Potter County
2018 Standard All-Hazard Mitigation Plan

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1. INTRODUCTION

1.1. Background

The **Potter County All-Hazard Mitigation Plan Update** is a plan that encompasses the input of the emergency management community, elected officials, other stakeholders and the general public. This plan update builds off of the original Potter County All-Hazard Mitigation Plan (HMP) approved in 2013.

Mitigation begins at the local level, in communities, boroughs, and cities where impacts of damaging events are first felt. Local mitigation planning focuses community attention on development issues prior to a disaster, ensuring participation in a more proactive sense. Through participation in the hazard mitigation planning process, local entities possess the capability to identify, take advantage of, and implement mitigation strategies. Active hazard mitigation in a community also contributes to public safety and welfare, economic development, and environmental protection.

Natural hazards, such as floods, tornadoes and hurricanes, are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. However, through hazard mitigation planning, we can attempt to control what comes afterward. By minimizing the impact of natural and human-made hazards upon our environment, we can help to prevent such events from resulting in disasters.

Hazard mitigation describes actions taken to prevent or reduce the long-term risks to life and property from hazards. Pre-disaster mitigation actions are taken in advance of a hazard event and are critical to breaking a disaster cycle--damage, reconstruction, and repeated damage. Mitigation actions should be long-term, cost-effective means of reducing the risk of loss. Such actions include structural projects, natural resource protection, public education, emergency services, property protection and prevention. These activities can target existing development or seek to protect future development by avoiding any new hazardous situations. It is widely accepted that the most effective mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made.

A mitigation plan ensures that measures to reduce the present and future vulnerability of a community are thoroughly considered before, during, and after a disaster strikes. Mitigation planning offers many benefits that include:

- saving lives and property;
- saving money;
- speeding recovery following disasters;
- reducing future vulnerability through wise development / redevelopment;
- expediting both pre-disaster and post-disaster grant funding;
- a commitment to improving community health and safety.

The State of Pennsylvania and the U.S. Congress have made the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for mitigation grant funding. Communities with an adopted plan will therefore be "pre-positioned" and more apt to receive any available mitigation funds.

Mitigation planning has the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of mitigation is that current dollars invested in mitigation practices will significantly reduce the demand for future dollars by lessening the amount needed for emergency recovery, repair and reconstruction. Further, these mitigation practices will enable local residents, businesses and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

Mitigation planning will also lead to benefits that go beyond solely reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, maintaining environmental health and natural features, and enhancing recreational opportunities.

With a land area of 1,092 square miles and a population of 17,450, Potter County is a rural sixth-class county in Western Pennsylvania that is particularly vulnerable to the effects of a wide range of natural and human-made hazards. These hazards threaten the life and safety of County residents, and have the potential to damage or destroy both public and private property and disrupt the local economy and overall quality of life. The County government, its residents and businesses have in fact suffered disaster losses in years past that exceed millions of dollars and resulted in the loss of life.

Beginning in the mid-1990's, Potter County established a firm commitment to reducing the potential for future disaster losses. Following a destructive series of flooding and severe weather, Potter County municipalities were awarded significant funding in order to mitigate public property against future storm events.

In an effort to sustain this local commitment to hazard mitigation, Potter County prepared its first version of the All Hazard Mitigation Plan, approved in 2013. At its most inner core, the Plan recommended specific actions to combat the forces of nature and protect its residents from hazard losses.

The county HMP is required to be updated every 5 years. Accordingly, this HMP Update has been developed as part of a regional effort. The county Hazard Mitigation Planning Team (Planning Team) is responsible for the actual development of the update, acting upon changes and recommendations by Pennsylvania Emergency Management Agency (PEMA) and the Federal Emergency Management Agency (FEMA).

The planning process to update the Potter HMP was initiated in 2017. This update was made possible through meetings and communication between the members of the Planning Team, County officials, municipal representatives, business leaders, emergency responders and other stakeholders. Potter County has also examined the Hazard Mitigation Plans for the State of Pennsylvania and several counties, including Tioga County and McKean County. The Potter County DES acts as a coordinating body

For both the Pennsylvania Emergency Management Agency (PEMA) and the Federal Emergency Management Agency (FEMA).

The HMP update is the result of the dedicated work by the Potter County citizens and officials of the County to develop an updated pre-disaster multi-hazard mitigation plan that will not only guide the County toward improved resistance to disaster, but will also potentially save the County money in the long-run by breaking the repetitive cycle of disaster—damage, reconstruction and repeated damage.

1.2. Purpose

The purpose of this HMP is to minimize the impact of hazards, both natural and human-made on the citizens, property, environment and economy of Potter County. The Potter County HMP Update was developed in accordance with the requirements of the Federal Emergency Management Agency (FEMA) Disaster Mitigation Act of 2000 (DMA 2000), and its implementing regulations (44 CFR §201.6, published February 26, 2002).

The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 requires that local governments (communities/counties), as a condition of receiving federal disaster mitigation funds, have a mitigation plan that describes the process for identifying hazards, creating risk assessment and vulnerability analysis, identifying and prioritizing mitigation strategies, and developing an implementation schedule for the County and each of the municipalities. Local mitigation plans are required to include both an action plan to mitigate hazards, risks, and vulnerabilities, as well as a strategy to implement those actions.

This Plan details a updated community profile, planning process, revised hazards, risk and capability assessments, community goals and objectives, and mitigation strategies/opportunities and actions that are appropriate for implementation in Potter County, Pennsylvania.

1.3. Scope

This All-Hazard Mitigation Plan applies to Potter County and any municipalities that adopt this HMP. It must be noted that only those municipalities that actively participated in the Plan update process will remain eligible for state and federal funding for implementation of the HMP. For the purpose of this Plan update, municipal participation is defined as providing the Planning Team with municipality-specific information (i.e., completed Risk Assessment Update Worksheet or Capability Assessment Survey), and attendance by a municipal at a planning or public meeting conducted during the planning process.

1.4. Authority and References

This section lists references used to prepare the Potter County HMP update. Existing plans and studies were also reviewed and integrated into the HMP. This information was used to formulate the County profile, to identify the history of individual hazards, and to detail the population projections in Potter County.

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;
- Code of Federal Regulations (CFR), Title 44, Parts 79.4, 201 and 206; and
- Disaster Mitigation Act (DMA) of 2000, Public Law 106-390, as amended.

Authority for this plan originated 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.
- Pennsylvania Stormwater Management Act of October 4, 1978. P.L. 864, No. 167.

The following Federal Emergency Management Agency (FEMA) guides and reference documents were also 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 *Multi-Hazard Mitigation Planning Guide Under the Disaster Mitigation Act of 2000*. January, 2008.
- FEMA *Local Multi-Hazard Mitigation Planning Guidance*. July 1, 2008.
- FEMA *National Fire Incident Reporting System 5.0: Complete Reference Guide*. January 2008.

The following Pennsylvania Emergency Management Agency (PEMA) guides and reference documents were used to 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 6, 2009.
- PEMA *Pennsylvania's Hazard Mitigation Planning Standard Operating Guide*. July 2010.

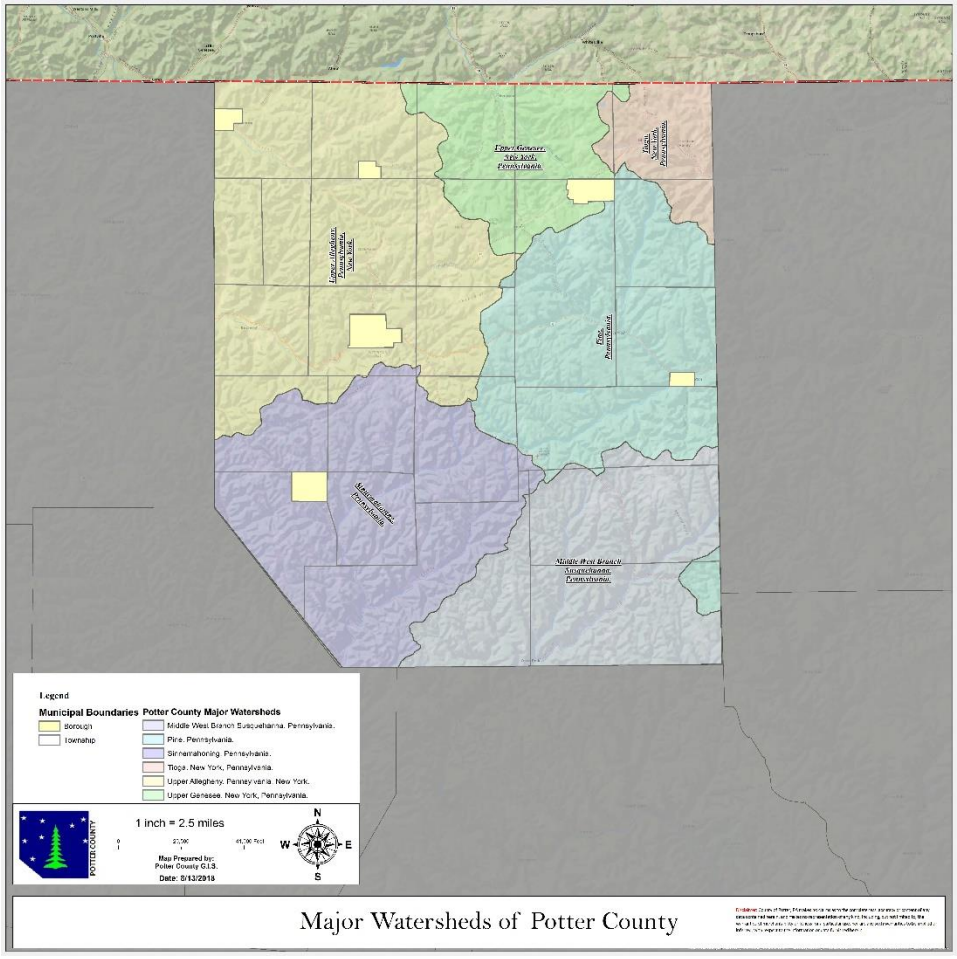
2. COMMUNITY PROFILE

2.1. Geography and Environment

Potter County is a rural sixth-class county in the west-central part of Pennsylvania. It has a land area of 1,081 square miles. Eighty-Eight (88%) percent of the land area is forest, 966.4 square miles, or 710,523 acres. Sinnemahoning Creek forms the southern boundary and the Allegheny River forms a large part of the western boundary. Coudersport is the county seat and is located slightly northwest of the center of the county.

Potter County is unique because it is has the headwaters of three major water sources. On a plateau near Gold, three springs on the same farm are headwaters of the Genesee River, which flows into the Gulf of St Lawrence, the Allegany that flows into the Gulf of Mexico, and a tributary of the Susquehanna River, which flows into the Chesapeake Bay. The map in Figure 2.1-1 shows the three watersheds in Potter County.

Figure 2.1-1 Map of Potter County Watersheds



Located about 163 miles southeast of Erie and 204 miles north of Pittsburgh, the county is easily accessible with Route 6 running east and west throughout the county. There are 510 miles of state and federal highways and 562.72 miles of secondary and municipal roads in the County.

Potter County is home to six State parks – Patterson, Lyman Run, Cherry Springs, Denton Hill, Ole Bull and Prouty Place. These State parks are popular with the local population, as well as tourists, for enjoying boating, camping, fishing, hunting, mountain biking, and swimming. In addition, Cherry Springs is widely known as one of the darkest places in the Northeastern United States and is very popular for professional and amateur stargazing.

2.2. Community Facts

The early history of Potter County is the history of timber. The county abounded in great pine and hemlock forest that were cut and rafted down the streams in the Allegany and Susquehanna rivers. When land was sold in the early days the timber rights were reserved and the only profit the settlers got from this great wealth of forest was that he might be paid for cutting it. Loggers from Maine and Canada were brought in to get out the pine. The hemlock was cut and the bark taken for tanning leaving the peeled logs lying on the ground.

Lumbering is no longer the great industry of the county. Today agriculture, together with several sizable industries provides employment for the inhabitants. The growing of great quantities of certified seed potatoes has become an important agricultural enterprise in the county. In addition, some oil has been produced for many years and large gas wells have been drilled in several localities. The Marcellus Shale play has sparked additional drilling, although most of this taken place in surrounding counties. Currently drilling in the Utica Shale play is the most prevalent drilling activity within Potter County.

Potter County has been called the “last frontier” of Pennsylvania because of the slowness of settlement due to the lack of adequate transportation. Not until completion of the Erie Canal in 1825 hastened the settlement of southern New York, was any considerable growth shown in neighboring Potter County.

Potter County is composed of six boroughs, Austin, Coudersport, Galeton, Oswayo, Shinglehouse, and Ulysses. And twenty-four townships, Abbott, Allegany, Bingham, Clara, Eulalia, Genesee, Harrison, Hebron, Hector, homer, Keating, Oswayo, Pike Pleasant Valley, Portage, Roulette, Sharon, Stewardson, Summit, Sweden, Sylvania, Ulysses, West Branch, and Wharton.

2.3. Population and Demographics

Potter County has population of 17,457 according to 2010 U.S. Census data. This represents a -3.5% decrease from the 2000 U.S. Census according to the Center for Rural Pennsylvania. The population projections for 2020 and 2030 suggest minimal growth or a decrease, at 17,641 and 17,153. (The Center for Rural Pennsylvania. “County Profile.”http://www.ruralpa2.org/county_profiles.cfm.) The overall population density of Potter County is 16.1 persons per square mile. The county seat, Coudersport Borough, holds the largest population with 2,589 citizens. The remainder of the County is sparsely populated with some concentrations of population along the main highway corridors throughout the county. Table 2.3-1 shows the population of the county by municipality as per the U.S. 2010 Census.

Table 2.3-1: List of municipalities in Potter County with associated population (U.S. Census, 2011)

MUNICIPALITY	2010 POPULATION
Abbott Township	242
Allegany Township	422
Austin Borough	562
Bingham Township	684
Clara Township	199
Coudersport Borough	2,546
Eulalia Township	889
Galeton Borough	1,149
Genessee Township	799
Harrison Township	1,037
Hebron Township	589
Hector Township	386
Homer Township	437
Keating Township	312
Oswayo Borough	139
Oswayo Township	278
Pike Township	324
Pleasant Valley	86
Portage Township	228
Roulette Township	1,197
Sharon Township	866
Shinglehouse Borough	1,127
Stewardson Township	74
Summit Township	188
Sweden Township	872
Sylvania Township	77
Ulysses Borough	621
Ulysses Township	635
West Branch Township	393
Wharton Township	99
Potter County Total	**17,457**

The 2015 median household income for Potter County was $41,754. Compared to a Pennsylvania median household income of $55,683. 14.3% of the county's population was living under the poverty level during that time. 22.4% of families were considered low-income, earning less than $20,000 per year. Home ownership was 77.1% with a median value of owner-occupied units at $87,300. 48.1% of housing units were vacant. (The Center for Rural Pennsylvania. "County Profile." http://www.ruralpa2.org/county_profiles.cfm)

Table 2.3-2 provides data on the age demographics of the county as per the 2010 Census data. The median age of the county's population is 44.9 years, according to the Center for Rural Pennsylvania.

Table 2.3-2 Age Demographics of Potter County (U.S. Census, 2010)

DEMOGRAPHICS	CENSUS 2010	% OF POPULATION
Total Population	17,457	
Male	8,724	49.97%
Female	8,733	50.03%
Under 18 years	3,901	22.35%
18 - 64 years	10,153	58.16%
65 years and over	3,403	19.49%

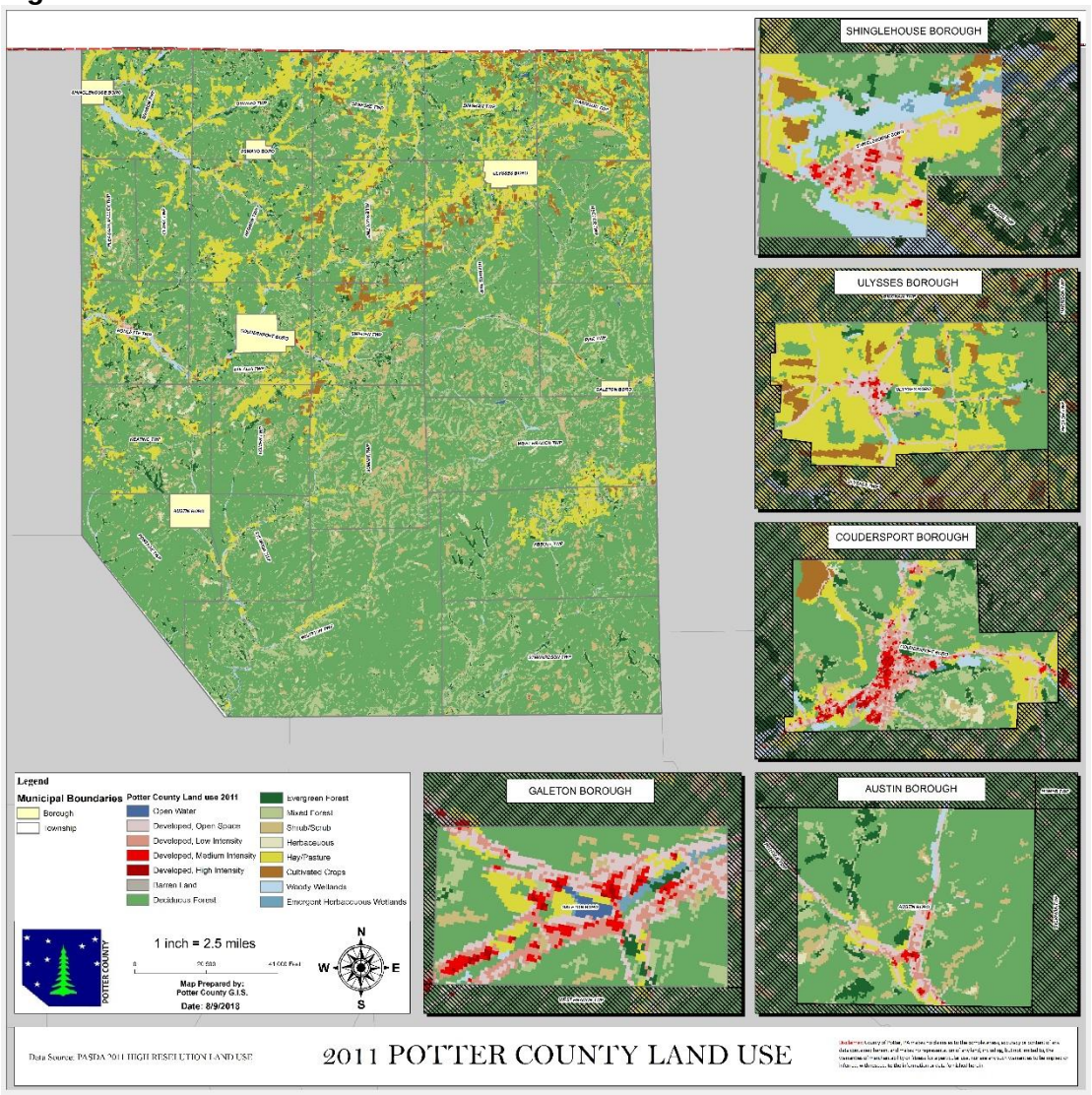
As the population decreases and ages, future challenges of maintaining public/emergency services provided through volunteers will be at the forefront of sustainability for these essential community services.

2.4. Land Use and Development

The Pine Creek, Allegheny and Sinnemahoning Rivers provide many recreational and scenic areas within the County. These rivers in combination with the County's forest areas, have contributed significantly to the County's economy.

The current land use map for Potter County can be seen in Figure 2.4-1.
This is the latest map available reflecting land usage within Potter County.

Figure 2.4-1 Land Use



88,457 acres of Potter County are farmland in 2007 (12.8% of the county) with the average farm of 234 acres per The Center for Rural Pennsylvania. The average market value of products sold per farm was $83,008.

2.5. Data Sources

Information for the updated Potter County Community Profile was developed using multiple sources, including the following:

- *Potter County All-Hazard Mitigation Plan*, 2013.
- *Potter County Comprehensive Plan*, 2005.
- U.S. Census Bureau. 2010 Census.
- The Center for Rural Pennsylvania. "County Profile." http://www.ruralpa2.org/county_profiles.cfm.
- Data sources used to update the HMP in general are listed in Section 1.4.

3.1. Update Process and Participation Summary

In accordance with the Disaster Mitigation Act of 2000 (DMA 2000) requirements, this Plan documents the following topics:

- Planning process
- Hazard identification
- Risk assessment
- Mitigation strategy: goals, actions, and projects
- Formal adoption by the participating jurisdictions
- PEMA and Federal Emergency Management Agency (FEMA) approval

The process of updating the plan is described in the *Standard Operating Guide* listed in Section 1.4. The review, analysis, and update of each of the hazard identification, risk assessment, and mitigation strategy sections are described in Sections 4 and 6.

Information to update the current plan was gathered via research, public participation, and planning meetings. Participation was facilitated by meetings, surveys, and a website created for public information and comment during the update process. In this way, the Plan represents input from County, municipalities, and other stakeholders as well as the public.

3.2. The Planning Team

The County's Planning Team consists of the following members:

- Glenn Dunn, Potter County Department of Emergency Services
- Dean Predmore, Potter County Department of Emergency Services
- Will Hunt, Potter County Planning Director
- Kathy Brooks, Potter County Department of Emergency Services
- Deb Ostrum, Potter County Planning Commission
- Helen Turner, Potter County Local Emergency Planning Committee
- Jason Childs, Potter County Conservation District
- Charlie Tuttle Potter County GIS
- Steve Baker, Potter County Local Emergency Planning Committee
- Julie Logue, Potter County 911/MSAG

Mr. Dunn served as the primary point of contact at the Department of Emergency Services.

3.3. Meetings and Documentation

The Planning team held the following meetings during the update process:
Meeting minutes were taken at each jurisdictional team meeting to document attendees, discussion and decisions. All such documentation from the meetings can be found in the Appendices. County residents were informed of public meetings through various sources, including local newspapers, press releases, and announcements on the hazard mitigation plan update website (www.potterhmp.com).

The Potter County DES partnered with Potter County Planning and GIS departments with the development of the updated HMP. The County provided GIS maps, copies, facilities for meetings, as well as guidance and input as necessary. The Planning Team reviewed any documentation produced for the project.

3.4. Public and Stakeholder Participation

In an effort to achieve the highest level of public and stakeholder participation possible, the Planning Team strongly encouraged involvement in the HMP update. Input was requested and collected via several means including email, meetings, surveys and the Potter County HMP website. The documents provided for municipality review included Existing Actions (from the 2013 plan), Hazard Identification/Risk Assessment, Capabilities Assessment Survey, Risk Factor Evaluation, and a Mitigation Strategy Goals and Objectives Evaluation. Copies of these forms may be found in the Appendices and/or in the body of this document. These were provided to the municipalities attending the meetings and sent out via email and/or hard-copy for those who did not attend the meetings. 22 out of 30 municipalities in Potter County, plus the Coudersport School District and UPMC Cole Hospital, responded so that their input could be reviewed and incorporated into the updated County HMP.

Local government, neighboring counties, local businesses, community leaders, educators, and other relevant stakeholders that had a vested interest in the development of the updated Plan were given the opportunity to participate in the planning process by attending a planning or public meeting, or offering comments on the website. Invitations to participate in meetings were sent to all municipalities and other stakeholders identified by the County. Letters were sent to reach out to adjacent counties to advise them of the update in progress, as well as to request questions, concerns or suggestions.

Copies of invitation letters and a list of municipal contacts are included in the Appendices. Surveys were provided to all municipalities via postal and electronic mail, as well as being placed on the project website (www.potterhmp.com). 23 out of 30 municipalities' representatives attended at least one type of these meetings. Also in attendance at some meetings were representatives of Charles Cole Memorial Hospital and Coudersport Area School District. Municipalities that did not attend any meetings were contacted individually by email to encourage participation.

Through public notices published in several local and regional newspapers, as well as a local news website (www.solomonswordsblogspot.com), the above groups and the general public were invited to review the Draft Plan update, copies of which were available on the project website (www.potterhmp.com), at the Potter County Gunzburger Building, and at the Coudersport Public Library. Comments were requested and to be forwarded to the Potter County EMA or Potter County Planning. A copy of the actual public notice is in Figure 3.4-1.

Figure 3.4-1 Public Notice

Section 3.5 includes a table showing overall municipal participation in the planning process. Despite being invited to public meetings, receiving postal mailings, receiving numerous e-mail messages throughout the process, and being contacted individually via email and/or telephone to participate in the planning process, the Planning Team was unable to secure participation from all 30 municipalities.

3.5. Multi-Jurisdictional Planning

This HMP update was prepared with a multi-jurisdictional approach in an effort to best meet the needs of the County and its municipalities. While the County had access to Plan updates, (as well as data, Geographic Information Systems [GIS], etc.) to which the municipalities may not have had access, the County was dependent on the municipalities' participation for multiple reasons including local knowledge of hazards and mitigation activities. In addition, municipality buy-in was critical for the process since the municipalities have the legal authority to enforce compliance of land use planning and development issues. A concerted effort was undertaken to involve all 30 municipalities in the update process.

Each municipality was given the opportunity to participate in this process. Municipal officials and representatives were invited to attend meetings, asked for comment on their prior existing HMP actions, and asked to create and prioritize mitigation actions. Since several municipalities were not able to attend a meeting as part of the planning process, EMA contacted them via telephone or email to provide another opportunity for participation. Participation culminates in formal adoption of the HMP; copies of municipal adoption resolutions to be found in the Appendices *pending approval*. The tables on the following pages reflect the municipalities that met the planning participation requirements that applied to this HMP update.

Figure 3.5-1 Participation Table

MUNICIPALITY / ORGANIZATION	MEETINGS							WORKSHEETS/SURVEYS/FORMS							
	PLANNING TEAM MEETINGS						PUBLIC MEETING								
	PLANNING TEAM MEETING)	PLANNING TEAM MEETING)	PLANNING TEAM MEETING)	JURISDICTION TEAM MEETING	JURISDICTION TEAM MEETING	JURISDICTION MEETING (individual)	PUBLIC MEETING	Hazard ID	Capability Assessment	Risk Assessment Update	Goals and Objectives	Mitigation Action Form(s)	Existing Mitigation Action Review	Risk Factor Evaluation	Mitigation Technique Matrix
Abbott				X	X		X	X	X		X	X	X	X	
Allegheny	X			X	X		X	X	X	X				X	X
Austin Boro						X									
Bingham				X	X		X		X	X					
Clara															
Coudersport Schools						X			X			X			
Coudersport Boro				X		X		X	X		X	X			
Eulalia					X	X		X	X		X	X		X	
Galeton Boro					X		X		X		X	X	X		
Genesee				X	X		X	X	X	X	X		X	X	
Harrison				X											
Hebron	X			X	X		X	X	X	X		X	X	X	X
Hector							X	X	X						
Homer					X			X	X	X	X	X		X	
Keating					X		X		X			X			
Oswayo Boro					X			X	X						
Oswayo Twp								X	X						
Pike					X						X	X		X	
Pleasant Valley							X	X							
Portage															
Roulette				X	X	X	X	X	X		X	X			
Shinglehouse Boro							X	X	X	X					
Sharon				X	X			X	X		X			X	
Stewardson					X								X	X	
Summit				X	X			X	X			X			
Sweden					X			X	X	X	X			X	
Sylvania															
Ulysses Boro															
Ulysses Twp							X								
West Branch				X	X		X	X	X	X		X	X		
Wharton															
LEPC	X														
Penn DOT		X													
Potter Conserv District	X	X				X									
Potter Planning Comm	X			X											
Potter County 911	X	X	X			X	X								
Potter County DES	X	X	X	X	X	X	X								
Potter County LEPC	X	x	X	X			X								
Charles Cole Hospital	X				X						X				

Despite the efforts of the Planning Team to include all municipalities in the planning process, all municipalities did not participate. The Planning Team made multiple attempts to contact these municipalities via mail, telephone and e-mail.

3.6. Existing Planning Mechanisms

The update planning process allowed for the review and incorporation of existing state and local plans, studies, and reports that could aid in the mitigation of hazards across the County. This updated Plan builds upon previous, related planning efforts and mitigation programs.

Despite the efforts of the Planning Team to include all municipalities in the planning process, all municipalities did not participate. The Planning Team made multiple attempts to contact these municipalities via mail, telephone and e-mail.

4. RISK ASSESSMENT

4.1. Update Process Summary

The Risk Assessment section of the Potter County Hazard Mitigation Plan (HMP) update provides a factual resource for the mitigation strategy. This section incorporates existing data and analysis from the approved 2013 HMP, as well as recent data and analysis on hazards occurring since that time.

In the 2013 HMP, the following hazards were identified as posing the greatest risk to the County and municipalities:

- Floods
- Severe Winter Weather
- Thunderstorms and Tornadoes
- Droughts
- Subsidence – Natural/Mine Related
- Landslides
- Earthquakes

In an effort to identify the hazards currently posing the greatest risk to Potter County, the Planning Team and the municipalities discussed the hazards in the current plan and potential new hazards in a meeting, utilizing the Pennsylvania State Standard List of Hazards. After analyzing the documentation from the PT and the municipalities, the Evaluation of Identified Hazard and Risk Forms, and reviewing the Pennsylvania State All-Hazard Mitigation Plan a new list of 19 hazards was established for the HMP as follows:

Natural Hazards

- Drought
- Earthquake
- Flood, Flash Flood, Ice Jam
- Hailstorm
- Hurricane, Tropical Storm, Nor'easter
- Invasive Species
- Landslide
- Lightning Strike
- Pandemic
- Radon Exposure
- Tornado, Wind Storm
- Wildfire
- Winter Storm

Human–Made Hazards

- Dam Failure
- Environmental Hazards
- Levee Failure
- Nuclear Incident
- Transportation Accidents
- Utility Interruptions

While there were a number of hazards added to the plan, there was also one hazard, Subsidence-Natural/Mine Related, that the PT and municipalities determined should be removed.

This section of the plan provides a detailed profile of each of the hazards in the Plan. The profiles describe and assess vulnerabilities and risks of each of the hazards in Potter County.

4.2. Hazard Identification

As discussed, the PT and municipalities analyzed and determined the hazards facing Potter County. To determine those hazards with the greatest risk of impacting the County, past Presidential Disaster Declarations, Gubernatorial Proclamations and SBA Economic Injury actions were documented and reviewed. Table 4.2-1 identifies these actions impacting Potter County from 1966 through 2018. No disaster declarations have been declared in Potter County since the fall of 2012.

Table 4.2-1 Disaster Declarations, Gubernatorial Proclamations of Emergency and SBA Economic Injury		
Declaration Date	**Disaster Type**	**Actions**
October 2012	Proclamation of Emergency - Hurricane Sandy	Governor Tom Corbett; Presidential Declaration of Emergency as of10/29/2012
June 2007	Drought	SBA Economic Injury
April 2007	Proclamation of Emergency -Severe Winter Storm	Governor Edward G. Rendell-Governor's Proclamation
February 2007	Proclamation of Emergency -Severe Winter Storm	Governor Edward G. Rendell-Governor's Proclamation
September 2006	Proclamation of Emergency - Tropical Depression Ernesto	Governor Edward G. Rendell-Governor's Proclamation
August 2006	Excessive Rain, Flooding, & Flash Flooding	SBA Economic Injury
June 2006	Proclamation of Emergency - Flooding	Governor Edward G. Rendell; Presidential - Major Disaster for Individual Assistance, Public Assistance and Hazard Mitigation
September 2005	Proclamation of Emergency- Hurricane Katrina	Governor Edward G. Rendell; Presidential Declaration of Emergency as of 9/10/2005 for Public Assistance
September 2004	Tropical Depression Ivan	Governor Edward G. Rendell; AS OF 10/19/04 - Presidential - Major Disaster (Individual Assistance and Public Assistance
August 2003	Severe Storms, Tornado, Flooding	Presidential for Individual Assistance and Public Assistance in Potter. SBA - Economic Injury Disaster Loan for McKean, Potter & Tioga
March 2003	Fire, Borough of Emporium	SBA Economic Injury Disaster Loan

September 1999	Hurricane Floyd	Governor Tom Ridge, Governor's Proclamation & President's Declaration Of Major Disaster - Individual Assistance - Berks County; Individual Assistance and Public Assistance - Bucks, Chester, Adams and Philadelphia counties; Individual Assistance and Public Assistance, Categories A & B - Lancaster and York counties.
July 1999	Drought	Governor Tom Ridge- Governor's Proclamation, Individual Assistance, Hazard Mitigation Grant Program - Amended to include all 67 counties for an agricultural disaster.
January 1996	Severe Winter Storms	Governor Tom Ridge - Governor's Proclamation & President's Declaration Of Major Disaster.
January 1996	Flooding	Governor Tom Ridge - Governor's Proclamation; President's Declaration of Major Disaster.
September 1995	Drought	Governor Tom Ridge - Governor's Proclamation.
January 1994	Severe Winter Storms	Governor Robert P. Casey - Governor's Proclamation & President's Declaration Of Major Disaster.
March 1993	Blizzard	Governor Robert P. Casey - Governor's Proclamation & President's Declaration of Emergency.
July 1991	Drought	Governor Robert P. Casey - Governor's Proclamation.
February 1978	Blizzard	Governor Milton J. Shapp - Governor's Proclamation.
January 1978	Heavy Snow	Governor Milton J. Shapp - Governor's Proclamation.
January 1977	Gas Shortage/Severe Winter Weather	President's Declaration of Emergency; Governor Milton J. Shapp - Governor's Proclamation

September 1975	Severe Storms, Heavy Rains, Flooding (Eloise)	President's Declaration Of Major Disaster; Governor Milton J. Shapp - Governor's Proclamation.
February 1974	Truckers Strike	Governor Milton J. Shapp - Governor's Proclamation.
June 1972	Flood (Agnes)	President's Declaration Of Major Disaster; Governor Milton J. Shapp - Governor's Proclamation.
February 1972	Heavy Snow	Governor Milton J. Shapp - Governor's Proclamation.
January 1966	Heavy Snow	Governor William W. Scranton - Governor's Proclamation.

4.2.2. Summary of Hazards

Utilizing the Pennsylvania Standard List of Hazards, the Planning Team and participating municipalities determined the hazards for which the County is most at risk. Six of the seven hazards from the 2005 plan were carried over (excepting Subsidence-Natural/Mine Related) and fourteen hazards were added. All nineteen hazards are defined in Table 4.2-2. Profiles of the hazards may be found in section 4.3.

Table 4.2-2 2018 Potter County Hazards Identified and Defined as per the Pennsylvania Standard List of Hazards

Hazard	Hazard Description
Drought	Drought is a natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought. This hazard is of particular concern in Pennsylvania due to the presence of farms as well as water-dependent industries and recreation areas across the Commonwealth. A prolonged drought could severely impact these sectors of the local economy, as well as residents who depend on wells for drinking water and other personal uses. (National Drought Mitigation Center, 2006).
Earthquake	An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10-20 miles of the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of underground caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake. (FEMA, 1997).
Flood, Flash Flood, Ice Jam	Flooding is the temporary condition of partial or complete inundation on normally dry land and it is the most frequent and

	costly of all hazards in Pennsylvania. Flooding events are generally the result of excessive precipitation. General flooding is typically experienced when precipitation occurs over a given river basin for an extended period of time. 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. The severity of a flood event is dependent upon a combination of stream and river basin topography and physiography, hydrology, precipitation and weather patterns, present soil moisture conditions, the degree of vegetative clearing as well as the presence of impervious surfaces in and around flood-prone areas. (NOAA, 2009). 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. All forms of flooding can damage infrastructure (USACE, 2007).
Hailstorm	In addition to flooding and severe winds, hail is another potential damaging product of severe thunderstorms. 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 (FEMA, 1997). The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Damage to crops and vehicles are typically the most significant impacts of hailstorms. Areas in eastern and central Pennsylvania typically experience less than 2 hailstorms per year while areas in western Pennsylvania experience 2-3 annually. (FEMA, 1997).
Hurricane, Tropical Storm, Nor'easter	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 (in the Northern Hemisphere) and whose diameter averages 10-30 miles across. While most of Pennsylvania is not directly affected by the devastating impacts cyclonic systems can have on coastal regions, many areas in the state are subject to the primary damaging forces associated with these storms including high-level sustained winds, heavy precipitation, and tornadoes. Areas in southeastern Pennsylvania could be susceptible to storm surge and tidal flooding. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season (June through November). (FEMA, 1997).

Invasive Species	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 or environmental harm or harm to human health. These species can be any type of organism: plant, fish, invertebrate, mammal, bird, disease, or pathogen. Infestations may not necessarily impact human health, but can create a nuisance or agricultural hardships by destroying crops, defoliating populations of native plant and tree species, or interfering with ecological systems (Governor's Invasive Species Council of Pennsylvania, 2009).
Landslide	A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, and changes in groundwater levels. Mudflows, mudslides, rock falls, rockslides, and rock topples are all forms of a landslide. Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires. (Delano & Wilshusen, 2001).
Lightning Strike	Lightning is a discharge of electrical energy resulting from the build-up of positive and negative charges within a thunderstorm. The flash or "bolt" of light usually occurs within clouds or between clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000°F. On average, 89 people are killed each year by lightning strikes in the United States. Within Pennsylvania, the annual average number of thunder and lightning events a given area can expect ranges between 40-70 events per year (FEMA, 1997).
Pandemic	A pandemic occurs when infection from of a new strain of a certain disease, to which most humans have no immunity, substantially exceeds the number of expected cases over a given period of time. Such a disease may or may not be transferable between humans and animals. (Martin & Martin-Granel, 2006).
Radon Exposure	Radon is a cancer-causing natural radioactive gas that you can't see, smell, or taste. It is a large component of the natural radiation that humans are exposed to and can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings. According to the USEPA, radon is estimated to cause about 21,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer (EPA 402-R-03-003: EPA Assessment…, 2003). An estimated 40% of the homes in Pennsylvania are believed to have elevated radon levels (Pennsylvania Department of Environmental Protection, 2009).
Tornado, Wind Storm	A wind storm can occur during severe thunderstorms, winter storms, coastal storms, or tornadoes. Straight-line winds such as a downburst have the potential to cause wind gusts that exceed 100 miles per hour. Based on 40 years of tornado history and over 100 years of hurricane history, FEMA identifies western and central Pennsylvania as being more susceptible to higher winds than eastern Pennsylvania. (FEMA, 1997). A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud

	extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes or tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage. Waterspouts are weak tornadoes that form over warm water and are relatively uncommon in Pennsylvania. Each year, an average of over 800 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries (NOAA, 2002). Based on NOAA Storm Prediction Center Statistics, the number of recorded F3, F4, & F5 tornadoes between 1950-1998 ranges from <1 to 15 per 3,700 square mile area across Pennsylvania (FEMA, 2009). A water spout is a tornado over a body of water (American Meteorological Society, 2009).
Wildfire	A wildfire is a raging, uncontrolled fire that spreads rapidly through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. Wildfires can occur at any time of the year, but mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Wildfires in Pennsylvania can occur in fields, grass, brush, and forests. 98% of wildfires in Pennsylvania are a direct result of people, often caused by debris burns (PA DCNR, 1999).
Winter Storm	Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. 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. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow, which can severely impair visibility and disrupt transportation. The Commonwealth of Pennsylvania has a long history of severe winter weather. (NOAA, 2009).

Dam Failure	A dam is a barrier across flowing water that obstructs, directs, or slows down water flow. Dams provide benefits such as flood protection, power generation, drinking water, irrigation, and recreation. Failure of these structures results in an uncontrolled release of impounded water. Failures are relatively rare, but immense damage and loss of life is possible in downstream communities when such events occur. Aging infrastructure, hydrologic, hydraulic and geologic characteristics, population growth, and design and maintenance practices should be considered when assessing dam failure hazards. The failure of the South Fork Dam, located in Johnstown, PA, was the deadliest dam failure ever experienced in the United States. It took place in 1889 and resulted in the Johnstown Flood which claimed 2,209 lives (FEMA, 1997). Today there are approximately 3,200 dams and reservoirs throughout Pennsylvania (Pennsylvania Department of Environmental Protection, 2009).
Environmental Hazards	Environmental hazards are hazards that pose threats to the natural environment, the built environment, and public safety through the diffusion of harmful substances, materials, or products. Environmental hazards include the following:• Hazardous material releases; at fixed facilities or as such materials are in transit and including toxic chemicals, infectious substances, bio hazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive (PL 1990-165, § 207(e)). • Air or Water Pollution; the release of harmful chemical and waste materials into water bodies or the atmosphere, for example (National Institute of Health Sciences, July 2009; Environmental Protection Agency, Natural Disaster PSAs, 2009).• Air or Water Pollution; the release of harmful chemical and waste materials into water bodies or the atmosphere, for example (National Institute of Health Sciences, July 2009; Environmental Protection Agency, Natural Disaster PSAs, 2009).• Superfund Facilities; hazards originating from abandoned hazardous waste sites listed on the National Priorities List (Environmental Protection Agency, National Priorities List, 2009).• Manure Spills; involving the release of stored or transported agricultural waste, for example (Environmental Protection Agency, Environmental Impacts of…, 1998).• Product Defect or Contamination; highly flammable or otherwise unsafe consumer products and dangerous foods (Consumer Product Safety Commission, 2003).
Levee Failure	A levee is a human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding (Interagency Levee Policy Review Committee, 2006). Levee failures or breaches occur when a levee fails to contain the floodwaters for which it is designed to control or floodwaters exceed the height of the constructed levee. 51 of Pennsylvania's 67 counties have been identified as having at least one levee (FEMA Region III, 2009).
Nuclear Incident	Nuclear accidents generally refer to events involving the release of significant levels of radioactivity or exposure of workers or the general public to radiation (FEMA, 1997). Nuclear accidents/incidents can be placed into three categories: 1) Criticality accidents which involve loss of control of nuclear

	assemblies or power reactors, 2) Loss-of-coolant accidents which result whenever a reactor coolant system experiences a break or opening large enough so that the coolant inventory in the system cannot be maintained by the normally operating make-up system, and 3) Loss-of-containment accidents which involve the release of radioactivity. The primary concern following such an incident or accident is the extent of radiation, inhalation, and ingestion of radioactive isotopes which can cause acute health effects (e.g. death, burns, severe impairment), chronic health effects (e.g. cancer), and psychological effects. (FEMA, 1997).
Transportation Accidents	Transportation accidents can result from any form of air, rail, water, or road travel. It is unlikely that small accidents would significantly impact the larger community. However, certain accidents could have secondary regional impacts such as a hazardous materials release or disruption in critical supply/access routes, especially if vital transportation corridors or junctions are present. (Research and Innovative Technology Administration, 2009). Traffic congestion in certain circumstances can also be hazardous. Traffic congestion is a condition that occurs when traffic demand approaches or exceeds the available capacity of the road network. This hazard should be carefully evaluated during emergency planning since it is a key factor in timely disaster or hazard response, especially in areas with high population density. (Federal Highway Administration, 2009).
Utility Interruptions	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: • Geomagnetic Storms; including temporary disturbances of the Earth's magnetic field resulting in disruptions of communication, navigation, and satellite systems (National Research Council et al., 1986). • Fuel or Resource Shortage; resulting from supply chain breaks or secondary to other hazard events, for example (Mercer County, PA, 2005). • Electromagnetic Pulse; originating from an explosion or fluctuating magnetic field and causing damaging current surges in electrical and electronic systems (Institute for Telecommunications Sciences, 1996). • Information Technology Failure; due to software bugs, viruses, or improper use (Rainer Jr., et al, 1991). • Ancillary Support Equipment; electrical generating, transmission, system-control, and distribution-system equipment for the energy industry (Hirst & Kirby, 1996). • Public Works Failure; damage to or failure of highways, flood control systems, deep-water ports and harbors, public buildings, bridges, dams, for example (United States Senate Committee on Environment and Public Works, 2009). • Telecommunications System Failure; Damage to data transfer, communications, and processing equipment, for example (FEMA, 1997) • Transmission Facility or Linear Utility Accident; liquefied natural gas leakages, explosions, facility problems, for example (United States Department of Energy, 2005) • Major Energy, Power, Utility Failure; interruptions of generation

	and distribution, power outages, for example (United States Department of Energy, 2000).

4.3. Hazard Profiles

This section aims to profile the natural and human-made hazards, as well as to analyze the County's vulnerability for each. By understanding the potential frequency and severity of a disaster, appropriate planning may take place. While natural hazards tend to occur on a relatively predictable and seasonal basis, human-made events tend to change over time, depending on changes in technology.

The following five criteria are herein utilized to systematically approach hazard analysis:

- Location and Extent
- Range of Magnitude
- Past Occurrences
- Future Occurrences
- Vulnerability Assessment

This HMP relies heavily on existing data sources developed by County departments, including the County Comprehensive Plan, the County Hazard Vulnerability Analysis, the existing FEMA-approved Potter County Hazard Mitigation Plan, Commonwealth of Pennsylvania 2010 Standard All-Hazard Mitigation Plan and the 2015 LEPC Commodity Flow study.
Information was gathered from a variety of sources to develop hazard profiles. State agency sources included the Pennsylvania Department of Environmental Protection, the Pennsylvania Department of Conservation and Natural Resources (DCNR), and PEMA. Federal agency sources included the Bureau of Transportation Statistics, the Environmental Protection Agency, the National Climatic Data Center, and FEMA.

4.4. NATURAL HAZARDS

4.4.1. Drought

The definition utilized for drought within this HMP is that of the National Drought Mitigation Center (2006), which defines drought as 'a natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought. This hazard is of particular concern in Pennsylvania due to the presence of farms as well as water- dependent industries and recreation areas across the Commonwealth. A prolonged drought could severely impact these sectors of the local economy, as well as residents who depend on wells for drinking water and other personal uses.'

4.4.1.1. Location and Extent

Droughts are typically regional events; therefore, the effects of drought will typically affect the entire County, as opposed to individual municipalities. In times of drought, land areas with waterways tend to show a less immediate impact than those areas with little or no proximity to water.

4.4.1.2. Range of Magnitude

The most notable adverse effects of drought conditions are as follows:

- Public water supply for human use
- Rural water supply for livestock and agricultural operations
- Water quality
- Natural soil water or irrigation water for agriculture
- Water for forests and for fighting forest fires
- Water for navigation and recreation

The Commonwealth of Pennsylvania uses 5 parameters in its assessment of drought conditions.

- Stream flows (compared to benchmark records)
- Precipitation (measured as the departure from normal, 30-year average precipitation)
- Reservoir storage levels in a variety of locations (especially three New York City reservoirs in the Upper Delaware River Basin)
- Groundwater elevations in a number of counties (comparing to past month, past year, and historic record)
- The Palmer Drought Index, a measure of soil moisture computed by the National Weather Service (see Table 4.4.1.2-1)

Table 4.4.1.2-1 Palmer Drought Severity Index (PSDI) classifications (NDMC, 2009).		
SEVERITY CATEGORY	**PSDI VALUE**	**DROUGHT STATUS**
Extremely wet	4.0 or more	None
Very wet	3.0 to 3.99	None
Moderately wet	2.0 to 2.99	None
Slightly wet	1.0 to 1.99	None
Incipient wet spell	0.5 to 0.99	None
Near normal	0.49 to -0.49	None
Incipient dry spell	-0.5 to -0.99	None
Mild drought	-1.0 to -1.99	None
Moderate drought	-2.0 to -2.99	Watch
Severe drought	-3.0 to -3.99	Warning
Extreme drought	-4.0 or less	Emergency

The phases of drought preparedness in Pennsylvania are as follows:

• Drought Watch: A period to alert government agencies, public water suppliers, water users, and the public regarding the potential for future drought-related problems. 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 5 percent in the affected areas. Because of varying conditions, individual water suppliers or municipalities may ask for more stringent conservation actions.

• *Drought Warning:* This phase is 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 to 15 percent in the affected areas. Because of varying conditions, individual water suppliers or municipalities may ask for more stringent conservation actions.

• *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 ensure 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 nonessential water uses as provided for in 4 Pa. Code Chapter 119, if deemed necessary and if ordered by the governor. 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 areas by 15 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 ensure equitable sharing of limited supplies.

• *Local Water Rationing:* Although not a drought phase, local municipalities may, with the approval of the Pennsylvania 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 4 Pa. 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.

4.4.1.3. Past Occurrences

Between 1980 and 2011, Potter County experienced 4 drought emergency declarations, 9 drought warnings and 15 drought watches (PADEP, 2012), thus creating hardships to households, businesses and the County's agricultural industry. These hydrological droughts, wherein surface and subsurface water levels (i.e., streams, rivers, lakes and reservoirs) drop, have been coupled with high temperatures, increased humidity and reduced rainfall. Some wells in the County were affected by a stoppage of flow.

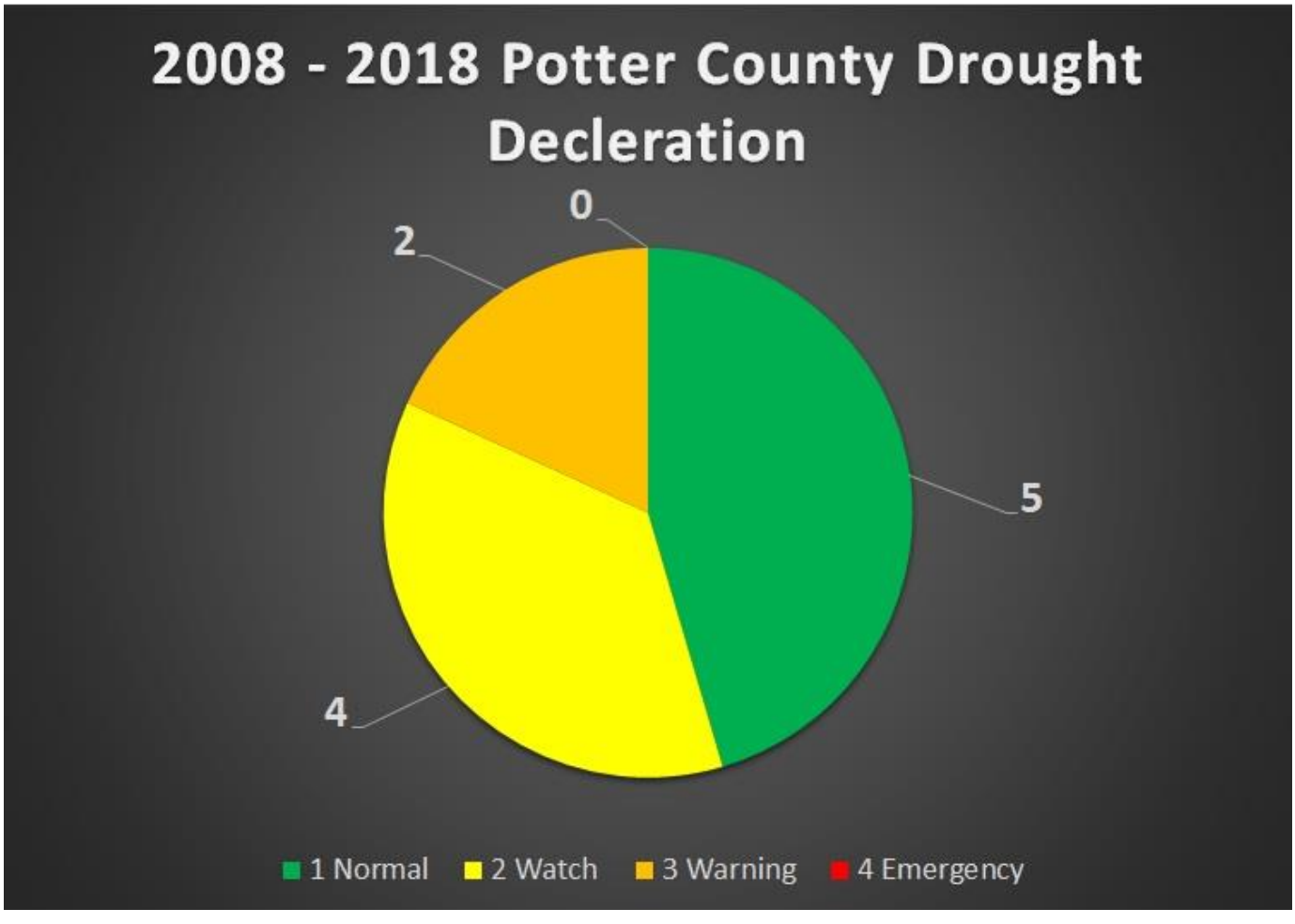
Table 4.4.1.3-1 shows a summary of PDSI values of severe or extreme drought events between January 1895 and March 2006, for the Northwest Plateau Climate Division of Pennsylvania.

Table 4.4.1.3-1 Summary of PDSI values for periods of 2 or more months with severe or extreme drought across Northwest Plateau Climate Division (NCDC, 2006).

Drought Periods	Duration (in months)	Lowest PDSI
6/1895 - 2/1896	9	-5.17 in 11/1895
4/1896 - 6/1896	3	-4.18 in 5/1896
8/1899 - 1/1900	6	-4.24 in 11/1899
4/1900 - 6/1902	27	-5.07 in 10/1900
10/1908 - 3/1909	6	-5.52 in 12/1908
8/1909 - 12/1909	5	-4.27 in 11/1909
3/1910 - 12/1910	10	-4.17 in 8/1910
5/1911 - 7/1911	3	-4.08 in 7/1911
6/1921 - 10/1921	5	-3.69 in 7/1921
9/1922 - 11/1923	15	-4.71 in 12/1922
8/1930 - 2/1933	31	-6.97 in 2/1931
7/1933 - 6/1935	24	-6.47 in 7/1934
9/1936 - 10/1936	2	-3.38 in 9/1936
4/1941 - 6/1941	3	-3.64 in 5/1941
11/1953 - 2/1954	4	-3.98 in 12/1953
12/1960 - 1/1961	2	-3.80 in 1/1961
10/1963 - 2/1964	5	-3.89 in 10/1963
7/1991 - 3/1992	9	-4.75 in 11/1991

A more recent picture of Pennsylvania's drought history may be found in Figure 4.4.1.3-2, which represents emergency drought declarations by County between 1980 and 2009.

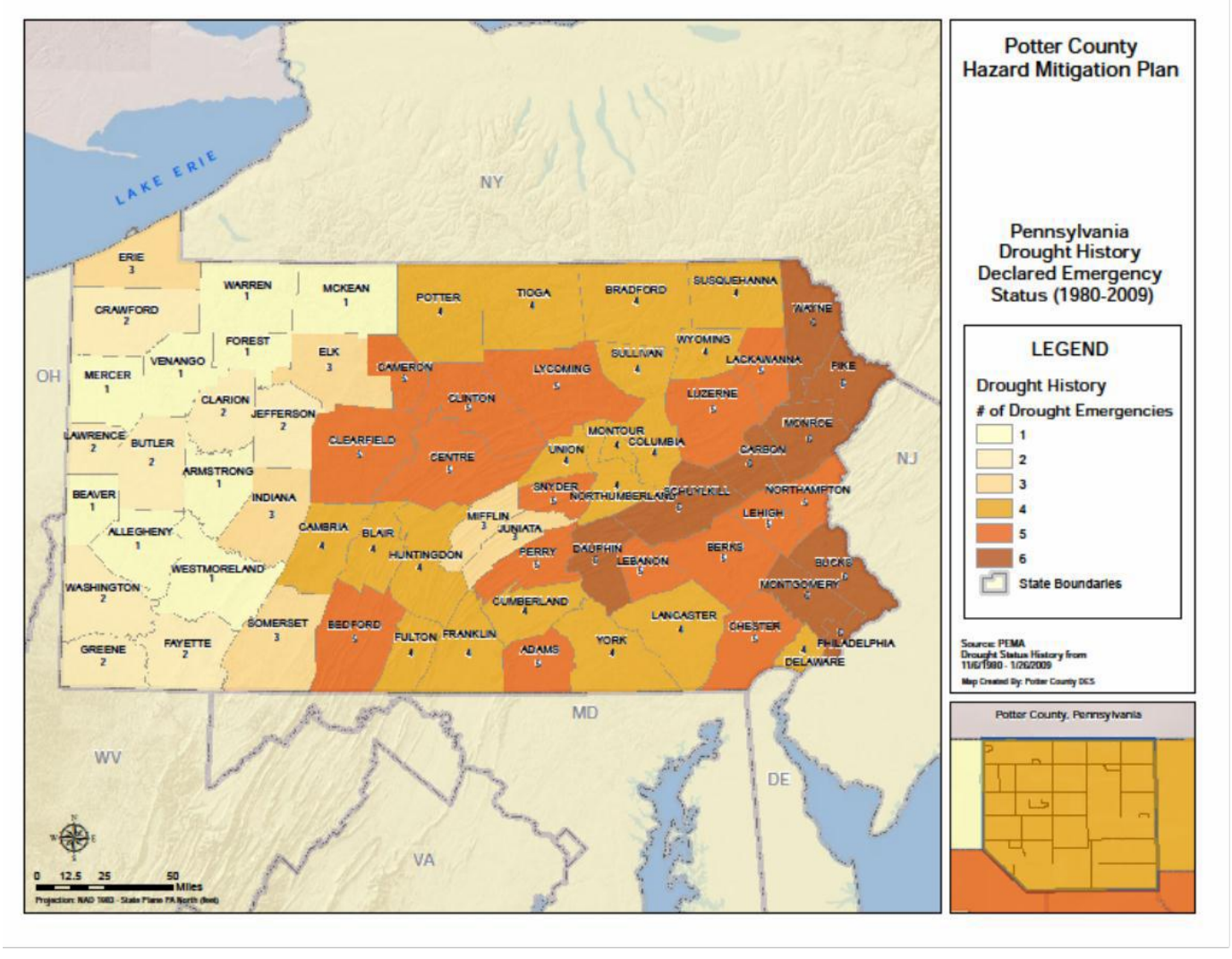
Figure 4.4.1.3-2 Number of emergency drought declarations in Pennsylvania by County 2002 -2018 (PADEP, 2009).



The time-frames of watches and warnings from 2002 through 2011 are listed below (PADEP, 2012):

02/12/2002 - 05/13/2002	Drought Watch
09/05/2002 – 11/07/2002	Drought Watch
11/07/2002 – 12/19/2002	Drought Watch
04/11/2006 – 06/30/2006	Drought Watch
08/06/2007 – 09/05/2007	Drought Watch
09/05/2007 – 10/05/2007	Drought Watch
10/05/2007 - 01/11/2008	Drought Watch
01/11/2008 – 02/15/2008	Drought Watch
11/07/2008 – 01/26/2009	Drought Watch
09/16/2010 – 11/10/2010	Drought Watch
08/05/2011 – 09/02/2011	Drought Warning
09/02/2011 – 10/13/2011	Drought Watch

Figure 4.4.1.3-4 Number of emergency drought declarations in Pennsylvania by County 1980-2009 (PADEP, 2009).



In November 2012, the U.S. Department of Agriculture (USDA) designated multiple counties in New York as primary natural disaster areas due to drought conditions that that began June 26, 2012. Several contiguous counties, including Potter, were also determined to be impacted and therefore farmers and ranchers also qualify for natural disaster assistance.

Figure 4.4.2.1-1 Map of Earthquake History in Pennsylvania

4.4.1.4. Future Occurrence

Predicting the severity and frequency of droughts in Potter County is difficult. Based on national historical data from 1895 to 1995, Potter County is in severe or extreme drought approximately 5 to 10 percent of the time. This is equivalent to a Palmer Drought Severity Index (PDSI) value less than or equal to -3. Therefore, a future occurrence of drought is considered possible.

4.4.1.5. Vulnerability Assessment

Drought is a possible hazard to Potter County. A drought in the County can have a significant negative impact on domestic water supply, agriculture, tourism and other water-dependent activities. Furthermore, a drought can increase the risk of wildfires.

4.4.2 Earthquake

FEMA's definition of an earthquake is 'the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10-20 miles of the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of underground caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake.' (FEMA, 1997).

4.4.2.1. location and Extent

Earthquake events in Pennsylvania, including Potter County, are typically mild. Most earthquakes impact a small geographical area of approximately 100 kilometers in diameter. An earthquake hazard for the County is considered very slight. Figure 4.4.2.1-1 shows the history of earthquakes in Pennsylvania.

4.4.2.2. Range of Magnitude

Earthquake magnitude is often measured using the Richter Scale, a logarithmic scale that describes an earthquake's release of energy. Table 4.4.2.2-1 provides a summary of Richter Scale magnitudes and associated effects. Based on historical events, earthquakes in Pennsylvania typically do not exceed magnitudes greater than 6.0

Figure 4.4.2.1-1 Map of Earthquake History in Pennsylvania

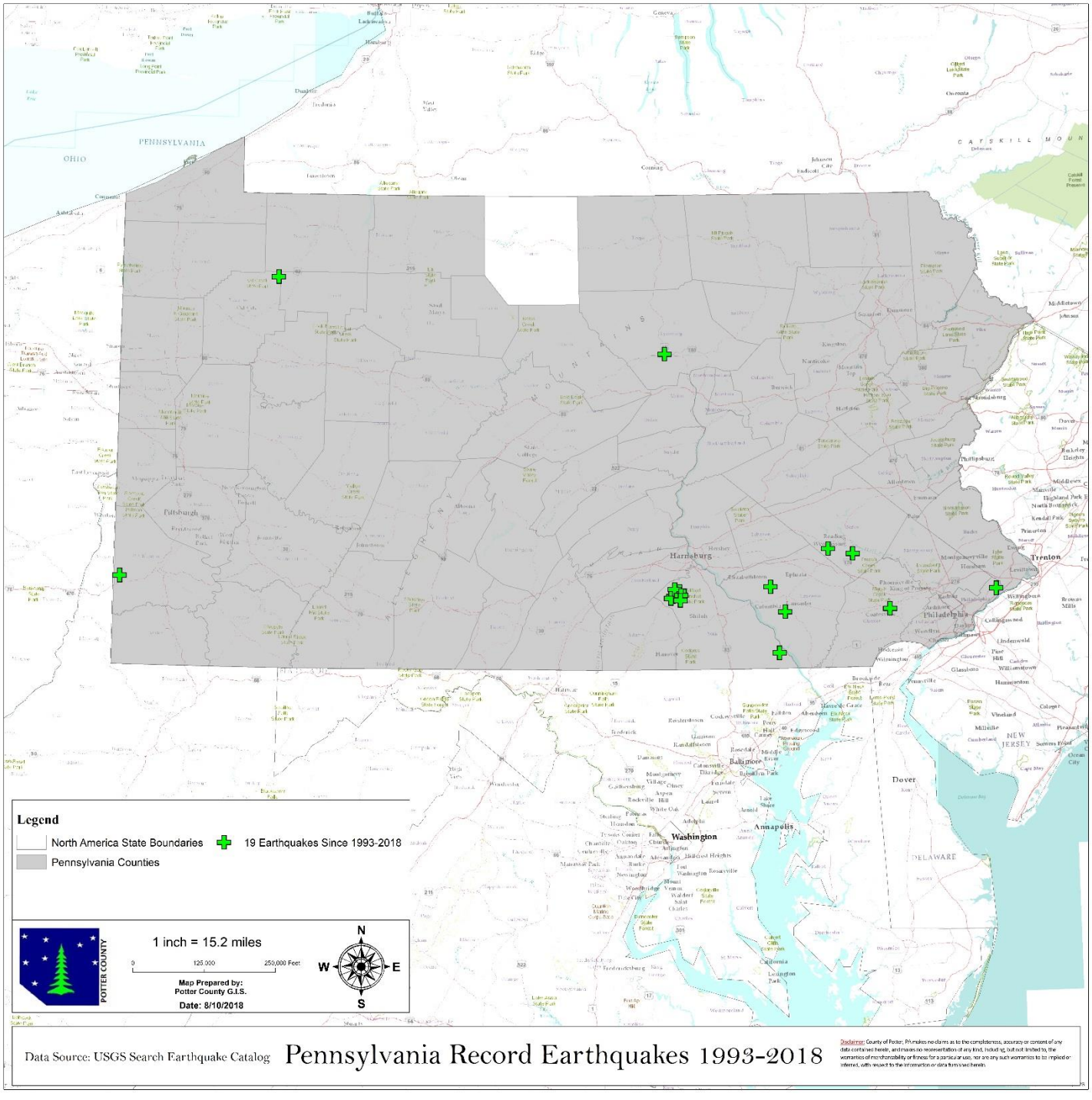


Table 4.4.2.2-1

Richter Magnitude	Earthquake effects
0-2	Not felt by people
2-3	Felt little by people
3-4	Ceiling lights swing
4-5	Walls crack
5-6	Furniture moves
6-7	Some buildings collapse
7-8	Many buildings destroyed
8-Up	Total destruction of buildings, bridges and roads

An earthquake's impact on an area is typically measured in terms of intensity. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. A detailed description of the MMI Scale is shown in Table 4.4.2.2-2. The earthquakes that occur in Pennsylvania originate deep within the earth's crust, not on an active fault. Therefore, little or no damage is expected. With that said, since the level 5.8 2011 earthquake that originated in Richmond, VA, the U.S. Geological Society has recognized that shock waves from earthquakes on the East Coast can travel farther and cause more damage than previously believed. The cause for this is considered to be due to the difference in geologic structures and rock properties that allow the seismic waves to travel farther without weakening.

Table 4.4.2.2-2 Modified Mercalli Intensity Scale

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

4.4.2.3. Past Occurrence

The August 2011 earthquake that originated in Virginia, and registered a 5.8 on the Richter scale was felt in Potter County and as far north as southern New York and Rhode Island. Minimal structural damage was reported by Roulette Township to its above ground wastewater treatment plant from this earthquake. Aside from this, there have been no other earthquake events recorded in or near Potter County.

4.4.2.4 Future Occurrence

An earthquake's severity may be measured by comparing its acceleration to normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this way. PGA represents the rate in change of motion of the earth's surface during an earthquake as a percentage of the established rate of acceleration due to gravity. As described by the U.S. Geological Survey, a small particle attached to the earth during an earthquake will be moved back and forth rather irregularly. This movement can be described by its changing position as a function of time, or by its changing velocity as a function of time, or by its changing acceleration as a function of time.

Per the USGS, acceleration is chosen as a measurement because building codes prescribe how much horizontal force a building should be able to withstand during an earthquake. This force is related to the ground acceleration. The peak acceleration is the maximum acceleration experienced by the particle during the course of the earthquake motion. (http://eqint.cr.usgs.gov/parm.php)

The 2009 analysis by the Earth Sciences Department at Millersville University of the relative earthquake hazard zones in Pennsylvania, indicates that earthquake hazards are “very slight” for all of Potter County. The future occurrence of earthquakes can be considered *very low* as defined by the Risk Factor Methodology probability criteria.

4.4.2.5 Vulnerability Assessment

Potter County is situated in a zone where very minor earthquake damage is anticipated. Minimal damage has been reported, but no casualties from earthquake events. It is therefore concluded that Potter County has a very low vulnerability to the effects of earthquakes.

4.4.3 Flood, Flash Flood, Ice Jam

The definition the state of Pennsylvania uses for flooding is as follows as per its 2013 Standard All-Hazard Mitigation Plan:

Flooding is the temporary condition of partial or complete inundation on normally dry land and it is the most frequent and costly of all hazards in Pennsylvania. Flooding events are generally the result of excessive precipitation. General flooding is typically experienced when precipitation occurs over a given river basin for an extended period of time. 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. The severity of a flood event is dependent upon a combination of stream and river basin topography and physiography, hydrology, precipitation and weather patterns, present soil moisture conditions, the degree of vegetative clearing as well as the presence of impervious surfaces in and around flood-prone areas (NOAA, 2009). 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. All forms of flooding can damage infrastructure (USACE, 2007).

4.4.3.1. Location and Extent

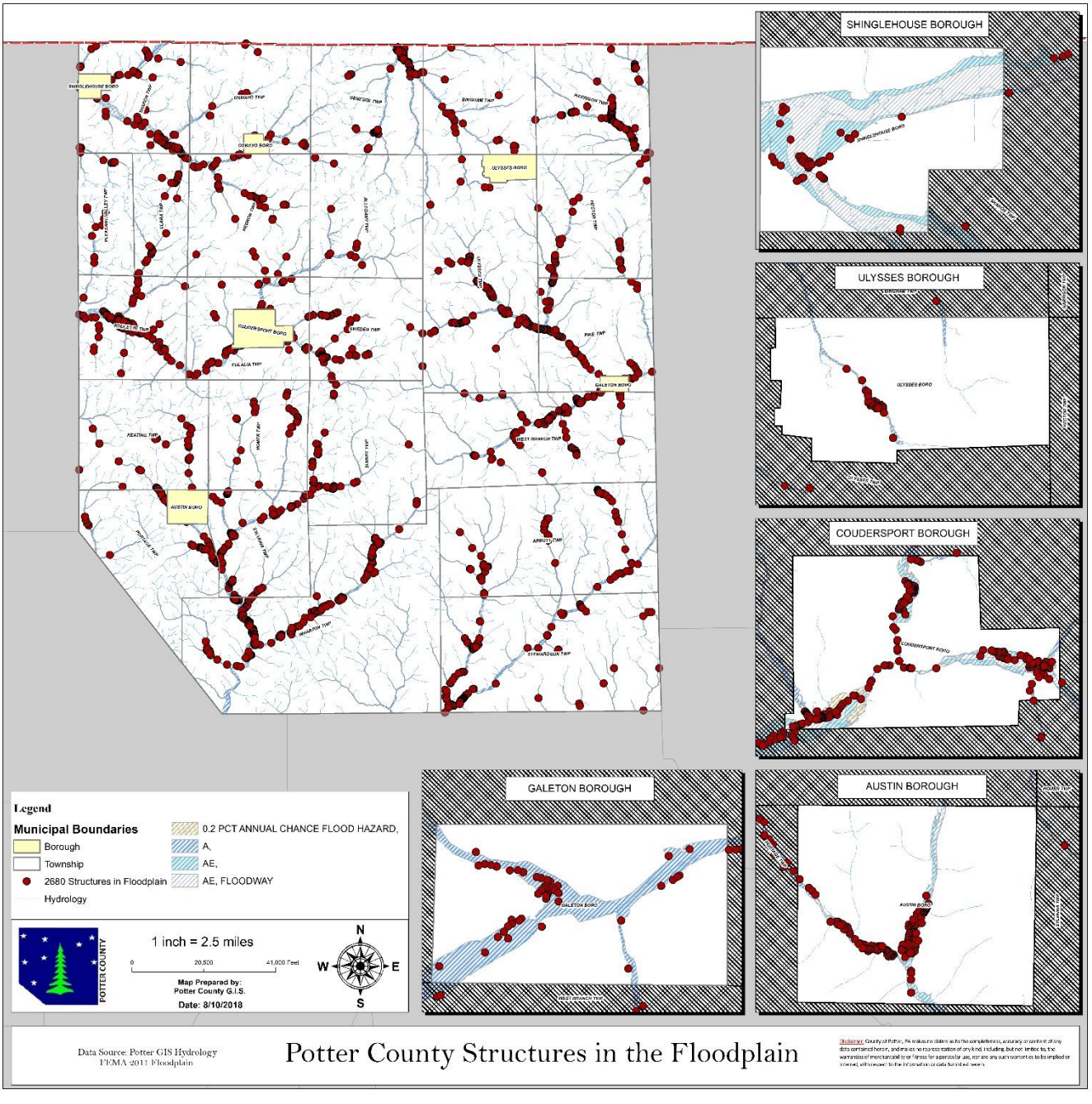
Flooding can be as frequent as the occurrence of a spring rain or summer thunderstorm. The amount of precipitation produced by storm events determines the type of flooding. Flash floods, which typically occur more frequently than general floods, occur along small streams and creeks of the type that are widely present throughout northwest Pennsylvania.

The undermining or washing out of roads is typically associated with flash floods. General flooding occurs less frequently and as the result of much larger storm events such as hurricanes. These larger storm events occur in northwest Pennsylvania most often in the late spring and summer.

Both flash flooding and longer-term general flooding can cause massive damage and destruction to the structures located in these floodplains.

Many individuals throughout northwestern Pennsylvania could potentially be left homeless and many businesses, located primarily within the incorporated municipalities, could be destroyed resulting in a reduction in economic activity, an increase in unemployment, and lower personal incomes. All of the municipalities in Potter County have flood prone areas. See Figure 4.4.3.1-1 for a map of structures located within and near the 100-Year Floodplain.

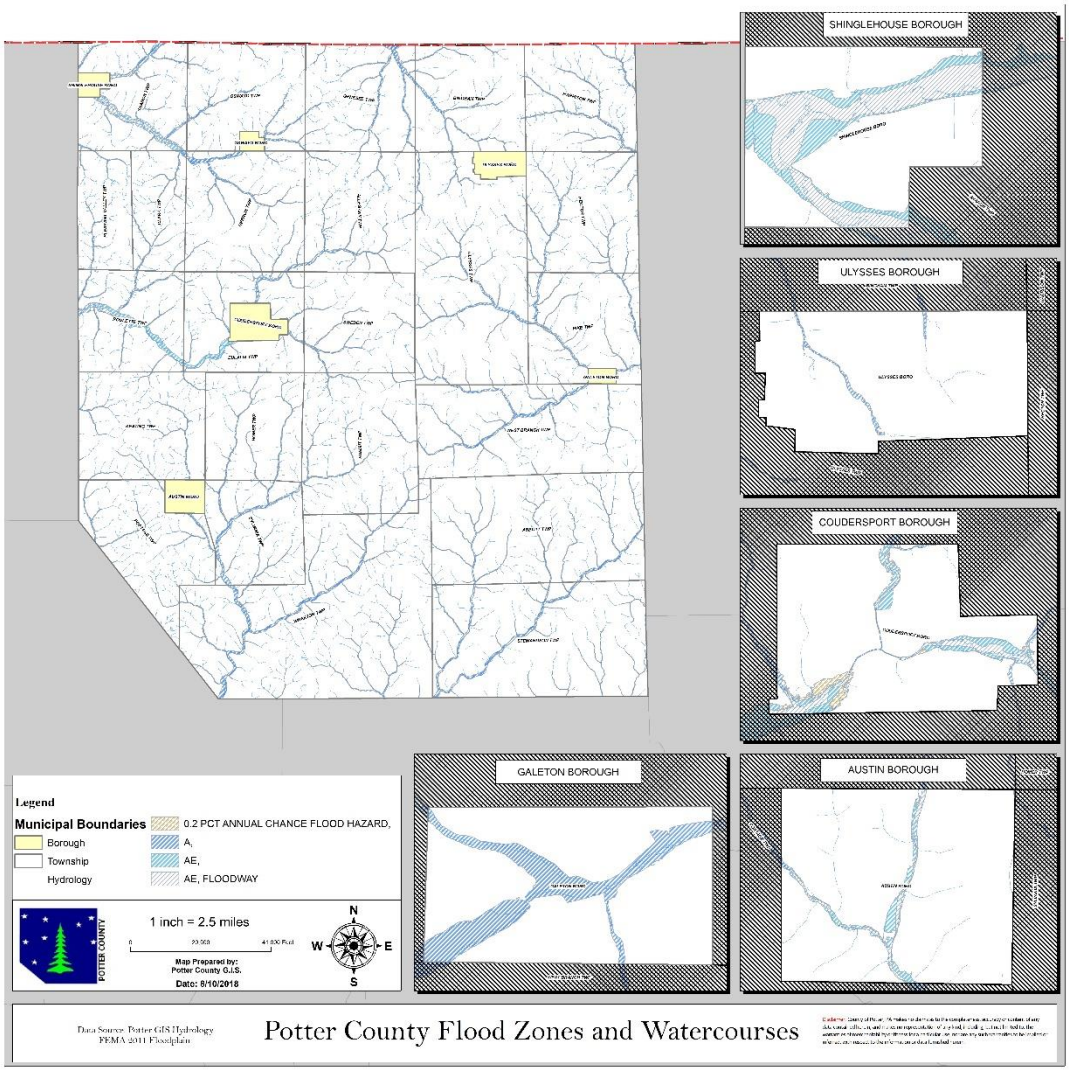
Figure 4.4.3.1-1 Map of Structures in and near the 100-Year Floodplain



The streams prone to flooding include: Upper Cowanesque River, Genesee River, Oswayo Creek, Kettle Creek, Sinnemahoning, Upper Allegany, and Upper Pine Creek.

Measurable precipitation amounts to an annual average of 40-45 inches. Most of the floods that occur from December and April are the result of heavy rain and snowmelt. Large floods with duration of several days can occur at any time of the year. See Figure 4.4.3.1-2 for a map of the Potter County Floodplain and Watercourses.

Figure 4.4.3.1-2 Potter County Floodplain and Watercourses Map



4.4.3.2. Range of Magnitude

The magnitude of a flood is determined by several factors, including rainfall intensity and duration, groundcover, and the rate of snow melting. Surface runoff of storm-water is greater where vegetative groundcover is minimal or terrain is sloped, as well as in paved areas. Floodwaters may spill onto roadways, potentially resulting in washouts, trapped vehicles, and road closures.

4.4.3.3. Past Occurrence

Historically, Potter County has experienced considerable major and minor flooding. On September 30, 1911, a mid-winter thaw caused the Bayliss Dam in Austin Borough to burst, leaving 78 people dead and causing over $6 million dollars in damage. Potter County also faced major flooding in 1942, 1972, and 1975. In addition, the County has recorded multiple floods and flash floods as noted below (http://www.ncdc.noaa.gov/stormevents/):

- November 27,1993 - Heavy rain caused flooding throughout the county, no dollar amount of damage recorded.
- August 18, 1994 - Flash flood, $50,000 in damages countywide. Cars and homes flooded do to stream flooding
-

- January 20, 1995 - small stream flooding no reported dollar amount of damage
- October 1, 1995 – Flooding no recorded dollar amount.
- October 21, 1995 – Flood/flash flood county wide, no dollar amount of damage recorded.
- January 19, 1996 – Flood/Flash Flood, countywide, no dollar amount reported.
- April 30, 1996 - Flash Flood, Coudersport area, no dollar amount of damage recorded
- May 11, 1996 – Flash Flood, Coudersport area, nor dollar amount of damage reported
- January 8, 1998 – Flash Flood, countywide, no dollar amount of damage recorded.
- June 23, 1998 – Flash Flood, Genesee area, no dollar amount of damage recorded.
- November 19, 2003 - Flash Flood, Coudersport area, Flooding reported throughout the county, no dollar amount of damage recorded.
- September 17, 2004 – Flood, 2 deaths, $50 million in property damage County-wide.
- July 21, 2006 – Flash Flood, Austin area, no dollar amount of damage reported.
- March 15, 2007 – Flood, Roulette area, no dollar amount of damage reported.
- February 6, 2008 – Flood, Genesee and Roulette areas, no dollar amount of damage reported.
- August 12, 2009 – Flash Flood, Walton area, no dollar amount of damage reported.
- January 25, 2010 – Flood, Genesee area, no dollar amount of damage reported.
- December 1, 2010 – Flood, Shinglehouse area, $800,000 in property damage reported.
- December 2010 – Flood, Roulette area, $305,000 dollar in property damage reported.
- January 12, 2018 – Ice Jam, Galeton area No dollar amount of damage provided.s

4.4.3.4. Future Occurrence

In Potter County, flooding is considered the highest ranking hazard of this Plan. Using historical records, the NFIP determines the probability of occurrence for different types of flooding. The probability of an occurrence is described in percentages as the chance of a flood of a specific extent occurring in any given year. A “base flood” has a 1 percent chance of occurring in any particular year. The base flood is often referred to as the “100-year flood,” since the probability of it happening *suggests* it should reoccur once every 100 years, although this is not the case in practice. The term “100-year flood” is a misnomer. Experiencing a 100-year flood does *not* mean a similar flood may not happen for the next 99 years; rather, it reflects the probability that over a long period of time a flood of that magnitude has a 1 percent chance of occurring in any given year.

Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a “10-year” (10 percent annual chance) flood has a greater likelihood of occurring than a “100-year” (1 percent annual chance) flood. Table 4.4.3.4-1 shows a range of flood recurrence intervals and their probabilities of occurrence.

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Table 4.4.3.4-1 Recurrence intervals and probabilities of occurrences

Recurrence interval, in years	Probability of occurrence in any given year	Percent chance of occurrence in any given year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

The future occurrence of flooding can be considered *highly likely*.

4.4.3.5. Vulnerability Assessment

All communities need to use proper floodplain management by reviewing and enforcing current codes and ordinances and by strongly enforcing their floodplain codes on new development to avoid new construction in unsafe areas or aggravating further flooding.

4.4.4 Hailstorm

FEMA defines the natural hazard of a Hailstorm in the following manner:

“In addition to flooding and severe winds, hail is another potential damaging product of severe thunderstorms. 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 (FEMA, 1997). The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Damage to crops and vehicles are typically the most significant impacts of hailstorms. Areas in eastern and central Pennsylvania typically experience less than 2 hailstorms per year while areas in western Pennsylvania experience 2-3 annually (FEMA, 1997).”

4.4.4.1. Location and Extent

A hailstorm is equally predictable event in any location within the County. It is not possible to pre-determine the duration nor the extent of a hailstorm.

4.4.4.2. Range of Magnitude

Hail size can vary significantly from less than an inch to several inches in diameter. Reported hail in Potter County has ranged in size from 0.88 inches to 2.50 inches. No injuries, property or crop damages have been

reported due to hail. If a hailstorm were to destroy agricultural production, the USDA estimates the County's losses would be $31,377,000 for its 88,457 acres of farmland (USDA Census of Agriculture 2007).

4.4.4.3. Past Occurrence

The National Climatic Data Center Storm Events database provides reference to reported hailstorm events shown in Table 4.4.3-1.

Table 4.4.4.3-1 Potter County Hailstorms 01/06 through 07/12 (NCDC, 2012).

Location	Date	Diameter (inches)	Deaths/ Injuries	Property/ Crop Damage
Harrison Valley	05/31/02	2.50	0	$0
Harrison Valley	06/06/05	0.88	0	$0
Harrison Valley	11/06/05	1.00	0	$0
Roulette	06/16/08	1.00	0	$0
Coudersport	06/16/08	0.88	0	$0
Walton	06/26/09	1.25	0	$0
Brookland/Ulysses	07/24/10	1.25	0	$0
Costello	10/11/10	1.00	0	$0
Galeton	05/02/12	1.00	0	$0
Inez	05/02/12	1.00	0	$0
Hickox	07/07/12	1.00	0	$0

4.4.4.4. Future Occurrence

It is difficult to predict the occurrence of a hailstorm more than a few days prior to the event, if at all. Prior hailstorm events indicate the greatest likelihood of a future hailstorm are in the spring and summer months. Based on prior occurrences, the County can expect zero to two recordable hailstorms each year. Therefore, the future occurrence of hailstorms can be considered likely.

4.4.4.5. Vulnerability Assessment

Potter County overall, including all critical infrastructure, is vulnerable to the effects of hail, as the storms that produce this hazard are spread over a large area. Hail can cause damage to people, automobiles, aircraft, skylights, livestock and crops. The National Weather Service reports that hail causes $1 billion in damage to property and crops each year in the United States.

4.4.5 Hurricane, Tropical Storm, Nor'easter

As defined by FEMA, 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 (in the Northern Hemisphere) and whose diameter averages 10-30 miles across. While most of Pennsylvania is not directly affected by the devastating impacts cyclonic systems can have on coastal regions, many areas in the state are subject to the primary damaging forces associated with these storms including high-level sustained winds, heavy precipitation, and tornadoes. Areas in southeastern Pennsylvania could be susceptible to storm surge and tidal flooding. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season (June through November). (FEMA, 1997).

4.4.5.1. Location and Extent

While Potter County does not have any open-ocean coastline, the impacts of coastal storm systems such as hurricanes, tropical storms, and nor'easters can extend well inland and cover large geographic areas.

The center of circulation for these storm systems with intense wind and precipitation effects can track inland and move directly over Pennsylvania. However, due to the size of these storms, the Commonwealth can be affected even when circulation centers are situated several hundred miles away from the State. In either case, these storms are regional in definition and can impact hundreds or thousands of miles over the course of a storm.

4.4.5.2. Range of Magnitude

Coastal storm systems commonly result in heavy precipitation and strong winds thereby often causing flood and wind damage. A nor'easter is capable of producing winds equivalent to hurricane or tropical storm force. Heavy snow or ice is also possible from these storms.

Tropical cyclones with maximum sustained winds of less than 39 miles per hour (mph) 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. Tornadoes may develop during these events.

Historically, these tropical cyclone events have delivered intense rainfall to Pennsylvania, sometimes causing flooding and northeast winds, which combined with very wet soil, has resulted in fallen trees and utility poles.

4.4.5.3. Past Occurrence

Although tropical cyclone events is not very common in Potter County, they have occurred. The NOAA Coastal Services Center shows multiple unnamed coastal storm events as tracking across the County, including the tropical storm of September 2003 and most recently, Hurricane Sandy in October 2012.

4.4.5.4. Future Occurrence

Using historical data from 1944 through 1999, the National Oceanic and Atmospheric Administration Hurricane Research Division predicts the chance that a tropical storm or hurricane will affect a Potter County during an Atlantic hurricane season (June through November), is less than 6% (NOAA HRD, 2009).

Based on historical events and discussions with the PT, the annual occurrence of a hurricane, tropical storm or nor'easter in Potter County is considered *low*.

4.4.5.5. Vulnerability Assessment

All of Potter County is vulnerable to the effects of tropical cyclone events, including county critical infrastructure, as the storms cover a large geographic area.

4.4.6 Invasive Species

An invasive species is defined by the Governor's Invasive Species Council of Pennsylvania as "a species that is not indigenous to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. These species can be any type of organism: plant, fish, invertebrate, mammal, bird, disease, or pathogen. Infestations may not necessarily impact human health, but can create a nuisance or agricultural hardships by destroying crops, defoliating populations of native plant and tree species, or interfering with ecological systems" (Governor's Invasive Species Council of Pennsylvania, 2009).

4.4.6.1. Location and Extent

The Commonwealth of Pennsylvania, including Potter County, is host to a number of invasive pathogens, insects, plants, invertebrates, fish, and higher mammals. These species have largely been introduced by the actions of humans. It is common for invasive species threats to be unintentionally released through the movement of goods and equipment that may unknowingly harbor species, smuggling, ship ballast, hull fouling, and escape from cultivation (Governor's Invasive Species Council, 2010).

Invasive species threats are generally divided into two main subsets of aquatic invasive species and terrestrial invasive species as described below:

• ***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 life cycle 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), has been the lead organization for invasive species threats, and has identified over 100 species threats that are or could potentially become significant in

Pennsylvania. Of these threats, County and municipal leaders, as well as the Pennsylvania Department of Agriculture/Bureau of Plant Industry, believe that the most significant are invasive forest pests like Mile-a-Minute, Goat's Rue, Giant Hogweed, Japanese Knotweed, Japanese Stilt Grass, non-native bush Honeysuckles, Japanese Barberry, Autumn Olive and the Gypsy Moth.

While not an issue presently, the PA Department of Agriculture/Bureau of Plant Industry also sees the following invasive species as being a potential future risk in Potter County: Tree-of-Heaven, Japanese Angelica Tree, Glossy Buckthorn, Black Swallow Wort, Narrowleaf & Hybrid Cattails, Eurasian Watermilfoil, Curly-leaf Pondweed (may already be present), Hydrilla, Rusty Crayfish, Zebra Mussel, Emerald Ash Borer, Asian Long-horned Beetle.

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, Goats'-Rue is an aggressive vascular plant; it has fairly wide ecological parameters, thriving in marshy fields, meadows, woodlands, sunny forest edges, semi-shaded fields, and along roadsides and stream banks (USDA Forest Service, 2005). Other species have limited extent due to the diligence of state agencies; the Emerald Ash Borer's extent has been limited to six counties (Allegheny, Beaver, Butler, Lawrence, Mercer, and Mifflin) because of an aggressive quarantine and testing program.

4.4.6.2. Range of Magnitude

The magnitude of an invasive species threat can be as minimal as a nuisance or a huge disruption to the County's ecosystem. Some invasive species are not considered agricultural pests and do not harm humans. Others can cause significant changes in the composition of Pennsylvania's ecosystems. The Emerald Ash Borer has a 99 percent mortality rate for any ash tree it infects. Such invasive species could have a significant economic impact in the County, with its logging and forest-based tourism. Other invasive species can cause widespread illness or death in humans. Anthrax, for example, is considered by the Centers for Disease Control and Prevention to be a Category A agent that may pose a significant, widespread threat to public health. 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.

The magnitude of an invasive species threat can be greater when the ecosystem or host species is already stressed, such as in times of drought. The weakened state of the ecosystem causes it to be more easily invaded. An example of a possible worst-case scenario for invasive species is if the Emerald Ash Borer were to break through the quarantine in Pennsylvania and invade the Commonwealth's 323 million ash trees. With the high mortality rate associated with the ash borer, Pennsylvania's, and Potter County's, hardwood forests would be devastated, logging establishments would shut down, and tourism would be significantly impacted, resulting in loss of jobs and valuable income to the state.

4.4.6.3. Past Occurrence

Invasive species have been entering Pennsylvania since the arrival of early European settlers, however, not all occurrences have required government action. The first invasive species outbreak requiring state attention occurred in 1862 when legislation was enacted to provide for the destruction of and to prevent the spread of Canada Thistle, Johnson Grass, and Marijuana. Since then, there have been 26 acts and quarantines enacted to prevent the spread of invasive species.

As mentioned previously, the most significant invasive pests for Potter County have been invasive forest pests like Mile-a-Minute, Goat's Rue, Giant Hogweed, Japanese Knotweed, Japanese Stilt Grass, non-native bush Honeysuckles, Japanese Barberry, Autumn Olive and the Gypsy Moth.

4.4.6.4. Future Occurrence

The probability of a future occurrence of invasive species threats in Potter County is *likely* and according to the Governor's Invasive Species Council of Pennsylvania (PISC), it is on the rise in Pennsylvania. This is primarily as a result of an increase in transported goods, efficiency and speed of transportation and expanding international trade agreements. Global trade has created opportunities for many organisms to be transported and to establish themselves in new countries and regions. In 2009 alone, Pennsylvania imported over $115 billion in goods from abroad, including agricultural, forestry, and fisheries goods that commonly carry unknown pests (U.S. Census, 2009). Additionally, changes in the climate are providing newly hospitable habitats for invasive species that may not have previously survived in the County's ecosystem.

To address these issues, in 2010, the PISC published the Invasive Species Management Plan. This plan presents the Commonwealth's goals for management of the spread of nonnative invasive species, as well as creates a framework for responding to threats through research, action, and public outreach and communication. More information on the Management Plan can be found online at www.invasivespeciescouncil.com.

4.4.6.5. Vulnerability Assessment

Due to the current presence of invasive species in the County, it is clear that the County is vulnerable to invasive species. It is therefore, it is reasonable to project that the County's vulnerability will increase.

4.4.7 Landslide

For purposes of this HMP, a landslide is defined per the Pennsylvania Standard List of Hazards as "the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, and changes in groundwater levels. Mudflows, mudslides, rock falls, rockslides, and rock topples are all forms of a landslide. Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires." (Delano & Wilshusen, 2001).

4.4.7.1. Location and Extent

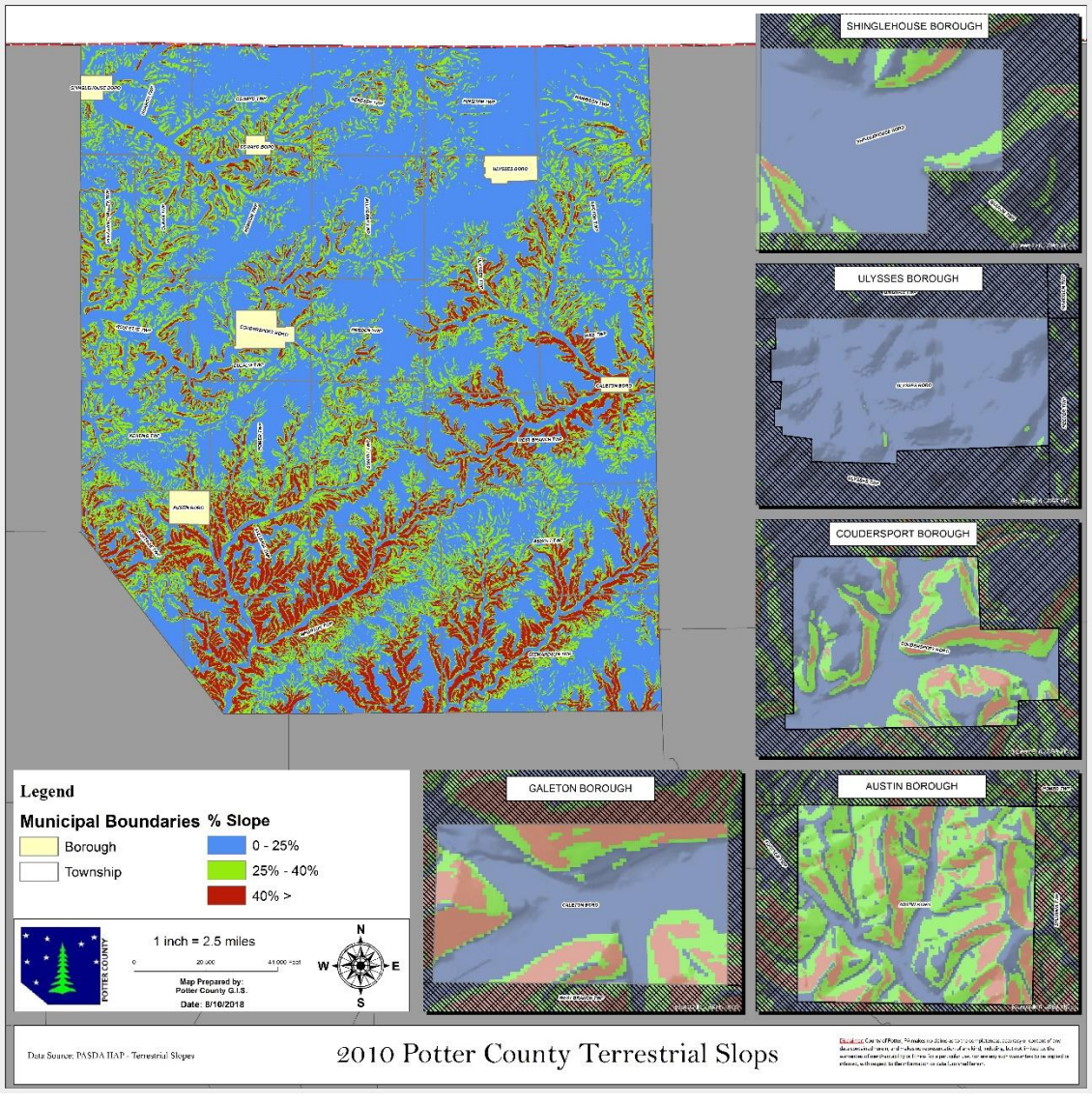
Landslides are most likely on moderate to steep slopes and often involved with precipitation events. Where there has been erosion or a decline in vegetation there is also a greater chance of landslides. An earthquake, although not as likely in Potter County, is another potential cause for a landslide event. Human changes, including construction, can also increase the likelihood of these events.

Figure 4.4.7.1-1 shows areas of low, moderate, and high landslide susceptibility as determined by the U.S. Geological Survey. Potter County is shown to have a moderate susceptibility to landslides.

4.4.7.2. Range of Magnitude

Landslides often cause damage to infrastructure such as roads, utilities, and buildings, as well as potentially disastrous flood effects when entering water bodies--especially when diverting or blocking water flow. These damages in turn can create travel delays, power outages and flooding. Most Pennsylvania landslides are moderate to slow moving, and they tend to damage things rather than people.

Figure 4.4.7.1-1 Map of Potter County Landslide Susceptibility



4.4.7.3. Past Occurrence

While Pennsylvania has a lot of history with landslides, a comprehensive inventory of landslide events is not available. That said, inventory maps were created in the 1970s and 1980s by the USGS which were part of an Appalachians-wide study of landslides and in turn provide some history for the State. The maps show landslides that were identified from aerial photographs where landslides commonly occur. While there are no known recorded landslides in Potter County, the map in Figure 4.4.7.3-1 shows where landslides have indeed taken place.

Figure 4.4.7.3-1 Landslide inventory map for Coudersport, PA from USGS Open File Map 81-238 (G-16 by John S. Pomeroy, 1981).

4.4.7.4. Future Occurrence

The risk of future landslide events is difficult to predict. However, using Figure 4.4.7.3-1, it is obvious that future landslides could occur in Potter County and the location of these could vary. While there are currently no known studies investigating the probability of future landslide events, discussions with the municipalities and the PT determine that the likelihood of an event in any given year is low, but possible.

4.4.7.5. Vulnerability Assessment

The areas of Potter County most vulnerable to landslides are limited to those with steep slopes. When landslides occur, travel, water, sewer, gas, electric and phone services can be disturbed as well as potential damage to public and private property. The loss of life likely to happen in such an occurrence would be a major concern, typically where multifamily construction has taken place near hazardous areas.

Areas where landforms have been altered for highways or other construction are uniquely vulnerable to landslide hazards. This is especially true where development is located at the base or crest of cliffs or near large highway cut-outs. These areas should be considered vulnerable to landslides, particularly if mitigation measures have not been implemented. Generally, the areas in which this potential exists are marked with warning signs and barriers.

4.4.8 Lightning Strike

This HMP uses FEMA's definition of lightning as follows:

Lightning is a discharge of electrical energy resulting from the build-up of positive and negative charges within a thunderstorm. The flash or "bolt" of light usually occurs within clouds or between clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000°F. On average, 89 people are killed each year by lightning strikes in the United States. Within Pennsylvania, the annual average number of thunder and lightning events a given area can expect ranges between 40-70 events per year (FEMA, 1997).

4.4.8.1. Location and Extent

More than 100,000 thunderstorms occur in the United States each year. Severe thunderstorms occur most often in the summer in northwestern Pennsylvania. These usually occur in the late afternoon or during the evening or night hours. Lightning is a possibility with all thunderstorms, making all of Potter County vulnerable to lightning events. Fatalities caused by lightning are most common during the summer and during the afternoon and evening. Summer thunderstorms can involve lightning, strong winds and heavy rains that may result in wildfires or localized wind damage and flash flooding.

4.4.8.2. Range of Magnitude

Lightning strikes and lightning damage are largely unreported, so statistics and opinions on frequency vary. Throughout the United States, lightning is annually responsible for the deaths of approximately a hundred people, injuries to hundreds more, and millions of dollars in damage to property. People who are struck by lightning sometimes suffer heart damage, inflated lungs and brain damage. For those who survive, loss of consciousness, amnesia, paralysis and burns are also often reported. Lightning can also cause death or injury to livestock, cause damage buildings, communication systems, power lines and electrical systems.

Between 1959 and 1994, Pennsylvania ranked **third** among all states in the U.S. with 644 casualties (i.e. combination of deaths and injuries). This represents approximately 5% of casualties in the U.S during that 35-year period. Pennsylvania ranked **first** among all states in the U.S. with 1,441 damage reports. (NOAA NWS, 1997).

A worst-case event lightning event would be a strike in a large crowd or gathering of people as might be found at a large sporting event or outdoor concert. This could result in mass deaths or injuries. A worst-case scenario occurred in 2012 at the Potter County Fair where multiple individuals were struck by lightning when a summer storm passed through. There were no fatalities.

4.4.8.3. Past Occurrence

The reporting of lightning events does not always take place and therefore historical lightning occurrence data is unreliable as a source of determining vulnerability. The lightning strikes at the Potter County Fair in Millport, PA on 07/31/2012, injured three attendees.

The Potter County Department of Emergency (DES) reports that since the inception of the 911 program in 1989, they have had multiple strikes at the following radio towers:

Cobb Hill (Andrews Settlement)

Dutch Hill (Coudersport)

Bailey Hill (Ulysses)

Crandall Hill (Hebron Township)

Austin Hill

Deer Lick Hill (Galeton) – Damage costs were over $25,000.00.

UPMC Cole Hospital (Coudersport – 2016)

Over the entire period since 1989, the DES estimates damage costs of approximately $75K -$100K. The majority of damage has been to the antennae. However, in the case of the Deer Lick radio tower, significant damage was sustained on the generator. The estimated cost of damage is not broken down by year; rather it covers the time frame of present day through 1989.

Corrective action has been to strengthen grounding controls and equipment.

In most cases, these lightning strikes are not reported to NOAA.

4.4.8.4. Future Occurrence

Lightning strike hazards in Potter County are expected to occur in the future with high probability, and the potential damage from these strikes and related thunderstorms will remain unchanged. The future occurrence of a lightning strike involving human casualties is considered unlikely, however, the chance of damage to cell towers remains.

4.4.8.5. Vulnerability Assessment

The potential for lightning strikes and thunderstorms will continue to exist for all the municipalities in Potter County. Outdoor activities and events are most vulnerable, and when lightning threatens a large outdoor venue, the game or event itself would typically be postponed. Potter County is a participant in the StormReady program.

4.4.9 Pandemic

The definition of a pandemic is when infection from of a new strain of a certain disease, to which most humans have no immunity, substantially exceeds the number of expected cases over a given period of time. Such a disease may or may not be transferable between humans and animals. (Martin & Martin-Granel, 2006).

4.4.9.1. Location and Extent

If Potter County were to experience a pandemic, the entire population could be affected. A pandemic disease event can cover a widespread geographical area and can affect large populations. The size and extent of a pandemic would be dependent upon how easily the illness is spread, the mode of transmission, and the amount of contact between infected and uninfected individuals. The disease spread typically follows population centers.

The pandemic diseases the County is primarily concerned with at this time are influenza and pertussis/whooping cough. The H1N1 virus, colloquially known as swine flu, was of particular concern in 2009 and 2010. 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 disease of 2009 H1N1 flu was underway.

4.4.9.2. Range of Magnitude

Modern medicine has made great strides in reducing the impact of diseases like influenza and pertussis. Deaths from these illnesses have greatly decreased globally over the last century.

An estimate of potential impacts of pandemic disease was prepared for Potter County using the CDC's FluSurge 2.0 model. Using a 12-week pandemic wave with a 25 percent attack rate, the model indicated that Potter County's maximum (worst-case) scenario would involve 87 hospital admissions, with a peak of new admissions in weeks 6 and 7, resulting in 22 deaths.

4.4.9.3. Past Occurrence

Several pandemic disease influenza outbreaks have occurred over the past 100 years. A list of worldwide events is shown in Table 4.4.9-1

Table 4.4.9-1: Significant Influenza Outbreaks Since 1918

Date	Pandemic Name/Subtype	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/H1N1	18,449 (as of August 6, 2010)

Precise numbers on cases of H1N1 and pertussis are unknown for Potter County; however, in 2009 there were 7 confirmed cases of H1N1 and in 2012, there were 61 cases of pertussis. There have been no deaths reported for either disease.

4.4.9.4. Future Occurrence

A future occurrence of Potter County experiencing a pandemic outbreak is difficult to predict in terms of timing or severity. While the County is in a remote part of Pennsylvania, tourism and travel are common, with diseases potentially being carried with them. For the purposes of this HMP, the risk of a pandemic is considered *low*.

4.4.9.5. Vulnerability Assessment

Typically, high-risk populations for pandemic disease include people 65 years and older, children younger than 5 years old, pregnant women, and people of any age with certain chronic medical conditions. Schools and institutions serving those younger than 5 years old and older than 65 years old are most conducive to transmission of pandemic strains of virus, since populations identified as being at high risk are concentrated at these facilities. All of the County's municipalities are considered equally vulnerable to a pandemic event.

4.4.10 Radon Exposure

The Department of Environmental Protection Agency defines radon as a cancer-causing natural radioactive gas that you can't see, smell, or taste. It is a large component of the natural radiation that humans are exposed to and can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings. According to the USEPA, radon is estimated to cause about 21,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer (EPA 402-R-03-003: EPA Assessment…, 2003). An estimated 40% of the homes in Pennsylvania are believed to have elevated radon levels (Pennsylvania Department of Environmental Protection, 2009).

4.4.10.1. Location and Extent

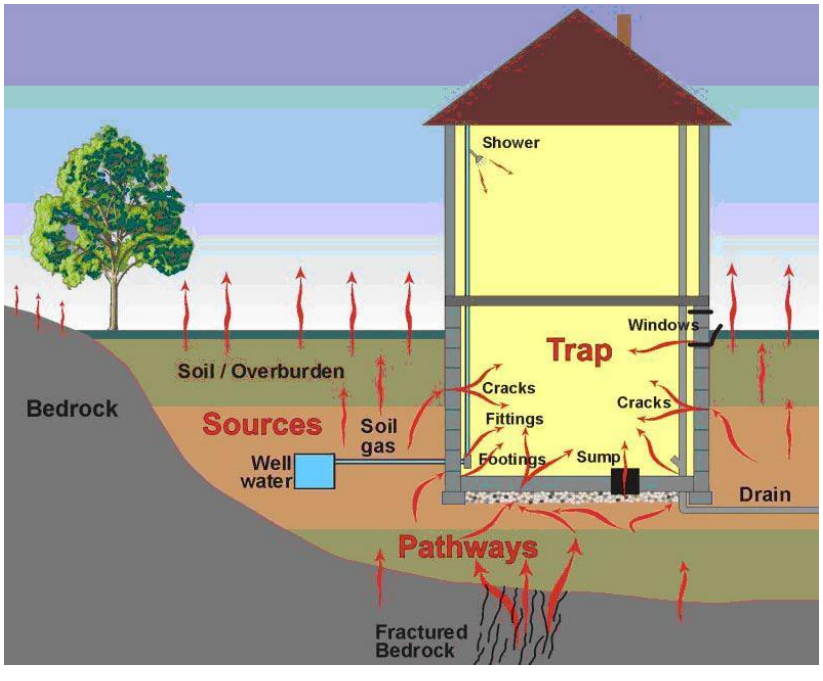
Radon is a gas that cannot be seen or smelled. The distribution of radon is correlated with the distribution of radium (i.e. 226Ra), its immediate radioactive parent, and with uranium, its original ancestor. Due to the short half-life of radon, the distance that radon atoms can travel from their parent before decay is generally limited to distances of feet or tens of feet.

Three sources of radon in houses are now recognized:

- Radon in soil air that flows into the house;
- Radon dissolved in water from private wells and exsolved during water usage; this is rarely a problem in Pennsylvania; and
- Radon emanating from uranium-rich building materials (e.g. concrete blocks or gypsum wallboard); this is not known to be a problem in Pennsylvania.

Each county in Pennsylvania is classified as having a *low*, *moderate*, or *high* radon hazard potential. Potter County is classified as having a moderate hazard, meaning there is a predicted basement radon level average of between 2 and 4 pCi/L.

Figure 4.4.10.1-1: Sketch of Radon Entry Points into a House (Arizona Geological Survey, 2006)



While high radon levels were originally thought to be worse in houses that are tightly sealed, it is now recognized that rates of air flow into and out of houses, as well as the location of air inflow and the radon content of air in the surrounding soil, are key factors in radon concentrations. Outflows of air from a house, caused by a furnace, fan, thermal “chimney” effect, or wind effects, require that air be drawn into the house to compensate. If the upper part of the house is tight enough to impede influx of outdoor air (radon concentration generally <0.1 pCi/L), then an appreciable fraction of the air may be drawn in from the soil or fractured bedrock through the foundation and slab beneath the house, or through cracks and openings for pipes, sumps, and similar features (see Figure 4.4.10-1). Soil gas typically contains from a few hundred to a few thousand pCi/L of radon; therefore, even a small rate of soil gas inflow can lead to elevated radon concentrations in a house.

The radon concentration of soil gas is dependent on various soil properties. Radon content is higher in soils containing higher levels of radium and uranium, even more so if the radium can easily escape. The amount of pore space in soil and permeability for air flow also impact the concentration of radon in soil gas and its rate of flow into a house or home. In addition, soil depth and moisture content, mineral host and form for radium and other soil properties may be important. Fractured zones of bedrock may supply radon concentrations similar to those in deep soil.

The areas where houses may experience higher levels of radon can be divided into three groups:

• Areas of very elevated uranium content (>50 ppm) around uranium deposits and prospects. Although very high levels of radon can occur in these areas, the hazard normally is restricted to within a few hundred feet of the deposit. In Pennsylvania, such localities occupy an *insignificant* area.

• Areas of common rocks having higher than average uranium content (5 to 50 ppm). In Pennsylvania, such rock types include granitic and felsic alkali igneous rocks and black shale. Elevated uranium occurs in Pennsylvania in the black shale of the Devonian Marcellus Formation and possibly the Ordovician Martinsburg Formation. High radon values are locally present in areas underlain by these formations.

• Areas of soil or bedrock that have normal uranium content but properties that promote high radon levels in houses. This group is incompletely understood at present. Relatively high soil permeability can lead to high radon, the clearest example being houses built on glacial eskers. Limestone-dolomite soils also appear to be predisposed for high radon levels in houses, perhaps because of the deep clay-rich residuum in which radium is concentrated by weathering on iron oxide or clay surfaces, coupled with moderate porosity and permeability. The importance of carbonate soils is indicated by the fact that radon contents in 93 percent of a sample of houses built on limestone-dolomite soils near State College, Centre County, exceeded 4 pCi/L, and 21 percent exceeded 20 pCi/L, even though the uranium values in the underlying bedrock are all in the normal range of 0.5 to 5 ppm uranium.

The second factor listed above is most likely the cause of moderate radon levels in Potter County. Table 4.4.10.3-1 shows test results of recent radon tests in several of the County's boroughs and townships.

4.4.10.2. Range of Magnitude

Radon exposure is the second leading cause of lung cancer after smoking. It is the number one cause of lung cancer among non-smokers. Radon is responsible for about 21,000 lung cancer deaths every year; approximately 2,900 of which occur among people who have never smoked. Lung cancer is the only known effect on human health from exposure to radon in air and thus far, there is no evidence that children are at greater risk of lung cancer than are adults (USEPA, 2010). The main hazard is actually from the radon daughter products (218Po, 214Pb, 214Bi), which may become attached to lung tissue and induce lung cancer by their radioactive decay.

According to the EPA, the average radon concentration in United States homes is approximately 1.3 pCi/L. The EPA recommends homes be fixed if the radon level is 4 pCi/L or more. However, as there is no known safe level of exposure to radon, the EPA also recommends fixing a home with radon levels that are between2 pCi/L and 4 pCi/L. Table 4.4.10.1-3 provides information on the relationship between various radon levels, probability of lung cancer, comparable risks from other hazards, and action thresholds. For example, a smoker exposed to radon has an increased risk of lung cancer. The worst-case scenario for radon exposure would be if a large area of homes provided residents high levels of exposure over a prolonged period of time without the

resident being aware. This worst-case scenario exposure then could lead to a large number radon-caused people with cancer.

Table 4.4.10.2-1: Radon Risk for Smokers and Non-Smokers (USEPA, March 2010)			
RADON LEVEL (cCi/L)	**IF 1,000 PEOPLE WERE EXPOSED TO THIS LEVEL OVER A LIFETIME…***	**RISK OF CANCER FROM RADON EXPOSURE COMPARES TO…****	**ACTION THRESHOLD**
SMOKERS			
20	About 260 people could get lung cancer	250 times the risk of drowing	Fix Structure
10	About 150 people could get lung cancer	200 times the risk of dying in a home fire	Fix Structure
8	About 120 people could get lung cancer	30 times the risk of dying in a fall	Fix Structure
4	About 62 people could get lung cancer	5 times the risk of dying in car crash	Fix Structure
2	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider Fixing between 2 and 4 pCi/L
1.3	About 20 people could get lung cancer	Average indoor radon level	Reducing radon levels below 2pCi/L is difficult
0.4	About 3 people could get lung cancer	Average indoor radon level	
NON-SMOKERS			
20	About 20 people could get lung cancer	35 times the risk of drowing	Fix Structure
10	About 18 people could get lung cancer	20 times the risk of dying in a home fire	Fix Structure
8	About 15 people could get lung cancer	4 times the risk of dying in a fall	Fix Structure
4	About 7 people could get lung cancer	The risk of dying in a car crash	Fix Structure
2	About 4 people could get lung cancer	The risk of dying from poison	Consider Fixing between 2 and 4 pCi/L
1.3	About 2 people could get lung cancer	Average indoor radon level	Reducing radon levels below 2pCi/L is difficult
0.4		Average outdoor radon level	
NOTE: Risk may be lower for former smokers.			
* Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).			

4.4.10.3. Past Occurrence

Current data on radon as it affects individual houses in Potter County, and the state in general, is considered incomplete and potentially biased. The EPA estimates that the national average indoor radon concentration is 1.3 pCi/L and the level for action is 4.0 pCi/L; however, they have estimated that the average indoor concentration in Pennsylvania basements to be about 7.1 pCi/L, and on the first floor of Pennsylvania homes around 3.6 pCi/L (PA DEP, 2011).

The Pennsylvania Department of Environmental Protection (PA DEP) Bureau of Radiation Protection (Bureau) provides information for homeowners on how to test for radon in their houses. If a test is reported to the Bureau over 4 pCi/L, then the Bureau works to help the homeowners make repairs to their houses to mitigate against high radon levels. The total number of tests reported to the Bureau since 1990 and their results are provided by zip code on the Bureau's website. However, this information is only provided if over 30 tests total were reported in order to best approximate the average for the area. In Potter County, only 1 zip code had sufficient tests reported to the Bureau, which are shown in Table 4.4.10.3-1. The average result for basements tested in the zip code 16915 has been 18.1 pCi/L.

Table 4.4.10.3-1 Potter County Radon Exposure

Municipality	Zip Code	Location	Number of Tests	Maximum Result pCi/L	Average Result pCi/L
Coudersport Borough Oswayo Borough Eulalia Township Hebron Township Homer Township Sweden Township	16915	Basement	225	271	18.1
Coudersport Borough Oswayo Borough Eulalia Township Hebron Township Homer Township Sweden Township	16915	First Floor	31	96.2	11.4

4.4.10.4. Future Occurrence

Radon exposure in Potter County is inevitable given its current present soil, geologic, and geomorphic factors. Future occurrence of high radon-level hazards can be considered *high.*

4.4.10.5. Vulnerability Assessment

A number of houses in Potter County could be susceptible to high levels of radon. As noted in the table above, smokers can be up to 10 times more vulnerable to lung cancer from high levels of radon, depending on the level of radon to which they are exposed. Older houses with crawl spaces or unfinished basements are more vulnerable because of the increased exposure to soils that may be releasing higher levels of radon gas.
Appropriate testing for radon levels should be completed across the County, especially where there have been higher incidence levels, to determine the level of vulnerability in homes, businesses and schools. The Pennsylvania Department of Environmental Protection Bureau of Radiation Protection provides tests to determine radon levels, and information for mitigating high levels of radon in a building. The EPA estimates that repairs to houses to protect against radon cost on average the same as regular house repairs (EPA, October 2010).

4.4.11 Tornado, Wind Storm

For purposes of this Plan, the hazard of Tornado, Wind Storm is defined in the following manner.

A wind storm can occur during severe thunderstorms, winter storms, coastal storms, or tornadoes. Straight-line winds such as a downburst have the potential to cause wind gusts that exceed 100 miles per hour. Based on 40 years of tornado history and over 100 years of hurricane history, FEMA identifies western and central Pennsylvania as being more susceptible to higher winds than eastern Pennsylvania. (FEMA, 1997). A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes or tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage. Waterspouts are weak tornadoes that form over warm water and are relatively uncommon in Pennsylvania. Each year, an average of over 800 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries (NOAA, 2002). Based on NOAA Storm Prediction Center Statistics, the number of recorded F3, F4, & F5 tornadoes between 1950-1998 ranges from <1 to 15 per 3,700 square mile area across Pennsylvania (FEMA, 2009). A water spout is a tornado over a body of water (American Meteorological Society, 2009).

4.4.11.1. Location and Extent

The tornado season typically runs from March through August, however, a tornado can occur any time, often accompanying tropical storms and hurricanes as they move onto land. Tornado events are not limited to any particular area of the County. It is not possible to predict the duration or that extent of area affected by a tornado.

4.4.11.2. Range of Magnitude

A windstorm is generally defined as having sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration. A tornado’s magnitude is classified using the Enhanced Fujita Scale is shown in Table 4.4.11.2-1.

Table 4.4.11.2-1 Enhanced Fujita Scale and Associated Damage

Scale	Wind speed		Relative frequency	Potential damage	
	mph	km/h			
EF0	65–85	105–137	53.5%	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.	
EF1	86–110	138–178	31.6%	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.	
EF2	111–135	179–218	10.7%	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.	
EF3	136–165	219–266	3.4%	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.	
EF4	166–200	267–322	0.7%	Extreme damage to near-total destruction. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.	
EF5	>200	>322	<0.1%	Massive Damage. Strong frame houses leveled off foundations and swept away; steel-reinforced concrete structures critically damaged; high-rise buildings have severe structural deformation. Incredible phenomena will occur.	

4.4.11.3. Past Occurrence

Tornadoes and windstorms can affect any geographical area of the County. A map of tornadoes that have affected Potter County 1950 - 2010 is shown below (see Map 4.4.11.3-1). This map illustrates the location of the eight tornadoes that have impacted Potter County during that time-frame; one F3 tornado, two F2 tornadoes, four F1 tornadoes and one F0 tornadoes. In addition, three EF0 tornadoes struck the County in 2011-2012. A table outlining specific tornadoes and windstorms in the County is provided in Table 4.4.11.3-1.

The majority of tornadoes on record in the County have been in the F1 and F2 range. While this is on the low end of the scale for tornadoes, they nonetheless are capable of producing devastating damage to property and human life. A windstorm on November 13, 2003 produced winds of 83 mph, resulting in a worst-case scenario for the county when three people died from the storm.

Figure 4.4.11.3-1 Map of Potter County Tornado History

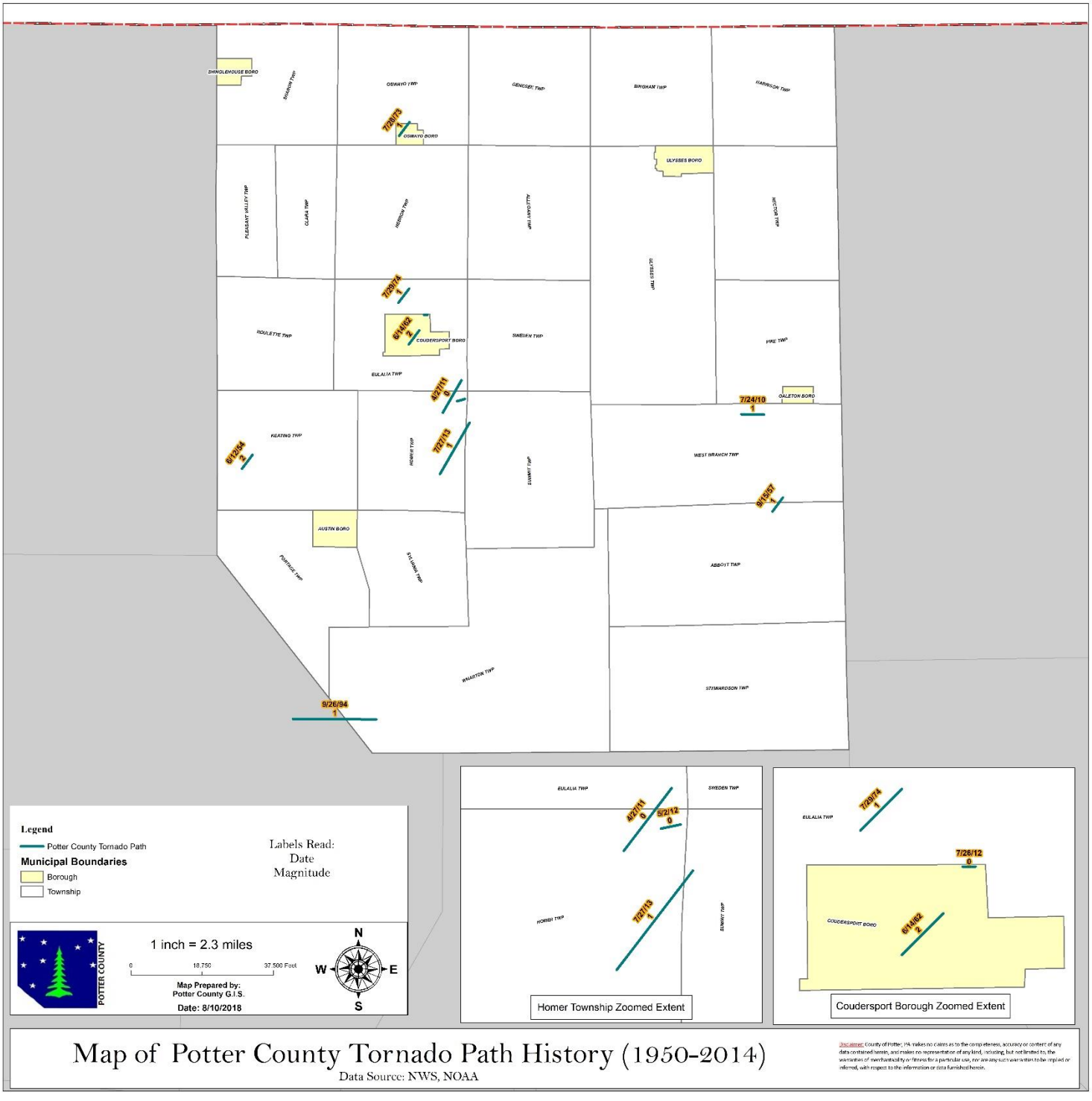


Table 4.4.11.3-1 Potter County Tornado/Wind Storms 2/1/2002 - 9/8/2018 (http://www.ncdc.noaa.gov/stormevents and municipality where noted)							
Location	**Date**	**Type**	**Magnitude**	**Death**	**Injury**	**Property Damage**	**Crop Damage**
Potter	2/1/2002	High Wind	73 mph	0	0	$5.0 K	$0 K
Potter	3/9/2002	High Wind	58 mph	0	0	$50.0 K	$0 K
Shinglehouse	6/27/2002	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Costello	7/28/2002	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Galeton	7/21/2003	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Potter	11/13/2003	High Wind	82 mph	3	0	$50 .0 K	$0 K
Coudersport	6/17/2004	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Galeton	7/14/2004	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Coudersport	8/10/2004	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Potter	12/1/2004	High Wind	69 mph	0	0	$0 K	$0 K
Potter	12/23/2004	High Wind	59 mph	0	0	$0 K	$0 K
Coudersport	6/6/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Shinglehouse	6/6/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Genesee	6/6/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Austin	6/14/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Roulette	6/14/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Austin	7/6/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Wharton	9/16/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Shinglehouse	9/29/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Coudersport	11/6/2005	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Galeton	11/6/2005	Thunderstorm Wind	69 mph	0	0	$0 K	$0 K
Coudersport	8/3/2006	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Galeton	11/16/2006	Thunderstorm Wind	58 mph	0	0	$20.0 K	$0 K
Potter	12/1/2006	High Wind	58 mph	0	0	$0 K	$0 K
Roulette	6/8/2007	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Kinney	6/27/2007	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Potter	1/30/2008	High Wind	61 mph	0	0	$0 K	$0 K
Roulette	5/31/2008	Thunderstorm Wind	67 mph	0	0	$0 K	$0 K
Cross Fork	6/13/2008	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Potter	6/16/2008	Thunderstorm Wind	58 mph	0	0	$0 K	$0 K
Potter	9/14/2008	High Wind	58 mph	0	0	$0 K	$0 K
Potter	2/12/2009	High Wind	58 mph	0	0	$50.0 K	$0 K
Potter	2/12/2009	High Wind	58 mph	0	0	$10.0 K	UNK
Kinney	8/9/2009	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Galeton	8/9/2009	Thunderstorm Wind	58 mph	0	0	$12.0 K	$0 K
Coudersport	8/9/2009	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Odin	7/17/2010	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Galeton	7/24/2010	Tornado	EF 1	0	0	$25.0 K	$0 K
Austin	4/27/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Inez	4/27/2011	Tornado	EF 0	0	0	$1.0 K	$0 K
Austin	5/25/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Brookland	5/30/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Shinglehouse	7/25/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Roulette	7/25/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Shinglehouse	11/14/2011	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Ellisburg	11/14/2011	Thunderstorm Wind	60 mph	0	0	UNK	$0 K
Inez	5/2/2012	Thunderstorm Wind	60 mph	0	0	$5.0 K	$0 K
Inez	5/2/2012	Tornado	EF 0	0	0	$75.0 K	$0 K
Coudersport	5/29/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Coudersport	6/1/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Lewisville	7/7/2012	Thunderstorm Wind	75 mph	0	0	$5.0 K	$0 K
Odin	7/25/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Roulette	7/26/2012	Thunderstorm Wind	58 mph	0	0	$200.0 K-per munic.	$0 K
Kinney	7/26/2012	Thunderstorm Wind	90 mph	1	1	$10.0 K	$0 K
Coudersport	7/26/2012	Tornado	EF 0	0	0	UNK	UNK
Austin	7/26/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Harrison Valley	7/26/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Hebron Center	8/9/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Hebron	9/8/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K
Sweden Valley	9/8/2012	Thunderstorm Wind	58 mph	0	0	$5.0 K	$0 K

4.4.11.4. Future Occurrence

The future occurrence of Potter County experiencing a windstorm or tornado is likely, while difficult to quantify. Strong winds are common, and can result in significant property damage, downed trees, utility outages and even death.

The probability of a tornado striking the County is considered high, with eleven occurring since 1954. For the most part, the tornadoes that have occurred have been relatively weak and caused little destruction, though there have been exceptions (described above). Most of Pennsylvania is susceptible to tornadoes of a magnitude of an EF3. It can be assumed that future tornadoes impacting Potter County will be similar to those that have occurred in the past.

4.4.11.5. Vulnerability Assessment

In Potter County, a tornado or windstorm could impact any facility or property. Mobile homes, commercial trailers and campers are extremely vulnerable to high winds. Areas of the County with higher population centers will tend to have a higher vulnerability to damage from tornadoes as opposed to uninhabited land.

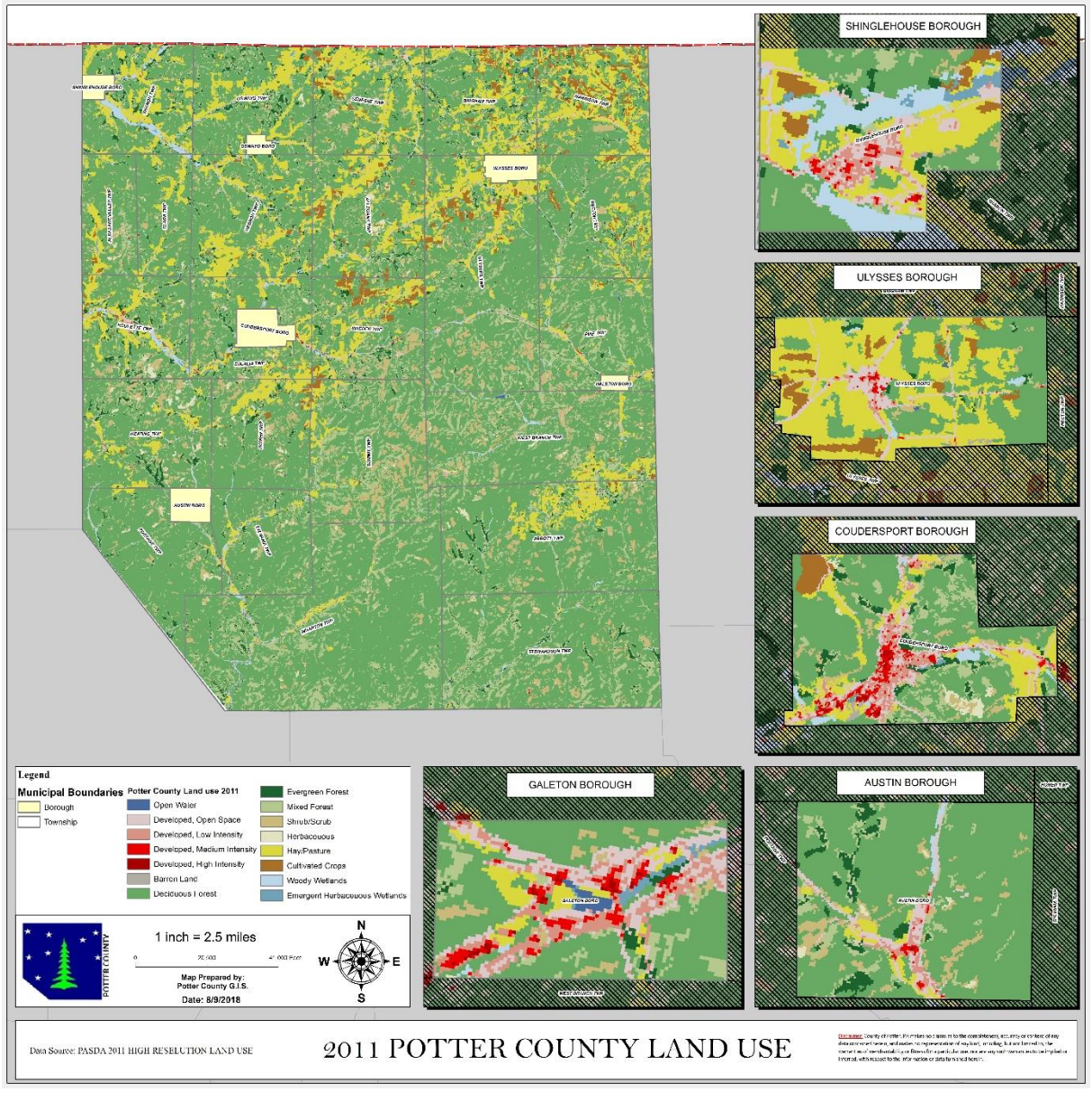
It is important to note that a tornado or windstorm could impact any critical facility. Identification of specific critical facilities and assets that are most vulnerable to this hazard is important. To evaluate vulnerability, the considerations should be age of the building (and building codes used), type of construction, and condition of the structure. Individual structure data was not available for this study, so it was difficult to determine the exact number and types of structures within Potter County that have heightened vulnerability to wind hazards.

4.4.12 Wildfire

As defined in this plan, a wildfire is a raging, uncontrolled fire that spreads rapidly through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. Wildfires can occur at any time of the year, but mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Wildfires in Pennsylvania can occur in fields, grass, brush, and forests. 98% of wildfires in Pennsylvania are a direct result of people, often caused by debris burns (PA DCNR, 1999).

4.4.12.1. Location and Extent

Potter County has several state parks and large areas of forest and woodland that are susceptible to wildfires. In fact, over 88% of the County's land area is forest land, 966.4 square miles, 710,523 acres. The land use map below, also previously shown as Figure 2.4.1, shows that the vast majority of the County is forest land, with several state parks and forests.



4.4.12.2. Range of Magnitude

Wildfires in Potter County have generally been small and easily contained. Since 1989, as little as 0.01 acre and as much as 68 acres have been involved in a single event. The potentially worst-case scenario for Potter County would be a large multiple-acre fire occurring during a drought, which could allow the fire to spread rapidly. Due to the large amount of forested land, a great deal of property could suffer damage.

4.4.12.3. Past Occurrence

The map in Figure 4.4.12.3-1 shows the reported wildfires that occurred in the County between 2002 – 2011, while Table 4.4.12.3-2 provides additional data including damages associated with these fires as recorded by the PA Department of Conservation and Natural Resources.

Figure 4.4.12.3-1 Potter County Wildfires 2002 - 2018

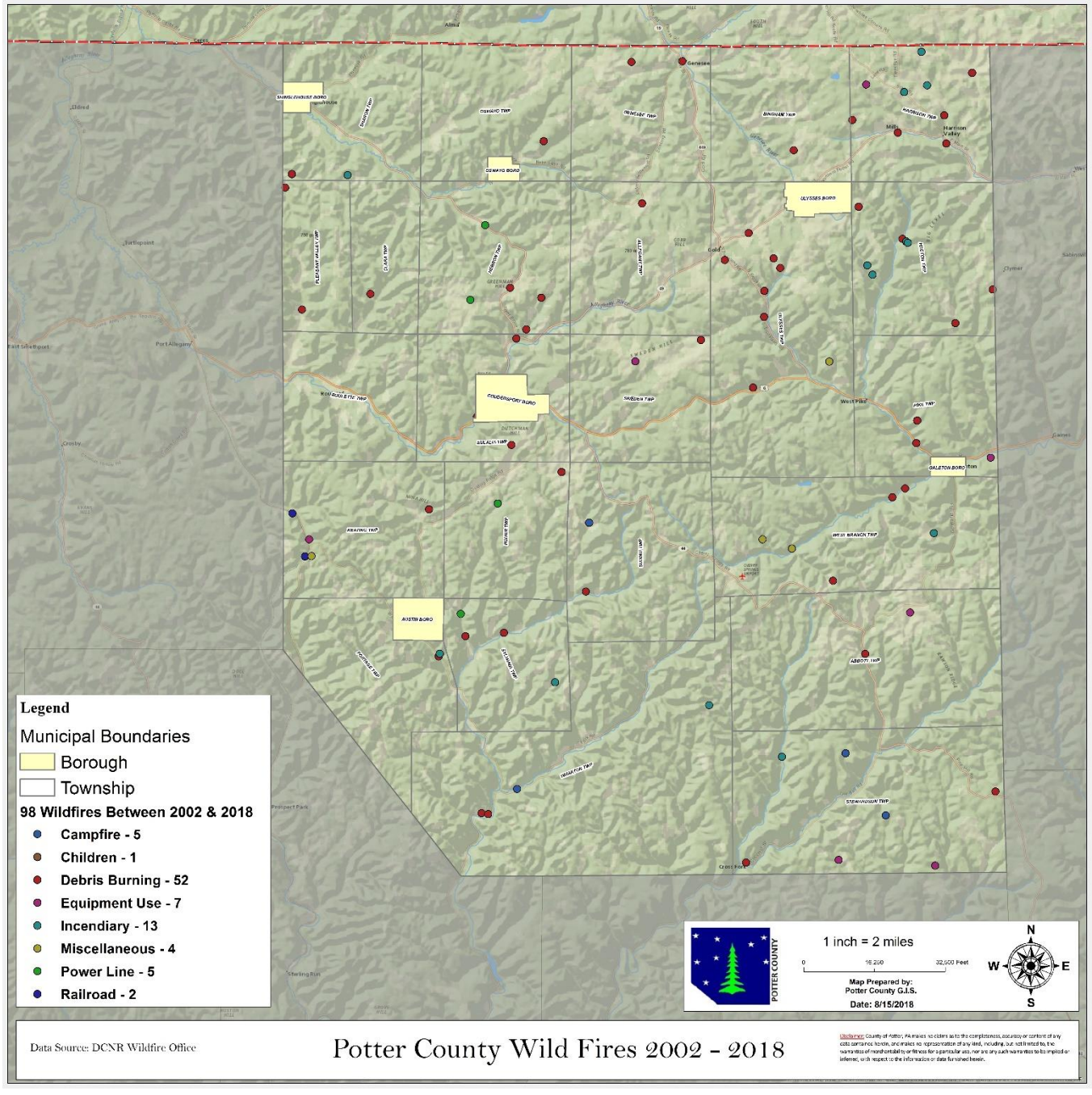


Table 4.4.12.3-2 Wildfires in Potter County and Associated Damage 2002 - 2012 (DCNR 2012)						
Season: (1) Jan - June (2) July - Dec	Year	Location (Township/Borough)	Acreage	Deaths	Injuries	Property Damage Cost
1	2002	HARRISON TWP	0.2			$0.00
2	2002	STEWARDSON TWP	68			$11,950.32
1	2003	HECTOR TWP	0.007			$0.00
1	2003	HECTOR TWP	0.6			$84.41
2	2003	HARRISON TWP	2.75			$3,299.83
1	2003	HECTOR TWP	6.06			$844.14
1	2003	HARRISON TWP	0.06			$0.00
1	2003	HARRISON TWP	0.07			$0.00
1	2003	HECTOR TWP	2.4			$177.19
1	2003	PIKE TWP	0.1			$0.00
1	2003	WHARTON TWP	1.93			$8.47
1	2003	HOMER TWP	0.67			$94.26
1	2004	KEATING TWP	2.04			$8.95
1	2004	EULALIA TWP	0.27			$0.00
1	2005	COUDERSPORT BORO	0.03			$0.00
1	2005	SUMMIT TWP	1.2			$168.83
1	2005	KEATING TWP	12.5			$1,527.50
1	2005	ULYSSES TWP	0.91			$128.02
1	2005	SHARON TWP	0.09			$0.00
1	2005	HECTOR TWP	5.39			$758.32
1	2005	CLARA TWP	15.8			$2,312.80
1	2005	SWEDEN TWP	30.3			$485.64
1	2005	WEST BRANCH TWP	7.22			$1,015.79
1	2005	HEBRON TWP	1.25			$175.86
1	2006	STEWARDSON TWP	0.01			$0.00
1	2006	STEWARDSON TWP	0.38			$28.06
1	2006	STEWARDSON TWP	0			$0.00
1	2006	WEST BRANCH TWP	34.54			$6,579.45
1	2006	ALLEGANY TWP	2.08			$0.00
1	2006	KEATING TWP	2.7			$199.34
1	2006	PIKE TWP	11.8			$1,258.94
1	2006	STEWARDSON TWP	5.5			$406.06
1	2006	ULYSSES TWP	6.36			$27.92
1	2007	SUMMIT TWP	1.9			$131.96
2	2007	HARRISON TWP	0.2			
1	2007	KEATING TWP	3.5			$0.00
1	2007	STEWARDSON TWP	1			$0.00
2	2008	HARRISON TWP	1			
1	2009	KEATING TWP	0.1			
1	2009	SWEDEN TWP	3.6			
1	2009	HARRISON TWP	0.2			
1	2009	GALETON BORO	0.5			
1	2009	HARRISON TWP	4.7			
1	2009	OSWAYO TWP	52.7			
1	2009	WEST BRANCH TWP	5.6			
1	2010	SYLVANIA TWP	56			
1	2010	ROULETTE TWP	7			
UNK	2011	POTTER COUNTY	4.5			$0.00
UNK	2012	POTTER COUNTY	20.91			$881.39

4.4.12.4. Future Occurrence

It is likely that wildfires will affect Potter County every year. Based on previous occurrences, the County can typically expect two or more wildfires each year. Therefore, the future occurrence of wildfires can be considered *very likely.*

4.4.12.5. Vulnerability Assessment

Wildfires can quickly destroy areas of forest and vegetation without regard to the man-made structures within those areas. Due to the rural nature of most of Potter County, fighting these fires can pose a challenge for the fire departments in terms of the time it takes to reach the fire and the resources to extinguish it. This situation leaves people and properties in close proximity to the forested areas of the County as the most vulnerable.

4.4.13 Winter Storm

Winter storm is defined by this HMP as a storm that may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. 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. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow, which can severely impair visibility and disrupt transportation. The Commonwealth of Pennsylvania has a long history of severe winter weather. (NOAA, 2009).

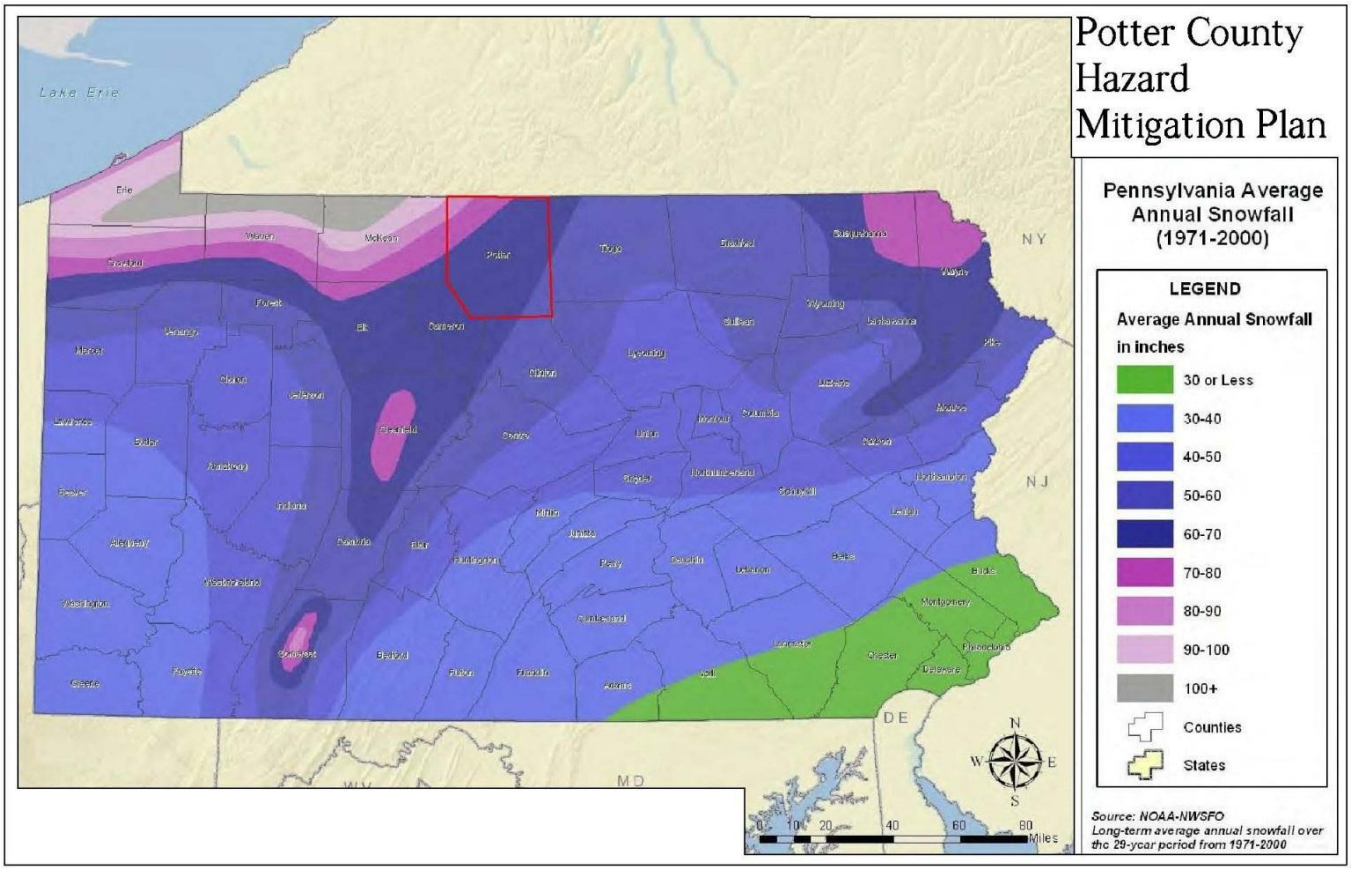
4.4.13.1. Location and Extent

Winter storms occur on an average of time times a year in Pennsylvania. From November to March, the Commonwealth is subjected to winter storms moving up the Atlantic seaboard, or sweeping in from the west. Winter storms may include both snow and ice alone, or may be coupled with high winds.

All counties in Pennsylvania are subject to severe winter weather, including Potter County, however, the Northern Tier, western counties and those counties along the Appalachian ranges are more likely to experience these storms with the most frequency and severity.

Average annual snowfall in Potter County ranges from 60 to 90 inches, with higher snowfall in the northwest areas of the County. The following map, Figure 4.4.13.1-1, provides an overview of annual snowfall in the Commonwealth from the 2010 Pennsylvania Hazard Mitigation Plan.

Figure 4.4.13.1-1 Pennsylvania Average Annual Snowfall 1971-2000 (NOAA-NWSFO)



4.4.13.2. Range of Magnitude

Winter storms in Potter County are common and are typically only considered a hazard when they result in damage or traffic issues. A winter storm can produce more damage than any other severe weather event, including tornadoes. These storms may damage communication networks, kill vegetation, collapse structures and cause traffic accidents. The Weather Bureau estimates that 85 percent of ice storm deaths are traffic related. Flooding can also be a damaging by-product of winter storms when there is a rapid thaw.

Categories of Winter Storms typically include:

1) Heavy Snowstorm: Accumulations of four inches or more in a six-hour period, or six inches or more in a twelve-hour period.

2) Sleet Storm: Significant accumulations of solid pellets that form from the freezing of raindrops or partially melted snowflakes, causing slippery surfaces and posing hazards to pedestrians and motorists.

3) Ice Storm: Significant accumulations of rain or drizzle freezing on objects (trees, power lines, roadways, etc.) as it strikes them, causing slippery surfaces and damage from the sheer weight of ice accumulation.

4) Blizzard: Wind velocity of 35 miles per hour or more, temperatures below freezing, considerable blowing snow with visibility frequently below one-quarter mile, prevailing over an extended period of time.

5) Severe Blizzard: Wind velocity of 45 miles per hour, temperatures of 10 degrees Fahrenheit or lower, a high density of blowing snow with visibility frequently measured in feet, prevailing over an extended period of time.

4.4.13.3. Past Occurrence

Potter County has a long history of severe winter weather. There have been at least 50 winter storm events since 1972. This data is as recorded in the prior Potter County HMP and Hazard/Vulnerability Analysis and the NCDC NOAA. Winter storms have caused heavy snow, closed roads, resulted in power outages and cut off communications over extended periods of time. Motorists have been stranded. Residents have gone without electricity, phone service and running water for days at a time. The highest record snowfalls in Potter County are as follows: 1-day snowfall, 25 inches; 2-day snowfall, 28 inches; 3-day snowfall, 28 inches.

Table 4.4.13.3-1 Potter County Winterstorms 1/06/1972 - 1/22/2018	
Date	**Type**
2/20/1972	Heavy Snow
1/9/1977	Gas Shortage/Severe Weather
1/20/1978	Heavy Snow
2/6/1978	Blizzard
12/12/1992	2' Snow and Power OutageS
3/4/1993	Heavy Snow, Power Outages, Road Closings
10/31/1993	Heavy Snow
1/7/1996	Heavy Snow Melt, Severe Flooding
March 1997	Blizzard/Severe Weather
3/4/1999	Winter Storm, Power Outages
April 2001	Flooding
1/6/2002	Heavy Snow
1/9/2002	Heavy Snow
1/31/2002	Ice Storm
3/24/2002	Winter Storm
12/5/2002	Heavy Snow
12/10/2002	Ice Storm
12/13/2002	Ice Storm
1/1/2003	Ice Storm
February 2003	Winter Storm, Ice, Power Outages
12/14/2003	Heavy Snow
2/3/2004	Heavy Snow
3/16/2004	Heavy Snow
1/5/2005	Winter Storm
1/22/2005	Winter Storm
2/21/2005	Winter Storm
10/25/2005	Heavy Snow
12/2/2005	Heavy Snow
12/16/2005	Winter Storm
1/3/2006	Winter Storm
3/16/2007	Heavy Snow
12/2/2007	Ice Storm
12/9/2007	Ice Storm
12/13/2007	Winter Storm
2/1/2008	Winter Storm
2/26/2008	Winter Storm
3/4/2008	Ice Storm
3/7/2008	Winter Storm
12/11/2008	Winter Storm
12/19/2008	Winter Storm
12/23/2008	Ice Storm
1/10/2009	Winter Storm
1/27/2009	Winter Storm
10/15/2009	Winter Storm
2/1/2011	Winter Storm
2/20/2011	Heavy Snow
3/6/2011	Heavy Snow
3/23/2011	Winter Storm
4/22/2012	Heavy Snow

4.4.13.4. Future Occurrence

The future probability of winter storms in the County is anticipated to remain fairly constant. Based on previous occurrences, the County can probably expect two or more winter storms each year. Therefore, the future occurrence of wildfires can be considered *highly likely.*

4.4.13.5. Vulnerability Assessment

Potter County is vulnerable to winter storms varying in degree of severity. Winter storms in the northern tier can paralyze the County for days at a time. Winter storms have caused heavy snow, closed roads, resulted in power outages and cut off communications over extended periods of time. Motorists have been stranded and residents have gone without electricity, phone service and running water for days at a time. That said, winter is a way of life in Potter County and in many ways people have adjusted to the interruptions caused by winter storms. As many Potter County households are accustomed to being vulnerable to the impact of winter storms, many use alternative sources of heat, such as wood stoves, space heaters, gas generators, coal and natural gas. However, for those without such an alternative, loss of electric power means a loss of heat and can pose an immediate threat to human life.

4.5 Human-Made Hazards

4.5.14. Dam Failure

The definition used in this HMP for a dam is a barrier across flowing water that obstructs, directs, or slows down water flow. Dams provide benefits such as flood protection, power generation, drinking water, irrigation, and recreation. Failure of these structures results in an uncontrolled release of impounded water. Failures are relatively rare, but immense damage and loss of life is possible in downstream communities when such events occur. Aging infrastructure, hydrologic, hydraulic and geologic characteristics, population growth, and design and maintenance practices should be considered when assessing dam failure hazards. The failure of the South Fork Dam, located in Johnstown, PA, was the deadliest dam failure ever experienced in the United States. It took place in 1889 and resulted in the Johnstown Flood which claimed 2,209 lives (FEMA, 1997). Today there are approximately 3,200 dams and reservoirs throughout Pennsylvania (Pennsylvania Department of Environmental Protection, 2009).

4.5.14.1. Location and Extent

Any dam has the potential for creating a major disaster. Dam failures usually occur with little or no notice, wreaking havoc on an unsuspecting community. There are potentially hazardous dams in the County, the North Fork Dam and Lyman Run Dam. Rapid thaw in the spring, poor maintenance, severe thunderstorms or rain are factors that may facilitate a dam break.

4.5.14.2. Range of Magnitude

A number of major dam failures in the U.S. have occurred in the last century, destroying several communities and permanently scarring others. The worst dam disaster in U.S. history took place in 1889 above Johnstown, PA, when the South Fork Dam collapsed due to poor maintenance, clogged discharge pipes and spilling. As a result of the dam failure, over 2,200 lives were lost.

4.5.14.3. Past Occurrence

There are several low-level dams located in Potter County. There have been no dam failures in the County in recent history. However, on Saturday, September 30, 1911, the Austin Dam broke killing 88 people and washing out the entire valley for miles.

4.5.14.4. Future Occurrence

The chance of a dam failure occurring in Potter County should remain *low* with continued maintenance of the dams in the County. In addition, the Emergency Action Plans approved by the PA DEP for the dams should aid to minimize the danger to those persons deemed at risk.

4.5.14.5. Vulnerability Assessment

While there are a few dams in Potter County, vulnerability is limited due to their small size and their locations in areas of low population density.

4.5.15. Environmental Hazards

As defined in this HMP, environmental hazards are hazards that pose threats to the natural environment, the built environment, and public safety through the diffusion of harmful substances, materials, or products. Environmental hazards include the following:• Hazardous material releases; at fixed facilities or as such materials are in transit and including toxic chemicals, infectious substances, bio hazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive (PL 1990-165, § 207(e)). • Air or Water Pollution; the release of harmful chemical and waste materials into water bodies or the atmosphere, for example (National Institute of Health Sciences, July 2009; Environmental Protection Agency, Natural Disaster PSAs, 2009).• Air or Water Pollution; the release of harmful chemical and waste materials into water bodies or the atmosphere, for example (National Institute of Health Sciences, July 2009; Environmental Protection Agency, Natural Disaster PSAs, 2009).• Superfund Facilities; hazards originating from abandoned hazardous waste sites listed on the National Priorities List (Environmental Protection Agency, National Priorities List, 2009).• Manure Spills; involving the release of stored or transported agricultural waste, for example (Environmental Protection Agency, Environmental Impacts of…, 1998).• Product Defect or Contamination; highly flammable or otherwise unsafe consumer products and dangerous foods (Consumer Product Safety Commission, 2003).

4.5.15.1. Location and Extent

According to Potter County Emergency Services, the County has twelve SARA facilities which use, store, transport or manufacture hazardous materials. In Pennsylvania, SARA facilities must comply with 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), as amended. The community right-to-know reporting requirements keep communities abreast of the presence and release of chemicals at individual facilities. Most of these facilities in Potter County are located within populated areas. Should an accident occur in any of these facilities, numbers of people would need to be evacuated.

4.5.15.2. Range of Magnitude

There are an increasingly large number of chemical, oils, radioactive materials and other hazardous substances spilled as the result of highway and waterway accidents, storage tank leakage, pipeline break, or other "unscheduled events." On occasion, these events reach major (disaster) proportions and force people to evacuate and/or lose their homes and businesses.

Although major spills are rare, spills in general are not, and in some areas there are daily occurrences in which tanks and drums rupture; bags, bottles, pails and boxes leak into puddles and streams and clouds of hazardous materials may be dispersed in a manner that no one ever intended, resulting in people being forced to evacuate. Such instances can be further complicated by such factors as terrain, population, location, weather and human elements.

The number of accidents involving cargoes of hazardous substances in Pennsylvania increased to 395 statewide in 1982. The five-year average, 1978 through 1982, was 223. Damages caused by such accidents have added up to about $2 million each year, according to the PA DOT, Hazardous Materials Division.

There have been numerous incidents of hazardous material spillage and illegal dumping throughout the state. A low level radiation leak at the Three Mile Island Nuclear Station in 1979 opened the eyes of people to the danger of hazardous materials. Pennsylvania is a highly industrialized and significantly agricultural state, and dealing with this problem is of the utmost importance. According to the Pennsylvania Emergency Management Agency study of 1980, there are over 1,500 items considered hazardous materials with more items added continuously. Materials are considered hazardous if they are corrosive, explosive, flammable, toxic, packaged under pressure, radioactive or an irritant to life.

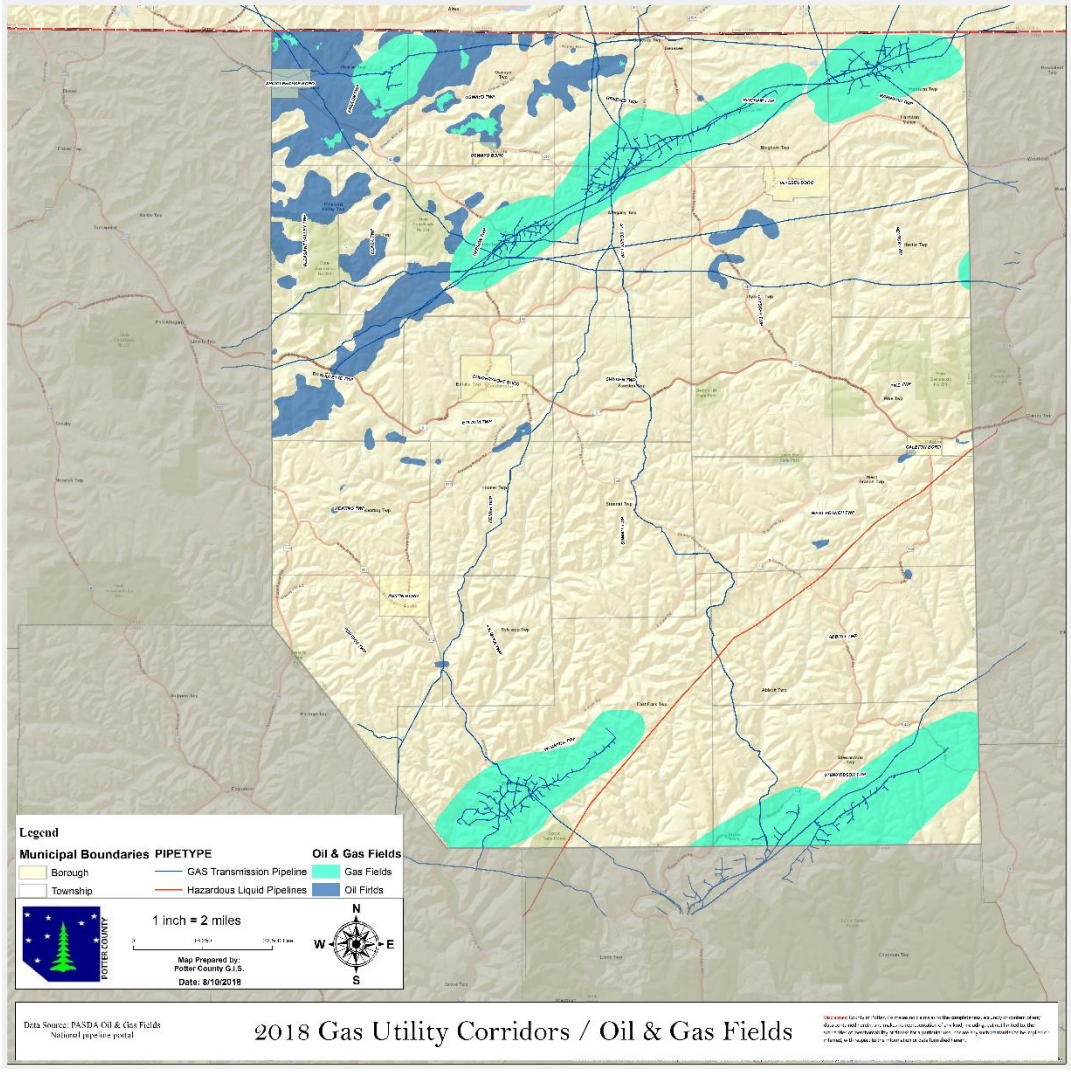
4.5.15.3. Past Occurrence

There have been several other localized hazardous materials incidents in Potter County over the past few years, most involving trucks.

In 2015, an onsite drilling rig incident resulted in several private water systems being contaminated by hazardous materials in the North Hollow region. Parts of a public water system was taken off-line as a precautionary measure. Local hospital water system was also affected by this incident. On-going water monitoring is occurring as a result of this incident.

With the increase in Utica Shale unconventional drilling activity in Potter County over the last several years, there is also a concern of hazardous spills and incidents related to the gas industry at drilling sites as well as with the trucks transporting materials to and from the sites on the County's highways and rural roads. The map in Figure 4.5.15.3-1 provides a snapshot of oil and gas well locations as of the time of this HMP.

Figure 4.5.15.3-1 Map of Potter County Oil and Gas Well Locations



4.5.15.4. Future Occurrence

The chance of a highway hazardous material accident occurring in Potter County is highly likely considering the amount of hazardous materials being transported through our highway system. The probability of hazardous materials transportation will more likely increase. Due to increases in chemical usage and the large network of highways within the county, the transportation of hazardous materials will continue to pose a threat to citizens. The risk of a future occurrence of an environmental hazard event is therefore considered *very likely*.

4.5.15.5. Vulnerability Assessment

A listing of most hazardous material types by areas of concern and transportation modes which exist within the County are listed below:

1. Industrial sites/ drilling sites that manufacture hazardous substances and/or generate hazardous waste.

2. Chemical distributors and/or users (including agricultural produce).

3. Highways or major industrial traffic.

4. Pipelines.

5. Gasoline, diesel, kerosene, heating oil, propane, service station and tanker truck fuel storage areas

6. Natural gas fueling terminals.

7. Railroads.

4.5.16. Levee Failure

A levee is defined as a human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding (Interagency Levee Policy Review Committee, 2006). Levee failures or breaches occur when a levee fails to contain the floodwaters for which it is designed to control or floodwaters exceed the height of the constructed levee. 51 of Pennsylvania's 67 counties have been identified as having at least one levee (FEMA Region III, 2009).

4.5.16.1. Location and Extent

If a levee were to fail, flood waters would inundate the protected area landward of the levee. The failure of a levee during a 1% annual chance flood would inundate the approximate 100-year flood plain previously protected by the levee. Structures located nearest the levee overtopping or the breach location would most likely bear the most damage following the initial failure.

Maintenance is critical for levees to provide the level of protection for which they were designed and built to protect. This responsibility belongs to a variety of entities including local, state and federal government and private land owners. Well maintained levees may obtain certification through independent inspections. Levees may not be certified for maintaining flood protection when the levee owner does not maintain to levee and or pay for an independent inspection. The impacts of an un-certified levee include levee failure and insurance rate increases because FEMA identifies that the structures are not designed to protect to the 1%- annual-chance flood height on Flood Insurance Rate Maps.

Potter County has two levees, one in the Coudersport Borough and the other in the Galeton Borough. The Coudersport Borough has been able to get its levee certify following the process of repair completed in the summer of 2018. The levee in the Galeton Borough is certified.

4.5.16.2. Range of Magnitude

The magnitude of a levee failure event depends on the level of flooding for which the structure is designed and the amount of property development in the vicinity. It is possible that flooding could be more severe under a levee failure event than a normal flood, since with an abrupt failure, rushing waters of a flood wave could result in catastrophic losses.

Those properties located in the area of reduced-risk landward of a levee system are not required to purchase mandatory flood insurance purchase as part of the National Flood Insurance Program. Therefore, in the event of a failure, it is likely that inundated properties would not be insured.

4.5.16.3. Past Occurrence

There are no known levee failures in Potter County.

4.5.16.4. Future Occurrence

Similar to a dam failure, a levee failure can occur at any time, under the appropriate circumstances. That said, by following proper design, construction and maintenance of the levee, the probability of a levee failure should be reduced. If not properly maintained, age alone can increase the potential for failures. The chance of a levee failure occurring in Potter County should remain *low* with continued maintenance of the levees in the County.

4.5.16.5. Vulnerability Assessment

Potter County has two levees, with no critical facilities in levee protected areas. There are 6 critical facilities in the 2,000 foot levee GIS buffer.

4.5.17 Nuclear Incident

A nuclear incident is defined in this HMP as an event involving the release of significant levels of radioactivity or exposure of workers or the general public to radiation (FEMA, 1997). Nuclear accidents/incidents can be placed into three categories: 1) Criticality accidents which involve loss of control of nuclear assemblies or power reactors, 2) Loss-of-coolant accidents which result whenever a reactor coolant system experiences a break or opening large enough so that the coolant inventory in the system cannot be maintained by the normally operating make-up system, and 3) Loss-of-containment accidents which involve the release of radioactivity. The primary concern following such an incident or accident is the extent of radiation, inhalation, and ingestion of radioactive isotopes which can cause acute health effects (e.g. death, burns, severe impairment), chronic health effects (e.g. cancer), and psychological effects. (FEMA, 1997).

4.5.17.1. Location and Extent

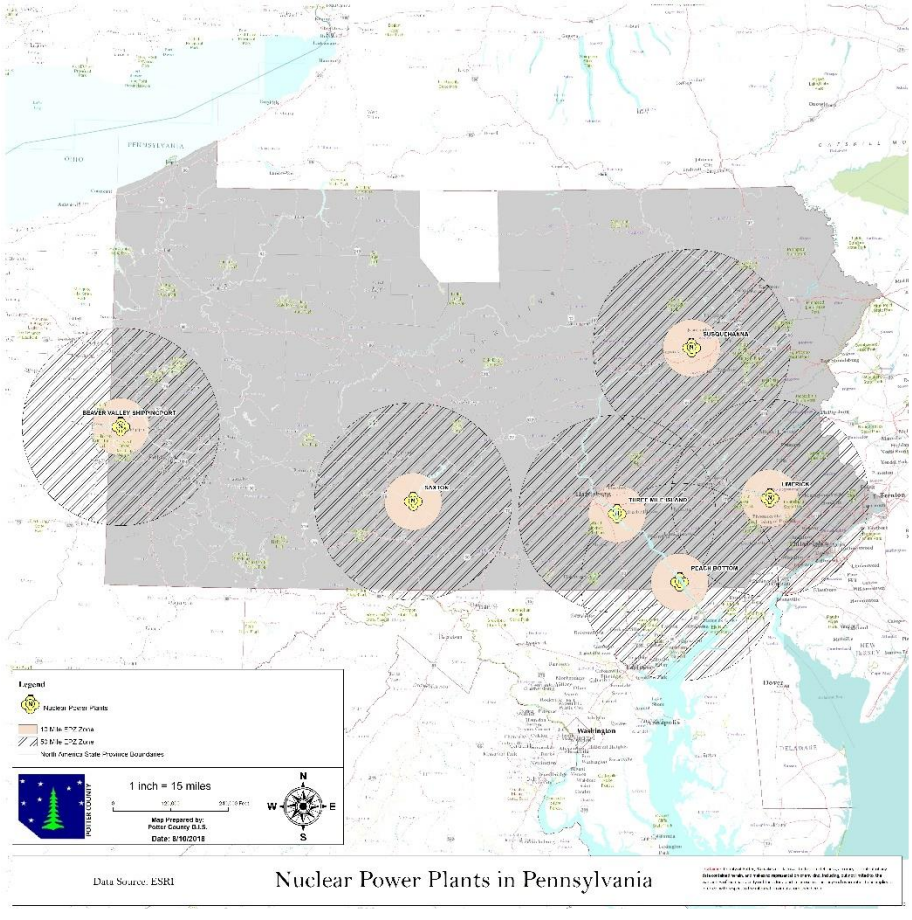
There are five nuclear power stations in the Commonwealth, which are an important source of energy:

Beaver Valley Power Station, Shippingport Borough, Beaver County;
Limerick Generating Station, Limerick Township, Montgomery County;
Peach Bottom Atomic Power Station, Peach Bottom Township, York County;
Susquehanna Steam Electric Station, Salem Township, Luzerne County; and
Three Mile Island Nuclear Generating Station, Londonderry Township, Dauphin County.

Four of the five nuclear stations are in the southeastern portion of the state, as seen in Figure 4.5.17-1. Four of the five plants have two operating licensed units. Three Mile Island (TMI) has only one operating license with the second unit in a state of Post-Defueling Monitored Storage (PDMS).

Potter County is located more than 50 miles from each of the stations, and therefore outside of the EPZ zone. That said, it is anticipated that if a nuclear incident were to occur, there may potentially be an influx of population into the more remote areas of the state as people relocate, whether temporarily or permanently. This would be most expected of the current base of seasonal visitors and camp owners who frequent the County on a regular basis and consider Potter County a second home.

Figure 4.5.17-1 Map of Nuclear Power Plants in Pennsylvania



4.5.17.2. Range of Magnitude

The magnitude of a nuclear incident for Potter County differs greatly from that of counties in closer proximity to the nuclear power stations. The potential influx of additional population could impact the entire County's infrastructure, from transportation, to school districts and job market.

4.5.17.3. Past Occurrence

Nuclear incidents rarely occur, but the incident at Three Mile Island is the worst fixed-nuclear facility accident in U.S. history. The accident at Three Mile Island had a profound effect on the nuclear industry. There have been no significant nuclear incidents in the Commonwealth since.

4.5.17.4. Future Occurrence

Nuclear power has become significantly safer and is one of the most heavily regulated industries in the nation. Despite the knowledge gained since then, there remains the possibility of accident to occur again. The Nuclear Energy Agency of the Organization for Economic Co-Operation and Development notes that studies estimate the chance of protective barriers in a modern nuclear facility at less than one in 100,000 per year (Nuclear Energy Agency 2005).

Nuclear incident occurrences may also occur as a result of intentional actions. In this case as well, the remoteness of the County would lend to the assumption that the impact of such an event would likely be secondary and in the form of an influx of people as well as a stress on the County's infrastructure. The risk of a nuclear incident is considered *low*.

4.5.17.5. Vulnerability Assessment

Due to the remote location of Potter County, vulnerability to a nuclear incident would most likely be limited to a population influx, which could impact the entire county and it's infrastructure.

4.5.18 Transportation Accidents

For purposes of this HMP, transportation accidents are defined as being able to result from any form of air, rail, water, or road travel. It is unlikely that small accidents would significantly impact the larger community. However, certain accidents could have secondary regional impacts such as a hazardous materials release or disruption in critical supply/access routes, especially if vital transportation corridors or junctions are present. (Research and Innovative Technology Administration, 2009). Traffic congestion in certain circumstances can also be hazardous. Traffic congestion is a condition that occurs when traffic demand approaches or exceeds the available capacity of the road network. This hazard should be carefully evaluated during emergency planning since it is a key factor in timely disaster or hazard response, especially in areas with high population density. (Federal Highway Administration, 2009).

4.5.18.1. Location and Extent

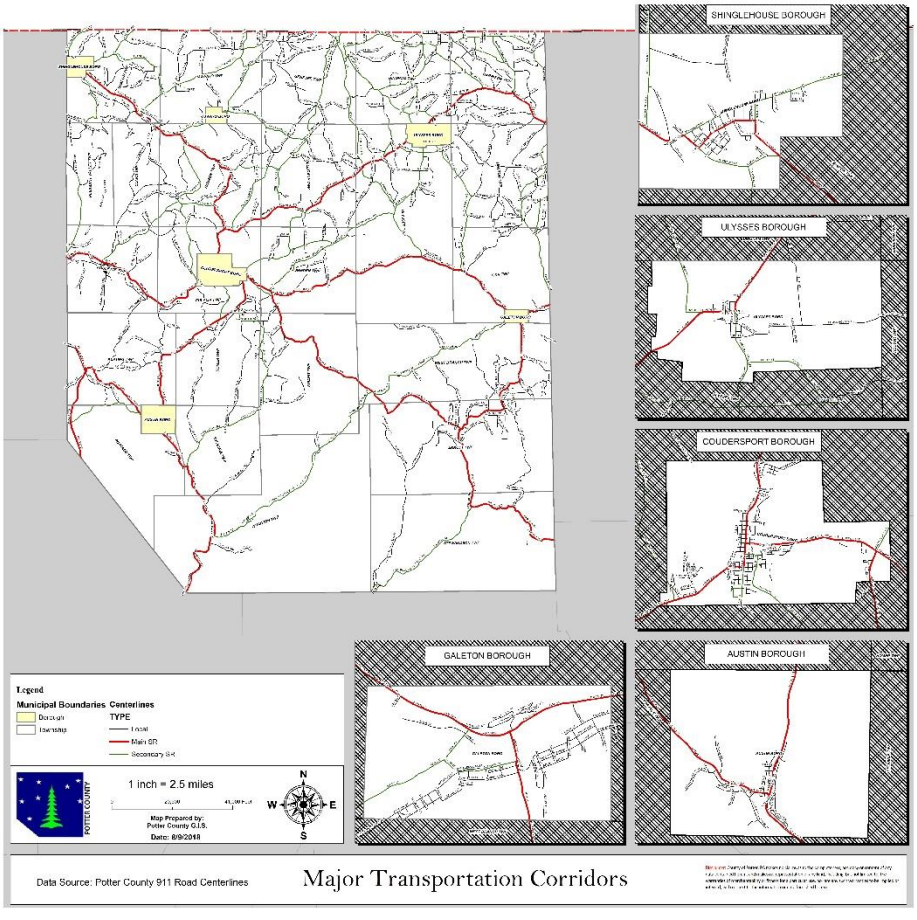
The present surface transportation system in Potter County is now entirely highway- oriented with almost total abandonment of railroads within the county and no water-borne transportation facilities. The principal east-west route is Route 6, which connects Potter County with other northern tier counties. This highway passes through the county seat at Coudersport, and most of the other principal highways in the County connect with Route 6. There are no four-lane interstate highways. There is an extensive network of low-volume, unpaved, township and local roads throughout the County. At this time, there are 510 miles of state and federal highways and 562.72 miles of secondary and municipal roads in Potter County.

Potter County has no commercial airline service. Two public airports exist in Potter County, providing access for private and corporate airplanes. There are three private airports located within the county as of 1982.

Public transportation is provided by the Area Transportation Authority to various towns throughout the county with a varied schedule.

Many roads in the County have seen increased large truck traffic due to the Marcellus Shale play in the area. Figure 4.5.18.1-1 provides a map of the County's transportation network.

Figure 4.5.18.1-1 Potter County Transportation Network



4.5.18.2. Range of Magnitude

The majority of motor vehicle crashes are non-fatal in Pennsylvania, but PennDOT estimates that every hour ten people are injured in a car crash, and every six hours someone dies as a result of a car crash (PennDOT, 2008). Most fatal crashes occur in the summer months of June, July, and August.

A worst-case transportation accident within Potter County would be if a tractor trailer carrying an extremely hazardous substance were to overturn, blocking traffic, and leaking its cargo onto a highway and potentially into a nearby waterway. Such an accident would have the potential to cause death or injury, close critical facilities, and bring transportation to a standstill.

4.5.18.3. Past Occurrence

The most common transportation accidents in the County are highway incidents involving motor vehicles. Those municipalities with roads with higher traffic volumes are in turn at a greater risk of transportation hazards. Table 4.5.18.3-1 provides detail on transportation accidents in the County 2002 - 2012.

Table 4.5.18.3-1 Transportation Accidents 2002 - 2012 (PA State Police, 2012)

# of Incidents	Incidents with Injury	Incidents with Fatality	Incidents with Injury and Fatality	Commercial Vehicle Involved
1149	634	11	6	509

4.5.18.4. Future Occurrence

Considering the transportation network within Potter County and the steady increase in local and tourist traffic, especially during the peak travel season (June-August), it can be assumed that unless the highways are improved and maintained we can expect the number of accidents and fatalities to increase. The future occurrence of transportation accidents is considered *very likely*.

4.5.18.5. Vulnerability Assessment

Most Potter County residents, visitors, and tourists will use automobiles as their primary transportation throughout the community. Potter County's future population growth and land use will be significantly impacted by the safety and capacity of the transportation systems traversing the County. With highway accidents, there is an added vulnerability that stems from the age and upkeep of bridges throughout the Commonwealth. In Potter County, there are 188 bridges, 89 of these are structurally deficient and 5 are functionally obsolete, for a total of 94 deficient bridges (Pennsylvania Bridge Inventory (Federal Highway Administration, 2010).

4.5.19 Utility Interruptions

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:

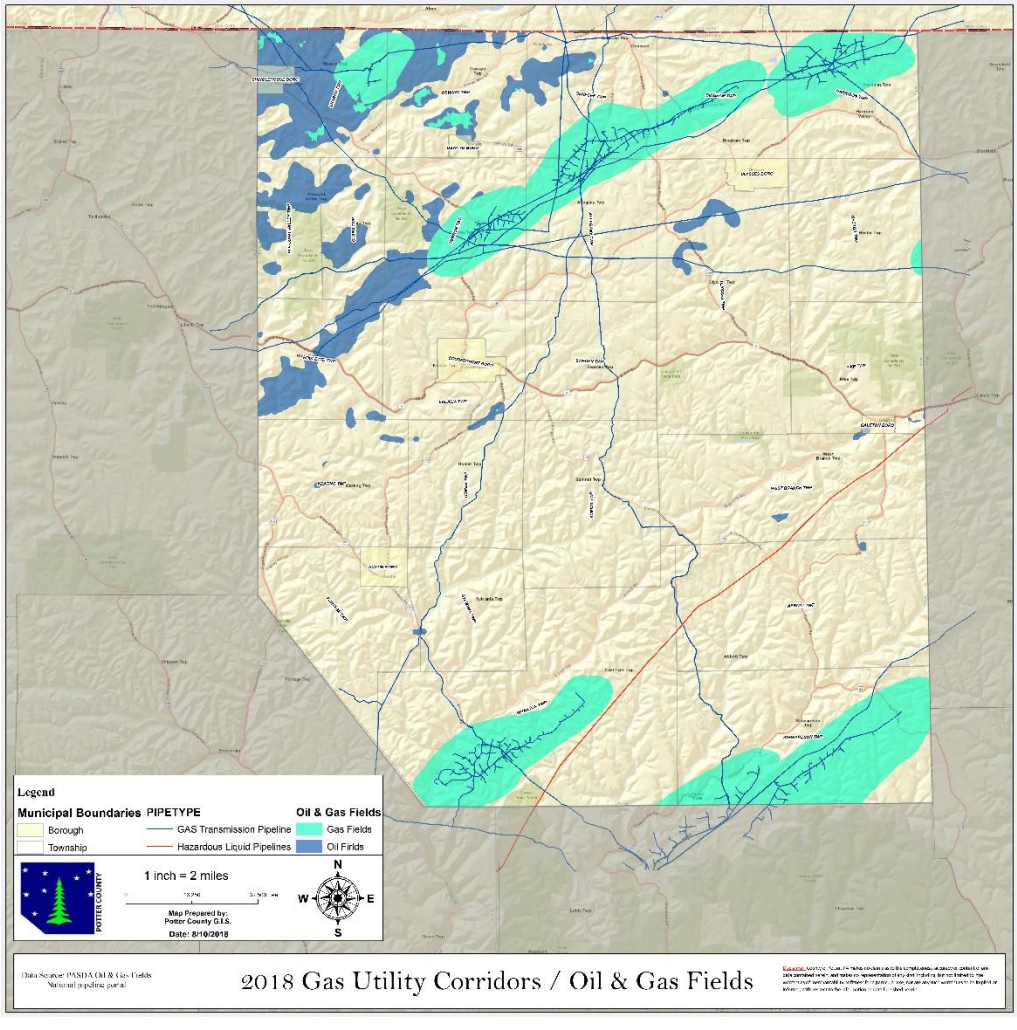
• Geomagnetic Storms; including temporary disturbances of the Earth's magnetic field resulting in disruptions of communication, navigation, and satellite systems (National Research Council et al., 1986).
• Fuel or Resource Shortage; resulting from supply chain breaks or secondary to other hazard events, for example (Mercer County, PA, 2005).
• Electromagnetic Pulse; originating from an explosion or fluctuating magnetic field and causing damaging current surges in electrical and electronic systems (Institute for Telecommunications Sciences, 1996).
• Information Technology Failure; due to software bugs, viruses, or improper use (Rainer Jr., et al, 1991).
• Ancillary Support Equipment; electrical generating, transmission, system-control, and distribution-system equipment for the energy industry (Hirst & Kirby, 1996).
• Public Works Failure; damage to or failure of highways, flood control systems, deep-water ports and harbors, public buildings, bridges, dams, for example (United States Senate Committee on Environment and Public Works, 2009).
• Telecommunications System Failure; Damage to data transfer, communications, and processing equipment, for example (FEMA, 1997)
• Transmission Facility or Linear Utility Accident; liquefied natural gas leakages, explosions, facility problems, for example (United States Department of Energy, 2005)
• Major Energy, Power, Utility Failure; interruptions of generation and distribution, power outages, for example (United States Department of Energy, 2000).

4.5.19.1. Location and Extent

Utility interruptions or energy emergencies may be caused by nationwide shortages or more localized imbalances of supply due to weather, strikes or an oil embargo. Such emergencies have been experienced in the U.S. including the problems caused by the rapid price increases which also have the effect of leaving homes and industry without the needed fuels. All of Potter County is susceptible to the potential and the effects of utility interruptions. A map of indicating is shown in In Figure 4.5.19.1-1.

Electrical power outages can occur anywhere that power is supplied. These outages are usually a secondary impact caused by another hazard such as winter weather, windstorms or transportation accidents resulting in downed power wires or utility poles. Additionally, outages can be caused by blown transformers or tripped circuit breakers. In most cases, power is restored within the hour.

Figure 4.5.19.1-1 Map of Potter County's Utility Corridors



4.5.19.2. Range of Magnitude

Due to the localization of outages, the number of people affected by Potter County's power and phone outages is unknown. No direct human casualties have been reported as a result of these interruptions in service. In most cases, utility companies record an 'event' when 10% or more of the customer base is impacted. Since the population of Potter County is relatively wide-spread, an outage affecting 10% of residents is not an event that would occur very often.

Potter County's worst-case scenario would be an extended county-wide power outage during an extreme temperature event. Without power, many homes in the County would be without power, heat and water. In addition, numerous facilities are dependent on power in order to serve the needs of the community, specifically individuals with access and functional needs, including five public schools, multiple nursing homes and a hospital with five additional clinics (the hospital and one clinic have back-up generator power) throughout the County.

4.5.19.3. Past Occurrence

Power outages in Potter County are typically minor, routine events caused by winter storms, wind, vehicle accidents, and other factors. The County has experienced localized outages annually due to these events. Table 4.5.19.3-1 shows data collected from utility sources for the County. This data is somewhat incomplete as not all utility companies were forthcoming with information. Minor outages and water breaks are not included below. The outage interruptions considered 'events' by a utility company represent 10% of the population.

Table 4.5.19.3-1 Utility Interruptions Events 2002 - 2011

Incident Type	Year										Total
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Phone Outage	UNK	UNK	UNK	UNK	0	0	1	1	0	0	2
Power Outage	7	7	2	1	0	0	1	1	0	0	19
Water Main Break	0	0	0	0	0	0	0	0	0	1	1

In addition to utility outages, Potter County, like most of Pennsylvania, experienced long lines at gasoline pumps and shortages of fuel in 1973. Government actions were taken to assure that fuels and power were available for emergency and priority users. In the late 1970s, drastic increases in prices presented hardships for low-income consumers in particular. Artificial shortages developed as suppliers held out for higher prices.

4.5.19.4. Future Occurrence

The County expects approximately one utility interruption each year, with minimal impact. Widespread utility interruption events are more likely to occur approximately once every five years, usually as a secondary effect of an extreme weather event. These interruptions should be anticipated and first responders should be prepared during severe weather events.

Power outages can be expected at any time of year. Utility interruptions are therefore considered to be *very likely*.

Aside from utility outages, a major fuel crisis could develop in the future depending on international relationship and tensions. However, significant changes seem to have reduced both the likelihood of another major oil embargo and/or drastic price increases. Alternative sources of energy, conservation and significant increases in efficiency through technological advances have reduced the growth in demand for oil thus reducing the probability of another 1973-type crisis will occur. However, the possibility must not be totally discounted.

4.5.19.5. Vulnerability Assessment

Major utility outages can pose a maximum threat to people with access and functional needs. Resources such as electricity, communications, gas, and water supply are critical to ensure the health, safety, and general welfare of the citizenry. All critical infrastructure is vulnerable to the effects of a power outage.

Conservation and improved technology for more efficient uses of fuel have reduced the rate of increase of demand for energy for many purposes. The capability of substitution of fuel, should a shortage of one fuel develop, have also increased in Potter County. The vulnerability to shortages seems to have decreased as a result of these changes and adjustments. Even so, Potter County experiences minor shortages causing electrical equipment to malfunction and overheat. During cold weather conditions, increased demand for natural gas requires some users to switch to oil, wood or other sources of energy.

As a result of escalating fuel prices, in the late 70s, low-income households in particular have become more vulnerable to utility shutoffs and more frequent depletion of fuel supplies. Potter County has developed programs to provide emergency fuel assistance to these households. The Department of Public Welfare reported that the State provides approximately $209 million dollars in assistance through the Low-Income Home Energy Assistance Program (LIHEAP), within the Commonwealth. Assistance was provided to 909 Potter County applicants during 2011-2012. The dollar amount of assistance for Potter County is unknown.

4.6. Hazard Vulnerability Summary

By ranking hazards communities are better prepared to set goals and priorities for mitigation based on their vulnerabilities. For this update, a quantitative method known as the Risk Factor (RF) calculation was used to rank hazards. The RF calculation is a tool 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 greatest threat to their area based on a variety of factors deemed important by the Planning Team in the hazard mitigation planning process.

4.6.1. Methodology

The RF calculation relies heavily on historical data, local knowledge, and general consensus opinions among the Planning Team and the public during the hazard mitigation planning process. The hazard profiles in Section 4.3, along with the disaster declaration history for Potter County, provide the basis for this analysis.

The RF approach produces numerical values that allow identified hazards to be ranked against one another. The higher the RF value for a hazard, the greater the risk. RF values were obtained by assigning varying degrees of risk to the five categories of each hazard: probability, impact, spatial extent, warning time, and duration. The degree of risk for each risk assessment category was weighted by significance. For instance, a high probability that a hazard will occur and a hazard having a strong impact were weighted most heavily. Each degree of risk is assigned a value ranging from 1 to 4. A summary table of the RF approach can be found below (*Standard Operating Guide* (Philadelphia: Michael Baker, Jr., Inc., 2009).

Table 4.6.1-1 Summary of Risk Factor Approach Used to Rank Hazard Risk

Summary of Risk Factor (RF) Approach				
Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
PROBABILITY *What is the likelihood of a hazard event occurring in a given year?*	UNLIKELY	LESS THAN 1% ANNUAL PROBABILITY	1	30%
	POSSIBLE	BETWEEN 1 & 10% ANNUAL PROBABILITY	2	
	LIKELY	BETWEEN 10 &100% ANNUAL PROBABILITY	3	
	HIGHLY LIKELY	100% ANNUAL PROBABILTY	4	
IMPACT *In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?*	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 *How large of an area could be impacted by a hazard event? Are impacts localized or regional?*	NEGLIGIBLE	LESS THAN 1% OF AREA AFFECTED	1	20%
	SMALL	BETWEEN 1 & 10% OF AREA AFFECTED	2	
	MODERATE	BETWEEN 10 & 50% OF AREA AFFECTED	3	
	LARGE	BETWEEN 50 & 100% OF AREA AFFECTED	4	
WARNING TIME *Is there usually some lead time associated with the hazard event? Have warning measures been implemented?*	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 *How long does the hazard event usually last?*	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	

(NOTE: Levels of warning time and criteria that define them may be adjusted based on hazard addressed.)

(NOTE: Levels of warning time and criteria that define them may be adjusted based on hazard addressed.)

According to the RF formula, the highest possible RF value is 4.0. An example of an RF value formula is illustrated below:

RF Value = [(Probability x .30) + (Impact x .30) + (Spatial Extent x .20) + (Warning Time x .10) + (Duration x .10)]

RF Value = [(4 x .30) + (4 x .30) + (4 x .20) + (4 x .10) + (4 x .10)] RF Value = 4.0

While not all counties have used RF methodology in their Hazard Mitigation Plans so far, as more counties update their plans in accordance with the Commonwealth of Pennsylvania Standard Operating Guide, the risk factors will become a way to compare risk, apples-to-apples, across the Commonwealth. These updated county calculated risk factors will be incorporated into the Commonwealth's Hazard Mitigation Plan annually during as a part of plan review and maintenance.

4.6.2. Ranking Results

Using the methodology described in Section 4.6.1, Table 4.6.2-1 lists the risk factors calculated for each of the 19 hazards identified in the 2013 Hazard Mitigation Plan Update. Hazards deemed as *high* risk have a risk factor value of 2.5 or greater. Those hazards with risk factors of 2.0 to 2.4 were determined a *moderate* risk. Risk factors of 1.9 and less are considered *low* risk.

Table 4.6.2-1 Ranking of Potter County Hazards based on Risk Factor Methodology

Ranking of hazard types based on Risk Factor (RF) methodology							
HAZARD RISK	HAZARD NATURAL (N) or MAN-MADE (M)	RISK ASSESSMENT CATEGORY					RISK FACTOR
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
High	Flood, Flash Flood, Ice Jam (N)	4	3	3	2	3	3.2
	Winter Storm (N)	4	2	4	1	3	3.0
	Lightning Strike (N)	4	2	2	4	1	2.7
	Radon Exposure (N)	4	1	3	1	4	2.6
	Wildfire (N)	4	1	3	3	2	2.6
	Transportation Accidents (M)	4	2	1	4	1	2.5
	Environmental Hazards (M)	3	2	2	4	2	2.5
	Utility Interruption (M)	3	2	2	4	2	2.5
Moderate	Tornado, Windstorm (N)	3	2	2	3	1	2.3
	Drought (N)	2	2	3	1	4	2.3
	Invasive Species (N)	2	2	3	1	4	2.3
Low	Nuclear Incidents (M)	1	1	3	3	4	1.9
	Hailstorm (N)	3	1	1	4	1	1.9
	Dam Failure (M)	1	2	1	4	4	1.9
	Hurricane, Tropical Storm, Nor'easter (N)	1	2	3	1	2	1.8
	Pandemic (N)	1	1	3	1	4	1.7
	Levee Failure (M)	1	2	1	3	3	1.7
	Landslide (N)	1	1	1	4	1	1.3
	Earthquake (N)	1	1	1	4	1	1.3

Based on these results, there are eight high risk hazards, three moderate risk hazards and eight low risk hazards in Potter County. There are mitigation actions to address all of these hazards.

The risk factors determined for the County as a whole, do not necessarily reflect the risk for each municipality. A table of risk factors for the County's municipalities as compared to the risk factors of the County overall may be found below.

Calculated County-wide Risk Ractor by Hazard and Comparative Jurisdictional Risk																			
Jurisdiction	IDENTIFIED HAZARD AND CORRESPONDING COUNTY-WIDE RISK FACTOR																		
	Flood, Flash Flood, Ice Jam	Winter Storm	Lightning Strike	Radon	Wildfire	Transportation Accidents	Environmental Hazards	Utility Interruption	Tornado, Windstorm	Drought	Invasive Species	Nuclear Incident	Hailstorm	Dam Failure	Hurricane, Tropical Storm, Nor'easter	Pandemic	Levee Failure	Landslide	Earthquake
	3.2	3.0	2.7	2.6	2.6	2.5	2.5	2.5	2.3	2.3	2.3	1.9	1.9	1.9	1.8	1.7	1.7	1.3	1.3
Abbott Township	=	=	=	=	<	=	>	=	=	=	=	=	=	>	=	=	<	=	=
Allegheny Township	=	>	=	=	=	=	>	=	>	=	=	=	=	<	=	=	<	=	=
Austin Borough	=	=	=	=	<	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Bingham Township	=	=	=	=	<	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Clara Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Coudersport Borough	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	>	=	=
Eulalia Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Galeton Borough	=	=	=	=	<	=	=	=	=	=	=	=	=	>	=	=	>	=	=
Genesee Township	=	=	=	=	<	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Harrison Township	=	=	=	=	>	=	=	=	=	=	=	=	=	>	=	=	<	=	=
Hebron Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Hector Township	=	=	=	=	>	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Homer Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Keating Township	=	=	=	=	>	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Oswayo Borough	=	=	=	=	<	=	>	=	=	=	=	=	=	<	=	=	<	<	=
Oswayo Township	=	=	=	=	=	=	>	=	=	=	=	=	=	<	=	=	<	<	=
Pike Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Pleasant Valley Township	=	=	=	=	=	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Portage Township	=	=	=	=	<	=	=	=	=	=	=	=	=	>	=	=	<	=	=
Roulette Township	>	=	=	=	<	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Shinglehouse Borough	=	=	=	=	<	=	=	=	=	=	=	=	=	<	=	=	<	<	=
Sharon Township	=	=	=	=	=	=	>	=	=	=	=	=	=	<	=	=	<	<	=

Calculated County-wide Risk Ractor by Hazard and Comparative Jurisdictional Risk																			
Jurisdiction	IDENTIFIED HAZARD AND CORRESPONDING COUNTY-WIDE RISK FACTOR																		
	Flood, Flash Flood, Ice Jam	Winter Storm	Lightning Strike	Radon	Wildfire	Transpor-tation Accidents	Environ-mental Hazards	Utility Interruption	Tornado, Windstorm	Drought	Invasive Species	Nuclear Incidents	Hailstorm	Dam Failure	Hurricane, Tropical Storm, Nor'easter	Pandemic	Levee Failure	Landslide	Earthquake
	3.2	3.0	2.7	2.6	2.6	2.5	2.5	2.5	2.3	2.3	2.3	1.9	1.9	1.9	1.8	1.7	1.7	1.3	1.3
Stewardson Township	=	=	=	=	>	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Summit Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Sweden Township	=	=	=	=	>	>	>	=	=	=	=	=	=	<	=	=	<	=	=
Sylvania Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
Ulysses Borough	=	=	=	=	<	=	>	=	=	=	=	=	=	<	=	=	<	=	=
Ulysses Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	<	=	=
West Branch Township	=	=	=	=	>	=	>	=	=	=	=	=	=	>	=	=	<	=	=
Wharton Township	=	=	=	=	=	=	>	=	=	=	=	=	=	>	=	=	<	=	=

4.6.3. Potential Loss Estimates

Of the hazards profiled in this HMP, several potential loss estimates were obtained using data from the Pennsylvania 2010 All-Hazard Mitigation Plan for drought; floods, flash floods, and ice jams; transportation accidents, tornadoes and wildfires. Winter storms, hailstorms, tornadoes and windstorms, lightning strikes, earthquakes, pandemics, invasive species, hurricanes tropical storm, nor'easter can affect the County as a whole, or at least large portions of it. Neither data on landslide loss estimates, nor dam and levee failure loss estimates was available at this time. Consideration should be made to include this information in the next HMP update. Environmental hazards, utility interruptions, nuclear incidents and radon exposure affect the residents far more than the property within the County; impacts of these hazards are described in the profiles above.

Drought

Although drought may affect all of Potter County, due to the large agricultural economy, an estimate of potential losses is included below.

Figure 4.6.3-1 Estimated Potter County losses related to agricultural production (USDA, Census of Agriculture, 2007).

Impacted Farmland Acreage	Market Value of All Agricultural Products ($)
88,457	$31,377,000

Flood, Flash Flood, Ice Jam

The two figures below detail the loss estimates for a 1% annual chance flood event and repetitive loss property estimates for Potter County.

Figure 4.6.3-2 HAZUS-MH Results for a 1% Annual Chance Flood Event

No. of Buildings Impacted	Total Building-Related Losses (million $)	Total Economic Loss (million $)	Shelter Requirements (people)	Households Displaced	Estimated 2010 Population
277	49.19	81.92	1,147	738	18,102

Figure 4.6.3-3 Repetitive Loss from Flooding in Potter County

Mitigated properties are shown in parentheses. Data was obtained from FEMA (January 2010) and ICC claim information (March 23, 2010).

2-4 Family	ASSMD Condo	Non-residential	Other residential	Single Family	Total
0 (0)	0 (0)	1 (0)	0 (0)	1 (0)	2 (0)

Transportation Accidents

Figure 4.6.3-4 Estimated Potter County losses related to transportation accidents.

Number of Impacted Buildings	Dollar Value of Exposure, Building and Contents ($)
11,153	$2,258,138,063

Tornadoes

Figure 4.6.3-5 Estimated Potter County losses related to tornadoes.

Number of Impacted Mobile Homes	Total Number of Impacted Buildings	Dollar Value of Exposure, Building and Contents ($)
834	6,845	$1,598,493,000

Wildfires

Figure 4.6.3-6 Estimated Potter County losses related to wildfires in high hazard areas.

Number of Impacted Buildings	Dollar Value of Exposure, Building and Contents ($)
13,115	$2,603,861,000

4.6.4. Future Development and Vulnerability

Vulnerability to hazards is not static. There will be increases and decreases in risk based on changes in land use and population levels.

Overall, the population of Potter County decreased 3.5% from 2000 to 2010. These declining numbers suggest that slightly fewer people will be at risk for the hazards outlined in this Plan.

Development can often change the hazard threat level of an area by placing additional critical facilities, businesses, transportation networks, and populations within vulnerable areas. Any development along transportation routes, for example, can increase the vulnerability to transportation incidents and hazardous material spills. Most often, development occurs along these transportation networks because of access and increased demand for travel and access to services. Therefore, the impact of a hazard may increase with increased frequency.

5. CAPABILITY ASSESSMENT

A capability assessment is an inventory of a jurisdiction's existing planning and regulatory tools and an analysis of its capacity to use them effectively. By doing a capability assessment gaps and conflicts can be identified, as well as potential weaknesses that may need to be addressed through future mitigation planning

goals, objectives, and actions. An assessment also takes a look at measures in place that should be continued or enhanced through future mitigation efforts. The process of doing a capability assessment ultimately assists as a guide in developing mitigation actions that a jurisdiction is capable of executing.

This assessment evaluates Potter County's governmental structure, political framework, legal jurisdiction, fiscal status, policies and programs, regulations and ordinances, and resource availability. Each category is evaluated for its strengths and weaknesses in responding to, preparing for, and mitigating the effects of the identified hazards.

5.1. Update Process Summary

Potter County has a number of resources it can utilize to implement hazard mitigation initiatives, including emergency response measures, local planning and regulatory tools, administrative assistance, technical expertise, fiscal capabilities, and participation in local, regional, state and federal programs. By appropriately utilizing these resources, the County is well-positioned to implement mitigation actions prior to a hazard as well as to navigate during and after a hazard event takes place.

The 2013 Potter County Hazard Mitigation Plan reviewed the County's Resources and Capabilities. Resources were categorized into five categories: human, physical, technological, informational and financial. The 2013 Capability Assessment also discussed the presence of local plans, ordinances and codes in place for municipalities. Finally, the Assessment also indicated local, state and non-profit resources available to assist in mitigation efforts including, PA Clean Ways, PA Organization for Watersheds and Rivers, PA Rivers Resource Advisory Council, Pennsylvania Biodiversity Partnership, Rivers, Bays and Oceans, Watershed Assistance Center Western Pennsylvania Conservancy, United States Army Corp of Engineers, Department of Environmental Protection (DEP) Growing Greener Grants, Voluntary Organizations Active in Disaster (VOAD), Safe School Plans, and the volunteer organizations in the County including 10 volunteer fire departments, the Red Cross and religious organizations in the County.

Through responses to the Capability Assessment Survey sent out to all the municipalities, the 2013 HMP provides an updated inventory of the municipalities' most critical planning tools, and a summary of the fiscal and technical capabilities available through programs and resources outside of the County.

5.2. Capability Assessment Findings

Below are descriptions of the items listed in the Capabilities Assessment Survey. Each municipality's response to the survey can be found in Tables 5.2.8-1 – 5.2.8-4.

5.2.1. Emergency Management

Emergency management is a comprehensive, integrated program of mitigation, preparedness, response, and recovery for emergencies/disasters. No public or private entity is immune to disasters, and no single segment of society can meet the complex needs of a major emergency or disaster on its own. The emergency management plans and programs in place in Potter County are discussed below.

Emergency Operations Plan

The Pennsylvania Emergency Management Services Code, Title 35, requires all political jurisdictions in the Commonwealth to have an Emergency Operations Plan (EOP), an Emergency Management Coordinator (EMC), and an Emergency Operations Center (EOC).

Potter County's EOP is updated regularly and complies with NIMS and is the basis for a coordinated and effective response to any disaster that may affect lives and property in Potter County. The EOP,or portions thereof, would be implemented when emergency circumstances warrant it.

Continuity of Operations Plan
Continuity of Operations (COOP) is a critically important planning principle for emergency managers as well as for municipal officials. National Fire Protection Association (NFPA) 1600 provides those with the responsibility for disaster and emergency management and COOP planning programs with the criteria to assess current programs or to develop, implement, and maintain a program to mitigate, prepare for, respond to, and recover from disasters and emergencies.

Evacuation Plan
Evacuation is one of the most widely used methods of protecting the public from hazard impacts. The easiest way to minimize death and injury due to a hazard event is to remove as many people as possible from its path. Evacuation plans include descriptions of the area(s) being evacuated, the demographics and characteristics of people within those area(s), transportation routes to safe areas, and how the community will support those individuals who do not have access to their own transportation.

StormReady
StormReady is a program administered by the NWS. To be certified as StormReady, a community must establish links to the NWS's warning systems and relationships with NWS staff, establish a 24-hour warning point, ensure sufficient capability to respond to severe weather events, and provide public outreach and education. Potter County is a participant of the StormReady program. In addition, at least one municipality, Roulette Township, indicates it is working towards certification in this program.

5.2.2. Participation in the National Flood Insurance Program (NFIP)

In Potter County, all 30 of the municipalities participate in the National Flood Insurance Program (NFIP). The Pennsylvania Flood Plain 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 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.

FEMA Region III makes available to communities an ordinance review checklist that lists required provisions for floodplain management ordinances. This checklist helps communities develop an effective floodplain management ordinance that meets federal requirements for participation in the NFIP.

The Pennsylvania Department of Community and Economic Development (DCED) provides communities, based on their CFR, Title 44, Section 60.3 level of regulations, with a suggested ordinance document to assist them in meeting the minimum requirements of the NFIP along with the Pennsylvania Flood Plain Management Act (Act 166). These suggested or model ordinances contain provisions that are more restrictive than state and federal requirements. Suggested provisions include but are not limited to the following:

• Prohibiting manufactured homes in the floodway
• Prohibiting manufactured homes within the area measured 50 feet landward from the top of a bank of any watercourse within a special flood hazard area

• Special requirements for recreational vehicles within the special flood hazard area
• Special requirements for accessory structures
• Prohibiting new construction and development within the area measured 50 feet landward from the top of a bank of any watercourse within a special flood hazard area
• Providing the County Conservation District an opportunity to review and comment on all applications and plans for any proposed construction or development in any identified floodplain area.

National Flood Insurance Program – CRS
The NFIP's Community Rating System (CRS) 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. Currently, no Potter County municipality participates in the CRS, although some municipalities are working toward it.

	Cnty Nbr	Community Name	Comm Number	Building Payments	Contents Payments	Total Payments
POTTER COUNTY	105	Austin, Borough Of	420760	81,259.43	16,947.28	98,206.71
		Coudersport, Borough Of	420761	11,660.60	0	11,660.60
		Sharon, Township Of	421987	10,882.79	11,295.90	22,178.69

	Average Payment	Losses	Properties
	32,735.57	3	1
	5,830.30	2	1
	11,089.35	2	1

Listed above is the repetitive loss information identified for Potter County located in flood hazard areas. Future HMP plans and county comprehensive planning will identify future mitigation techniques.

5.2.3. Planning and Regulatory Capability

Some of the most important planning and regulatory capabilities that can be utilized for hazard mitigation include comprehensive plans, building codes, floodplain ordinances, subdivision and land development ordinances, and zoning ordinances. These tools provide mechanisms for implementing adopted mitigation strategies. Table 5.2.8-1 summarizes the presence of each of these capabilities as reported by the municipality.

Comprehensive Land Use Plan (or General, Master, or Growth Management Plan)
A Comprehensive Plan is a policy document that states objectives and guides the future growth and physical development of a municipality. The Comprehensive Plan is a blueprint for housing, transportation, community facilities, utilities, and land use. It examines how the past led to the present and charts the community's future path. The MPC Act 247 of 1968, as reauthorized and amended, requires counties to prepare and maintain a county Comprehensive Plan. In addition, the MPC requires counties to update the Comprehensive Plan every 10 years.

With regard to hazard mitigation planning, Section 301a.(2) of the MPC requires Comprehensive Plans to include a plan for land use, which, among other provisions, suggests that the plan should give consideration to floodplains and other areas of special hazards and other similar uses. The MPC also requires Comprehensive Plans to include a plan for community facilities and services, and recommends giving consideration to storm drainage and floodplain management.

Floodplain Management Plan
Floodplain Management Plans describe how the community will reduce the impact of flood events through preventive and corrective actions. These actions may include mandated open space and prohibition of development in floodplains, property buyout, and other measures.

Stormwater Management Plan/Ordinance
The proper management of stormwater runoff can improve conditions and decrease the chance of flooding. These ordinances are developed in conjunction with the guidelines established in the Pennsylvania Stormwater Management Act (Act 167 of 1978).

The Pennsylvania Department of Environmental Protection's Stormwater Management Program provides grant money to counties to develop stormwater management plans for designated watersheds. This planning effort, as required by the Stormwater Management Act (Act 167 of 1978), results in sound engineering standards and criteria being incorporated into local codes and ordinances in order to manage stormwater runoff from new development in a coordinated, watershed-wide approach. Without such planning, stormwater is either not controlled by municipal ordinances, or is addressed on a site-to-site or municipal boundary basis. Municipalities within the same watershed may require different levels of control of stormwater. The result is often the total disregard of downstream impacts or the compounding of existing flooding problems.

Municipalities have an obligation to implement the criteria and standards developed in each watershed stormwater management plan by amending or adopting laws and regulations for land use and development. The implementation of stormwater management criteria and standards at the local level is necessary, since municipalities are responsible for local land use decisions and planning. The degree of detail in the ordinances depends on the extent of existing and projected development. Municipalities within rapidly developing watersheds will benefit from the Watershed Stormwater Management Plan and will use the information for sound land use considerations. The Watershed Stormwater Management Plan is designed to aid the municipality in setting standards for the land uses it has proposed. The Watershed Plan and the attendant municipal regulations are intended to prevent future drainage problems and avoid the aggravation of existing problems.

There are three watersheds in Potter County: Genesee River Watershed, Allegheny River Watershed and Susquehanna River Watershed.

Natural Resource Protection Plan
Natural Resource Protection Plans are designed to protect woodlands, steep slopes, waterways, floodplains, wetlands, and coastal buffers through prohibiting or severely limiting development in these areas. Emergency managers and community planners have been made more and more aware of the benefits of protecting these areas as mitigation measures over the last few decades.

Capital Improvements Plan
The Capital Improvements Plan is a multi-year policy guide that identifies needed capital projects and is used to coordinate the financing and timing of public improvements. Capital improvements relate to streets, stormwater systems, water distribution, sewage treatment, and other major public facilities. A Capital

Improvements Plan should be prepared by the respective county's planning commission and should include a capital budget. This budget identifies the highest-priority projects recommended for funding in the next annual budget. The Capital Improvements Plan is dynamic and can be tailored to specific circumstances.

Economic Development Plan

An Economic Development Plan serves as a road map for economic development decision making, based on the collection of statistical data, historical perspective, and human potential, and it does the following:

- Clearly defines realistic goals and objectives
- Establishes a defined time frame to implement goals and objectives
- Communicates those goals and objectives to the organization's constituents
- Ensures effective use of the organization's resources

• Provides a baseline from which progress can be measured
• Builds consensus around future goals and objectives

Historic Preservation Plan
These plans describe how the community will preserve the historic structures and areas within it. Since these structures pre-date building codes and modern community planning requirements, many of them are especially vulnerable to a variety of hazards. The Historic Preservation Plan may include measures to retrofit or relocate historic treasures out of hazard impact areas.

Floodplain Regulations
Through administration of the floodplain ordinances, the municipalities can ensure that all new construction or substantial improvements to existing structures that are located in the 1 percent chance floodplain are built with first-floor elevations above the Base Flood Elevation (BFE).

Zoning Regulations
Article VI of the MPC authorizes municipalities to prepare, enact, and enforce zoning to regulate land use. Its regulations can apply to the following:
• Permitted use of land
• Height and bulk of structures
• Percentage of a lot that may be occupied by buildings and other impervious surfaces
• Yard setbacks
• Density of development
• Height and size of signs

Zoning ordinances contain both a map that delineates zoning districts and text documenting the regulations that apply in each zoning district.

Subdivision Regulations
Article V of the MPC authorizes municipalities to prepare, enact, and enforce a subdivision and land development ordinance, including regulations to control the layout of streets, minimum lot sizes, and the provision of utilities. The objectives of a subdivision and land development ordinance are to do the following:
• Coordinate street patterns
• Ensure that adequate utilities and other improvements are provided in a manner that will not pollute streams, wells, and/or soils
• Reduce traffic congestion
• Provide sound design standards as a guide to developers, elected officials, planning commissions, and other municipal officials

Building Code
Building codes are important in mitigation, because codes are developed for regions of the country in consideration of the hazards present within that region. Consequently, structures that are built to applicable codes are inherently resistant to many hazards like strong winds, floods, and earthquakes, and can help mitigate regional hazards like wildfires. In 2003 the Commonwealth of Pennsylvania implemented the Uniform Construction Code (Act 45 of 1999), a comprehensive building code that establishes minimum regulations for most new construction, including additions and renovations to existing structures.

The code applies to almost all buildings, excluding manufactured and industrialized housing (which are covered by other laws), agricultural buildings, and certain utility and miscellaneous buildings. The Uniform

Construction Code (UCC) has many advantages in requiring builders to use materials and methods that have been professionally evaluated for quality and safety, as well as requiring inspections of completed work to ensure compliance.

If a municipality has "opted in," all UCC enforcement is local, except where municipal (or third-party) code officials lack the certification necessary to approve plans and inspect commercial construction for compliance with UCC accessibility requirements. If a municipality has "opted out," the Department of Labor and Industry is responsible for all commercial code enforcement in that municipality. The Department of Labor and Industry also has sole jurisdiction for all state-owned buildings no matter where they are located. (Pennsylvania Department of Labor and Industry, *Building Codes: Uniform Construction Code*)

Fire Code

Fire codes relate to both the construction and use of structures in terms of preventing fires from starting and minimizing their spread, and minimizing the injuries and deaths caused by a fire within a building. They govern such things as the following:

- Building materials that may be used
- The presence and number/type of fire extinguishers
- Means of egress
- Hazardous materials storage and use

Firewise

Firewise is a national program that brings together the response community, community planners, and homeowners to minimize the risk of wildfires. The program focuses on development that is compatible with the natural environment. Participation in the program is begun and maintained by groups of homeowners.

Farmland Preservation

Farmland preservation measures are important to hazard mitigation. Preserved farms protect soil from erosion and prevent the contamination of local surface water. In addition, farms and forest land are important for recharging the community's aquifer, and provide habitat for local wildlife (Pennsylvania Farmland Preservation Association, "Why Preserve Farmland?" http://www.pafarmland.org/why_preserve_farmland.htm (accessed November 13, 2009).

5.2.4. Administrative and Technical Capability

Responses to this section of the survey can be found in Table 5.2.8-2.

Planners with knowledge of land development/management practices

County Planning Commission

In Pennsylvania, planning responsibilities traditionally have been delegated to each county and local municipality through the MPC.

A planning agency acts as an advisor to the governing body on matters of community growth and development. A governing body may appoint individuals to serve as legal and engineering advisors to the planning agency. In addition to the duties and responsibilities authorized by Article II of the MPC, a governing body may, by ordinance, delegate approval authority to a planning agency for subdivision and land development applications. A governing body has considerable flexibility, not only as to which powers and

duties are assigned to a planning agency, but also as to what form an agency will possess. A governing body can create a planning commission, a planning department, or both.

The purpose of the Potter County Planning Commission is to receive and make recommendations on public and private proposals for development, and to prepare and administer planning regulations. Subdivision and land development plans are also reviewed and approved by the Potter County Planning Commission, which works in conjunction with the municipal planning commissions, where applicable.

Municipal Planning Commission
The MPC conveys that the planning authority establishes the requirements that a municipality must follow.

Engineers or professionals trained in construction practices related to buildings and/or infrastructure (includes building inspectors)
A municipal engineer performs duties as directed in the areas of construction, reconstruction, maintenance and repair of streets, roads, pavements, sanitary sewers, bridges, culverts, and other engineering work. The municipal engineer reviews and/or prepares plans, specifications, and estimates of the work undertaken within the municipality.

Planners or engineers with an understanding of natural and/or human-caused hazards
When staff who are responsible for community planning or engineering the structures on which people rely are familiar with the hazards that can impact the community, there is a great potential for synergy. These staff members will design the communities and structures with hazard impacts in mind, resulting in more sustainable communities and stronger structures.

Emergency manager
A municipal EMC is responsible for emergency management – preparedness, response, recovery, and mitigation within his/her respective Authority Having Jurisdiction (AHJ). The responsibilities of the EMC are outlined in PA Title 35 §7503:
• Prepare and maintain a current disaster emergency management plan
• Establish, equip, and staff an EOC
• Provide individual and organizational training programs
• Organize and coordinate all locally available manpower, materials, supplies, equipment, and services necessary for disaster emergency readiness, response, and recovery
• Adopt and implement precautionary measures to mitigate the anticipated effects of a disaster
• Cooperate and coordinate with any public and private agency or entity
• Provide prompt information regarding local disaster emergencies to appropriate Commonwealth and local officials or agencies and the general public
• Participate in all tests, drills, and exercises, including remedial drills and exercises, scheduled by the agency or by the federal government

Floodplain manager
Floodplain managers are experts in the rules and regulations of development in a floodplain, and can provide vast amounts of information on the risks and impacts of building within those hazard areas. They are an integral part of the mitigation planning team, and can make recommendations based on the needs and conditions of the community.

Land surveyors
Land surveyors determine, among other things, the elevation of a given point (e.g., a structure). This is especially useful in determining what development lies in the floodplain, but can also be useful in examining vulnerability to other hazards as well.

Scientist familiar with the hazards of the community
Natural and human-made hazards' characteristics and impacts can be highly technical. Meteorology, aerodynamics, fluid dynamics, physics and health physics, chemistry, and several other scientific fields are involved in determining the impacts of a hazard event. Having access to a scientist who can describe the technical aspects of hazards in lay terms is important to having a sound mitigation strategy.

Staff with the education or expertise to assess the community's vulnerability to hazards
The basis of hazard mitigation is hazard identification and vulnerability assessment. Conducting the vulnerability assessment is a complicated process. Planners must know where to find data on the hazards and their impacts, and the characteristics of the community. More importantly, they must be able to combine these two sets of knowledge to make the analysis useful.

Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program
Spatial and tabular data are linked in a computerized, visual format through the use of sophisticated GIS technology. Through GIS projects, it is possible to accomplish environmental restoration, economic development, "smart growth" land use planning, infrastructure development, and training to use GIS for decision support. Potter County has GIS capabilities that can assist the municipalities.

Resource development staff or grant writers
Few communities have the financial resources that are required to implement all of its potential programs (e.g., mitigation measures). Therefore, they must rely on grants and other fundraising opportunities to obtain the money necessary to perform mitigation projects. Many grants are competitive, and individuals can provide donations to a vast array of causes, so the community must demonstrate that it can use those funds better than other applicants. This may be difficult, but having a specialist on staff will likely increase the community's chances of receiving funding.

Fiscal staff to handle large/complex grants
Many of the funding streams that can be used for hazard mitigation have substantial management and reporting requirements. Employing or having access to staff specializing in grants management will help the community ensure that it does not lose a grant opportunity because it did not meet the administrative requirements of that grant.

5.2.5. Fiscal Capability

Fiscal capability is important to the implementation of hazard mitigation activities. Every jurisdiction must operate within the constraints of limited financial resources. The following information pertains to various financial assistance programs pertinent to hazard mitigation. Responses to this section of the survey can be found in Table 5.2.8-3.

Capital improvement programming
Most capital improvement projects involve the outlay of substantial funds, and local government can seldom budget for these improvements in the annual operating budget. Therefore, numerous techniques have evolved to enable local governments to finance for capital improvements over a time period exceeding one year. Public

finance literature and state laws governing local government finance classify techniques that are allowed to finance capital improvements. These techniques include revenue bonds; lease-purchase, authorities and special districts; current revenue (pay-as-you-go); reserve funds; and tax increment financing.

Some projects may be financed with general obligation bonds. With this method, the jurisdiction's taxing power is pledged to pay interest and principal to retire debt. General obligation bonds can be sold to finance permanent types of improvements, such as schools, municipal buildings, parks, and recreation facilities. Voter approval may be required.

Community Development Block Grants
These grants are designed to assist the vulnerable populations within the community by ensuring affordable housing, creating jobs, and providing direct services. The amount of each grant is determined by a formula that accounts for the community's need, poverty, population, housing, and comparison to other areas. The annual appropriation is divided among the states and local jurisdictions (referred to as "non-entitlement communities" and "entitlement communities"). The following are entitlement communities (U.S. Department of Housing and Urban Development, "Community Development Block Grant – CDBG," http://www.hud.gov/offices/cpd/communitydevelopment/programs/ (accessed September 21, 2009).

• Central cities of Metropolitan Statistical Areas (MSAs)
• Cities with at least 50,000 people
• Some urban counties with at least 200,000 people

States provide CDBG funds to non-entitlement jurisdictions.
The majority of CDBG funds are required to be spent to benefit low- and moderate-income people. Also, there is a set of national objectives for the program, including addressing existing conditions that pose a threat to the health and welfare of the community (e.g., low-income housing in a floodplain).

Special purpose taxes
Communities may exercise their taxing authority to raise funds for any project they see fit. This includes special taxes to fund mitigation measures. Spreading the cost of a community project among the community's taxpayers helps provide the greatest public good for relatively little individual cost.

Gas/electric utility fees
In the same way that special taxes can be levied to fund mitigation projects, another avenue for financing a project that a community may utilize is to dedicate a portion of homeowners' gas and electric utilities' fees to upgrade and maintain the related infrastructure. Burying transmission lines, thereby mitigating from the effects of winds and ice storms, is expensive. These fees help to offset that cost.

Water/sewer fees

Water Authorities and Fees
Water authorities are multipurpose authorities with water projects, many of which operate both water and sewer systems. The financing of water systems for lease back to the municipality is among the principal activities of the local government facilities' financing authorities. An operating water authority issues bonds to purchase existing facilities or to construct, extend, or improve a system.

The primary source of revenue is user fees based on metered usage. The cost of constructing or extending water supply lines can be funded by special assessments against abutting property owners. Tapping fees also help fund water system capital costs. Water utilities are directly operated by municipal governments and by

privately owned public utilities regulated by the Pennsylvania Public Utility Commission. The Pennsylvania Department of Environmental Protection has a program to assist with consolidation of small individual water systems to make system upgrades more cost effective.

Sewer Authorities and Fees
Sewer authorities include multipurpose authorities with sewer projects. The authorities issue bonds to finance acquisition of existing systems or to finance construction, extension, and improvements. Sewer authority operating revenues originate from user fees. The fee frequently is based on the amount of water consumed, and payment is enforced by the ability to terminate service or the imposition of liens against real estate. In areas with no public water supply, flat rate charges are calculated on average use per dwelling unit.

Storm water utility fees
Storm water utility fees are assessed and collected to offset the cost of maintaining and upgrading storm water management structures such as drains, retention ponds, and culverts.

Development impact fees
Development impact fees are one-time fees assessed to offset the cost of providing public services to a new development. They may be dedicated to providing the related new water or sewer infrastructure, roads, parks and recreational areas, libraries, schools, etc. The new infrastructure may be less vulnerable to hazard impacts.

General obligation, revenue, and/or special tax bonds
Jurisdictions may simply decide to dedicate general fund or similar financing to implement hazard mitigation projects.

Partnering arrangements or intergovernmental agreements
Intergovernmental cooperation is one manner of accomplishing common goals, solving mutual problems, and reducing expenditures. The 30 municipalities within Potter County comprise 6 boroughs and 24 townships. Each of these municipalities conducts its daily operations and provides various community services according to local needs and limitations. Each municipality varies in staff size, resource availability, fiscal status, service provision, constituent population, overall size, and vulnerability to the identified hazards.

5.2.6. Political Capability

Political capability refers to a jurisdiction's incentive or willingness to accomplish hazard mitigation objectives. It is measured by the degree to which local political leadership (including appointed boards) is willing to enact policies and programs that reduce hazard vulnerabilities in the community, even if met with some opposition. Examples may include guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum state or federal requirements (e.g., building codes, floodplain management, etc.).

Local decision makers may not rank hazard mitigation as a high-priority task if there are other, more immediate political concerns. It often takes a disaster to get people thinking about hazard mitigation. Responses to this section of the survey can be found in Table 5.2.8-4.

5.2.7. Self-Assessment

The self-assessment provided the County and each municipality with an opportunity to approximate the jurisdiction's capability to implement hazard mitigation strategies. The assessment reflects this capability in each of the major capability areas. Responses to this section of the survey can be found in Table 5.2.8-5.

5.2.8. Existing Limitations

Of the 14 municipalities that completed the Capability Assessment update as part of this planning process,

- one noted a Comprehensive Plan in place;
- ten indicate zoning or subdivision regulations;
- none stated that they have Historic Preservation Plans, Natural Resources Protection Plan, or Open Space Management Plan.

With the exception of emergency managers and engineers or professionals trained in construction practices related to buildings and/or infrastructure (including building inspectors), very few of the municipalities had staff or access to personnel with technical expertise.

A majority of respondents indicated that there was limited capability in their respective jurisdiction to effectively implement hazard mitigation strategies.

Self-assessments of the different areas of capability also varied by municipality, but the overall trend showed that many of the communities have low capability to implement hazard mitigation strategies, especially in terms of fiscal capability.

Tables 5.2.8-1 through 5.2.8-5 show which municipalities completed the Capability Assessment Survey and their responses.

Table 5.2.8-1 Planning and Regulatory Capabilities per Municipality (HMP Capability Assessment Surveys, 2018)

	Hazard Mitigation Plan	Emergency Operations Plan (County Plan)	Evacuation Plan	Continuity of Operations Plan	NFIP	NFIP - CRS	Floodplain Regulations	Floodplain Management Plan	Zoning Regulations	Subdivision Regulations	Comprehensive Land Use Plan (or General, Master or Growth Mgmt. Plan)	Open Space Management Plan (or Parks/Rec or Greenways Plan)	Stormwater Management Plan/Ordinance	Natural Resource Protection Plan	Capital Improvement Plan	Economic Development Plan	Historic Preservation Plan	Farmland Preservation	Building Code	Fire Code	Firewise	Storm Ready	NIMS Adoption
Abbott Township	X	X	X	X	X	X	X	X					X						X				X
Allegheny Township	X	X	X	X			X			X			X					X	X				X
Austin Borough	X	X														X							X
Bingham Township	X	X	X	X	X		X	X		X	X		X						X				X
Ciara Township	X	X		X	X																		X
Coudersport Borough	X	X	X		X				X				X		X	X			X				X
Eulalia Township	X	X			X		X	X					X					X	X				X
Galeton Borough	X	X	X		X		X	X					X		X	X			X				X
Genesee Township	X	X		X	X		X	X					X						X				X
Harrison Township	X	X			X																		X
Hebron Township	X	X			X					X			X						X	X			X
Hector Township	X	X			X		X	X		X			X					X	X				X
Homer Township	X	X			X		X	X		X			X										X
Keating Township	X	X			X		X	X		X			X						X				X
Oswayo Borough	X	X			X			X					X						X				X
Oswayo Township	X	X			X			X					X					X	X	X			X
Pike Township	X	X			X																		X
Pleasant Valley Township	X	X			X																		X
Portage Township	X	X			X																		X
Roulette Township	X	X	X		X		X	X		X			X		X				X				X
Shinglehouse Borough	X	X			X		X			X			X		X	X			X				X
Sharon Township	X	X	X	X	X		X	X					X						X				X
Stewardson Township	X	X			X																		X
Summit Township	X	X			X		X	X		X			X										X
Sweden Township	X	X			X			X					X						X				X
Sylvania Township	X	X			X																		X
Ulysses Borough	X	X			X										X								X
Ulysses Township	X	X			X																		X
West Branch Township	X	X			X	X	X	X			X		X						X				X
Wharton Township	X	X			X																		x

Table 5.2.8-2 Administrative and Technical Capabilities per Municipality (HMP Capability Assessment Surveys, 2018)

	Planners (with land use/land development knowledge)	Planners or engineers (with natural and/or human caused hazards knowledge)	Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	Emergency manager	Floodplain manager	Land surveyors	Scientists or staff familiar with the hazards of the community	Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	Grant writers or fiscal staff to handle large/complex grants	G 402/ ICS Training
Abbott Township		X	X	X	X			X		X
Allegheny Township				X						X
Austin Borough				X						X
Bingham Township			X	X				X		
Clara Township				X						X
Coudersport Borough			X	X	X					X
Eulalia Township				X						
Galeton Borough				X			X			X
Genesee Township				X						X
Harrison Township				X						X
Hebron Township	X			X						X
Hector Township				X						
Homer Township				X						X
Keating Township			X	X						
Oswayo Borough				X						
Oswayo Township				X						
Pike Township				X						X
Pleasant Valley Township				X						
Portage Township										
Roulette Township	X	X	X	X	X		X	X		X
Shinglehouse Borough				X						X
Sharon Township	X			X		X				X
Stewardson Township			X	X						X
Summit Township			X	X		X				
Sweden Township				X						X
Sylvania Township				X						X
Ulysses Borough				X						X
Ulysses Township				X						X
West Branch Township			X	X						X
Wharton Township				X						

Table 5.2.8-3 Fiscal Capabilities per Municipality (HMP Capability Assessment Surveys, 2018)

	Capital improvement programming	Community Development Block Grants (CDBG)	Special purpose taxes	Gas/electric utility fees	Water/sewer fees	Stormwater utility fees	Development impact fees	General obligation, revenue, and/or special tax bonds	Partnering arrangements or intergovernmental agreements	Other
Abbott Township										
Allegheny Township									X	
Austin Borough					X					
Bingham Township		X								
Clara Township										
Coudersport Borough		X	x		X					
Eulalia Township		X	X				X			
Galeton Borough					X			X	X	
Genesee Township					X				X	
Harrison Township										
Hebron Township										
Hector Township										
Homer Township										
Keating Township										
Oswayo Borough										
Oswayo Township										
Pike Township										
Pleasant Valley Township										
Portage Township										
Roulette Township	X	X	X		X				X	
Shinglehouse Borough		X			X			X		
Sharon Township										
Stewardson Township										
Summit Township										
Sweden Township										
Sylvania Township										
Ulysses Borough		x								
Ulysses Township										
West Branch Township										
Wharton Township										

Table 5.2.8-4 Community Political Capabilities per Municipality (HMP Capability Assessment Surveys, 2018)

0 - Unwilling to Adopt Policies/Programs 3 - Moderately Willing 5 - Very Willing	5	4	3	2	1	0
Abbott Township		X				
Allegheny Township		X				
Austin Borough				X		
Bingham Township		X				
Clara Township				X		
Coudersport Borough		X				
Eulalia Township			X			
Galeton Borough		X				
Genesee Township			X			
Harrison Township				X		
Hebron Township		X				
Hector Township			X			
Homer Township			X			
Keating Township					X	
Oswayo Borough						X
Oswayo Township			X			
Pike Township			X			
Pleasant Valley Township					X	
Portage Township						X
Roulette Township	X					
Shinglehouse Borough			X			
Sharon Township				X		
Stewardson Township				X		
Summit Township			X			
Sweden Township			X			
Sylvania Township				X		
Ulysses Borough				X		
Ulysses Township			X			
West Branch Township		X				
Wharton Township			X			

Table 5.2.8-5 Self-Assessment Capabilities per Municipality (HMP Capability Assessment Surveys, 2018)

H - High M - Moderate L - Limited	Planning and Regulatory Capability	Administrative and Technical Capability	Fiscal Capability	Community Political Capability	Community Resiliency Capability
Abbott Township	M	M	M	M	M
Allegheny Township	M	M	M	L	L
Austin Borough	L	M	M	L	
Bingham Township	M	H	L	M	L
Clara Township			L		
Coudersport Borough	M	L	M	M	M
Eulalia Township	M	L	M	L	L
Galeton Borough	M		M	M	
Genesee Township	L	L	L	L	L
Harrison Township	L	L	M		
Hebron Township	M	M	M	M	M
Hector Township	L	L	M	L	L
Homer Township	M	M	M	M	M
Keating Township	M	M	L	M	M
Oswayo Borough	L		L		
Oswayo Township	L	L	L	L	L
Pike Township	M		L		
Pleasant Valley Township	L		L		
Portage Township			L		
Roulette Township	L	M	L	M	M
Shinglehouse Borough	L		L	L	
Sharon Township	L	L	L	L	L
Stewardson Township	L		L		
Summit Township	L		L		
Sweden Township	M	M	M	M	M
Sylvania Township	L		L		
Ulysses Borough	M		M	M	
Ulysses Township	M		L	M	
West Branch Township	M	M	M	M	M
Wharton Township	L		L	L	

6. MITIGATION STRATEGY

The Mitigation Strategy section of the Potter County Hazard Mitigation Plan (HMP) Update identifies the goals, objectives, actions, and mitigation action plan for mitigating against the impacts of hazards.

Goals are general guidelines that explain what the County wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results.

Objectives describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date.

Actions provide more detailed descriptions of specific work tasks to help a community achieve the goals and objectives. For each objective statement, there are alternatives for mitigation actions that must be evaluated to determine the best choices for each situation.

The Mitigation Action Plan includes a listing and description of the preferred mitigation actions and the strategy for implementation (e.g., who is responsible, how will they proceed, when should action be initiated and/or completed, etc.).

6.1. Update Process Summary

The goals and objectives listed in the HMP were examined by the Planning Team and stakeholders during a municipal meeting to review the Risk Assessment and to discuss the mitigation strategy. The Planning Team members and stakeholders were afforded the opportunity to comment on the goals, objectives, and actions that were listed in the existing HMP during this meeting and asked to review with other municipal team members and return the forms at a later date as necessary.

The following list shows the mitigation goals and objectives identified in the Potter County 2018 HMP as potentially having the greatest benefit in hazard reduction to the County:

Preventive Measures
1. Continue to regulate construction and development in the watershed to prevent increases in runoff and subsequent increases in flood flows.

2. Continue to ensure that new construction is resistant to flood damage.

3. Continue to ensure that the current building codes and standards follow FEMA guidelines and are properly enforced.

Property Protection
1. Ensure that high-risk, pre-FIRM residential structures do not repeatedly flood by using retrofitting techniques to reduce the flood risk to properties.

2. Encourage residents who own or rent structures which are at risk to flooding to buy flood insurance.

Emergency Service Measures
1. Provide county residents with adequate warning of potential floods.

2. Ensure that emergency response services and critical facility functions are not interrupted by flooding.

3. Ensure that emergency response personnel are adequately trained to respond to flooding and other natural and man-caused hazards.

4. Provide safe and efficient evacuation routes during floods.

5. Improve communications between the public and emergency management services.

Structural Projects
1. Investigate structural solutions to flooding problems.

Natural Resource Protection
1. Protect existing natural resources and open space, including parks and wetlands, within the floodplain and watershed.

2. Restore degraded natural resources and open space to improve their flood control functions.

Public Information Program
1. Ensure that all residents and business owners are aware of potential hazards associated with the floodplain areas and the ways they can protect themselves and their property.

2. Ensure that property owners and potential property owners are aware of the availability and benefits of obtaining federal flood insurance.

3. Ensure that local officials are well trained about flooding hazards and mitigation.

The Mitigation Actions established for the Potter County 2018 HMP, herein discussed as 'Existing Actions,' may be found in the Appendices.

6.2. Mitigation Goals and Objectives

For the Potter County 2018 HMP Update, the following goals have been identified for hazard mitigation over the next five years based on results of the goals and objectives exercise and input from the municipalities and Planning Team;

- *Reduce vulnerability, including loss of life and damage to property, to natural and human-made hazards.*
- *Promote disaster-resistant future development.*
- *Improve emergency warning and response capabilities and procedures to better protect the citizens of Potter County.*
- *Protect existing natural resources and preserve environmentally sensitive areas where hazard potential is high.*
- *Increase Public Awareness regarding natural and human-made hazard risks, preparedness and mitigation.*
- *Implement structural projects to reduce the impacts of hazards.*

Goals and Objectives	
GOAL 1	***Reduce vulnerability, including loss of life and damage to property, to natural and human-made hazards.***
Objective A	*Ensure that existing drainage systems (pipes, culverts, channels) are adequate and functioning properly to reduce impacts related to flash flooding and storm water problems.*
Objective B	*Minimize future damage due to flooding of the Allegany, Genesee and Susquehanna Rivers and their tributaries.*
Objective C	*Reduce impacts related to winter storms, tornadoes, windstorms, drought, flash flooding and stormwater problems.*
Objective D	*Ensure that local building codes/ordinances are consistent with FEMA and PA DCED guidelines and are properly enforced.*

GOAL 2	***Promote disaster-resistant future development.***
Objective A	*Minimize future damage due to flooding of the Allegany, Genesee and Susquehanna Rivers and its tributaries by promoting resistant construction, retrofitting techniques and in the rural areas by erosion/ sedimentation control practices.*
Objective B	*Regulate construction/ development in the County to prevent increases in runoff and subsequent increases in flood flows.*
Objective C	*Ensure that new construction is resistant to natural hazards.*

GOAL 3	***Improve emergency warning and response capabilities and procedures to better protect the citizens of Potter County.***
Objective A	*Provide residents with adequate warning of potential floods and other meteorological events.*
Objective B	*Ensure that emergency response services and critical facilities functions are not interrupted by hazards.*
Objective C	*Provide adequate, safe and efficient evacuation routes and shelters during hazard events.*
Objective D	*Provide adequate communication systems for emergency management agencies and emergency response units.*
Objective E	*Ensure that local officials are well trained regarding natural hazards and appropriate prevention and mitigation activities and improve communications between the public and emergency management services.*

GOAL 4	***Protect existing natural resources and preserve environmentally sensitive areas where hazard potential is high.***
Objective A	*Protect existing natural resources and open space, including parks and wetlands, within the floodplains.*
Objective B	*Restore degraded natural resources and open space to improve their flood control function.*
Objective C	*Preserve areas where natural hazard potential is high such as steeply sloping areas.*
Objective D	*Help educate property owners with property in floodplains on flood risks and mitigation.*

GOAL 5	***Increase Public Awareness regarding natural and human-made hazard risks, preparedness and mitigation.***
Objective A	*Ensure that all residents and business owners are aware of the potential hazards associated with their environment and the ways they can protect themselves.*
Objective B	*Improve the participation rate in federal flood insurance through education.*
Objective C	*Develop citizen information on natural, technological, and man-made disaster response.*

GOAL 6	***Implement structural projects to reduce the impacts of hazards.***
Objective A	*Use the Act 167 Stormwater Management Plan as a guide to implementing structural solutions to reduce the impact of flooding.*
Objective B	*Design and implement appropriate flood control projects.*
Objective C	*Provide information to municipal officials regarding available funding for structural projects.*

6.3. Identification and Analysis of Mitigation Techniques

There are six general techniques to reducing hazard risks:

- Prevention
- Property protection
- Emergency services measures
- Structural projects
- Natural resource protection
- Public education/awareness programs

Prevention

Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning, zoning, building codes, subdivision regulations, hazard specific regulations (such as floodplain regulations), capital improvement programs, and open space preservation and stormwater regulations.

Property Protection

This category includes actions that involve the modification of existing buildings or infrastructure to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, flood proofing, storm shutters, and shatter resistant glass. Most of these techniques are considered “sticks and bricks”; however, this category also includes insurance.

Public Education and Awareness

This includes actions to inform and educate citizens, elected officials, and property owners about potential risks from hazards and potential ways to mitigate them. Such actions include hazard mapping, outreach projects, library materials, real estate disclosures, hazard information centers, and school age / adult education programs.

Natural Resource Protection

Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, forest and vegetation management, wetlands restoration/preservation, slope stabilization, and historic properties and archeological site preservation.

Structural Projects

These mitigation projects are intended to lessen the impact of a hazard by modifying the environment using structures. Such structures include stormwater controls (culvert), dams/dikes/levees, beach nourishment, and safe rooms.

Emergency Services

These projects may not typically be considered mitigation techniques, but serve to reduce the impacts of a hazard event on people and property. These actions are often taken prior to, during, or in response to an emergency or disaster. Examples include warning systems, evacuation planning and management, emergency response training and exercises, and emergency flood protection procedures. The Potter County Local Emergency Planning Committee, (LEPC) is an active group within the county which monitors and reviews the hazardous materials reported within the county and compliance for the 12 SARA facilities in the county. Current list of members and facilities are on file at the Potter County Department of Emergency Services office.

Mitigation Technique Matrix

Mitigation Technique	Prevention	Property Protection	Emergency Services	Structural Projects	Natural Resource Protection	Public Education / Awareness
Natural Hazards						
Drought	X		X		X	X
Earthquake	X	X	X			X
Flood, Flash Flood, Ice Jam	X	X	X	X	X	X
Hailstorm		X	X			X
Hurricane, Tropical Storm, Nor'easter	X	X	X			X
Invasive Species	X	X			X	X
Landslide	X	X	X		X	X
Lightning Strike	X	X	X			X
Pandemic	X		X			X
Radon Exposure	X		X			X
Tornado, Wind Storm	X	X	X			X
Wildfire	X	X	X		X	X
Winter Storm	X	X	X			X
Human-Made Hazards						
Dam Failure	X	X	X	X	X	X
Environmental Hazards	X		X		X	X
Levee Failure	X	X	X	X	X	X
Nuclear Incident			X			X
Transportation Accidents	X		X			X
Utility Interruptions	X		X			X

6.4. Mitigation Action Plan

6.4.1. Identification of Mitigation Actions

The list presents the set of Mitigation Actions identified by the Planning Team and the municipalities. Actions were determined in one of the following ways: from the review of the 2013 HMP by the municipalities; from a review of the municipality's Capabilities Assessment survey; or from a completed Mitigation Action Form or Project Opportunity Form. Mitigation Action Forms can be found in the Appendices.

Mitigation Actions	
1	Disseminate informational pamphlets on radon exposure to County residents and encourage home and facility testing.
2	Set up booth at Potter County Fair annually to increase public awareness about hazard mitigation
3	Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce the impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation, i.e., booth at Potter County Fair.
4	Develop an informational Web site with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce the risks.
5	Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation.
6	Utilize existing programs for school education programs on hazards, hazard safety, and mitigation.
7	Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1% annual chance floodplain or owners of repetitive-loss structures.
8	Work with state and federal officials to enforce sediment and erosion control regulations.
9	Work with state and federal officials to enforce stream dumping regulations.
10	Work with state and federal officials to enforce wetlands development regulations.
11	Acquire properties in hazard areas, notably the 1% annual chance floodplain, to convert them to open space.
12	Elevate structures in hazard areas.
13	Regularly inspect and maintain bridges and culverts.
14	Develop a stream corridor restoration plan.
15	Create and maintain a database and map of all critical facilities in the County.
16	Inspect critical facilities regularly to ensure they comply with standard codes and can withstand the impacts of a disaster.
17	Ensure that all critical facilities have updated emergency response plans.
18	Enforce floodplain development regulations.
19	Offer technical assistance to municipalities to develop, address, or enforce floodplain zoning, hillside development regulations, subdivision and development regulations, design review standards, and environmental review standards.
20	Promote open space preservation.
21	Promote natural resource planning.
22	Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas.
23	Recommend, encourage, and assist communities to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS).
24	Encourage departments responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies.

25	Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use.
26	Develop and maintain hazard occurrence databases to record information on hazards such as date and time of occurrence, duration of disaster, amount of damage, number of injuries, etc.
27	Develop detailed databases on parcels and buildings in and out of the 1% annual chance floodplain. The data could include first-floor elevations, number of stories, basements, value of structure, acreage of parcel in floodplain, etc.
28	Develop and distribute a list of contact persons for each organization that may play a part in emergency response, services, relief, or hazard mitigation.
29	Encourage the heads of each department or organization involved in emergency response, services, relief, or hazard mitigation to meet several times a year to discuss hazard mitigation.
30	Develop informational workshops or programs on hazard mitigation and available funding for organizations, departments, elected officials, and volunteers.
31	Disseminate informational brochures for organizations involved in emergency response.
32	Inventory all available equipment and technology used for emergency response.
33	Continue to target and prioritize at-risk structures, and if funding becomes available, perform acquisitions, demolitions, relocations, and/or elevations.
34	Collect Floodplain Management Ordinance-specific information from communities participating in the NFIP including: freeboard requirements; prohibition of identified dangerous materials in the floodway; and prohibition or restriction of hospitals, nursing homes, and jails/prisons.

6.4.2. Evaluation of Mitigation Actions

The preceding list include action items, many of which will require substantial commitments of time by County and municipal staff. It is unrealistic to assume that the individuals working for these entities will have the time and resources to pursue all of these activities within the planning horizon for this HMP (i.e., over the next five years, which is the planning horizon for this HMP relative to the requirements of DMA 2000). To focus the energies of these individuals and related organizations, it was necessary to determine priorities for actions.

The first step in prioritizing these actions was to evaluate them based on their technical feasibility, social effects on the community, and the support of residents and local officials. The PA-STEEL evaluation method (see table below) categorizes the evaluation criteria into political, administrative, social, technical, economic, and environmental areas.

Table 6.4.2-1 PA-STEEL Criteria

Criteria	Considerations
Political	Who are the stakeholders in this proposed action? Have all of the stakeholders been offered an opportunity to participate in the planning process? How can the mitigation goals be accomplished at the lowest cost to the stakeholders? Is there public support both to implement and maintain this measure? Is the political leadership willing to propose and support the favored measure?
Administrative	Does the community have the capability to accomplish the action (i.e., can it implement the mitigation action)? Can the community provide any necessary maintenance? Is there enough staff, technical experts, and funding? Can it be accomplished in a timely manner?
Social	Will it cause any one segment of the population to be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts or cause the relocation of low- and moderate-income people? Is the action compatible with present and future community values? Will the measures adversely affect cultural values or resources?
Technical	How effective is the measure in avoiding or reducing future losses? Will it create more problems than it solves? Does it solve a problem or only a symptom? In light of other community goals, is it the most useful?
Economic	What are the costs and benefits of this measure? How will the implementation of this measure affect the pocketbook of the community?
Environmental	Is the action consistent with the community's environmental goals?
Legal	Does the community have the authority to implement the proposed measure? Is there a clear legal basis for the mitigation action? Is an ordinance or resolution necessary? What are the legal side effects? Will the community be liable for the actions or support of actions, or lack of action? Is it likely to be challenged?

Using PA-STEEL criteria, the mitigation alternatives were scored as shown in Table 6.4.2-2.

Table 6.4.2-2 PA STEEL Evaluation of Mitigation Actions

	Actions	PA STEEL Criteria Considerations																								Summary (Equal Weighting)	Summary (Benefits & Costs Prioritized)
		+Favorable -Less Favorable NA Not Applicable																									
		P			A			S		T			E				E						L				
		Political			Administrative			Social		Technical			Economic				Environmental						Legal				
		Political Support	Local Champion	Public Support	Staffing	Funding Allocation	Maintenance/Operations	Community /Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Site	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	State Authority	Existing Local Authority	Potential Legal Challenge		
1	Disseminate informational pamphlets on radon exposure to County residents and encourage home and facility testing.	+	+	+	-	+	+	+	+	+	+	NA	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	16 (+) 1 (-) 6 (NA)	20 (+) 1 (-) 6 (NA)
2	Set up booth at Potter County Fair annually to increase public awareness about hazard mitigation	+	+	+	-	+	+	+	+	+	+	NA	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	16 (+) 1 (-) 6 (NA)	20 (+) 1 (-) 6 (NA)
3	Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce the impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation, i.e., booth at Potter County Fair.	+	+	+	-	+	+	+	+	+	+	NA	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	16 (+) 1 (-) 6 (NA)	20 (+) 1 (-) 6 (NA)

4	Continue updates to county Web site with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce the risks.	+	+	+	-	+	+	+	+	+	+	+	+	+	NA	+	NA	NA	NA	NA	+	NA	+	NA	15 (+) 1 (-) 7(NA)	19 (+) 1 (-) 7(NA)
5	Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation.	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	NA	NA	NA	NA	+	NA	+	+	16 (+) 2 (-) 5 (NA)	18 (+) 4 (-) 5 (NA)
6	Utilize existing programs for school education programs on hazards, hazard safety, and mitigation.	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	18 (+) 0 (-) 5 (NA)	22 (+) 0 (-) 5 (NA)
7	Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1% annual chance floodplain or owners of repetitive-loss structures.	+	+	+	+	+	+	+	+	+	+	NA	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	17(+) 0 (-) 6 (NA)	21 (+) 0 (-) 6 (NA)
8	Work with state and federal officials to enforce sediment and erosion control regulations.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	+	22 (+) 0 (-) 1 (NA)	26 (+) 0 (-) 1 (NA)
9	Work with state and federal officials to enforce stream dumping regulations.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	+	22 (+) 0 (-) 1 (NA)	26 (+) 0 (-) 1 (NA)
10	Work with state and federal officials to enforce wetlands development regulations.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	+	22 (+) 0 (-) 1 (NA)	26 (+) 0 (-) 1 (NA)

11	Acquire properties in hazard areas, notably the 1% annual chance floodplain, to convert them to open space.	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	NA	NA	NA	NA	+	+	+	+	15 (+) 4 (-) 4 (NA)	17 (+) 6 (-) 4 (NA)
12	Elevate structures in hazard areas.	+	+	+	-	-	+	+	+	+	+	NA	+	-	+	-	NA	NA	NA	NA	+	+	+	+	14 (+) 4 (-) 5 (NA)	16 (+) 6 (-) 5 (NA)
13	Regularly inspect and maintain bridges and culverts.	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	NA	NA	NA	NA	+	+	+	+	18 (+) 0 (-) 5 (NA)	22 (+) 0 (-) 5 (NA)
14	Develop a stream corridor restoration plan.	+	+	+	-	-	+	+	+	+	+	+	+	+	NA	-	+	+	NA	+	+	+	+	+	18 (+) 3 (-) 2 (NA)	22 (+) 3 (-) 2 (NA)
15	Create and maintain a database and map of all critical facilities in the County.	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	-	NA	NA	NA	NA	+	+	+	+	17 (+) 1(-) 5 (NA)	21 (+) 1(-) 5 (NA)
16	Inspect critical facilities regularly to ensure they comply with standard codes and can withstand the impacts of a disaster.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	19 (+) 0 (-) 4 (NA)	23 (+) 0 (-) 4 (NA)
17	Ensure that all critical facilities have updated emergency response plans.	+	+	+	-	-	+	+	+	+	+	+	+	+	NA	-	NA	NA	NA	NA	+	+	+	+	15 (+) 3 (-) 5 (NA)	19 (+) 3 (-) 5 (NA)
18	Enforce floodplain development regulations.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23 (+) 0 (-) 0 (NA)	27 (+) 0 (-) 0 (NA)
19	Offer technical assistance to municipalities to develop, address, or enforce floodplain zoning, hillside development regulations, subdivision and development regulations, design review standards, and environmental review standards.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23 (+) 0 (-) 0 (NA)	27 (+) 0 (-) 0 (NA)

20	Promote open space preservation.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	+	22 (+) 0 (-) 1 (NA)	26 (+) 0 (-) 1 (NA)
21	Promote natural resource planning.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	+	+	+	+	22 (+) 0 (-) 1 (NA)	26 (+) 0 (-) 1 (NA)
22	Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	NA	+	+	+	+	+	+	21 (+) 0 (-) 2 (NA)	25 (+) 0 (-) 2 (NA)
23	Recommend, encourage, and assist communities to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23 (+) 0 (-) 0 (NA)	27 (+) 0 (-) 0 (NA)
24	Encourage departments responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies.	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	17 (+) 2 (-) 4 (NA)	21 (+) 2 (-) 4 (NA)
25	Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use.	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	NA	NA	NA	NA	+	+	+	+	18 (+) 0 (-) 5 (NA)	22 (+) 0 (-) 5 (NA)
26	Develop and maintain hazard occurrence databases to record information on hazards such as date and time of occurrence, duration of	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	17 (+) 2 (-) 4 (NA)	21 (+) 2 (-) 4 (NA)

	disaster, amount of damage, number of injuries, etc.																								
27	Develop detailed databases on parcels and buildings in and out of the 1% annual chance floodplain. The data could include first-floor elevations, number of stories, basements, value of structure, acreage of parcel in floodplain, etc.	+	+	+	-	-	-	+	+	+	+	+	+	-	+	-	NA	NA	NA	NA	+	+	+	+	14 (+) 5 (-) 4 (NA)	16 (+) 7 (-) 4 (NA)
28	Develop and distribute a list of contact persons for each organization that may play a part in emergency response, services, relief, or hazard mitigation.	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	18 (+) 1 (-) 4 (NA)	22 (+) 1 (-) 4 (NA)
29	Encourage the heads of each department or organization involved in emergency response, services, relief, or hazard mitigation to meet several times a year to discuss hazard mitigation.	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	18 (+) 1 (-) 4 (NA)	22 (+) 1 (-) 4 (NA)
30	Develop informational workshops or programs on hazard mitigation and available funding for organizations, departments, elected officials, and volunteers.	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	NA	NA	NA	NA	+	+	+	+	17 (+) 2 (-) 4 (NA)	21 (+) 2 (-) 4 (NA)
31	Disseminate informational brochures for organizations involved in emergency response.	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	NA	NA	NA	NA	+	+	+	+	16 (+) 3 (-) 4 (NA)	18 (+) 5 (-) 4 (NA)

32	Inventory all available equipment and technology used for emergency response.	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	NA	NA	NA	NA	+	+	+	+	17 (+) 2 (-) 4 (NA)	21 (+) 2 (-) 4 (NA)
33	Continue to target and prioritize at-risk structures, and if funding becomes available, perform acquisitions, demolitions, relocations, and/or elevations.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	NA	NA	+	+	+	+	+	20 (+) 0 (-) 3 (NA)	24 (+) 0 (-) 3 (NA)
34	Collect Floodplain Management Ordinance-specific information from communities participating in the NFIP including: freeboard requirements; prohibition of identified dangerous materials in the floodway; and prohibition or restriction of hospitals, nursing homes, and jails/prisons.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23 (+) 0 (-) 0 (NA)	27 (+) 0 (-) 0 (NA)
35	Abbott Township: Purchase of generator to be used at township's sewer facility in case of extended power outage.	+	+	+	+	+	-	+	+	+	+	+	+	+	NA	-	+	+	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
36	Austin Borough : Storm water management and improvements to drainage to Grace Street. Conservation district project	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	NA	+	+	+	+	+	20 (+) 2 (-) 1 (NA)	24 (+) 2 (-) 1 (NA)
37	Allegany Township: Erosion control measures, drainage and sluice updates Dwight Creek Rd.	+	+	+	+	+	+	+	+	+	-	+	+	+	NA	-	+	+	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)

38	Bingham Township: Burt Street Roadway and sluice improvements	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	NA	+	-	-	-	-	14 (+) 8 (-) 1 (NA)	16 (+) 10 (-) 1 (NA)
39	Clara Township: Drainage improvements Canada Hollow.	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	NA	+	-	-	-	-	14 (+) 8 (-) 1 (NA)	16 (+) 10 (-) 1 (NA)
40	Coudersport Borough: Install and maintain debris basins for Dutch Hill and Ross Glen areas.	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	NA	+	-	-	-	-	14 (+) 8 (-) 1 (NA)	16 (+) 10 (-) 1 (NA)
41	Coudersport Borough: Remove gravel bar from Allegheny River in CARP.	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	NA	+	-	-	-	-	14 (+) 8 (-) 1 (NA)	16 (+) 10 (-) 1 (NA)
42	Coudersport Borough: Continue to Maintain and upgrade flood control system for Allegany and Mill Creek rivers.	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	NA	NA	NA	+	+	+	+	+	19 (+) 0 (-) 4 (NA)	23 (+) 0 (-) 4 (NA)
43	Coudersport Area School District: Burial of high voltage power lines at the elementary school to allow access into the building in the event that a high wind event has knocked down power lines. The burial of these lines will allow the flow of traffic to continue into the elementary school should the American Red Cross need to use our building as a shelter as it is a designated shelter.	+	+	+	-	-	+	+	+	-	+	+	+	-	NA	-	-	NA	NA	+	+	+	+	+	14 (+) 6 (-) 3 (NA)	16 (+) 8 (-) 3 (NA)
44	County School Districts: Minimizing Lightning Risks during outside activities.	+	+	+	+	+	NA	+	+	+	+	+	+	+	NA	+	NA	NA	NA	+	+	+	+	+	18 (+) 0 (-) 5 (NA)	22 (+) 0 (-) 5 (NA)

45	County School Districts: Emergency procedures and safe rooms during tornado warnings	+	+	+	+	+	NA	+	+	+	NA	+	+	+	NA	+	NA	NA	NA	NA	NA	+	+	+	15 (+) 0 (-) 8 (NA)	19 (+) 0 (-) 8 (NA)
46	Coudersport Borough : Develop emergency warming and red cross shelters	+	+	+	-	+	+	+	+	+	+	+	+	+	NA	NA	-	-	NA	NA	+	+	+	+	16 (+) 3 (-) 4 (NA)	20 (+) 3 (-) 4 (NA)
47	Eulalia Township: Old Shovel Road Project. Improvements to Drainage and sluices.	+	+	+	+	+	-	+	+	+	+	+	+	+	NA	NA	+	NA	+	+	+	+	+	+	19 (+) 1 (-) 3 (NA)	23 (+) 1 (-) 3 (NA)
48	Galeton Borough: Continued storm drain upgrades.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	NA	+	+	+	+	+	21 (+) 0 (-) 2 (NA)	25 (+) 0 (-) 2 (NA)
49	Harrison Twp: McCutcheon Hollow Rd. sluice and drainage improvements	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	+	NA	+	+	+	+	+	19 (+) 3 (-) 1 (NA)	21 (+) 5 (-) 1 (NA)
50	Hebron Township: Bryant Hollow Rd. Sluice and roadway upgrade.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	NA	+	+	+	+	+	20 (+) 2 (-) 1 (NA)	24 (+) 2 (-) 1 (NA)
51	Hebron Township: Tennessee Road drainage and Erosion control.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	NA	+	+	+	+	+	20 (+) 2 (-) 1 (NA)	24 (+) 2 (-) 1 (NA)
52	Hebron Township: T305 Tracy Brook Road – continued drainage upgrade	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	NA	+	+	+	+	+	20 (+) 2 (-) 1 (NA)	24 (+) 2 (-) 1 (NA)
53	Hebron Township: T333 Green Hill Road - large tree removal.	+	+	+	-	-	+	+	+	+	+	+	+	+	NA	NA	-	-	NA	NA	+	+	+	+	15 (+) 4 (-) 4 (NA)	19 (+) 4 (-) 4 (NA)
54	Hebron Township: T336 Ottis Moffit Road - drainage improvements	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	-	NA	NA	+	+	+	+	+	18 (+) 3 (-) 2 (NA)	22 (+) 3 (-) 2 (NA)
55	Hebron Township: Summit Road sluice and drainage update roadway upgrade.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
56	Hebron Township: T341 White Chopping Road - erosion concern, heavy canopy.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)

57	Hebron Township: T344 Castle Hollow Road - erosion control measures.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
58	Hebron Township: T352 Lent Hollow Road - sluice pipe replacement.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
59	Hebron Township: T353 Summit Road - tree/shrub removal.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
60	Hebron Township: T355 Dry Run Road - tree removal; replace culverts.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
61	Hebron Township: Carpenter Hollow sluice and culvert replacement. Erosion control	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
62	Hebron Township: T545 Whitney Creek Ext - 5' culvert replacement; excavation.	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
63	Homer Township: South woods road erosion control, sluice replacement, roadway improvements drainage upgrade	+	+	+	+	-	+	+	+	+	+	+	+	-	NA	-	NA	NA	NA	+	+	+	+	+	16 (+) 3 (-) 4 (NA)	18 (+) 5 (-) 4 (NA)
64	Homer Township: Predmore road repairs erosion control	+	+	+	+	-	+	+	+	+	+	+	+	-	-	-	NA	NA	NA	+	+	+	+	+	16 (+) 4 (-) 3 (NA)	18 (+) 6 (-) 3 (NA)
65	Homer Township: Cherry Tree lane Ditch work, erosion control	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	NA	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
66	Homer Township: Erosion control along Moore's Run Road	+	+	+	+	-	+	+	+	+	+	+	+	+	NA	-	+	+	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
67	Keating Township Upper Bark Shanty road and drainage upgrade.	+	+	+	+	-	+	+	+	+	+	+	+	+	NA	-	+	+	NA	+	+	+	+	+	19 (+) 2 (-) 2 (NA)	23 (+) 2 (-) 2 (NA)
68	Roulette Twp.: Trout Brook Road drainage and sluice project	+	+	+	+	-	+	+	+	+	+	+	+	-	NA	-	+	+	NA	+	+	+	+	+	18 (+) 3 (-) 4 (NA)	20 (+) 5 (-) 4 (NA)

69	Summit Township Predmore, Black hole, Edge comb Roads, erosion controls, drainage & sluice improvements. Unconventional Drilling activities.	+	+	+	+	+	+	+	+	+	+	+	+	+	NA	+	NA	NA	NA	NA	NA	+	+	NA	16 (+) 0 (-) 7 (NA)	20 (+) 0 (-) 7 (NA)
70	Sweden Twp: Burrous & Irish Farm road sustainment erosion controls unconventional drilling activities.	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	NA	+	+	+	+	+	18 (+) 4 (-) 1 (NA)	20 (+) 6 (-) 1 (NA)
71	Sylvania Township: South Woods Road erosion control, sluice, drainage and roadway improvements. Conservation District Project.	+	+	+	+	-	+	+	+	+	+	+	+	-	NA	-	+	+	+	+	+	+	+	+	19 (+) 3 (-) 1 (NA)	21 (+) 5 (-) 1 (NA)
72	Ulysses Borough: Burt Street Project In conjunction with a Bingham Township project. Roadway, sluice drainage upgrade	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	NA	+	+	+	+	+	18 (+) 4 (-) 1 (NA)	20 (+) 6 (-) 1 (NA)
73	Ulysses Township: Rapley and Horseshoe Roads, Drainage and roadway improvements, sluice replacements. Conservation District project.	+	+	+	-	-	+	+	+	+	+	+	+	-	-	-	+	+	NA	+	+	+	+	+	17 (+) 5 (-) 1 (NA)	19 (+) 7 (-) 1 (NA)
74	West Branch Township: Lyman Run Road Project	+	+	+	-	-	+	+	+	+	+	+	+	-	-	-	+	+	NA	+	+	+	+	+	17 (+) 5 (-) 1 (NA)	19 (+) 7 (-) 1 (NA)

6.4.3. Prioritization of Mitigation Actions

Once the mitigation actions were evaluated, the leadership of the Planning Team set about prioritizing them to create an implementation strategy.

The Federal Emergency Management Agency (FEMA) mitigation planning requirements indicate that any prioritization system used shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects. Though the PA-STEEL values for each action are somewhat vague, all of the actions listed as having an economic impact indicated that that impact would be beneficial to the community. Whether the actions had associated costs or not, those mitigation actions could not be ruled out based on the benefit or cost values in the PA-STEEL evaluation. Implementation of any project will be based on a benefit-cost analysis as described in FEMA 386-5: Using Benefit Cost Review in Mitigation Planning (2007). The specific economic benefits and costs will be determined prior to application for funding of the mitigation project.

Those participating in the 2013 HMP update provided comments that allowed for the prioritization of the mitigation actions listed in Table 6.4.3-1 using the seven PA-STEEL criteria. In order to evaluate and prioritize the mitigation actions, participants reviewed *favorable* and *less favorable* factors for each action. Table 6.4.2-2 summarizes the evaluation methodology and provides the results of this evaluation for all 74 mitigation actions in two columns. The first results column includes a summary of the feasibility factors, placing equal weight on all factors. The second results column reflects feasibility scores with benefits and costs weighted more heavily, and therefore, given greater priority. A weighting factor of three was used for each benefit and cost element. Therefore, a "+" benefit factor rating equals three pluses and a "-" benefit factor rating equals three minuses in the total prioritization score.

The results of the weighted PA-STEEL matrix were examined to prioritize the mitigation actions. The number of unfavorable ratings was subtracted from the number of favorable ratings to determine each action's score. Actions with scores of 27 (the highest possible) were assigned high priority. Those that received scores of 21 (the average of the scores) to 26, inclusive, were assigned medium priority. All others were assigned low priority. The actions cited below are listed in order of priority, with the high-priority actions listed first. Any actions, including projects, to be implemented will have benefits outweighing associated costs to the community(ies) (i.e., a benefit-cost ratio greater than 1).

Table 6.4.3-1 Prioritized Mitigation Actions

	Action	Score	Priority
18	Enforce floodplain development regulations.	27	High
19	Offer technical assistance to municipalities to develop, address, or enforce floodplain zoning, hillside development regulations, subdivision and development regulations, design review standards, and environmental review standards.	27	High
23	Recommend, encourage, and assist communities to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS).	27	High
34	Collect Floodplain Management Ordinance-specific information from communities participating in the NFIP including: freeboard requirements; prohibition of identified dangerous materials in the floodway; and prohibition or restriction of hospitals, nursing homes, and jails/prisons.	27	High
8	Work with state and federal officials to enforce sediment and erosion control regulations.	26	Medium
9	Work with state and federal officials to enforce stream dumping regulations.	26	Medium
10	Work with state and federal officials to enforce wetlands development regulations.	26	Medium
20	Promote open space preservation.	26	Medium
21	Promote natural resource planning.	26	Medium

22	Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas.	25	Medium
48	Galeton Borough: Continued storm drain improvements.	25	Medium
33	Continue to target and prioritize at-risk structures, and if funding becomes available, perform acquisitions, demolitions, relocations, and/or elevations.	24	Medium
16	Inspect critical facilities regularly to ensure they comply with standard codes and can withstand the impacts of a disaster.	23	Medium
42	Coudersport Borough: Flood Control System Maintenance within the boro for the Allegany River and Mill Creek.	23	Medium
6	Utilize existing programs for school education programs on hazards, hazard safety, and mitigation.	22	Medium
13	Regularly inspect and maintain bridges and culverts.	22	Medium
25	Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use.	22	Medium
36	Austin Borough : Grace Street Project – Drainage and erosion control measures	22	Medium
44	Potter County School Districts: Minimizing Thunderstorm/Lightning risks for outdoor school activities.	22	Medium
47	Eulalia Township: Roadway and erosion control measures in cooperation with conservation district project. Old Shovel Road.	22	Medium
50	Hebron Township: Bryant Hollow Road and drainage improvements.	22	Medium
51	Hebron Township: Tennessee Road and drainage improvement project.	22	Medium
52	Hebron Township: T305 Tracy Brook Road – continued drainage updates.	22	Medium
7	Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1% annual chance floodplain or owners of repetitive-loss structures.	21	Medium
28	Develop and distribute a list of contact persons for each organization that may play a part in emergency response, services, relief, or hazard mitigation.	21	Medium
29	Encourage the heads of each department or organization involved in emergency response, services, relief, or hazard mitigation to meet several times a year to discuss hazard mitigation.	21	Medium
35	Abbott Township: Purchase of generator to be used at township's sewer facility in case of extended power outage.	21	Medium
37	Allegany Township: Dwight Creek Rd. Project. Erosion control, sluice replacement, roadway improvements.	21	Medium
55	Hebron Township: T340 Derring Hollow - flooding and erosion concerns.	21	Medium
56	Hebron Township: T341 White Chopping Road - erosion concern, heavy canopy.	21	Medium
57	Hebron Township: T344 Castle Hollow Road - erosion control measures.	21	Medium
58	Hebron Township: T352 Lent Hollow Road - sluice pipe replacement.	21	Medium
59	Hebron Township: T353 Summit Road - tree/shrub removal.	21	Medium
60	Hebron Township: T355 Dry Run Road - tree removal; replace culverts.	21	Medium
61	Hebron Township: Carpenter Hollow sluice and culvert replacement. Erosion control.	21	Medium
62	Hebron Township: T545 Whitney Creek Ext - 5' culvert replacement; excavation.	21	Medium
65	Homer Twp: Cherry Tree Lane improvements and Erosion Controls	21	Medium
66	Homer Township: Erosion control along Moore's Run Road	21	Medium
67	Keating Township: Upper Bark Shanty Road and drainage improvements	21	Medium

15	Create and maintain a database and map of all critical facilities in the County.	20	Low
69	Summit Township: Predmore, Black Hole, and Edge comb Roads, sluice replacements, erosion control, Roadway improvements. Unconventional drilling impacts	20	Low
1	Disseminate informational pamphlets on radon exposure to County residents and encourage home and facility testing.	19	Low
2	Set up booth at Potter County Fair annually to increase public awareness about hazard mitigation	19	Low
3	Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce the impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation, i.e., booth at Potter County Fair.	19	Low
14	Develop a stream corridor restoration plan.	19	Low
24	Encourage departments responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies.	19	Low
26	Develop and maintain hazard occurrence databases to record information on hazards such as date and time of occurrence, duration of disaster, amount of damage, number of injuries, etc.	19	Low
30	Develop informational workshops or programs on hazard mitigation and available funding for organizations, departments, elected officials, and volunteers.	19	Low
32	Inventory all available equipment and technology used for emergency response.	19	Low
45	Potter County School Districts: Emergency procedures and safe rooms during tornado warnings	19	Low
54	Hebron Township: T336 Ottis Moffit Road - large tree removal; drainage.	19	Low
4	Continue with updates to County Web site with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce the risks.	18	Low
46	Coudersport Borough: Continued development of warming shelter and Red Cross shelter locations for residents during emergencies.	17	Low
17	Ensure that all critical facilities have updated emergency response plans.	16	Low
49	Harrison Township: McCutcheon Road improvement project – Erosion control and roadway improvements.	16	Low
71	Sylvania Township: South Woods Road project. Erosion control, sluice replacements drainage improvements. Conservation District Project.	16	Low
53	Hebron Township: T333 Green Hill Road - large tree removal.	15	Low
68	Roulette Township: Trout Brook Road drainage improvement project	15	Low
5	Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation.	14	Low
70	Sweden Township: Burrows Road – Erosion Control, drainage repairs, roadway stabilization. Drilling impacted areas	14	Low
72	Ulysses Borough: Burt Street Project. Conservation District Project. In conjunction with Bingham Township project, improving erosion control, sluice and roadway	14	Low
31	Disseminate informational brochures for organizations involved in emergency response.	13	Low
63	Homer Twp: South Woods Road project, erosion and drainage improvements.	13	Low

64	Homer Township: Predmore Road repairs and erosion control	12	Low
73	Ulysses Township: Rapley and Horseshoe roads project in cooperation with conservation district. Erosion control, sluice, roadway improvements Drainage improvements.	12	Low
74	West Branch Township – Lyman Run Road and drainage improvements.	12	Low
11	Acquire properties in hazard areas, notably the 1% annual chance floodplain, to convert them to open space.	11	Low
12	Elevate structures in hazard areas.	10	Low
27	Develop detailed databases on parcels and buildings in and out of the 1% annual chance floodplain. The data could include first-floor elevations, number of stories, basements, value of structure, acreage of parcel in floodplain, etc.	9	Low
43	Coudersport Area School District: Burial of high voltage power lines at the elementary school to allow access into the building in the event that a high wind event has knocked down power lines. The burial of these lines will allow the flow of traffic to continue into the elementary school should the American Red Cross need to use our building as a shelter as it is a designated shelter.	8	Low
38	Bingham Township: Burt Street project. Roadway and sluice improvements and debris mitigation.	6	Low
39	Clara Township: Canada Hollow/ Camp Rd Road and Sluice project	6	Low
40	Coudersport Borough: Install and maintain debris basins for Dutch Hill and Ross Glen area storm drainage.	6	Low
41	Coudersport Borough: Remove gravel bar from Allegheny River in CARP.	6	Low

The Potter County Conservation District has also identified planned stream bank improvement projects, which will aid in the protection of natural resources and improved water flow aiding in the protection of citizens and property.

Pike Township – Phoenix Run

Harrison Township – Cowanesque River

Sweden Township – Mill Creek

Clara Township – Clara Creek

Roulette Township – Sartwell Creek

Keating Township – Sinnemahoning Creek

Given that floods, flash floods, and ice jams are the highest-risk hazard in the County, a large number of the mitigation actions identified, evaluated, and prioritized in this HMP relate to decreasing the County's risk from floods, flash floods, and ice jams. Some actions will reduce the County's vulnerability to all natural and man-made hazards.

7. PLAN MAINTENANCE

7.1. Update Process Summary

This update to Potter County's Federal Emergency Management Agency (FEMA)-approved 2013 Hazard Mitigation Plan (HMP) was a comprehensive update that expanded the sources and amount of data for better trend analysis, updated the Vulnerability and Risk Assessment for local hazards, created a more fluid process to streamline future updates to the HMP, and updated the hazard mitigation measures identified to limit the effects of local hazards.

This Plan Maintenance section was updated based on discussions with the Planning Team regarding how the HMP would be monitored, evaluated, and updated over the next five years. The HMP's relationship with the County Comprehensive Plan and Emergency Operations Plan (EOP) was discussed and documented in Section 7.3. The Planning Team, municipal representatives, and other stakeholders were offered the opportunity to review and comment on this section along with the rest of the HMP during the public comment period.

7.2. Monitoring, Evaluating and Updating the Plan

Hazard mitigation planning in Potter County is the responsibility of all levels of government (i.e., County and local), as well as the citizens of the County. As listed in FEMA 386-4, the Potter County Hazard Mitigation Planning Team (Planning Team) must continuously monitor and document the progress of the HMP's recommended actions. The Planning Team (listed in Section 3.2), under the direction of the Potter County Department of Emergency Services (DES), will be responsible for maintaining this HMP. The Planning Team will meet regularly and following each emergency declaration, with the purpose of reviewing the Plan. Glenn Dunn of Potter County DES, will lead the Planning Team for regular reviews of the HMP. The County will regularly solicit new projects from the municipalities by sending Project Opportunity Forms and informing the municipalities of the opportunity to update their mitigation measures.

Each review process will ensure that the Risk Assessment reflects current conditions in the County and the municipalities, the Capability Assessment accurately reflects local circumstances, and the hazard mitigation strategy is updated based on the County's damage assessment reports and local mitigation project priorities. The Planning Team will complete a Progress Report to evaluate the status and accuracy of the HMP and record the Planning Team's findings. The Potter County DES will maintain a copy of these records. The Progress Report template is found in the Appendices.

As per FEMA 386-4, the Progress Report shall include the following information: the hazard mitigation action's objectives; who the lead and supporting agencies responsible for implementation are; how long the project

should take, including a delineation of the various stages of work along with timelines (milestones should be included); whether the resources needed for implementation, funding, staff time, and technical assistance are available, or if other arrangements must be made to obtain them; the types of permits or approvals necessary to implement the action; details on the ways the actions will be accomplished within the organization, and whether the duties will be assigned to agency staff or contracted out; and the current status of the project, identifying any issues that may hinder implementation.

The HMP must be updated on a five-year cycle. This HMP will be updated and resubmitted to FEMA for approval within the five-year period. The monitoring, evaluating, and updating of the Plan every five years will rely heavily on the outcomes of the regular Planning Team meetings.

7.3. Incorporation into Other Planning Mechanisms

Potter County Comprehensive Plan

Method

The Potter County Planning Commission is responsible for maintaining and updating the County Comprehensive Plan, and provides a model subdivision and land use ordinance for use by the municipalities. The Planning Commission meets regularly to review, discuss, and comment on municipal subdivision and land development plans, municipal floodplain ordinances, municipal storm water management plans and ordinances, and other community planning and development matters. Since the adoption of the existing HMP, these reviews have included informal cross-referencing of the planned development or regulatory activity with the provisions of the HMP. It uses this information to identify necessary revisions and to amend the Comprehensive Plan. The Planning Commission's meetings are open to the public and are advertised according to the Pennsylvania Sunshine Act (65 PA C.S.A.). All municipalities are covered by the County Comprehensive Plan. These practices will continue using the information in the updated HMP.

Maintenance Schedule

Article III of the Pennsylvania Municipalities Planning Code (Act 247 of 1968, as reenacted and amended) requires all Pennsylvania counties (except Philadelphia) to adopt a comprehensive plan and update it at least every 10 years. Coupling this requirement with the Disaster Mitigation Act of 2000 (DMA 2000)-required five-year update cycle for HMPs, when possible, will allow the County to better integrate the County Comprehensive Plan and HMP planning processes and strengthen public participation for both efforts.

Potter County's current Comprehensive Plan was adopted in late 2005, and update is in the process of being compiled. This plan provides general direction and a blueprint for the future of Potter County and constituent communities. Recommendations from the HMP can be incorporated into the document.

Potter County Emergency Operations Plan

Method

The Pennsylvania Emergency Management Services Code (35 PA C.S. Sections 7701-7707, as amended) requires each county and municipality to prepare, maintain, and keep current an EOP. The Potter County DES is responsible for preparing and maintaining the County EOP. The Risk Assessment information presented in

the existing HMP was used to update the hazard Vulnerability Assessment section of the County EOP. The updated Risk Assessment information will affect subsequent updates to the EOP.

Maintenance Schedule
The EOP is reviewed regularly. Whenever portions of the plan are implemented in an emergency event or training exercise, a review is performed and changes are made where necessary. These changes are then distributed to the County's municipal Emergency Management Coordinators (EMCs).

The Potter County DES will consider the County's HMP during its review of the County EOP. Recommended changes to the HMP, based on changes to the EOP, will then be coordinated with the Planning Team.

Act 167 Stormwater Management Plans

Method
Act 167 requires that all storm water management plans include an analysis of present and projected land development in flood hazard areas and its sensitivity to damages from future flooding or increased runoff. The floodplain maps included in this HMP can be used as a reference to meet Act 167 requirements.

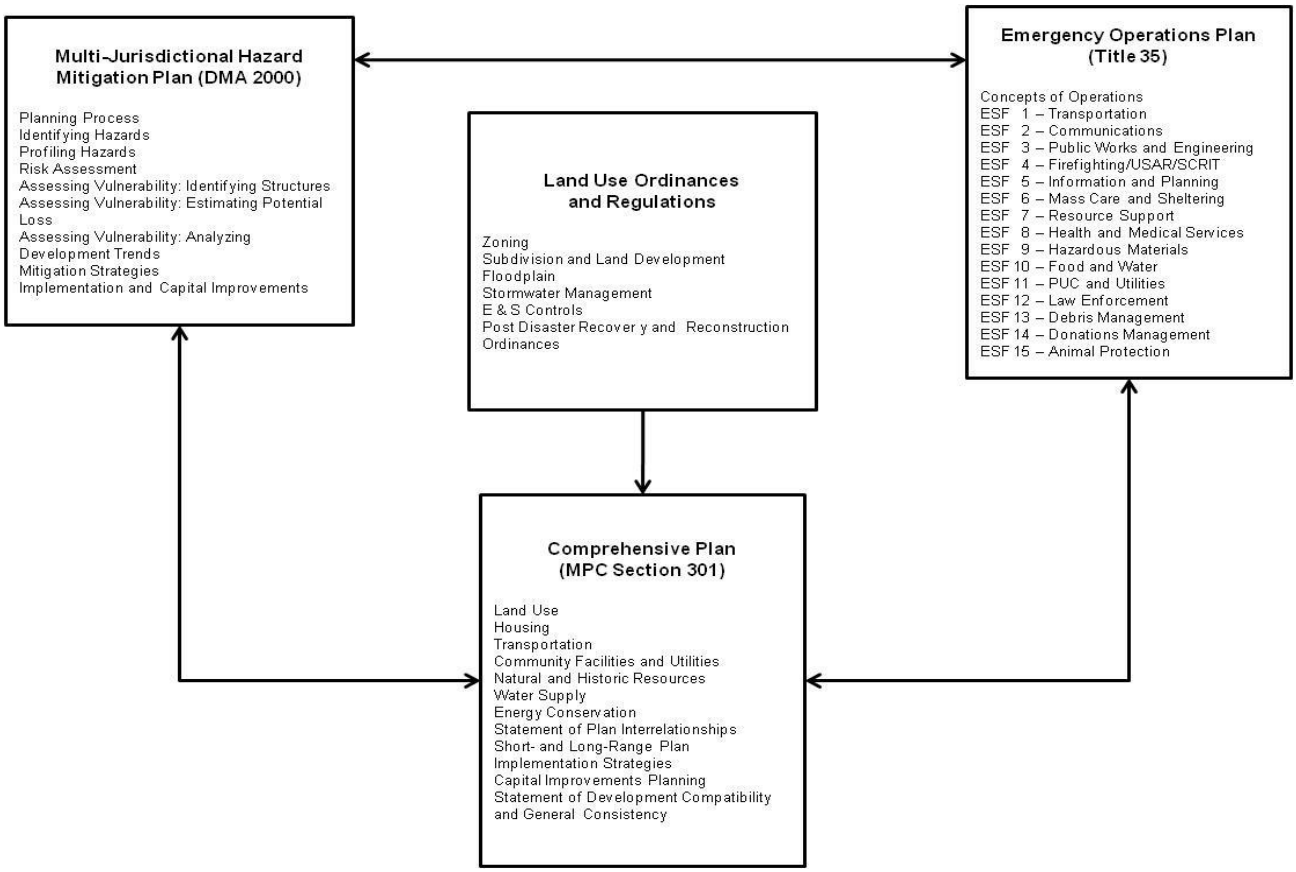
Maintenance Schedule
Like the HMP, storm water management plans must be reviewed (and revised, if necessary) every five years.

As these plans are reviewed, information gathered in the revision of these plans should be incorporated into the revision of the HMP, and vice versa.

Figure 7.3-1 illustrates the interrelationships between the HMP, County Comprehensive Plan, County EOP, and other community planning mechanisms. Ensuring consistency between these planning mechanisms is critical. In fact, Section 301 (4.1) of the Pennsylvania Municipalities Planning Code requires that comprehensive plans include a discussion of the interrelationships among their various plan components, "which may include an estimate of the environmental, energy conservation, fiscal, economic development, and social consequences on the environment."

When developing the HMP, certain sections of the County Comprehensive Plan, EOP, and various land use ordinances and regulations provided key information. Moving forward, each of these documents should not be treated as unrelated and updated separately. The County and each participating municipality are responsible for incorporating the specific mitigation actions recommended in this Plan into the necessary planning documents, including the appropriate comprehensive plan, the County EOP, and any land use ordinances and regulations.

Figure 7.3-1 Interrelationships between the HMP, County Comprehensive Plan, County EOP, and other community planning mechanisms.



7.4. Continued Public Involvement

The Potter County DES will ensure that the HMP is posted and maintained on the County website and will continue to encourage public review and comment on the Plan through information posted to the website and public notices in local newspapers. The citizens of Potter County are encouraged to submit their comments to elected officials and/or members of the Planning Team.

To promote public participation during the final update process, Potter County welcomed comments on sections of the HMP Update draft for a 30-day period. This offered the public the opportunity to share their comments and observations. All comments received will be maintained and considered by the Planning Team when updating the HMP.

Potter County will continue to reach out to municipalities via telephone, mail, and e-mail regarding mitigation projects, especially those municipalities that did not submit projects for inclusion in this HMP. Any additional Hazard Mitigation Project Opportunity Forms received during the life of this five-year HMP will be incorporated into the Plan as an interim, updated, and included in the next five-year Plan update.

8. PLAN ADOPTION

Resolutions reflecting formal adoption of this HMP by the County and participating municipalities will be found in the Appendices. The template resolutions used by the County and municipalities are shown on the following pages.

Potter County Hazard Mitigation Plan
County Adoption Resolution

Resolution No. _____
Potter County, Pennsylvania

WHEREAS, the municipalities of Potter County, Pennsylvania, are most vulnerable to natural and human-made 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, Potter County acknowledges the requirement 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 Potter County Hazard Mitigation Plan has been developed by the Potter County Emergency Management Agency in cooperation with other County departments, local municipal officials, and the citizens of Potter County; and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to update the Potter County Hazard Mitigation Plan; and

WHEREAS, the Potter County Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments;

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

- The Potter County Hazard Mitigation Plan 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 Potter County Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this_____day of_____, 2018

ATTEST: **POTTER COUNTY COMMISSIONERS**

_____

By _____

By _____

By _____

Potter County Hazard Mitigation Plan
Municipal Adoption Resolution

Resolution No. _____

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

WHEREAS, the <*Borough/Township of Municipality Name*>, Potter County, Pennsylvania, is most vulnerable to natural and human-made 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 requirement 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 Potter County Hazard Mitigation Plan has been developed by the Potter 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 Potter County Hazard Mitigation Plan; and

WHEREAS, the Potter County Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made 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 Potter County Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the <*Borough/Township of Municipality Name*>; and

• The respective officials and agencies identified in the implementation strategy of the Potter County Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this_____day of_____, 2018

ATTEST: ***<BOROUGH/TOWNSHIP OF MUNICIPALITY NAME>***

_____

By _____

By _____

By _____

9. BIBLIOGRAPHY

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GIS Data Sources

-ESRI World Terrain Base Map

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-***Watershed Data*** – Pennsylvania Spatial Data Access

-***Tornado Data*** – National Weather Service

-***Pandemic Data*** – PA Department of Health, 2010. www.H1N1inpa.com

-***Oil & Gas Well Data*** – PA DEP, 2018

-***Nuclear Plant Data*** – PEMA, 2018

-***Landslide Data*** – USGS (via National Atlas), 2001

-***Floodplain Data*** – PEMA, 2017

-***Fire Data*** – PA DCNR, Bureau of Forestry, 2018

-***Earthquake Data*** – USGS (via National Atlas), 2012

-***Drought Data*** – PEMA – Drought Status History 11/6/1980 – 2018

-***Dams Data*** – Potter County Emergency Management Agency

Utica Shale Data/Locations -- Potter County 911, Potter County Planning Commission, GIS. 2018

SARA Facilities/ Commodity Flow Information – Potter County Local Emergency Planning Comm. 2018

Stream Bank Projects/ Dirt and Gravel Road information – Potter County Conservation District 2018