movement of the tornado/storm track. Rotational wind speeds of the vortex can range from 100 mph to more than 250 mph. In addition, the speed of forward motion can be zero to 45 or 50 mph. Therefore, some estimates place the maximum velocity (combination of ground speed, wind speed, and upper winds) of tornadoes at about 300 mph.

The forward motion of the tornado path can be a few hundred yards or several hundred miles in length. The width of tornadoes can vary greatly, but generally range in size from less than 100 feet to over a mile in width. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times.

Straight-line winds often accompany tornadoes and are caused by the movement of air from areas of higher pressure to areas of lower pressure – the greater the difference in pressure, the stronger the winds. Wind storms are generally defined as sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.

The enhanced Fujita Tornado Scale (or the -EF-Scale) classifies U.S. tornadoes into six intensity categories, named EF0 to EF5, based upon the estimated maximum winds occurring within the funnel. The EF-

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Scale has subsequently become the definitive metric for estimating wind speeds within tornadoes based upon the damage done to buildings and structures.

4.3.10.2. Range of Magnitude

Since 2007 an Enhanced Fujita Scale (EF Scale) has been used in the United States to describe the magnitude of tornadoes. Prior to 2007, the Fujita Scale was commonly used to describe magnitude. This scale is based on new information about the relationship between wind speed given in miles per hour (mph) and corresponding damages. The EF Scale categorized tornadoes from EF0 to EF5 with EF0 being the most commonly occurring type of tornado. The most damaging and deadliest tornado recorded in Huntingdon County was a category 2 or EF2 tornado. The following table shows the relationship between the Fujita and the Enhanced Fujita Scales.

FUJITA SCALE		ENHANCED FUJITA SCALE	
F NUMBER	3-SECOND GUST (MPH)	EF NUMBER	3-SECOND GUST (MPH)
0	45–78	0	65–85
1	79–117	1	86–110
2	118–161	2	111–135
3	162–209	3	136–165
4	210–261	4	166–200
5	262–317	5	OVER 200

The types of damages that can be expected with each category of tornado are described in the table below.

F OR EF SCALE	EXAMPLES OF POSSIBLE DAMAGE
0	Light damage. Some damage to chimneys; broken tree branches; shallow-rooted trees pushed over; damage to sign boards.
1	Moderate damage. Surface peeled off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
2	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
3	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.

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F OR EF SCALE	EXAMPLES OF POSSIBLE DAMAGE
4	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
5	Catastrophic damage. Well-built houses swept completely away, leaving only the slab foundations.

While tornado winds rotate, high winds that move in a straight line can also be damaging. High winds are defined as sustained wind speeds of 40 mph or greater lasting for one hour or more, or winds of 58 mph or greater for any duration.

Figure 4.3.5-1 in the Hurricane, Tropical Storm, and Nor'easter hazard profile shows wind speed zones developed by the American Society of Civil Engineers based on information including 40 years of tornado history and over 100 years of hurricane history. It identifies wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities. Huntingdon County falls within Zone III, meaning design wind speeds for shelters and critical facilities should be able to withstand a three-second gust of up to 200 mph, regardless of whether the gust is the result of a tornado, hurricane, tropical storm, or windstorm event. Therefore, these structures should be able to withstand speeds experienced in an EF4 or EF5 tornado.

4.3.10.3. Past Occurrence

The worst tornado recorded in Huntingdon County was an F2 in September 1991 when three people were injured. Many houses and farm buildings were demolished resulting in \$250,000 in property damage (NCEI, 2019). One F0 tornado occurred in June 1987. Tornadoes with an F1 magnitude occurred in 1985 and in 1989. The most recent tornado even in Huntingdon County occurred in April 2019, with a maximum windspeed of 110 mph. The tornado touched down near Richvale causing sporadic damage to trees, homes, and barns. The next table summarizes previous tornado events in Huntingdon County.

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Table 4.3.10-3 Previous tornado events between 1950 and 2019 in Huntingdon County (NCEI, 2019).

LOCATION	DATE	ESTIMATED LENGTH	ESTIMATED WIDTH	MAGNITUDE	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	06/27/1978	not given	33 yards	F0	not given
Countywide	06/16/1985	1.00 mile	80 yards	F1	25,000
Countywide	06/30/1987	0.20 miles	10 yards	F0	25,000
Countywide	06/24/1989	7.00 miles	13 yards	F1	250,000
Countywide	11/20/1989	3.50 miles	1230 yards	F2	25,000
Countywide	09/18/1991	4.00 miles	330 yards	F2	250,000
Broad Top City Borough	04/28/2011	2.85 miles	50 yards	EF1	10,000
Coalmont Borough	05/27/2011	3.71 miles	300 yards	EF1	10,000
Calvin	05/27/2011	2.72 miles	100 yards	EF1	10,000
Shades Valley	04/19/2019	5.37 miles	350 yards	EF1	100,000

High winds moving in a straight line are the movement of air from areas of higher pressure to areas of lower pressure. As the difference in pressure increases, the strength and speed of the winds increase. As previously mentioned, wind storms are generally defined as having sustained straight-line wind speeds of 40 mph or greater that last for one hour or longer, or winds of 58 mph (i.e. 50 knots) or greater for any duration. Previous high wind events in the County are summarized in the following table.

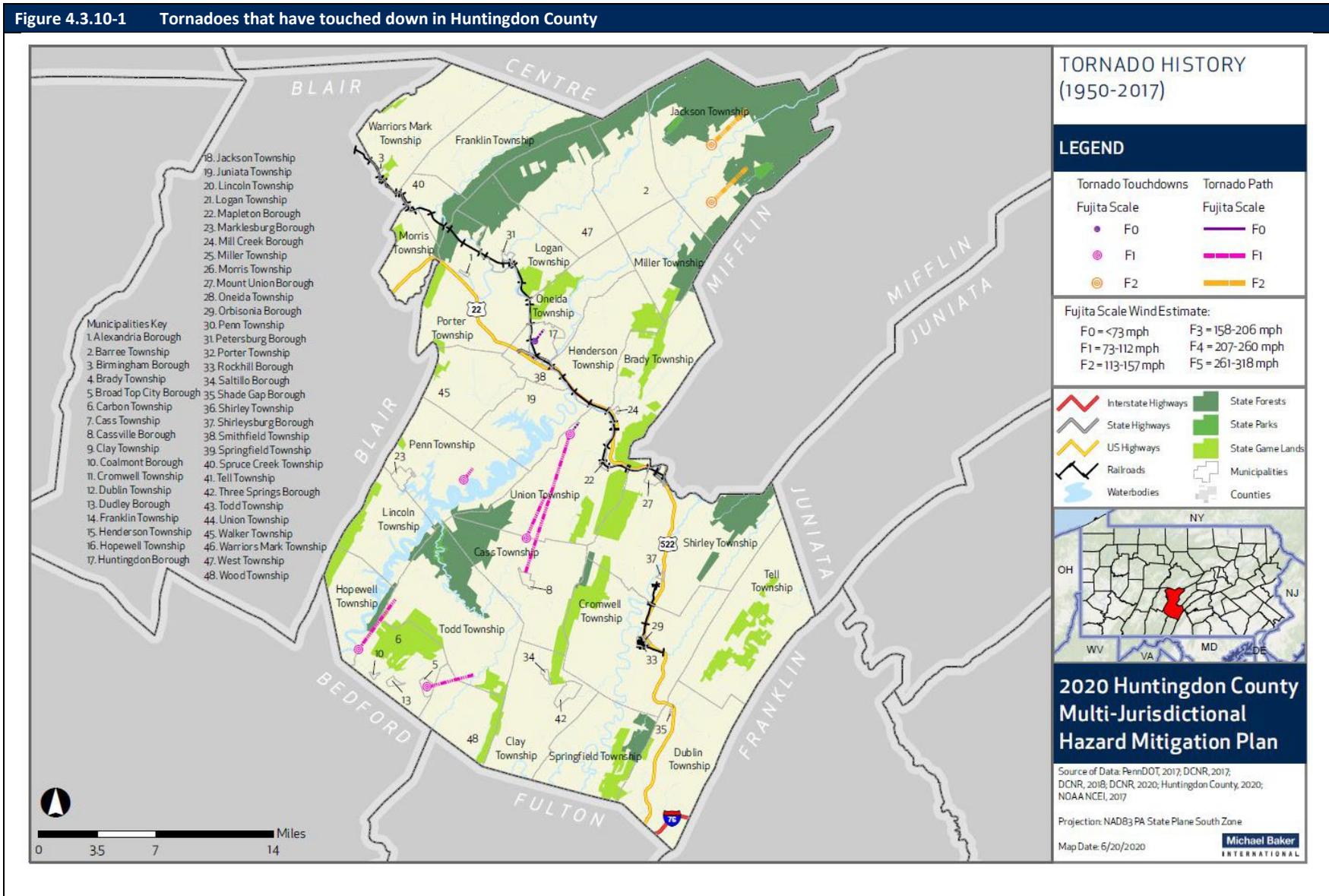
Table 4.3.10-4 Previous windstorm events greater than 50 knots in Huntingdon County between 1950 and 2019 (NCEI, 2019).

LOCATION	DATE	ESTIMATED WIND SPEED (knots)	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	09/29/1999	60	not given
Countywide	01/10/2000	50	not given
Countywide	12/12/2000	not given	13,900
Countywide	02/10/2001	not given	5,550
Countywide	03/09/2002	50	not given
Countywide	11/13/2003	60	not given
Countywide	12/01/2004	60	not given
Countywide	02/12/2009	50	25,000
Countywide	10/29/2012	50	not given
Countywide	04/03/2016	52	4,000
Countywide	04/04/2018	52	not given
Countywide	02/24/2019	52	not given

The next map shows that tornado activity has occurred throughout the entire County.

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Figure 4.3.10-1 Tornadoes that have touched down in Huntingdon County



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4.3.10.4. Future Occurrence

Ten tornadoes were reported for Huntingdon County for the entire 1950–2019 period in NCEI. Therefore, the annual probability of being in the path of a tornado in Huntingdon County is relatively minor. While the chance of being hit by a tornado is small, the damage that results when the tornado arrives can be potentially devastating. According to NCEI, there have been 12 high wind events greater than 50 knots in Huntingdon County between 1950 and 2019. The probability of tornadoes and windstorms in Huntingdon County can be considered *likely* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

In recent years, there have been increasing numbers of tornadoes and windstorms, as seen by the recent 2019 event. While most of the recent wind storms and tornadoes have occurred outside of the County, their proximity contributes to future risk. Because more wind storms have been seen in the central Pennsylvania region, it is possible that an increasing number of tornadoes will be seen in Huntingdon County.

4.3.10.5. Vulnerability Assessment

For tornadoes or high winds, aged and dilapidated structures or structures not built to applicable building codes are more susceptible to damage. Mobile homes and campgrounds are especially susceptible to damage due to tornado or high wind. Strong winds can rip roofs off of any dilapidated structures and overturn mobile homes. Past experience with tornadoes in Huntingdon County shows that injury and even deaths are indeed possibilities.

Vulnerability to the effects of a tornado or high wind is somewhat dependent upon the age of a structure because as building codes become more stringent, buildings are capable of enduring greater wind forces.

In Huntingdon County, high winds occur annually. The most common detrimental effects are interruptions in power supply and communications services due to downed wires and blocked roadways due to downed trees. More information about these impacts can be found in the utility interruption hazard profile in Section 4.3.20.

All structures and infrastructure might be exposed to the effects of a tornado or other high winds. Depending upon the severity of a tornado or high wind, any existing structures might be damaged to some extent. Any future structures might be exposed to tornados or high winds as this hazard does not occur in specific locations. However, future buildings will be somewhat protected from the effects of tornado or high wind as they will meet the most current State building code requirements for bracing and roof design.

Manufactured housing (i.e. mobile homes or trailers) is particularly vulnerable to high winds and tornadoes. The U.S. Census Bureau defines manufactured homes as “movable dwellings, eight feet or wider and 40 feet or longer, design to be towed on its own chassis, with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation (Census, 2010).” They can include multi-wides and expandable manufactured homes but exclude travel trailers, motor homes, and modular housing. Due to their light-weight and often unanchored design, manufactured housing is extremely vulnerable to high winds and will generally sustain the most damage. Approximately 11.4% of

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occupied housing units in the County are mobile homes (U.S. Census Bureau, 2018). More than 20% of occupied housing units are mobile homes in the following municipalities: Clay Township (21.7%), Dublin Township (21.5%), Hopewell Township (32.9%), Shirley Township (24.4%), Tell Township (28.7%), and Wood Township (20.8%) (U.S. Census Bureau, 2018). Table 4.3.10-5 lists mobile homes as percent occupied housing units for all municipalities in Huntingdon County.

MUNICIPALITY	MOBILE HOMES AS PERCENT OCCUPIED HOUSING UNITS	MUNICIPALITY	MOBILE HOMES AS PERCENT OCCUPIED HOUSING UNITS
Alexandria Borough	1.5	Miller Township	11.8
Barree Township	9.1	Morris Township	19.0
Birmingham Borough	3.2	Mount Union Borough	4.9
Brady Township	19.7	Oneida Township	10.8
Broad Top City Borough	19.2	Orbisonia Borough	2.0
Carbon Township	17.2	Penn Township	12.1
Cass Township	8.2	Petersburg Borough	3.8
Cassville Borough	7.0	Porter Township	14.0
Clay Township	21.7	Rockhill Borough	15.3
Coalmont Borough	5.6	Saltillo Borough	8.4
Cromwell Township	19.7	Shade Gap Borough	0.0
Dublin Township	21.5	Shirley Township	24.4
Dudley Borough	14.0	Shirleysburg Borough	9.1
Franklin Township	9.6	Smithfield Township	8.1
Henderson Township	15.8	Springfield Township	18.0
Hopewell Township	32.9	Spruce Creek Township	15.4
Huntingdon Borough	3.3	Tell Township	28.7
Jackson Township	9.7	Three Springs Borough	6.0
Juniata Township	12.1	Todd Township	15.5
Lincoln Township	3.5	Union Township	10.7
Logan Township	15.7	Walker Township	4.1
Mapleton Borough	4.8	Warriors Mark Township	6.1
Marklesburg Borough	3.2	West Township	10.5
Mill Creek Borough	11.8	Wood Township	20.8

Environmental impacts from tornadoes can include debris in streams, wetlands, and other sensitive environmental features. Tree damage is commonly seen after high wind events. Hazardous material

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facilities should meet design requirements for the wind zones identified in Figure 4.3.5-1 in order to prevent release of hazardous materials into the environment.

4.3.11. Wildfire

4.3.11.1. Location and Extent

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities. An urban-wildland interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.



Wildfires can occur at any time of the year but are most likely to occur in the County during a drought. Wildland fires in Pennsylvania can occur in fields, grass, and brush as well as in the forest itself. Under dry conditions or drought, wildfires have the potential to burn forests as well as croplands. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildland fires are caused by human carelessness, negligence, and ignorance. In 2017, debris burning accounted for the largest number of wildfires, while incendiary causes accounted for the largest number of acres burned in Pennsylvania (DCNR, 2017). However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion.

Huntingdon County is generally rural in nature, consisting of large tracts of undeveloped and forested lands. Therefore, a wildfire could develop in any portion of the County. The most high-risk areas of the County are at the forest-urban interface, where the potential for wildfire to spread to structures is greatest.

Any small fire in a wooded area, if not quickly detected and suppressed, can spread and become a wildfire that is out of control. Most wildfires are caused by human carelessness, negligence, and ignorance and some are precipitated by lightning strikes.

4.3.11.2. Range of Magnitude

Wildfire events can range from small fires that can be managed by local firefighters to large fires impacting many acres of land. Large events may require evacuation from one or more communities and necessitate regional or national firefighting support. The impact of a severe wildfire can be devastating. A wildfire has the potential to kill people, livestock, fish, and wildlife. They often destroy property, valuable timber, and forage, recreational, and scenic values.

Vegetation loss is often an environmental concern with wildfires, but it typically is not a serious impact in that they burn dead trees, leaves, and

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grasses to allow more open space for new and different types of vegetation to grow and receive sunlight. Another positive effect of a wildfire is that it stimulates the growth of new shoots on trees and shrubs and its heat can open pinecones and other seed pods. The most significant negative impact the potential for severe erosion, silting of stream beds and reservoirs, and flooding due to ground-cover loss following a fire event.

In addition to the risk wildfires pose to the general public and property owners, the safety of firefighters is also a concern. Although loss of life among firefighters does not occur often in Pennsylvania, it is always a risk. More common firefighting injuries include falls, sprains, abrasions, or heat-related injuries such as dehydration. Response to wildfires also exposes emergency responders to the risk of motor vehicle accidents and can place them in remote areas away from the communities that they are chartered to protect.

4.3.11.3. Past Occurrence

From 2014-2019, there were 134 wildfire events in Pennsylvania State Forest District 3 reported to the Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry, and 95 wildfire events in Pennsylvania State Forest District 5. District 3 consists of Huntingdon, Cumberland, Franklin, Juniata, Mifflin, and Perry Counties. District 5 consists of Huntingdon, Centre, and Mifflin Counties. The majority of Huntingdon County is within District 5. This number does not include wildfires that were not reported to DCNR or that were controlled solely by the volunteer fire departments in the County, but it is the most current and comprehensive list of wildfire occurrences available for the region surrounding Huntingdon County. The following table shows the list of wildfire events reported to the DCNR.

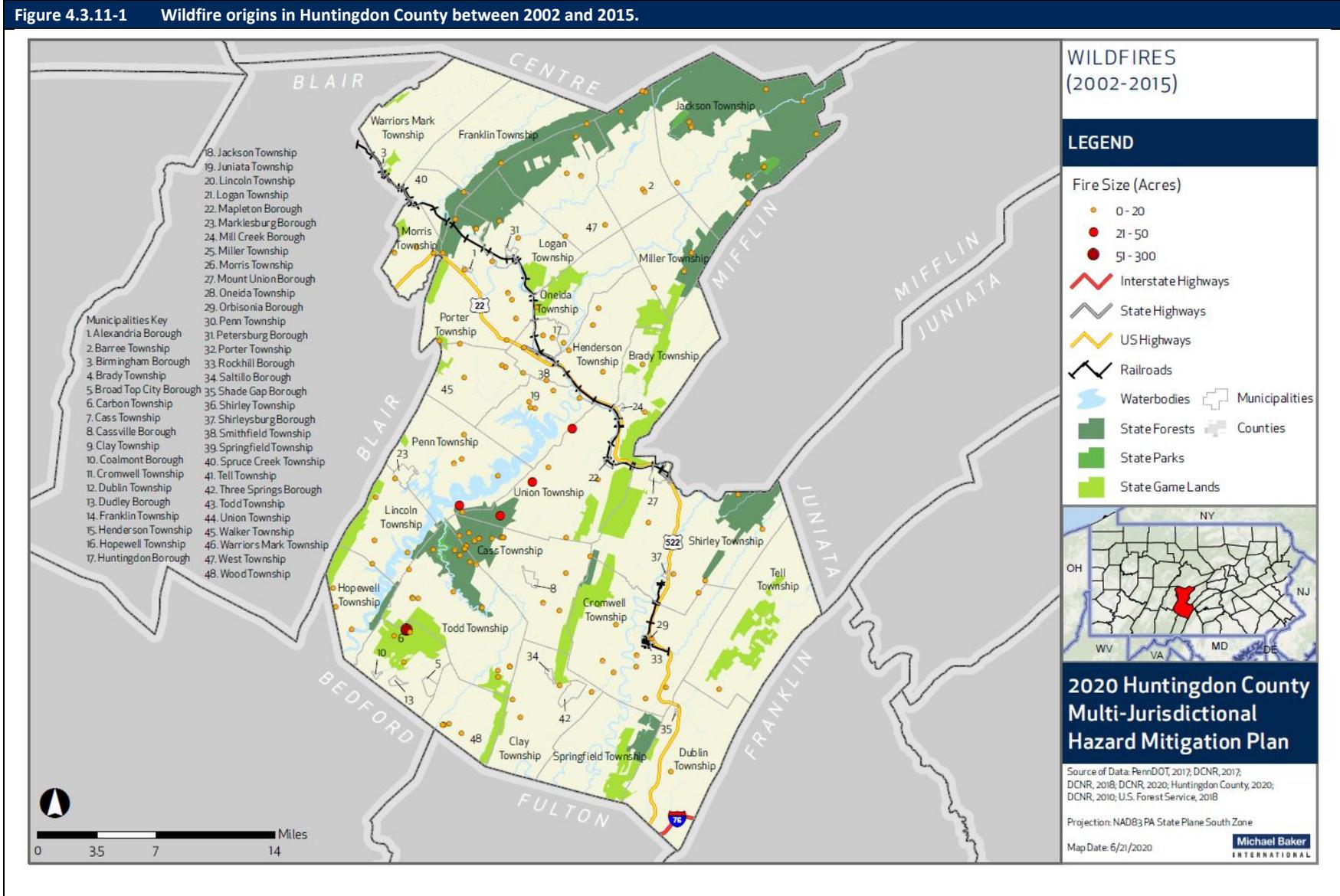
YEAR	District 3				District 5			
	TOTAL # OF FIRES	TOTAL AREA (ACRES)	% TOTAL FIRES	%TOTAL AREA (ACRES)	TOTAL # OF FIRES	TOTAL AREA (ACRES)	% TOTAL FIRES	%TOTAL AREA (ACRES)
2014	32	52.8	3.7%	1.2%	25	64.7	2.9%	1.4%
2015	17	54.8	2.1%	1.3%	19	76.4	2.3%	1.8%
2016	24	149.4	2.8%	1.2%	23	86.2	2.7%	0.7%
2017	23	43.0	4.3%	2.6%	9	15.4	1.7%	0.9%
2018	13	57.0	1.9%	3.1%	10	12.8	1.4%	0.7%
2019	25	29.7	4.7%	4.3%	9	10.5	1.7%	1.5%

Notes: % Total Fires and % Total area represent percentages of the entire state of Pennsylvania.

Figure 4.3.11-1 provides the most recent available GIS data for different criteria, wildfire origins classified by fire size, with data available only for the years 2002-2015.

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Figure 4.3.11-1 Wildfire origins in Huntingdon County between 2002 and 2015.



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4.3.11.4. *Future Occurrence*

There have been over 500 wildfire events reported to the PADCNR over the past six years across the Commonwealth. Previous events indicate that wildfires will continue to occur yearly in Huntingdon County. The probability of a wildfire occurrence in any given year can be considered *unlikely* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1). Furthermore, the likelihood of a fire attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response.

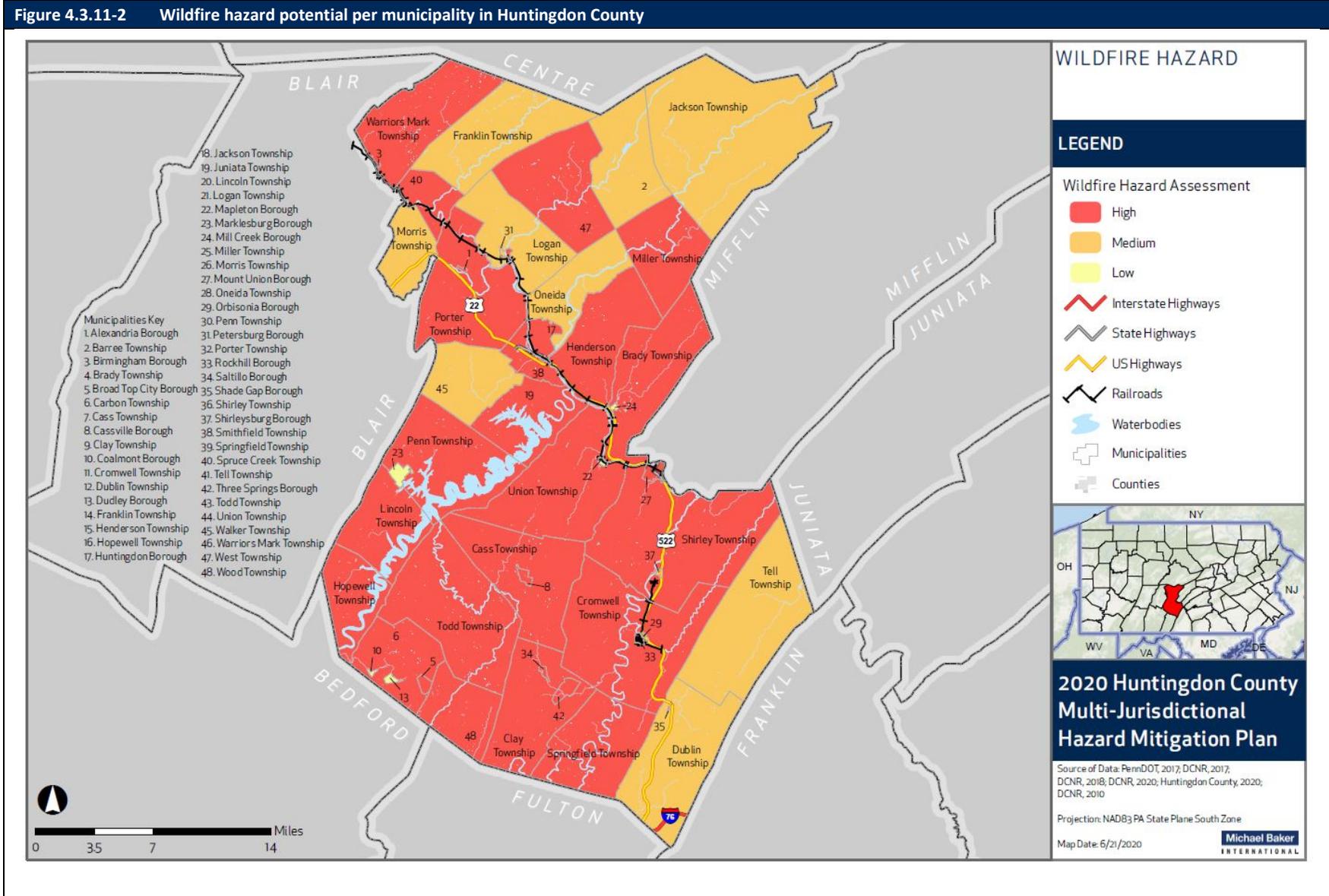
4.3.11.5. *Vulnerability Assessment*

The PADCNR-BOF has conducted an independent wildfire hazard risk assessment for the various municipalities across Huntingdon County. Results of that assessment are shown in Figure 4.3.11-2. *Wildfire hazard* is defined based on conditions that affect wildfire ignition and/or behavior such as fuel, topography and local weather. Based on this assessment, 33 jurisdictions have a *high* wildfire rating. Ten municipalities within Huntingdon County have a *medium* wildfire hazard potential. Five jurisdictions, all of which are Boroughs, are considered to have *low* wildfire hazard potential.

The population of each municipality is listed in Table 2.3-1. The total population of the county is 45,421, with Huntingdon Borough the most populous municipality with 6,987 residents. The total number of structures and the total number of critical facilities in each municipality are listed in Table 4.3.3-7. As shown in Table 4.3.3-7, there are a total of 24,518 structures in Huntingdon County, including 302 critical facilities. Huntingdon Borough has the most structures (2,784) and the most critical facilities (34) of any municipality, and Figure 4.3.11-2 shows that it also has a *high* wildfire rating.

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Figure 4.3.11-2 Wildfire hazard potential per municipality in Huntingdon County



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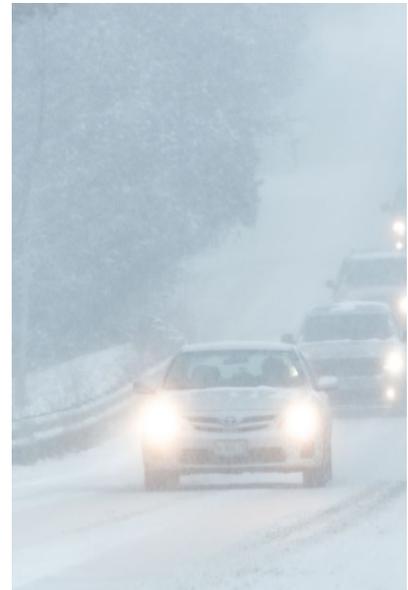
Wildfires have the potential to destroy huge areas of vegetation with no regard to the man-made structures within those areas. The rural areas in which these fires occur generally have little firefighting infrastructure such as hydrants, and the fire departments servicing those areas may take extended times to reach and ultimately extinguish the fire.

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4.3.12. Winter Storm

4.3.12.1. Location and Extent

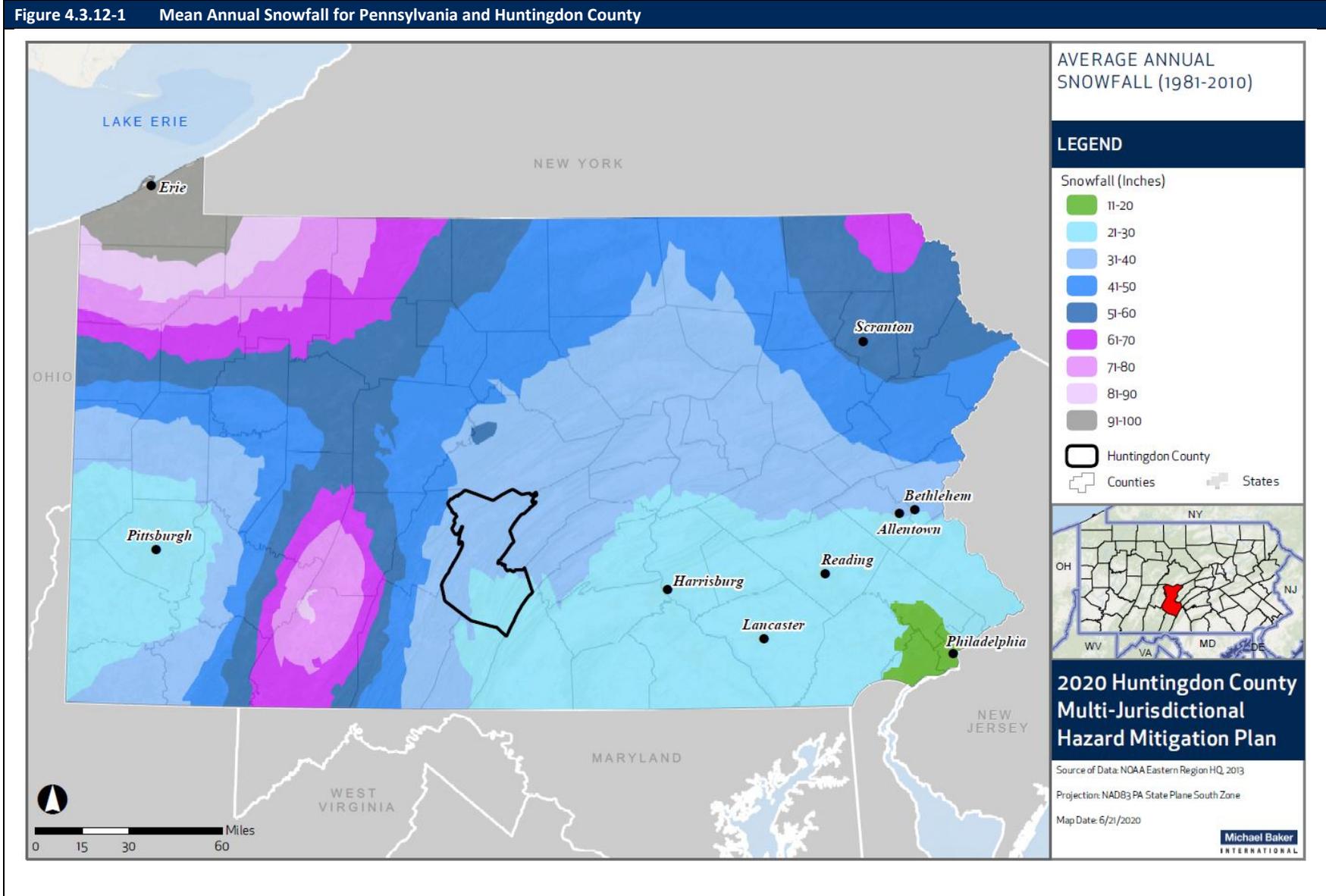
Heavy snow or ice occurs throughout the Commonwealth of Pennsylvania. Every county in the Commonwealth is affected by these storms with the northern and western counties and mountainous regions experiencing these storms more frequently and to a greater extent. Huntingdon County experiences all levels of winter storms from ice storms and freezing rain to heavy snow and blizzards. Generally, the average annual snowfall is consistent throughout the County, with the areas receiving between 21 and 40 inches of snow annually (see the map below). This was the most current data available at the time of this MJHMP Update.



Average annual snowfall is consistent throughout the County, with the area receiving between 21 and 40 inches of snow annually.

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Figure 4.3.12-1 Mean Annual Snowfall for Pennsylvania and Huntingdon County



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4.3.12.2. Range of Magnitude

Winter storms consist of cold temperatures, heavy snow or ice and sometimes strong winds. Because winter storms are a regular occurrence in Huntingdon County, they are considered hazards only when they result in damage to specific structures and/or overwhelm local capabilities to handle disruptions to traffic, communications, and electric power. The cost of removing snow, repairing damages, especially from ice storms, and the loss to businesses can have a negative economic impact for communities. Winter storms can generate other hazards such as infrastructure disruption (blocked roads and power outages), human-caused hazards (traffic accidents and trapped vehicles), and technological problems (communication system outages and overload). Winter storms can adversely affect roadways, utilities, business activities, and can cause loss of life, frostbite, or freezing.

Winter storms may include one or more of the following weather events:

- **Heavy Snowstorm:** Accumulations of four inches or more in a six-hour period, or six inches or more in a 12-hour period.
- **Sleet Storm:** Sleet is formed when snow falling to the earth partially melts as it passes through a layer of warm air. The precipitation then passes through a cold layer of air and refreezes into solid pellets. Sleet causes surfaces to become slippery, posing hazards to pedestrians and motorists.
- **Ice Storm:** An ice storm occurs when rain freezes upon impact with the ground or other objects such as trees and power lines. Heavy accumulations of ice can bring down trees and topple utility poles, disrupting power and communication for days while crews make the necessary repairs. The icy conditions are also dangerous for pedestrians and vehicular traffic.
- **Blizzard:** According to the National Weather Service, a blizzard is a severe snowstorm that occurs when winds reach 35mph or more. The blowing snow reduces visibility to less the one-quarter of a mile for at least three hours. Storms that meet these criteria are not frequent in Huntingdon County; however, storms that produce blizzard-like conditions are a common occurrence.
- **Severe Blizzard:** Wind velocity of 45 mph, temperatures of 10 degrees Fahrenheit or lower, a high density of blowing snow with visibility frequently measured in feet prevailing over an extended period time.

4.3.12.3. Past Occurrence

The Commonwealth of Pennsylvania has a long history of winter storms. Winter storms generally occur more than once each year in the County. The NCEI data on past occurrences for winter storm lists events since 1995. These winter storm events are listed in the following table.

LOCATION	DATE	TYPE	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	01/07/1996	Blizzard	not given
Countywide	01/12/1996	Heavy Snow	not given

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Table 4.3.12-1 Previous winter storm events impacting Huntingdon County since 1950 (NCEI, 2019).

LOCATION	DATE	TYPE	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	11/28/1996	Heavy Snow	not given
Countywide	02/13/1997	Winter Storm	not given
Countywide	03/14/1997	Ice Storm	not given
Countywide	11/14/1997	Heavy Snow	not given
Countywide	12/29/1997	Heavy Snow	not given
Countywide	01/15/1998	Ice Storm	not given
Countywide	01/02/1999	Winter Storm	not given
Countywide	01/08/1999	Winter Storm	not given
Countywide	01/14/1999	Winter Storm	not given
Countywide	03/14/1999	Heavy Snow	not given
Countywide	01/30/2000	Heavy Snow	not given
Countywide	02/13/2000	Ice Storm	not given
Countywide	02/18/2000	Winter Storm	not given
Countywide	12/13/2000	Winter Storm	not given
Countywide	03/04/2001	Heavy Snow	\$5,000
Countywide	01/06/2002	Heavy Snow	not given
Countywide	12/05/2002	Heavy Snow	not given
Countywide	12/10/2002	Ice Storm	not given
Countywide	12/25/2002	Heavy Snow	not given
Countywide	02/16/2003	Heavy Snow	not given
Countywide	12/05/2003	Heavy Snow	not given
Countywide	01/14/2004	Heavy Snow	not given
Countywide	01/25/2004	Heavy Snow	not given
Countywide	02/03/2004	Heavy Snow	not given
Countywide	02/06/2004	Ice Storm	not given
Countywide	01/05/2005	Winter Storm	not given
Countywide	02/24/2005	Heavy Snow	not given
Countywide	12/09/2005	Heavy Snow	not given
Countywide	12/16/2005	Winter Storm	not given
Countywide	02/13/2007	Winter Storm	not given
Countywide	03/16/2007	Heavy Snow	not given
Countywide	02/01/2008	Winter Storm	not given
Countywide	01/06/2009	Ice Storm	not given
Countywide	12/19/2009	Winter Storm	not given
Countywide	02/05/2010	Winter Storm	not given
Countywide	02/09/2010	Winter Storm	not given
Countywide	02/01/2011	Winter Storm	not given
Countywide	02/01/2011	Heavy Snow	not given
Countywide	02/21/2011	Heavy Snow	not given
Countywide	10/29/2011	Heavy Snow	not given

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Table 4.3.12-1 Previous winter storm events impacting Huntingdon County since 1950 (NCEI, 2019).

LOCATION	DATE	TYPE	ESTIMATED PROPERTY DAMAGE (\$)
Countywide	12/26/2012	Winter Storm	not given
Countywide	03/06/2013	Heavy Snow	not given
Countywide	11/26/2013	Ice Storm	not given
Countywide	12/14/2013	Winter Storm	not given
Countywide	02/04/2014	Winter Storm	not given
Countywide	02/13/2014	Heavy Snow	not given
Countywide	11/25/2014	Heavy Snow	not given
Countywide	02/08/2017	Winter Storm	not given
Countywide	03/13/2017	Winter Storm	not given
Countywide	03/20/2018	Winter Storm	not given
Countywide	11/15/2018	Winter Storm	not given
Countywide	02/11/2019	Winter Storm	not given
Countywide	02/20/2019	Winter Storm	not given

4.3.12.4. Future Occurrence

Data from NCEI shows that winter storms are a regular occurrence in Huntingdon County. So, the probability of the occurrence of a damaging heavy snow or ice storm in Huntingdon County in any given year is 100 percent, although the yearly occurrences and severity have decreased. The future occurrence of winter storms hazard can be considered *highly likely* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.12.5. Vulnerability Assessment

Vulnerability to the effects of winter storms on buildings is considered to be somewhat dependent on the age of a building because as building codes become more stringent, buildings are capable of supporting heavier loads and as building age, various factors may deteriorate their structural integrity. Vulnerability also depends upon the type of construction and the degree to which a structure has been maintained.

The most vulnerable structures are those that were poorly built or are dilapidated. The weight of heavy snow or ice may lead to structural collapse or to minor damage. Some shed roofs that protect township and borough road maintenance or firefighting equipment have large span roofs that may collapse under the weight of especially heavy snow or ice although none have collapsed due to recent heavy snow or ice storms.

In Huntingdon County, accumulations of snow and/or ice during winter months are expected and normal. The most common detrimental effects of snow and/or ice are not collapsed structures but traffic accidents and interruptions in power supply and communications services.

All structures and infrastructure in Huntingdon County are exposed to heavy snow and ice. For this analysis, structures built prior to 1940 are identified as being potentially at risk of being somewhat weakened and more susceptible to damage due to heavy snow or ice. The following table shows the

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number of housing units in Huntingdon County built prior to 1940 according to the U.S. Census Bureau’s estimates. Huntingdon Borough and Mount Union Borough have the most structures of any municipality in the county built prior to 1940 (over 400 each). However, Shirleysburg Borough has the largest proportion of housing units built prior to 1940 (75.4%). While the U.S. Census provides estimates for residential structures, the age of non-residential structures is not available.

Table 4.3.12-2 Age of housing units in Huntingdon County (U.S. Census, 2018)

MUNICIPALITY	NUMBER OF HOUSING UNITS BUILT PRIOR TO 1940	PERCENT OF TOTAL HOUSING UNITS
Alexandria Borough	96	70.1%
Barree Township	63	25.3%
Birmingham Borough	42	66.7%
Brady Township	67	14.6%
Broad Top City Borough	39	19.0%
Carbon Township	50	25.3%
Cass Township	72	11.1%
Cassville Borough	35	58.3%
Clay Township	68	13.8%
Coalmont Borough	27	52.9%
Cromwell Township	172	18.5%
Dublin Township	108	16.0%
Dudley Borough	57	54.8%
Franklin Township	86	34.1%
Henderson Township	82	14.2%
Hopewell Township	68	15.0%
Huntingdon Borough	1,522	52.2%
Jackson Township	170	23.8%
Juniata Township	16	4.3%
Lincoln Township	26	9.8%
Logan Township	67	19.1%
Mapleton Borough	134	61.8%
Marklesburg Borough	56	40.6%
Mill Creek Borough	57	35.4%
Miller Township	53	17.2%
Morris Township	35	18.1%
Mount Union Borough	533	39.0%
Oneida Township	101	20.1%
Orbisonia Borough	119	53.4%
Penn Township	99	12.5%
Petersburg Borough	123	64.1%
Porter Township	169	17.2%
Rockhill Borough	66	34.9%
Saltillo Borough	68	45.9%

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Table 4.3.12-2 Age of housing units in Huntingdon County (U.S. Census, 2018)		
MUNICIPALITY	NUMBER OF HOUSING UNITS BUILT PRIOR TO 1940	PERCENT OF TOTAL HOUSING UNITS
Shade Gap Borough	32	74.4%
Shirley Township	316	22.9%
Shirleysburg Borough	43	75.4%
Smithfield Township	107	26.9%
Springfield Township	64	12.9%
Spruce Creek Township	59	44.7%
Tell Township	95	26.0%
Three Springs Borough	87	31.9%
Todd Township	108	16.4%
Union Township	70	9.2%
Walker Township	155	15.9%
Warriors Mark Township	184	22.8%
West Township	87	29.3%
Wood Township	152	36.9%
Total	6,105	27.0%

All structures and infrastructure in Huntingdon County will be exposed to heavy snow and ice. Yet, because all of Huntingdon County has adopted and enforced the 2009 International Building Code (IBC) and IRC, building yet to be constructed will be able to withstand the weight of heavy snow or ice.

HUMAN-MADE HAZARDS

4.3.13. Civil Disturbance

4.3.13.1. Location and Extent

Civil disturbance is a broad term that is typically used by law enforcement to describe one or more forms of disturbance caused by a group of people. Civil disturbances are typically a symptom of, and a form of protest against, major socio-political problems. Civil disturbance hazards include the following:



- **Famine;** involving a widespread scarcity of food leading to malnutrition, increased mortality, and a period of psychosocial instability associated with the scarcity of food, such as riots, theft of food, and the falls of governments caused by political instability borne of an inability to deal with the crisis caused by famine (Brennan, 2014).
- **Economic Collapse, Recession;** Very slow or negative growth (The Economist, 2009).
- **Misinformation;** Erroneous information spread unintentionally (Makkai, 1970).
- **Public Unrest, Mass Hysteria, Riot;** Group acts of violence against property and individuals, for example (18 U.S.C. § 232, 2008).
- **Strike, Labor Dispute;** Controversies related to the terms and conditions of employment, for example (29 U.S.C. § 113, 2008).

Typically, the severity of the action coincides with the level of public outrage. In addition to a form of protest against major socio-political problems, civil disturbances can also arise out of union protest, institutional population uprising, or from large celebrations that become disorderly.

The scale and scope of civil disturbance events varies widely. However, government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather. Due to the number of educational institutions, headquarters, specifically within Huntingdon Borough, and SCI Huntingdon, the area is susceptible to these events.

4.3.13.2. Range of Magnitude

Civil disturbances can take the form of small gatherings or large groups blocking or impeding access to a building or disrupting normal activities by generating noise and intimidating people. They can range from a peaceful sit-in to a full-scale riot, in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. Often that which was intended to be a peaceful demonstration to the public and the government can escalate into general chaos. There are two types of large gatherings typically associated with civil disturbances: a crowd and a mob. A crowd may be defined as a casual, temporary collection of people without a strong, cohesive relationship. Crowds can be classified into four categories:

1. **Casual Crowd:** A casual crowd is a group of people who happen to be in the same place at the same time. Violent conduct does not occur.
2. **Cohesive Crowd:** A cohesive crowd consists of members who are involved in some type of unified

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behavior. Members of this group are involved in some type of common activity, such as worshipping, dancing, or watching a sporting event. They require substantial provocation to arouse group action.

3. **Expressive Crowd:** An expressive crowd is one held together by a common commitment or purpose. Although they may not be formally organized, they are assembled as an expression of common sentiment or frustration. Members wish to be seen as a formidable influence. One of the best examples of this crowd type is a group assembled to protest a cause.
4. **Aggressive Crowd:** An aggressive crowd is comprised of individuals who have assembled and are visibly angry or violent. This crowd often has leaders who attempt to arouse the members or motivate them to action. Members are noisy and threatening and will taunt authorities. They tend to be impulsive and highly emotional, and require only minimal stimulation to arouse them to violence

A mob can be defined as a large disorderly crowd or throng. Mobs are usually emotional, loud, tumultuous, violent and lawless. Similar to crowds, mobs have different levels of commitment and can be classified into four categories (Alvarez and Bachman, 2007):

1. **Aggressive Mob:** An aggressive mob is one that attacks, riots and terrorizes. The object of violence may be a person, property, or both. An aggressive mob is distinguished from an aggressive crowd only by lawless activity. Examples of aggressive mobs are the inmate mobs in prisons and jails, mobs that act out their frustrations after political defeat, or violent mobs at political protests or rallies.
2. **Escape Mob:** An escape mob is attempting to flee from something such as a fire, bomb, flood, or other catastrophe. Members of escape mobs are generally difficult to control can be characterized by unreasonable terror.
3. **Acquisitive Mob:** An acquisitive mob is one motivated by a desire to acquire something. Riots caused by other factors often turn into looting sprees. This mob exploits a lack of control by authorities in safeguarding property.
4. **Expressive Mob:** An expressive mob is one that expresses fervor or revelry following some sporting event, religious activity, or celebration. Members experience a release of pent up emotions in highly charged situations.

The worst-case scenario for Huntingdon County would be an aggressive crowd or an expressive mob protesting on or within a major thoroughfare, most likely formed near a major educational institution or headquarters.

4.3.13.3. *Past Occurrence*

The impacts of civil disturbance events are contingent upon numerous factors including issues, politics, and method of response. Generally, the impact of civil disturbance events is nominal and short-lived unless acts of sabotage are performed. There may be minor injuries to first responders or participants from physical confrontations, and vandalism may cause minimal damage to property, facilities, and infrastructure. Adequate law enforcement at planned civil disturbance events and around likely target

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locations like the offices of state agencies minimizes the chances of a small assembly of individuals turning into a significant disturbance.

PEMA Knowledge Center (KC) reports indicate that there has been one past occurrence of civil disturbance in Huntingdon County.

Incident	Jurisdiction	Incident Date(s)
Creation Fest 2014	Shirleysburg Borough	6/24/2014 – 7/6/2014

The Youth Forestry Camp System in Huntingdon County serving delinquent youth has reported several incidents of civil disturbance. One reported civil disturbance event involved unauthorized entrance on the Youth Forestry Camp state property, with people assisting residents to abscond.

4.3.13.4. Future Occurrence

Civil disturbance is always a possibility as long as there is discrimination or other perceived social or economic injustices. However, it may be possible to recognize the potential for an event to occur in the near-term. For example, an upcoming significant sporting event at one of the colleges or universities in the Commonwealth may result in gathering of large crowds or immediately after significant national news involving political or social debates. Local law enforcement should anticipate these types of events and be prepared to handle a crowd so that peaceful gatherings are prevented from turning into unruly public disturbances. The future occurrence of a civil disturbance hazard can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.13.5. Vulnerability Assessment

The vulnerability of individual jurisdictions is difficult to determine because civil disturbance hazards are tied to the current political and economic climate. A jurisdiction that is very vulnerable one month may be less vulnerable the next.

Jurisdictional losses for civil disturbance events are difficult to predict and can vary significantly in range. For example, the State College Riot in July 1998, fueled by alcohol consumption, resulted in approximately \$150,000 in damages. Sites previously identified in this section are locations where such events are more likely to occur and therefore should be considered more vulnerable. Adequate law enforcement at these locations minimizes the chances of a small assembly of people turning into a significant disturbance. This will ensure improved response times, optimal communications, and containment of the event; as during these events major roadways can be blocked and disturb traffic and larger events may involve the interruption or removal of communication.

More broadly, in the case of large civil disturbance events, the county may incur losses related to work stoppages in addition to any acts of vandalism that may occur. Failure to pursue a program of civil disturbance awareness may result in increased loss of lives and property.

4.3.14. Cyber Terrorism



4.3.14.1. Location and Extent

Cyberterrorism is a broad term that refers to acts associated with the convergence of terrorism and cyberspace. Generally, cyberterrorism involves unlawful attacks or threats against computers, networks, and the information stored therein to intimidate or coerce a government or its people to achieve political or social objectives (Denning, 2000). These acts can range from taking control of a host website, to using networked resources to directly cause destruction and harm. The Pennsylvania Department of Homeland Security defines the following types and

methods of cyberattacks:

Table 4.3.14-1 Methods of Cyberattacks (PA Department of Homeland Security, 2017)	
THREAT	DESCRIPTION
Botnet (also zombies)	A collection of computers subject to control by an outside party, usually without the knowledge of the owners, using secretly installed software robots. The robots are spread by trojan horses and viruses. The botnets can be used to launch denial-of-service attacks and transmit spam.
Card Skimming	The act of using a skimmer to illegally collect data from the magnetic stripe of a credit, debit or ATM card. This information, copied onto another blank card's magnetic stripe, is then used by an identity thief to make purchases or withdraw cash in the name of the actual account holder. Skimming can take place at an ATM and can occur at restaurants, taxis, or other places where a user surrenders his or her card to an employee.
Denial-of-service attack	Flooding the networks or servers of individuals or organizations with false data requests so they are unable to respond to requests from legitimate users.
Malicious code (also malware)	Any code that can be used to attack a computer by spreading viruses, crashing networks, gathering intelligence, corrupting data, distributing misinformation and interfering with normal operations.
Pharming	The act of sending an e-mail to a user falsely claiming to be an established legitimate enterprise to scam the user into surrendering private information that will be used for identity theft. The e-mail directs the user to visit a website where they are asked to update personal information, such as passwords and credit card, social security, and bank account numbers that the legitimate organization already has. The website, however, is bogus and set up only to steal the user's information.
Phishing	Using fake e-mail to trick individuals into revealing personal information, such as Social Security numbers, debit and credit card account numbers and passwords, for nefarious uses.

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Table 4.3.14-1 Methods of Cyberattacks (PA Department of Homeland Security, 2017)	
THREAT	DESCRIPTION
Spam	Unsolicited bulk e-mail that may contain malicious software. Spam is now said to account for around 81 percent of all e-mail traffic.
Spear Phishing	A type of phishing attack that focuses on a single user or department within an organization, addressed from someone within the company in a position of trust and requesting information such as login IDs and passwords. Spear phishing scams will often appear to be from a company's own human resources or technical support divisions and may ask employees to update their username and passwords. Once hackers get this data, they can gain entry into secured networks. Another type of spear phishing attack will ask users to click on a link, which deploys spyware that can steal data.
Spoofing	Making a message or transaction appear to come from a source other than the originator.
Spyware	Software that collects information without a user's knowledge and transfers it to a third party.
Trojan horse	A destructive program that masquerades as a benign application. Unlike viruses, Trojan horses do not replicate themselves, but they can be just as destructive. One of the most insidious types of Trojan horse is a program that claims to rid your computer of viruses but instead introduces viruses onto your computer.
Virus	A program designed to degrade service, cause inexplicable symptoms or damage networks.
Worm	Program or algorithm that replicates itself over a computer network and usually performs malicious actions, such as using up the computer's resources and possibly shutting the system down. A worm, unlike a virus, has the capability to travel without human action and does not need to be attached to another file or program.

Cyberattacks may not always constitute acts of cyberterrorism because some acts may have relatively small impacts and only produce annoyances. A cyberattack is generally considered an act of cyberterrorism when the following motivations are present:

- **Effects-based:** What computer attacks result in effects that are disruptive enough to generate fear comparable to a traditional act of terrorism.
- **Intent-based:** When unlawful or politically motivated computer attacks are done to intimidate or coerce a government or people to further a political objective, or to cause grave harm or severe economic damage (Rollins and Clay, 2007).

Cyberattacks can be further divided into the following categories based on the complexity of the attack:

- **Simple-Unstructured:** Simple-unstructured attacks are the most common. These are amateurish attacks with relatively minimal consequences.
- **Advanced-Structured:** Advanced-structured attacks are more sophisticated and consequential and have a greater emphasis on targeting victims prior to an attack, resulting in a more debilitating effect.

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- **Complex-Coordinated:** Complex-coordinated attacks are the most advanced and most troublesome type of attack where success could mean a network shutdown (Denning, 2000).

Cyberterrorism can cause severe disruptions to transportation, public safety, and utility services, all of which are critical infrastructure that are highly dependent on information technology. Cyberterrorism can take many forms, including attacks through physical means, electronic means, and use of malicious code. Cyberterrorists can also have a wide range of personal, political, or cultural agendas. All state agencies, as well as individuals, businesses, and other institutions in Huntingdon County, are potential targets for cyberterrorism. Potential threats include identity theft, loss of sensitive information, disruption of services, and other malicious activity.

Cyber terrorists can be difficult to identify because the internet provides a meeting place for individuals from various parts of the world. Individuals or groups planning a cyber-attack are not organized in a traditional manner, as they are able to effectively communicate over long distances without delay. Cyber-attacks are also unpredictable and typically occur without warning.

4.3.14.2. Range of Magnitude

In recent years, cyberterrorism has become a significant threat and can impact people, businesses, institutions, local governments, and state agencies to varying degrees. Impacts from a large-scale cyberterrorism event could disrupt the state's economy and potentially threaten its economic stability. The magnitude of a cyberterrorism attack will vary greatly based on the extent of systems affected and duration of the impact. Additionally, the magnitude will vary based upon which specific system is affected by an attack, the ability to preempt an attack, and an attack's effect on continuity of operations. The largest threat to institutions from cyberterrorism comes from any processes that are networked and controlled via computer. The county and individual municipalities should address and take measures to reduce any vulnerabilities that could allow access to sensitive data or processes.

4.3.14.3. Past Occurrence

Since 2012, there have been two statewide cyberterrorism related incidents reported to PEMA-KC. In 2017 there was an international cyber-attack, and in 2018 there was a statewide cyber incident. There were also cyber threats and attacks in other Pennsylvania Counties, including York in 2016, and Northampton and Bethlehem City in 2017.

Another large-scale attack was the Equifax data breach in 2017, which was estimated to potentially impact over 5.5 million residents of Pennsylvania and over 145.5 million nationally. The information accessed included names, Social Security numbers, birthdates, addresses, and driver's license numbers (PA Office of the Attorney General, 2017). Additionally, in 2014 the largest data breach in history impacted over 3 billion Yahoo user accounts, including the names, email address, date of birth, and telephone numbers of over 500 million users (CSO, 2018). In terms of a data breach cyber-attack, this could be considered a worst-case scenario event. Other large-scale data breach events have also occurred in recent years and are becoming more common.

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In addition to large-scale acts of cyberterrorism, smaller cyberattacks occur daily. Billions of emails are sent each day, and spam and phishing emails account for a significant share of all email traffic. Additionally, brute force attacks, which are trial and error attempts to obtain user passwords and pins, are frequently used by criminals attempting to crack encrypted data or gain access to private accounts. Firewalls can be effective at keeping security threats such as these out, but once a cybercriminal gains access to a system, they can attack from within. For example, gaining access to a state employees email account would allow a hacker to send additional phishing emails from within a network, which may not be as monitored as closely as attacks from outside the system. This is known as spear phishing.

4.3.14.4. Future Occurrence

Cyberterrorism is an emerging hazard that has the potential to impact the County's computer infrastructure and the systems and services that are provided to the public. Concerns about cyberterrorism throughout the United States is growing as its impacts could have potentially crippling effects. Security experts describe the threat of cyberterrorism as imminent. The future occurrence of cyberterrorism can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.14.5. Vulnerability Assessment

Generally, cyberterrorism has no direct effect on the environment; however, the environment may be affected if a hazardous materials release occurred because of critical infrastructure failure as a result of cyberterrorism. Please see Section 4.3.16 for more information on Hazardous Materials Release.

All county and municipal facilities are vulnerable to cyberterrorism. While the physical structures of these buildings are generally not at risk, information systems and data stored within them are vulnerable. Government computer networks contain sensitive information that is integral to the security of the Commonwealth and could be the target of a cyber-attack. County and municipal governments may also possess and maintain forms of personal and financial information, including tax filings, birth and death records, Social Security numbers, medical information, and more. Additionally, many critical facilities that are essential to Huntingdon County operations are reliant upon computer networks to monitor and control critical functions. For example, an attack on a nuclear power plant or the power grid could have detrimental impacts on County services and functions. Additionally, a large-scale computer breach could lead to economic costs in lost productivity to the impacted agency/organization and potentially related businesses and industries. However, lost revenues and productivity would depend on the type of magnitude of the cyberterrorism event.

All communities in Huntingdon County are vulnerable on some level, directly or indirectly, to a cyberterrorism attack. However, in general, areas with higher concentrations of government or industry facilities may have higher risk. Additionally, areas with higher concentrations of people, businesses, and critical infrastructure might be at higher risk.

4.3.15. Dam Failure



Due to data sensitivity, the Dam Failure profile can be found in Appendix G.

4.3.16. Environmental Hazards – Hazardous Materials Release

4.3.16.1. Location and Extent

The main type of human-made environmental hazard discussed in this plan is hazardous material release through transportation accidents and Toxic Release Sites. Given the rapid increase of truck traffic through downtown areas, the County is primarily concerned with what risk these two hazards might pose to the County.

Hazardous material (HAZMAT) releases in the form of leaks, spills, discharge, or improper disposal pose a threat to the natural environment, built environment, and to public safety. Hazardous material release through the diffusion of harmful materials, explosives, toxic chemicals, and radioactive materials can result in injury to humans and wildlife, contamination to air, water, and soils, and property damage. There are increasingly large numbers of chemicals, oils, radioactive materials, and other hazardous substances spilled as the result of highway, rail, and waterway accidents, storage tank leakage, pipeline break, and/or other accidents. On occasion, these events become a major disaster and force people to evacuate and/or lose their homes and businesses.

Transportation of hazardous materials on highways via tankers or trailers accounts for the greatest number of hazardous materials release incidents in Pennsylvania. According to the U.S. DOT's Office of Operations and the U.S. Census Bureau, it is estimated that 11 percent of all freight transported by trucks is hazardous material. A number of major highways can be used in Huntingdon County for the transport of hazardous materials including U.S. Routes 22 and 522, and the Pennsylvania Turnpike. Huntingdon County has 1,291.69 linear miles of roadway according to PennDOT's 2018 Pennsylvania Highway Statistics Report (PennDOT, 2018). Many of these roads are used to transport hazardous materials. Additionally, many cross rivers and streams and travel through downtown and residential areas, increasing the potential to pollute surface water and groundwater and cause harm to life and property.

Potential also exists for hazardous material release incidents to occur along rail lines and pipelines. Large spills can result from collisions or derailments of train cars. Several railroad accidents have occurred in Pennsylvania involving hazardous materials (NTSB, 2018), though none in Huntingdon County. Huntingdon County has many miles of railroad throughout the County, mainly used for moving freight. Norfolk Southern transports hazardous materials through the County frequently. Pipelines that transport hazardous liquids and flammable substances can corrode, be damaged during excavation, incorrectly operated, or damaged by other natural or human-made forces leading to a hazardous materials release incident.



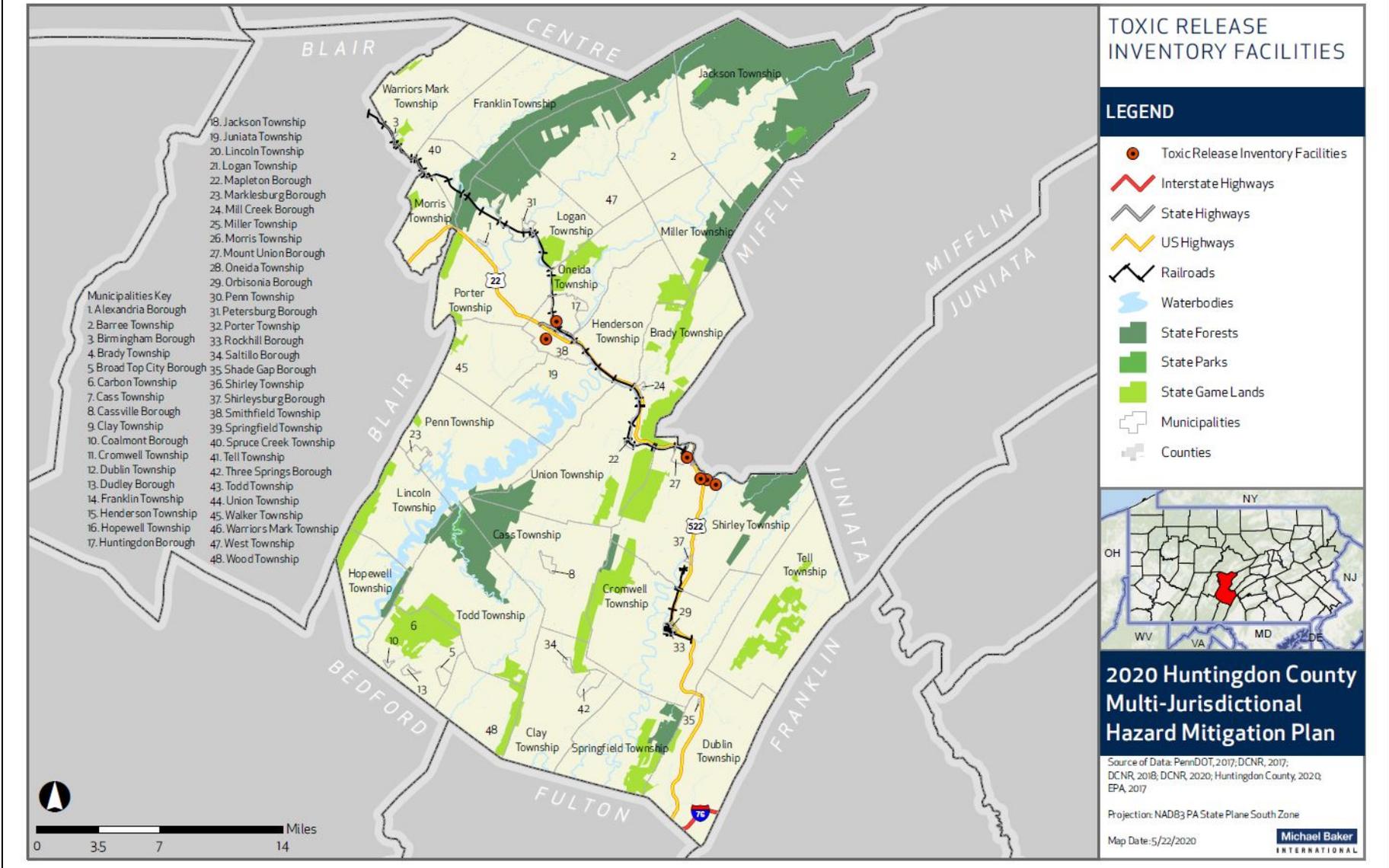
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Fixed-site facilities that use, manufacture, or store hazardous materials in Pennsylvania pose significant risk to public health and the environment and must comply with both Title III of the federal Superfund Amendments and Reauthorization Act (SARA), also known as the Emergency Planning and Community Right-to-Know Act (EPCRA), and the Commonwealth's reporting requirements under the Hazardous Materials Emergency Planning and Response Act (1990-165). These statutes require that all owners or operators of facilities that manufacture, produce, use, import, export, store, supply, or distribute any extremely hazardous substance, as defined by the EPA, at or above the threshold planning quantity, report to the county where the facility is located and the Commonwealth. These facilities are subject to the requirement of assisting the Local Emergency Planning Committee (LEPC) in developing an Off-site Emergency Response Plan.

The EPA also tracks key information about chemicals handled by industrial facilities through its Toxics Release Inventory (TRI) database. Facilities which employ ten or more full-time employees, and which manufacture or process 25,000 pounds or more, or otherwise use 10,000 pounds or more, of any SARA Section 313-listed toxic chemical in the course of a calendar year are required to report TRI information to the EPA, the federal enforcement agency for SARA Title III, and PEMA. As of April 2020, there were six TRI facilities located in Huntingdon County. See the map below of TRI facility locations within the County.

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Figure 4.3.16-1 Locations of TRI facilities in Huntingdon County



4.3.16.2. *Range of Magnitude*

Hazardous material releases can contaminate air, water, and soils possibly resulting in death and/or injuries. Dispersion can take place rapidly when transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events. As previously mentioned, materials can include toxic chemicals, radioactive materials, infectious substances and hazardous wastes. Such releases can affect nearby populations and contaminate critical or sensitive environmental areas.

With a hazardous material release, whether accidental or intentional, there are several potentially mitigating or exacerbating circumstances that will affect its severity or impact. Mitigating conditions are precautionary measures taken in advance to reduce the impact of a release on the surrounding environment. Primary and secondary containment or shielding by sheltering-in-place protects people and property from the harmful effects of a hazardous material release. Exacerbating conditions, characteristics that can enhance or magnify the effects of a hazardous material release include:

- **Weather conditions:** affects how the hazard occurs and develops
- **Micro-meteorological effects of buildings and terrain:** alters dispersion of hazardous materials
- **Non-compliance with applicable codes (e.g. building or fire codes) and maintenance failures (e.g. fire protection and containment features):** can substantially increase the damage to the facility itself and to surrounding buildings.

The severity of the incident is dependent not only on the circumstances described above, but also on the type of material released and the distance and related response time for emergency response teams. The areas within closest proximity to the releases are generally at greatest risk, yet depending on the agent, a release can travel great distances or remain present in the environment for a long period of time (e.g. centuries to millennia for radioactive materials), resulting in extensive impacts on people and the environment.

One of the worst recorded hazardous materials incidents known in Pennsylvania occurred in March 2009 when a tractor trailer overturned spilling 33,000 pounds of toxic hydrofluoric acid near Wind Gap, Pennsylvania resulting in the evacuation of 5,000 people (USA Today, 2009). Residents were evacuated because contact with concentrated



11% of all freight transported by trucks is hazardous material.

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solutions of the acid can cause severe burns and inhaling the gas can cause respiratory irritation, severe eye damage, and pulmonary edema. More recently in Pennsylvania, a train derailment incident required the evacuation of an entire town of approximately 1,000 residents roughly 100 miles southeast of Pittsburgh. In August 2017, at least 32 cars on a CSX freight train derailed causing some cars to catch fire. CSX reported that one car containing liquid petroleum gas and another containing molten sulfur leaked and caught fire. Additionally, one of the cars collided with a home and set fire to the garage (CBS News, 2017).

Huntingdon County could experience many issues if a hazardous material release occurred in the most populous jurisdictions. These include the Boroughs of Huntingdon and Mount Union. A hazardous material release would likely cause the evacuation of city residents, visitors, and employees.

4.3.16.3. Past Occurrence

According to the Pipeline and Hazardous Materials Safety Administration, 165,053 hazardous material release incidents have been reported during transportation (including in-transit, loading, and unloading) in the United States since 2010. Pennsylvania alone can account for 8,092 of those incidents, with damages exceeding \$31 Million, 68 hospitalizations, and one fatality (PHMSA, 2019). Specific information regarding incident reports by year can be found on the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration website.

Since the passage of SARA, Title III facilities that produce, use, or store hazardous chemicals must notify the public through the county emergency dispatch center and PEMA if an accidental release of a hazardous substance meets or exceeds a designated reportable quantity and affects or has the potential to affect persons and/or the environment outside the plant. SARA Title III and Pennsylvania Act 165 also require a written follow-up report to PEMA and the County. These written follow-up reports include any known or anticipated health risks associated with the release and actions to be taken to mitigate potential future incidents. In addition, Section 204(a) (10) of Act 165 requires PEMA to staff and operate a 24-hour State Emergency Operations Center (SEOC) to provide effective emergency response coordination. The U.S. EPA TRI reports that over 147,000 pounds of chemicals (including chromium, manganese, nickel, and zinc compounds) were released from facilities located in Huntingdon County in 2018. In January 2020, the PA Department of Environmental Protection reported that the Sunoco Mariner East 2 pipeline at Raystown Lake released 2,008,000 gallons of drilling fluid were released into the lake bottom over a course of 39 days (The Daily News, 2020).

4.3.16.4. Future Occurrence

While many hazardous material release incidents have occurred in Pennsylvania in the past, not many have specifically happened in Huntingdon County. Hazardous material release incidents are generally considered difficult to predict. An occurrence is largely dependent upon the accidental or intentional actions of a person or group. The future occurrence of hazardous materials release incidents in Huntingdon County can be characterized as *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

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Shifting traffic patterns and the presence of a multitude of hazardous materials in transit through the County warrants the need for development of increased response capability. It is difficult to predict when and where environmental hazards will arise as they are often related to equipment failure and human error. Adequate monitoring through the DEP will reduce the likelihood of potential impacts to the community and to the environment.

4.3.16.5. Vulnerability Assessment

The vulnerability of a community and the environment to a spill or release of an extremely hazardous substance at a facility or from a transportation accident depends on many variables. These include: the specific chemical, the extent of the spill or release, the proximity of waterways, and the number of people residing in a radius from the facility or accident location that can reasonably be expected to be adversely affected.

Furthermore, the vulnerability of a community and the environment to a hazardous material release from a transportation incident is directly related to several specific variables; namely the mode and class of transportation. Each mode is further subject to several categories of hazard. Each mode of transportation (truck/highway, aircraft, rail, watercraft, or pipeline) has separate and distinct factors affecting the vulnerability. Transportation carriers must have response plans in place to address accidents, otherwise the local emergency response team will step-in to secure and restore the area. Quick response minimizes the volume and concentration of hazardous materials that disperse through air, water, and soil.

4.3.17. Terrorism

4.3.17.1. Location and Extent

The term “terrorism” refers to intentional, criminal, malicious acts, but the functional definition of terrorism can be interpreted in many ways. Officially, terrorism is defined in the Code of Federal Regulations as “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives” (28 CFR §0.85).

The Federal Bureau of Investigation (FBI) characterizes terrorism as either domestic or international, depending on the origin, base, and objectives of the terrorist organization. However, the origin of the terrorist or person causing the hazard is far less relevant to mitigation planning than the hazard itself and its consequences.

Terrorism refers to the use of weapons of mass destruction (WMD), including, biological, chemical, radiological, and nuclear weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and agriterrorism; intentional hazardous materials releases; and cyber-terrorism.

Terrorism is a threat everywhere, but there are a number of important considerations in evaluating terrorism hazards, such as the existence of facilities, landmarks, or other buildings of international, national, or regional importance. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Furthermore, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail (FEMA, April 2009). Additionally, terrorists use threats to create fear, to try to convince citizens of the powerlessness of their government, and/or to get publicity for their cause. Nonetheless, terrorism can take many forms and terrorists have a wide range of personal, political, or cultural agendas.

The probability of terrorism cannot be quantified with as great a level of accuracy as that of many natural hazards. Furthermore, these incidents generally occur at a specific location, such as a government building, rather than encompassing an area such as a floodplain. This type of attack could take place at any facility or public or private location in the County. Huntingdon County has many high profile and public places that could be considered targets, including, but not limited to, business centers, especially in Huntingdon Borough which has a high daytime workforce population; educational centers, including Juniata College; cultural centers, and the hazardous material sites detailed in Section 4.3.16.



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4.3.17.2. Range of Magnitude

The severity of terrorist incidents depends upon the type of method used, the proximity of the attack to people, animals, or other assets, and the duration of exposure to the incident or to a device (in the case of chemical, radiological, or biological agent attacks). For example, chemical agents are poisonous gases, liquids, or solids that have toxic effects on people, animals, or plants. Many chemical agents can cause serious injuries or death. In this case, severity of injuries depends on the type and amount of the chemical agent used and the duration of exposure.

Biological agents are organisms or toxins that have illness-producing effects on people, livestock, and crops. Some biological agents cannot be easily detected and may take time to develop. Therefore, it can be difficult to know that a biological attack has occurred until victims display symptoms. In other cases, the effects are immediate. Those affected by a biological agent require the immediate attention of professional medical personnel. Some agents are contagious which may result in the need for victims to be quarantined.

An evolving type of terrorist threat is Complex Coordinated Terrorist Attacks (CCTAs). CCTAs are acts of terrorism that involve synchronized and independent team(s) at multiple locations, sequentially or in close succession, initiated with little or no warning, and employing one or more weapon systems which could include firearms, explosives, fire as a weapon, and other nontraditional attack methodologies that are intended to result in large numbers of casualties (FEMA, 2019). The dynamic of CCTAs cause the threat to be unknown, which is a shift from the traditional symbolic and highly planned attacks. CCTAs could occur anywhere, at any time, with the potential for mass casualties and infrastructure damage.

Depending on the type of terrorist attack, there may be significant loss of life for humans and animals as well as economic losses. Additionally, the impact of the attack itself may be exacerbated by the fact that human services agencies like community support programs, health and medical services, public assistance programs, and social services can experience physical damage to facilities, supplies, and equipment and disruption of emergency communications. There may also be ancillary effects of terrorism such as urban fires or, in the case of a radiological device, radioactive fallout that can multiply the impact of a terrorist event.

4.3.17.3. Past Occurrence

There has been a high consciousness of terrorist activity in the press with few catastrophic events. The most significant terrorist attack on US soil occurred on September 11, 2001; Flight 93, the fourth hijacked aircraft in the attack, crashed in Somerset County, Pennsylvania.

There have not been any catastrophic terrorist attacks in Huntingdon County.

4.3.17.4. Future Occurrence

An important consideration in estimating the likelihood of a terrorist incident is the existence of facilities, landmarks, or other buildings of national or regional importance. As previously noted, Huntingdon County has many high profile and public places that could be considered terrorist targets, and the County hosts several special events annually. Additionally, the County has multiple hazardous material sites which could be targeted for attack that could impact the surrounding area.

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Although previous events have not resulted in what are considered significant terrorist attacks, the severity of a future incident cannot be predicted with a sufficient level of certainty. Prediction of terrorist attacks is almost impossible because terrorism is a result of human factors. As long as fringe groups maintain radically different ideas than that of the government or general population, terrorism is a possibility. The likelihood of a terrorist attack is considered *possible*, as defined by the Risk Factor Methodology (see Table 4.4.1-1).

4.3.17.5. Vulnerability Assessment

Since the probability of terrorism occurring cannot be quantified in the same way as that of many natural hazards, it is not possible to assess vulnerability in terms of likelihood of occurrence. Instead, vulnerability is assessed in terms of specific assets. By identifying potentially at-risk terrorist targets in Huntingdon County, planning efforts can be put in place to reduce the risk of attack. FEMA's Integrating Manmade Hazards into Mitigation Planning (2003) encourages site-specific assessments that should be based on the relative importance of a particular site to the surrounding community or population, threats that are known to exist, and vulnerabilities including:

- Inherent vulnerability:
 - Visibility – How aware is the public of the existence of the facility?
 - Utility – How valuable might the place be in meeting the objectives of a potential terrorist?
 - Accessibility – How accessible is the place to the public?
 - Asset mobility – is the asset's location fixed or mobile?
 - Presence of hazardous materials – Are flammable, explosive, biological, chemical and/or radiological materials present on site? If so, are they well secured?
 - Potential for collateral damage – What are the potential consequences for the surrounding area if the asset is attacked or damaged?
 - Occupancy – What is the potential for mass casualties based on the maximum number of individuals on site at a given time?
- Tactical vulnerability:
 - Site Perimeter
 - Site planning and Landscape Design – Is the facility designed with security in mind – both site-specific and with regard to adjacent land uses?
 - Parking Security – Are vehicle access and parking managed in a way that separates vehicles and structures?
 - Building Envelope
 - Structural Engineering – Is the building's envelope designed to be blast-resistant? Does it provide collective protection against chemical, biological, and radiological contaminants?
 - Facility Interior
 - Architectural and Interior Space Planning – Does security screening cover all public and private areas?

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- Mechanical Engineering – Are utilities and Heating, Ventilating and Air Conditioning (HVAC) systems protected and/or backed up with redundant systems?
- Electrical Engineering – Are emergency power and telecommunications available? Are alarm systems operational? Is lightning sufficient?
- Fire Protection Engineering – Are the building’s water supply and fire suppression systems adequate, code-compliant, and protected? Are on-site personnel trained appropriately? Are local first responders aware of the nature of the operations at the facility?
- Electronic and Organized Security – Are systems and personnel in place to monitor and protect the facility?

4.3.18. Transportation Accidents

4.3.18.1. Location and Extent

For this analysis a transportation accident is defined as an incident involving highway or rail travel. Accidents involving hazardous materials are considered in more detail in Section 4.3.16. Within Huntingdon County, there are 1,291.69 linear miles of roadway and 374 state and local bridges. There are 26 state bridges (8.20%) and 16 local bridges (28.07%) classified as being in poor condition by PennDOT. In 2018, PennDOT statistics indicated over 1.1 million daily vehicle miles traveled within Huntingdon County (PennDOT, 2018). The Norfolk Southern Rail central/main line corridor passes through Huntingdon County and is the largest rail freight corridor in Pennsylvania. Amtrak also utilizes this corridor, with a station in Huntingdon Borough (SAP&DC, 2017) (See Figure 4.3.18-1). There is potential for major accidents on any of these roads, bridges or railways. Major transportation corridors are more vulnerable to transportation accidents, especially in areas where the daily traffic counts are greatest.

4.3.18.2. Range of Magnitude

At a minimum, transportation accidents can result in damage to the vehicles and minor injuries to passengers and drivers. At worst, significant transportation accidents can result in death or serious injury or extensive property loss or damage coupled with business interruptions and hours of congestion. Road and railway accidents in particular have the potential to result in hazardous materials releases if the vehicle or train car involved in an accident is hauling hazardous materials. The expected impacts of transportation accidents are amplified by the fact that there is often little warning of accidents. Accidents involving railroads could also have significant impacts on Huntingdon County. The worst-case scenario for a transportation accident impacting Huntingdon County would be a road or rail accident which results in a hazardous materials spill in a densely populated area, such as in Huntingdon near downtown or Juniata College. Such an event would constitute an immediate health hazard to the borough and university population and require an evacuation of campus.

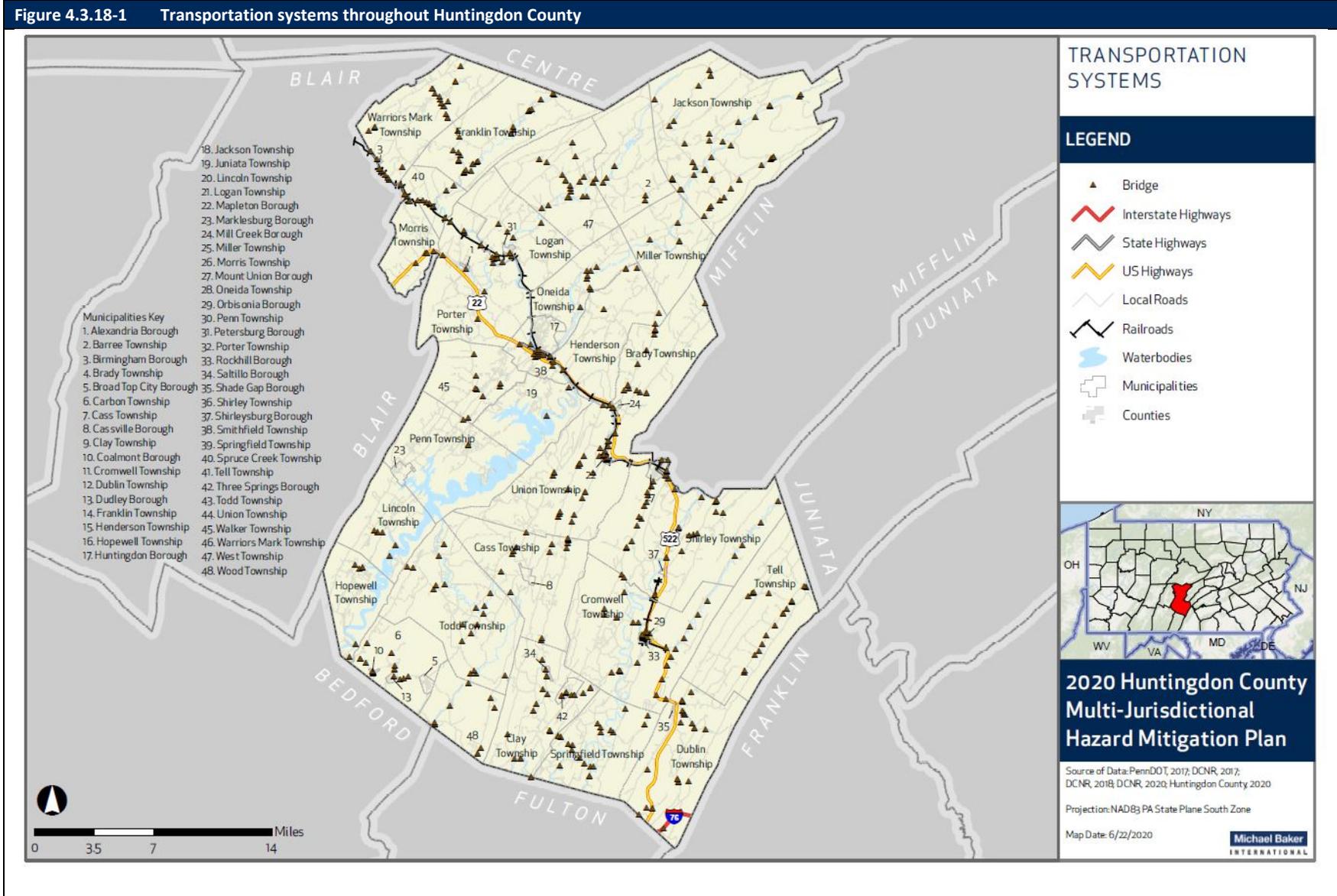


Norfolk Southern Rail three-car derailment into the Juniata River on April 3, 2018.

**Photograph courtesy of Nikkisha Marie, April 2018.*

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Figure 4.3.18-1 Transportation systems throughout Huntingdon County



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4.3.18.3. Past Occurrence

The most common transportation accidents in Huntingdon County are highway accidents involving automobiles and small trucks. The greatest roadway transportation concerns involve U.S. Route 22 and U.S. Route 522, as well as Interstate 76, since these routes have the highest annual average traffic counts in the County. Additionally, there is a temporal aspect to highway transportation accidents; in the spring and early summer, when construction and narrowed lanes are commonplace, the incidence of large-scale transportation accidents increases. Similarly, rush hour periods will see much higher volume of traffic than other times of the day depending on the location. Vehicle crashes continues to be a risk throughout the County.

As seen in Table 4.3.18-1, the number of crashes in Huntingdon County increased from 2014 to 2017, however, crashes slightly decreased in 2018. In addition, a four-mile section of U.S. Route 22 in Henderson Township was identified as one of Pennsylvania’s deadliest roads, with a significant amount of fatal crashes, in a recent 2019 study conducted by the National Highway Traffic Safety Administration (NHTSA) (The Daily News, February 2019).

Year	Total Crashes	Total Fatal Crashes	Total Injury Crashes	Total Property Damage Only Crashes
2010	373	10	186	177
2011	406	11	205	190
2012	378	5	193	180
2013	392	13	194	185
2014	358	10	170	178
2015	401	5	197	199
2016	415	4	185	226
2017	434	5	200	229
2018	358	3	140	215

4.3.18.4. Future Occurrence

Transportation accidents have little to no warning time and are nearly impossible to predict. However, as Table 4.3.18-1 shows, the amount of traffic accidents have remained fairly constant in recent years. Additionally, the trucking industry is expected to continue to grow increasing the number of long-haul trucks operating in the County on a daily basis. The increase in Bakken crude oil transportation by rail represents an increase in risk to future transportation accidents by rail. Based on all of these factors, the probability of transportation accidents is characterized as *highly likely* according to the Risk Factor Methodology (See Table 4.4.1-1).

Hazardous material release incidents through transportation accidents are generally considered difficult to predict. There is the possibility that increasing freight transportation could increase the number of hazardous material release incidents (See Section 4.3.16).

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Rail-related transportation accidents are not as likely to impact the County because of their lower frequency, but they are still possible.

4.3.18.5. Vulnerability Assessment

A transportation-related incident can occur on any stretch of road in Huntingdon County. However, severe accidents are more likely on the County's highways, which experience heavier traffic volumes including heavy freight vehicles. The combination of high traffic volume, severe winter weather in the County and large numbers of hazardous materials haulers increase the chances of traffic accidents occurring. Because of the widespread transportation network in Huntingdon County, a large number of structures are also exposed to the threat of transportation accidents.

Like highway incidents, rail incidents can impact populations living near rail lines. Crude oil shipping across the United States has grown by a factor of seventeen in the last five years, increasing the risk for a derailment or rail accident to involve this material. Additionally, recent rail incidents from 2013 to 2015 have shown a high risk for trains carrying crude oil to explode upon derailment.

4.3.19. Urban Fire and Explosion

4.3.19.1. Location and Extent

Urban fire and explosion hazards incorporate vehicle and building/structure fires as well as overpressure rupture, overheating, or other explosions. Statewide, this hazard occurs in the denser, more urbanized areas and occurs most often in residential structures (U.S. Fire Administration, 2009). Urban fires can more easily spread from building to building in these denser areas.



Urban fires and explosions often begin as a result of other hazards, particularly severe storms, drought, transportation accidents, hazardous material releases, criminal activity such as arson, and terrorism. Urban fires have the potential to cause extensive damage to residential, commercial, or public property. Damage ranges from minor smoke and/or water damage to the destruction of buildings. People are often displaced for several months to years depending on the magnitude of the event. Urban fires and explosions can also cause injuries and death; in Pennsylvania, the fire mortality rate is approximately 13.9 deaths per million residents, or about 180 fire-related deaths per year. This is the 21st highest fire mortality rate in the nation and is higher than the national average of 11.2 deaths per million residents (U.S. Fire Administration, 2017). In Huntingdon County, many communities have an abundance of wood-frame homes densely built, which is conducive to urban fires.

In the most serious urban fire events, the extreme heat of a fire event can damage the underlying infrastructure. For example, in 1996, an eight-alarm tire fire ignited in Philadelphia under Interstate 95. The extreme heat of the fire caused the bridge to buckle and forced two months of repairs to the bridge. The governor declared this event a disaster shortly after it occurred.

4.3.19.2. Range of Magnitude

The impacts of urban fire and explosion events vary based on the size of the incident and the population and structure density where it occurs. There may be environmental impacts related to hazardous materials when a fire event or explosion releases dangerous materials.

There are additional economic consequences related to this hazard. Urban fires and explosions may result in lost wages due to temporarily or permanently closed businesses, destruction and damage involving business and personal assets, loss of tax base, recovery costs, and lost investments in destroyed property.

The secondary effects of urban fire and explosion events relate to the ability of public, private, and non-profit entities to provide post-incident relief. Human services agencies (community support programs, health and medical services, public assistance programs and social services) can be affected by urban fire and explosion events as well. Effects may consist of physical damage to facilities and equipment, disruption of emergency communications, loss of health and medical facilities and supplies, and an overwhelming load of victims who are suffering from the effects of the urban fire, including loss of their home or place of business.

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4.3.19.3. Past Occurrence

Huntingdon County experiences a number of urban fire and explosion events each year, most of which are small and affect a limited number of structures. The following table lists urban fire and explosion events within Huntingdon County.

Incident	Jurisdiction	Incident Date(s)
Commercial Structure Fire	Morris Township	4/10/2018 – 4/11/2018
Structure Fire	Smithfield Township	1/18/2018 – 1/19/2018
Fire	Tell Township	4/16/2017
Fire at High School	Cromwell Township	04/22/2016
Structure Fire	Huntingdon Borough	12/12/2015 – 12/13/2015
Structure Fire	Broad Top City Borough	04/19/2015
Hospital Fire	Huntingdon Borough	08/31/2014
Apartment Building Fire	Mapleton Borough	07/17/2014
Structure Fire	Shirleysburg Borough	07/08/2014
Explosion at JC Blair Hospital	Huntingdon Borough	01/02/2014

4.3.19.4. Future Occurrence

Urban fire and explosion events can be considered possible, with minor events happening more frequently than major fires or explosions in the future. The greatest urban fire and explosion threats in Huntingdon County are industrial fires. While residential fires are more common, industrial fires have a potentially higher risk because of the possibility of there being flammable chemicals and a sustained fuel source at industrial sites. While small fires may be more frequent, overall the probability of future urban fire and explosion events is considered *possible*, according to the Risk Factor Methodology (see Table 4.4.1-1).

There is also a growing threat of natural gas, particularly methane, migration into homes and sparking fires and explosions. These events could occur more frequently moving forward if natural gas extraction grows in the County.

4.3.19.5. Vulnerability Assessment

Population density is an indicator of urban fire and explosion because areas where large buildings are located, or development is closely spaced are considered to be more vulnerable to urban fire and explosion events. In order to adequately assess vulnerability to urban fires and explosions, detailed information on the design specifications on the design specifications, specifically fire codes, used for the construction of individual buildings as required. As of December 31, 2006, all communities in Pennsylvania are required to comply with the Uniform Construction Codes. This includes requirements to comply with

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both the International Fire Code and the International Wildland Urban Interface Code. The adoption and enforcement of these codes will hopefully decrease the overall vulnerability of structures in Huntingdon County. However, these regulations will only affect new construction, as well as additions and renovations to existing structures. Older buildings that do not meet the criteria established in these modern fire codes will continue to remain vulnerable to urban fire and explosion events, as will vacant and unmaintained structures of nearly any age. Additionally, homes that are located in proximity to natural gas drilling operations may have an added vulnerability to fires and explosions.

4.3.20. Utility Interruption

4.3.20.1. Location and Extent

Utility interruption is defined as the loss of incoming electricity, steam, gas, and outgoing water, typically caused by damage from natural hazards like fire or windstorm. Utility interruptions are seen across Pennsylvania, with greater rates of interruption seen during storm seasons. Interruption in Huntingdon County can be seen at any type of property; residential, commercial, or institutional.

Most severe power failures or outages are regional events. With the loss of power, electrical-powered equipment and systems will not be operational. Examples may include:

- Lighting
- HVAC and ancillary support equipment
- Communication systems (public address systems, telephone, computer servers, and peripherals)
- Ventilation systems
- Fire and security systems
- Refrigerators
- Sterilizers
- Trash compactors
- Office equipment
- Medical equipment

This can cause food spoilage, loss of heat or air conditioning, basement flooding (sump pump failure), lack of light, loss of water (well pump failure), lack of phone service, or lack of internet service. While is most often a short-term nuisance rather than a catastrophic hazard, utility interruptions can cause challenges for communications and response, particularly in more rural areas of the county. At a minimum, power outages can cause short term disruption in the orderly functioning of business, government, and private citizen functioning and activities. A worst-case scenario for utility interruption in Huntingdon County would involve a power outage during the winter snow or ice storm. Downed trees and wires from the heavy ice formation could cause power outages throughout the entirety of the County for prolonged periods of time. Rural areas of the county are more vulnerable to experiencing prolonged outages.

4.3.20.2. Range of Magnitude

Utility interruptions in Huntingdon County focus primarily on power failures, which are often a secondary impact of another hazard event. For example, severe thunderstorms or winter storms could bring down power lines and



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cause widespread disruptions in electricity service. Strong heat waves may result in rolling blackouts where power may not be available for an extended period of time. Local outages may be caused by traffic accidents or wind damage. Utility interruptions and power failures can take place throughout the County. Communities are more vulnerable to this if utility lines are aboveground. Moving them underground is one way to mitigate the risk of interruptions.

Piping for gas delivery is typically located underground and is less susceptible to utility interruption. However, hazards like floods and earthquakes pose risk to underground piping. Additionally, as the infrastructure is underground, it can take much longer to remedy a gas utility interruption. This type of utility interruption is especially dangerous, as a break in natural gas pipelines can lead to fires and/or explosions.

Water utility interruption can occur for both inflow and outflow services. This means that water interruption can result in the inability to bring in new water, in addition to the inability to drain used water (i.e. flushing the toilet). Water utility interruption can occur for several reasons. If the water treatment system is impacted by flooding, there may be resulting flooding throughout the rest of the system. Additionally, water interruption can be caused by loss of electricity to the water treatment system.

TYPE OF UTILITY	COMPANY	SERVICE AREA
Electric	Allegheny Electric Cooperative Inc.	Pennsylvania and New Jersey
	PPL Electric Utilities	Much of Eastern Pennsylvania
	Penelec – First Energy Corporation	Pennsylvania, Ohio, New Jersey, West Virginia, and Maryland
	Valley Rural Electric Cooperative	South-Central Pennsylvania
Natural Gas	UGI Penn Natural Gas	Marcellus/Utica Shale Region in Pennsylvania
	National Fuel Gas Company	Pennsylvania and New York
	People’s Gas	Pennsylvania, West Virginia, and Kentucky
	Martin Oil Company	Neelyton
	Laurel Pipe Line Company	Mount Union Borough

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Table 4.3.20-1 Utility providers in Huntingdon County (Huntingdon County Planning and Development Department, 2011).

TYPE OF UTILITY	COMPANY	SERVICE AREA
Water and Sewer	Alexandria Borough Water Authority	Alexandria Borough
	Alexandria Porter Joint Sewer and Water Authority	Alexandria Borough, Porter Township
	Broad Top Area Water Authority	Broad Top City Borough
	Broad Top City Borough Sewer	Broad Top City Borough
	Cassville Borough Water/Sewer Authority	Cassville Borough
	Cromwell Township Sewer	Cromwell Township
	Dudley Coalmont Carbon Township Joint Authority	Dudley Borough, Coalmont Borough, Carbon Township
	Greenwood Furnace State Park	
	Hopewell Township (Cherrytown)	Hopewell Township
	Hopewell Township (Lakeview Estates)	Hopewell Township
	Huntingdon Borough Water and Sewer Authority	Huntingdon Borough
	Mapleton Area Joint Municipal Authority	Mapleton Borough
	Mapleton Municipal Water Authority	Mapleton Borough
	Marklesburg Sewer Authority	Marklesburg Borough
	Mill Creek Area Municipal Authority	Mill Creek Borough
	Mount Union Municipal Authority	Mount Union Borough
	Neelyton Water Co-op	Dublin Township
	Oneida Township Sewer	Oneida Township
	Orbisonia Rockhill Joint Municipal Authority	Orbisonia Borough, Rockhill Borough
	Penn Township Sewer	Penn Township

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Table 4.3.20-1 Utility providers in Huntingdon County (Huntingdon County Planning and Development Department, 2011).

TYPE OF UTILITY	COMPANY	SERVICE AREA
	Petersburg Sewer Authority	Petersburg Borough
	Petersburg Water Authority	Petersburg Borough
	Saltillo Borough Water	Saltillo Borough
	Saxton Borough Municipal Authority (Puttstown), Bedford County	Hopewell Township
	SCI - Huntingdon	Huntingdon Borough
	Shade Gap Area Joint Municipal Authority	Shade Gap Borough
	Shirley Township General Authority	Shirley Township
	Smithfield Township Water and Sewer Authority	Smithfield Township
	Three Springs Borough Water	Three Springs Borough
	Trough Creek State Park	
	Spring Creek Joint Sewer Authority	Three Springs Borough
	Walker Township Municipal Authority	Walker Township
	Warriors Mark General Authority	Warriors Mark Township
	Wood-Broad Top-Wells Joint Municipal Authority	Wood Township, Broad Top City Borough

4.3.20.3. Past Occurrence

Utility interruptions are largely minor, routine events; however, the impacts may be felt more strongly and for longer periods of time in rural areas. In Huntingdon County, minor power outages occur several times per year. They are most often associated with winter storms and windstorms. Table 4.3.20-2 lists utility interruption occurrences that have occurred since 2013 within Huntingdon County.

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Table 4.3.20-2 Utility Interruption Events Reported to PEMA-KC (PEMA, 2018).		
Incident	Jurisdiction	Incident Date(s)
911 Phone Outage	Countywide	03/02/2018 – 03/03/2018
Boil Water Advisory	Porter Township	01/26/2018 – 02/15/2018
Boil Water Advisory	Alexandria Borough	01/16/2018 – 01/17/2018
Boil Water Advisory	Huntingdon Borough	01/06/2018
Boil Water Advisory	Huntingdon Borough	12/14/2017 – 12/21/2017
Boil Water Advisories	Countywide	10/12/2017 – 11/02/2017
911 Phone Outage	Countywide	09/12/2017
Boil Water Advisory	Mount Union Borough	08/23/2017 – 10/31/2017
Boil Water Advisory	Huntingdon Borough	07/19 – 09/26/2017
Boil Water Advisory	Huntingdon Borough	07/18/2017 – 08/03/2017
Boil Water Advisory	Walker Township	06/07/2017 – 06/15/2017
627 Exchange Unable to Call 911	Walker Township	05/25/2017
Boil Water Advisory	Saltillo Borough	05/25/2017 – 05/26/2017
Verizon and Electric Outage	Logan Township	05/01/2017 – 05/10/2017
Boil Water Advisory	Saltillo Borough	11/23/2015 – 12/15/2015
Boil Water Advisory	Todd Township	10/20/2015 – 12/15/2015
Power Outage	Huntingdon Borough	06/28/2015 – 06/29/2015
Phone Outage at Hospital	Huntingdon Borough	03/16/2015 – 03/07/2015
Boil Water Advisory	Mapleton Borough	02/23/2015 – 02/26/2015
Telephone Outage	Countywide	02/12/2015
911 Phone Outage	Countywide	10/27/2014
Vehicle Accident/Power Outage	Dudley Borough	08/16/2014
Phone Outage at Hospital	Huntingdon Borough	08/08/2014
Power Outage	Countywide	03/13/2014
Power Outage	Smithfield Township	03/12/2014 – 03/13/2014
Boil Water Advisory	Huntingdon Borough	01/25/2014 – 02/10/2014
Steam Heat Outage	Countywide	01/16/2014 – 02/12/2014

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Incident	Jurisdiction	Incident Date(s)
Comms Tower Outage	Countywide	01/03/2014 – 01/13/2014
Raystown Dam Tainter Gate	Countywide	12/23/2013 - 11/10/2015
Power Outage/Warming Shelter	Wood Township	11/28/2013
Water Main Break	Smithfield Township	9/22/2013

4.3.20.4. Future Occurrence

Minor power failure (i.e. short outage events) may occur several times a year for any given area in the County, while major (i.e. widespread, long outage) events take place once every few years. Power failures are often occurrences during severe weather and therefore, should be expected during those events. Therefore, the future occurrence of utility interruptions in Huntingdon County can be considered *possible* as defined by the Risk Factor methodology probability criteria (see Table 4.4.1-1). These interruptions should be anticipated, and first responders should be prepared during severe weather events.

4.3.20.5. Vulnerability Assessment

Emergency medical facilities, including retirement homes and senior centers are particularly vulnerable to power outages. While back-up power generators are often used at these facilities, loss of electricity may result in hot or cold temperatures for which elderly populations are particularly vulnerable. The following map shows the location of critical facilities in Huntingdon County. In total, there are 302 critical facilities identified by the County. These include emergency services, educational facilities, and utility services. It is important to prioritize utility protection at critical facilities in order to protect vulnerable populations in the event of severe weather. Conservation and improved technology have resulted in more efficient use of energy sources. The increasing use of alternative fuel supplies, such as kerosene heaters, wood burning stoves, coal burners, etc., has also decreased our vulnerability to future shortages. However, severe weather extremes, transportation accidents, labor strikes, or nationwide shortages could cause significant energy shortage problems. Vulnerability may also depend on the utility provider. If utility lines are upgraded and buried in certain areas of the County, such as in areas with concentration of new development, these areas could potentially be at lower risk to experiencing power outages as a result of downed power lines. Less populated municipalities such as Lincoln Township, Miller Township, and West Township face increased vulnerability to utility interruption as a result of winter storms or high winds due to isolation, access issues, and longer emergency response times.

4.4. Hazard Vulnerability Summary

4.4.1. Methodology

Ranking hazards helps communities set goals and priorities for mitigation based on their vulnerabilities. A Risk Factor (RF) is a tool used to measure the degree of risk for identified hazards in a particular planning area. The RF can also be used to assist local community officials in ranking and prioritizing those hazards that pose the most significant threat to their area based on a variety of factors deemed important by the planning team and other stakeholders involved in the hazard mitigation planning process. The RF system relies mainly on historical data, local knowledge, general consensus opinions from the planning team and information collected through development of the hazard profiles included in Section 4.3. The RF approach produces numerical values that allow identified hazards to be ranked against one another; the higher the RF value, the greater the hazard risk.

RF values were obtained by assigning varying degrees of risk to five categories for each of the twenty hazards profiled in the 2015 Multi-Jurisdictional Hazard Mitigation Plan Update and the new human-made hazards hazard being profiled in the 2020 MJHMP Update: Invasive Species. Those categories include: *probability, impact, spatial extent, warning time, and duration*. Each degree of risk was assigned a value ranging from 1 to 4. The weighting factor is shown in Table 4.4.1-1. To calculate the RF value for a given hazard, the assigned risk value for each category was multiplied by the weighting factor. The sum of all five categories equals the final RF value, as demonstrated in the example equation:

$$\text{Risk Factor Value} = [(Probability \times .30) + (Impact \times .30) + (Spatial \text{ Extent} \times .20) + (Warning \text{ Time} \times .10) + (Duration \times .10)]$$

Table 4.4.1-1 summarizes each of the five categories used for calculating a RF for each hazard. According to the weighting scheme applied, the highest possible RF value is 4.0.

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Table 4.4.1-1 Summary of Risk Factor approach used to rank hazard risk.

Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
PROBABILITY <i>What is the likelihood of a hazard event occurring in a given year?</i>	UNLIKELY	LESS THAN 1% ANNUAL PROBABILITY	1	30%
	POSSIBLE	BETWEEN 1% & 49.9% ANNUAL PROBABILITY	2	
	LIKELY	BETWEEN 50% & 90% ANNUAL PROBABILITY	3	
	HIGHLY LIKELY	GREATER THAN 90% ANNUAL PROBABILITY	4	
IMPACT <i>In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?</i>	MINOR	VERY FEW INJURIES, IF ANY. ONLY MINOR PROPERTY DAMAGE & MINIMAL DISRUPTION ON QUALITY OF LIFE. TEMPORARY SHUTDOWN OF CRITICAL FACILITIES.	1	30%
	LIMITED	MINOR INJURIES ONLY. MORE THAN 10% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE DAY.	2	
	CRITICAL	MULTIPLE DEATHS/INJURIES POSSIBLE. MORE THAN 25% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE WEEK.	3	
	CATASTROPHIC	HIGH NUMBER OF DEATHS/INJURIES POSSIBLE. MORE THAN 50% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR 30 DAYS OR MORE.	4	
SPATIAL EXTENT <i>How large of an area could be impacted by a hazard event? Are impacts localized or regional?</i>	NEGLECTIBLE	LESS THAN 1% OF AREA AFFECTED	1	20%
	SMALL	BETWEEN 1 & 10.9% OF AREA AFFECTED	2	
	MODERATE	BETWEEN 11 & 25% OF AREA AFFECTED	3	
	LARGE	GREATER THAN 25% OF AREA AFFECTED	4	
WARNING TIME <i>Is there usually some lead time associated with the hazard event? Have warning measures been implemented?</i>	MORE THAN 24 HRS	SELF-DEFINED	1	10%
	12 TO 24 HRS	SELF-DEFINED	2	
	6 TO 12 HRS	SELF-DEFINED	3	
	LESS THAN 6 HRS	SELF-DEFINED	4	
DURATION <i>How long does the hazard event usually last?</i>	LESS THAN 6 HRS	SELF-DEFINED	1	10%
	LESS THAN 24 HRS	SELF-DEFINED	2	
	LESS THAN 1 WEEK	SELF-DEFINED	3	
	MORE THAN 1 WEEK	SELF-DEFINED	4	

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4.4.2. Ranking Results

Using the methodology described in Section 4.4.1, Table 4.4.2-1 lists the Risk Factor calculated for each of the 20 hazards identified in the 2020 MJHMP Update. Hazards identified as *high* risk have risk factors greater than 2.5. Risk Factors ranging from 2.0 to 2.4 were deemed *moderate* risk hazards. Hazards with Risk Factors 1.9 and less are considered *low* risk.

Table 4.4.2-1 Ranking of hazard types based on Risk Factor methodology.							
HAZARD RISK	HAZARD	RISK ASSESSMENT CATEGORY					RISK FACTOR
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Invasive Species	4	3	3	1	4	3.2
	Pandemic/Infectious Disease	2	4	4	1	4	3.1
	Environmental Hazards – Hazardous Materials Release	2	4	3	3	3	3.0
	Flood, Flash Flood, and Ice Jam	2	3	3	3	2	2.6
	Tornado and Windstorm	3	3	2	2	2	2.6
	Winter Storm	4	1	3	1	3	2.5
MODERATE	Cyber Terrorism	2	2	3	4	1	2.3
	Hurricane, Tropical Storm, Nor'easter	2	2	4	1	2	2.3
	Terrorism	2	3	3	1	1	2.3
	Utility Interruption	2	2	3	2	3	2.3
	Transportation Accidents	4	1	1	4	1	2.2
	Extreme Temperatures	2	2	3	2	2	2.2
	Hailstorm	2	2	3	3	1	2.2
	Civil Disturbance	2	1	3	3	3	2.1
	Dam Failure	1	3	3	1	1	2.0
	Wildfire	1	2	3	2	3	2.0
LOW	Urban Fire and Explosion	2	2	2	2	1	1.9
	Drought	2	1	2	1	4	1.8
	Subsidence and Sinkhole	1	2	2	2	1	1.6
	Landslide	1	2	2	1	1	1.5

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Based on these results, there are six *high* risk hazards, ten *moderate* risk hazards and four *low* risk hazards in Huntingdon County. Mitigation actions were developed for all high, moderate, and low risk hazards (see Section 6.4).

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Table 4.4.2-2 Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk.

JURISDICTION	IDENTIFIED HAZARD AND CORRESPONDING COUNTYWIDE RISK FACTOR																			
	Invasive Species	Pandemic/ Infectious Disease	Hazardous Materials Release	Flood, Flash Flood, Ice Jam	Tornado and Windstorm	Winter Storm	Cyber Terrorism	Hurricane, Tropical Storm, Nor' easter	Terrorism	Utility Interruption	Transportation Accidents	Extreme Temperatures	Hailstorm	Civil Disturbance	Dam Failure	Wildfire	Urban Fire and Explosion	Drought	Subsidence and Sinkhole	Landslide
	3.2	3.1	3.0	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.5
Alexandria Borough	>	=	>	=	=	<	=	=	=	=	>	=	=	=	=	=	=	=	=	=
Barree Township	=	=	=	=	=	=	=	>	=	>	=	=	=	=	=	=	=	<	=	=
Birmingham Borough	>	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	=	<	=	=
Brady Township	=	>	=	<	>	<	=	=	=	=	=	=	=	=	>	>	=	=	<	=
Broad Top City Borough	>	=	=	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Carbon Township	=	>	=	=	>	=	=	=	=	=	=	=	=	=	=	=	=	<	<	=
Cass Township	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Cassville Borough	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Clay Township	=	=	=	<	>	<	=	=	=	<	=	=	=	=	=	=	=	<	=	=
Coalmont Borough	=	=	=	<	=	<	=	=	=	=	=	=	=	=	=	=	=	<	=	=
Cromwell Township	=	=	=	<	=	<	=	=	=	=	=	=	=	=	=	=	=	<	=	=
Dublin Township	=	=	=	<	>	<	=	=	=	<	=	=	=	=	=	=	=	<	=	=
Dudley Borough	=	=	=	<	>	<	=	=	=	<	=	=	=	=	=	=	=	<	=	=

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Table 4.4.2-2 Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk.

JURISDICTION	IDENTIFIED HAZARD AND CORRESPONDING COUNTYWIDE RISK FACTOR																			
	Invasive Species	Pandemic/ Infectious Disease	Hazardous Materials Release	Flood, Flash Flood, Ice Jam	Tornado and Windstorm	Winter Storm	Cyber Terrorism	Hurricane, Tropical Storm, Nor' easter	Terrorism	Utility Interruption	Transportation Accidents	Extreme Temperatures	Hailstorm	Civil Disturbance	Dam Failure	Wildfire	Urban Fire and Explosion	Drought	Subsidence and Sinkhole	Landslide
	3.2	3.1	3.0	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.5
Franklin Township	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Henderson Township	>	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=
Hopewell Township	=	>	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	<	=	=
Huntingdon Borough	=	>	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=
Jackson Township	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Juniata Township	=	=	=	=	=	=	=	=	=	=	=	=	=	=	>	=	=	=	=	=
Lincoln Township	=	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Logan Township	>	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Mapleton Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Marklesburg Borough	=	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Mill Creek Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Miller Township	>	=	>	=	=	=	=	=	=	>	=	=	=	=	=	=	=	<	=	=
Morris Township	>	>	=	=	>	=	=	=	=	>	=	=	=	=	=	>	=	=	=	=

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Table 4.4.2-2 Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk.

JURISDICTION	IDENTIFIED HAZARD AND CORRESPONDING COUNTYWIDE RISK FACTOR																			
	Invasive Species	Pandemic/ Infectious Disease	Hazardous Materials Release	Flood, Flash Flood, Ice Jam	Tornado and Windstorm	Winter Storm	Cyber Terrorism	Hurricane, Tropical Storm, Nor' easter	Terrorism	Utility Interruption	Transportation Accidents	Extreme Temperatures	Hailstorm	Civil Disturbance	Dam Failure	Wildfire	Urban Fire and Explosion	Drought	Subsidence and Sinkhole	Landslide
	3.2	3.1	3.0	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.5
Mount Union Borough	>	=	>	=	=	=	=	=	=	>	=	=	=	=	=	=	=	<	=	=
Oneida Township	>	>	=	=	>	=	=	=	=	>	=	=	=	=	=	>	=	=	=	=
Orbisonia Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Penn Township	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Petersburg Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Porter Township	>	>	=	=	>	=	=	=	=	>	=	=	=	=	=	>	=	=	=	=
Rockhill Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Saltillo Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Shade Gap Borough	=	=	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=
Shirley Township	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Shirleysburg Borough	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

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Table 4.4.2-2 Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk.

JURISDICTION	IDENTIFIED HAZARD AND CORRESPONDING COUNTYWIDE RISK FACTOR																			
	Invasive Species	Pandemic/ Infectious Disease	Hazardous Materials Release	Flood, Flash Flood, Ice Jam	Tornado and Windstorm	Winter Storm	Cyber Terrorism	Hurricane, Tropical Storm, Nor' easter	Terrorism	Utility Interruption	Transportation Accidents	Extreme Temperatures	Hailstorm	Civil Disturbance	Dam Failure	Wildfire	Urban Fire and Explosion	Drought	Subsidence and Sinkhole	Landslide
	3.2	3.1	3.0	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.5
Smithfield Township	>	>	<	=	=	<	<	=	=	<	>	>	<	=	=	>	<	=	<	<
Springfield Township	>	=	=	<	>	<	=	=	=	<	=	<	=	=	=	=	=	<	=	=
Spruce Creek Township	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Tell Township	=	>	=	=	>	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=
Three Springs Borough	=	=	=	=	=	<	=	=	=	=	=	=	=	=	=	=	=	<	=	=
Todd Township	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Union Township	>	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Walker Township	>	=	=	=	=	=	=	=	=	=	=	<	=	=	=	=	=	=	=	=
Warriors Mark Township	=	=	>	>	>	=	=	=	=	>	>	=	=	=	=	=	=	=	>	=
West Township	>	=	=	=	=	=	=	=	=	=	=	<	=	=	=	=	=	=	=	=
Wood Township	>	=	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=

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4.4.3. Potential Loss Estimates

Based on various kinds of available data, potential loss estimates were established for flood, flash flood, and ice jam, tornado and windstorms, wildfires, and winter storms. Estimates provided in this section are based on Hazus, version 4.0, geospatial analysis, and previous events. Estimates are considered *potential* in that they generally represent losses that could occur in a countywide hazard scenario. In events that are localized, losses may be lower, while regional events could yield higher losses.

Potential loss estimates have four basic components, including:

- Replacement Value: Current cost of returning an asset to its pre-damaged condition, using present-day cost of labor and materials.
- Content Loss: Value of building's contents, typically measured as a percentage of the building replacement value.
- Functional Loss: The value of a building's use or function that would be lost if it were damaged or closed.
- Displacement Cost: The dollar amount required for relocation of the function (business or service) to another structure following a hazard event.

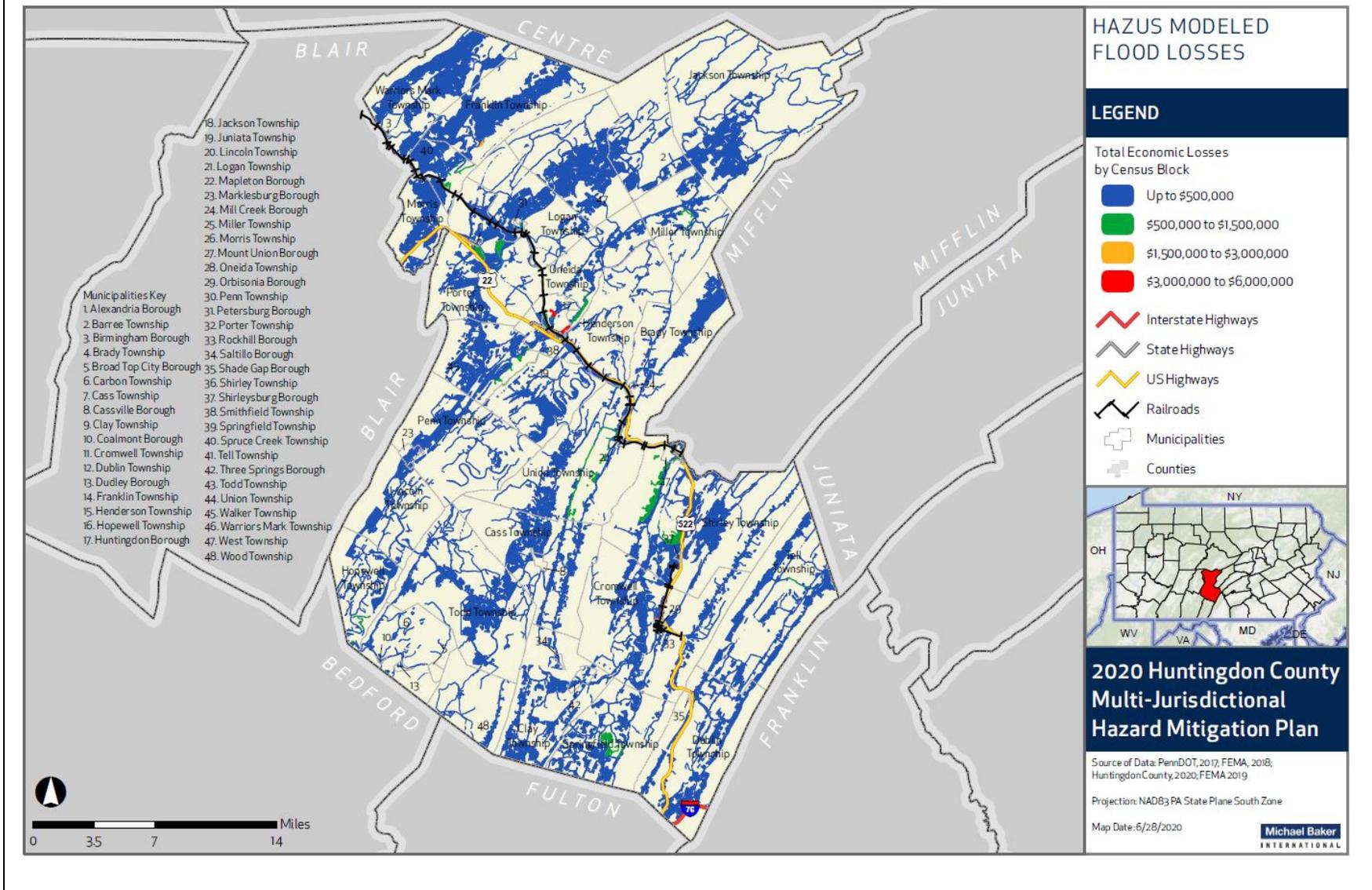
This Plan employed an enhanced Hazus analysis for floods. As opposed to basic analysis using only default data, enhanced analysis incorporates some kind of more recent, up-to-date, or specific data for inclusion in the hazard models. The enhanced data incorporated into this plan update include:

- Updated demographic data from the 2010 Census;
- Updated essential facilities data from the County and other sources

Using these datasets in Hazus, total building-related losses from a 1%-annual-chance flood in Huntingdon County are estimated to equal \$116.12 million. Residential occupancies make up 59.14% of the total estimated building-related losses. Figure 4.4.3-1 shows a distribution of building-related losses by census block across Huntingdon County. Damages would be most significant in and near Huntingdon Borough. Total economic loss, including replacement value, content loss, functional loss and displacement cost, from a countywide 1%-annual-chance flood are estimated to equal \$116.97 million. In this scenario, an expected 252 buildings would be moderately damaged. In addition, an estimated 1,149 households would be displaced, and 1,293 people would require shelter. Essential facilities would mostly remain undamaged in this scenario, but one school and one fire station are estimated to have at least moderate damage, and one fire station is estimated to have substantial damage. Two fire stations and one school are estimated to have complete loss of use. For more details on the Hazus methodology used and additional results reports, see **Appendix F**.

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Figure 4.4.3-1 Distribution by census block of the potential total economic loss expected from a 1%-annual-chance flood in Huntingdon County (FEMA, 2019).





Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale.

Losses associated with particular natural hazard events are sometimes reported to the NCEI with the event. The reporting time frame is 1950-2019. While these historic losses give a glimpse of potential losses in hazard events, they are not reported for all events and should be considered a broad estimate. Several deaths and millions of dollars' worth of property damage have been caused by floods, flash floods, or ice jams in Huntingdon County. Previous flood events listed in Table 4.3.3-2 have caused an estimated \$275,000 worth of property damage throughout the County. It is important to note that loss estimates are not available for many of the previous flood events which have occurred in the County. Historical loss estimates are available for only five of the 49 events listed in Table 4.3.3-2.

Additionally, as discussed in Section 4.3.3.5, a total of 542 NFIP claims for flood damages have been made since 1978 for structures under the NFIP. Cumulative NFIP payments for flood damages have exceeded \$9.4 million (Michael Baker International, 2018).

The NCEI database losses for tornado events in Huntingdon County from 1950 – 2019 totaled \$705,000, whereas windstorm events totaled \$19,540. For winter storm events, no losses were reported. A high percentage of losses from winter storms are usually in the form of repairs to damaged utility poles, wires, and other infrastructure.

4.4.4. Future Development and Vulnerability

Risk and vulnerability to natural hazard events are not static. Risk will increase or decrease as counties and municipalities see changes in land use and development as well as changes in population. Huntingdon County is expected to experience a variety of factors that will, in some areas, increase vulnerability to hazards while in other areas, vulnerability may stay static or even be reduced.

Population change and the age of the housing stock are main indicators of vulnerability change in Huntingdon County. As discussed in Section 2.3, the total population of Huntingdon County is estimated to have decreased by 0.9 percent from 2010-2018, indicating the overall population of the County has generally stayed the same. Twenty-two municipalities increased in population while twenty-six decreased in population during this time period (see Table 2.3-1). Areas of higher density, in the larger municipalities

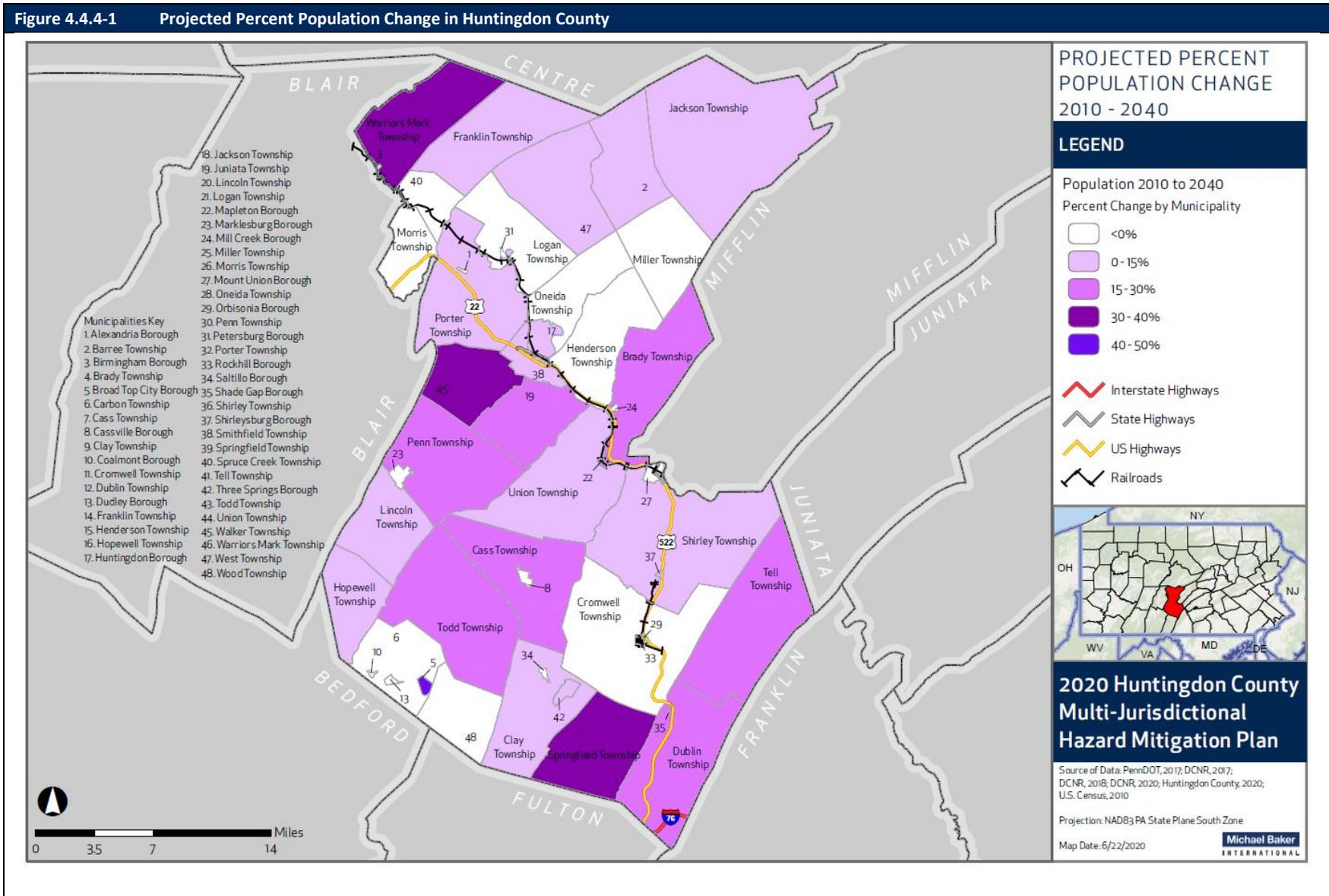
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and growing municipalities, face increased vulnerability and increased exposed structures with most hazard events. Increases in population results in increased vulnerability to hazards such as wildfires, floods, and winter storms as more people will be impacted.

Population projections for Huntingdon County through 2040 shows the most population growth in Broad Top City Borough, Warriors Mark Township, Walker Township, and Springfield Township. Figure 4.4.4-1 shows projected population change in Huntingdon County between 2010 and 2040 based on U.S. Census population projections.

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Figure 4.4.4-1 Projected Percent Population Change in Huntingdon County



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Current zoning and development regulations allow future development to occur within the Special Flood Hazard Area in several municipalities; this suggests that there is potential for additional loss due to flooding in the future. Special Flood Hazard Area development regulations relate to the base flood elevation, which is the estimated level of flooding that has a 1-percent chance of being equaled or exceeded in any given year. Because Special Flood Hazard Area or floodplain development regulations specify that residential structures must be elevated to or above the base flood elevation and commercial structures must either be elevated or flood-proofed to or above this level, the degree to which future structures are exposed to flood damages should be minimal. However, calculations of base flood elevations are based on models that rely upon data about previous flood events; should future floods be greater than those experienced in the past, the base flood elevation may not provide sufficient protection.

In addition, remote and sparsely populated municipalities also face higher vulnerability to hazards because they do not have as easy access to care facilities or response personnel. For instance, the less populated municipalities such as West Township, Carbon Township, and Coalmont Borough, face increased vulnerability to winter storms due to isolation, access issues, and longer emergency response times.

Twenty percent of Huntingdon County's population is over the age of 65. Older residents pose unique challenges when it comes to evacuation and/or mobility during the rescue and recovery processes that typically occur in the case of a hazard event. Officials may consider partnering with human services organizations to specifically plan for this vulnerable population.

The aging housing stock in Huntingdon County is another source of current and future vulnerability in many hazard events. As discussed in Section 4.3.12.5, many homes in the County were built before 1940. Huntingdon County can experience gusts of wind up to 200 miles per hour during windstorms, tornadoes, hurricane, tropical storms, or nor'easters. The structure of these older houses may be more at risk of destruction under these strong wind conditions. These structures may also be at risk during flooding and winter storm events if the materials are either not strong enough to withstand the pressure or weight of the precipitation or are liable to leak, causing further risk of destruction to the house. More than seventy-five percent of the housing units in Shirleysburg Borough were built before 1940, making it most vulnerable to the risks from these hazards. Shade Gap Borough also has a large percent of housing units built before 1940 (more than 70%).

In June 2018, Huntingdon County adopted a Comprehensive Plan titled *Alleghenies Ahead: Shared Strategies for a Stronger Region*. The plan's visions include "developing and implementing strategies that will increase the region's chances to create jobs, increase the region's capacity to compete for households who have choices, and become a region of stronger and more vital communities." Concentrating growth may help to reduce isolation-based vulnerability of communities with few access routes, no municipal water supply, and low cell phone reception. On the other hand, higher densities mean that more people are likely to be impacted in a hazard event should it strike those more populated areas.

5. Capability Assessment

5.1. Update Process Summary

The purpose of the Capability Assessment is to identify strengths and weaknesses that will affect the ability of the County and participating jurisdictions to implement mitigation actions. Capabilities include a variety of regulations, existing planning mechanisms, and administrative capabilities provided through established agencies or authorities.

Based on the above-identified vulnerability analysis, Huntingdon County can assess its current resources and begin to address the legal, regulatory, administrative, financial and other capabilities which it currently has at its disposal to address the potential hazards which make the County and its local municipalities vulnerable.

Huntingdon County has a number of resources it can access to implement hazard mitigation initiatives including emergency response measures, local planning and regulatory tools, administrative assistance and technical expertise, financial capabilities, and participation in local, regional, state, and federal programs. The presence of these resources enables community resiliency through actions taken before, during, and after a hazard event. The most important resources which provide the basis for addressing hazard potential and mitigation are the emergency services manpower, equipment, fiscal, and other resources available within Huntingdon County communities. At the County level, the Huntingdon County Emergency Management Agency provides leadership and the resources to coordinate, respond, and provide logistical support to address hazard incidents.

The 2015 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Update identified the suite of resources available in the County to support hazard mitigation, including regulatory, planning, and administrative resources. It also indicated the presence of local plans, ordinances, and codes in applicable municipalities. Finally, the 2015 Capability Assessment specified local, state, and federal resources available for mitigation efforts.

For the 2020 Plan, the HMPT updated the 2015 Capability Assessment by distributing a *Capability Assessment Survey* to all 48 municipalities and summarizing responses. In addition, the HMPT provided additional input into the 2020 Capability Assessment through feedback at meetings. The HMPT also provided input on a *National Flood Insurance Program (NFIP) Worksheet* where the municipalities provided comments on how they implemented the NFIP in their communities.

The 2020 Capability Assessment provides an updated inventory of the most critical local planning and regulatory tools available within each municipality, a summary of the fiscal and technical capabilities available through programs and organizations outside of the County and provides an opportunity to discuss any plan integration opportunities with the hazard mitigation plan. It also identifies emergency management capabilities and the processes used for implementation of the National Flood Insurance Program.

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While the capability assessment serves as a good instrument for identifying local capabilities, it also provides a means for recognizing gaps and weaknesses that can be resolved through future mitigation actions. The results of this assessment lend critical information for developing an effective mitigation strategy.

The Mitigation Strategy, including the goals and actions, is incorporated into relevant planning mechanisms based on their pertinence and relevance to specific plans and ordinances. For example, all structural projects should be included in the Capital Improvements Program. Land use and zoning related projects should be incorporated into the next update of the Community’s Comprehensive Plan and Zoning Ordinance through collaboration with the Planning and Zoning departments. Likewise, information from relevant planning documents was used to inform and update the Multi-Jurisdictional Hazard Mitigation Plan. A general list of relevant plans and documents and corresponding areas for incorporation are listed below:

RELEVANT DOCUMENTS	HAZARD MITIGATION PLANNING ELEMENTS
Comprehensive Plan/Land Use Plan, Zoning/Subdivision Regulations, Floodplain Ordinance	Demographic data, land use, development trends, and floodplain management information
Stormwater Management (SWM) Plan, Sediment and Erosion Control Plan, Culvert and Bridge Maintenance Plans, Southern Alleghenies Long Range Transportation Plan, Infrastructure and Water Supply Plan	Stormwater management and infrastructure data and projects
Evacuation Plan, Emergency Operations/Response Plan	All-hazards information for evacuation, response and recover
Raystown Lake Master Plan, Dam Safety Regulations	Risk and vulnerability data, and storm/floodwater management
Southern Alleghenies Greenways and Open Space Network Plan	Mitigation progress and solutions

5.2. Capability Assessment Findings

5.2.1. Planning and Regulatory Capability

Huntingdon County and participating jurisdictions have several planning and regulatory tools in place to support the goals of hazard mitigation planning. Additionally, these regulations provide opportunities for further mitigating the potentially negative effects of natural hazards.

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JURISDICTION	COMPREHENSIVE PLAN	ZONING ORDINANCES	SUBDIVISION REGULATIONS	FLOODPLAIN MANAGEMENT REGULATIONS	STORMWATER MANAGEMENT REGULATIONS	BUILDING CODES
Huntingdon County	✓	N/A			✓	N/A
Alexandria Borough		✓		✓		✓
Barree Township	✓			✓		✓
Birmingham Borough				✓		
Brady Township			✓	✓		✓
Broad Top City Borough	✓		✓			✓
Carbon Township				✓		✓
Cass Township			✓	✓		✓
Cassville Borough			✓			✓
Clay Township	✓		✓	✓		✓
Coalmont Borough				✓		✓
Cromwell Township			✓	✓		✓
Dublin Township			✓	✓		✓
Dudley Borough				✓		✓
Franklin Township				✓		✓
Henderson Township	✓	✓	✓	✓		✓
Hopewell Township			✓	✓		✓
Huntingdon Borough	✓	✓	✓	✓		✓
Jackson Township			✓	✓		✓
Juniata Township			✓	✓		✓
Lincoln Township			✓	✓		✓
Logan Township			✓	✓		✓
Mapleton Borough				✓		✓
Marklesburg Borough			✓	✓		✓
Mill Creek Borough				✓		✓
Miller Township			✓	✓		✓
Morris Township			✓	✓		✓
Mount Union Borough	✓	✓		✓		✓
Oneida Township	✓	✓	✓	✓	✓	✓
Orbisonia Borough	✓	✓		✓		✓
Penn Township			✓	✓		✓
Petersburg Borough				✓		✓
Porter Township	✓		✓	✓		✓
Rockhill Borough	✓			✓		✓
Saltillo Borough				✓	✓	✓
Shade Gap Borough		✓				✓

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JURISDICTION	COMPREHENSIVE PLAN	ZONING ORDINANCES	SUBDIVISION REGULATIONS	FLOODPLAIN MANAGEMENT REGULATIONS	STORMWATER MANAGEMENT REGULATIONS	BUILDING CODES
Shirley Township			✓	✓	✓	✓
Shirleysburg Borough	✓			✓		✓
Smithfield Township	✓	✓	✓	✓	✓	
Springfield Township			✓	✓		✓
Spruce Creek Township	✓		✓	✓		
Tell Township			✓	✓		✓
Three Springs Borough				✓		✓
Todd Township			✓	✓		✓
Union Township			✓	✓		✓
Walker Township	✓	✓	✓	✓		✓
Warriors Mark Township	✓	✓	✓	✓	✓	✓
West Township			✓	✓		✓
Wood Township	✓		✓	✓		✓

5.2.1.1. Plans and Regulations

The purpose of a plan/ordinance review as part of this planning process is trifold:

- To identify existing Commonwealth, Regional/County, and Municipal initiatives;
- To provide an inventory and review of sample plans and ordinances and identify sections in these documents that address hazard mitigation-related issues; and
- To provide a platform to integrate plans and other documents so recommendations and strategies are not in contradiction with one another (e.g., between the hazard mitigation plan and comprehensive plan).

A review of updated and existing zoning and subdivision ordinances, comprehensive plans, open space and recreation plans, stormwater management plans, sediment and erosion control plans, and emergency operations plans, among others, are summarized below by level of administration (Commonwealth, Regional/County, and Municipal).

Commonwealth of Pennsylvania Document Review

- The 2018 Update of the **Pennsylvania State All-Hazard Mitigation Plan** goals and objectives that are applicable to this Huntingdon County Plan Update including:
 - Protect lives, property, environmental quality, and resources of the Commonwealth;
 - Enhance consistent coordination, collaboration, and communications among stakeholders;

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- Provide a framework for active hazard mitigation planning and implementation; and
- Increase awareness, understanding, and preparedness across all sectors.

Hazard identification and risk assessment data for Huntingdon County has been incorporated into the appropriate sections of this Plan update from the 2018 PA All-Hazard Mitigation Plan.

- The **Uniform Construction Code (UCC)** is the statewide building code (Act 45 of 1999) that took effect in Pennsylvania in April of 2004. The UCC is mandated by the State for all municipalities in Pennsylvania and establishes minimum regulations for most new construction, including additions and renovations to existing structures. All new construction is required to meet the UCC requirements statewide.
- The **Commonwealth of Pennsylvania Governor’s Executive Order 1999-1 (Land Use Planning)** provides the basis for the requirement to integrate hazard mitigation into comprehensive land use planning. As part of this executive order, the Interagency Land Use Team was established, comprising the following state agencies: Department of Agriculture; Department of Community and Economic Development; Department of Conservation and Natural Resources; Department of Environmental Protection; Governor’s Green Government Council; Fish and Boat Commission; Game Commission; Department of Transportation; and the Pennsylvania Emergency Management Agency. One of the most significant outcomes of PEMA’s participation on the team is the integration of hazard mitigation goals and objectives into the comprehensive land use planning process.
- The **Pennsylvania Erosion and Sediment Control Code** requires all earthmoving projects in the Commonwealth to develop an erosion and sediment pollution control plan to ensure that proper site development practices are employed for land development and implement best management practices for the control of sediment pollution during construction. Pennsylvania DEP requires a National Pollution Discharge Elimination System (NPDES) permit for earthmoving activities exceeding one acre. As well as erosion and sediment pollution control during construction, the permit also addresses post-construction stormwater management.

Regional/County Document Review

- **Alleghenies Ahead – Comprehensive Plan for the Southern Alleghenies Region** was completed and adopted in June 2018. A comprehensive plan is a policy document identifying community goals and objectives for future growth and development. The Southern Alleghenies Planning and Development Commission (SAP&DC) and the six Planning Directors of the Southern Alleghenies counties consolidated and coordinated for the regional comprehensive planning requirements. In addition, sixteen municipalities within Huntingdon County have adopted a municipal comprehensive plan.
- The **Southern Alleghenies Long Range Transportation Plan, 2017**, guides the region’s planning for a 20-year horizon. Huntingdon County and the remaining southern Allegheny region counties decided to work on joint planning efforts as they exist in a highly integrated region.
- **Southern Alleghenies Greenways and Open Space Network Plan, 2007**, provides recommendations for achieving a balance between natural resources and the built environment

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in the Southern Allegheny region. This plan looks at land resources and identifies areas offering opportunities for preserving and protecting natural resources.

- After FEMA provides a municipality with regulatory flood hazard information, they are required to adopt a **floodplain ordinance** that meets or exceeds the minimum NFIP requirements in order to participate in the NFIP. The purpose of these overriding regulations is to ensure that participating communities take flood hazard data into account when acting on land management and use. Floodplain ordinances in Huntingdon County are included in individual municipalities' zoning ordinances. More on floodplain ordinances administration can be found below in *Section 5.2.1.2*.
- **Zoning and Subdivision regulations** are administered similarly through the **Zoning Ordinance**, which specifies the types of development that can occur in particular locations. Ten municipalities in Huntingdon County have adopted zoning ordinances under the guide of the Model Zoning Ordinance prepared by the Huntingdon County Office of Planning and Development.
- **Subdivision regulations** further specify how development can occur. There are 31 municipalities in Huntingdon County that have adopted Subdivision Regulations.
- Adoption and enforcement of **building codes** ensure that both residential and commercial structures are safe. Every municipality in Huntingdon County has adopted the 2009 International Code Council (ICC) Family of Model Codes including the 2009 International Residential Code (IRC), with the exception of Birmingham Borough, Smithfield Township, and Spruce Creek Township.
- **Sediment and Erosion Control Regulations** is administered by the Huntingdon County Conservation District. For those municipalities that have their own subdivision ordinance regulations, the stormwater regulations are included in the subdivision ordinance. The level of enforcement of these regulations varies by municipality and is based on staff availability and technical capability. If a project requires a sediment and erosion control permit, a plan is required to be submitted. The Huntingdon County Conservation District also implements the **Dirt and Gravel Roads Program**, which provides funding for public roads that impact water quality within the County. The road drainage must reach a stream, lake, wetland, or water body in order to qualify.
- **Stormwater management regulations** provide for the conveyance of stormwater to decrease flooding. Huntingdon County adopted the Act 167 stormwater management plan for Muddy Run Watershed. Only five municipalities in Huntingdon County have adopted regulations for stormwater management.
- The **Huntingdon County Emergency Operations Plan** was completed and approved in 2015. Huntingdon County operates a separate 911 Center and an Emergency Operations Center (EOC). The 911 Center and the EOC have listings of resources available from County assets as well as resources available from the municipalities via mutual aid agreements for reciprocal emergency assistance as needed. The County also has many trained and qualified citizen volunteers that make up the Community Emergency Response Team (CERT). The Emergency Operations Plan (EOP) mentions the most likely and damaging hazards for the County to be winter storms, flooding, and drought. **Emergency Action Plans** have been prepared for high hazard dams located

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in Huntingdon County as well as those for which the inundation area includes part of Huntingdon County. Each Emergency Action Plan addresses ways to safeguard lives and reduce property damage within the inundation area; procedures for effective dam surveillance; procedures for prompt notification of emergency management officials; warning and evacuation procedures; and emergency response actions that will be taken in the event of potential or imminent failure of the dam. Plans are typically prepared by dam owners and are reviewed by Huntingdon County officials. Plans are not available to the public due to sensitive information.

- **Act 165: Hazardous Materials Emergency Planning and Response Act**, amended in 2001, established a Statewide hazardous materials safety program. This created the Hazardous Materials Response Fund, county Hazardous Material Emergency Response Accounts, and further provided duties to PEMA and the Pennsylvania Emergency Management Council. This Act requires facilities with extremely hazardous chemicals on hand to create Off-site Emergency Response Plans, which are then presented to Local Emergency Planning Committees. Huntingdon County has also teamed up with Eagle Hazmat to increase their response capabilities.
- A total of 45 **shelters** exist in the County, with 25 community shelters designated and maintained by the Red Cross. The shelters are widely dispersed throughout the County. All shelters follow the Red Cross guidelines for shelters and shelter management.

Local/Municipal Document Review

- A local **historic district ordinance** enables a community to regulate development in a specific, designated area of historic significance. Huntingdon Borough has adopted a historic district ordinance.
- The **Raystown Lake Master Plan**, adopted in 2019, provides strategic land use management for all recreational, natural, and cultural resources at Raystown Lake. This includes water quality monitoring, shoreline erosion and sedimentation, and utility corridors.



5.2.1.2. Participation in the National Flood Insurance Program

The Pennsylvania Floodplain Management Act (Act 166 of 1978) requires every municipality identified by the Federal Emergency Management Agency (FEMA) to participate in the NFIP and permits all

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municipalities to adopt floodplain management regulations. It is in the interest of all property owners in the floodplain to keep development and land usage within the scope of the floodplain regulations for their community. This helps keep insurance rates low and makes sure that the risk of flood damage is not increased by property development.

Of the municipalities in Huntingdon County, 45 of 48 participate in the NFIP. Table 5.2.1-1 shows NFIP participation status for each municipality, the number of policies, whether the municipality is in good standing, and when they entered the NFIP. Shade Gap Borough has never participated in the NFIP and flood studies have never identified a flood hazard area in this municipality. Broad Top City Borough and Cassville Borough do participate in the NFIP, despite having no identified flood hazard areas. Lincoln Township and Birmingham Borough have never participated in the NFIP despite having identified flood hazard areas (FEMA, 2014).

MUNICIPALITY	DATE ENTERED THE NFIP	# POLICIES	IS THE COMMUNITY IN GOOD STANDING?
Alexandria Borough	2/1/1980	35	Yes
Barree Township	9/10/1984	0	Yes
Birmingham Borough	Not Participating		
Brady Township	2/17/1989	3	Yes
Broad Top City Borough*	7/21/1978	0	Yes
Carbon Township	6/19/1989	2	Yes
Cass Township	11/1/1985	1	Yes
Cassville Borough*	7/10/2012	0	Yes
Clay Township	8/16/1988	2	Yes
Coalmont Borough	8/3/1989	1	Yes
Cromwell Township	12/4/1985	4	Yes
Dublin Township	12/4/1985	2	Yes
Dudley Borough	9/24/1984	2	Yes
Franklin Township	2/17/1989	13	Yes
Henderson Township	8/3/1989	17	Yes
Hopewell Township	8/15/1989	4	Yes
Huntingdon Borough	9/29/1978	90	Yes
Jackson Township	8/3/1989	9	Yes
Juniata Township	2/17/1989	2	Yes
Lincoln Township	Not Participating		
Logan Township	8/3/1989	5	Yes
Mapleton Borough	7/5/1977	4	Yes
Marklesburg Borough	7/5/2018	0	Yes
Mill Creek Borough	3/2/1989	4	Yes
Miller Township	3/2/1989	2	Yes
Morris Township	7/2/2018	2	Yes
Mount Union Borough	7/18/1977	22	Yes

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Table 5.2.1-1 NFIP Participation in Huntingdon County (FEMA CIS, 2020).			
MUNICIPALITY	DATE ENTERED THE NFIP	# POLICIES	IS THE COMMUNITY IN GOOD STANDING?
Oneida Township	3/2/1989	2	Yes
Orbisonia Borough	12/31/1982	0	Yes
Penn Township	11/15/1985	2	Yes
Petersburg Borough	8/15/1989	3	Yes
Porter Township	3/16/1981	30	Yes
Rockhill Borough	7/3/1990	10	Yes
Saltillo Borough	10/15/1985	3	Yes
Shade Gap Borough*	Not Participating		
Shirley Township	8/15/1989	13	Yes
Shirleysburg Borough	4/15/1986	0	Yes
Smithfield Township	3/15/1977	11	Yes
Springfield Township	12/4/1985	1	Yes
Spruce Creek Township	3/2/1989	8	Yes
Tell Township	6/11/1982	5	Yes
Three Springs Borough	10/1/1982	2	Yes
Todd Township	8/15/1989	2	Yes
Union Township	3/2/1989	2	Yes
Walker Township	9/10/1984	8	Yes
Warriors Mark Township	3/2/1989	12	Yes
West Township	12/4/1985	5	Yes
Wood Township	11/1/1985	1	Yes
<i>*No identified SFHAs</i>			

The NFIP’s Community Rating System provides discounts on flood insurance premiums in those communities that establish floodplain management programs that go beyond NFIP minimum requirements. Under the CRS, communities receive credit for more restrictive regulations; acquisition; relocation, or flood-proofing of flood-prone buildings, preservation of open space; and other measures that reduce flood damage or protect the natural resources and functions of floodplains.

The CRS was implemented in 1990 to recognize and encourage community floodplain management activities that exceed the minimum NFIP standards. Section 541 of the 1994 Act amends Section 1315 of the 1968 Act to codify the CRS in the NFIP and expands the CRS goals to specifically include incentives to reduce the risk of flood-related erosion and to encourage measures that protect natural and beneficial floodplain functions. These goals have been incorporated into the CRS, and communities now receive credit toward premium reductions for activities that contribute to them.

Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet a minimum of three of the following CRS goals:

- Reduce flood losses

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- Reduce damage to property
- Protect public health and safety
- Prevent increases in flood damage from new construction
- Reduce the risk of erosion damage
- Protect natural and beneficial floodplain functions
- Facilitate accurate insurance rating
- Promote the awareness of flood insurance

There are 10 CRS classes that provide varied reduction in insurance premiums. Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction. CRS premium discounts on flood insurance range from 5 percent for Class 9 communities up to 45 percent for Class 1 communities. The CRS recognizes 18 creditable activities that are organized under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness. There are no CRS municipalities in Huntingdon County.

The HMPT used FEMA's NFIP Worksheet to understand local implementation of the NFIP. Results of this worksheet showed that municipalities engage in the NFIP in several ways. Smithfield Township's ordinance exceeds FEMA and State minimums by prohibiting production or storage of chemicals in the SFHA and regulating auxiliary structures. Walker Township enforces its floodplain ordinance through a third-party state code inspection service and does not allow construction in the SFHA. Warriors Mark Township administers the NFIP through permit review, inspections, and collection of elevation certificates.

For communities to participate and purchase flood insurance through the NFIP, all minimum requirements must be in place. The decision about a structure being "substantially damaged" is made at the local government level, generally by a building official or floodplain manager. Substantial damage applies to a structure in the SFHA for which the total cost of repairs is 50 percent or more of the structure's market value before the disaster occurred, regardless of the cause of damage. This percentage could vary among jurisdictions but must not be below NFIP standards. Preliminary damage assessments conducted by Huntingdon County after a disaster (as discussed in Section 5.2.1.1) can be used when making substantial damage determinations. If a building within the floodplain is determined to be substantially damaged after a disaster, it will need to be brought into compliance through methods such as elevating the structure and floodproofing utilities. This should be monitored by the local community in order to stay in compliance with the NFIP.

5.2.2. Administrative and Technical Capability

A variety of administrative capabilities are established in Huntingdon County and its jurisdictions. These capabilities can support the implementation of mitigation actions that are proposed in this Plan. These capabilities are:

- **The Huntingdon County Planning and Development Department** makes recommendations to the governing body on a number of issues, including zoning, subdivision/land development and

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comprehensive planning. The Department administers a zoning ordinance for 22 municipalities within the county and administers the subdivision/land development ordinance for 28 municipalities and also reviews subdivision/land development plans for all municipalities within the County, including those over which the County does not have control.

- The **Circuit Rider Program** is an example of intergovernmental cooperation. This program offers municipalities the ability to join together to accomplish a common goal. The Circuit Rider is a municipal engineer who serves several small municipalities simultaneously. These are municipalities that may be too small to hire a professional engineer for their own operations yet need the skills and expertise the engineer can offer. Municipalities can jointly obtain what no single municipality could obtain on its own. Currently, only state-funded Circuit Rider Programs are offered through the PA Department of Conservation and Natural Resources Partnerships Program and the PA Department of Environmental Protection's Circuit Rider Program for Water and Wastewater Facilities.
- **The Huntingdon County Emergency Management Agency** is responsible for protection of the County's public health, safety and environment, and management through and recovery from natural disasters, emergencies or threats to security. The EMA also contains a **Local Emergency Planning Committee (LEPC)** which is responsible for overseeing the Hazardous Materials Response Account and approving Off-site Emergency Response Plans. The LEPC is comprised of the County emergency management coordinator, a hospital emergency management coordinator, local government representative, firefighter, PEMA Central Area representative, and emergency management personnel, among others.
- **The Huntingdon County Office of Community Development** is entrusted with the provision of decent housing, a suitable living environment, and expanded economic opportunities that will improve the quality of life of County residents. The Office of Community Development administers three Federally funded Housing and Urban Development (HUD) programs:
 - **Community Development Block Grant Program (CDBG)** - community development activities directed toward revitalizing neighborhoods, economic development, and providing improved community facilities and services. CDBG funds may be used for activities such as acquisition of real property; relocation and demolition; rehabilitation of residential and non-residential structures; and construction of public facilities and improvements to facilities such as water, sewer, and streets.
- **The Huntingdon County Conservation District (HCCD)** strives to conserve natural resources in Huntingdon County through public awareness, technical assistance, and encouraging regulatory compliance. It works closely with property owners, public and private organizations and citizens to increase their responsibility to the natural environment.
 - The HCCD maintains the County's **Agricultural Security Areas (ASA)** under the Farmland Preservation Program. There are ASAs established in 19 municipalities within Huntingdon County.
- **The Huntingdon County Economic Development Task Force** was developed in 2000 to encourage economic development within the County. The Task Force developed the

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Comprehensive Economic Analysis for Huntingdon County, adopted in 2003, to provide measurable objectives and economic development planning in the County.

- The **Southern Alleghenies Planning and Development Commission (SAP&DC)** promotes economic and community development within the six west-central Pennsylvania counties, including Huntingdon County. As part of the Alleghenies Ahead, the Regional Comprehensive Plan, the **Regional Broadband Task Force** was established. There is a great need for broadband support and improvement across all six counties, and the Task Force aims to provide an affordable and reliable network implementation for businesses and residents in these counties.
- The **Susquehanna River Basin Commission** works to enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin. To accomplish this mission, the Commission works to reduce damages caused by floods; provide for the reasonable and sustained development and use of surface and ground water for municipal, agricultural, recreational, commercial and industrial purposes; protect and restore fisheries, wetlands and aquatic habitat; protect water quality and instream uses; and ensure future availability of flows to the Chesapeake Bay.
- Huntingdon County Emergency Management Agency is the coordinating agency for three **flood warning systems** along the Juniata River and Aughwick Creek. These digital flood monitoring systems also contain cameras and monitor flows for these rivers and streams. This program is in partnership with PEMA and the Susquehanna River Basin Commission.
- Huntingdon is a certified **StormReady Community** by the National Weather Service and the Pennsylvania Eastern Region Storm Ready Advisory Board. The Storm Ready program was established to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. By participating in this program, local agencies can earn recognition for their jurisdiction by meeting the guidelines established by the National Weather Service in partnership with Federal, State, and local emergency management professionals.
- Huntingdon County administers a comprehensive GIS database for the entire County, and the Huntingdon County Mapping Department provides mapping and development data retrieval capabilities.
 - The SAP&DC provides a **Geographic Information Systems (GIS) Program** to local governments within the six-county region with reliable and effective GIS data.

5.2.3. Financial Capability

A critical key to the implementation of any plan is the financial resources to accomplish the priority projects identified. The implementation of mitigation actions requires time and fiscal resources. While some mitigation actions are less costly than others, it is important that money is available locally to implement policies and projects. Financial resources are particularly important if communities are trying to take advantage of state or federal mitigation grant funding opportunities that require local-match contributions. Based on the *Capability Assessment Survey* results received, most municipalities within the County perceive fiscal capability to be limited; however, two communities listed their capability to be moderate.

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Support for mitigation planning actions is provided by the Commonwealth of Pennsylvania and the Federal Government. Programs that complement Huntingdon County mitigation planning initiatives are:

- Pennsylvania administered programs including:
 - **Shared Municipal Services**, which provides grant funds to promote cooperation among municipalities.
 - **Land Use Planning and Technical Assistance Program**, which provides grant funds for the preparation of community comprehensive plans and ordinances to implement them.
 - **Floodplain Land Use Assistance Program**, which provides grants and technical assistance to improve management of floodplain lands.
 - **Community Revitalization Program**, which provides grant funds to support local initiatives that promote social and economic diversity to ensure a productive tax base and good quality of life.
 - **Growing Greener** is a State program that addresses critical environmental concerns. Projects include farmland preservation projects; protection of open space; restoration of watersheds; funding for recreational trails and local parks; land use; and provision of new and upgraded water and sewer systems. Projects of special interest include those that implement stormwater management. Recognizing that there was great similarity between the goals of the Hazard Mitigation Grant Program and Growing Greener, PEMA and the Department of Environmental Protection entered into a cooperative agreement in which Growing Greener funding would be used to pay the non-federal share for HMGP projects that resulted in creating open space. This infusion of funds provides financial leverage for the Commonwealth's property acquisition program, the goal of which is to return the floodplain to its natural function.

- Federal Government programs including the:
 - **Hazard Mitigation Assistance Programs**, which provide grants for cost-effective mitigation projects either in the absence of a disaster or after a disaster declaration has occurred:
 - Pre-Disaster Mitigation Assistance Program (PDM)
 - Flood Mitigation Assistance Program (FMA)
 - Hazard Mitigation Grant Program (HMGP)
 - **Community Development Block Grants**, which provides funds to address a wide range of community development needs.
 - **Small Communities Program Fund**, which supports water quality infrastructure projects.
 - **Weatherization Assistance Program**, which enables low-income households to make their homes more energy efficient.
 - **Firewise Communities** Program, which involves homeowners and community leaders in protecting structures from fire damage.

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In addition, the SAP&DC provides investments and grant assistance services to all six counties in the region. Specifically, they provide assistance with applications to the **Economic Development Administration (EDA)** and the **Appalachian Regional Commission (ARC)**.

5.2.4. Education and Outreach

Education and outreach programs and methods are used to implement mitigation activities and communicate hazard-related information. Examples include fire safety programs that fire departments deliver to students at local schools; participation in community programs, such as Firewise Communities Certification or StormReady Certification; and activities conducted as part of hazard awareness campaigns, such as Hurricane Preparedness Week. Some communities have their own public information or communications office to handle outreach initiatives.

Reported education and outreach activities in Huntingdon County are summarized as follows:

- Huntingdon County disseminates critical information via the Ping4alerts! emergency communications platform. This system is designed to contact specific people or areas in the event of an emergency or for sharing important information directly on devices. The Huntingdon County Emergency Management Agency will use this system to alert citizens of information regarding their safety, or the safety of their property. The system can make thousands of calls, send thousands of text messages and emails per minute to convey vital information. These messages may include information on floods, fires, water emergencies, evacuation orders, and weather emergencies. Residents can download an app or register a cellular phone number online. Huntingdon County also utilizes AlertPA to deliver emergency and state government alerts.
- The **Southern Alleghenies Long Range Transportation Plan** included a **Public Participation Plan**, which was updated in March 2016. The plan includes a description of public participation to date and a large section describing participation tools and techniques that can help with transportation planning. This Public Participation Plan demonstrates the Southern Alleghenies Rural Planning Organization's ongoing efforts to provide timely and meaningful opportunities for public involvement in the transportation planning and decision-making process. These strategies and techniques can be implemented throughout the hazard mitigation planning process as well.
- Huntingdon County hosted a **Floodplain Ordinance Update Workshop** facilitated by the Pennsylvania Municipal League on February 26, 2018.
- Alexandria Borough implemented their own communication platform, the CodeRED Community Notification System, to broadcast community events, emergencies, and flooding events to Borough residents.
- The Huntingdon County Citizen Corps was first established to increase volunteerism within the community. Volunteers are trained in first aid and to support local emergency responders,

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disaster relief, and community safety. Furthermore, the Huntingdon County Community Emergency Response Teams (CERT) provides courses and trainings through the Huntingdon County Citizens' Corps Council. CERT also provides schedule, resources, and important policy information to the County.

- Huntingdon County Emergency Management Agency staff also conducts public outreach throughout the year to share hazard preparedness, trainings, and safety information. Staff attends various PEMA and FEMA trainings and events. Staff also works with residents one-on-one on an as-needed basis to answer questions about mitigation projects and grants.

5.2.5. Plan Integration

Plan integration ensures that hazard mitigation planning is woven into each municipality's planning and regulatory documents. These include the plans, policies, codes, and programs that guide land use and development. Effective integration of hazard mitigation occurs when the planning framework fosters development that does not increase risks from known hazards or leads to redevelopment that reduces risk from known hazards (FEMA, 2013).

While not all regulatory tools are relevant to every municipality in Huntingdon County, each municipality should evaluate what tools are available to them related to their vulnerability identified in this MJHMP. Communities should continue to review and revise building codes, zoning ordinances, floodplain ordinances, and subdivision and land development ordinances with respect to the findings in the 2020 MJHMP risk assessment. For example, a municipality could revise its zoning ordinance to restrict the density of new development in hazard-prone areas or guide development away from these areas. Some tools may also be useful for addressing multiple hazards in these municipalities; for example, the presence of a stormwater management plan would greatly enhance mitigation capabilities needed to address both flood and transportation hazards.

As mentioned above, Huntingdon County adopted its Comprehensive Plan in June 2018. The plan identifies an action plan for each county within the Southern Alleghenies. For Huntingdon County, these actions include evaluating opportunities for shared services, consolidation, and potential effectiveness of a Council of Governments (COG), outreach and education, and establishing a matching grant program to incentivize inter-municipal agreements and service sharing. The plan also outlines actions to improve business and workforce development. These actions include strengthening locally owned farm by developing educational/training programs for farmers to learn about new technologies and collaborating with Juniata College and County school districts to begin a shadow program with local businesses and students. The Huntingdon County Planning and Development Department recognizes the importance of plan integration and will develop more ways to integrate this Hazard Vulnerability Assessment and Mitigation Plan Update into the next update of the Regional Comprehensive Plan.

The Southern Alleghenies region developed a Regional Greenways and Open Space Network Plan. The plan's goals are to conserve important natural resources, expand recreation opportunities, celebrate cultural heritage, bolster economic development, increase pedestrian and bicycle mobility, and promote healthy lifestyles. The purpose of the plan is to establish specific priorities for conserving open spaces such

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as farms, forests, community parks and waterbodies and for creating future greenway corridors within the region.

The Huntingdon County Emergency Operations Plan embraces an “all-hazards” principle. Most emergency response functions are similar, regardless of the hazard, and the EMC is required to mobilize functions and personnel as required by the emergency. This plan mentions that mitigation opportunities will be considered throughout disaster operations. Implementation includes a combination of conservation tools including land management plans and easements; regulatory methods like density transfers, zoning overlays, buffer zones, and subdivision exactions, and land acquisition made possible through donation and purchase, and purchase of development rights. These principles must be encouraged.

Based on the capability assessment results and information from the Huntingdon County Emergency Management Agency, all of Huntingdon County’s jurisdictions have some forms of local land use controls. As will be discussed in Section 6.1, upon review of the 2015 mitigation actions, it was determined that a few municipalities completed mitigation actions that achieve plan integration by furthering hazard mitigation goals through land development regulations.

Some other land use tools in municipalities have not been updated recently. As municipalities work to update comprehensive plans and land use ordinances, local governments can go further to use land use regulations to direct development away from hazard-prone areas.

A barrier to plan integration is often the lack of resources to accomplish activities that plan integration requires. Several municipalities noted on the *Capability Assessment Surveys* that lack of financial resources precludes development of some planning tools. The Self-Assessment portion of the survey provided each municipality an opportunity to conduct its own self-assessment of its capability to effectively implement hazard mitigation activities. As part of this process, County and municipal officials were encouraged to consider the barriers to implementing proposed mitigation strategies in addition to the mechanisms that could enhance or further such strategies. In response to the survey questionnaire, local officials classified each of the capabilities as either “limited,” “moderate,” or “high.” Table 5.2.5-1 summarizes the results of the self-assessment survey as a percentage of responses received. With available resources being limited and stretched into the foreseeable future, plan integration is extremely relevant and will help leverage existing resources to the maximum extent possible.

CAPABILITY CATEGORY	LIMITED	MODERATE	HIGH
Planning & Regulatory	40%	30%	30%
Administrative & Technical	70%	10%	20%
Financial	70%	20%	10%
Community Political	80%	10%	10%
Education & Outreach	80%	20%	0%

6. Mitigation Strategy

6.1 Update Process Summary

The mitigation strategy serves as the long-term road map to reduce the potential losses, vulnerabilities, and shortcomings identified in the Hazard Identification and Risk Assessment section. A typical mitigation strategy includes a list of goals and objectives, with mitigation actions to address the goals and objectives, that are then prioritized, based on the community’s need.

Goals are long-term aspirations about the resiliency of the community given the potential effects of hazards. **Objectives** are measurable strategies that the Huntingdon County community has determined will be necessary to move closer to attaining each goal. **Actions** are the tasks that are proposed for realizing each objective.

There were 5 goals identified in the 2015 Huntingdon County Multi-Jurisdictional Hazard Mitigation Plan Update. The 2015 Plan did not identify any objectives for each goal, and therefore, objectives could not be reviewed. Goals were presented to the HMPT during the March 5, 2020 kick-off meeting and new objectives were created. The HMPT review of the goals and objectives is included in Table 6.1-1.

Table 6.1-1 List of 2015 mitigation strategy goals.
<p>Goal 1: Strengthen County and municipal capabilities to reduce the potential impacts of flooding on existing and future public/private assets, including structures, critical facilities, and infrastructure.</p>
<p>Goal 2: Increase intergovernmental cooperation and build public/private partnerships to implement activities that will reduce the impact of natural, man-made, and technological hazards.</p>
<p>Goal 3: Enhance planning and emergency response efforts among state, county, and local emergency management personnel to protect public health and safety.</p>
<p>Goal 4: Continue to build Huntingdon County’s spatial information resources to strengthen public and private hazard mitigation planning and decision-support capabilities.</p>
<p>Goal 5: Increase public awareness on both the potential impacts of natural hazards and activities to reduce those impacts.</p>

Mitigation actions have been carried over and developed for the County as well as for each participating jurisdiction. While some actions may be more general in nature and could apply to more than one jurisdiction, most actions are specific to individual jurisdictions. The mitigation actions that were developed were based on the following: issues identified in the Hazard Identification and Risk Assessment, gaps identified in the mitigation capability analysis, input from the HMPT, and feedback from the Risk Assessment and Mitigation Solutions Workshops held on May 13, May 20, and May 26, 2020. These

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mitigation actions may be implemented through a variety of local tools such as: changes in ordinances and policies, inclusion into capital improvements budgets, and grant funding.

County and Municipal actions in the 2015 Plan were distributed prior to the May 2020 Mitigation Solutions workshops for review and update. Each action has been assigned one of the following categories:

- “Completed” – Actions that were completed since the adoption of the 2008 Plan
- “Cancelled” – Actions that were terminated.
- “Deferred” – Actions that had not been initiated since the adoption of the 2015 Plan
- “On-Going” – Actions that are performed on a regular and continuous basis by the department

The majority of existing mitigation actions have been carried over into the 2020 MJHMP as they are continuous actions or actions that were not completed, but that the County or municipalities would like to continue into the 2020 MJHMP Update so that they can work to complete them over the next five years (i.e. “deferred actions”). A list of these actions as well as a review and summary of their progress based on comments received from stakeholders involved in the plan update process is included in Table 6.1-2. Actions were evaluated by the HMPT and municipal officials with the intent of producing a usable mitigation action plan in 2020 with actions and projects that could be completed over the next five years. **Appendix C** contains a summary of responses provided by municipalities to the *Mitigation Action Progress Report Form*.

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA, Private Sector	1	All hazards	Ensure all applicable private industrial, commercial, and public utility service providers have a current Environmental Emergency Response Plan per the Federal Clean Water Act, the Pennsylvania Clean Streams Law (35 P.S. §§691.1-691.1001), the Pennsylvania Solid Waste Management Act, the Pennsylvania Storage Tank Act, the Oil Pollution Act and regulations promulgated thereunder.				X
Huntingdon County EMA, PSU County Extension Agency, PDA	2	Pandemic	Strengthen the County's domestic animal health surveillance by familiarizing the Huntingdon County agricultural community with the list of reportable diseases and conditions related to animal health per the Office of International Epizootics (OIE) and the Pennsylvania Domestic Animal Act (Act 100 of 1996).			X	
SCMCTTF, PA DOH, PEMA, Seven Mountains EMS Council, Southern Alleghenies EMS Council	3	Terrorism	Continue to work with the Pennsylvania Department of Health and the Pennsylvania Emergency Management Agency to implement a Strategic National Stockpile Plan for Huntingdon County and the South Central Mountain Counter Terrorism Task Force (SCMCTTF).				X
Huntingdon County EMA	4	Hazardous Materials Release	Maintain the County's Commodity Flow Study to Ensure the County Planning Commission, Local Emergency Planning Committee (LEPC), first responders, and local officials understand the types, frequencies, and amounts of hazardous materials being transported through its borders.	X			
Huntingdon County EMA	5	Flood	Ensure all County GIS staff receive regular HAZUS training from EMI.				X
Huntingdon County EMA, PSU Extension Agency	6	All hazards	Continue to work with the County's agricultural community to develop and implement the County Animal Response Team (CART) to strengthen the County's comprehensive emergency management program.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA, SCMCTTF	7	All hazards	National Incident Management Systems (NIMS) training for first responders.				X
Huntingdon County EMA, County Commissioners, County PC, HMPO	8	All hazards	Integrate the 5-year maintenance cycle of the Hazard Mitigation Plan with both the 10-year and biennial review and maintenance cycles of the County Comprehensive Plan and County Regional Emergency Operations Plan, respectively.				X
PADEP, County Commissioners, County PC, County Conservation District	9	Flood	Prepare Act 167 Stormwater Management Plans for the DEP-designated stormwater management watersheds draining in Huntingdon County.				X
Local Municipalities	10	Flood	Prepare and enact stormwater management ordinances consistent with Act 167 Stormwater Management Plans.				X
Huntingdon County PC, Local Municipalities	11	All hazards	Ensure County and municipal subdivision and land development ordinances are consistent with Chapter 102 Erosion & Sedimentation Control requirements.				X
County Commissioners	12	All hazards	Consider adopting a Countywide, post-disaster recovery and reconstruction ordinance using the model ordinance included in the APA/FEMA PAS Report No. 483/484.				X
Huntingdon County EMA, County PC, Local Elected Officials	13	All hazards	Complete critical infrastructure facilities assessment and incorporate into a GIS dataset.				X
County Commissioners	14	All hazards	Prepare and implement a Continuity of Government Plan for the Huntingdon County Government.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
County Commissioners, County PC, and Local Elected Officials	15	All hazards	Maintain a Countywide capital improvements plan to program, schedule, prioritize, and budget both County and municipal capital improvements.			X	
Recommended County Engineer Circuit Rider	16	Flood	Obtain first floor flood elevation data for the County's inventoried critical infrastructure and intersect this information with the base flood elevations to identify high risk facilities and formulate mitigation strategies.				X
Huntingdon County EMA, County Planning Department, Municipalities	17	Earthquake	Collect and analyze data on specific impacts earthquakes have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	18	Civil Disturbance	Collect and analyze data on potential locations for civil disorder and the specific impacts that a civil disorder would have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	19	Landslide	Collect and analyze data on specific impacts landslides have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	20	Wildfire	Collect and analyze data on specific impacts wildfires have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	21	Nuclear Incident	Collect and analyze data on specific impacts a nuclear accident would have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.			X	

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA, County Planning Department, Municipalities	22	Terrorism	Collect and analyze data on potential locations for terrorism and the specific impacts that an event would have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	23	Dam Failure, Flood	Collect and analyze data on the specific impacts a dam failure at the County's Lake Raystown Dam would have on the County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	24	Subsidence and Sinkholes	Collect and analyze data on specific impacts subsidence and sinkholes have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	25	Urban Fire and Explosion	Collect and analyze data on specific impacts urban fires have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	26	Tornado and Windstorm	Collect and analyze data on specific impacts tornados have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	27	Transportation Accidents	Identify high crash areas and other transportation sites throughout the County in need of improvements, analyze data for those sites and include it in the 5-year update of this Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	28	Drought	Collect and analyze data on specific impacts droughts have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	29	Winter Storm	Collect and analyze data on specific impacts severe winter weather has on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA, County Planning Department, Municipalities	30	Utility Interruption	Collect and analyze data on specific impacts power failures have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	31	Drought, Extreme Temperatures, Hailstorm, Hurricane, Tornado and Windstorm, Wildfire, Winter Storm	Collect and analyze data on specific impacts severe weather events have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Planning Department, Municipalities	32	Hurricane	Collect and analyze data on specific impacts hurricanes and tropical storms have on Huntingdon County and its municipalities to include in the 5-year update of the Hazard Mitigation Plan.				X
Huntingdon County EMA, County Commissioners, County PC, HMPO, and Local Elected Officials	33	Flood	Evaluate and refine the County's repetitive loss structures list by ranking properties based on the number of losses and the value of the claims paid and target the priority properties for buyout opportunities.			X	
Huntingdon County EMA, County PC, County Commissioners, Local Elected Officials	34	Flood	Encourage the County's National Flood Insurance Program (NFIP) communities to participate in the NFIP Community Rating System (CRS) and attain discount opportunities on flood insurance premiums.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA, County PC, DEP	35	Radon Exposure	Collaborate with the DEP Bureau of Radiation Protection to ensure the State's Radon Awareness Campaign and public service announcements are disseminated throughout Huntingdon County.				X
Huntingdon County EMA	36	Radon Exposure	Maintain and disseminate a list of DEP-certified radon testers, mitigators, and laboratories.				X
Huntingdon County EMA	37	Flood	Incorporate the County's Flood Warning and Response System (FWRS) Procedures into Emergency Support Function 2 (Communications and Warning) of the County's Regional EOP.	X			
Huntingdon County EMA	38	Flood	Conduct a flood study for Alexandria Borough.			X	
Huntingdon County EMA	39	Flood	Examine feasibility of jurisdictions to join the Community Rating System (CRS).				X
Huntingdon County EMA	40	Flood	Conduct a CRS workshop for communities to learn about CRS.			X	
Huntingdon County EMA	41	Flood	Encourage staff to become certified floodplain managers. Attend or host NFIP workshops for local officials.			X	
Huntingdon County EMA	42	Flood	Educate residents and business owners regarding NFIP insurance.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County EMA	43	Flood	Enhance situational awareness using smartphone (Android and iPhone) technologies to identify, map, and disseminate critical information related to flood conditions and to enhance rapid damage assessment capabilities.				X
Huntingdon County EMA, Planning Department	44	All hazards	Identify existing public structures that can be used as shelters (e.g. civil defense shelters)				X
Huntingdon County EMA, County Fire Chiefs' Association	45	Wildfire	Educate residents about wildfire defensible space practices.			X	
Huntingdon County EMA	46	Drought	Increase public awareness by including/updating drought information on website or brochures.				X
County Agriculture (PSU Extension)	47	Drought	Conduct workshops on crop survival and livestock management during droughts.			X	
Huntingdon County EMA	48	Drought	Develop a Countywide drought messaging campaign for use in the event of a drought watch or warning.			X	
Huntingdon County EMA	49	Earthquake	Develop/update literature to keep residents and business owners informed on how to seismically strengthen their homes and businesses.			X	
Huntingdon County EMA	50	Hailstorm, Tornado and Windstorm	Provide community outreach to residents on how to prepare for severe thunderstorms and hail.				X
Huntingdon County EMA, Planning Department	51	Landslide	Identify the locations and inventory critical facilities and other buildings or infrastructure that are vulnerable to landslides.			X	

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County Planning Department	52	Tornado and Windstorm	Review, update or adopt regulations governing construction to prevent wind damage.			X	
Huntingdon County, municipal and state government	53	Civil Disturbance, Urban Fire and Explosion	Provide training for police officers on how to deal with large violent crowds and explosives.				X
Huntingdon County, municipal and state government	54	Cyber Terrorism	Consistently back-up data and use/maintain anti-virus software.				X
Huntingdon County, municipal and state government	55	All hazards	Develop protective physical countermeasures for critical communications, power and IT infrastructure countywide for solar and hostile electromagnetic events.				X
Huntingdon County, municipal and state government	56	Hazardous Materials Release	Provide training for police officers and emergency personnel on how to deal with chemical, radiological or biological agents.				X
Huntingdon County, municipal and state government	57	All human-made hazards	Distribute educational information to residents on man-made hazards and how to prepare.				X
Huntingdon County and Municipal governments/response agencies	58	Cyber Terrorism, Terrorism	Purchase and maintain proper equipment to prevent, respond and recover from an attack.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Smithfield Township	59	Flood	Upgrade or reinforce manholes to prevent sewage flowing into the basements of homes during flooding events.	X			
Tell Township	60	Flood, Transportation Accidents	Streambank Restoration to prevent erosion of the subbase of highway.				X
Tell Township	61	Flood	Clean the stream channel of Tuscarora Creek of fallen trees and other debris, approximately 33 linear feet.			X	
Tell Township	62	Flood	Clean Narrows Branch of Tuscarora Creek of trees and brush.			X	
Spruce Creek Township	63	Flood	Remove flood causing debris from SR 4006 Union Furnace Road railroad bridge.			X	
Spruce Creek Township	64	Flood	Remove flood causing dirt under the small bridge on Route 45, at the intersection with Turnpike Road T512.			X	
Miller Township	65	Flood	Road level on Toner Camp Road needs to be raised to allow for access during flooding events.	X			
Three Springs Borough	66	Flood	Upgrade storm drains to help control flood waters.			X	
Three Springs Borough	67	Flood	Construct cement wall to prevent flooding of swimming pool.		X		

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Alexandria Borough	68	Flood	Alexandria Flood Control Project				X
Brady Township	69	Flood	Sadlers Creek bed clean up to prevent property damage along the creek.				X
Carbon Township	70	Flood	Natural Stream Design				X
Barree Township	71	Dam Failure, Flood	Stabilize dirt and gravel roads at Stone Valley Dam.				X
Carbon Township	72	Flood	Repair stream banks and road shoulders.		X		
Dudley Borough	73	Flood	Conduct a stormwater management study for levees and to improve waterways.				X
Coalmont Borough	74	Flood	Hydrologic study for stormwater detention area. Stabilization of Coalbank Run.	X			
Henderson Township	75	Dam Failure	Public warning system for Raystown Dam failure.		X		
Rockhill Borough	76	Flood	Levee repair.	X			

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon Borough	77	Winter Storm	Snow Melting Machine.		X		
Huntingdon Borough	78	Civil Disturbance, Cyber Terrorism, Terrorism	Automatic fingerprint machine.		X		
Jackson Township	79	Transportation Accidents	Road and bridge repair.				X
Jackson Township	80	Flood	Fire hall currently in the floodplain.		X		
Jackson Township	81	Winter Storm	Enhance snow removal (more plows).	X			
Logan Township	82	Flood	Debris removal from Juniata River (trash, not sedimentation).	X			
Logan Township	83	Winter Storm	Heavy Equipment.		X		
Logan Township	84	All hazards	Public alert system.		X		

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Mapleton Borough	85	All hazards	Public warning system.	X			
Mapleton Borough	86	Flood	Clean Scrub Run.				X
Mapleton Borough	87	Flood	Rouse road beds.				X
Marklesburg Borough	88	Flood	Clean storm drains.	X			
Marklesburg Borough	89	Flood	Update stormwater system.				X
Mill Creek Borough	90	All hazards	Public warning system.		X		
Mill Creek Borough	91	Flood	Debris removal.		X		
Petersburg Borough	92	All hazards	Public warning system.				X
Petersburg Borough	93	Flood	Clean and dredge streams.		X		

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Petersburg Borough	94	Winter Storm	Snow removal equipment.	X			
Porter Township	95	Flood	Stormwater management system.				X
Smithfield Township	96	All hazards	Public warning system.				X
Tell Township	97	Flood	Tuscarora Creek bank channel debris removal at Blairs Mill.			X	
Todd Township	98	Flood	Debris removal.				X
West Township	99	Flood	Road flooding.				X
Huntingdon County	100	All hazards	Countywide public warning system.				X
Huntingdon County	101	Dam Failure, Flood	Public warning system to alert municipalities downstream from Raystown Dam, which include Huntingdon Borough, Smithfield Township, Juniata Township, Henderson Township, Mill Creek Borough, Brady Township, Union Township, Mapleton Borough, Mount Union Borough, Shirley Township, and Shirleysburg Borough.				X

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Table 6.1-2 List and status of 2015 Mitigation Action Plan.							
Community	Action #	Hazard(s) Addressed	Mitigation Action	Status			
				Completed	Cancelled	Deferred	Ongoing
Huntingdon County	102	Civil Disturbance, Cyber Terrorism, Terrorism, Urban Fire and Explosion	Increase security at the County Courthouse, allow for public entrance in the front of the building and prison entrance in the back of the building. Enlarge EOC and create a 911 center.	X			
Huntingdon County	103	Flood	Replacement of storm water management system currently in disrepair and construction of terra-cotta infrastructure in Petersburg Borough.		X		

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Table 6.1-2 above indicates that progress has been made on a number of mitigation actions since the 2015 Plan. The Huntingdon County Emergency Management Agency (EMA) installed an emergency alert system directly from the EMA office. This new alert system can communicate to the entire County in just one text. Furthermore, Huntingdon County EMA also incorporated the County’s Flood Warning and Response System (FWRS) Procedures into the emergency support function of the County’s Regional Emergency Operations Plan. Recently, the Planning and Development Department collaborated with the U.S. Army Corps of Engineers to complete floodplain mapping for Muddy Run in Huntingdon Borough. Nearly 200 buildings in Huntingdon Borough are located within the 1-percent-annual floodplain.

In addition, a few municipalities completed mitigation activities between the 2015 and 2020 MJHMP Updates that aimed to further hazard mitigation goals through land development regulations, as discussed in Section 5.2.5.

6.2 Mitigation Goals and Objectives

Based on results of the review of the mitigation goals established in 2015, one new goal and all objectives were adopted in 2020. Table 6.2-1 shows the mitigation goals and objectives established for the 2020 Plan. There are 6 goals and 23 objectives identified.

GOAL 1	Strengthen County and municipal capabilities to reduce the potential impacts of flooding on existing and future public/private assets, including structures, critical facilities, and infrastructure.
Objective 1.1	Protect existing structures in the Special Flood Hazard Area.
Objective 1.2	Promote the continual purchase of flood insurance by property owners in flood hazard areas.
Objective 1.3	Develop a comprehensive approach for reducing the possibility of damage to and loss of function at critical facilities located in the Special Flood Hazard Area.
Objective 1.4	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property.
Objective 1.5	Maintain streams and culverts to reduce back-up and flooding.
GOAL 2	Increase intergovernmental cooperation and build public/private partnerships to implement activities that will reduce the impact of natural, man-made, and technological hazards.
Objective 2.1	Improve hazard mitigation awareness and response for the private sector of Huntingdon County.
Objective 2.2	Maintain open lines of communication between the County and the municipalities regarding hazard mitigation.
Objective 2.3	Discuss partnering opportunities with private entities.
GOAL 3	Enhance planning and emergency response efforts among state, county, and local emergency management personnel to protect public health and safety.

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Table 6.2-1 List of 2020 mitigation strategy goals and objectives.	
Objective 3.1	Improve coordination and communication between departments and private industry.
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
Objective 3.3	Ensure adequacy of equipment and technology.
Objective 3.4	Ensure that residents receive relief and are evacuated as quickly as possible in the event of a disaster.
Objective 3.5	Continue to foster development of information and resources for subsequent Hazard Mitigation Plans.
GOAL 4	Continue to build Huntingdon County’s spatial information resources to strengthen public and private hazard mitigation planning and decision-support capabilities.
Objective 4.1	Develop data management policies to ensure adequate data management.
Objective 4.2	Develop and update detailed databases related to hazards and hazard mitigation.
GOAL 5	Increase public awareness on both the potential impacts of natural hazards and activities to reduce those impacts.
Objective 5.1	Develop public and business education and outreach programs on hazards and hazard mitigation.
Objective 5.2	Educate property owners in hazard-risk areas regarding their risks and precaution measures that can be taken.
Objective 5.3	Increase public awareness of the presence of the spotted lanternfly within Huntingdon County.
GOAL 6	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to High Hazard Potential Dams (HHPD).
Objective 6.1	Promote partnerships between the municipalities, the County, and the U.S. Army Corps of Engineers to develop a comprehensive approach to reducing the possibility of losses due to dam failures.
Objective 6.2	Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard and inundation areas.
Objective 6.3	Continue to provide consistent enforcement of ordinances and codes.
Objective 6.4	Develop an effective public awareness program for potential failure of HHPDs.

6.3 Identification and Analysis of Mitigation Techniques

The mitigation strategy in the updated Hazard Vulnerability Assessment and Mitigation Plan Update should include analysis of a comprehensive range of specific techniques or actions. FEMA, through the March 2013 Local Mitigation Handbook, and PEMA, through the October 2013 Standard Operating Guide (SOG), identify four categories of hazard mitigation techniques.

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- **Local plans and regulations:** Government authorities, policies, or codes that influence the way land and buildings are developed and built. Examples include, but are not limited to: comprehensive plans, subdivision regulations, building codes and enforcement, and NFIP and CRS.
- **Structure and infrastructure:** Modifying existing structures and infrastructure or constructing new structures to reduce hazard vulnerability. Examples include, but are not limited to: acquisition and elevation of structures in flood prone areas, utility undergrounding, structural retrofits, floodwalls and retaining walls, detention and retention structures, and culverts.
- **Natural systems protection:** Actions that minimize damage and losses and also preserve or restore the functions of natural systems. Examples include, but are not limited to: sediment and erosion control, stream corridor restoration, forest management, conservation easements, and wetland restoration and preservation.
- **Education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate the hazards, and may also include participation in national programs. Examples include, but are not limited to: radio or television spots, websites with maps and information, provide information and training, NFIP outreach, StormReady, and Firewise Communities.

The HMPT reviewed the four types of mitigation techniques and examples of actions at the Risk Assessment and Mitigation Solutions Workshops. Table 6.3-1 provides a matrix identifying the mitigation techniques used for each hazard in the County. The specific actions associated with these techniques are included in Table 6.4-1.

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6.3-1 Mitigation techniques used for the hazards in Huntingdon County.				
HAZARD	MITIGATION TECHNIQUE			
	LOCAL PLANS AND REGULATIONS	EDUCATION AND AWARENESS PROGRAMS	NATURAL SYSTEMS PROTECTION	STRUCTURAL AND INFRASTRUCTURE PROJECTS
Civil Disturbance	✓	✓		✓
Cyber Terrorism	✓	✓		✓
Dam Failure	✓	✓		✓
Drought	✓	✓		✓
Extreme Temperatures	✓	✓		✓
Environmental Hazards – Hazardous Materials Release	✓	✓	✓	✓
Flood, Flash Flood, Ice Jam	✓	✓	✓	✓
Hailstorm	✓	✓		✓
Hurricane, Tropical Storm, Nor'easter	✓	✓		✓
Invasive Species	✓	✓		✓
Landslide	✓	✓	✓	✓
Pandemic and Infectious Disease	✓	✓		✓
Subsidence and Sinkhole	✓	✓		✓
Terrorism	✓	✓		✓
Tornado and Windstorm	✓	✓		✓
Transportation Accidents	✓	✓	✓	✓
Urban Fire and Explosion	✓	✓	✓	✓
Utility Interruption	✓	✓	✓	✓
Wildfire	✓	✓	✓	✓
Winter Storm	✓	✓		✓

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6.4 Mitigation Action Plan

A kick-off meeting for the 2020 Huntingdon County MJHMP Update was held on March 5, 2020 to develop a framework for the Plan. The goals were presented during this meeting, and new objectives were created for each goal. During the Risk Assessment and Mitigation Solutions Workshops on May 13, May 20, and May 26, 2020, Mitigation Techniques were discussed using FEMA's *Mitigation Ideas* document. Prior to the workshops, municipalities were provided with their *Mitigation Action Progress Report Form* which listed their projects from the 2015 Plan. As described in Section 6.1 above, the municipalities were asked to review whether each project was completed, canceled, deferred, or is ongoing. Completed or canceled actions were not carried over to the 2020 Action Plan. In addition, many of the actions proposed by the previous version of the mitigation plan are again proposed for implementation.

Copies of the *Mitigation Action Progress Report Form* for each municipality can be found in **Appendix C**. In addition, participants were given *Mitigation Action Forms* to provide any new actions or projects to be included in the plan update. Meeting participants who were not affiliated with a municipality were provided with *New Mitigation Action Forms* to include new mitigation actions in the 2020 Plan if they so wished.

The HMPT reviewed the 2015 actions submitted by municipalities that did not turn in one of the above action/project forms and determined that the projects were no longer viable and should not be continued into the 2020 Hazard Vulnerability Assessment and Mitigation Plan Update. Additionally, one new action was developed by the HMPT based on the 2020 risk assessment.

The final list of 116 mitigation actions is contained in Table 6.4-1. This table provides an overview of the strategy that will be utilized in order to implement each of the proposed mitigation actions. For each action listed in Table 6.4-1, the associated strategy identifies the agency or job title that will be responsible for initiating the work and potential sources of funding for the work. Each strategy also indicates when the action will happen.

At least one mitigation action was established for each hazard in Huntingdon County. More than one action is identified for several hazards. Every participating jurisdiction has at least one mitigation action. Additionally, many of the county-led actions will benefit some or all of the municipalities, with the county leading the actions due to resource availability. Each mitigation action is intended to address one or more of the goals and objectives identified in Section 6.2. The priority level and feasibility of each action follows in separate tables.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 1	Ensure all applicable private industrial, commercial, and public utility service providers have a current Environmental Emergency Response Plan per the Federal Clean Water Act, the Pennsylvania Clean Streams Law, the Pennsylvania Solid Waste Management Act, the Pennsylvania Storage Tank Act, the Oil Pollution Act and regulations promulgated thereunder.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Hazardous Materials Release
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 5 years
Funding Source:	Huntingdon County EMA, Private Sector
ACTION NO: 2	Strengthen the County’s domestic animal health surveillance by familiarizing the Huntingdon County agricultural community with the list of reportable diseases and conditions related to animal health per the Office of International Epizootics (OIE) and the Pennsylvania Domestic Animal Act (Act 100 of 1996).
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Pandemic and Infectious Disease
Lead Agency/Department:	Huntingdon County EMA, Penn State Extension – Huntingdon County
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, PA Department of Agriculture
ACTION NO: 3	Continue to work with the Pennsylvania Department of Health and the Pennsylvania Emergency Management Agency to implement a Strategic National Stockpile Plan for Huntingdon County.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Terrorism
Lead Agency/Department:	Seven Mountains EMS Council, Southern Alleghenies EMS Council, PA Department of Health
Implementation Schedule:	1 – 5 years
Funding Source:	State Grants
ACTION NO: 4	Ensure all County GIS staff receive regular HAZUS training from the Emergency Management Institute.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Mapping Department
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, HMA Grants
ACTION NO: 5	Continue to work with the County’s agricultural community to develop and implement the County Animal Response Team (CART) to strengthen the County’s comprehensive emergency management program.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA, Penn State Extension – Huntingdon County
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County EMA, PA Department of Agriculture
ACTION NO: 6	National Incident Management Systems (NIMS) training for first responders.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, HMA Grants
ACTION NO: 7	Integrate the 5-year maintenance cycle of the Multi-Jurisdictional Hazard Mitigation Plan with both the 10-year and biennial review and maintenance cycles of the County Comprehensive Plan and County Regional Emergency Operations Plan, respectively.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA, County Commissioners, Huntingdon County Planning and Development Department, HMPO
Implementation Schedule:	5 years
Funding Source:	Huntingdon County EMA, Huntingdon County Planning and Development Department, County Annual Budget
ACTION NO: 8	Prepare Act 167 Stormwater Management Plans for the DEP-designated stormwater management watersheds draining in Huntingdon County.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	County Commissioners, Huntingdon County Planning and Development Department, Huntingdon County Conservation District, PA Department of Environmental Protection
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County Planning and Development Department, County Annual Budget, State Grants
ACTION NO: 9	Prepare and enact stormwater management ordinances consistent with Act 167 Stormwater Management Plans.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Food, Flash Flood, Ice Jam
Lead Agency/Department:	Local Municipalities
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County Planning and Development Department, Municipal Annual Budget, State Grants
ACTION NO: 10	Ensure County and municipal subdivision and land development ordinances are consistent with Chapter 102 Erosion & Sedimentation Control requirements.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam; Landslide
Lead Agency/Department:	County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County Planning and Development Department, County Annual Budget
ACTION NO: 11	Consider adopting a Countywide, post-disaster recovery and reconstruction ordinance using the model ordinance included in the APA/FEMA PAS Report No. 483/484.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam; Landslide; Urban Fire and Explosion; Winter Storm
Lead Agency/Department:	County Commissioners, All 48 local municipalities
Implementation Schedule:	1 – 5 years

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Funding Source:	County Annual Budget
ACTION NO: 12	Complete critical infrastructure facilities assessment and incorporate into a GIS dataset.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, County Mapping Department
Implementation Schedule:	1 – 5 years
Funding Source:	Huntingdon County Planning and Development Department, County Annual Budget
ACTION NO: 13	Prepare and implement a Continuity of Government Plan for the Huntingdon County Government.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	County Commissioners
Implementation Schedule:	1 – 5 years
Funding Source:	County Annual Budget
ACTION NO: 14	Maintain a Countywide capital improvements plan to program, schedule, prioritize, and budget both County and municipal capital improvements.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	County Commissioners, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	1 – 5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 15	Obtain first floor flood elevation data for the County’s inventoried critical infrastructure and other structures and intersect this information with the base flood elevations to identify high risk facilities and formulate mitigation strategies.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County Mapping Department, County Engineer Circuit Rider

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Implementation Schedule:	1 – 5 years
Funding Source:	County Annual Budget
ACTION NO: 16	Collect and analyze data on potential locations for civil disturbances and the specific impacts that a civil disturbance would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Civil Disturbance
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 17	Collect and analyze data on potential locations on specific impacts landslides have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Landslide
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets, HMGP 5% initiative funds, County-wide public information collection strategy on occurrences and impacts, using smart phone technology to capture damages and locations
ACTION NO: 18	Collect and analyze data on potential locations on specific impacts wildfires have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Wildfire
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 19	Collect and analyze data on potential locations for terrorism and the specific impacts than an event would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Terrorism
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 20	Collect and analyze data on the specific impacts a dam failure at the County's Lake Raystown Dam would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County, Juniata Township	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Dam Failure; Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 21	Collect and analyze data on the specific impacts subsidence and sinkholes have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County, Broad Top City Borough	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Subsidence and Sinkholes
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 22	Collect and analyze data on the specific impacts urban fires have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Urban Fire and Explosion

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 23	Collect and analyze data on the specific impacts tornados have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Tornado and Windstorm
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 24	Identify high crash areas and other transportation sites throughout the County in need of improvements, analyze data for those sites and include it in the 5-year update of this Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 25	Collect and analyze data on specific impacts droughts have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Drought
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 26	Collect and analyze data on specific impacts severe winter weather has on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Winter Storm
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 27	Collect and analyze data on specific impacts power failures have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County, Miller Township	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Utility Interruption
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 28	Collect and analyze data on specific impacts severe weather events have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Extreme Temperatures; Hailstorm
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 29	Collect and analyze data on specific impacts hurricanes and tropical storms have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Hurricane, Tropical Storm, Nor'easter

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	5 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 30	Evaluate and refine the County's repetitive loss structures list by ranking properties based on the number of losses and the value of the claims paid and target the priority properties for buyout opportunities.
COMMUNITY: Huntingdon County	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, HMPO, Local Elected Officials
Implementation Schedule:	1 – 2 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 31	Encourage the County's National Flood Insurance Program (NFIP) communities to participate in the NFIP Community Rating System (CRS) and attain discount opportunities on flood insurance premiums.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, County Planning and Development Department, County Commissioners, Local Elected Officials
Implementation Schedule:	1 – 2 years
Funding Source:	County Annual Budget, Municipal Annual Budgets
ACTION NO: 32	Conduct a flood study for Alexandria Borough.
COMMUNITY: Huntingdon County, Alexandria Borough	
Category:	Education and Awareness Programs, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, Alexandria Borough
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, Borough Annual Budget, HMA Grants
ACTION NO: 33	Examine feasibility of jurisdictions to join the Community Rating System (CRS).
COMMUNITY: Huntingdon County	

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Category:	Education and Awareness Programs, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County EMA
ACTION NO: 34	Conduct a CRS workshop for communities to learn about CRS.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County EMA
ACTION NO: 35	Encourage staff to become certified floodplain managers. Attend or host NFIP workshops for local officials.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County EMA
ACTION NO: 36	Enhance situational awareness using smartphone (Android and iPhone) technologies to identify, map, and disseminate critical information related to flood conditions and to enhance rapid damage assessment capabilities.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Mapping Department
Implementation Schedule:	1 – 5 years
Funding Source:	Huntingdon County EMA
ACTION NO: 37	Identify existing public structures that can be used as shelters (e.g. civil defense shelters).
COMMUNITY: Huntingdon County	

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Planning and Development Department
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 38	Educate residents about wildfire defensible space practices.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Wildfire
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Fire Chiefs Association
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 39	Increase public awareness by including/updating drought information on website or brochures.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Drought
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 40	Conduct workshops on crop survival and livestock management during droughts.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Drought
Lead Agency/Department:	Huntingdon County EMA, Penn State Extension – Huntingdon County
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 41	Develop a Countywide drought messaging campaign for use in the event of a drought watch or warning.
COMMUNITY: Huntingdon County	

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Drought
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 42	Provide community outreach to residents on how to prepare for severe thunderstorms and hail.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Hailstorm; Tornado and Windstorm
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 43	Identify the locations and inventory critical facilities and other buildings or infrastructure that are vulnerable to landslides.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs, Structure and Infrastructure Projects
Hazard(s) Addressed:	Landslide
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Planning and Development Department
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 44	Review, update or adopt regulations governing construction to prevent wind damage.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Tornado and Windstorm
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Planning and Development Department
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 45	Provide training for police officers on how to deal with large violent crowds and explosives.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Civil Disturbance, Urban Fire and Explosion
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 46	Consistently back-up data and use/maintain anti-virus software.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Cyber Terrorism
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	1 year
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 47	Develop protective physical countermeasures for critical communications, power and IT infrastructure countywide for solar and hostile electromagnetic events.
COMMUNITY: Huntingdon County	
Category:	Structure and Infrastructure Programs
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 48	Provide training for police officers and emergency personnel on how to deal with chemical, radiological or biological agents.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Hazardous Materials Release
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget, HMA Funds
ACTION NO: 49	Distribute educational information to residents on man-made hazards and how to prepare.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	All human-made hazards
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	2 – 3 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 50	Purchase and maintain proper equipment to prevent, respond and recover from an attack.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Terrorism, Cyber Terrorism
Lead Agency/Department:	Huntingdon County EMA, Local Municipalities
Implementation Schedule:	1 – 2 years
Funding Source:	Huntingdon County EMA, County Annual Budget
ACTION NO: 51	Stabilize dirt and gravel roads at Stone Valley Dam.
COMMUNITY: Barree Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Dam Failure
Lead Agency/Department:	Barree Township Supervisors
Implementation Schedule:	1 – 2 years
Funding Source:	Center for Dirt and Gravel Roads
ACTION NO: 52	Working with the Huntingdon County Conservation District to procure Low Volume Road Funding to raise the profile of T-539 (Winchester Road).
COMMUNITY: Barree Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Barree Township Supervisors
Implementation Schedule:	2 years
Funding Source:	Center for Dirt and Gravel Roads
ACTION NO: 53	Stabilization of Borough road and implement storm drainage to prevent excess erosion and unsafe road travel.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Birmingham Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Transportation Accidents
Lead Agency/Department:	Raymond Zeke, Birmingham Borough
Implementation Schedule:	2 years
Funding Source:	Borough General Fund, Borough of Liquid Fuels, Huntingdon County Conservation District
ACTION NO: 54	Purchase a generator for the Coalmont Borough Building so that the facility may be a designated shelter.
COMMUNITY: Coalmont Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Utility Interruption; Extreme Temperatures
Lead Agency/Department:	Coalmont Borough Council
Implementation Schedule:	1 – 2 years
Funding Source:	Borough General Fund
ACTION NO: 55	Conduct a Geotechnical evaluation of the hillside on Pine Ridge Road to determine the underlying weaknesses and prepare an Engineering Design to stabilize the roadway.
COMMUNITY: Hopewell Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Landslide; Transportation Accidents
Lead Agency/Department:	Hopewell Township Supervisors, PennDOT District 9-0, U.S. Army Corps of Engineers – Raystown Lake Station
Implementation Schedule:	As soon as possible. There are visible signs that the landslide is continuing by comparison of photos from 2011, 2018, and 2019.
Funding Source:	Municipal General Funds, Hazard Mitigation Grants, and Liquid Fuels Funds
ACTION NO: 56	Miller Road (T-520) bridge replacement and road improvement.
COMMUNITY: Jackson Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Jackson Township, DGLVR Program
Implementation Schedule:	3 years
Funding Source:	Grant Funding, Liquid Fuels Funds

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 57	Replace double-cross pipes at the culvert on Camp Road (T-546) with one large capacity pipe, install headwalls and sidewalls, and build up the road surface to accommodate the larger cross-pipe.
COMMUNITY: Jackson Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Jackson Township, DGLVR Program
Implementation Schedule:	2 – 3 years
Funding Source:	Grant Funding, Liquid Fuels Funds
ACTION NO: 58	Implement a Township public warning system.
COMMUNITY: Smithfield Township	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Smithfield Township
Implementation Schedule:	1 – 2 years
Funding Source:	Municipal Grants
ACTION NO: 59	Dredge and clean out debris and settlement from the Crooked Creek bed.
COMMUNITY: Smithfield Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Smithfield Township
Implementation Schedule:	1 – 5 years
Funding Source:	Municipal Grants
ACTION NO: 60	Debris removal.
COMMUNITY: Todd Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Todd Township
Implementation Schedule:	1 – 5 years
Funding Source:	Township Annual Budget, Municipal Grants

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 61	Work with the Todd Township engineer to create a list of suggestions to improve the safety of Mill Hall Road (T-369).
COMMUNITY: Todd Township	
Category:	Education and Awareness Programs, Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Transportation Accidents, Winter Storm
Lead Agency/Department:	Todd Township
Implementation Schedule:	5 years
Funding Source:	Township Annual Budget
ACTION NO: 62	Reinforce bridge piers and install tiles under Harmony Church Road and Lorry Road to redirect flood waters off of these roads.
COMMUNITY: Union Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Union Township
Implementation Schedule:	1–2 years to begin; 3–5 years to complete
Funding Source:	Township Annual Budget, Grant Funding
ACTION NO: 63	Install 200 to 300 yards of metal guard rails on Numers Hollow Road (T-450) to improve roadway safety.
COMMUNITY: Henderson Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Henderson Township
Implementation Schedule:	1 – 2 years
Funding Source:	Grant Capital
ACTION NO: 64	Culverts Replacement on School House Road (T-448) on the private property of the Humane Society.
COMMUNITY: Henderson Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Private landowner, Henderson Township, Huntingdon County Conservation District, state and federal agencies
Implementation Schedule:	1-2 years
Funding Source:	Grant Capital, Private Landowner Funding

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 65	Transportation safety improvements to the Ellenberger Road (T-465) turn access off of Numers Hollow Road (T-450).
COMMUNITY: Henderson Township	
Category:	Structure and Infrastructure Projects, Education and Awareness Programs
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Henderson Township
Implementation Schedule:	1 year, preferably in 2020
Funding Source:	Township Annual Budget, Grant Capital
ACTION NO: 66	Repair dilapidated water lines to obtain consistent drinking water.
COMMUNITY: Orbisonia Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Utility Interruption
Lead Agency/Department:	Orbisonia Rockhill Water Authority, Orbisonia Borough, Rockhill Borough
Implementation Schedule:	2 – 3 years
Funding Source:	Borough Annual Budget
ACTION NO: 67	Close all levee openings and ground hog holes in order to keep Black Log Creek and Jordan Run free of debris, as well as control erosion issues.
COMMUNITY: Rockhill Borough	
Category:	Education and Awareness Programs, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Rockhill Borough, Sub-contract to Todd McCartney
Implementation Schedule:	2 – 3 years
Funding Source:	Borough Annual Budget
ACTION NO: 68	Implement a grade, diversion ditches, and a retention pond on Ridgeview Drive to control stormwater.
COMMUNITY: Oneida Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Oneida Township, DCNR Center for Dirt and Gravel Roads, PennDOT
Implementation Schedule:	1 – 2 years
Funding Source:	Dirt and Gravel Road Program, PennDOT Municipal Services

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 69	Realign stream embankment with culvert and replace rip rap on Blair Road.
COMMUNITY: Oneida Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Oneida Township, DCNR Center for Dirt and Gravel Roads, PADEP, PennDOT Municipal Services
Implementation Schedule:	2 – 3 years
Funding Source:	Township Annual Budget
ACTION NO: 70	Build up the roadway on Sunrise Camp Road and Wike’s Road to prevent roadway failure and flooding.
COMMUNITY: Oneida Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Transportation Accidents
Lead Agency/Department:	Oneida Township, DCNR Center for Dirt and Gravel Roads, PennDOT Municipal Services
Implementation Schedule:	2 – 3 years
Funding Source:	Municipal Grants, Township Annual Budget
ACTION NO: 71	Conduct a stormwater management study for levees and to improve waterways.
COMMUNITY: Dudley Borough	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Dudley Borough
Implementation Schedule:	1 year
Funding Source:	Municipal Grant
ACTION NO: 72	Insert a new pipe on 4th Street within the Borough to prevent flooding and icing.
COMMUNITY: Dudley Borough	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Dudley Borough
Implementation Schedule:	1 – 2 years
Funding Source:	2020 DCNR Grant

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 73	Improve access to water supply for rural fires and wildfires.
COMMUNITY: Logan Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection, Education and Awareness Programs
Hazard(s) Addressed:	Urban Fire and Explosion; Wildfire; Utility Interruption
Lead Agency/Department:	Logan Township
Implementation Schedule:	5 years
Funding Source:	Township Annual Budget
ACTION NO: 74	Improve ditching along Township road edges to prevent road flooding.
COMMUNITY: West Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	West Township Supervisors, Huntingdon County Conservation District
Implementation Schedule:	1 – 5 years
Funding Source:	Dirt and Gravel Road Program
ACTION NO: 75	Improve the road base, road surface, and ditching along Township roads.
COMMUNITY: West Township	
Category:	Structure and Infrastructure Projects, Natural Systems Protection, Education and Awareness Programs
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	West Township Supervisors, Huntingdon County Conservation District
Implementation Schedule:	Annually
Funding Source:	Dirt and Gravel Road Program
ACTION NO: 76	Clean and dredge the Field's Dam section of Scrub Run.
COMMUNITY: Mapleton Borough	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Mapleton Borough
Implementation Schedule:	2 – 3 years
Funding Source:	Municipal Grants

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
ACTION NO: 77	Rouse Borough road beds.
COMMUNITY: Mapleton Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Mapleton Borough
Implementation Schedule:	2 – 3 years
Funding Source:	Municipal Grants, PennDOT Grants
ACTION NO: 78	Construct a bridge over Scrub Run to connect Ridge Street and Glendower Street, as an alternate route to enter or exit the Borough.
COMMUNITY: Mapleton Borough	
Category:	Local Plans and Regulations, Structure and Infrastructure Projects
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Mapleton Borough, County Planning, DCED, PennDOT, USDA, PEMA
Implementation Schedule:	1 – 2 years
Funding Source:	Block Grants, Liquid Fuels Funds
ACTION NO: 79	Improve and expand the Mapleton Borough storm water drainage system.
COMMUNITY: Mapleton Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Mapleton Borough, County Planning, DCED
Implementation Schedule:	3 – 5 years
Funding Source:	CDBG, Liquid Fuels Funds, USDA
ACTION NO: 80	Upgrade storm drain system.
COMMUNITY: Three Springs Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Subsidence and Sinkholes
Lead Agency/Department:	Three Springs Borough
Implementation Schedule:	3 – 5 years
Funding Source:	Borough Annual Funds
ACTION NO: 81	Expand local firehouse to create an Emergency Shelter for Three Springs Borough.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Three Springs Borough	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Three Springs Borough, Huntingdon County EMA
Implementation Schedule:	2 – 3 years
Funding Source:	Borough Annual Funds
ACTION NO: 82	Establish a Public Warning System to provide emergency information to Petersburg Borough residents.
COMMUNITY: Petersburg Borough	
Category:	Local Plans and Regulations; Education and Awareness Programs
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Petersburg Borough
Implementation Schedule:	1 – 2 years
Funding Source:	Borough Annual Budget
ACTION NO: 83	Remove river stones in the Sadlers Creek bed to return water levels to normal.
COMMUNITY: Brady Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Brady Township
Implementation Schedule:	3 – 5 years
Funding Source:	Municipal General Funds and Grants
ACTION NO: 84	Install and implement speed bumps on Main Street to mitigate speeding throughout the Borough.
COMMUNITY: Shade Gap Borough	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Shade Gap Borough
Implementation Schedule:	1 – 2 years
Funding Source:	Borough Annual Budget, Grants
ACTION NO: 85	Repair the structure of Muddy Run.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Huntingdon Borough	
Category:	Local Plans and Regulations, Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam
Lead Agency/Department:	Huntingdon Borough, U.S. Army Corps of Engineers, GHD Engineering
Implementation Schedule:	1 – 5 years
Funding Source:	U.S. Army Corps of Engineers, DCNR Grants
ACTION NO: 86	Acquisition of hazard prone lands, in their undeveloped state. Specifically, land located south of the 300 block of Main Street and Bridge Street, Alexandria.
COMMUNITY: Alexandria Borough	
Category:	Local Plans and Regulations, Natural Systems Protections
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Hazardous Materials Release
Lead Agency/Department:	Alexandria Borough, U.S. Army Corps of Engineers, Porter Township
Implementation Schedule:	1 – 2 years
Funding Source:	Grant Assistance
ACTION NO: 87	Redirect commercial trucks for ACCO.
COMMUNITY: Alexandria Borough	
Category:	Plans and Regulations, Structure and Infrastructure
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Alexandria Borough, Porter Township
Implementation Schedule:	1 year
Funding Source:	Township and Borough Annual Budgets, PennDOT Grants
ACTION NO: 88	Implement a new stormwater drainage system on Shelton Avenue and High Street.
COMMUNITY: Alexandria Borough	
Category:	Local Plans and Regulations, Structure and Infrastructure
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam; Transportation Accidents; Hazardous Materials Release
Lead Agency/Department:	Alexandria Borough, U.S. Army Corps of Engineers
Implementation Schedule:	1 – 2 years
Funding Source:	Township and Borough Annual Budgets, U.S. Army Corps of Engineers
ACTION NO: 89	Implement a new stormwater drainage system on 6th Street.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Alexandria Borough	
Category:	Local Plans and Regulations, Structure and Infrastructure
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam; Transportation Accidents; Hazardous Materials Release
Lead Agency/Department:	Alexandria Borough, U.S. Army Corps of Engineers
Implementation Schedule:	1 – 2 years
Funding Source:	Township and Borough Annual Budgets, U.S. Army Corps of Engineers
ACTION NO: 90	Build the Canal Street Pedestrian Bridge which will provide direct access to the Alexandria/Porter Township Park.
COMMUNITY: Alexandria Borough	
Category:	Structure and Infrastructure
Hazard(s) Addressed:	Transportation Accidents
Lead Agency/Department:	Alexandria Borough, Porter Township
Implementation Schedule:	1 – 2 years
Funding Source:	Community Fundraising, State Waivers and Grants
ACTION NO: 91	Develop an early warning system for public notification of emergencies.
COMMUNITY: Morris Township, Porter Township	
Category:	Education and Awareness Programs, Local Plans and Regulations
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Porter Township Supervisors, Morris Township Supervisors
Implementation Schedule:	1 year
Funding Source:	Township Annual Budgets
ACTION NO: 92	Stormwater management system.
COMMUNITY: Porter Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Porter Township Supervisors, U.S. Army Corps of Engineers
Implementation Schedule:	1 year
Funding Source:	Township Annual Budgets, U.S. Army Corps of Engineers
ACTION NO: 93	Enhance highway safety efforts in conjunction with PennDOT on State Routes 350 and 550 and continue efforts to equip first responders with materials and equipment to handle agricultural and commercial vehicle accidents.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Warriors Mark Township	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Transportation Accidents, Hazardous Materials Release
Lead Agency/Department:	Warriors Mark Township, PennDOT
Implementation Schedule:	Within 5 years
Funding Source:	Township Annual Budgets, PennDOT Grants
ACTION NO: 94	Update Emergency Operations Plan and shelter in place.
COMMUNITY: Shirley Township	
Category:	Structure and Infrastructure, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, and Ice Jam; Tornado and Windstorm
Lead Agency/Department:	Shirley Township Supervisors, Local EMC, County EMA
Implementation Schedule:	Within the next 5 years
Funding Source:	Township Annual Budgets, Potential grants
ACTION NO: 95	Update Emergency Operations Plan and shelter in place.
COMMUNITY: Shirleysburg Borough	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	Tornado and Windstorm
Lead Agency/Department:	Shirleysburg Borough Council, Local EMC, County EMA
Implementation Schedule:	Within the next 5 years
Funding Source:	Borough Annual Budgets, Potential grants
ACTION NO: 96	Work with the local fire department to remove dilapidated structures to improve the safety and attractiveness of the community.
COMMUNITY: Tell Township	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Urban Fire and Explosion
Lead Agency/Department:	Tell Township, Volunteer Fire Companies
Implementation Schedule:	4 – 5 years
Funding Source:	Grants through Fire Companies
ACTION NO: 97	Streambank restoration to prevent erosion of the subbase of the highway.

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
COMMUNITY: Tell Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Tell Township
Implementation Schedule:	1 – 2 years
Funding Source:	Municipal Grants
ACTION NO: 98	Clean approximately 33 linear feet of the Tuscarora Creek stream channel of fallen trees and other debris.
COMMUNITY: Tell Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Tell Township
Implementation Schedule:	1 – 2 years
Funding Source:	Municipal Grants
ACTION NO: 99	Clean Narrows Branch of Tuscarora Creek of trees, brush, and other debris.
COMMUNITY: Tell Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Tell Township
Implementation Schedule:	1 – 2 years
Funding Source:	Municipal Grants
ACTION NO: 100	Continue to implement the Countywide public warning system.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	All hazards
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 5 years
Funding Source:	Huntingdon County EMA
ACTION NO: 101	Implement a public warning system to alert municipalities downstream from Raystown Dam, which include Huntingdon Borough, Smithfield Township, Juniata Township, Henderson Township, Mill Creek Borough, Brady Township, Union

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
	Township, Mapleton Borough, Mount Union Borough, Shirley Township, and Shirleysburg Borough.
COMMUNITY: Huntingdon County	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Dam Failure; Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	1 – 5 years
Funding Source:	Huntingdon County EMA
ACTION NO: 102	Improve the natural stream design of Shoups Run.
COMMUNITY: Carbon Township	
Category:	Natural Systems Protection
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Carbon Township, Huntingdon County Conservation District, Shoups Run Association
Implementation Schedule:	1 year
Funding Source:	Huntingdon County Conservation District, Shoups Run Association
ACTION NO: 103	Create an emergency plan for the Norfolk Southern Rail line that goes through the Borough in the event a derailment occurred.
COMMUNITY: Mount Union Borough	
Category:	Local Plans and Regulations, Education and Awareness Programs
Hazard(s) Addressed:	Hazardous Materials Release, Transportation Accidents
Lead Agency/Department	Mount Union Borough, Huntingdon County EMA, Norfolk Southern Railroad
Implementation Schedule:	1 – 3 years
Funding Source:	Huntingdon County EMA
ACTION NO: 104	Plan and assess a COVID-19 distribution plan and the County’s broadband capabilities for pandemics. Replenish the County’s PPE stockpile.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Pandemic and Infectious Disease
Lead Agency/Department:	Huntingdon County EMA
Implementation Schedule:	Within 1 year

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Funding Source:	CDBG (CARES Act)
ACTION NO: 105	Ensure that culvert inlets are cleaned out to prevent road erosion and subsequent flooding.
COMMUNITY: Lincoln Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Lincoln Township Supervisors
Implementation Schedule:	1 – 2 years
Funding Source:	Township Annual Budget
ACTION NO: 106	Maintain cross pipe inlets to prevent flooding of roadways during storm events.
COMMUNITY: Penn Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam; Transportation Accidents
Lead Agency/Department:	Penn Township
Implementation Schedule:	1 – 2 years
Funding Source:	Township Annual Budget
ACTION NO: 107	Monitor storm water runoff coming from fields uphill of Marklesburg Borough, that is causing homes to flood below the inlet.
COMMUNITY: Marklesburg Borough	
Category:	Flood, Flash Flood, Ice Jam
Hazard(s) Addressed:	Natural Systems Protection, Structure and Infrastructure Projects
Lead Agency/Department:	Marklesburg Borough
Implementation Schedule:	1 – 2 years
Funding Source:	Borough Annual Budget
ACTION NO: 108	Educate the public and township stakeholders about hazardous materials sites and releases.
COMMUNITY: Clay Township, Dublin Township, Springfield Township	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Hazardous Materials Release, Transportation Accidents
Lead Agency/Department:	Clay Township, Dublin Township, and Springfield Township Supervisors
Implementation Schedule:	1 – 5 years

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Funding Source:	Township Annual Budget, Liquid Fuel Funds
ACTION NO: 109	Conduct public outreach to educate residents on preparedness for potential hazardous materials releases from the neighboring strip mine.
COMMUNITY: Wood Township	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Hazardous Materials Release
Lead Agency/Department:	Wood Township Supervisors, Private Landowner, Contractor, PADEP, Huntingdon County EMA
Implementation Schedule:	1 – 3 years
Funding Source:	Township Annual Budget
ACTION NO: 110	Update the Borough stormwater system.
COMMUNITY: Marklesburg Borough	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Marklesburg Borough
Implementation Schedule:	1 – 2 years
Funding Source:	Borough Annual Budget
ACTION NO: 111	Continue blight remediation and implement an ordinance for vacant properties.
COMMUNITY: Spruce Creek Township	
Category:	Structure and Infrastructure Projects, Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Spruce Creek Township
Implementation Schedule:	1 year
Funding Source:	CDBG Grants
ACTION NO: 112	Stormwater flooding of Cree Manor.
COMMUNITY: Walker Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Walker Township and the Commonwealth of Pennsylvania
Implementation Schedule:	Within the next 2 years

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Funding Source:	Township Annual Funds
ACTION NO: 113	Build up McClure Road with slate and tiles to prevent yearly flooding from Aughwick Creek.
COMMUNITY: Cromwell Township	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	Cromwell Township
Implementation Schedule:	2 – 4 years
Funding Source:	Municipal General Fund and any available grant money.
ACTION NO: 114	Collect and analyze data on specific impacts the invasive spotted lantern fly has on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.
COMMUNITY: Huntingdon County, Cassville Borough, Cass Township, Franklin Township, Mill Creek Borough, Saltillo Borough	
Category:	Education and Awareness Programs
Hazard(s) Addressed:	Invasive Species
Lead Agency/Department:	Huntingdon County EMA, Huntingdon County Planning and Development Department, Cassville Borough, Cass Township, Franklin Township, Mill Creek Borough, Saltillo Borough
Implementation Schedule:	5 years
Funding Source:	Huntingdon County EMA, Huntingdon County Planning and Development Department, PA Department of Agriculture
ACTION NO: 115	The County and its municipalities will regularly review and update their respective floodplain regulations to include the required updates following FEMA flood map revisions.
COMMUNITY: Huntingdon County	
Category:	Local Plans and Regulations
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	Based on FEMA flood map revision schedule
Funding Source:	Huntingdon County Planning and Development Department, County Annual Budget
ACTION NO: 116	Protect infrastructure and structures at-risk to flood through elevation, acquisition, relocation, or retrofits.
COMMUNITY: Huntingdon County	

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6.4-1 List of 2020 mitigation actions with information including community or communities affected, action category, hazard addressed, action description, lead agency/department and general implementation schedule.	
Category:	Structure and Infrastructure Projects
Hazard(s) Addressed:	Flood, Flash Flood, Ice Jam
Lead Agency/Department:	County Planning and Development Department, All 48 local municipalities
Implementation Schedule:	2-4 years
Funding Source:	Huntingdon County Planning and Development Department, County Annual Budget, Municipal Annual Budgets, Grant Assistance

Table 6.4-1 lists 116 mitigation actions, many of which will require substantial time commitments from staff at the County and local municipalities. Those that participated in the development of the 2020 Plan believe that each of these actions is attainable and can pragmatically be advanced over the next five-year cycle.

While all of these activities will be pursued over the next five years, the reality of limited time and resources requires the identification of the feasibility and priority level of mitigation actions. Prioritization allows the individuals and organizations involved to focus their energies and ensure progress on mitigation activities.

Evaluating mitigation actions involves judging each action against certain criteria to determine its feasibility and potential impact. Actions evaluated and prioritized by applying the Multi-Objective Mitigation Action Prioritization criteria. For each action, scores were assigned to each criterion using the following weighted, multi-objective mitigation action prioritization criteria.

- **Effectiveness** (weight: 20% of score): The extent to which an action reduces the vulnerability of people and property.
- **Efficiency** (weight: 30% of score): The extent to which time, effort, and cost is well used as a means of reducing vulnerability.
- **Multi-Hazard Mitigation** (weight: 20% of score): The action reduces vulnerability for more than one hazard.
- **Addresses High Risk Hazard** (weight: 15% of score): The action reduces vulnerability for people and property from a hazard(s) identified as high risk.
- **Addresses Critical Communications/Critical Infrastructure** (weight: 15% of score): The action pertains to the maintenance of critical functions and structures such as transportation, supply chain management, data circuits, etc.

Scores of 1, 2, or 3 were assigned for each multi-objective mitigation action prioritization criterion where 1 is a low score and 3 is a high score. The Efficiency criterion, which considers the cost and effort of each action versus its overall vulnerability reduction benefit, is the most highly weighted criterion as part of the

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total prioritization score. Actions were prioritized using the cumulative score assigned to each. Each mitigation action was then given a priority ranking (Low, Medium, and High) based on the following:

- Low Priority: 1.0 – 1.8
- Medium Priority: 1.9 – 2.4
- High Priority: 2.5 – 3.0

Table 6.4-2 presents the cumulative results of the prioritization of mitigation actions. All but three actions were ranked High or Medium Priority.

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
1	Ensure all applicable private industrial, commercial, and public utility service providers have a current Environmental Emergency Response Plan per the Federal Clean Water Act, the Pennsylvania Clean Streams Law, the Pennsylvania Solid Waste Management Act, the Pennsylvania Storage Tank Act, the Oil Pollution Act and regulations promulgated thereunder.	3	2.5	2.5	3	3	2.8
2	Strengthen the County's domestic animal health surveillance by familiarizing the Huntingdon County agricultural community with the list of reportable diseases and conditions related to animal health per the Office of International Epizootics (OIE) and the Pennsylvania Domestic Animal Act (Act 100 of 1996).	2.5	2.3	1.5	2.7	0.5	2.0
3	Continue to work with the Pennsylvania Department of Health and the Pennsylvania Emergency Management Agency to implement a Strategic National Stockpile Plan for Huntingdon County.	3	3	2.5	2.5	1	2.5
4	Ensure all County GIS staff receive regular HAZUS training from the Emergency Management Institute.	3	3	2.3	3	3	2.9
5	Continue to work with the County's agricultural community to develop and implement the County Animal Response Team (CART) to strengthen the County's comprehensive emergency management program.	2	2.5	2.7	3	2	2.4
6	National Incident Management Systems (NIMS) training for first responders.	3	3	3	3	2.5	2.9
7	Integrate the 5-year maintenance cycle of the Multi-Jurisdictional Hazard Mitigation Plan with both the 10-year and biennial review and maintenance cycles of the	3	3	3	2.5	2	2.8

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
	County Comprehensive Plan and County Regional Emergency Operations Plan, respectively.						
8	Prepare Act 167 Stormwater Management Plans for the DEP-designated stormwater management watersheds draining in Huntingdon County.	3	3	2.5	3	3	2.9
9	Prepare and enact stormwater management ordinances consistent with Act 167 Stormwater Management Plans.	3	3	2.5	3	3	2.9
10	Ensure County and municipal subdivision and land development ordinances are consistent with Chapter 102 Erosion & Sedimentation Control requirements.	3	3	2.5	3	3	2.9
11	Consider adopting a Countywide, post-disaster recovery and reconstruction ordinance using the model ordinance included in the APA/FEMA PAS Report No. 483/484.	3	3	3	3	3	3.0
12	Complete critical infrastructure facilities assessment and incorporate into a GIS dataset.	3	3	3	3	3	3.0
13	Prepare and implement a Continuity of Government Plan for the Huntingdon County Government.	2.7	2.5	2.5	2.5	2	2.4
14	Maintain a Countywide capital improvements plan to program, schedule, prioritize, and budget both County and municipal capital improvements.	3	3	3	2.5	2.5	2.8
15	Obtain first floor flood elevation data for the County's inventoried critical infrastructure and other structures and intersect this information with the base flood elevations to identify high risk facilities and formulate mitigation strategies.	3	3	2	3	3	2.8

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
16	Collect and analyze data on potential locations for civil disturbances and the specific impacts that a civil disturbance would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.5	2.3	1.5	2	2.5	2.2
17	Collect and analyze data on potential locations on specific impacts landslides have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1	2.5	2.1
18	Collect and analyze data on potential locations on specific impacts wildfires have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1.7	2.5	2.2
19	Collect and analyze data on potential locations for terrorism and the specific impacts than an event would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.7	2.3	2.5	2.4
20	Collect and analyze data on the specific impacts a dam failure at the County's Lake Raystown Dam would have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.9	1.9	2.7	2.4
21	Collect and analyze data on the specific impacts subsidence and sinkholes have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1.2	2.5	2.2
22	Collect and analyze data on the specific impacts urban fires have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1.4	2.5	2.2

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
23	Collect and analyze data on the specific impacts tornados have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.6	2.3	2.5	2.4
24	Identify high crash areas and other transportation sites throughout the County in need of improvements, analyze data for those sites and include it in the 5-year update of this Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	2	3	2.5	2.5
25	Collect and analyze data on specific impacts droughts have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1.1	2.5	2.5
26	Collect and analyze data on specific impacts severe winter weather has on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	1.4	2.5	2.3
27	Collect and analyze data on specific impacts power failures have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	2.4	2.5	2.0
28	Collect and analyze data on specific impacts severe weather events have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	3	2.5	2.5	2.0
29	Collect and analyze data on specific impacts hurricanes and tropical storms have on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	2.7	2.3	2.5	2.4

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/Critical Infrastructure	Total Score
30	Evaluate and refine the County's repetitive loss structures list by ranking properties based on the number of losses and the value of the claims paid and target the priority properties for buyout opportunities.	3	3	2.3	3	3	1.8
31	Encourage the County's National Flood Insurance Program (NFIP) communities to participate in the NFIP Community Rating System (CRS) and attain discount opportunities on flood insurance premiums.	3	3	2.3	3	3	2.3
32	Conduct a flood study for Alexandria Borough.	3	3	2.3	3	2.7	2.4
33	Examine feasibility of jurisdictions to join the Community Rating System (CRS).	3	3	2.3	3	3	2.9
34	Conduct a CRS workshop for communities to learn about CRS.	3	3	2.3	3	3	2.9
35	Encourage staff to become certified floodplain managers. Attend or host NFIP workshops for local officials.	3	3	2.3	3	3	2.9
36	Enhance situational awareness using smartphone (Android and iPhone) technologies to identify, map, and disseminate critical information related to flood conditions and to enhance rapid damage assessment capabilities.	3	3	2.5	3	3	2.9
37	Identify existing public structures that can be used as shelters (e.g. civil defense shelters).	3	3	3	3	3	3.0
38	Educate residents about wildfire defensible space practices.	3	2.5	1.5	2	2	2.3
39	Increase public awareness by including/updating drought information on website or brochures.	2	1.5	1.5	1	1.5	1.5
40	Conduct workshops on crop survival and livestock management during droughts.	2	2.5	1.5	1	1.8	1.9

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
41	Develop a Countywide drought messaging campaign for use in the event of a drought watch or warning.	2	2.8	1.5	1	1.3	1.9
42	Provide community outreach to residents on how to prepare for severe thunderstorms and hail.	2.5	2.5	3	2.5	1.5	2.4
43	Identify the locations and inventory critical facilities and other buildings or infrastructure that are vulnerable to landslides.	3	3	1.5	1	3	2.4
44	Review, update or adopt regulations governing construction to prevent wind damage.	3	3	2	2.7	2.8	2.7
45	Provide training for police officers on how to deal with large violent crowds and explosives.	2.7	3	3	2.4	2	2.7
46	Consistently back-up data and use/maintain anti-virus software.	3	3	1	2.3	2.5	2.4
47	Develop protective physical countermeasures for critical communications, power and IT infrastructure countywide for solar and hostile electromagnetic events.	3	3	3	2.8	3	2.9
48	Provide training for police officers and emergency personnel on how to deal with chemical, radiological or biological agents.	3	2.5	1.5	3	2	2.4
49	Distribute educational information to residents on man-made hazards and how to prepare.	3	2.5	3	2.9	2.7	2.8
50	Purchase and maintain proper equipment to prevent, respond and recover from an attack.	3	3	3	2.5	2	2.8
51	Stabilize dirt and gravel roads at Stone Valley Dam.	2.5	2.8	3	2.9	2	2.7
52	Working with the Huntingdon County Conservation District to procure Low Volume Road Funding to raise the profile of T-539 (Winchester Road).	2.5	2.7	2.5	3	2	2.6
53	Stabilization of Borough road and implement storm drainage to prevent excess erosion and unsafe road travel.	3	3	2.8	3	2.8	2.9

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
54	Purchase a generator for the Coalmont Borough Building so that the facility may be a designated shelter.	3	2.8	3	2.5	3	2.9
55	Conduct a Geotechnical evaluation of the hillside on Pine Ridge Road to determine the underlying weaknesses and prepare an Engineering Design to stabilize the roadway.	3	3	2	2	3	2.7
56	Miller Road (T-520) bridge replacement and road improvement.	3	2.5	1.5	3	2.7	2.5
57	Replace double-cross pipes at the culvert on Camp Road (T-546) with one large capacity pipe, install headwalls and sidewalls, and build up the road surface to accommodate the larger cross-pipe.	3	2.5	1.5	3	2	2.4
58	Implement a Township public warning system.	3	2.8	3	3	2.5	2.9
59	Dredge and clean out debris and settlement from the Crooked Creek bed.	2.7	2.5	1.5	3	2.3	2.4
60	Debris removal.	2.7	2.5	1.5	3	2.3	2.4
61	Work with the Todd Township engineer to create a list of suggestions to improve the safety of Mill Hall Road (T-369).	2.5	2.8	3	3	1.5	2.6
62	Reinforce bridge piers and install tiles under Harmony Church Road and Lorry Road to redirect flood waters off of these roads.	2.6	2.6	1.5	3	2	2.3
63	Install 200 to 300 yards of metal guard rails on Numers Hollow Road (T-450) to improve roadway safety.	3	3	1.5	3	2	2.6
64	Culverts Replacement on School House Road (T-448) on the private property of the Humane Society.	3	2.5	1.5	3	2	2.4
65	Transportation safety improvements to the Ellenberger Road (T-465) turn access off of Numers Hollow Road (T-450).	3	2.8	1.5	3	2	2.5

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/Critical Infrastructure	Total Score
66	Repair dilapidated water lines to obtain consistent drinking water.	3	3	1	2	2.5	2.4
67	Close all levee openings and ground hog holes in order to keep Black Log Creek and Jordan Run free of debris, as well as control erosion issues.	3	2.7	1.5	3	2	2.5
68	Implement a grade, diversion ditches, and a retention pond on Ridgeview Drive to control stormwater.	3	2.7	1.5	3	1.5	2.4
69	Realign stream embankment with culvert and replace rip rap on Blair Road.	3	2.7	1.5	3	1.5	2.4
70	Build up the roadway on Sunrise Camp Road and Wike's Road to prevent roadway failure and flooding.	3	2.8	3	3	2	2.8
71	Conduct a stormwater management study for levees and to improve waterways.	3	3	1	3	3	2.6
72	Insert a new pipe on 4 th Street within the Borough to prevent flooding and icing.	3	2.5	1	3	2	2.3
73	Improve access to water supply for rural fires and wildfires.	3	3	3	2	2.5	2.8
74	Improve ditching along Township road edges to prevent road flooding.	3	2.5	1	3	2	2.3
75	Improve the road base, road surface, and ditching along Township roads.	3	2.5	1	3	2	2.3
76	Clean and dredge the Field's Dam section of Scrub Run.	3	2.8	1.5	3	2	2.5
77	Rouse Borough road beds.	3	2.3	1	3	1.5	2.2
78	Construct a bridge over Scrub Run to connect Ridge Street and Glendower Street, as an alternate route to enter or exit the Borough.	3	3	3	3	2.5	2.9
79	Improve and expand the Mapleton Borough storm water drainage system.	3	3	1.5	3	3	2.7

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
80	Upgrade storm drain system.	3	3	1.5	3	3	2.7
81	Expand local firehouse to create an Emergency Shelter for Three Springs Borough.	3	3	3	3	3	3.0
82	Establish a Public Warning System to provide emergency information to Petersburg Borough residents.	3	2.8	3	3	2.5	2.9
83	Remove river stones in the Sadlers Creek bed to return water levels to normal.	3	2.7	1	3	2	2.4
84	Install and implement speed bumps on Main Street to mitigate speeding throughout the Borough.	3	2	1.5	3	1	2.1
85	Repair the structure of Muddy Run.	3	2.9	1.5	3	2.7	2.6
86	Acquisition of hazard prone lands, in their undeveloped state. Specifically, land located south of the 300 block of Main Street and Bridge Street, Alexandria.	3	3	3	3	2.8	3.0
87	Redirect commercial trucks for ACCO.	3	2.5	1.5	3	2.5	2.5
88	Implement a new stormwater drainage system on Shelton Avenue and High Street.	3	2.8	3	3	2	2.8
89	Implement a new stormwater drainage system on 6 th Street.	3	2.8	3	3	2	2.8
90	Build the Canal Street Pedestrian Bridge which will provide direct access to the Alexandria/Porter Township Park.	3	3	1.5	3	2.5	2.6
91	Develop an early warning system for public notification of emergencies.	3	2.8	3	3	2.5	2.9
92	Stormwater management system.	3	3	2	3	3	2.8
93	Enhance highway safety efforts in conjunction with PennDOT on State Routes 350 and 550 and continue	3	3	3	3	2.5	2.9

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/Critical Infrastructure	Total Score
	efforts to equip first responders with materials and equipment to handle agricultural and commercial vehicle accidents.						
94	Update Emergency Operations Plan and shelter in place.	3	3	3	3	3	3.0
95	Update Emergency Operations Plan and shelter in place.	3	3	3	2.7	3	2.9
96	Work with the local fire department to remove dilapidated structures to improve the safety and attractiveness of the community.	3	2.5	1	1.5	1	1.9
97	Streambank restoration to prevent erosion of the subbase of the highway.	3	2.5	1.5	3	1	2.2
98	Clean approximately 33 linear feet of the Tuscarora Creek stream channel of fallen trees and other debris.	3	2.5	1.5	3	1	2.2
99	Clean Narrows Branch of Tuscarora Creek of trees, brush, and other debris.	3	2.5	1.5	3	1	2.2
100	Continue to implement the Countywide public warning system.	3	3	3	3	2.7	2.9
101	Implement a public warning system to alert municipalities downstream from Raystown Dam, which include Huntingdon Borough, Smithfield Township, Juniata Township, Henderson Township, Mill Creek Borough, Brady Township, Union Township, Mapleton Borough, Mount Union Borough, Shirley Township, and Shirleysburg Borough.	3	3	3	3	3	3.0
102	Improve the natural stream design of Shoups Run.	3	2.5	1.5	3	1	2.2
103	Create an emergency plan for the Norfolk Southern Rail line that goes through the Borough in the event a derailment occurred.	3	3	3	3	2.5	2.9

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/Critical Infrastructure	Total Score
104	Plan and assess a COVID-19 distribution plan and the County's broadband capabilities for pandemics. Replenish the County's PPE stockpile.	3	3	3	3	3	3.0
105	Ensure that culvert inlets are cleaned out to prevent road erosion and subsequent flooding.	3	2.5	1	3	2.7	2.4
106	Maintain cross pipe inlets to prevent flooding of roadways during storm events.	3	2.5	2.8	3	2.7	2.8
107	Monitor storm water runoff coming from fields uphill of Marklesburg Borough, that is causing homes to flood below the inlet.	2	2.5	2	3	2.5	2.4
108	Educate the public and township stakeholders about hazardous materials sites and releases.	2	1.5	3	2.5	1	1.9
109	Conduct public outreach to educate residents on preparedness for potential hazardous materials releases from the neighboring strip mine.	2	1.5	1.5	2.8	1	1.7
110	Update the Borough stormwater system.	3	3	2	3	3	2.8
111	Continue blight remediation and implement an ordinance for vacant properties.	3	2.7	1	3	2.5	2.4
112	Stormwater flooding of Cree Manor.	3	2.5	1	3	1	2.15
113	Build up McClure Road with slate and tiles to prevent yearly flooding from Aughwick Creek.	3	3	1	3	2	2.45
114	Collect and analyze data on specific impacts the invasive spotted lantern fly has on Huntingdon County and its municipalities to include in the 5-year update of the Multi-Jurisdictional Hazard Mitigation Plan.	2.8	2.5	1.5	3	2.5	2.4

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6.4-2 Mitigation Action Prioritization.							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 0-1.8		Medium = 1.9-2.4		High = 2.5-3	
NO.	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
115	The County and its municipalities will regularly review and update their respective floodplain regulations to include the required updates following FEMA flood map revisions.	3	3	2.5	3	3	2.9
116	Protect infrastructure and structures at-risk to flood through elevation, acquisition, relocation, or retrofits.	3	3	2.5	3	3	2.9

7. Plan Maintenance

7.1 Update Process Summary

Monitoring, evaluating, and updating this Plan are critical to maintaining its value and success in Huntingdon County's hazard mitigation efforts. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities including a description of how the public will be involved on a continued basis.

Huntingdon County Emergency Management Agency carries out continued efforts with all municipalities in the County to be aware of the progress on mitigation actions in the Plan and opportunities for new mitigation actions. Outreach is conducted semi-annually via phone or email.

The HMPT reviewed the 2015 Plan maintenance section and a few minor updates were made. The majority of this section is consistent with the Plan maintenance section in the 2015 Plan.

7.2 Monitoring, Evaluating and Updating the Plan

MJHMP updates are provided at the bi-monthly Local Emergency Planning Committee meetings and at the monthly Huntingdon County Planning Commission meetings.

Additionally, as part of the HMPT, the Huntingdon County Emergency Management Agency will monitor the progress made on the implementation of the identified action items annually at about the anniversary date of plan adoption. Monitoring will be accomplished by calling or emailing each municipality or municipal agency that, through adoption of the Plan, has assumed the responsibility of implementing one or more mitigation actions.

By monitoring mitigation actions, when the Plan is next updated, information about the status of proposed mitigation actions will be readily available. The updated Plan will include a section explaining if previously proposed mitigation actions have been implemented, completed, or deferred. The updated Plan will identify actions that are no longer appropriate for the community and should be deleted. The updated Plan will identify obstacles to implementation that caused proposed actions to be deferred and will recommend strategies for overcoming those obstacles.

The HMPT will not only monitor the implementation of mitigation actions proposed in this Plan, but will also monitor actions of participating jurisdictions and surrounding communities that may affect the ability of Huntingdon County to withstand the effects of natural hazards or to recover from a disaster in the future. The method for gathering information about actions beyond those proposed in this plan will be informal; as active members of the Huntingdon County community, HMPT members will bring their own knowledge of the area to monitoring meetings to provide information about actions of participating jurisdictions as well as of nearby communities.

One month after conducting the annual monitoring of mitigation actions, the Huntingdon County Emergency Management Agency will schedule an annual meeting of the HMPT to evaluate the mitigation

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planning process, implementation of the plan, and conditions in Huntingdon County that suggest the need to modify either planning data or planning actions. Participating boroughs and townships will be invited to attend the evaluation meetings. The evaluation meeting will include a presentation of the results of the monitoring of mitigation actions and will answer the following questions:

- Do mitigation goals and objectives reflect current community concerns as well as the finding of the risk assessment?
- Have conditions in the County changed so that findings of the risk assessment should be updated?
- What hazards have caused damage in the County since the plan was written? Were these anticipated and evaluated in the plan, or should these hazards be added to the plan?
- Have conditions in the County changed so that the magnitude of risk as expressed in this plan has changed?
- Are new sources of data available that will improve the risk assessment?
- Are current resources sufficient for implementing mitigation actions?
- For each mitigation action that has not been completed, what are the obstacles to implementation? What are potential solutions for overcoming these obstacles?
- Is each completed mitigation action effective in reducing risk? What action is required to further reduce the risk addressed by the completed action?
- What mitigation actions should be added to the plan and proposed for implementation?
- Should any proposed mitigation actions be deleted from the plan? What is the rationale for deleting previously proposed actions from the plan?
- Based upon the evaluation, should the plan be updated as soon as possible or should the plan be updated as scheduled five years after it was adopted?

Huntingdon County Emergency Management Agency will document the results of the annual evaluation meeting and submit the findings to each borough and township for review within two weeks. Documentation of the annual evaluation meeting will be attached to the Huntingdon County paper and electronic copies of this plan within one month. If the HMPT determines that the Plan should be updated as soon as possible, the Huntingdon County Emergency Management Agency will take action to initiate the Plan update.

This Plan must be updated within five years and again adopted by the County and participating jurisdictions in order to maintain compliance with the regulations stated in 44 CFR Part 201.6 and ensure eligibility for applying for and receiving certain Federal mitigation grant funds.

Monitoring and evaluation will identify necessary modifications to the Plan including changes in mitigation strategies and actions that should be incorporated in the next update. The update will also have more current information about previous occurrences of hazards.

Huntingdon County Emergency Management Agency will initiate the process of updating the Plan no more than three years after the plan was adopted or immediately upon a determination by the HMPT that the

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Plan should be updated sooner. This will allow approximately one year for securing funding and/or staff for updating the Plan and one year for conducting research and writing the updated Plan.

7.3 Continued Public Involvement

The Huntingdon County Emergency Management Agency will provide printed copies of the Plan to key Huntingdon County offices so that the public has access to printed copies of the Plan. A copy of the adopted Plan will be posted on the County website for five years so that the public has electronic access to the Plan. The website will include an easy-to-access feedback option so that residents, business owners, and others who read the Plan will be able to provide a comment about the Plan or about the mitigation strategies. Huntingdon County Emergency Management Agency will maintain these comments and will provide them to the HMPT for consideration at the annual Plan evaluation meetings.

Huntingdon County Emergency Management Agency will post notices of annual mitigation plan evaluation meetings using the usual methods for posting meeting announcements in the County to invite the public to participate. In addition to posting announcements on the County website, at least one newspaper press release will be published at the onset of the process of updating the Plan inviting public participation.

Huntingdon County Emergency Management Agency will document the number of people who participate in the annual meetings and the results of the meeting for inclusion in the Plan when it is next updated. In this way, the public will have an opportunity to become involved in the planning process and to influence mitigation planning decisions.

In order to better involve the public in this Plan update, Huntingdon County extended an invitation to all school districts, Juniata College, and various additional stakeholders. This practice will be carried out in future plan updates.

Huntingdon County Emergency Management Agency will provide a written report and/or make a presentation to the Huntingdon County Commissioners to advise them of the status of the Plan and of proposed mitigation actions. In this way, the public will have another opportunity to become aware of local mitigation efforts.

8. Plan Adoption

The Plan was submitted to the Pennsylvania State Hazard Mitigation Officer and forwarded to FEMA for final review and approval-pending-adoption on October 1, 2020. FEMA granted approval-pending-adoption on February 5, 2021. Full approval from FEMA was received on *<Month Day, Year>*.

This section of the Plan includes copies of the local adoption resolutions passed by Huntingdon County and its municipal governments. Adoption resolution templates are provided to assist the County and municipal governments with recommended language for future adoption of the Plan.

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

Huntingdon County 2020 Mitigation Plan Update County Adoption Resolution

Resolution No. _____
Huntingdon County, Pennsylvania

WHEREAS, the municipalities of Huntingdon County, Pennsylvania are most vulnerable to natural hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires State and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, Huntingdon County acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update has been developed by the Huntingdon County Emergency Management Agency in cooperation with other county departments, local municipal officials, and the citizens of Huntingdon County, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update, and

WHEREAS, the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update recommends mitigation activities that will reduce losses to life and property affected by natural hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the County of Huntingdon that:

- The Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update is hereby adopted as the official Hazard Mitigation Plan of the County, and
- The respective officials and agencies identified in the implementation strategy of the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 2020

ATTEST:

HUNTINGDON COUNTY COMMISSIONERS

By _____

By _____

By _____

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update

Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update Municipal Adoption Resolution

Resolution No. _____

<Borough/Township of Municipality Name>, Huntingdon County, Pennsylvania

WHEREAS, the <Borough/Township of Municipality Name>, Huntingdon County, Pennsylvania is most vulnerable to natural hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires State and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, the <Borough/Township of Municipality Name> acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update has been developed by the Huntingdon County Emergency Management Agency in cooperation with other county departments, and officials and citizens of <Borough/Township of Municipality Name>, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update, and

WHEREAS, the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update recommends mitigation activities that will reduce losses to life and property affected by natural hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the <Borough/Township of Municipality Name>:

- The Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update is hereby adopted as the official Hazard Mitigation Plan of the <Borough/Township>, and
- The respective officials and agencies identified in the implementation strategy of the Huntingdon County 2020 Multi-Jurisdictional Hazard Mitigation Plan Update are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 2020

ATTEST:

<BOROUGH/TOWNSHIP OF MUNICIPALITY

By _____

By _____

By _____

9. Appendices

- Appendix A – Bibliography
- Appendix B – Local Mitigation Plan Review Tool
- Appendix C – Meeting and Other Participation Documentation
- Appendix D – Local Municipality Flood Vulnerability Maps
- Appendix E – Critical Facilities
- Appendix F – Hazus Reports
- Appendix G – Dam Failure