

HAZARD VULNERABILITY ASSESSMENT AND MITIGATION PLAN

BLAIR COUNTY, PENNSYLVANIA



2013

BLAIR COUNTY

2013

HAZARD VULNERABILITY ASSESSMENT

AND MITIGATION PLAN

REPORT VOLUME

PREPARED FOR

**BLAIR COUNTY EMERGENCY MANAGEMENT AGENCY
615 FOURTH STREET, ALTOONA, PENNSYLVANIA 16602**

PREPARED BY



BLAIR COUNTY PLANNING COMMISSION

301 VALLEY VIEW BOULEVARD, WING E

ALTOONA, PENNSYLVANIA 16602

JULY 31, 2013

RESUBMISSION: JANUARY 21, 2014

Certification of Annual Review

The Blair County Department of Emergency Services has reviewed this Hazard Mitigation Plan. The Blair County Emergency Management Agency Director of hereby certifies the review.

Date	Name (Print)	Signature

Record of Changes

Date	Description of Change Made	Requesting Authority	Change Made By (Print Name)	Change Made By (Signature)

List of Acronyms

BCPC	Blair County Planning Commission
BFE	Base Flood Elevation
CRS	Community Rating System
DCED	Department of Community and Economic Development
DCNR	Department of Conservation and Natural Resources
DEP	Department of Environmental Protection
DMA	Disaster Mitigation Act of 2000
EHS	Extremely Hazardous Substances
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
HAZUS	Hazards U.S.
HMGP	Hazard Mitigation Grant Program
LEMC	Local Emergency Management Coordinators
LEPC	Local Emergency Planning Committee
MPO	Metropolitan Planning Organization
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
PEMA	Pennsylvania Emergency Management Agency
PENNDOT	Pennsylvania Department of Transportation
RDBMS	Relational Database Management System
RL	Repetitive Loss
SARA	Superfund Amendments and Reauthorization Act
UCC	Uniform Construction Code
USGS	United States Geological Survey

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- SECTION 1 -

INTRODUCTION

1.0 INTRODUCTION

1.1 PURPOSE

Across the United States, natural disasters have led to increasing levels of deaths, injuries, property damage, and interruption of business and government services. The time, money, and efforts to recover from these disasters exhaust resources, diverting attention from important public programs and private agendas. With 23 statewide or county-specific gubernatorial and presidential disaster declarations since 1985, the emergency management community, citizens, elected officials, and other stakeholders in Blair County, Pennsylvania recognized the impact of disasters on their community and concluded that proactive efforts needed to be taken to reduce the impact of natural hazards.

1.2 HAZARD MITIGATION

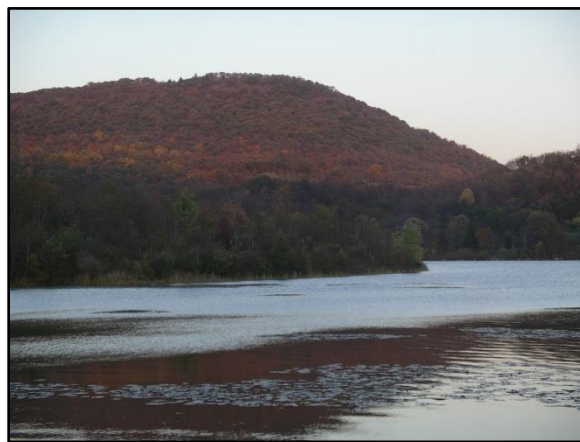
Hazard Mitigation is a phrase that describes actions taken to prevent or reduce the long-term risks to life and property from hazards. Pre-disaster mitigation actions are taken in advance of a hazard event and are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, mitigation actions can be long-term, cost-effective means of reducing the risk of loss. Development and implementation of this plan demonstrates that the municipalities have considered the threats facing them and are taking steps to reduce risks to life and property, thereby reducing legal liabilities. Accordingly, the Blair County HMPC, composed of governmental leaders from Blair County, in cooperation with the elected officials of the County and its municipalities, has sponsored and prepared this Hazard Mitigation Plan. The Plan is the result of many months of work by the citizens of the County to develop a pre-disaster multi-hazard mitigation plan that will not only guide the County towards greater

disaster resistance, but will also respect the character and needs of the community.

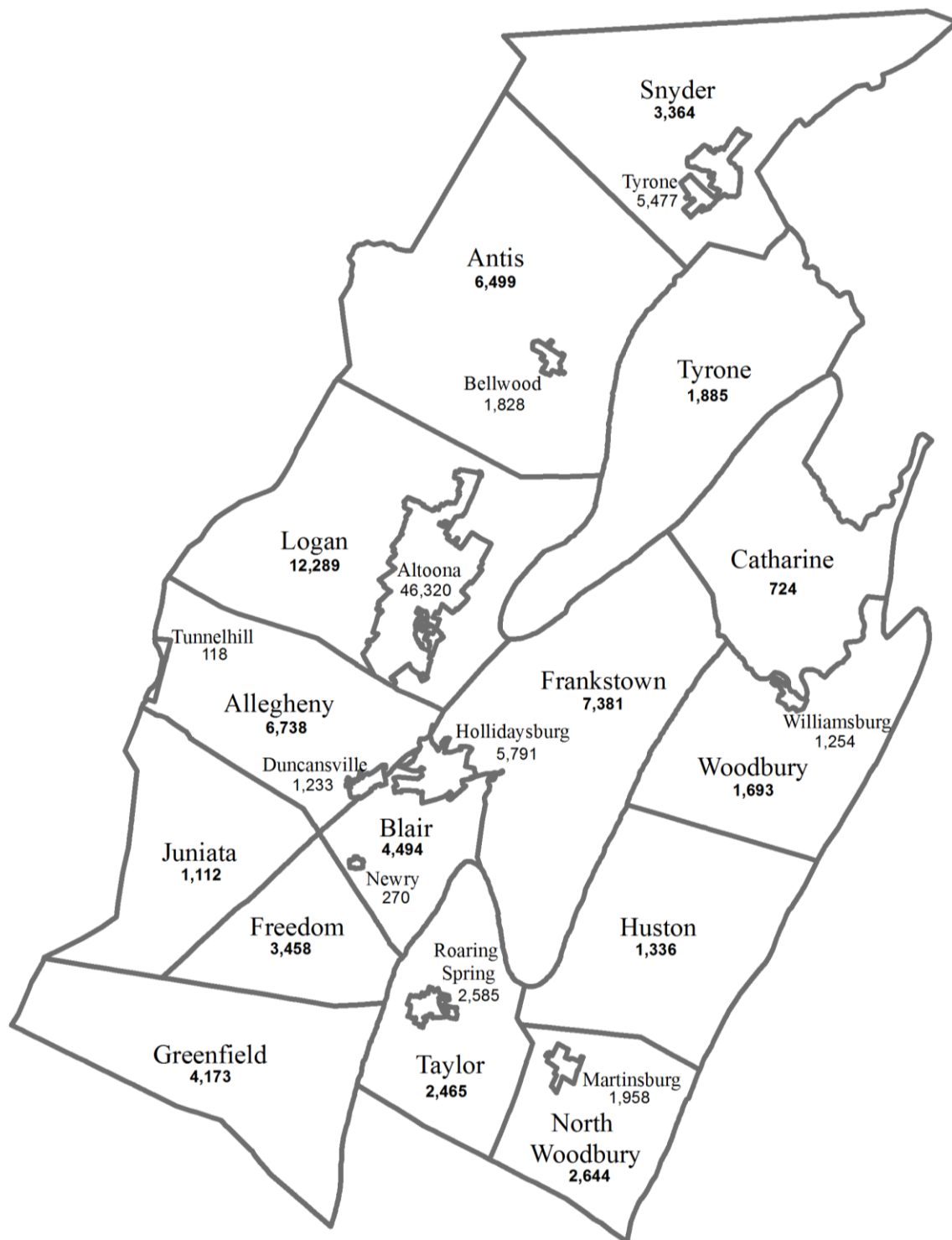
In order to qualify for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with the Disaster Mitigation Act of 2000 (DMA) and its implementing regulations (44 CFR §§201.6, published February 26, 2002). The Blair County Hazard Mitigation Plan has been prepared to meet FEMA and PEMA requirements in order for the County to be eligible for funding and technical assistance from state and federal hazard mitigation programs.

1.3 ABOUT BLAIR COUNTY

Blair County covers 526 square miles and is located in the south-central portion of the Commonwealth of Pennsylvania. It is bounded by Centre County to the north, Huntingdon County to the east, Bedford County to the south, Cambria County to the west, and Clearfield County to the northwest. According to the 2010 Census, the population of Blair County was 127,089. For municipal populations see Figure 1.1.



The land use is about 65 percent forest/game lands, 20 percent agricultural, and nine percent residential. Over 65 percent of the population is

**FIGURE 1.1: POPULATION OF BLAIR COUNTY MUNICIPALITIES**

concentrated in less than six percent of the county's land area. The County is divided into 25 municipalities: the City of Altoona, nine boroughs, and 15 townships. The major transportation routes in Blair County include Interstate 99, which runs in a north/south direction and US Route 22 which runs east/west. Health services, manufacturing and the retail trade are the largest employers in Blair County.

1.4 LEGAL BASIS

With the passage of the Disaster Mitigation Act of 2000 (DMA 2000) (Public Law 106- 390) on October 10, 2000, the Federal Emergency Management Agency (FEMA) established new criteria for the development of multi-Hazard Mitigation Plans at the state and local level on a pre-disaster basis. Specifically, Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121-5206), enacted by Section 104 of DMA 2000, provided new and revitalized approaches to hazard mitigation planning. This section also emphasized the importance of coordinating state and local hazard mitigation planning and implementation activities and continued the requirement for a state Hazard Mitigation Plan as a condition for receiving federal disaster assistance. In addition, Section 322 allows the amount of funding available through FEMA's Hazard Mitigation Grant Program (HMGP) to be increased for states that demonstrate an increased commitment to comprehensive hazard mitigation planning and implementation through the development of an "enhanced" Hazard Mitigation Plan. Finally, Section 322 authorized the expenditure of up to 7% of the HMGP funds available to each state to be used for the completion of Hazard Mitigation Plans on a pre-disaster basis. Also important is the fact that state and local governments were not eligible for post-disaster HMGP funds after November 1, 2004, without an approved Hazard Mitigation Plan.

To implement the hazard mitigation planning criteria developed under DMA 2000, FEMA published an Interim Final Rule in the Federal Register at 44 CFR Part 201. This Interim Final Rule clearly established the hazard mitigation planning criteria for state and local plans. According to Section 201.1(b) of FEMA's Interim Final Rule, the purpose of hazard mitigation planning is for state, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. FEMA's Interim Final Rule describes three general types of Hazard Mitigation Plans. These include Standard State Mitigation Plans, Enhanced State Mitigation Plans, and Local Mitigation Plans. Regardless of the type of plan, the hazard mitigation planning process must be open to the public and must provide an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval. Involving the public in the hazard mitigation planning process allows for the development of a more comprehensive approach to reducing the effects of disasters, which is essential to the development of an effective plan.

Given the above law, regulations, and policies, the Blair County Commissioners have prepared a multi-jurisdictional Hazard Mitigation Plan for the County's 25 municipalities. This Hazard Mitigation Plan includes documentation of the process that was used to develop the plan, including how it was prepared, who was involved, and how the public was involved. In accordance with FEMA guidance, the risk assessment part of the plan includes a description of all natural hazards that affect the County and the County's vulnerability to those hazards. Following the risk assessment, a mitigation strategy for reducing the potential losses is also included. The mitigation strategy identifies and analyzes a comprehensive range

of specific mitigation actions to reduce the effects of each identified hazard. The mitigation strategy also includes an action plan that identifies projects, who is responsible for administering the projects, and a timeline for project implementation. Finally, the Hazard Mitigation Plan Update includes documentation of an established plan maintenance process and proof of plan adoption by Blair County and its municipalities.

Adoption of this Hazard Mitigation Plan Update by Blair County and its municipalities provides each municipality with an ongoing thorough understanding of its vulnerability to various hazards and an updated blueprint for mitigating the damaging effects of those hazards. It also allows each municipality to continue its eligibility for disaster mitigation grant funds to address these identified hazards.

The mitigation planning regulations at 44 CFR Part 201.6(d)(3) state that a local jurisdiction must review and revise its plan to reflect development changes, progress of local efforts, and priority changes within five years in order to remain eligible for grant funding. This update must undergo the same approval process as the original plan. Such an update is good planning practice even absent the grant incentives. The 2013 Plan is more than an update; it is a completely fresh look at the County and a fresh approach to mitigation. FEMA issued two guidance documents which were referenced for this update which include information on plan update requirements. Those guidance documents are titled Local Multi-Hazard Mitigation Planning Guidance and Multi-Jurisdictional Mitigation Planning.

1.5 MULTI-JURISDICTIONAL PLAN ADOPTION

In order for a multi-jurisdictional hazard mitigation plan to be approved, each municipality that is included in the plan must

have its governing body adopt the plan, even though the Blair County Emergency Management Agency has the authority to prepare such a plan on behalf of the respective jurisdictions. Once adopted resolutions for the plan are included in the Appendix A and B (pages 75 and 77) and are summarized in Table 1.1. Information regarding the adoption of the plan is also included.

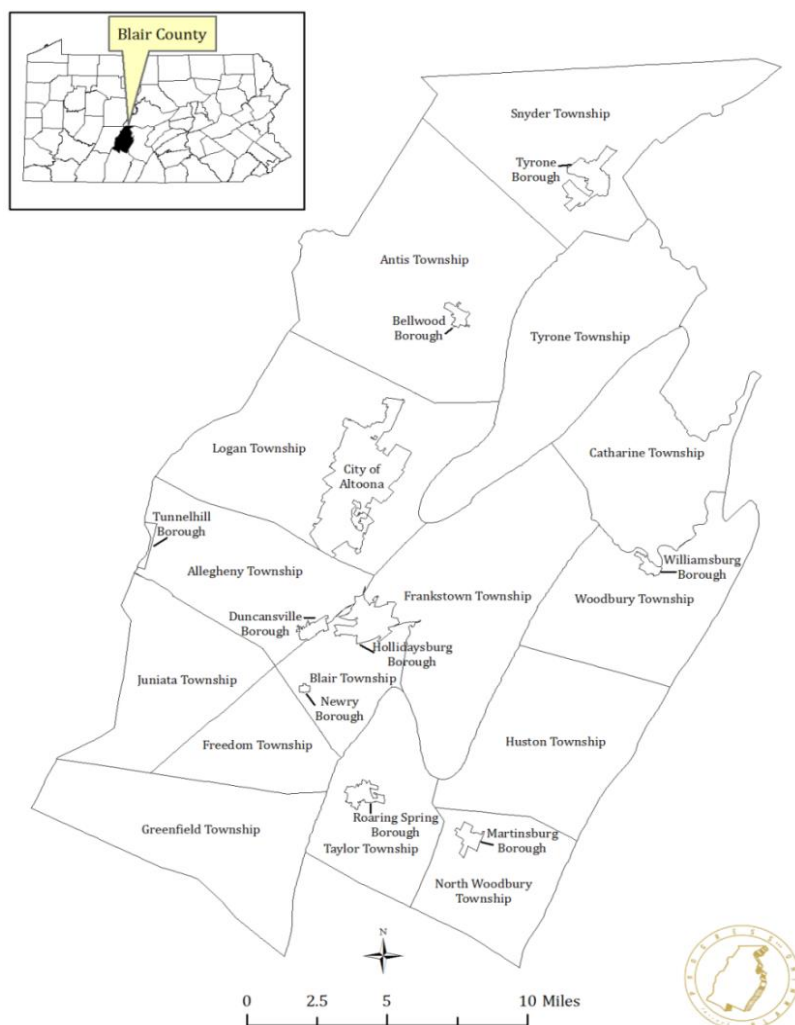
1.6 MULTI-JURISDICTIONAL PLANNING PARTICIPATION

Blair County's 25 municipalities (see Figure 1.2, page 6) were involved throughout both the hazard mitigation planning process. Municipal emergency management coordinators were informed about the project at their quarterly training sessions. Municipal officials provided information related to existing codes and ordinances, known hazard areas, the severity of past hazard events, and the location of critical facilities. Table 1.2 (page 6) shows the County officials who participated in the plan update through the Steering Committee. Municipalities also identified the mitigation measures they completed under the 2008 plan (listed in Appendix M on page 266). The municipalities also participated in the identification and ranking of project planning goals (see Chapter 3). Municipal officials also provided input on the hazard identification and risk assessment and hazard mitigation strategy sections of the plan. Municipal involvement in this hazard mitigation planning program was further emphasized during review of the draft plan and by adopting the final plan.

TABLE 1.1: MULTI-JURISDICTIONAL PLANNING PARTICIPATION

MUNICIPALITY	2008 ADOPTION DATE	2013 PARTICIPATION	2013 ADOPTION DATE
Blair County	June, 2008	Yes, see Section 1.6	
Altoona City	January 23, 2008	Yes, see Section 1.6	
Bellwood Borough	January 7, 2008	Yes, see Section 1.6	
Duncansville Borough	December 10, 2007	Yes, see Section 1.6	
Hollidaysburg Borough	September 9, 2010	Yes, see Section 1.6	
Newry Borough	September 8, 2010	Yes, see Section 1.6	
Martinsburg Borough	January 7, 2008	Yes, see Section 1.6	
Roaring Spring	August 9, 2010	Yes, see Section 1.6	
Tunnelhill Borough ¹	-	No, see note below	-
Tyrone Borough	February 11, 2008	Yes, see Section 1.6	
Williamsburg Borough	February 4, 2008	Yes, see Section 1.6	
Allegheny Township	January 17, 2008	Yes, see Section 1.6	
Antis Township	February 7, 2008	Yes, see Section 1.6	
Blair Township	January 8, 2008	Yes, see Section 1.6	
Catharine Township	January 2008	Yes, see Section 1.6	
Frankstown Township	September 7, 2010	Yes, see Section 1.6	
Freedom Township	January 7, 2008	Yes, see Section 1.6	
Greenfield Township	January 7, 2008	Yes, see Section 1.6	
Huston Township	September 2, 2010	Yes, see Section 1.6	
Juniata Township	January 3, 2011	Yes, see Section 1.6	
Logan Township	January 25, 2008	Yes, see Section 1.6	
North Woodbury Township	January 7, 2008	Yes, see Section 1.6	
Snyder Township	September 7, 2010	Yes, see Section 1.6	
Taylor Township	April 7, 2008	Yes, see Section 1.6	
Tyrone Township	February 14, 2011	Yes, see Section 1.6	
Woodbury Township	September 7, 2010	Yes, see Section 1.6	

¹ Tunnelhill Borough is split between Blair and Cambria Counties and generally identifies with Cambria County.

**FIGURE 1.2: BLAIR COUNTY MUNICIPALITIES****TABLE 1.2: MITIGATION STEERING COMMITTEE MEMBERS**

ORGANIZATION	NAME
Blair County Emergency Management Agency	Daniel Boyles
Blair County Emergency Management Agency	Stephen Michelone
Blair County Emergency Management Agency	Michael Wall
Blair County Planning Commission	David McFarland

1.7 THE PLANNING PROCESS

The Blair County Emergency Management Agency was responsible for the development and coordination of the original Hazard Mitigation Plan. To accomplish this task, a Mitigation Steering Committee comprised of representatives from FEMA, the Pennsylvania Emergency Management Agency (PEMA), various Blair County agencies, the Blair County Planning Commission (BCPC), the various municipalities, and the Blair County Emergency Management Agency was formed. The Mitigation Steering Committee met on an as-needed basis and the plan was developed over the course of one year. For the 2013 Plan, a Mitigation Steering Committee formed, and the committee met on a quarterly basis for two years, then on a bi-monthly basis for the first seven months of 2013 met with municipal representatives to complete the update. These final meetings were held on the last Thursday of January, March, May, and July. Documentation of all meetings is included in the Appendix C (page 79).

Efforts were made to solicit both municipal and public input throughout the planning process. Two series of public meetings were held during the formation of the plan. The committee was interested in obtaining the viewpoints of the residents on what hazards the county faced as well as any mitigation ideas that may have been forthcoming. The public meetings were open to residents, organizations, employers, community leaders, and anyone else interested in providing input. Three identical meetings were held in the northern, central, and southern areas of the county to provide better accessibility for all interested parties.

Comments received from the public proved valuable in the development and updating of the plan. Two important points made during the public meetings included the lack of what is now termed a "Special Needs Database" and a

potential communication gap between an EOC and the public should the power go out for an extended period. (Table 1.3) The first concern has been incorporated into this plan as a goal to be met in the coming five years. The County feels it can address the latter concern with internal procedural changes. Meeting documentation can be found in Appendix D (page 118).

TABLE 1.3: DISPOSITION OF PUBLIC COMMENTS

Public Concern Raised	How Addressed
Lack of "Special Needs Database"	Incorporated as major goal of this plan
No communication during power failure	Internal procedural changes at EMA

A number of organizations and individuals provided support through the development of the plan including the Blair County Emergency Management Agency, Blair County Planning Commission, Home Nursing Agency, LEMC, municipal police departments, borough secretaries/managers, a BCPC board member, Logan Township Planning Commission, City of Altoona Planning Commission, a Blair County LEPC member, municipal road foremen/road masters, municipal elected officials, county elected officials, municipal code enforcement, Tyrone Hospital, James E. Van Zandt VA Medical Center and two citizens. This support included provision of background materials, such as the County Comprehensive Plan, statistical event data, post-damage reports, historic event data, and hazard assessments; coordination with local municipalities and businesses; and administrative support with mailings and other information distribution efforts.

Ongoing meetings will be held throughout the five year life of the plan to ensure implementation and currency with the situation in Blair County. Ongoing meetings and plan implementation are discussed further in Section Five.

1.8 THE UPDATE PROCESS

The regulations intend that the approved plan serve as a stand-alone complete and current plan, not as an amendment to the another document. The new plan must provide information on the progress to fulfill the commitments and activities intended to be implemented through the adoption of the previously approved plan.

The plan update includes all newly identified hazards as well as more detailed information on existing hazards where it became available. Information for the plan update was gathered using the same resources that were utilized during the original plan development process, including available mapping from local and state agencies, municipal planning documents, and through coordination with EMA staff and municipal representatives.

The contents in Section One have been freshened, but generally not updated. The exceptions to this are 1.7 and 1.8, which directly address the development of this document. Those sections have been rewritten to reflect the planning and updating processes used to develop the 2013 update to the plan.

Section Two has been altered to assess the impact of the four hazards identified by the Committee as the most critical to Blair County. The prior plan focused almost exclusively on flooding, which is a major source of damage, to the detriment of other possibilities. The four hazards identified have been evaluated and are discussed in Section Two. The remaining hazards are identified briefly and are presented in Appendix E and F (pages 147 and 157).

Section Three was updated to reflect current capabilities, but overall has not changed much in terms of the content presented. The conclusion is that Blair County is capable of implementing this plan.

Section Four has been completely rewritten to reflect the new priorities imposed by identifying the four hazards to be addressed by the plan. This section was developed by the Committee at the meetings in January, March, and May of 2013. The goals and objectives are presented in priority order based on Committee consensus, and are intended to be implemented as a partnership between the County and each municipality. The hazards identified do not have significantly greater or lesser impacts between municipalities, and so were addressed as having equal potential countywide. The goals and objectives are based on the concept of empowering people through knowledge so they are better able to help themselves with less reliance on emergency response. This will enable responders to focus their resources where they are most needed.

Section Five on implementation and maintenance has been updated to match the way the plan has been developed as a method of implementation. The Committee will continue to meet at least twice each year to keep up to date on the implementation of the plan, assist with projects, and ensure the county-municipal partnerships are working. The Committee will also consider any public comment and participation that may occur. The plan maintenance, implementation, and participation concepts are fully discussed in Section Five.

Approaching the plan by evaluating the planning process, identifying and evaluating the hazards, and considering capability before developing goals and implementation has produced a document that the County and each municipality has been able to support and carry into the future.

- SECTION 2 -

**HAZARD IDENTIFICATION
AND RISK ASSESSMENT**

2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

2.1 HAZARD IDENTIFICATION

Based on historical occurrences specific to Blair County, the Mitigation Steering Committee developed a listing of known natural hazards to be addressed in this plan. These known natural hazards were identified through an extensive process that involved the following:

- input from the individual Steering Committee members, local officials, and the public;
- coordination with various federal, state, and local agencies;
- a review of natural disaster history specific to Blair County (see Table 2.1 on the next page for data for the previous 10 years);
- analysis of hazard identification and risk assessment publications at the state and local level;
- limited field reconnaissance;
- Internet research; and
- Review of NFPA 1600 hazards.

In addition, the Planning Commission's geographic information system (GIS) database was used as an important resource in identifying and mapping the County's infrastructure, critical facilities, and land uses. Data from this source and GIS data made available from other project participants (i.e., FEMA and PA DCNR) were used to determine those hazards that present the greatest risk to the County. GIS layers available were:

- Aerial Photography – PAMAPP Program
- Parcels – Blair County Assessment Office
- Structures – Blair County Department of Emergency Services
 - Critical facilities were derived from this data

- Roads – Various Sources
- Waterways – FEMA
- Watersheds – PA Department of Environmental Protection
- Special Flood Hazard Areas – FEMA
- Municipalities – Blair County Department of Emergency Services
- Existing Land Use – Blair County Planning Commission
- Future Land Use – Blair County Planning Commission

Man-made disasters have also occurred within Blair County. Examples include hazardous material incidents, fires, and explosions. Hazardous materials incidents are summarized in Table 2.2 on page 16. Other incidents include the Logan Valley Mall fire of 1994, the Smith Transport fire of 1994, the Lakemont explosion of 1998, and the New Pig fire of 2002. The tables in Appendix E (page 147) summarize the identification of hazards that are most likely to occur in Blair County.

Due to the lack of record of occurrence for these events, natural hazards such as avalanches, coastal storms, coastal erosion, tsunamis, glacier, tidal surge, expansive soil, sandstorms, famine, and volcanoes are not addressed in this plan.

TABLE 2.1: BLAIR COUNTY 10-YEAR DISASTER HISTORY

Location	Date	Hazard Type	Property Damage**
Countywide	1/6/2002	Heavy Snow	\$0
Countywide	3/9/2002	High Wind	\$0
Martinsburg	5/12/2002	Thunderstorm Wind	\$0
Altoona-Blair County Airport	5/12/2002	Thunderstorm Wind	\$0
Countywide	12/5/2002	Heavy Snow	\$0
Countywide	12/10/2002	Ice Storm	\$0
Countywide	12/25/2002	Heavy Snow	\$0
Countywide	1/2/2003	Flood	\$0
Countywide	1/2/2003	Heavy Snow	\$0
Countywide	2/16/2003	Heavy Snow*	\$0
Countywide	3/30/2003	Heavy Snow	\$0
Altoona	8/9/2003	Flash Flood*	\$250,000
Claysburg	8/26/2003	Thunderstorm Wind*	\$0
Countywide	9/18/2003	Tropical Storm Isabel/Henri*	\$0
Lakemont	9/27/2003	Flash Flood	\$0
Countywide	11/13/2003	High Wind	\$0
Altoona	11/19/2003	Flash Flood	\$0
Countywide	11/19/2003	Flood	\$0
Countywide	11/19/2003	Flood	\$0
Countywide	12/5/2003	Heavy Snow	\$0
Countywide	12/14/2003	Heavy Snow	\$0
Countywide	1/14/2004	Heavy Snow	\$0
Countywide	1/25/2004	Heavy Snow	\$0
Countywide	2/3/2004	Heavy Snow	\$0
Countywide	2/6/2004	Ice Storm	\$0
Claysburg	5/7/2004	Thunderstorm Wind	\$0
Altoona	5/21/2004	Flash Flood	\$0
Hollidaysburg	8/30/2004	Flash Flood - Tropical Depression Frances*	\$0
Countywide	9/8/2004	Flood	\$0
Countywide	9/9/2004	Flood	\$0
Countywide	9/17/2004	Flood - Tropical Depression Ivan*	\$0
Countywide	9/17/2004	Strong Wind - Tropical Depression Ivan*	\$4,540
Countywide	9/17/2004	Flood*	\$0
Countywide	12/1/2004	High Wind	\$0
Countywide	1/5/2005	Winter Storm	\$0
Countywide	1/6/2005	Flood	\$0
Countywide	1/22/2005	Winter Storm	\$0
Countywide	2/24/2005	Heavy Snow	\$0
Countywide	3/28/2005	Flood	\$0
Countywide	9/1/2005	Tropical Depression Katrina*	\$0
Hollidaysburg	11/6/2005	Thunderstorm Wind	\$0
Duncansville	11/6/2005	Thunderstorm Wind	\$0

Location	Date	Hazard Type	Property Damage**
Countywide	12/9/2005	Heavy Snow	\$0
Countywide	12/16/2005	Winter Storm	\$0
Countywide	2/17/2006	High Wind	\$0
Countywide	6/1/2006	Flood*	\$0
Duncansville	7/2/2006	Thunderstorm Wind	\$0
Hollidaysburg	7/2/2006	Thunderstorm Wind	\$0
Countywide	7/17/2006	Heat	\$0
Countywide	8/1/2006	Heat	\$0
Countywide	9/1/2006	Tropical Depression Ernesto*	\$0
Countywide	2/5/2007	Extreme Cold/Wind Chill*	\$0
Countywide	2/5/2007	Extreme Cold/Wind Chill*	\$0
Countywide	2/13/2007	Winter Storm*	\$0
Countywide	3/7/2007	Heavy Snow*	\$0
Mill run	6/8/2007	Thunderstorm Wind	\$0
Bellwood	6/12/2007	Thunderstorm Wind	\$0
Bellwood	6/12/2007	Thunderstorm Wind	\$0
Hollidaysburg	6/27/2007	Thunderstorm Wind	\$0
New Portage Junction	6/27/2007	Thunderstorm Wind	\$0
Lakemont	6/27/2007	Thunderstorm Wind	\$0
Altoona	6/27/2007	Thunderstorm Wind	\$0
Loop	6/27/2007	Thunderstorm Wind	\$0
Hollidaysburg	8/9/2007	Thunderstorm Wind	\$0
Countywide	12/16/2007	High Wind	\$0
Countywide	2/1/2008	Winter Storm	\$0
Countywide	2/10/2008	Extreme Cold/Wind Chill	\$0
Countywide	5/11/2008	High Wind	\$0
Ironville	6/16/2008	Thunderstorm Wind	\$0
Newry	6/26/2008	Thunderstorm Wind	\$0
Mill Run	6/26/2008	Thunderstorm Wind	\$0
Mill Run	7/20/2008	Thunderstorm Wind	\$0
Tyrone	7/24/2008	Thunderstorm Wind	\$0
Tyrone	7/24/2008	Hail	\$0
Altoona	7/24/2008	Thunderstorm Wind	\$0
Williamsburg	7/24/2008	Thunderstorm Wind	\$0
Countywide	9/14/2008	High Wind	\$0
Countywide	12/21/2008	Extreme Cold/Wind Chill	\$0
Countywide	1/6/2009	Ice Storm	\$0
Countywide	1/16/2009	Extreme Cold/Wind Chill	\$0
Countywide	2/12/2009	High Wind	\$100,000
Bellwood	6/20/2009	Flash Flood	\$25,000
Williamsburg	7/21/2009	Thunderstorm Wind	\$5,000
Sickles Corner	8/10/2009	Thunderstorm Wind	\$5,000
Countywide	10/7/2009	Strong Wind	\$5,000

Location	Date	Hazard Type	Property Damage**
Countywide	12/19/2009	Winter Storm	\$0
Countywide	2/5/2010	Winter Storm	\$0
Countywide	2/9/2010	Winter Storm	\$0
Mill Run	3/13/2010	Flood	\$0
Mill Run	4/16/2010	Thunderstorm Wind*	\$5,000
Altoona-Blair County Airport	4/16/2010	Thunderstorm Wind*	\$0
Canan	5/14/2010	Thunderstorm Wind	\$10,000
Roaring Spring	5/14/2010	Hail	\$0
Martinsburg	5/14/2010	Thunderstorm Wind	\$10,000
Tyrone	5/14/2010	Hail	\$0
Blue Knob	5/28/2010	Flash Flood	\$0
Puzzletown	12/1/2010	Flood	\$10,000
Countywide	2/1/2011	Winter Storm	\$0
Countywide	2/21/2011	Heavy Snow	\$0
Frankstown	3/10/2011	Flood	\$0
Williamsburg	3/10/2011	Flood	\$0
Tyrone	4/26/2011	Hail	\$0
Altoona-Blair County Airport	4/26/2011	Thunderstorm Wind	\$0
Altoona-Blair County Airport	4/28/2011	Hail	\$0
Countywide	6/10/2011	Thunderstorm Wind	\$5,000
Clappertown	7/29/2011	Thunderstorm Wind	\$5,000
Bennington	9/9/2011	Flash Flood	\$0
Juniata Gap Run	9/9/2011	Flash Flood	\$0
Mill Run	9/27/2011	Thunderstorm Wind	\$5,000
Countywide	10/29/2011	Heavy Snow	\$0
Countywide	2/24/2012	High Wind	\$0
Mill Run	5/27/2012	Thunderstorm Wind	\$5,000
Hollidaysburg	5/27/2012	Thunderstorm Wind	\$5,000
Williamsburg	5/27/2012	Thunderstorm Wind	\$5,000
Mill Run	6/1/2012	Thunderstorm Wind	\$5,000
Hollidaysburg	7/7/2012	Thunderstorm Wind	\$10,000
Hollidaysburg	7/26/2012	Thunderstorm Wind	\$0
Martinsburg	8/9/2012	Hail	\$0
Tyrone	9/8/2012	Thunderstorm Wind	\$5,000
Countywide	10/29/2012	High Wind	\$0
Countywide	12/26/2012	Winter Storm	\$0
Royer	1/30/2013	Thunderstorm Wind	\$5,000
Countywide	3/6/2013	Heavy Snow	\$0

Source: FEMA, PEMA, NCDC

* Federal/State disaster declaration

** Damage totals could be either \$0 or damage totals were not listed

2.2 HAZARD EVENT PROFILES

2.2.1 HAZARDOUS MATERIAL INCIDENT

2.2.1.1 OVERVIEW – HAZARDOUS MATERIAL INCIDENT

A hazardous material incident can occur anywhere, but is most commonly associated with transportation facilities and storage facilities. An incident occurs when material being transported or stored finds its way into the surrounding environment, posing a risk to life and/or property. Chemicals can also cause an incident during production and disposal if handled improperly or safety measures fail. Hazardous materials are found throughout the landscape, particularly in industrial areas, and are transported on the highways, railroads, and pipelines crisscrossing the county.

The stereotypical places for hazardous materials are not the only place they are found, however. We use various chemicals in everyday living to clean clothing, cars, and houses. We use chemicals for water purification, and fertilize lawns and gardens. Unfortunately, the criminal element of society uses chemicals to manufacture drugs and other paraphernalia to further their goals. Many of these examples are in residential neighborhoods; even in our own kitchens and bathrooms

People are blissfully unaware of the potential hazards surrounding them in the form of chemicals. It was determined that this lack of knowledge is a missing link in mitigating the potential for hazardous material incidents. Additionally, it is assumed the ongoing hazardous material training provided for responders and for the employees of the firms handling the chemicals is up-to-date and these people are aware of the risks and potential damage that can happen with these agents. The public most commonly interacts with large quantities of hazardous chemicals on the

transportation system. Therefore, the focus for the 2013 plan will be on education and identification of conflict points on the transportation network. In 2012, Blair County adopted a Transportation Emergency Response Plan for Hazardous Materials. Through this exercise, it was recognized that the transportation system is vulnerable to a hazardous material incident, and even with responder preparation, the public is unaware of what should be done relative to these incidents. Also during the development of that document, the current efforts in Blair County for training responders and providing a forum for interchange between the responder community and industry have gone a long way in addressing the hazardous material issue.

Responders in Blair County have been offered regular opportunities to participate in both “tabletop” and “on-site” simulation exercises, some of which involve hazardous material simulations. Additionally, responders attend other training exercises not tied to these events which keep them updated on proper techniques and the properties of the chemicals they may face. In addition to the training, Blair County hosts an annual SARA Summit each spring that brings various industries together with a focus on chemicals and response to incidents.

On the household side, Blair County offers an annual household waste collection day to assist people with the proper disposal of hazardous materials and other materials that have been deemed to be harmful to the environment. While the amount of these materials may seem insignificant to the individual, collectively they represent a significant amount that would otherwise be improperly disposed or simply kept in a cabinet, basement, garage, or shed for an indeterminate period of time where other harm may result. By offering this opportunity, the County provides a small measure of mitigation before an incident happens on a

residential property that could easily have been avoided.

2.2.1.2 PREVIOUS OCCURRENCES – HAZARDOUS MATERIAL INCIDENT

Data for hazardous material incidents in Blair County are reliable only back to 2009. The Table 2.2 on the next page shows the year and number of incidents annually involving hazardous materials. “Meth lab” incidents are considered a hazardous material incident and are included in the incident numbers. The County sees an average of seventeen incidents each year; between one and two a month. Transportation Statistics indicate that the average hazardous material incident costs between \$22,000 and \$28,000 to the community. The cost factors in equipment, responders, property loss, health issues, loss of use of the facility, and ancillary activity related to the incident (such as reporting and investigating).

Blair County has mapped all the SARA sites and has a handle on other large concentrations of potentially hazardous materials. Additionally, buffer zones have been established along the major transportation corridors for quick identification of at-risk properties should an incident occur. Buffer zones need to be established along routes used by facilities that are not on the major portion of the network.

It is planned that over the life of this plan that hazardous material incident data can be collected in a more robust form, including reliable location and chemical data that can be used without compromising the economic or proprietary interests of Blair County industry. This can likely be done by disaggregating the data so the chemical cannot be associated with the company in any public records, but will still enable research on location and material to be conducted to better mitigate the hazard.

TABLE 2.2: HISTORY OF HAZARDOUS MATERIALS INCIDENTS IN BLAIR COUNTY 2009-2012

Date	Hazardous Material Incidents
2009	17
2010	18
2011	17
2012	17

Source: Blair County EMA

2.2.1.3 HAZARD PROFILE – HAZARDOUS MATERIAL INCIDENT

Hazard Characteristics

The types of chemicals that can potentially be involved in an incident are too numerous to discuss in this format. Also, as this is a public document, publishing such characteristics and the effects on life and property could encourage wrong behavior. As such, this discussion will remain general.

Most chemicals that would be involved in a hazardous material incident will tend to stay in place unless acted on by gravity, water, or wind. Many, such as chlorine, will sink to the lowest depression and settle there. Therefore, the general advice concerning hazardous materials – move uphill, upstream, and upwind at least half a mile – inversely describes the characteristics of many hazardous material incidents.

Like many substances, most hazardous materials will be influenced by the effects of gravity. This will tend to keep the incident very localized, but very intense at the site. Without air or water movement, the incident site will remain the size necessary to contain the depressurized volume of the chemical. However, with movement of air or water, the incident area can quickly expand in the

direction of movement and affect a larger number of properties and people as the chemical is dispersed into the surrounding area. This makes for a larger incident area, but the concentration of the chemical is generally then less intense, making sheltering in place a viable option to protect the surrounding population.

Other incidents occur subtly and over a period of time before they are noticed. These may not even require emergency response, but still impact the general population. Included in this category are petroleum leaks from underground storage tanks, some pipeline leaks, and leachate leaking from landfills. The movement of the chemical is slow, but can have a significant impact if it comes into contact with water or air.

Characteristics of hazardous material incidents are diverse and the public needs to be made aware that proper response for one chemical may not conform to the “normal” advice given. An education campaign explaining where to turn for information, how to shelter or evacuate, and what to do if an unreported incident is discovered can all be covered in this campaign. Not only will this enable people to help themselves, but will also reduce the severity of the incident in the long run.

Probability of Occurrence

On average, seventeen incidents happen per year in Blair County. On any given day, there is a 4.7% chance of an incident involving hazardous materials occurring somewhere in the county. If an average incident affects everyone within a half mile of the incident point, the average citizen in Blair County has a 1.6% likelihood of being impacted by a hazardous material incident in any given year. This number is low as it is based on countywide numbers. Many of the chemical sites and the major portions of the transportation network are located where the larger portion of the population is. If we consider only the within a half-mile buffer of

the two US-designated highways, the railroads, and state highways 36, 453, and, the numbers change. Knowing the 17 incidents is a constant; the average resident living in these buffer zones sees a 2.9% likelihood of experiencing the effects of a hazardous material incident. Residents in the remainder of the county drop to 0.8%.

Severity

Severity of hazardous material incidents can vary. It can be limited to the loss of the material and minor facility damage and range upward to widespread contamination and loss of a community. For instance, if a gas pipeline were to rupture and be immediately reported, the severity would be low: the loss of a few feet of pipe and the gas that leaked. However, much larger incidents can occur with widespread destruction, such as fertilizer plant explosions, or incidents at nuclear facilities. Blair County has the potential to experience the full range of incident severity, particularly given the material transported by rail through the population center.

2.2.1.4 HAZARD VULNERABILITY – HAZARDOUS MATERIAL INCIDENT

Existing Community Assets

Since a hazardous material incident can occur countywide, or at any of a large number of points in the county, it is difficult to ascertain the vulnerability of existing community assets. Several manufacturing plants and municipal treatment plants are located, by necessity, along streams to take advantage of the water in the production process. Should an incident occur, it could result in the loss of the stream and impact land and communities downstream, including the drinking water supply. An incident on the transportation network would sever the network for a long period while reconstruction occurs. No schools are impacted by on-site

storage, but could be affected if a transportation incident occurs nearby.

An incident at or near the Canan Station intermodal facility could have widespread impact. The incident would have the potential to shut down both US 220/I-99 and US 22, the major north-south and east-west highway corridors in the region. It also could contaminate the nearby stream and impact downstream water users and land owners. More immediate to the site, it is surrounded by commercial and residential land uses in an area with few good evacuation options.

Future Development

The long-term land use vision for the county separates the most egregious chemical sites from the surrounding community, and newer industrial building and operation codes are in place to ensure the safety of these sites. That stated, future non-industrial development will be encouraged to locate away from the more intense sites when possible to minimize the impact on those not directly involved with the industry.

2.2.1.5 CONCLUSION – HAZARDOUS MATERIAL INCIDENT

A hazardous material incident can occur anywhere such chemicals are manufactured, stored, transported, or disposed. This means large areas of Blair County are exposed to this risk, especially including the population center in and around the Altoona-Duncansville-Hollidaysburg triangle. The safest location in the county is the Williamsburg Community School District area with little through traffic and no known storage, manufacturing, or disposal sites.

Hazardous material incident training for responders and industry people is robust and ongoing, with those involved keeping themselves up to date on techniques, handling,

and chemical properties. A large hole is the blissful ignorance of the general public which does not realize what is actually present in Blair County. Education on the various aspects of hazardous materials including an overview of what is in the county, what to do in the event of an incident, and self-preservation actions is needed so people are better prepared if faced with an incident.

Finally, the community needs an understanding of where the weak points are in the transportation system (highway, rail, pipeline, and air) so these can be improved. The transportation system is the place the general public is most likely to come into contact with – or possibly cause, due to ignorance – a hazardous material incident. Steps can be taken as a result of the studies proposed to strengthen any weak points identified.

2.2.2 HIGH WIND

2.2.2.1 OVERVIEW – HIGH WIND

High wind can occur anywhere in Blair County, with ridge tops being particularly vulnerable. Likewise, certain valleys, hollows, and gaps can experience high winds if the prevailing direction of air movement is angled into the feature and funneled through, resulting in high speed scouring winds.

Table 2.3 shows the probability of winds that reach the strength of tropical storms and hurricane conditions in Blair and surrounding counties. The table includes wind speeds for all types of storms, not only storms that are cyclones. Cyclones are storm events like Nor'easters and severe winter low-pressure systems. Both West and East coasts can experience these non-tropical storms that produce gale-force winds and precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called Nor'easters on the East Coast because of the direction of the storm winds, can last for

several days and can be very large – 1,000-mile wide storms are not uncommon. That table shows that in Blair County and surrounding areas, the annual probability for strong winds that equal the strength of tropical storms (over 45 mph) is over 91 percent, and the probability for winds at hurricane strength is more than 8 percent in any given year. However, winds of 119 mph or above have less than 0.1 percent chance of occurring in any given year.

TABLE 2.3: HIGH WIND PROBABILITY FOR BLAIR COUNTY AREA

Wind Speed (mph)	Corresponding Saffir-Simpson Hurricane Categories	Annual Probability of Occurrence (%)
45-77	Tropical Storms	91.592
78-118	Hurricane Categories 1 to 2	8.322
119-138	Hurricane Categories 3 to 4	0.077
139-163	Hurricane Categories 4 to 5	0.009
164-194	Hurricane Category 5	0.001

Source: Tornado & Hurricane Shelter Model of “Benefit Cost Analysis of Hazard Mitigation Projects”, developed by FEMA

As indicated in Table 2.3, the wind speeds with the greatest probabilities of occurrence, 45 to 77 mph and 78 to 118 mph, correspond to tropical storms and hurricane categories one and two. The expected damages of storms of this magnitude can be determined by using the Saffir-Simpson scale as shown in Table 2.4.

The expected damages from the wind speeds most likely to be encountered in Blair County are considered under this scale to be “minimal”

to “moderate”. However, these events can still topple trees, knock out power, and cause severe damage to manufactured homes.

TABLE 2.4: SAFFIR-SIMPSON SCALE FOR WIND SPEEDS

Category	Wind Speed, mph	Expected Damage
1	74-95	Minimal: Damage is done primarily to shrubbery and trees, unanchored mobile homes are damaged, some signs are damaged, no real damage is done to structures.
2	96-110	Moderate: Some trees are toppled, some roof coverings are damaged, and major damage is done to mobile homes.
3	111-130	Extensive: Large trees are toppled, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131-155	Extreme: Extensive damage is done to roofs, windows, and doors; roof systems on small buildings completely fail; some curtain walls fail.
5	>155	Catastrophic: Roof damage is considerable and widespread, window and door damage is severe, there are extensive glass failures, and entire buildings could fail.

Source: NCDC website (www.nhc.noaa.gov/aboutshs.shtml)

A tornado, a violently rotating funnel-like vortex, is an extraordinary feature of severe thunderstorms. A condensation funnel does not need to reach to the ground for a tornado to be present; a debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado, even in the total absence of a funnel. While the extent of tornado damage is usually localized, the extreme winds of this vortex can be among the most destructive on earth when they move through populated, developed areas. The Fujita Tornado Scale (or the “F-Scale”) classifies US tornadoes into six intensity categories, named F0 to F5, based upon the estimated maximum winds occurring within the funnel. The F-Scale has subsequently become the definitive metric for estimating wind speeds within tornadoes based upon the damage done to buildings and structures.

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

2.2.2.2 PREVIOUS OCCURRENCES – HIGH WIND

Tornadoes have occurred in Pennsylvania in all seasons and in all parts of the state, but the western and southeastern portions have been more frequently struck. Blair County has a history of tornadoes; however, none have been reported in the last 10 years. Historically tornadoes in the County have been rated F-1 and lower. Table 2.5 on the next page summarizes reported high winds, in Blair County over the last 10 years.

2.2.2.3 HAZARD PROFILE – HIGH WIND

Hazard Characteristics

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

The length of the tornado path and the width of tornadoes can vary greatly. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times.

TABLE 2.5: HISTORY OF HIGH WINDS IN BLAIR COUNTY 2002-2012

Location	Date	Hazard type	Property Damage
Countywide	3/9/2002	High wind	\$0
Martinsburg	5/12/2002	Thunderstorm wind	\$0
Altoona- Blair County Airport	5/12/2002	Thunderstorm wind	\$0
Claysburg	8/26/2003	Thunderstorm wind	\$0
Countywide	11/13/2003	High wind	\$0
Claysburg	5/7/2004	Thunderstorm wind	\$0
Countywide	9/17/2004	Strong wind	\$4,540
Countywide	12/1/2004	High wind	\$0
Hollidaysburg	11/6/2005	Thunderstorm wind	\$0
Duncansville	11/6/2005	Thunderstorm wind	\$0
Countywide	2/17/2006	High wind	\$0
Duncansville	7/2/2006	Thunderstorm wind	\$0
Hollidaysburg	7/2/2006	Thunderstorm wind	\$0
Mill run	6/8/2007	Thunderstorm wind	\$0
Bellwood	6/12/2007	Thunderstorm wind	\$0
Bellwood	6/12/2007	Thunderstorm wind	\$0
Hollidaysburg	6/27/2007	Thunderstorm wind	\$0
New Portage Junction	6/27/2007	Thunderstorm wind	\$0
Lakemont	6/27/2007	Thunderstorm wind	\$0
Altoona	6/27/2007	Thunderstorm wind	\$0
Loop	6/27/2007	Thunderstorm wind	\$0
Hollidaysburg	8/9/2007	Thunderstorm wind	\$0
Countywide	12/16/2007	High wind	\$0
Countywide	5/11/2008	High wind	\$0
Ironville	6/16/2008	Thunderstorm wind	\$0
Newry	6/26/2008	Thunderstorm wind	\$0
Mill Run	6/26/2008	Thunderstorm wind	\$0
Mill Run	7/20/2008	Thunderstorm wind	\$0
Tyrone	7/24/2008	Thunderstorm wind	\$0
Altoona	7/24/2008	Thunderstorm wind	\$0
Williamsburg	7/24/2008	Thunderstorm wind	\$0
Countywide	9/14/2008	High wind	\$0
Countywide	2/12/2009	High wind	\$100,000
Williamsburg	7/21/2009	Thunderstorm wind	\$5,000
Sickles Corner	8/10/2009	Thunderstorm wind	\$5,000
Countywide	10/7/2009	Strong wind	\$5,000
Mill Run	4/16/2010	Thunderstorm wind	\$5,000
Altoona-Blair County Airport	4/16/2010	Thunderstorm wind	\$0
Canan	5/14/2010	Thunderstorm wind	\$10,000
Martinsburg	5/14/2010	Thunderstorm wind	\$10,000
Altoona-Blair County Airport	4/26/2011	Thunderstorm wind	\$0
Countywide	6/10/2011	Thunderstorm wind	\$5,000
Clappertown	7/29/2011	Thunderstorm wind	\$5,000
Mill run	9/27/2011	Thunderstorm wind	\$5,000
Countywide	2/24/2012	High wind	\$0
Mill Run	5/27/2012	Thunderstorm wind	\$5,000
Hollidaysburg	5/27/2012	Thunderstorm wind	\$5,000

Location	Date	Hazard type	Property Damage
Williamsburg	5/27/2012	Thunderstorm wind	\$5,000
Mill run	6/1/2012	Thunderstorm wind	\$5,000
Hollidaysburg	7/7/2012	Thunderstorm wind	\$10,000
Hollidaysburg	7/26/2012	Thunderstorm wind	\$0
Tyrone	9/8/2012	Thunderstorm wind	\$5,000
Countywide	10/29/2012	High wind	\$0
Royer	1/30/2013	Thunderstorm wind	\$5,000

Source: NCDC

Probability of Occurrence/Severity

According to the National Weather Service, the Commonwealth of Pennsylvania has an annual average of ten tornadoes with two related deaths. The weather service states the probability of actually being in the path of a tornado in any given year in Blair County is quite small, on the order of 0.03 percent. Another way of visualizing this number is that you would have to stand on the same spot for about 30,000 years to be reasonably certain of being in the direct path of a tornado.

Conversely, a high wind event can easily encompass the entire county. Blair County experiences about a half dozen high wind events each year, blowing over trees, causing roof damage, cutting power, and producing other calamities. Based on an analysis of the trends, we expect the number of incidents to remain relatively constant during the five-year life of the plan.

While the chance is small, the damage that results when the tornado arrives is devastating. A tornado with an “F4” designation can carry a wind velocity of 200 mph resulting in a force of more than 100 pounds per square foot of surface area, a “wind load” that exceeds the design limits of most buildings. Refer to Table 2.6 for a list of expected damages.

In February 2007, the Enhanced Fujita (EF) Scale became operational. The scale was updated to clearly define and easily identify additional damage indicators, such as a buildings, structures, and trees. The new

damage indicators allow the National Weather Service teams to appropriately identify a tornado’s scale rating. The EF Scale is not further discussed in this document because Blair County has no recorded incident of a tornado since the scale was adopted.

TABLE 2.6: FEMA TORNADO EXPECTED DAMAGES

Tornado F-Scale	Expected Damage
F0	Light damage: Some damage to chimneys; branches break from trees and show-rooted trees pushed over; damage to sign boards.
F1	Moderate damage: Peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off road.
F2	Considerable damage: Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	Severe damage: Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	Devastating damage: Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible damage: Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur.

Source: FEMA

A useful tool for determining vulnerability to the winds that result from hazard events like tornadoes (and tropical cyclones) is depicted in Figure 2.1. This map of design wind speeds,

wind zones, and areas susceptible to wind damage was developed by the American Society of Civil Engineers and identifies wind speeds to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities.

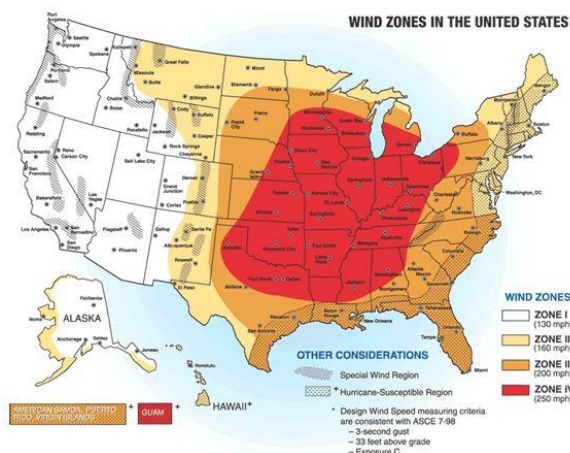


FIGURE 2.1: WIND ZONE

2.2.2.4 HAZARD VULNERABILITY – HIGH WIND

Existing Community Assets

Since high wind events may affect the entire County, it is important to identify specific critical facilities and assets that are most vulnerable to the hazard. Evaluation criteria include age of the building, what building codes may have been in effect at the time of construction, type of construction, condition of the structure, and how well the structure has been maintained. Note that individual structure data is not consistently recorded in Blair County, so it was not possible to determine the exact number and types of structures within the county that have heightened vulnerability to wind hazards.

Future Development

All Blair County communities have adopted the Uniform Construction Code (UCC) as their building code, which increases the probability

that new construction will be able to resist design wind loads. Development patterns are expected to continue the trends of the past quarter century. A comparison of existing and future land uses is presented in Appendices G and H (pages 171 and 173).

2.2.3 STRONG STORMS

2.2.3.1 OVERVIEW – STRONG STORMS

Strong storms occur year-round, cover large area and typically take the form of tropical storms and winter storms. Primary elements associated with these storms are high winds, heavy precipitation and the lingering effects caused by these elements.

Winter storms consist of cold temperatures and heavy snow or ice. Because winter storms are regular, annual occurrences in Pennsylvania, they are considered hazards only when they result in damage to specific structures and/or overwhelm local capabilities to handle disruptions to traffic, communications and electric power.

Blair County experienced some of its worst damage as the result of tropical storms. While Blair County is located too far inland to be impacted by all of the common hazards associated with a tropical storm event such as severe winds and coastal storm surge, it is susceptible to the significant rainfall and associated flooding that accompanies these medium-probability events. Like most states along the eastern seaboard, Pennsylvania has had its share of tropical-storm related events, usually in the form of heavy rainfall and winds. Although the Commonwealth does not have coasts along the Atlantic Ocean, tropical storms have traversed the state and affected Blair County. Previous occurrences, including Agnes in 1972, Beryl in 1994, Dennis and Floyd in 1999, and Ivan in 2004 have brought intense rainfall, sometimes leading to damaging floods (see the preceding portion of this section

regarding Floods for more information). These storms also brought strong northeast winds, which, combined with waterlogged soils, caused trees and utility poles to fall. . The 2004 Ivan event resulted in the flood of record for both the Frankstown Branch of the Juniata River and the Little Juniata River.

2.2.3.2 PREVIOUS OCCURRENCES – STRONG STORMS

The Commonwealth of Pennsylvania has a long history of strong storms. In the winter of 1993-4, the state was hit by a series of protracted winter storms. The severity and nature of these storms combined with accompanying record-breaking frigid temperatures posed a major threat to the lives, safety and well-being of Commonwealth residents and caused major disruptions to the activities of schools, businesses, hospitals, and nursing homes.

The first of these devastating winter storms occurred in early January with record snowfall depths (in excess of 33 inches in the southwest and south-central portions of the Commonwealth), strong winds and sleet/freezing rains. Numerous storm-related power outages were reported, and as many as 600,000 residents were without electricity, in some cases for several days at a time. A ravaging ice storm followed, affecting the southeastern portion of the Commonwealth, which closed major arterial roads and downed trees and power lines. Utility crews from a five-state area were called to assist in power restoration repairs. Officials from PP&L stated that this was the worst winter storm in the history of the company, and related damage-repair costs exceeded \$5,000,000.

Serious power supply shortages continued through mid-January because of record cold temperatures at many places, causing sporadic power generation outages across the Commonwealth. The entire Pennsylvania-New

Jersey-Maryland grid and its partners in the District of Columbia, New York and Virginia experienced 15- to 30-minute rolling blackouts, threatening the lives of people and the safety of the facilities in which they resided. Power and fuel shortages affecting Pennsylvania and the East Coast power grid system required the Governor to recommend power conservation measures be taken by all commercial, residential, and industrial power consumers.

The record cold conditions resulted in numerous water-main breaks and interruptions of service to thousands of municipal and city water customers throughout the Commonwealth. Additionally, the extreme cold in conjunction with accumulations of frozen precipitation resulted in acute shortages of road salt. As a result, trucks were dispatched to haul salt from New York to expedite deliveries to PennDOT storage sites.

During January and February 1994, Pennsylvania experienced at least 17 regional or statewide storms. The consequences resulted in the need for intervention by the President in an effort to alleviate the severity of the hardship and to aid the recovery of the hardest-hit counties.

In January 1996, another series of severe winter storms with 27- and 24-inch accumulated snow depths were followed by 50 to 60 degree temperatures resulting in rapid melting and flooding. Strong storm data for the past 10 years is summarized on the next page in Table 2.7. Furthermore, storms in winter may be more severe at higher altitudes.

TABLE 2.7: HISTORY OF STRONG STORMS IN BLAIR COUNTY 2002-2012

Date	Hazard Type	Property Damage
1/6/2002	Heavy Snow	\$0
12/5/2002	Heavy Snow	\$0
12/10/2002	Ice Storm	\$0
12/25/2002	Heavy Snow	\$0
1/2/2003	Heavy Snow	\$0
2/16/2003	Heavy Snow	\$0
3/30/2003	Heavy Snow	\$0
12/5/2003	Heavy Snow	\$0
12/14/2003	Heavy Snow	\$0
1/14/2004	Heavy Snow	\$0
1/25/2004	Heavy Snow	\$0
2/3/2004	Heavy Snow	\$0
2/6/2004	Ice Storm	\$0
1/5/2005	Winter Storm	\$0
1/22/2005	Winter Storm	\$0
2/24/2005	Heavy Snow	\$0
12/9/2005	Heavy Snow	\$0
12/16/2005	Winter Storm	\$0
2/13/2007	Winter Storm	\$0
3/7/2007	Heavy Snow	\$0
2/1/2008	Winter Storm	\$0
1/6/2009	Ice Storm	\$0
12/19/2009	Winter Storm	\$0
2/5/2010	Winter Storm	\$0
2/9/2010	Winter Storm	\$0
2/1/2011	Winter Storm	\$0
2/21/2011	Heavy Snow	\$0
10/29/2011	Heavy Snow	\$0
12/26/2012	Winter Storm	\$0
3/6/2013	Heavy Snow	\$0

2.2.3.3 HAZARD PROFILE – STRONG STORMS**Hazard Characteristics**

Strong storms affecting Blair County begin as low-pressure systems that move through Pennsylvania either following the jet stream from the west or developing as extra-tropical cyclonic weather systems over the Atlantic Ocean from the south called “Nor’easters.” The effects of these storms can sometimes last for weeks, bringing several inches of rain or ice or a foot or two of snow.

Probability of Occurrence

Strong storms occur on the average of 54 times a year in Pennsylvania, with about 20% of these storms affecting the county. Blair County annually receives an average of 97.3 inches of precipitation. Note, however, that snowfall varies considerably from one year to the next in Blair County. Like the high wind events, we expect the number of strong storms affecting the county to remain relatively constant (about 11 each year) through the five-year life of the plan.

Severity

A strong storm can adversely affect roadways, utilities, business activities and can cause loss of life, injury, illness, and property damage. Strong storms may contain one or more hazardous weather events, including heavy rain, ice, heavy snow, sleet, and high winds. Some contain hail, lightning, and tornadoes as well.

Some rural areas of the county are susceptible to isolation during major storms due to power and communication loss, as well as road closings. Emergency medical, food, and fuel supplies are sometimes required during these storms. About 20 percent of the County’s population lives in such areas. Furthermore,

storms in winter may be more severe at higher altitudes.

2.2.3.4 HAZARD VULNERABILITY - STRONG STORMS

Existing Community Assets

Storm events would likely affect the entire County. Strong storms are cyclonic in nature and therefore typically cover a large area and have a lot of power and precipitation associated with them. The basic effects of the strong storms are the same year round, with severed transportation systems, power outages, and structural damage to buildings. However, there are some specific additional effects associated with winter storms, discussed below.

Wintertime snow accumulations are expected and normal in Blair County. The most common, but potentially serious effect of very heavy snowstorms with accumulations exceeding six or more inches in a 12-hour period are traffic accidents; interruptions in power supply and communications; and the failure of inadequately designed and/or maintained roofing systems. Similar to the discussion under tornadoes and wind storms, vulnerability to the effects of winter storms on buildings is dependent on the age of the building, what building codes may have been in effect at the time of construction, type of construction, condition of the structure, and how well has the structure been maintained. Individual structure data is not maintained consistently in Blair County, so it was not possible to determine the exact number and types of structures within the county that have heightened vulnerability to winter-storm snow loading.

Associated effects of strong storms include high winds and flooding, both of which are discussed elsewhere as separate hazards.

Future Development

All Blair County communities have adopted the UCC as their building code, which increases the probability that new construction will be able to resist design snow loads, high winds, and ensures proper treatment for flooding. The building code also addresses water runoff to prevent foundation and basement damage from excessive rain. Development patterns are expected to continue as per historical trends in the past quarter century. A comparison of existing and future land uses is presented in Appendices G and H (pages 171 and 173).

2.2.3.5 CONCLUSION - STRONG STORMS

Blair County is vulnerable to tropical storms coming inland, which can cause heavy rainfall and subsequent flooding. There were several major events in the 2000's that caused record flooding levels and damages. The hazard analysis shows that Blair County is also vulnerable to possible tornado activity. Blair County is vulnerable to thunderstorms which can cause high winds, heavy rainfall and subsequent flooding.

Pennsylvania and Blair County experience several winter storms every year that can create power loss, among other obvious adverse effects. Heavy snowstorm, sleet storm, ice storm, blizzard and severe blizzard are the types of winter storms possible in Blair County. Due to the frequency of past events and a relatively high annual probability for high snow depths, winter storms are very likely to continue affecting normal activity in the County in the coming years.

2.2.3.6 WHAT CAN BE MITIGATED?

The nature of many strong storms is that the entire County can be affected. There are no hazard zones, and every area within the County is equally exposed, although weather impacts may vary somewhat according to topography

and other factors. For all strong storm events aged, dilapidated, or buildings not adequately built or not built to applicable building codes are more susceptible to storm hazards. Heavy snow can collapse roofs on houses, or cause total failure of poorly constructed structures. Aged or otherwise compromised structures are also susceptible to snow loads. For that reason, vulnerability and determining what can be mitigated are described in terms of structures or infrastructure that are most vulnerable to the hazard.

2.2.4 FLOODING

2.2.4.1 OVERVIEW – FLOODS

A flood is a natural event for rivers and streams. For inland areas like Central Pennsylvania, excess water from snowmelt or rainfall accumulates and overflows onto the stream banks and adjacent floodplains. As illustrated in Figure 2.2, floodplains are lowlands, adjacent to rivers, streams and creeks that are subject to recurring floods.

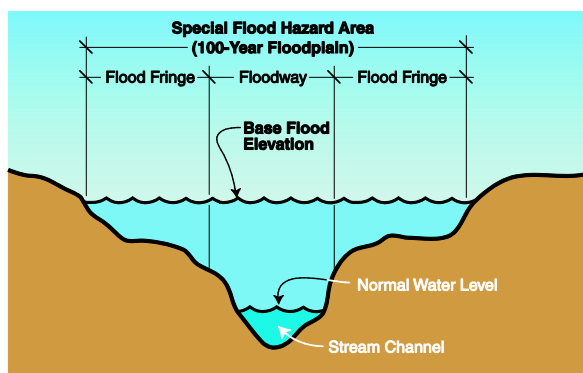


FIGURE 2.2: FLOODPLAIN TERMINOLOGY

Floods are considered hazards when people and property are affected. Nationwide, hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories. In Pennsylvania, flooding occurs commonly and can occur during any season of the year from a variety of sources. Every two to three years, serious flooding occurs along one

or more of Pennsylvania's major rivers or streams, and it is not unusual for this to occur several years in succession. Most injuries and deaths from flooding happen when people are swept away by flood currents and most property damage results from inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity and duration, topography and ground cover. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also result in floods in locations where the soil is frozen or saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas.

2.2.4.2 PREVIOUS OCCURRENCES – FLOODS

Blair County has a long history of flooding problems from numerous major floods and localized flash flooding. According to the County's Areawide Comprehensive Plan, historical flooding problem areas include Mill Run, the Frankstown Branch of the Juniata River near Frankstown at Lind's Crossing and Williamsburg Borough, and the Little Juniata River near Bellwood Borough and Tyrone Borough. Table 2.8 lists some of the significant flood events in Blair County over more than 10 years.

2.2.4.3 HAZARD PROFILE – FLOODS

Hazard Characteristics

In Central Pennsylvania, including Blair County, there are seasonal differences in the causes for floods. In the winter and early spring (February to April), major flooding has occurred as a result of heavy rainfall on dense snowpack throughout contributing watersheds, although the snowpack is generally moderate during most winters. Winter floods also have resulted

from runoff of intense rainfall on frozen ground, and local flooding has been exacerbated by ice jams in rivers, streams and creeks.

TABLE 2.8: HISTORY OF FLOODING IN BLAIR COUNTY 2002-2012

Location	Date	Hazard Type	Property Damage
Countywide	1/2/2003	Flood	\$0
Altoona	8/9/2003	Flash Flood	\$250,000
Lakemont	9/27/2003	Flash Flood	\$0
Altoona	11/19/2003	Flash Flood	\$0
Countywide	11/19/2003	Flood	\$0
Countywide	11/19/2003	Flood	\$0
Altoona	5/21/2004	Flash Flood	\$0
Hollidaysburg	8/30/2004	Flash Flood	\$0
Countywide	9/8/2004	Flood	\$0
Countywide	9/9/2004	Flood	\$0
Countywide	9/17/2004	Flood	\$0
Countywide	9/17/2004	Flood	\$0
Countywide	1/6/2005	Flood	\$0
Countywide	3/28/2005	Flood	\$0
Bellwood	6/20/2009	Flash Flood	\$25,000
Mill Run	3/13/2010	Flood	\$0
Blue Knob	5/28/2010	Flash Flood	\$0
Puzzletown	12/1/2010	Flood	\$10,000
Frankstown	3/10/2011	Flood	\$0
Williamsburg	3/10/2011	Flood	\$0
Bennington	9/9/2011	Flash Flood	\$0
Juniata Run Gap	9/9/2011	Flash Flood	\$0

Source: NCDC

Summer floods have occurred from intense rainfall on previously saturated soils. Summer thunderstorms that deposited large quantities of rainfall over a short period of time have also produced flash flooding. In addition, as detailed in the Strong Storms section of the plan, the Commonwealth occasionally receives intense

rainfall from tropical storms in late summer and early fall.

The most severe flooding in Central Pennsylvania has been associated with the Susquehanna River Basin, which is the largest watershed on the Atlantic seaboard of the United States and drains directly into the Chesapeake Bay. In addition, the tributaries of the Susquehanna River located within Blair County – the Little Juniata River and the Frankstown Branch – are major sources of flooding within Blair County. The main tributaries of the Little Juniata River include Bald Eagle Creek, Sinking Creek, and Spruce Creek. The main tributaries of the Frankstown Branch include Beaverdam Branch, Blair Gap Run, Canoe Creek, Piney Creek, and Clover Creek.

There are two standard water gauges that provide data on river flows and flood stages on Blair County streams. The first is located on the Frankstown Branch of the Juniata River in Williamsburg. Annual data is provided in Table 2.9 on the next page. The second is located just downstream from Blair County along the Little Juniata River at Spruce Creek, with data shown on the next page in Table 2.10. As is common with streams nationwide, the flooding has grown more frequent and more severe as the amount of developed land upstream increases. The worst flood on record for Blair County occurred in conjunction with the passage of Ivan in 2004. On 9/18/2004, the Frankstown Branch of the Juniata River at Williamsburg was observed to crest at 19.46 feet, which is the all-time record crest in Blair County.

TABLE 2.9: PEAK ANNUAL DISCHARGE AND STAGE FOR THE FRANKSTOWN BRANCH OF THE JUNIATA RIVER AT WILLIAMSBURG

Water Year	Actual Date	Discharge (cf/s)	Stage (ft)	Surface Elevation
2002	5/18/2002	5,190	10.57	842.32
2003	1/2/2003	8,690	13.49	845.24
2004	9/18/2004	18,000	19.46	851.21
2005	1/6/2005	5,650	10.99	842.74
2006	11/30/2005	6,190	11.44	843.19
2007	8/21/2007	5,090	10.48	842.23
2008	3/5/2008	6,620	11.80	843.55
2009	12/20/2008	4,740	10.14	841.89
2010	3/14/2010	9,130	13.56	845.31
2011	12/1/2010	11,600	15.27	847.02
2012	11/23/2011	6,260	11.24	842.99

Source: USGS

TABLE 2.10: PEAK ANNUAL DISCHARGE AND STAGE FOR THE LITTLE JUNIATA RIVER AT SPRUCE CREEK

Water Year	Actual Date	Discharge (cf/s)	Stage (ft)	Surface Elevation
2002	3/26/2002	6,150	8.04	759.19
2003	1/2/2003	5,660	7.72	758.87
2004	9/18/2004	22,100	15.46	766.61
2005	1/6/2005	4,790	7.27	758.42
2006	11/29/2005	6,790	8.74	759.89
2007	11/16/2006	3,420	6.13	757.28
2008	3/5/2008	4,930	7.46	758.61
2009	6/20/2009	3,530	6.37	757.52
2010	3/14/2010	8,540	9.84	760.99
2011	12/1/2010	10,700	11.03	762.18

Source: USGS

Dam failures can also pose a serious flood threat to communities located downstream from major dams. The worst dam failure to occur in the Commonwealth resulted in the Johnstown flood of 1889, which claimed 2,100 lives. The County has one dam (Mill Run) that is classified by DEP in the highest hazard category (A-1), because it poses a potential significant threat to residents and property. Inundation maps for this dam have been prepared and are on file with the Altoona City Authority. The county dams are listed on page 31 in Table 2.11 by DEP classification, in descending order of hazard. Table 2.12, found on page 31, defines the types of hazard classes listed in Table 2.11.

The hazard-class letter designation relates to hydraulic potential (height and/or storage), and the number relates to downstream population. Within each classification, the dams are listed below by descending order of hydraulic potential and population. The hazard from these dams is limited by structural integrity and inspection programs (which are regulated by DEP), and thus the relative risk is considered low. There have been no documented dam failures in Blair County for more than 25 years. Note that the vulnerability to dam failure is essentially the same as for other flooding events.

There have been two dam failures of note in Blair County history. The first occurred with the same storm that triggered the Johnstown flood in 1889. There is little record of this failure since a much larger disaster happened just over the ridge line. The original Mill Run Dam reservoir swelled over capacity with water overtopping the crown of the dam and running down its breast. This quickly compromised the structural integrity of the dam, which shortly gave way. The resulting wall of water removed all downstream structures in its path for approximately one mile. At that point, the debris field caught on the Three Culverts Bridge of the Pennsylvania Railroad, which prevented

the deluge from entering Altoona on the other side. Water flowed through the debris at a manageable rate, and the mess cleaned up in the ensuing days.

The second dam failure occurred in Ganister in 1936. The Three Mile Dam on the Frankstown Branch of the Juniata River gave way during a storm due to lack of maintenance. The resulting flow downstream removed the Ganister Spur rail bridge, the Route 230 (now 866) bridge, the paper mill bridge in Williamsburg, and the High Street Bridge in Williamsburg. It also did extensive damage to the paper mill itself, and flooded the lower blocks of the borough. The debris caught on the Petersburg Branch railroad bridge east of Williamsburg, preventing further downstream destruction.

Probability of Occurrence

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. The National Flood Insurance Program (NFIP) uses historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year.

A specific flood that is used for a number of purposes is called the “base flood”, which has a one percent chance of occurring in any particular year. The base flood is often referred to as the “100-year flood” since its probability of occurrence suggests it should reoccur once every 100 years, although this is not the case in practice. Experiencing a 100-year flood does not mean a similar flood cannot 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 one percent chance of occurring in any given year.

TABLE 2.11: DEP CLASSIFIED DAMS IN BLAIR COUNTY

Name	Owner	Hazard Class*	Municipality
Mill Run	Altoona City Authority	A-1	Logan Township
Hollidaysburg Muleshoe Reservoir	Hollidaysburg Borough Authority	B-1	Hollidaysburg Borough
Tipton	Altoona City Authority		Antis Township
Lake Altoona			Logan Township
Bellwood			Antis Township
William L. Cochran Impounding			Logan Township
Kettle Dam			Tyrone Township
Tyrone Reservoir #2	Tyrone Borough		Tyrone Borough
Plane Nine	Altoona City Authority		Duncansville Borough
Upper Kittanning			Logan Township
Canoe Creek	DCNR		Frankstown Township
Blair Gap	Altoona City Authority	B-2	Allegheny Township
Allegheny Storage		C-1	Logan Township
Homer Gap No 2		C-1	Logan Township
Lakemont Park	Blair County Commissioners	C-1	Logan Township

Source: DEP

*Refer to Table 2.11

TABLE 2.12: DAM HAZARD CLASS DEFINITIONS

Dam Hazard Class Definitions	
A-1	Dam has impoundment storage equal to or greater than 50,000 acre feet or a dam height equal to or greater than 100 feet. There is a substantial population at risk (numerous homes or small businesses or a large business and a school) or the economic loss is excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.
B-1	Dam has impoundment storage less than 50,000 but greater than 1,000 acre feet or a dam height less than 100 but greater than 40 feet. There is a substantial population at risk (numerous homes or small businesses or a large business and a school) or the economic loss is excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.
B-2	Dam has impoundment storage less than 50,000 but greater than 1,000 acre feet or a dam height less than 100 but greater than 40 feet. There is a fewer population at risk (small number of homes or small businesses) or the economic loss is appreciable such as limited residential, commercial, or agricultural damage, or moderate public inconvenience.
C-1	Dam has impoundment storage equal to or less than 1,000 acre feet or a dam height equal to or less than 40 feet. There is a substantial population at risk (numerous homes or small businesses or a large business and a school) or the economic loss is excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.

Source: PA Code Title 25 - Environmental Protection

Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a “10-year” flood has a greater likelihood of occurring than a “100-year” flood. The extent of flooding associated with a one percent probability of occurrence – the base flood – is used as a regulatory boundary by a number of federal, state and local agencies. Also referred to as the “special flood hazard area”, this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities, since many communities like Blair County have maps available that show the extent of the base flood and the likely depths that will be experienced. Figure 2.3 depicts the base flood area (100-year floodplain) in Blair County. Table 2.13 identifies municipalities with unnumbered A zones.

Severity

Several factors determine the extent or “severity” of floods, including rainfall intensity and duration or volume and rate of snowmelt. The County also has conditions that may exacerbate the effects of floods:

- Topography and ground cover contribute to the location and severity of floods, e.g., water runoff is greater in areas with steep slopes and little or no vegetative ground cover.
- Blair County has sloping terrain (especially along the Allegheny Front in the western part) which can contribute to increased flooding, since runoff reaches the receiving creeks, streams and rivers more rapidly over steeper terrain. (see Figure 2.4 for a map of Blair County creeks and waterways)
- Urbanization leads to replacement of vegetative ground cover with asphalt and concrete, increasing surface runoff of stormwater. This effect may be exacerbated by stormwater drainage

systems that are poorly planned, installed, and/or maintained.

- Facilities that handle or store hazardous materials are located in the 100-year and 500-year floodplains, presenting potential sources of contamination during flood events.

TABLE 2.13: UNNUMBERED FLOODPLAIN A-ZONES

Municipality	Unnumbered A-Zones
Altoona City	Yes
Antis Township	Yes
Bellwood Borough	No
Blair Township	Yes
Catharine Township	Yes
Duncansville Borough	Yes
Frankstown Township	Yes
Freedom Township	Yes
Greenfield Township	Yes
Hollidaysburg Borough	Yes
Huston Township	Yes
Juniata Township	Yes
Logan Township	Yes
Martinsburg Borough	No
Newry Borough	Yes
North Woodbury Township	Yes
Roaring Spring Borough	No
Snyder Township	Yes
Taylor Township	Yes
Tyrone Borough	Yes
Tyrone Township	Yes
Williamsburg Borough	Yes
Woodbury Township	Yes

Source: FEMA

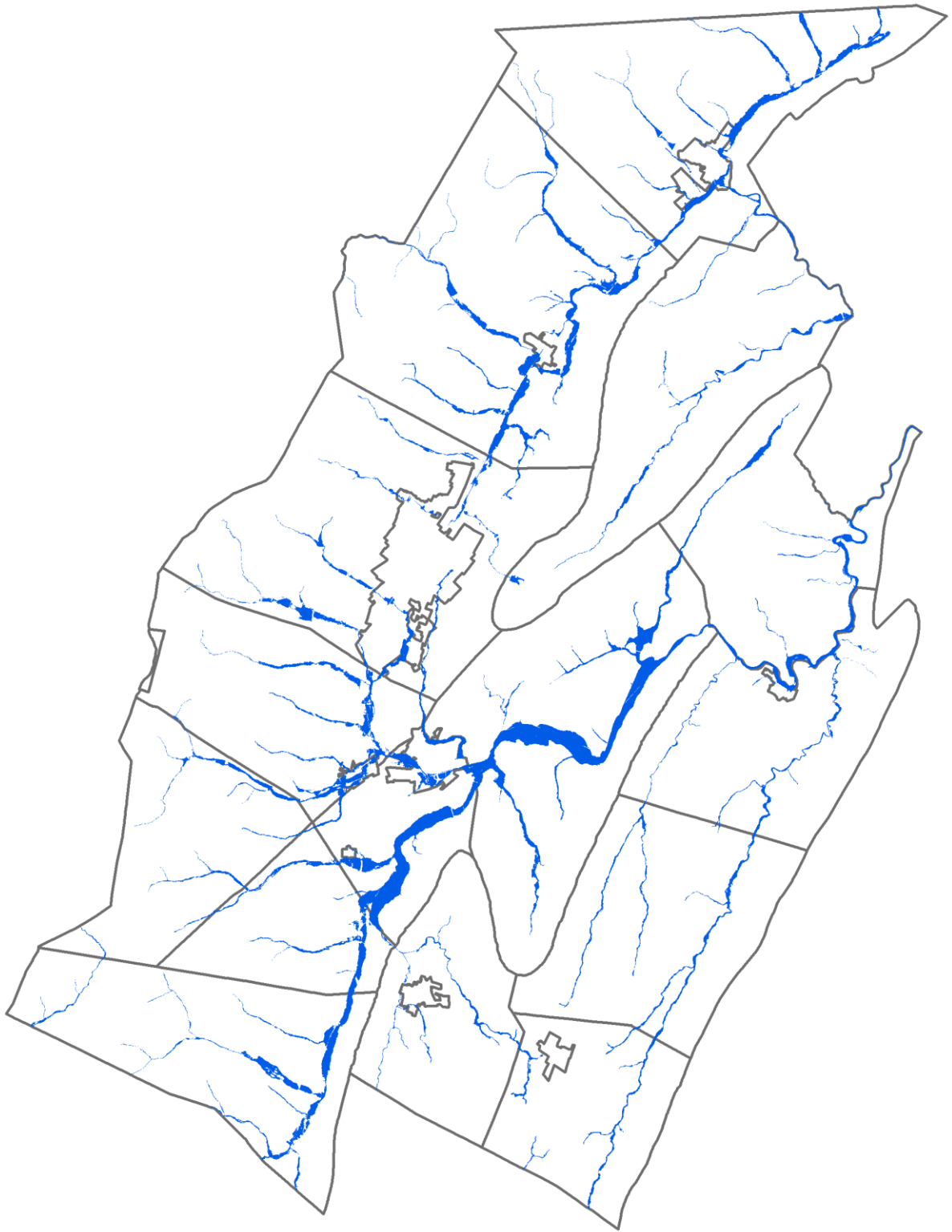


FIGURE 2.3: 2012 BLAIR COUNTY FEMA FLOODPLAIN



FIGURE 2.4: BLAIR COUNTY CREEKS AND WATERWAYS

2.2.4.4 HAZARD VULNERABILITY - FLOODS

Existing Community Assets

The flood hazard vulnerability assessment for the County focused on the community assets that are located in the 100-year floodplain. While greater and smaller floods are possible, information about the extent and depth for the 100-year floodplain is available in a similar format for all Blair County municipalities, providing a consistent basis for analysis. Appendix I on page 175 contains maps showing the vulnerable structures within the 100-year floodplain for all of the municipalities in Blair County. Table 2.14 also presents a list of flood-prone areas that were designated by respondents to a survey sent to all municipalities.

FIRMs

Flood insurance rate maps (FIRMs) were used to assess flood vulnerability in the 100-year floodplain. Detailed flood-study data exists for some areas of the County. These areas are in the AE zone according to the FEMA flood maps, which means they have Base Flood Elevations (BFE's). Detailed flood studies are typically done by FEMA for those areas that have a flood hazard and are developed enough to make it cost-effective to do a detailed study. For the buildings in the AE zone, more detailed assessments of vulnerability can be performed

TABLE 2.13: JURISDICTION-SPECIFIC SPECIFIC FLOOD HAZARD AREAS

Jurisdiction	Vulnerable Areas/Assets
Altoona (City of)	Juniata, Maryland Ave - 58th St. – has been mitigated
Antis Township	<ol style="list-style-type: none"> 1. Bellwood Borough 2. Lower Johnson Development in Tipton 3. River Road 4. Pinecroft (near the curves) 5. Bellmeade 6. Fuoss Mills

Jurisdiction	Vulnerable Areas/Assets
Bellwood Borough	Approx. 12 houses on the North side of town. Stormwater gets into the sanitary sewer system causing backup into the basements of private homes.
Blair Township	Residences in four areas: <ol style="list-style-type: none"> 1. Fort Fetter 2. Independence Place 3. East View St. 4. River Road
Duncansville Borough	Approx. 20 bldgs. from 13th St. Bridge – Park Foot Bridges
Frankstown Twp.	Various properties being acquired and elevated
Greenfield Township.	SR3013 north of Oakdale Road
Hollidaysburg Borough	Various properties
Martinsburg Borough	<ol style="list-style-type: none"> 1. Nicodemus Street, 100-200-300 block 2. 201 W. 300 W. Allegheny Street
N. Woodbury Township	Bridges: Central High Rd & SR 164 Fredricksburg Rd
Snyder Township	A great portion of Snyder Twp. is prone to flooding from several rivers and creeks
Taylor Township	Damaged Decker Hollow Bridge isolates the development of new residences
Tyrone Borough	<ol style="list-style-type: none"> 1. 10th St. 2. Pennsylvania Ave. 3. S. Logan Ave. 4. Park Ave. (from 3rd to 9th St.)

HAZUS-MH Flood Model

For the 2008 plan, FEMA's HAZUS-MH software was used to quantify flood vulnerability in the 100-year floodplain for Blair County. The HAZUS-MH model lists stream "reaches" (tributaries) that are in the County; due to modeling constraints, all of these were modeled by PEMA at one time as a "study case". The total economic losses from this study case for the 100-year flood are indicated by HAZUS-MH

as \$141 million. Losses include 17 destroyed buildings, 290 damaged buildings, 1,831 displaced people, and 15,100 tons of debris.

Repetitive Flood Loss Properties

FEMA defines a repetitive loss property as any property that has received two or more claim payments of more than \$1,000 from the National Flood Insurance Program within any rolling 10-year period for a home or business. FEMA maintains a national list of such properties, and Table 2.15 indicates there are sixteen repetitive loss properties in Blair County. These sixteen repetitive loss properties combined for 47 total claims worth over \$440,000. One property had 6 claims totaling nearly \$124,000. The approximate location of the properties have been identified in Figure 2.5.

The number of repetitive loss properties as compared to the 2008 plan is greatly reduced. There are two primary contributors to this reduction. First, three municipalities engaged in a voluntary buy-out program that resulted in public ownership of the properties and their conversion to permanent green space. This occurred in Altoona, Allegheny Township, and Frankstown Township, with great success in the targeted flood areas. This buy-out program remains an objective in the 2013 plan. Secondly, the new definition of what constitutes a repetitive loss property has reduced the number on the list, since many previous flood claims were more than ten years old.

Critical Facilities

There are likely critical facilities in Blair County (e.g., hospitals, police/fire stations, county/municipal buildings, or schools) that are in the 100-year floodplain. Not enough information is available to determine if any of the facility locations are actually in the floodplain. Note that there are also several dams in the County which are critical facilities

that are located by design in the 100-year floodplain. Identification of critical facilities is one of the action steps to be undertaken under this plan.

TABLE 2.14: NUMBER OF NFIP INSURANCE POLICIES AND REPETITIVE FLOOD LOSS PROPERTIES

Municipality	Number of Policies/Repetitive Loss Properties
Altoona City	212/1
Antis Township	45/0
Bellwood Borough	10/0
Blair Township	91/2
Catharine Township	9/0
Duncansville Borough	112/1
Frankstown Township	65/9
Freedom Township	67/0
Greenfield Township	76/0
Hollidaysburg Borough	80/2
Huston Township	10/0
Juniata Township	6/0
Logan Township	109/0
Martinsburg Borough	1/0
Newry Borough	1/0
North Woodbury Township	6/0
Roaring Spring Borough	9/0
Snyder Township	28/0
Taylor Township	14/0
Tyrone Borough	168/0
Tyrone Township	12/0
Williamsburg Borough	27/1
Woodbury Township	10/0
Total	1168

Source: FEMA

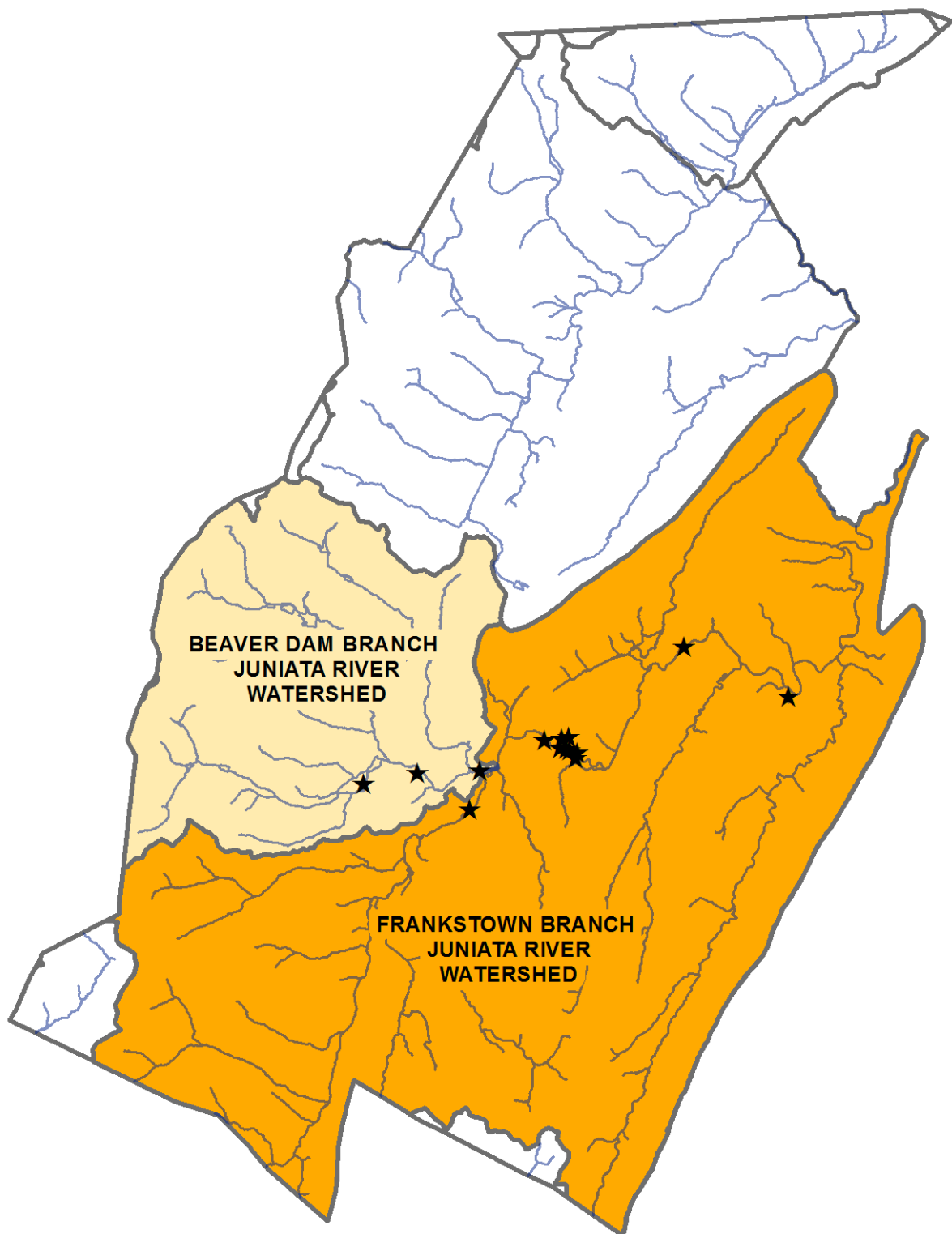


FIGURE 2.5: REPETITIVE LOSS PROPERTIES

Hazardous Material Storage

There are likely facilities storing extremely hazardous substances (EHS) that are in the 100-year floodplain. Not enough information is available to determine if the EHS storage location is actually in the floodplain.

Future Development Trends

New structures (including subdivided parcels) in flood-prone areas would be developed per current floodplain-management ordinances. This should have the net-effect of severely limiting or possibly eliminating new structures being constructed within the floodplain. A listing of the number of structures subject to flooding and the watercourse that causes the flooding can be found in Table 2.16 on the next page. All municipalities within Blair County have floodplain ordinances that limit development within the floodplain. If current trends continue, Blair County will see a reduction in the total number of structures in the floodplain over the life of this plan. A comparison of existing and future land uses is presented in Appendices G and H (pages 171 and 173).

2.2.4.5 CONCLUSIONS – FLOODS

The following summarizes the salient points identified during the hazard identification, profiling and vulnerability assessment portions of the work that are carried forward as part of the planning process.

Summary of Hazard Vulnerability Assessment

Floods have been and will continue to be a significant threat to the economic and social well-being of selected areas of the County. The main sources of flooding in the County, the Susquehanna River and its tributaries (e.g., Little Juniata River), have produced significant flooding several times in the past with great

consequences for the County. The County has had four declared disasters since 1972, including significant events in 1996 and 2003.

What can be Mitigated?

Determining the aspects of Blair County flood vulnerability that can be mitigated requires a review of the causal factors for floods. In Blair County, flooding is primarily caused by human infringement upon natural processes. As a result, available alternatives for mitigation actions focus on property protection and education measures as opposed to altering water courses or changing land management practices within the contributing watersheds. Future development in floodplains will be limited through appropriate legislative and administrative actions and procedures. Altoona, Allegheny Township, and Frankstown Township have acquired properties in a voluntary buyout program as of the writing of this plan. All properties have been or will be demolished and will remain open space (deed restricted).

The people of Blair County have undertaken several flood control projects, including an Army Corps of Engineers project in and around Tyrone (a summary of this project is presented in Appendix L on page 228), a project to stabilize Spring Run, improvements to storm sewers in Lakemont and along the commercial area of Plank Road in Altoona and Logan Township, and storm water management in Duncansville Borough.

TABLE 2.156: STRUCTURES SUBJECT TO FLOODING BY WATERCOURSE

Municipality	Structures in Floodplain	Watercourse
Allegheny Township	476	Beaverdam Branch of the Juniata River, Blair Gap Run, Burgoon Run, Gillans Run, Spencer Run, Sugar Run (#1), Mill Run
Altoona City	472	Brush Run, Burgoon Run, Mill Run , Spring Run
Antis Township	225	Bells Gap Run, Little Juniata River, Riggles Gap Run, Sugar Run (#2), Tipton Run, Sandy Run
Bellwood Borough	24	Bells Gap Run
Blair Township	209	Dry Run, Frankstown Branch of the Juniata River, Halter Creek, Poplar Run, McDonald Run
Catharine Township	16	Canoe Creek, Yellow Spring Run, Frankstown Branch of the Juniata River
Duncansville Borough	338	Blair Gap Run, Gillans Run
Frankstown Township	198	Brush Creek, Canoe Creek, Frankstown Branch of the Juniata River, New Creek, Oldtown Run, Robinson Run
Freedom Township	218	Blue Knob Run, Frankstown Branch of the Juniata River, Halter Creek, Paw Paw Run, Poplar Run, South Dry Run
Greenfield Township	307	Beaverdam Branch of the Juniata River, Boiling Spring Run, Carson Run, Frankstown Branch of the Juniata River, Pine Run, Polecat Run, Smoky Run, South Poplar Run
Hollidaysburg Borough	152	Beaverdam Branch of the Juniata River, Brush Run
Huston Township	13	Clover Creek, Piney Creek
Juniata Township	21	Blair Gap Run, Poplar Run
Logan Township	202	Brush Run, Burgoon Run, Homer Gap Run, Kettle Creek, Little Juniata River, Mill Run, Sandy Run, Spring Run
Martinsburg Borough	0	None
Newry Borough	0	None
North Woodbury Township	23	Clover Creek, Cone Creek, Middle Run Creek, Plum Creek
Roaring Spring Borough	11	Cabbage Creek
Snyder Township	78	Bald Eagle Creek, Baughman Hollow Run, Big Fill Run, Decker Run, Elk Run, Little Juniata River, Logan Spring Run, Plummer Hollow Run, Vanscoyoc Run
Taylor Township	42	Cabbage Creek, Halter Creek, Plum Creek
Tyrone Borough	661	Bald Eagle Creek, Decker Run, Laurel Run, Little Juniata River, Schell Run
Tyrone Township	44	Elk Run, Little Juniata River, Sinking Run
Williamsburg Borough	77	Big Spring Run, Frankstown Branch of the Juniata River
Woodbury Township	25	Clover Creek, Piney Creek
Total	3832	

2.3 VULNERABILITY ASSESSMENT: IDENTIFYING ASSETS

Asset identification is a critical step in the hazard mitigation planning process. Inventorying existing structures and identifying critical facilities provide insight into the County's vulnerability to select hazards and the magnitude of the potential damages of those hazards. As such, asset identification is being conducted as a phased process that involves municipal coordination, public input, GIS data analysis, record research, review of local emergency management plans, and limited field reconnaissance.

The next task of the asset identification will focus on mapping critical facilities throughout the County. Critical facilities are structures in which vital community operations are performed. If these facilities are impacted by a natural hazard, there could be severe consequences to public health and safety. Therefore, it is imperative that critical facilities be adequately protected from natural hazards. Critical facilities are not strictly defined by FEMA. Rather, communities are encouraged to evaluate their own facilities and determine which would be necessary during an emergency event. As such, critical facilities are generally defined as either buildings or locations vital to the hazard response effort (i.e., Emergency Operations Centers, police, fire and EMS stations, hospitals/mass care centers, evacuation centers/emergency shelters, communications facilities, schools, etc.), or buildings or locations that, if impacted, would create secondary disasters (i.e., hazardous materials facilities, water/wastewater treatment plants, etc.).

Once the critical facilities were identified and mapped, the focus of the asset identification shifted to assessing vulnerability on a per hazard basis. Based on the hazard event profiling described earlier, GIS data analysis

(via the County's data) was used to inventory the total number of structures as well as the critical facilities that are potentially vulnerable to the identified hazards. Keep in mind that weather hazards cannot be effectively mapped at the county level as they are likely to impact the entire County or undefined locations within the County. As such, the entire County must be considered somewhat vulnerable to weather hazards. In regard to flooding, below are listed the total number of vulnerable structures and vulnerable critical facilities throughout the county.

- 3,650 Units Affected by Base Flood
- 1,524 Parcels Affected by Base Flood
- 2 Municipal Buildings Affected by Base Flood
- 1 Police Stations Affected by Base Flood
- 2 Fire Stations Affected by the Base Flood
- 2 EMS Stations Affected by the Base Flood
- 8 Treatment Plants Affected by the Base Flood

In addition to critical facilities, Blair County contains "at risk" populations that must be factored into the vulnerability assessment. These include a relatively large population of elderly residents with limited mobility that are dispersed throughout the County including retirement communities, students at Penn State Altoona, and the inmate population of the Blair County Prison in Hollidaysburg.

2.4 VULNERABILITY ASSESSMENT: ESTIMATING POTENTIAL LOSSES

Estimating potential losses/damages from natural hazard events at the county level can be a very difficult task to complete due to limited data. The County relied mostly on historical trends and reported damage estimates from past hazard events. Damage estimates from past hazard events were used specifically for those hazards that are cannot to be mapped at the county level (e.g., droughts, hurricanes/tropical storms, tornadoes, and severe storms). For those hazards that are specific to certain parts of the County (e.g., hazardous material incidents and flooding), the GIS data analysis that was conducted for the asset identification served as the primary means for estimating potential losses from the profiled hazard events. In addition, NFIP claims data and 100-year flood loss estimates calculated for a number of representative floodplain structures identified from throughout the County were used to supplement the loss estimation for regional flooding. A summary of the estimated potential losses from the profiled hazard events is provided below.

2.4.1 POTENTIAL HAZARDOUS MATERIAL INCIDENT LOSSES

Hazardous Material Incident data for Blair County only go back to 2009. In each year that records are kept, the number of incidents is in the mid-teens. The number is rising slowly – by about one each year – and we expect this trend to continue as the transportation industry continues to grow in Blair County. No cost data was available for the development of this plan. Assuming the HMRIS average cost of \$25,000 per incident, each year Blair County experienced approximately \$387,500 in loss due to the hazardous material incidents; this

number will likely hold firm around \$400,000 over the next five years.

2.4.2 POTENTIAL HIGH WIND LOSSES

High winds in Blair County generally come with thunderstorms or large storm events. While we are sitting high enough to experience winds strong and steady enough to enable wind farming, surface winds outside storms is usually calm. The total loss due to high wind over the last quarter century is approximately \$329,358 for the County. The trend, like with strong storms, appears to be flat over this period. Given these parameters and projecting the historical trend forward over the life of the plan, Blair County can expect about \$65,871 in loss due to high wind in the next five years.

2.4.3 POTENTIAL STRONG STORM LOSSES

Damage estimates from past quarter century for strong storms were reported at an unadjusted aggregate of \$158,292.00 for Blair County. This included residential, commercial, industrial, and infrastructure damages. The trend for per-incident cost is remaining generally constant. Applying this trend, Blair County can expect approximately \$32,000 in strong storm losses over the life of the plan. This does not include wind damage or flood damage, as those are discussed separately.

2.4.4 POTENTIAL FLOODING LOSSES

GIS data analysis conducted for the asset identification indicated that there are approximately 3,650 addressed units in the 100-year floodplain in Blair County. An addressed unit is any structure or unit (i.e. apartment, suite, or condo) assigned an address. Overall, there are 1,524 assessment parcels in the 100-year floodplain. In terms of critical facilities, there are 2 municipal buildings, 2 fire stations, 2 EMS stations, 1 police station, and 8 treatment plants affected

by the floodplain. Mapping analysis is an action step of the 2013 plan, and this analysis is ongoing. It was mentioned above that the 2008 HAZUS analysis indicated the average flood will result in approximately \$41 million in losses. Continuing efforts must be made to continue to move structures out of flood-prone areas.

2.5 VULNERABILITY ASSESSMENT: ANALYZING DEVELOPMENT TRENDS

Blair County is located just south of central in Pennsylvania and consists of a diverse mixture of land uses. The largest municipality in Blair County is the City of Altoona, which serves as a regional economic and cultural center in the state. Altoona is located in the center of the western valley of the County at the top of the watershed for the Little Juniata River. Many of the municipalities in the western valley have and are continuing to experience moderate suburban development. This suburban development consists of residential subdivisions, commercial complexes, and industrial parks, and is driven by the transportation network.

The eastern valleys of Blair County are primarily agricultural. The mountains themselves are forest covered. The three valleys in the east are, from north to south, Sinking Valley, Canoe Valley, and Morrison's Cove. These areas are rural with associated lifestyles and culture. Other than agricultural, the industries are forestry, mining, and health care. The eastern valleys are coming under some development pressure; however the culture in these valleys, particularly Morrison's Cove, has played no small role in keeping this pressure in check. The boroughs of Williamsburg, Martinsburg, and Roaring Spring serve as small regional centers for the valleys.

Land use and development pressure throughout Blair County tend to be focused in and near a

triangle formed by Altoona, Duncansville and Hollidaysburg, with an extension northward along the valley floor to Tyrone. The large majority of development applications, residential development, and industrial interests are located in this area. This is due primarily to the presence of railroad service and the intersecting highways US 22 and US 220/I-99. This same catalyst for growth is also a concern for hazard mitigation with respect to a hazardous material incident. Eastern Blair County is seeing different growth: agriculture. The agriculture sector in the east has experienced robust growth since the 1970s and this trend continues. Farmers are now interested in preserving the farming heritage of the area, creating a waiting list for the farmland preservation program administered by the County Conservation District.

In regard to assessing the vulnerability of the County's future development to potential hazards, several generalizations can be made. Natural hazards such as drought, tropical storms, severe storms, and tornadoes have the potential to impact all future development as they are not constrained to specific locations of the County. Many flood-prone lands now have development restrictions placed on them so that new development in the floodplain is unlikely. The County has no storm water management plan, except for the Beaverdam Branch, which makes controlling storm water runoff difficult. A related project to the Hazard Mitigation strategies is to develop such a plan and have the municipalities adopt the appropriate ordinances to control runoff generated by development.

2.6 MULTI-JURISDICTIONAL RISK ASSESSMENT

In considering the hazard risk across jurisdictions, there are two basic ways the four hazards in focus will manifest. Certain natural hazards such as strong storms and high winds

occur countywide or can occur in any part of the county at any time. There is no single municipality that has been shown to be at a greater or lesser risk than the county as a whole in terms of strong storms and high winds. The municipalities were therefore treated equally throughout the County in terms of storms and winds.

Conversely, other hazards such as hazardous material incidents and flooding occur in specific locations and jurisdictions within the County. One goal of this Hazard Mitigation Plan is to address these hazard concerns on a regional basis and to provide a platform for mitigation at the local level through subsequent updates. Through the development of this plan, several critical data pieces were found to be lacking in integrity or missing outright. It is the intent of the plan to develop and provide that information so that targeted, informed decisions can be made on goals and objectives in the subsequent update. To that end, the hazards were once again treated equally across municipalities for this update.

2.7 UNADDRESSED HAZARDS

In developing this plan, several dozen hazards were identified and evaluated for further consideration in the Hazard Mitigation Plan. Other hazards, which do not occur in Blair County, were dismissed immediately. A chart of showing all the hazards evaluated is included in Appendix E (page 147). Additionally, a definition listing of all the hazards considered is included in Appendix F (page 157). These hazards were divided into three basic categories, and were evaluated on four criteria. The basic categories of hazards are natural hazards, man-made hazards, and technological hazards. The criteria were probability of occurrence, likelihood of injury or death, likelihood of property damage, and the likelihood of a loss of service from the incident.

Of the three hazard types, the natural hazard is the easiest to identify, and the most recognizable. A natural hazard is naturally occurring event, usually meteorological or geological, including incidents like earthquakes, flooding, weather, avalanche, and so on. A man-made hazard is one where a person is generally the focus of the incident. These include such events as active shooters, terrorists, and riots. The technological hazard is any failure of technology to the detriment of the local community, and can encompass a transportation incident (like hazardous materials), power failure, communications failure, and similar events. Hazards were considered under all three types for the plan, and three natural hazards and one technological hazard were selected for further consideration.

The hazards left unaddressed in the 2013 plan will be reconsidered for the plan update in five years on an equal basis unless an action step under this plan remains undone. In that case, it is likely that goal will be carried forward with all other hazards receiving equal consideration for inclusion in the 2018 plan update.

- SECTION 3 -

CAPABILITY ASSESSMENT

3.0 CAPABILITY ASSESSMENT

3.1 INTRODUCTION

A capability assessment involves an evaluation of the County in regard to its governmental structure, political framework, legal jurisdiction, fiscal status, policies and programs, regulations and ordinances, and resource availability. These factors are evaluated with respect to their strengths and weaknesses in preparing for, responding to and mitigating the effects of the profiled natural hazards. By doing so, the Mitigation Steering Committee can draw reasonable conclusions as to the relative appropriateness of various hazard mitigation action items that may be identified as part of the hazard mitigation strategy. As such, the capability assessment plays an important role in the hazard mitigation planning process. The capability assessment was originally developed during the original hazard plan process, but it has been updated to reflect changes within the County and each municipality that have occurred in the last five years.

Within Pennsylvania, no county-level capability assessment would be complete without considering the constituent municipalities. Local municipalities have their own governing body, enforce their own rules and regulations, purchase their own equipment, maintain their own infrastructure, and manage their own resources. In many ways, the County is only as good as the capabilities of its constituent municipalities. As such, this capability assessment does not consider Blair County as a lone entity, but evaluates it in light of the various characteristics and differences of and between its 25 constituent municipalities.

3.2 INSTITUTIONAL CAPABILITY

Blair County's 25 constituent municipalities include 1 city, 9 boroughs, and 15 townships. Each of these municipalities carries out its daily

operations and provides various community services according to the local needs and limitations. Some of these municipalities have formed cooperative agreements and work jointly with their neighboring municipalities to provide such services as police protection, fire and emergency response, solid waste disposal, recreational opportunities, wastewater treatment, infrastructure maintenance, and water supply management, while others choose to operate on their own. They vary in staff size, resource availability, fiscal status, service provision, constituent population, overall size, and vulnerability to the profiled hazards. Our assessment indicates that 18 of the 25 municipalities do not have a local planning commission. As such, it is easy to see why the County's capabilities to deal with hazards are a reflection of the local municipalities.

Generally speaking, the municipalities in the central part of the County have more residents (according to the County's Comprehensive Plan, planning regions three and five have just eight municipalities, but account for about 60% of the County's total population), more staff, and, a more diverse supply of available resources than those municipalities in the more rural parts of the County. This is not to say, however, that hazard mitigation is not an important factor, it simply may require a more unified or coordinated approach and/or more efficient utilization of available resources (e.g., financial, technical, and human). For example, Catharine Township in the eastern part of the County, with its resident population of 724 persons, would not be expected, nor would it be appropriate, to engage in hazard mitigation activities on a scale similar to that of Altoona, with its resident population of 46,320 persons. Rather, Catharine Township would be expected to engage in hazard mitigation activities according to its local needs and available resources, which may prove to be as valuable to

its residents as that of some other municipality's hazard mitigation activities.



In addition to the institutional capability of the municipal government structure described above, the County itself is capable of engaging in hazard mitigation activities. The County has its own staff, resources, budget, equipment, and objectives, which may or may not be similar to those of its constituent municipalities. As such, the County itself has its own capabilities to mitigate the profiled hazards. When partnered with the local municipalities, the state, the federal government, local authorities, watershed groups, environmental groups, or some other entity, the results could be limitless.

3.3 LEGAL CAPABILITY

Within Pennsylvania, municipalities have the authority to govern more restrictively than State and County minimum requirements as long as they are in compliance with all criteria established by the Commonwealth through the various enabling municipal codes. Municipalities can, and typically do, develop their own policies and programs and implement their own rules and regulations to protect and serve their local residents. Local policies and programs are typically identified in a comprehensive plan, implemented via local ordinance, and enforced through the governmental body or its appointee.

Municipalities regulate development via the adoption and enforcement of zoning, subdivision and land development, building code, building permit, floodplain management, and/or stormwater management ordinances. Within the development, adoption, and enforcement of these ordinances, there is an opportunity for hazard mitigation in the form of preventive measures. Most notably is the municipal adoption of NFIP and Pennsylvania Floodplain Management Act (Act 166 of 1978) which identifies minimum floodplain management criteria. A municipality must adopt and enforce these minimum criteria to be eligible for participation in the NFIP. As such, municipalities have the option of adopting a single-purpose ordinance or incorporating these provisions into their zoning, subdivision and land development, or building code ordinances, thereby mitigating the potential impacts of local flooding in a preventive manner.

Table 3.1 on the next page summarizes the local-government capabilities the County's municipalities possess that will facilitate implementation of the mitigation strategy. Blair County and the municipalities within its boundaries have a very important relationship in which they share resources to ensure the effective implementation of ordinances and codes.

3.4 FISCAL CAPABILITY

Finances can be an important factor in the capability of any jurisdiction to implement hazard mitigation activities. Every jurisdiction, including those in Blair County, must operate within the constraints of limited financial resources. As such, the key factor in determining fiscal capability is to analyze how tight these constraints are. This could involve a detailed auditing process to tally all revenues and expenditures, or could involve an assessment of existing financial ratings as

TABLE 3.1: LOCAL ORDINANCES RELATED TO HAZARD MITIGATION

Municipality	Comprehensive Plan	Zoning Ordinance	Subdivision & Land Development Ordinance	Flood Ordinance & NFIP
City of Altoona	Yes	Yes	Yes	Yes
Borough of Bellwood	Yes	No	No	Yes
Borough of Duncansville	No	Yes	Yes	Yes
Borough of Hollidaysburg	Yes	Yes	Yes	Yes
Borough of Martinsburg	Yes	Yes	No	Yes
Borough of Newry	No	No	No	Yes
Borough of Roaring Spring	Yes	Yes	Yes	Yes
Borough of Tunnelhill**	-	-	-	-
Borough of Tyrone	Yes	Yes	Yes	Yes
Borough of Williamsburg	Yes	Yes	No	Yes
Township of Allegheny	No	No	Yes	Yes
Township of Antis	Yes	No	Yes	Yes
Township of Blair	Yes	No	Yes	Yes
Township of Catharine	Yes	No	Yes	Yes
Township of Frankstown	No	Yes	Yes	Yes
Township of Freedom	No	No	Yes	Yes
Township of Greenfield	No	No	Yes	Yes
Township of Huston	No	No	Yes	Yes
Township of Juniata	No	No	No	Yes
Township of Logan	Yes	Yes	Yes	Yes
Township of North Woodbury	Yes	No	Yes	Yes
Township of Snyder	No	No	Yes	Yes
Township of Taylor	No	No	Yes	Yes
Township of Tyrone	No	No	Yes	Yes
Township of Woodbury	Yes	No	Yes	Yes

Source: BCPC

¹ Tunnelhill Borough is in both Cambria and Blair Counties. FEMA recognizes Tunnelhill as being located in Cambria County

identified and reported by the PA DCED. For the purposes of this planning program, the Mitigation Steering Committee elected to use the existing financial ratings reported by the PA DCED as a base indicator of fiscal capability at the municipal level.

The Pennsylvania Municipalities Financial Recovery Act (Act 47 of 1987) identified fiscally distressed municipalities based on established criteria, and authorized the PA DCED to assist in developing financial recovery plans in these areas. Analysis of the Act 47 fiscally distressed municipality list indicated that none of Blair County's municipalities were identified as being fiscally distressed at the time of the original plan, however for the 2013 Plan, the City of Altoona has entered the program. In accordance with Section 1303 of the Pennsylvania Job Enhancement Act (73 P.S. Section 400.1303) the Pennsylvania State Data Center designated several Blair County municipalities as distressed-eligible communities based on their ability to meet at least three of the following five criteria. This list of communities is used by the DCED for loan eligibility.

- Twenty percent or more of the population with incomes below the poverty level as reported in the latest decennial census.
- Fifteen percent or more of the labor force is unemployed as reported in the census or as reported in a survey done by the municipality.
- Five percent or more loss of population as reported in the census.
- Significant business vacancy rate within the area, either in gross footage or acreage or in the number of business or industrial buildings.
- Significant reduction in employment.

While this distressed community designation may provide some insight into the fiscal capability of the subject municipalities, it most

certainly does not preclude these municipalities from participating in hazard mitigation activities. Cooperative arrangements, coordinated efforts, and resource efficiency may serve as effective avenues for overcoming fiscal constraints and accomplishing hazard mitigation objectives at the local level.

It is important to remember that finances are not the only factor in determining hazard mitigation capability. In addition, there are numerous partnering opportunities and grant programs available to assist in offsetting the expenses of local hazard mitigation efforts. Partnering opportunities at the local level include the Susquehanna River Basin Commission, Blair Emergency Management Agency, Juniata Clean Water Partnership, and the various sportsmen clubs and watershed associations. Grant programs that may be utilized to accomplish hazard mitigation objectives are available from the Pennsylvania departments of Community and Economic Development, Environmental Protection, Conservation and Natural Resources, and the Pennsylvania Infrastructure Investment Authority.

3.5 POLITICAL CAPABILITY

Political capability refers to a jurisdiction's incentive or willingness to accomplish hazard mitigation objectives. Local decision makers may not rank hazard mitigation as a high priority task if there hasn't been a disaster in recent history or if there are other more immediate political concerns. Unfortunately, there is no better way to get people thinking about hazard mitigation than to have a disaster occur. Responding to and recovering from a disaster event can exhaust local resources, thereby elevating hazard mitigation to the forefront of political awareness. This reactionary effort, while somewhat nominal in value during the aftermath of a disaster event,

can go a long way in preparing for and mitigating future events.

Within Blair County, many long-term residents and business owners remember the unexpected damage that was caused by freeze-thaw runoff in January 1996. This flood event is one of the top five floods on record for Blair County. If not the 1996 event, most Blair County residents can recall the 2004 flooding caused by the remnants of Ivan, which inundated areas that were not inundated in recorded history. The Ivan floods are the highest on record. Given the extent of this relatively recent flood event and the unexpectedness of the 1996 event, the political capability of Blair County should not be an issue when planning for and implementing local hazard mitigation activities, as long as the activities are generally accepted by the public and perceived to be relatively cost-beneficial.

3.6 TECHNICAL CAPABILITY

Technical capability refers to a jurisdiction's availability of resources (other than financial) and knowledge/skill level to accomplish hazard mitigation objectives. Necessary resources typically include employees, volunteers, equipment, machinery, materials, and supplies. Without these necessary resources, the measurements of a jurisdiction's capability to accomplish hazard mitigation discussed above are moot. Conversely, resource availability is moot if the jurisdiction does not have the knowledge and skills necessary to effectively accomplish the designated hazard mitigation objective. As such, technical capability is an important factor when analyzing a jurisdiction's ability to accomplish hazard mitigation objectives.

Within Blair County, technical capability varies widely between the municipalities. Even neighboring municipalities may exhibit extreme variations in technical capability. Generally speaking, the more financial resources a

municipality has, the more technically capable it will probably be from a resource availability perspective. This is not necessarily the case, however, when analyzing technical capability from a knowledge and skill level perspective. As such, technical capability must be analyzed by each individual municipality prior to implementing any hazard mitigation activities. It is important to note, however, that much like fiscal capability, shortfalls in technical capability may be overcome by such arrangements such as cooperative agreements, coordinated efforts, and resource efficiency.

- SECTION 4 - HAZARD MITIGATION STRATEGY

4.0 HAZARD MITIGATION STRATEGY

4.1 HAZARD MITIGATION GOALS

As part of the hazard mitigation planning process, the goals and objectives in the 2008 plan were evaluated for completeness, and those few that were found to be incomplete were pulled forward into the 2013 plan (Additional data from the 2008 plan can be found in Appendix K on page 204). These are all found under flood mitigation. As a result of evaluating the needs to mitigate the four hazards ranked highest during the hazard assessment, the County is proposing six goals for the 2013 plan. Each goal has objectives and action steps associated with it to ensure progress is made through the life of the plan.

The goals have been ranked by vote of the participants and are presented in ranked order from highest to lowest priority. Likewise, under each goal, the objectives are presented in order from highest to lowest priority. These goals and objective are set to empower individuals in their awareness of situations, response to incidents, and their participation in mitigation efforts. Likewise, the goals and objectives complement some related efforts proposed in the county. These related efforts include the possibility of a countywide Certified Floodplain Manager for all areas outside the City of Altoona, a program to bolster and improve the availability of public information, storm water management planning to reduce the effect of flooding, and a proactive application of the pre-disaster concepts of the “Designing to Heal” protocol. These are discussed in section 4.8, below.

The rankings also took into consideration the benefit received for the cost expended to accomplish the goal. For example, the first goal is to obtain a Community Ranking System score

for each of the municipalities. The initial score for many municipalities is expected to be based on simple documentation of existing procedures. During this study of procedure, any tweaks that may be needed can then be implemented for minimal cost. The benefit in terms of improved record keeping, orderly processing of papers, and insurance savings will most likely outweigh the cost of documentation in nearly every municipality. By implementing the hazard education and storm preparedness goals, individuals will save money in property damage and injury, and possibly even save lives as a result. The two goals focusing on data and studies will reap future benefits as those are put to use in future on-the-ground mitigation projects. The Committee felt that the cost involved in each of the six goals is modest when compared to the long-terms benefits reaped by the programs.

4.2 GOAL: COMMUNITY RATING SYSTEM RANKINGS

The planning process identified two top priority goals for the 2013 Hazard Mitigation Plan. The first of these is to obtain a Community Rating System ranking for the municipalities throughout Blair County. The Community Rating System in itself reflects mitigation actions taken to reduce the risk to insurers, municipalities and property owners relative to flooding within identified floodplains. Each action step identified under this goal was given a high priority ranking, though the various municipalities are at different stages of readiness to tackle this goal.

The City of Altoona has embarked on this path already and has obtained sufficient recognition of its efforts that its residents now enjoy a ten percent reduction on their flood insurance

premiums. Additionally, a city employee has obtained Certified Floodplain Manager status to assist both the municipality and its residents with flood issues.

Over the next three years, the Blair County EMA and the Blair County Planning Commission will engage each of the municipalities to embark on the journey to obtain a rating. Each municipality will be free to set its own start date and its own pace, dependent on other pending needs, funding, and staff availability. Within that framework, however, no start date should be later than the third year of this plan to ensure a rating is obtained within the expected five year scope of the plan.

To achieve this goal, the following objectives and action steps are established.

4.2.1 OBJECTIVE: RAISE AWARENESS

Many people are not aware of the Community Rating System and its benefits. As part of implementing the Community Rating System in Blair County, the County will first reach out to each of the municipalities to explain what the system is, its requirements, and its benefits. The County and municipality will then jointly raise awareness of the system to the general public, with specific emphasis on those elements most likely to affect the average citizen. The objective will result in public awareness of the system, understanding why certain requirements are in place, and further enhancement of the overall Community Rating System score.

A major step toward the goal of a Community Rating System score is to make the municipalities aware of the opportunity. As mentioned above, Altoona has already taken steps toward improving its CRS ranking, an effort it undertook once it became aware of the program. As the City staff researched the requirements for a rating, it became apparent that many routine actions and ordinances already in place counted favorably toward the

Community Rating System. Much of the support for the current rating had already been undertaken through previous efforts.

The first objective for the Community Rating System goal is to raise awareness of the program, its requirements, and the resulting benefits. All but two Blair County municipalities are impacted by Flood Zone A (or a derivative) as depicted on the March 2, 2012 update of the Flood Insurance Rate Maps for Blair County. The Blair County Planning Commission and the Blair County Emergency Management Agency will reach out to the municipalities to ensure the necessary people are informed about the Community Rating System, and also work toward obtaining a score for the municipality.

4.2.1.1 ACTION STEP: RAISE AWARENESS OF THE COMMUNITY RATING SYSTEM

The first action step is to simply make people aware of the Community Rating System. This campaign must include the general public, municipal officials, and business owners. Government cannot do flood mitigation alone; each individual citizen has a role to play. The Community Rating System is best implemented from the grass-roots level with citizens understanding the benefits of the program and municipal officials responding to the citizen interest with measures to gain a CRS rating. These measures can, either directly or indirectly, reduce rates, reduce risk, improve public safety, benefit property owners by preventing development that exacerbates the flooding problem, save money by identifying existing problems and potential solutions, and raising general flood awareness.

Both the public and public officials are expected to support the efforts and shoulder the burden of mitigation. This step can be done in conjunction with the action steps under the Hazard Education goal, below, but must be

included for a successful implementation of this objective.

4.2.1.2 ACTION STEP: COUNTY ASSISTANCE

The County, or one of its agencies, will act as a liaison between the locality and the necessary state and federal officials to assist the municipality in attaining a Community Rating System ranking. Because many of the municipalities are understaffed or have the minimum staff necessary for basic operations, county assistance will be provided for each of the objectives and action steps for this goal. This assistance will begin with an outreach contact to the municipality with appropriate literature about the Community Rating System, and assurance that backing will be there until a score is obtained.

4.2.1.3 ACTION STEP: REPETITIVE LOSS PROPERTY IDENTIFICATION

Repetitive loss properties are those that have had multiple insurance claims filed for flooding damage. Some areas have been cleared of such properties through buyouts or abandonment, but several areas remain. The 2008 Plan mentioned such identification as a need and tied it to ongoing development of the County GIS program. That program did not progress as quickly as was hoped at the time, and this identification is being pulled forward as an action step under this objective with the hope that this data can also be used to prioritize assistance to municipalities.

4.2.1.4 ACTION STEP: FEMA KICKOFF MEETING

When it is ready, each municipality will meet with FEMA to discuss its needs to obtain community rating. At the time this plan is written, it is hoped that these will be completed by the end of the third year to allow sufficient time to obtain a rating before the five-year

window expires for this plan. This kickoff meeting will include, at a minimum, the appropriate municipal officials, FEMA representatives, and the county liaison. Record will be kept for purposes of documenting progress toward this goal.

4.2.1.5 ACTION STEP: RATING ROADMAP

As a direct follow-up of the FEMA kickoff meeting, the municipality, with County assistance, will develop an action plan to obtain its first Community Rating System rating within the timeframe of this plan. The roadmap will clearly outline steps to be taken to meet Community Rating System requirements, FEMA recommendations, and any other suggestions made at the kickoff meeting. The roadmap will be used as the guide in moving toward a Community Rating System score.

4.2.2 OBJECTIVE: DOCUMENT ACTIONS

As was noted above, Altoona discovered that it had already completed many of the elements necessary for an initial Community Rating System score. As a result of the discussion during the development of this plan, it seems many municipalities also have taken previous steps toward flood awareness and mitigation that will help with the Community Rating System process. This objective should be recognized in the roadmap developed after the kickoff meeting, as documentation of current and previous municipal action is one of the needs for a basic score.

Municipal actions come in many forms; formally adopted plans, such as comprehensive plans, strategic plans, capital improvement plans, recreation plans, and such related documents provide general direction and guidance for decision making. Ordinances and regulations mandate a level of compliance to mitigate or prevent detrimental situations, including known hazards. These form a baseline

for development, commerce, and preservation in a community. Other related actions include decisions made under the ordinances and plans as well as other decisions that impact the flood hazard.

Record keeping is a basic, but often neglected step in the development process. Indeed, the Pennsylvania Historic and Museum Commission mandates that most plans, ordinances, and decisions related to land development be retained by the adopting government permanently. Keeping record of the official actions proves whether a municipality is serious about flood mitigation throughout the community. Retention of the records improves the Community Rating System score.



4.2.2.1 ACTION STEP: IDENTIFY ADOPTED ORDINANCES AND PLANS

Most municipalities in Blair County have adopted a comprehensive plan, though many need to be updated. Blair County witnessed one of the earliest endeavors of joint municipal planning with a joint comprehensive plan covering Williamsburg Borough, Catharine Township, and Woodbury Township. An inventory of which plans are adopted needs to be built at the municipal level. The Blair County Planning Commission has been a general repository for most municipal plans and this

bank of information will be used as a starting point.

Additionally, most municipalities have adopted ordinances regulating the use of land, either through zoning or subdivision and land development. Many have attached storm water management requirements and floodplain requirements to the base ordinance. Again, the repository at the Blair County Planning Commission will be used as a start point for the local municipal inventory needed for the Community Rating System.

4.2.2.2 ACTION STEP: IDENTIFY RELATED MUNICIPAL ACTIONS

Other actions taken by municipalities to mitigate flooding need to be inventoried and documented. Removing repetitive loss properties, land banking floodplain property, encouraging practices to minimize storm water runoff, encouraging runoff-reducing ground cover, minimizing impervious surfaces, and moving public facilities out of the flood hazard area are examples of such actions. Additionally, the records for prior development decisions will be used to enhance the score under the Community Rating System.

4.2.2.3 ACTION STEP: MAINTAIN MAPS AND CERTIFICATES

Each municipality should maintain a set of each release of flood maps in perpetuity. This assists in reconciling code issues, maintains a record of where the floodplain is located, and can be a record on how it has changed over the years. Additionally, the municipality should maintain on record all elevation certificates issued for construction as well as any Letters of Map Amendment or similar documents. This verifies compliance with floodplain requirements and can be a resource for property owners in verifying their building elevations or making

future development decisions. It also shows the municipality is diligent in flood mitigation.

4.2.2.4 ACTION STEP: DOCUMENT EDUCATION EFFORTS

Each municipality choosing to participate in the Community Rating System will need to keep documentation on its education efforts, as discussed above. It is often said the three most important things in real estate are location, location, and location. In government, it is documentation, documentation, and documentation. Such documentation will go toward obtaining a better score and further lowering residents' rates for flood insurance.

4.3 GOAL: SPECIAL NEEDS DATABASE

The second priority goal identified through the planning process is to establish a database listing special needs at a given address so when an emergency occurs, these needs are quickly identified and accommodated. Often during an emergency situation, a quick, efficient response is critical. The purpose of this database is to identify the need up front so the responding agent arrives properly equipped to meet the need. It is important to note that the database will list special *needs* at a particular location, not the *reason* for the need (unless the reason is relevant to response).

There are several types of special needs anticipated to be included in the database. The first special need is immobility, specifically relating to driving. This need can be a result of any one of several factors, or a combination thereof. Permanent immobility can be a conscious decision of an elderly person who has realized their age has impaired their ability to control an automobile. It can also be an involuntary physical limitation that prohibits driving. There may be temporary situations, such as recovery from a surgical procedure or

other health issues. As stated above, the purpose of the database is not necessarily why the condition exists, but simply the fact that it does exist and must be addressed.

A second possibility for inclusion in the database is a need for electrical power for life-critical functions or services. There are any number of conditions requiring the use of equipment powered by electricity to keep a person alive. While many families dependent on such equipment have installed generators, situations may arise where this will not be enough, especially during long outages or if an evacuation is needed. People with respiratory ailments, diabetics, and others are included in this category, although such conditions will not be revealed in the database.

4.3.1 OBJECTIVE: DEVELOP TECHNOLOGY, DATABASE, AND PROTOCOLS

Three separate yet interrelated systems need to be developed under this goal. The first is to survey and obtain the proper technology for the database to operate independently, with the 911 system, and with the County GIS. Also, the database framework must be developed for ease of use, confidentiality, and consistency across users. These are complemented by the final piece, protocols. Protocols must be developed identifying who has access, when updates will occur, how the links between the database and the other systems will work, and how the data will be kept current. Some of the development of these systems is discussed below. The discussion is kept general so as not to tie the hands of those selected to implement this objective.

4.3.1. ACTION STEP: DEVELOP DATABASE ATTACHMENT

A subroutine will be developed that will allow continual updates to the database to be visible in the dispatch system and GIS. While not

necessarily in real-time, the updates to the database should become visible on an established routine basis in a manner that is not disruptive to the basic functions of the systems. Ideally, this subroutine will process the updates in an independent database program maintained by line staff and feed updates into the main dispatch system and GIS at low demand times. Alternatively, the subroutine will exist in the dispatch system and reach out to the independent database for records whenever a call comes in.

4.3.1.2 ACTION STEP: DEVELOP THE DATABASE STRUCTURE

Thought will need to be given to the actual structure of the database so that minimal alterations are necessary once it goes live. The data structure will need to be formatted in a way that is compatible with the demands of the host RDBMS software, the GIS, and the 911 dispatch system. Additionally, the fields of the database and permissions will need to be established prior to populating the records. Fields should be minimal to assist with confidentiality, and may not even need to include a name.

4.3.1.3 ACTION STEP: DEVELOP UPDATE MECHANISM

A mechanism to keep the database up-to-date needs to be put into place to ensure that the information utilized by both dispatchers and responders is accurate. The County will need to work with others who have implemented a similar system, the local social service agencies, and the participants to develop a protocol ensuring a current record for each participant. The County should determine when a record is considered out-of-date, including age of record since last contact, inconsistent contact information as compared with another source, or loss of contact with the participant.

4.3.1.4 ACTION STEP: ENGAGE THIRD-PARTY DATABASES FOR VERIFICATION

Several third-party databases may be utilized to verify contact information for the participants. These may include other governmental databases for permitting and licensing, utility databases, social service databases, and medical databases. Many of these are accessible for the purposes intended by this plan, however medical information should be included only when absolutely necessary due to privacy concerns.

4.3.1.5 ACTION STEP: ENSURE HIPAA COMPLIANCE

Participation in the special needs database will be encouraged, but remain voluntary in order to mitigate the restrictions placed on such data by law. As mentioned previously, the County will strive to include only the need in the database, not the condition, and develop a nameless database. A medical condition should be included only if voluntary consent is given and only if absolutely necessary to identify the need. Additionally, the County will develop a protocol to ensure continued privacy on any information provided by participants. The parameters in the protocol will be determined in part by the social service agencies involved as well as the third-party database(s) identified for verification.

4.3.2 OBJECTIVE: MARKET TO TARGETED POPULATION

Once the technology, database structure, and protocols are in place to ensure proper operation of the special needs database, the County will engage in a marketing program to encourage residents and other people who are regularly in Blair County to take advantage of the program. When marketing, the database keepers need to keep in mind those that may have a special need that still allows them to work outside the home, and those who enter

the county for regular care. These would likely register under a mobile number or a work number instead of (or in addition to) a residential line.

4.3.2.1 ACTION STEP: IDENTIFY PEOPLE, LOCATIONS, AND NEEDS

The County will develop a well-publicized voluntary system of adding records to the database. Each record will include the data needed to successfully implement the goal. Marketing can be targeted to known special needs populations and known high-risk areas throughout the county. In most Blair County communities, elected officials, responders, and prominent members of the community will likely have a working knowledge of where those who would benefit from this program are.



4.3.2.2 ACTION STEP: ENGAGE SOCIAL SERVICE AGENCIES

The County will partner with the various social service agencies to reach out to the special needs population with literature on the program and how it will benefit each individual. These agencies can be a trusted face on what can be a rather impersonal program. The County will develop the literature and distribute it to the social service agencies, who will then ensure it gets to those who need it. The agencies can also serve to sign up

interested people at their facilities and forward the collected information to the County for inclusion in the database. Notices for updates and deletions can be handled through this same system.

4.3.2.3 ACTION STEP: DIRECT MARKETING

A direct marketing program can also be run to encourage people to participate in the database. This will reach the general population and make the database common knowledge. Literature similar to what is given to the social service agencies can be used in the marketing campaign.

4.4 GOAL: HAZARD EDUCATION PROGRAM

People are better helped when they are able to help themselves. A person who has an understanding does not require as much time or personnel to accomplish something as a person who lacks that understanding. The County, in consultation with local officials, will develop a hazard education program utilizing existing and newly-developed materials and programs targeted at the general population, but addressing specific needs and hazards throughout Blair County.

The Hazard Education Program will empower the average citizen during an emergency because of the knowledge obtained through the program. There are active and passive education elements, as well as programs for the general public and responders. The program goal is to make people knowledgeable of types of hazards and emergencies, proper responses, aware of active training programs and services made available through the county and local officials, and keep responders current.

The education program for the life of this plan will focus on the four hazards identified as a priority earlier in the plan, with supplemental

references to other hazards when germane. A separate goal will address storm preparedness as a specific element, leaving this goal with a primary focus on hazardous materials and flooding.

4.4.1 OBJECTIVE: IDENTIFY HIGH-RISK AREAS AND POPULATIONS

While the overall goal is to target the general public, prudence dictates that information on site-specific hazards should be targeted to those who need the information most. This ensures that the information needed in a crisis situation is in the hands of those in need. It also reduces the clutter of information in areas where it is not needed. For instance, information on a dam failure can be targeted to those addresses within the inundation area and not to others since it is only applicable to those areas. Limiting information to those who need it and promoting general information to all results in a better use of limited resources.

4.4.1.1 ACTION STEP: MAP HIGH RISK GEOGRAPHIC AREAS

The 2013 plan is concerned primarily with hazardous material incidents, wind, storms, and flooding. Because of the general nature of the winds and storms, no geographically targeted literature is expected. However, the fact that highway and rail corridors are in fixed locations, and flood-prone areas are mapped, education materials for hazardous materials and flooding can be geographically targeted to the impacted properties. This can be done on the county GIS by comparing the hazard areas with known property addresses or parcels. Once complete, the materials can be distributed to those specific places.

4.4.1.2 ACTION STEP: DEVELOP MAP-ON-THE-FLY PRODUCT

Once the hazard areas are generally identified, an on-the-fly mapping product can be developed to identify impacted properties for a specific incident. This may also have general application for response teams with computer capability on-board the response vehicle or in the station. This product can be used to target incident-specific information to impacted properties.

4.4.1.3 ACTION STEP: IDENTIFY HIGH RISK POPULATIONS

In addition to high risk areas, high-risk populations must also be identified. These include institutionalized people, those on the special needs database mentioned earlier, elderly, school children, and others that may become apparent in the future. For some of these, the materials can be distributed easily and without listing specific individuals (i.e. in the institution, rest home, or school); others will need to be done through surrogate agencies or other outlets with varying degrees of specificity in identifying the recipients.

4.4.1.4 ACTION STEP: DEVELOP LANGUAGE-SPECIFIC LITERATURE

Nearly all Blair County residents speak English either as their primary or second language. The 2007-2011 US Census American Community Survey 5-year Estimates less than three percent could not speak English. This appears to negate the need to develop language-specific materials. However during an incident, having reference material available in the primary language can be a great benefit. Some of the general information can be developed in some of the more prominent second languages in Blair County. Should a concentration of bi-lingual people be found in one of the targeted geographic areas, that material can be

translated as well. Translations should be done by actual bi-lingual translators since computer translation can be unreliable. The most prevalent non-English languages in Blair County are Spanish/Spanish Creole, German, other German languages, Italian, and French.

4.4.2 OBJECTIVE: DEVELOP AND DISTRIBUTE LITERATURE

The mitigation strategy is to inform the public on the various hazards facing the County and how to respond should an incident occur. This will occur through the hazard education program and the storm preparedness program described below. The literature will be developed using pre-existing materials as a base and developing new material as deemed necessary. Due to the relatively low internet use and availability in the county, the materials will be distributed in both print and electronic form.

4.4.2.1 ACTION STEP: INCREASE EMA AND LEMA VISIBILITY

As part of the hazard education program, the visibility of the county and local emergency managers will be increased. This will include an increased identification of the person holding the office, the office itself, and the role it fills. This position can be used both on the county and local level to assist in developing the education material as well as distribution. One element of the hazard education program will focus directly on the emergency manager.

4.4.2.2 ACTION STEP: IDENTIFY NEEDED TOPICS

The hazards to be included are identified in the plan as hazardous material incident, high winds, strong storms, and flooding. Within each of these hazards, several topics will be developed for public consumption. These may include topics on how to shelter in place, driving in floods, how to handle downed wires, and so

forth. The topics and specific material will be determined after consideration of the needs of the county population as well as any specific needs of the high-risk populations described above.

4.4.2.3 ACTION STEP: DEVELOP GENERAL INFORMATION BROCHURE

Most topics will likely be easily covered through the development of an information brochure that outlines the issue and briefly discusses major points. These will be published both in print and online. Where material is already developed by another agency, permission will be sought to utilize that instead of redeveloping something new.

4.4.2.4 ACTION STEP: DEVELOP DETAILED INFORMATION BOOKLET

For other topics, particularly the specific incidents affecting limited populations, a more detailed booklet may be developed so those affected have a more thorough understanding of what needs to be done and the roles of people that may be involved to overcome the incident. As with the brochures, these will be published both in print and online, and existing material will be used whenever possible.

4.4.2.5 ACTION STEP: ENSURE CLARITY AND COMPREHENSION

Once the material is developed to a near-final version, it will be given to select people not involved in planning, emergency management, or response to test read. This step is to ensure the target population is able to understand what has been developed and that it is clear and concise, yet comprehensive enough to accomplish its purpose.

4.4.2.6 ACTION STEP: PROMOTE THE RAPID NOTIFY SYSTEM

The County has engaged in a rapid notification system that alerts residents of incidents and provides pertinent information. This has been promoted in the past few years with modest interest. As part of the education program, this system will be more actively and heavily promoted to increase the coverage and availability to the public.

4.4.2.7 ACTION STEP: PROMOTE SMARTPHONE APPS

Several general smartphone ‘apps’ have been developed by third parties in recent years that enable users to monitor weather situations, local incidents, and other hazard-related information. As part of the hazard education program, these will be evaluated for usefulness in the Blair County setting and those with local utility will be actively promoted in the program. This will further enable the public to be informed during a hazard incident.

4.4.3 OBJECTIVE: MAINTAIN HIGH QUALITY RESPONDER TRAINING

The Blair County Emergency Management Agency has engaged in several high quality training exercises in recent years and there is strong interest in continuing these exercises and possibly increasing quality and frequency. The EMA has partnered with local industrial interests, regional firms, and education providers to offer an array of simulations both at the table and in the field. Additionally, the Blair County SARA Summit has provided an important interchange between responders and industry each spring. There is strong support for this activity in the community and interest for it to continue as part of the hazard education program.

4.4.3.1 ACTION STEP: OFFER TABLETOP SIMULATION EXERCISES

The tabletop exercises provide the ability to evaluate response capabilities and deficiencies to ensure responders are prepared for an incident. As mentioned above, the County EMA has been coordinating exercises and the responder community would like these continued, possibly with increased quality and frequency. These would be a part of an overall training package for the responders, including regular continuing education, the SARA Summit, and on-site simulations discussed below. With a well-rounded program, responders will be better prepared when an incident occurs.



4.4.3.2 ACTION STEP: OFFER ON-SITE SIMULATION EXERCISES

On-site simulations provide an extra level of training from the tabletop exercises in that they occur in the field using an actual site with actual people. Like the tabletop exercises, the County EMA has been coordinating these with strong interest in continuing them as part of an overall education program. The County EMA will continue to seek partner sites for simulations as well as other partners who can provide relevant, practical training experiences for the Blair County situation.

4.4.3.3 ACTION STEP: CONTINUE ANNUAL SARA SUMMIT

The SARA Summit has occurred annually for the past few years. It brings together people from a variety of industries and fields to discuss common issues with a particular focus on SARA sites. Given the success of the summit as well as the growing statewide popularity, this Summit will be continued as part of the education program.

4.5 GOAL: STORM PREPAREDNESS AND AWARENESS

As mentioned under the Hazard Education Goal, an informed public is better prepared when an incident occurs. This is also true of severe weather incidents. Despite the fact that we are all affected by weather and the fixation of the media on weather, the population remains relatively uninformed as to severe weather. Many do not know the difference between a 'watch' and a 'warning' issued by the National Weather Service, nor how to set EAS-enabled devices to work properly.

More importantly, many do not know the proper response when severe weather occurs. Many dangerous myths abound on a proper response, particularly with high winds and tornadoes. Many do not realize the inherent danger in a thunderstorm, even if it is still somewhat distant. The National Weather Service has initiated several campaigns of its own, such as the "turn around, don't drown" for flooding or "when thunder roars head indoors" for storms. This goal is to expand on the efforts of others to round out and increase storm preparedness in Blair County.

4.5.1 OBJECTIVE: RAISE PUBLIC AWARENESS

Because weather is an everyday occurrence, it is taken for granted and complacency sets in.

When a storm does arise, it is treated as a minor annoyance and the inherent dangers are overlooked or ignored. Public awareness of the actual dangers in a storm will help to overcome the complacency and enable people to protect life and property during a storm.

4.5.1.1 ACTION STEP: TRAINING FOR GENERAL PUBLIC

There are several training programs developed for the general public relative to storm preparedness, most notably CERT. Training opportunities for storm preparedness will be offered on an ongoing basis to raise awareness of storm dangers and proper response. People who have taken the training will also be in a position to help their neighbors and promote the programs to further spread the word on preparedness.

4.5.1.2 ACTION STEP: TRAINING FOR PUBLIC OFFICIALS

Similar to the general public, public officials are generally complacent on storm preparedness. A similar training program will be offered for the public officials, however, this program will include elements that cover the additional responsibilities public officials bear during a storm incident. As with the general public, this will potentially self-propagate with people helping their neighbors and promoting the training programs through word of mouth.

4.5.1.3 ACTION STEP: DISTRIBUTE SEVERE WEATHER LITERATURE

Materials developed for the Hazard Education Program can be distributed for storm preparedness, particularly the strong storms and high winds. Efforts must be made to reach the special populations so they can also benefit from the program. Literature should be available both in print and electronic formats.

4.5.1.4 ACTION STEP: PROMOTE THE EMERGENCY ACTIVATION SYSTEM

Most people still do not know what the Emergency Activation System is or how it can directly benefit them. The system will be explained and the setup and operation of EAS-enabled devices discussed. By properly setting up the devices, people will be better informed when alerts are issued and will not miss alerts simply because the device is not properly programmed.

4.5.1.5 ACTION STEP: DISTRIBUTE ALL-HAZARD WEATHER RADIOS

The Blair County Emergency Management Agency has been distributing all-hazard weather radios for the past couple years in an effort to inform institutional settings and large employers of the availability of the devices as well as any alerts that are issued. This program has been successful and will continue under the storm preparedness goal of this plan.

4.5.2 OBJECTIVE: DEVELOP PUBLIC RESPONSE

An informed public is half the battle in storm preparedness. The information is useless without an action to go with it. In conjunction with the public awareness objective, a public response must also be developed. This will mirror the Hazard Education Program in many ways, but focus entirely on storm preparedness.

4.5.2.1 ACTION STEP: DEVELOP INFORMATIONAL PAMPHLET

Most topics will likely be easily covered through the development of an information brochure that outlines the issue and briefly discusses major points. These will be published both in print and online. Where material is already developed by another agency, permission will

be sought to utilize that instead of redeveloping something new.

4.5.2.2 ACTION STEP: DEVELOP INFORMATIONAL BOOKLET

For other topics, particularly the specific incidents affecting limited populations, a more detailed booklet may be developed so those affected have a more thorough understanding of what needs to be done and the roles of people that may be involved to overcome the incident. As with the brochures, these will be published both in print and online, and existing material will be used whenever possible.

4.5.2.3 ACTION STEP: PROVIDE SKY-WARN COURSE

As part of the response training, the Sky-Warn course will continue to be offered on an ongoing basis in Blair County to better prepare people for storms and weather situations.

4.5.2.4 ACTION STEP: PROMOTE RAPID NOTIFY

The County has engaged in a rapid notification system that alerts residents of incidents and provides pertinent information. This has been promoted in the past few years with modest interest. As part of the storm preparedness program, this system will be more actively and heavily promoted to increase the coverage and availability to the public.

4.5.2.5 ACTION STEP: PROMOTE SMARTPHONE APPS

Several general smartphone 'apps' have been developed by third parties in recent years that enable users to monitor weather situations and related information. As part of the storm preparedness program, these will be evaluated for usefulness in the Blair County setting and those with local utility will be actively promoted in the program. This will further

enable the public to be informed during a weather incident.

4.6 GOAL: CONTINUE FLOOD PROGRAM INITIATED UNDER 2008 PLAN

This goal is a carry-over from the 2008 plan with the goal of completing the items identified in that plan under the 2013 plan. Flooding was the primary focus of the 2008 plan with a large portion of the document devoted to mitigating the most common and widespread hazard in Blair County. Significant progress was made under the 2008 plan in mitigating the impact of flooding, however several points have not been completed. These are discussed below.

4.6.1 OBJECTIVE: IDENTIFICATION OF FLOOD IMPACTS

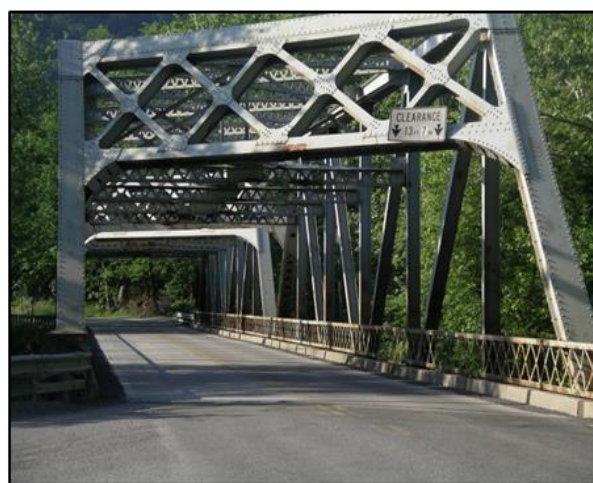
Blair County needs to complete the identification of flood impacts that started under the 2008 plan. Much of the work under that plan has been completed, however, the lack of some data that was assumed to be available slowed down and hindered completion. These action steps will see this identification project through to its completion.

4.6.1.1 ACTION STEP: MAINTAIN NFIP COMPLIANCE

All Blair County municipalities are currently participating in the National Flood Insurance Program (NFIP), and have been continuously since the 1970s. Flood Insurance Rate Maps (FIRMs) were updated countywide effective March 2, 2012. Protocols already in place will be maintained to ensure the continued accuracy of all maps related to flooding. Currently there are approximately 1200 flood insurance policies in force throughout Blair County with a total insured value of \$180 million. Total annual premiums come to just over one million dollars. Table 4.1 on the next page contains municipal

level detail on participation in the National Flood Insurance Program.

A second part of participation in the NFIP is the adoption of ordinances that regulate floodplain development. As of 2013, all participating municipalities have adopted such ordinances, either as part of a larger development ordinance (such as zoning) or as a stand-alone regulatory function. There are no plans in any participating municipality to undermine the benefits and controls these ordinances have put in place.



Finally, the protocols for mapping accuracy will include standards for data collection and maintenance for related flood items such as critical facilities, structures, public land, roads, and related elements impacted by flooding. Like the mapping protocols, these will ensure the accuracy and currency of the published data and data used for analytical purposes.

TABLE 4.1: NFIP PARTICIPATION

Municipality	Community ID	Date of Entry	Current Map Date	# of Policies in Force	\$ Insurance in Force*	\$ Premium Paid
City of Altoona	420159	6/28/1974	3/2/2012	216	\$29,258	\$182,063
Borough of Bellwood	420160	6/1/1979	3/2/2012	11	\$2,611	\$16,115
Borough of Duncansville	420161	6/28/1974	3/2/2012	106	\$13,088	\$99,871
Borough of Hollidaysburg	420162	10/12/1973	3/2/2012	86	\$10,159	\$88,018
Borough of Martinsburg	421384	12/20/1974	N/A	1	\$100	\$269
Borough of Newry	422333	2/7/1975	3/2/2012	1	\$215	\$449
Borough of Roaring Spring	420163	2/1/1974	3/2/2012	8	\$985	\$4,671
Borough of Tunnelhill**	422689	-	-	-	-	-
Borough of Tyrone	420164	12/21/1973	3/2/2012	173	\$20,079	\$142,801
Borough of Williamsburg	420165	11/30/1973	3/2/2012	31	\$2,903	\$19,492
Township of Allegheny	420961	8/2/1974	3/2/2012	98	\$17,263	\$102,252
Township of Antis	421385	12/27/1974	3/2/2012	45	\$12,339	\$58,557
Township of Blair	421386	11/22/1974	3/2/2012	93	\$14,049	\$76,024
Township of Catharine	420962	1/18/1974	3/2/2012	6	\$694	\$6,976
Township of Frankstown	421387	12/13/1974	3/2/2012	64	\$8,429	\$37,022
Township of Freedom	421388	1/31/1975	3/2/2012	68	\$10,464	\$50,497
Township of Greenfield	421389	2/14/1975	3/2/2012	71	\$9,871	\$49,439
Township of Huston	422332	1/10/1975	3/2/2012	9	\$928	\$3,407
Township of Juniata	421390	12/27/1974	3/2/2012	5	\$785	\$2,851
Township of Logan	421391	1/3/1975	3/2/2012	112	\$17,841	\$85,456
Township of North Woodbury	421392	1/24/1975	3/2/2012	6	\$337	\$3,195
Township of Snyder	421393	1/10/1975	3/2/2012	31	\$4,619	\$35,699
Township of Taylor	421394	1/17/1975	3/2/2012	15	\$1,668	\$14,496
Township of Tyrone	421395	12/13/1974	3/2/2012	10	\$988	\$6,388
Township of Woodbury	420963	3/15/1974	3/2/2012	10	\$684	\$4,023
Totals				1276	\$180,357	\$1,090,031

Source: FEMA Community Status Book Report: HUDEX Report

* in thousands \$

** Tunnelhill Borough is in both Cambria and Blair Counties. FEMA recognizes Tunnelhill as being located in Cambria County.

4.6.1.2 ACTION STEP: IDENTIFY ALL PUBLIC LANDS CONTAINING FLOOD HAZARD

The 2008 plan called for the County to identify all public lands within a flood hazard area. This will identify greenways and restricted development lands as well as parks and similar facilities that help to mitigate the impact of

flooding by providing a low- or no-development land use in a flood prone area. Additionally, it enables the public sector owners of the land to identify which property is impacted by the flood hazard and make decisions accordingly.

4.6.1.3 ACTION STEP: IDENTIFY CRITICAL FACILITIES IMPACTED BY FLOOD HAZARD

Related to the above action step, this focuses on developed property in the floodplain that is owned by the public or a quasi-public owner. Critical facilities include schools, municipal buildings, libraries, water and sewer plants, dams, EMS, Fire, Police, and public works facilities. It may also include shelter-eligible properties such as assembly halls and houses of worship. Once identified, decision-makers are able to make better-informed decisions regarding the future of these facilities with an eye on flood damage, loss of use from flooding, and potential for catastrophic loss.

4.6.1.4 ACTION STEP: IMPROVE BLAIR COUNTY ASSESSMENT DATABASE

The 2008 plan was hindered by a lack of data in the county assessment database that prevented some of the analysis from being completed. To keep this from happening in the future, the database will be improved to better identify the flood issues related to each property and to maintain a more accurate record going forward.

4.6.2 OBJECTIVE: CONTINUE BUYOUT PROGRAM

Under the 2008 plan, three municipalities engaged in a voluntary buyout program in flood prone areas. Altoona, Allegheny Township, and Frankstown Township each have purchased properties in the floodplain and have converted them to permanent greenways. Two others, Martinsburg and Greenfield Township, proposed such action but the property owners were unwilling to engage in the transaction. This buyout program is voluntary and removes vulnerable properties from the floodplain thereby minimizing loss to property and opening the floodplain area thereby reducing upstream and downstream impacts.

4.6.2.1 ACTION STEP: PROMOTE VOLUNTARY PARTICIPATION

The voluntary nature of the program must be emphasized, but participation must also be encouraged if the program is to be successful. There are several other areas in the County that would be eligible for the program. The County or local municipality will promote the voluntary participation in the program to mitigate flood impact from future flood events.

4.6.2.2 ACTION STEP: EXPAND COMMUNITIES PARTICIPATING

Of the two dozen municipalities in Blair County, three have had success with the program and another two had interest with nonparticipation by the affected property owners. The program can be expanded to additional municipalities by explaining the benefits and assisting with the administration and implementation of the buyout portion of the program. Municipalities must also understand that the program includes property being made open space in perpetuity to prevent further development in the floodplain.

4.6.2.3 ACTION STEP: CREATE LAND BANK OR GREENWAY IN FLOOD AREAS

This is a critical part of the voluntary buyout program. The land acquired in the program must be forever barred from further development to mitigate flood loss and also mitigate the impact of flooding elsewhere in the floodplain. This is best done when the properties are aggregated into one cohesive greenway or riparian buffer that allows stream access to the public and overflow for the stream during high water events. Some communities have also used flood prone property in a land bank or development right bank program where the right to develop the land is transferred to another piece of land allowing a

more intensive development on the non-flood prone property.

4.6.3 OBJECTIVE: ADDRESS VULNERABLE FACILITIES

Part of the identification objective was to identify facilities that are vulnerable to flooding. With this knowledge, property owners and public officials are then able to make better decisions regarding floodplain development. Removing or altering the vulnerable facilities will reduce flood loss and related loss of use and insurance claims.

4.6.3.1 ACTION STEP: RELOCATE CRITICAL BUILDINGS

This is not a proactive action, but an action to be considered in conjunction with other factors in property maintenance. Should a building become obsolete or become abandoned, or need major repairs or upgrades for continued use, relocation should be considered to reduce the risk of flood loss and mitigate the building's impact on the surrounding flood prone properties.

4.6.3.2 ACTION STEP: RELOCATE STOCK AND MAINTENANCE YARDS

Stock yards and maintenance yards located in flood prone areas pose special hazards during a flood event. Flood waters can pick up storage materials or hazardous materials stored on-site. Moving these yards will preserve the stock piles and reduce the risk that material will be washed downstream. It will also prevent the loss of access to the materials during the flood event. Relocating can occur on the same property with the stock moved above the floodplain level.

4.6.3.3 ACTION STEP: REINFORCE UNMOVABLE FACILITIES

There are critical facilities that are located in the floodplain by design, or by nature. These

generally include portions of water treatment plants, sewer plants, outfalls, dams, and weirs. In the event a facility cannot be moved by nature of the facility or by other factor, the owner should take steps to reinforce the facility against flooding. This can include moving hazardous material at the facility above the flood area, installing design elements to complement the flow of water, ensure inundation does not result in failure of the facility, and so forth.

4.6.3.4 ACTION STEP: CONTINUE DAM MAINTENANCE

There are over a dozen dams in Blair County, most of which are for water supply for the western valley. These dams are in good repair and have owners, such as municipal authorities, that are knowledgeable in the continued operation and maintenance of the facility. The dam maintenance currently in place should continue with schedule maintenance occurring when it should by the owners. Major upgrades or maintenance projects should be undertaken sooner than later to minimize cost to the owner and risk to the public.

4.7 GOAL: TRANSPORTATION IMPROVEMENTS

A part of the hazardous material incident concern was an incident on the transportation system, particularly the railroad and near the intermodal facilities at Canan Station. As part of the mitigation plan for hazardous material incidents, two transportation improvement objectives have been identified for the 2013 plan, both focused on highway transportation.

Transportation has always played an important role in Blair County. Hollidaysburg was the point where the Pennsylvania Mainline Canal converted to the Allegheny Portage Railroad. Later, Altoona was the "base camp" for those working on moving the Pennsylvania Railroad

westward around Horseshoe Curve and onto the Allegheny Plateau. With the construction of US-220/I-99 and US 22, Blair County sits at a major highway crossroads. While the canal traffic is long gone, the highways and railroads continue to carry people and goods to and through Blair County. With this movement of goods, there is a risk of a hazardous material incident on the network.

Blair County is also home to intermodal facilities at Canan Station. These facilities enable the transfer of material between pipeline, rail, and truck traffic. It is the third largest such facility in Pennsylvania. The potential for an incident in this area and along the PA 764 corridor is greater due to the presence of the facility. Canan Station is populated by residences, retail commercial, and industrial uses all within close proximity of the intermodal facility.

This goal is to identify the risks to the public infrastructure and make such improvements as needed to minimize the risks to the infrastructure and those using it. There is no intended focus on the operation of the facilities themselves in the 2013 plan.

4.7.1 OBJECTIVE: IMPROVE PA 764 CORRIDOR

The PA 764 corridor between the intermodal facilities in Canan Station and US 22 sees a high level of traffic carrying hazardous materials due to the presence of the intermodal facilities. While the corridor has no history of a major incident, there are likely improvements that can be identified and constructed to further improve the safety of the corridor. Of particular concern is the intersection of Burns Avenue with PA 764 as this is a turning point for truck traffic using the intermodal facilities.

4.7.1.1 ACTION STEP: CONDUCT TRAFFIC STUDY

The group identified this area as a concern, however also recognized that they did not possess the expertise or authority to actually analyze the traffic patterns and implement safety improvements. Therefore this plan recommends that the MPO conduct a traffic study (or similar undertaking) of the corridor to identify potential conflict points, areas of increased risk of a hazardous material incident, and any other concerns that may be relevant. Two points of concern were the Burns Avenue Intersection and the narrowing of the road from four lanes to two lanes north of Carson Valley Road.



4.7.1.2 ACTION STEP: INSTALL WAY-FINDING FOR COMMERCIAL DRIVERS

So that commercial drivers are better able to find their way to the intermodal facility, and to avoid potential jams resulting from trucks not making the clearance under the Hollidaysburg Branch bridge, a way-finding system is recommended along the corridor. This will give non-local drivers confidence in making their way to the appropriate facility and gate along the corridor.

4.7.1.3 ACTION STEP: INSTALL WARNING NOTICES FOR NON-COMMERCIAL DRIVERS

In conjunction with the way-finding for commercial drivers, a simple notification for other drivers that there is heavy truck traffic and cross traffic in the area should be installed at each end of the corridor. Notification may include a brief warning of the cargo being transported.

4.7.2 OBJECTIVE: IDENTIFY HAZARDOUS MATERIAL CHOKES POINTS

A second study is county-wide in focus. This study will identify points on the system where a hazardous material incident is more likely to occur and possible solutions. This will engage the MPO in a study of the entire transportation system (not just highways) with recommendations for improvements that can be implemented over the short- to mid-term future.

4.7.2.1 ACTION STEP: ENGAGE PENNDOT

A study of this size must include the state transportation experts. PennDOT District 9 is located in Hollidaysburg and, in conjunction with the MPO, is well able to undertake the study. If a subcommittee is formed to oversee this study, PennDOT should have a seat at the table. The liaison for the MPO can be a first contact to initiate this objective.

4.7.2.2 ACTION STEP: CONDUCT COUNTY WIDE SURVEY OF CHOKES POINTS

This study will include a county wide survey of the entire transportation network in Blair County. Immediately surrounding areas may need to be included to have a proper view of the system and implement solutions. The survey should include critical points on the state system, the local system, the railroads,

pipelines, and any air traffic that are at increased risk of a hazardous material incident. Additionally, cargo flow studies should be a part of the study to give an overall view of the movement of goods through the county.

4.7.2.3 ACTION STEP: CONDUCT MARCELLUS SHALE ROAD SURVEY

A final part of this study will be an analysis of local roadways for their capability of handling the impacts of Marcellus shale traffic. The intent will be to pick up any roads remaining that should be posted for bonding that have not been and to identify any elements on the network that are simply incapable of handling the typical shale traffic. Assistance can be provided to post the roads, should it be requested from the township.

4.8 RELATED ACTIVITIES

4.8.1 STORM WATER MANAGEMENT PLANNING

Blair County has completed storm water management planning on one sub-watershed, the Beaverdam Branch of the Juniata River. This is the most developed sub-watershed and has the most development pressure. A similar exercise was started for the Little Juniata River, but was canceled after phase one for lack of funding.

Storm water management planning provides an overall glimpse of a watershed to identify the sources and impacts of storm water runoff on the streams and adjacent lands. As a result, there is a close tie between storm water management and floodplain management. The Beaverdam Branch plan has resulted in a reduced negative impact of storm water on the stream and on those lands downstream including the downstream portions of the Frankstown Branch of the Juniata River. The benefits include reduced erosion, smarter

development patterns, land restoration, and reduced flood impacts.

In the middle of the last decade, the Pennsylvania Department of Environmental Protection asked Blair County to consider a countywide storm water management plan instead of doing each of the several watersheds individually. This approach was favorable, however funding has remained a concern. Development pressure is now increasing in both the Little Juniata River watershed and the Frankstown Branch watershed, which combined drain over 80% of the county. Countywide storm water management planning would keep improper development in check, reduce flood impact, reduce erosion, and assist in stream management.

In 2012, York County, with the blessing of PA-DEP, began promoting a non-engineered approach to storm water management planning, which reduced costs significantly, but still achieved tangible results. Blair County Planning Commission is now considering undertaking a storm water management planning exercise countywide based on the York County model.

4.8.2 COUNTY COMPREHENSIVE PLAN UPDATE

The Blair County Comprehensive Plan was adopted in 2007, and must be updated every ten years. The data used for the development of the plan was developed or published between 2000 and 2004. The Blair County Planning Commission will be initiating the development of a new plan during the life of this 2013 update. Efforts will be made in that plan to incorporate the goals and objectives of this plan as well as to utilize the studies and data collected to mutually support the Comprehensive Plan and this plan.

The Comprehensive Plan guides community and economic development in the county and has a

direct impact on development patterns countywide. These development patterns can help mitigate hazards or, if unchecked, can make the impact of a hazard worse. The comprehensive plan adopted in 2007 was developed with the flood issue of the 2008 plan in mind, and has been directing development away from flood prone areas. The development of further data under this plan's goals and objectives will further support the goals and objectives in the comprehensive plan, resulting in development patterns that help to mitigate the effects of the hazards facing Blair County.

4.8.3 COUNTYWIDE CERTIFIED FLOODPLAIN MANAGER

During the development of this plan, discussion arose as to whether it would make sense to have a Certified Floodplain Manager to serve the entire county, with the exception of the City of Altoona. Altoona would be excepted due to population size and density, and the fact it has a CFM on staff to meet the needs of the City and its residents. The consensus was that a countywide CFM would be beneficial not only to the municipalities, but also to the individual residents. The various contract firms that provide services to municipalities and residents, such as code inspectors, engineers, and surveyors, would also benefit. Research into the requirements for both obtaining and maintaining the certification as well as where to house the position is ongoing.

4.8.4 DESIGNING TO HEAL PROTOCOL

The Designing to Heal Protocol has two elements. One – the more visible – is to design “ground zero” sites of disasters to honor and remember those who fell victim to the disaster. The other, less visible but much more important, is to pre-design communities so that a disaster does not have as great an impact as it might otherwise. As part of the development review process, this second element can be

incorporated so as to reduce impact of future disasters in Blair County

The Designing to Heal Protocol can also be incorporated in to the two planning efforts mentioned earlier, the Comprehensive Plan, and storm water management plan, to further enshrine the principles and goal of Designing to Heal.

4.8.5 PUBLIC INFORMATION CAMPAIGN

It can be difficult to obtain some types of public information throughout Blair County. This is not due to reluctance to provide it, but rather to an inability to provide it in a usable format, or the incompleteness or inaccuracy of the data. Various efforts are underway to overcome these obstacles, including document management, MIS, GIS, and networking opportunities throughout not only the Blair County government structure, but others as well. This could tie in nicely with all the goals in this plan by providing support for information distribution, as well as receiving benefit from improved data and process management.

- SECTION 5 -

**PLAN MAINTENANCE
PROCEDURES**

5.0 PLAN MAINTENANCE PROCEDURES

5.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

Blair County has established a procedure for monitoring, evaluating, and updating the hazard mitigation plan. Monitoring of this hazard mitigation plan will continue as an ongoing process conducted by Blair EMA and coordinated with the representative members of the Mitigation Steering Committee on an annual basis via a report memorandum to be submitted by December 31 of each year. Blair EMA will continue to track overall plan progress not only at the County level but also at the municipal level via coordination with local emergency management coordinators. The County will continue to use the table in Appendix J (see page 188) to record the date of completion of the various hazard mitigation recommendations and to track progress at the individual municipal level. The annual report memorandum will summarize that year's progress towards meeting the identified hazard mitigation planning goals.

In regard to updating the hazard mitigation plan, the Mitigation Steering Committee will continue to convene on a semiannual basis to review the Blair EMA monitoring activity, evaluate the current effectiveness of the hazard mitigation plan, and make any needed updates/changes to the hazard mitigation plan. The five-year review will begin in 2016 to evaluate the hazard mitigation plan in regard to its accuracy, relevance, and applicability for the anticipated five-year update in 2018. In particular, the Mitigation Steering Committee will review the hazard mitigation plan in light of:

- The ability of the identified hazard mitigation planning goals to address current and anticipated future conditions;
- Any known or perceived changes in the County's vulnerability to newly-identified hazards;
- The current capabilities of the County and its constituent municipalities;
- The successes, failures, and/or lessons learned from implementing the identified hazard mitigation recommendations during this five-year period;
- The need to address additional hazards in the plan and/or the need for other modifications to the plan; and
- Advances in technologies and database software that would allow for more detailed analysis of asset vulnerability and loss estimation.

If the Mitigation Steering Committee determines that updates and/or changes are needed to the hazard mitigation plan, assignments will be made to the representative members and the Committee will meet as deemed necessary until all updates and/or changes have been completed and incorporated into the hazard mitigation plan. It will be the responsibility of Blair EMA to oversee the plan review/update process and to coordinate all plan revisions with the appropriate municipalities.

Additional updates to the hazard mitigation plan will be completed upon development of the County's GIS program. In particular, as the County develops/refines its various GIS databases more detailed analysis of asset vulnerability and loss estimation can be conducted. Having a more detailed GIS structure database, for instance, would enable an exact count of the type and value of buildings in known hazard areas to be generated. This level of data would greatly enhance the asset vulnerability and loss estimation and should be

included as an adjunct with a future update to the plan.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Implementation of the new and ongoing hazard mitigation recommendations outlined in this plan will continue upon plan adoption. Analysis of PM-1 indicates that the municipalities are encouraged to develop a new or amend their existing Comprehensive Plan to include hazard related provisions. As such, it is anticipated that those municipalities with an existing Comprehensive Plan will be re-adopting this updated hazard mitigation plan as an amendment to their Comprehensive Plan, thus fulfilling PM-1. By so doing, those municipalities will be continuing their local hazard mitigation program simply by re-adopting this updated hazard mitigation plan. Similarly, those municipalities can then proceed to revise other existing local planning documents (i.e., capital improvement plan, zoning ordinance, subdivision and land development ordinance, building code, floodplain ordinance, etc.) as appropriate to implement any new or ongoing hazard mitigation recommendations that apply to their jurisdiction. Ultimately, it will be left to the discretion of the individual municipalities to revise their existing policies, plans, and programs to be consistent with and to help implement the updated hazard mitigation planning recommendations.

For those municipalities that do not have an existing Comprehensive Plan, the critical first step will be to adopt this updated hazard mitigation plan as a stand-alone document. Once this occurs, those municipalities will then be free to implement the new and ongoing hazard mitigation recommendations that are applicable to their respective jurisdiction. It is understood, however, that in certain instances, select municipalities may not have any existing programs through which to implement the

hazard mitigation recommendations. This concept was clearly defined in the Capability Assessment and is not to be interpreted as an inability to implement the hazard mitigation recommendations. Rather, implementation of the hazard mitigation recommendations in these select municipalities may be accomplished through cooperative arrangements, more coordinated efforts, and/or resource efficiency.



5.3 CONTINUED PUBLIC INVOLVEMENT

Blair County is committed to involving the public in the continual reshaping and updating of this hazard mitigation plan. Blair EMA is responsible for monitoring the plan and for the five-year review/update of the plan. In this capacity, it will also be the responsibility of Blair EMA to coordinate with the Blair County Planning Commission to implement long-term public participation activities.

Copies of this updated hazard mitigation plan will be catalogued and kept on file at public libraries and municipal buildings throughout the County. In addition, the updated plan will be posted on the County's Web site. This site will also contain contact information to which people can direct their comments or concerns. These will be reviewed and discussed by the Committee at its semi-annual meetings, with

any appropriate actions or responses documented.

The Committee will continue to meet on a semi-annual basis to ensure the plan is being implemented and to stay on top of any issues that may arise. A public comment period will be provided at the beginning of these meetings to allow any member of the public to address the Committee with concerns, ideas, or comments relative to hazard mitigation.

Finally, similar to that which was completed for this hazard plan update, a public meeting will be held after each five-year review/update of the plan. This meeting will provide the public an opportunity to express concerns, opinions, or ideas about the plan. Blair EMA will be responsible for organizing and advertising this public meeting.

**- APPENDIX A -
PLAN ADOPTION
RESOLUTIONS – COUNTY
COMMISSIONERS**

**- APPENDIX B -
PLAN ADOPTION
RESOLUTIONS – MUNICIPAL
ELECTED BOARDS**

- APPENDIX C - MUNICIPAL PARTICIPATION RECORDS

Hazard Mitigation Plan Meeting Minutes January 24, 2013

The Hazard Mitigation meeting was held at the Blair County EOC, 10:00 am.

The meeting started with Dave McFarland, of the Blair County Planning Commission, overseeing the assessment meeting with all 24 Blair County municipalities.

Dave explained the purpose of the plan and how Blair County municipalities have to adopt an updated plan in 2013.

The goal for today's meeting is to identify three different hazards; human, natural and technological in the Blair County area. The probability of the occurrence, the probability of human injury or death, the probability of property damage and probability of service interruption needs identified.

The remaining time of the meeting was spent on discussion about each of the hazards and entering the information on the identification form.

The results will be assessed and compiled then reviewed through emails. Then the goal and objectives phase will be discussed in the next meeting.

Next meeting is scheduled for March 28, 2013.

Meeting adjourned.

Respectfully submitted,
Jane Beveridge
Recording Secretary

**Blair County
Hazard Mitigation Plan
Hazard Assessment Meeting**

10:00 AM January 24, 2013
Blair County EOC

Call to Order

1. Introductions
2. Project Overview & Purpose
3. Mitigation Alternatives
 - a. Under Current Plan
 - b. Looking Forward
4. Hazard Identification
 - a. Countywide
 - b. Localized
5. Next Steps
6. Next Meeting

Adjourn

	LAST NAME	FIRST NAME	ORGANIZATION	ADDRESS	CITY	ST	ZIP	PHONE	EMAIL	INITIALS
1	Tennant	CS		189 Howard St.	Mountain	PA	16802	792-4541	CSPT@Aol.com	CS
2	Acks	JL	Huron Twp Catharine & Huron	2800 Deco Ave 1227 Resurrection Dr.	Williamstown	PA	16802	937-1395		
3	Hoffman	Gill			Willing	PA	16802	832-3851		WH
4	Smith	Thomas	Tyone Hospital	87 Hospital Drive	Tyone	PA	16810	684-1255	tsmith@tyonehospital.org	TS
5	Leibert	Phillips	Tyone Borough	1102 Leque Avenue	Tyone	PA	16806	684-1330	leibert@tyoneborough.org	PL
6	Young	Jay	Tyone Borough	1100 Leque Ave	Tyone	PA	16806	684-1330	tyone@tyoneborough.org	JY
7	Stewart	Barney	Marion County Government	110 S. Walnut St.	Marion	PA	16642	781-7222	estates@marioncountypa.org	BS
8	Brown	Sharon	Northbrook, Tenn	113 Century Road	Northbrook	PA	16642	783-4357	sharonbrown@northbrook.org	SB
9	Runde	John	Tyone Twp.	472 Double Lane	Attomedia	PA	16601	949-2602	John.Runde@attomedia.com	JR
10	Malters	Beve	Juniata Twp	785 Kwik Rd	Portage	PA	16804	814-317-5057	beve.malters@juniata.org	BM
11	Fieldis	Mathew	Reynolds Springs	616 Spring St	Reynolds	PA	16723	814-234-4874	mathew@reynoldspas.org	MF
12	Biddle	Marion	Duncansville	574 Logan Dr	Duncansville	PA	16828	814-502-0530		MB
13	Murphy	Silk	Allegheny Twp	3131 Oliver Rd	Allegheny	PA	16605	685-9563	allegheny@allegheny.org	SM
14	Cubitt	Roger	Blair Twp	375 Conner Dr	DuBois	PA	16801	814-696-3594	roger.cubitt@blairtwp.org	RC
15	Bojarski	Greg	Penn		Altoona	PA				
16	Reverdy	Jane	City of Altoona					949-2446	jane.reverdy@altoona.org	JR
17	Tobias	Mike	Altoona Fire Dept					949-2433	mtobias@altoonafire.org	MT
18	Schmide	Assenda	Logan Twp					944-5349	cschmide@altontwp.org	CS

19	Greiner	Howy	Blair Co Sheriff	423 Allegheny St	Holly, Pa	16091	811.03.510	hgreiner@blair.org	He
20	Ingersoll	Terri	Greenfield Twp	1020 Bedford St	Clarksburg, PA	16025	239-8543	terri.ingersoll@blair.org	Terri
21	Sammur	Maria	W-Burg	401 B/Cir St	W-Burg, PA	16048	695-8051	msammur@blair.org	Msammur
22	Bender	Ed	Freedom Twp	131 Municipal St	Freedom, PA	16039			
23	Claycomb	Suzanne	"	"	"	"	"		
24	Hesley	Don	"	131 Municipal St	"	"	"		
25	Guinan	Don	Neuery Boro		Neuery	16015		dgouinan@blair.org	
26	Rossier	Tom	Beaumont Twp	607 Beaumont Rd	Duquesne	16023			
27	Rabits	Pat	Tyrone Borough	1100 Logan Ave	Tyrone, PA	16086	684-1330		
28	Conville	Don	Antenna	3301 5th Ave	Antenna, PA	16001	934-4074	donconville@antenna.org	
29	Kennedy	Ray	Antenna	3301 5th Ave	Antenna, PA	16001	944-4074	raykennedy@antenna.org	
30	Leasberry	Tox	Williamsburg Boro	305 E 2nd St	Williamsburg	16093	832-2051	jlleasberry@gmail.com	TL
31	Chapman	Harry	"	"	"	"	"		PC
32	Huyle	Janice	ARC	415 Orchard Ave	Antenna	16001	814-944-4074	janice.huyle@antenna.org	Janice
33	Benton	Donella	"	"	"	"	"	donella.benton@antenna.org	Donella
34	Dillon	Ann	Snyder Twp	106 Beaumont Ave	Tyrone	16086	684-1048	ann.dillon@snyder-twp.com	Ann
35	Fischer	Dee	Beaumont Twp	136 Frontline Circle	Antenna	16001	944-5788	dee.fischer@antenna.org	Dee
36	Nicholson	Steve	Blair Co EMA	615 4th St	Antenna	16002	944-5906	stevenicholson@blair.org	Steve
37	Byrds	Don	Blair Co EMA	415 4th St	Antenna	16002	944-5905	donbyrds@blair.org	Don

Hazard Mitigation Meeting January 24, 2013

38	Haney	Greg	Woodbury Twp	6385 Clear Creek Rd	Williamsburg	16845	832-2296		CH
39	Hamlin	Craig	114			1689	832-2296		CH
40	Jagers	Bob	Taylor Twp	7217 Woodbury Rd		74673	724 2738		BC
41	McAulick David	Blair-Phewy	301 Valley View Blvd Wye E	Altoona	017 1602	940-5976	deborah@blairphewy.org	DM	
42	McCall	Michael	3940 Murphy Ave	Altoona	004 1601	946-8974	mcwalle@kentshamns.com	MA	
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Hazard Mitigation Initial Public Input Meeting – January 24, 2013

Hazard Mitigation Plan

Initial Public Meeting
January 24, 2013

Hazard Mitigation Plan: Purpose

- Requirement of Federal Law
- Continuity of Operation
- Elimination of Known and Potential Hazards
- Funding for Identified Hazards
- Basis for response plans
- Basis for Standard Operating Procedures

Hazard Mitigation Plan: Status

- Current Plan Expires 2013
- Identified Projects for Mitigation
- Stakeholder Meetings through 2011 and 2012
- Focus on Flooding

Hazard Mitigation Plan: Status

- Incomplete Items:
 - Define properties in the floodplain (new maps)
 - Identify repetitive loss properties
 - Address lack of detailed information on structures
- Incomplete municipal items

Hazard Identification: Type

- Natural Hazards
- Human Hazards
- Technological Hazards

Hazard Identification: Probabilities

- Probability of Occurrence
- Probability of Human Injury or Death
- Probability of Property Damage
- Probability of Service Interruption

Hazard Identification: Scope

- Large-Scale
- Countywide
- Local Concern
- Evaluate Threats (Excel)

Hazard Identification Form

2013 Hazard Mitigation Plan Hazard Assessment Natural Events						
Hazard Identification	Probability					
	Occurrence	Human Impact	Property Impact	Service Interruption	SOP?	
Drought	2	1	2	2		
Earthquake	1	3	3	3		
Conflagration	2	3	3	2		
Flooding	3	1	2	1		
High Winds	3	1	2	2		
Severe Thunderstorm	3	1	2	2		
Tornado	1	2	2	2		
Wildfire	2	1	3	3		
Winter Storm	2	1	2	2		
Pandemic	2	3	0	3		
Tropical Storm	3	1	2	3		
Subsidence	1	3	3	3		

Next Steps

- Hazard Assessments
- Draft Mitigation Measures
- Develop Goals and Objectives
- Next Meeting – March 28th

Hazard Mitigation Plan Meeting Minutes March 28, 2013

The Hazard Mitigation meeting was held at the Blair County EOC, 9:30 am.

The meeting started with Dave McFarland, of the Blair County Planning Commission. This is one of four meetings to discuss the rankings of hazards in Blair County from the previous meeting.

The goal for today's meeting is to discuss the rankings and the possibility of combining similar hazards into the same category. Definitions in the plan were reviewed and/or revised. The hazards were then reviewed and some combined.

The floodplain analysis, under the 2008 plan, but using new mapping was discussed. Some municipalities were mapped and with floodplain properties identified. That analysis is available to any municipality.

There was then discussion of 2013 goals and objectives. An education program was created, which ties in with other state wide and national initiatives. Three hazards were identified in the plan that will include goals and objectives. Each municipality has to pick a goal for the 2013 plan. There were discussion ideas for projects that the municipalities can choose from.

Public meetings are set up in the next few weeks at three locations in the county. Next meeting is scheduled for May 23, 2013.

Meeting adjourned.

Respectfully submitted,
Jane Beveridge
Recording Secretary

Agenda for March 28, 2013

1. Opening Remarks
2. Ranking of Identified Hazards for 2013
3. Floodplain Analysis (Under 2008 Plan)
4. Discussion of 2013 Goals and Objectives
5. Identification of 2013 Projects and Action Steps
6. Date of Next Meeting
7. Closing Remarks

Hazardous Mitigation Planning Meeting
03/28/2013

	NAME	Municipality
1	CA. TEARANTA	Tyler Township
2	David Sanchez	
3	Bethany Richaker	
4	Terri Lingenfelter	Greenfield
5	Roger Lingenfelter	Greenfield
6	Bob Gustafson	Boyle / APC
7	Bob Carbes	Taylor Twp
8	Don Boyle	EMA
9	Jay Young	Tyrone
10	STEFAN STREIB	Atsion PD
11	Sharon Brown	North Woodbury Twp.
12	Kathy Stoltz	MARTINSBURG Borough
13	Drew McChes	Blair LEP

Hazardous Mitigation Planning Meeting
03/26/2013

28	Craig Hamilton	Woodbury Twp.
29	Lucas Martsolf	Aurora Twp.
30	Jeff Farber	Antis Twp. Bellwood
31	Dorothy Stahl	Houston
32	Michael Kelly	Atlanta VAMC
33	Jan Larson	Burn Twp
34	Richard Booris	Acersent Twp
35	Roger White	Blair Twp.
36	Greg Hancy	Woodbury Twp.
37	Amie Bink	Blair County Planning Commission
38		
39		
40		
41		

Hazard Mitigation Plan Development Meeting – March 28, 2013

Hazard Mitigation Plan

Plan Development Meeting

March 28, 2013

Today's Agenda

- Ranking of Identified Hazards for 2013
- Floodplain Analysis (Under 2008 Plan)
- Discussion of 2013 Goals and Objectives
- Identification of 2013 Projects / Action Steps

Definitions

- Definitions of Ranked Hazards
- Defined by Industry Sources
- Focus of Plan Narrative
- Limits on Solutions

Natural Hazard Consolidation

- Tropical Storm & Winter Storm -> Major Storm
- Conflagration & Wildfire -> Major Fire
- Cold Snap & Heat Wave -> Extreme Temps.
- Tornado fits into Severe Thunderstorm

Human Hazard Consolidation

- Active Shooter
- Hostage / Barricade Situation
- Domestic Issue
- Workplace Violence
- ALL Combine into "Violent Person" Category

Tech Hazard Consolidation

- Clandestine Lab fits with Hazardous Materials
- Highway, Train, & Aircraft -> Transp. Incident
- Water and Sewer Combine
- Shale Site Incident fits with Pipeline Incident

2013 Hazard Mitigation Plan

Hazard Assessment

Natural Events

Hazard Identification	Probability						Final		
	Occurrence		Human		Property		Service		Rank
High Winds	3	3	3	1	2	3	2	3	35, 37, 36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35, 37, 36
Flooding	3	3	1	1	2	3	1	3	34, 37, 35.5
Coastal Storm	3	2	1	2	2	3	3	3	36, 28, 32
Conflagration	2	2	3	3	3	3	2	3	28, 29, 28.5
Winter Storm	2	2	1	2	2	3	2	3	25, 28, 26.5
Wildfire	2	2	1	1	3	3	3	2	27, 26, 26.5
Cold Snap	2	2	1	3	1	3	1	3	23, 29, 26
Pandemic	2	2	3	3	0	0	3	3	36, 26, 26
Drought	2	2	1	1	2	2	2	2	25, 25, 25
Heat Wave	2	2	2	2	1	1	1	2	24, 25, 24.5
Earthquake	1	1	3	2	3	3	3	3	19, 18, 18.5
Infestation	2	1	1	0	1	2	1	1	23, 13, 18
Subsidence	1	1	3	1	3	3	3	2	19, 16, 17.5
Tornado	1	1	2	2	2	2	3	3	16, 18, 17

2013 Hazard Mitigation Plan

Hazard Assessment

Human Events

Hazard Identification	Probability									Final		
	Occurrence		Human		Property		Service		Rank			
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30	
Active Shooter	1	3	3	3	2	3	3	3	18	39	28.5	
Hostage/Barricade	2	2	2	3	2	3	2	3	26	29	27.5	
Domestic Issue	1	3	1	3	1	1	1	2	13	36	24.5	
Workplace Violence	2	1	2	3	2	2	2	3	26	18	22	
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18	
Prison Riot	1	1	1	3	1	3	1	3	13	19	16	
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5	
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15	

2013 Hazard Mitigation Plan

Hazard Assessment

Technological Events

Hazard Identification	Probability						Final				
	Occurrence		Human		Property		Service		Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Clandestine Lab	3	3	2	3	2	3	2	3	36	39	37.5
Highway Incident	2	3	2	3	3	3	3	3	28	39	33.5
Gas/Pipeline Loss	2	3	1	2	0	2	3	3	24	37	30.5
5/Telephone	2	2	1	1	1	1	3	3	25	25	25
Train Accident	1	2	2	3	2	3	2	3	16	29	22.5
Sewer Loss	1	2	1	1	2	3	2	3	13	27	21
Water Loss	1	2	0	1	0	2	2	3	12	26	19
Dam Failure	1	1	2	3	3	3	3	3	16	19	18.5
Wind Farm	1	2	1	1	1	3	0	1	12	25	18.5
Pipeline Incident	1	1	1	3	2	3	2	3	15	19	17
Aircraft Accident	1	1	2	3	2	2	1	3	13	18	16.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	14	17	15.5
Natural Gas Loss	1	1	1	1	1	2	2	3	14	17	15.5
Bridge Failure	1	1	1	1	1	3	3	2	13	17	15
Shale Site Incident	1	1	1	1	2	2	2	2	13	15	15
AMD Treatment Fail	1	1	1	1	1	2	2	2	13	16	14.5

2013 Hazard Mitigation Plan

Hazard Assessment

All Events

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service		Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Clandestine Lab	3	3	2	3	2	3	2	3	36	39	37.5
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Highway Incident	2	3	2	3	3	3	3	3	28	39	33.5
Tropical Storm	3	2	1	2	2	3	3	3	36	28	32
Civil Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
Domestic Issue	1	3	1	3	1	1	1	2	13	36	24.5

2013 Hazard Mitigation Plan

Hazard Assessment

Natural Events (Combined)

Hazard Identification	Probability										Final	
	Occurrence		Human		Property		Service		Rank			
High Winds	3	3	1	1	2	3	2	3	35	37	36	
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36	
Flooding	3	3	1	1	2	3	1	3	34	37	35.5	
Major Fire	2	2	2	2	3	3	2	2	27	27	27	
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5	
Pandemic	2	2	3	3	0	0	3	3	26	26	26	
Drought	2	2	1	1	2	2	2	2	25	25	25	
Extreme Temperature	2	2	1	2	1	2	1	2	23	26	24.5	
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5	
Infestation	2	1	1	0	1	2	1	1	23	13	18	
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5	

2013 Hazard Mitigation Plan

Hazard Assessment

Human Events (Combined)

Hazard Identification	Probability										Final	
	Occurrence		Human		Property		Service		Rank			
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30	
Violent Person	2	2	2	3	2	2	2	3	26	28	27	
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18	
Prison Riot	1	1	1	3	1	3	1	3	13	19	16	
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5	
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15	

2013 Hazard Mitigation Plan												
Hazard Assessment												
Technological Events (Combined)												
Hazard Identification		Probability								Final		
		Occurrence		Human		Property		Service				
											Rank	
Hazardous Material		3	3	2	3	2	3	3	3	37	39	38
Full Power Loss		2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom		2	2	1	1	1	1	3	3	25	25	25
Transportation Incident		1	2	2	3	2	3	2	3	16	29	22.5
Water/Sewer Loss		1	2	1	1	1	2	2	3	14	26	20
Dam Failure		1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms		1	2	1	1	1	3	0	1	12	25	18.5
Pipeline Incident		1	1	1	2	2	3	2	3	15	18	16.5
Rolling Elec. Outages		1	1	1	2	1	2	2	3	14	17	15.5
Natural Gas Loss		1	1	1	2	1	2	2	3	14	17	15.5
Bridge Failure		1	1	1	1	1	3	1	3	13	17	15
AMD Treatment Fail		1	1	1	2	1	2	1	2	13	16	14.5

2013 Hazard Mitigation Plan

Hazard Assessment

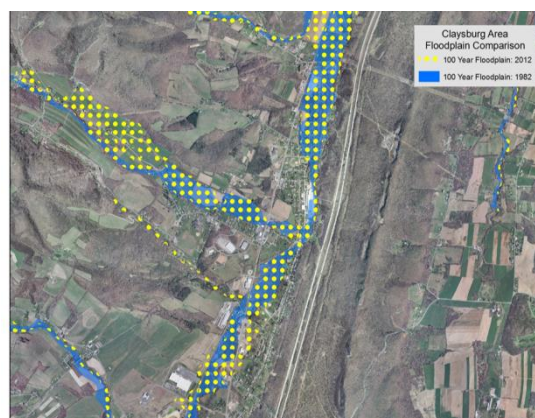
All Events (Combined)

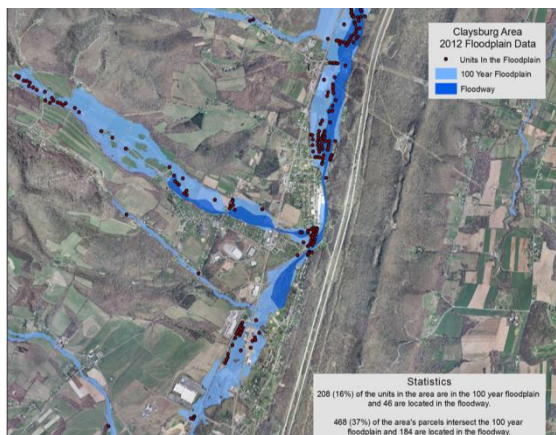
Hazard Identification	Probability										Final	
	Occurrence				Human		Property		Service		Rank	
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38	
High Winds	3	3	1	1	2	3	2	3	35	37	36	
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36	
Flooding	3	3	1	1	2	3	1	3	34	37	35.5	
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5	
Storm Threat	3	2	1	2	1	1	2	3	34	26	30	
Major Fire	2	2	2	2	3	3	2	2	27	27	27	
Violent Person	2	2	2	3	2	2	2	3	26	28	27	
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5	

2008 Flood Analysis

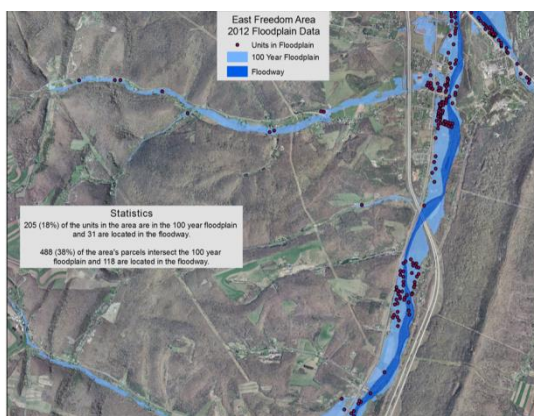
- Identify Flood Prone Areas
- Identify Properties Affected
- Identify Structures Affected
- Identify Critical Facilities Affected
- Identify Public Properties Affected
- Identify Repetitive Loss Properties
- Determine Availability of Assessment Data
- Carry Results into 2013 Plan to Mitigate

Claysburg Area

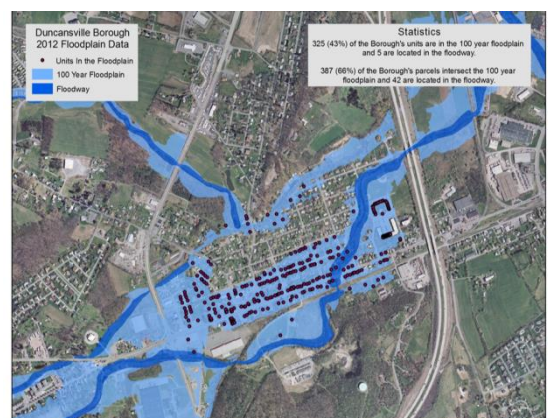
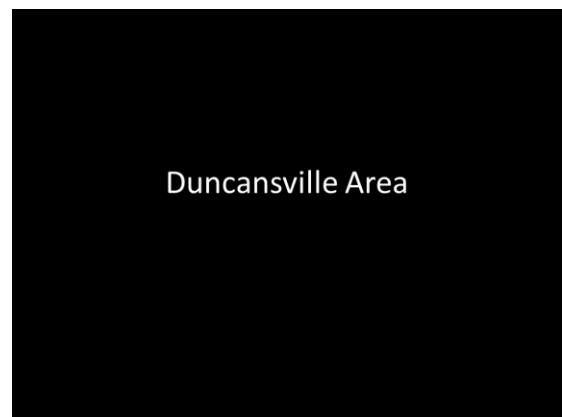
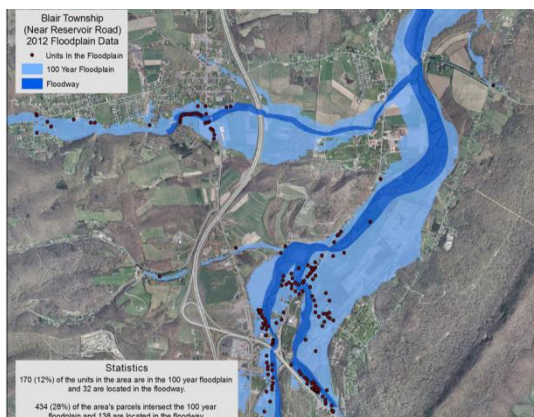
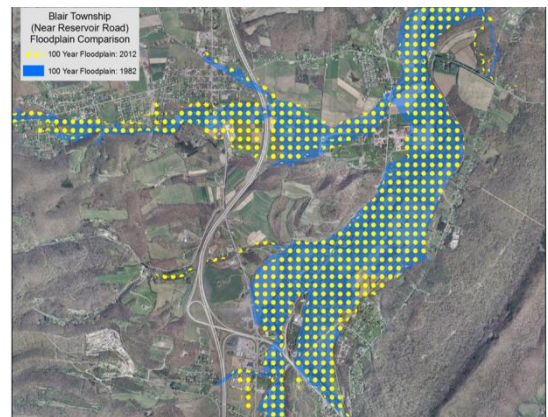
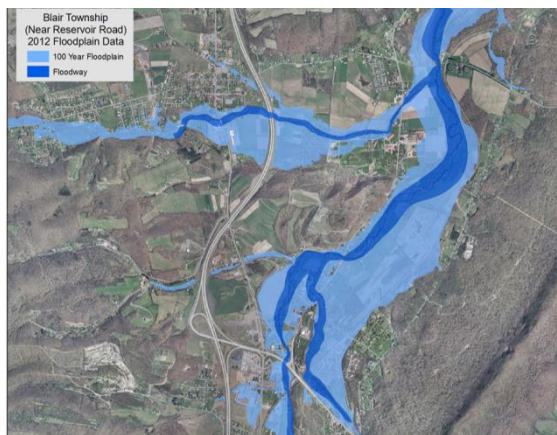




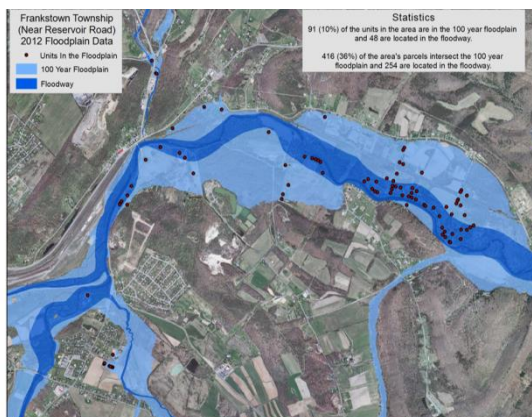
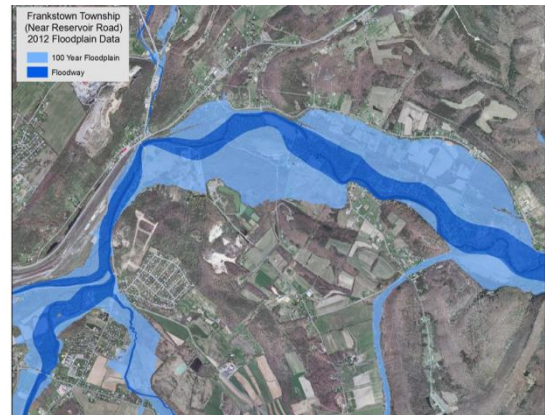
East Freedom Area



Newry / McKee Area



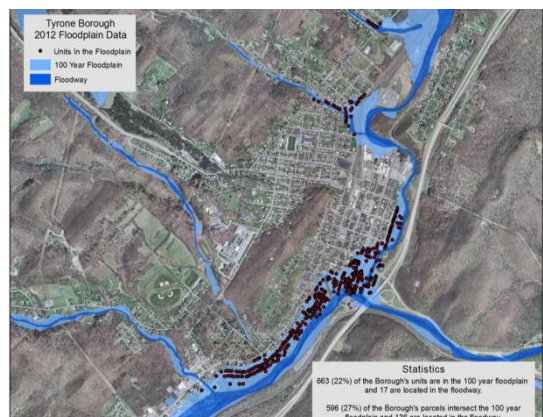
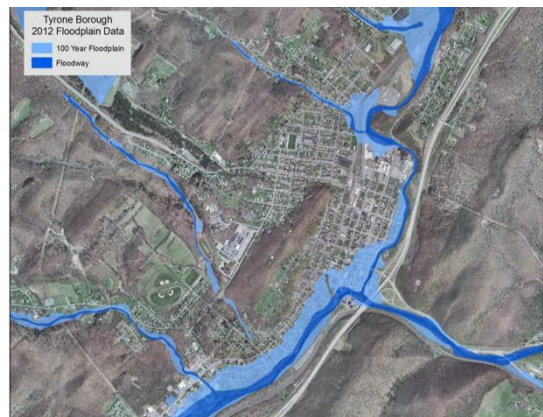
Frankstown Area



Williamsburg Area



Tyrone Area



Countywide Flood Data

- 3,650 Units Affected by Base Flood
- 1,524 Parcels Affected by Base Flood
- 2 Municipal Buildings Affected by Base Flood
- 1 Police Stations Affected by Base Flood
- 2 Fire Stations Affected by the Base Flood
- 2 EMS Stations Affected by the Base Flood
- 8 Treatment Plants Affected by the Base Flood

2008 Remaining Needs

- Identify Repetitive Loss Properties
- Assessor Data for Flood Information
- Identify Public Properties in Base Flood
- Develop 2013 Flood Mitigation Measures
- Education Program (Continue into 2013 Plan)

2013 Goals and Objectives

- **GOAL:** Overall Target
- **OBJECTIVE:** Measurable Mileposts to Goal
- **ACTION STEP:** Incremental Steps for each Objective
- **PROJECTS:** Physical tasks to reach an Objective; a type of Action Step

Next Steps

- Send in additional projects or action steps
 - Email: blairhazmit13@yahoo.com
- Public Outreach Meetings
 - April 2, April 4, April 9 at 6:30 PM
 - Tyrone, Martinsburg, and Logan Township
- Develop Plan Document
- Next Stakeholder Meeting: May 23, 2013

THANK YOU!

Hazard Mitigation Plan

Plan Development Meeting

March 28, 2013

Hazard Mitigation Plan Meeting Minutes May 30, 2013

The Hazard Mitigation meeting was held at the Blair County EOC, 9:30 am.

The meeting started with Dave McFarland, of the Blair County Planning Commission. Dave started by reviewing why we need a county wide hazard mitigation plan.

The hazards, goals, objectives and action steps of the plan have been previously identified and are considered completed in the plan. Three public meetings were held prior to today's meeting welcoming public comments. Another public meeting will be held after the committee has finalized the plan.

The goal for today's meeting is to discuss an implementation strategy with a time frame of completion, order of priority and the party/group that can best complete that project. The county hazard mitigation plan will be implemented through education, transportation improvements, storm preparedness, Community Rating System, continued flood mitigation and a special needs database.

Next public meeting is scheduled for second week in June, 2013. The next committee meeting is being scheduled in July, 2013

Meeting adjourned.

Respectfully submitted,
Jane Beveridge
Recording Secretary

Hazardous Mitigation Planning Meeting
05/30/2013

NAME	Municipality
1 Mark Seaman	6945-7543 Hillsborough
2 Jay R Young	Tyone Borough
3 Gile Morrison	Allegheny Township
4 Dennis 1904	Hoover Spring Lake
5 Bob Cooper	Taylor Twp
6 Tim Warner	Huston Twp.
7 Roger A. White	Blair Twp. P.O.
8 Dennis Stewert	Bain Twp. Water and Sewer Authority
9 KANDY STOLTZ	MARTINSBURG BOROUGH
10 Cassandra Schmick	Logan Twp.
11 Jane Beerdke	City of Altoona
12 HAROLD BIDDLE	Duncansville Borough
13 Rick Heflinger	Tyone Borough

Hazardous Mitigation Planning Meeting
05/30/2013

14	Erny Henry	Woodbury Twp.
15	Dan Bogle	201A
16	E J Brown	Wendover & Taylor Ind. 9 Mt
17	Michael Webb	5th
18	Dan McGowan	TRCPC
19		
20		
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26		
27		

Hazard Mitigation Plan Meeting – May 30, 2013

Hazard Mitigation Plan

May 30, 2013

The Need for the Plan

- Ounce of Prevention is Worth a Pound of Cure
- It Happens; Be Prepared
- Federal Expectations
- Continuity from Previous Plan
- Guide Community Leaders in Decision Making
- Shield Community from Liability
- Guide Funding

Vulnerability Analysis

- Three Classes of Hazards
- Many Hazards Considered
- Results Weighted and Ranked
- Top Hazards Overall Selected for Plan
 - Hazardous Material Incident
 - Strong Storm
 - High Wind
 - Flooding

Hazardous Material Incident

- Trucking Crossroads
 - I-99, US 22, US 220, PA 36, PA 453
- Major Rail Corridor
 - Norfolk Southern Mainline
 - Juniata Yards
- Intermodal Pipeline Facility
 - Pipe to Truck and Rail
 - Largest outside Philadelphia and Pittsburgh

Strong Storms

- History of Winter Storms
 - Heavy Snows
 - Accumulating Ice
 - Nor'easters
- History of Summertime Storms
 - Torrential Rain
 - Hailstorms
 - Tropical Storm Remnants

Flooding

- Demonstrated History of Flooding
 - Known Locations
 - Past Mitigation Actions
 - Areas Identified
- Widespread Impact
 - All County Regions Affected
 - Severs Transportation System
 - Negative Impact on Emergency Response

Other Hazards

- Brief Identification of Each
 - What it is
 - Discussion on Blair County Experience
- Reference to Vulnerability Analysis Tables
 - Complete Listing
 - Full Ranking of All Hazards

Public Participation

- Email Address for Comments
- Three Public Meetings in April
 - Held in Tyrone, Martinsburg, and Logan Township
 - Input from local officials on general issues
 - Input from private citizen on Special Needs Issue
- Integrated into Plan Implementation Strategy
- Additional Public Meeting in June
 - Final Opportunity for Comment

Plan Implementation Strategy

- Goal
 - Objective
 - Action Step
 - Action Step
 - Objective
 - Action Step
- Goal
 - Objective
 - Action Step

Plan Implementation Strategy

- Identify:
 - What Needs to be Done
 - General Timeframe for Completion
 - Overall Priority Within the Plan
 - Responsible Parties and/or Agencies
- Oversight
 - County Emergency Management
 - County Planning

Capability Analysis

- Can Blair County Undertake the Action Steps?
 - Professional Capacity
 - Technological Capacity
 - Political Capacity
 - Financial Capacity
- Is Blair County Willing?
- Multi-Jurisdictional Support

Plan Goals

- Education Programs
- Transportation Improvements
- Storm Preparedness Program
- Obtain Community Rating System score(s)
- Continue Flood Mitigation from 2008 Plan
- Develop Special Needs Household Database

Education Programs

- Objectives (for all):
 - Public Information Campaign
 - Identify Appropriate Public Responses to Incidents
- Additional Objectives (HazMat only):
 - Identify Affected Geography and Population
 - Responder Training Program

Education Programs

- Public Information Campaign
 - Identify public information requirements
 - Write materials in understandable language
 - Offer SKY-WARN Course to Public Officials
 - Increase EMA Visibility

Education Programs

- Identify Appropriate Public Response
 - Identify Access Routes and Alternates
 - Identify Evacuation Routes and Alternates
 - Develop Pamphlet with General Information
 - Develop Web Site with Detailed Information
 - Promote the RapidNotify System
 - Increase Awareness of SmartPhone “Apps”

Education Programs

- Identify Affected Geography and Population
 - Map affected areas
 - Develop map-on-the-fly capability for response
 - Develop pamphlet(s) with appropriate information
 - Develop web site with detailed information
 - Identify population with special needs (other goal)

Education Programs

- Responder Training Program
 - Sponsor Routinely-Scheduled Tabletop Exercises
 - Support Periodic On-Site “Mock” Exercises
 - Continue the Annual SARA Summit Program

Transportation Improvements

- Objectives:
 - Identify Hazardous Material Choke Points
 - Improve Burns Avenue/PA 764 Intersection

Transportation Improvements

- Identify Hazardous Material Choke Points
 - Survey Municipalities
 - Review PennDOT History Data
 - Include PennDOT Liaison on Steering Committee
 - Conduct a Traffic/Chemical Flow Study
 - Road Condition Survey in Marcellus Shale Areas

Transportation Improvements

- Improve Burns Avenue/PA 764 Intersection
 - Conduct Traffic Study to ID Proper Treatment
 - Traffic Type
 - Turning Movements
 - Accident History
 - Improve Way-Finding for Haulers
 - Enhance Motorist Awareness

Storm Preparedness Program

- Objectives:
 - Increase Public Awareness
 - Identify Appropriate Public Response to Incident

Storm Preparedness Program

- Increase Public Awareness
 - Promote CERT Program for the General Public
 - Train Elected, Appointed, and Employed Officials
 - Dispense Weather Radios to Vulnerable Homes
 - Promote EAS/Weather Radio
 - Distribute NOAA Severe Weather Material

Storm Preparedness Program

- Identify Appropriate Public Response
 - Identify Access Routes and Alternates
 - Identify Evacuation Routes and Alternates
 - Develop Pamphlet with Information
 - Develop Web Site with Information
 - Promote the RapidNotify System
 - Increase Awareness of SmartPhone “Apps”

Community Rating System

- Objectives:
 - Start Process in Each Municipality
 - Document Qualifying Past Actions
 - Public Education (separate Goal)

Community Rating System

- Start Process in Each Municipality
 - Identify Repetitive Loss Properties
 - FEMA Meeting
 - Establish Structure and “Road Map” to a Rating
 - County Planning and EMA Assist Municipalities

Community Rating System

- Document Qualifying Past Actions
 - Identify Adopted Ordinances and Plan(s)
 - Identify Related Municipal Action(s)
 - Maintain Maps and Elevation Certificates
 - Establish Public Education Program (other goal)

Community Rating System

- Engage Public Education
 - Implement the Public Education Program Goal
 - Document Education Efforts
 - Raise Awareness of the CRS and its Benefits

Continue Flood Mitigation

- Objectives:
 - Continue Identification Program
 - Continue Buyout Program
 - Relocate or Reinforce Vulnerable Facilities

Continue Flood Mitigation

- Continue Identification Program
 - Maintain Map Set Currency
 - Identify Public Lands in the Floodplain
 - Identify Critical Structures in the Floodplain
 - Improve County Database with Flood Information

Continue Flood Mitigation

- Continue Buyout Program
 - Voluntary Participation
 - Expand to Additional Municipalities
 - Tie to Redevelopment via Land Banking
 - Tie to Regional Greenways Plan

Continue Flood Mitigation

- Relocate or Reinforce Critical facilities
 - Relocate schools and libraries where feasible
 - Consider relocating municipal stock yards
 - Reinforce facilities that must be in flood area
 - Enhance flood proofing of sewage plants
 - Maintain water supply dams to optimum level

Special Needs Households

- Objectives:
 - Identify Need on Incoming 911 Calls
 - Identify Need for General Orders
 - Evacuation Assistance
 - Shelter In Place Limitations
 - Direct Assistance to those who need it most
 - Keep Database Current

Special Needs Households

- Identify Need on Incoming 911 Calls
 - Enhanced Database via GIS Attachment
 - Identify Person and Need
 - Maintain HIPAA Compliance

Special Needs Households

- Identify Need for General Orders
 - Map Identification During Incident
 - Needs Identified
 - Assistance with Compliance
 - Evacuate if General 'Shelter In Place' will Injure

Special Needs Households

- Keep Database Current
 - Maintain HIPAA Compliance
 - Establish Regular Update Mechanism
 - Work with Social Service Agencies
 - Tie Through Established Third-Party Database

Plan Implementation Strategy

- Hazards (Complete)
- Goals (Complete)
- Objectives (Complete)
- Action Steps (Complete)
- Time Frame for Implementation
- Priority of Implementation
- Responsible Parties

Next Steps

- Public Review and Comment
 - In Person
 - Electronically
- Commissioner Review
- PEMA Review & Sign-Off
- FEMA Review & Approval
- Local Approval(s)

Hazard Mitigation Plan

May 30, 2013

PROOF OF PUBLICATION OF NOTICE IN ALTOONA MIRROR

Public Notice -Hazard
Mitigation Plan Meeting
- Change of Date

The meeting scheduled for
Thursday, July 25 has
been changed to Wednes-
day, July 31, 2013,
9AM-Noon, Blair County
EOC, 615 4th Street, Altoo-
na, PA 16602

July 24, 2013

STATE OF PENNSYLVANIA
COUNTY OF BLAIR

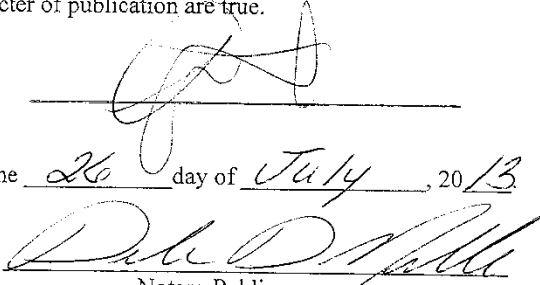
Ray Eckenrode, being duly sworn, says: That he is the
General Manager of the ALTOONA MIRROR, a newspaper of general circulation,
published at Number 301 Cayuga Avenue, Township of Logan, City of Altoona, County
of Blair, and State of Pennsylvania.

That said newspaper was established as a daily newspaper of general circulation
on the Thirteenth Day of June 1874, since which date said newspaper has been published
daily in the City of Altoona; that a copy of the printed notice, hereto attached, is exactly
as the same was printed and published in the regular edition of the daily ALTOONA
MIRROR published on the following date, viz:

July 24th 2013

The affiant further deposes and declares that he is not interested in the subject
matter of the aforesaid notice of publication and that all allegations in the foregoing
statement as to time, place and character of publication are true.

Sworn to and subscribed before me the 26 day of July, 2013


Notary Public

My Commission expires _____

NOTARIAL SEAL
DEBRA D MILLER
Notary Public
ALTOONA CITY, BLAIR COUNTY
My Commission Expires July 25 2017

Proof of Publication

COMMONWEALTH OF PENNSYLVANIA COUNTY OF BLAIR

Allan J Bassler

.....being (duly sworn) (affirmed)
according to law deposes and says that (he) (she) is the
(manager) (publisher) of the

Morrisons Cove Herald

a weekly newspaper, established in 1885 and published
at MARTINSBURG, Blair Co., and that the report of
the Hazard Mitigation Plan Meeting - Change
of Date notice, a true copy of which is hereto
annexed was published in its issues of
Jul 25, 2013

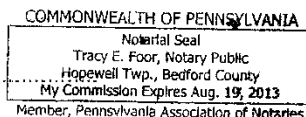
and affiant further states that (he) or (she) is not
interested in the subject of matter of this notice or
advertisement, and that the statement as to time,
place, and character of publication, is true.

[Signature]

Subscribed and (sworn to) (affirmed) before me a
(Notary Public) (~~Justice of the Peace~~) this 6th day of
August 2013

[Signature]
Notary Public
~~Justice of the Peace~~

My commission expires



PROOF

PUBLIC NOTICE – HAZARD MITIGATION PLAN MEETING – CHANGE OF DATE

The meeting scheduled for Thursday, July 25, has been changed
to Wednesday, July 31, 2013, 9 a.m.-noon, Blair County EOC, 615
4th St., Altoona, PA 16602. 15,11

Hazard Mitigation Plan Meeting Minutes July 31, 2013

The Hazard Mitigation meeting was held at the Blair County EOC, 9:00 am.

The meeting started with Dave McFarland, of the Blair County Planning Commission. Dave started by reviewing the top hazards and the structure of the plan.

The Blair County Hazard Mitigation Plan is broken down into six sections.

- Introduction
- Risk Assessments
- Capabilities Analysis
- Mitigation Strategies and Alternatives
 - Communities obtain CRS rating
 - Special needs household database
 - Education
 - Storm Preparedness
 - Continued Flood Mitigation
 - Transportation
- Plan Maintenance
- Appendices

Each of these sections were reviewed and discussed. The plan will be finalized and submitted to the federal and state levels for approval. Upon those approvals, the County will adopt the plan. Copies of the plan will then be distributed to each municipality for adoption. It must be adopted this calendar year.

Meeting adjourned.

Respectfully submitted,
Jane Beveridge
Recording Secretary

Hazard Mitigation Meeting
Sign in Sheet 7/31/2013

Name	Municipality/Affiliation
Kathy Branch	Blair County/Harris Nursing Agency
Donna Isenberg	HNA / Blair County
John Dunkel	Tyone Twp.
Mark Schroyer	H-burg
Ann Dillon	Snyder Township
Jayne Houck	American Red Cross
Melvin J. Edwards	Houston Township
Sgt Joseph Cox ^{ATP}	Altoona Police Dept.
Chief Roger White	BTPO -
Dennis Steward	BTWSA
Bob Corfies	Taylor Twp.
Silk Morrison	Allegheny Twp.
Cassandra Schmick	Logan Twp.
Jane Beveridge	City of Altoona - Engineering

Hazard Mitigation Meeting
Sign in Sheet 7/31/2013

Name	Municipality/Affiliation
CJ TENANA	Taylor N. Woodway Twp
David McFarland	BCPC
Michael Wall	BCEMA
Dan Boyles	EMA

Hazard Mitigation Plan Meeting – July 31, 2013

Hazard Mitigation Plan

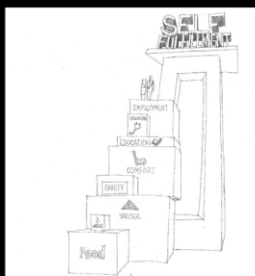
July 31, 2013

When Disaster Strikes

- Loss of Life and Property
- Loss of Livelihood
- Loss of Social/Health Infrastructure
- Trauma and Stress
- Erosion Of Community
- Loss of direction/hope.
- Erosion of connection between people and place.
- People begin an unfamiliar emotional journey

The Livability Deficit

The Livability Deficit is the gap between a nonconductive environment and a conducive one. When disaster strikes, the Livability Deficit increases.



Cost of Disasters

- Survivor's guilt
- Rebuilding physical infrastructure
- Rebuilding social infrastructure
- Dealing with personal loss
- Identifying with community loss
- Respecting the dead
- Gathering the scattered community
- Old Skills become irrelevant or unimportant

Cost of Unpreparedness

- Slower recovery
- Wasted resources
- Efforts are irrelevant to the community
- Lower life expectancy
- Poorer health care outcomes
- Reduced social or economic attainment
- Disappointment/frustration
- Unrealized potential in life
- Thwarted potential

Preparedness

- Designs the human environment so it is supported and nurtured to overcome the incident and get on with their lives;
- Creates the most favorable circumstances for people to thrive and help each other; and
- Creates long term solutions that "hardwires" the community to get back on track.

THE BLAIR COUNTY PLAN

- Introduction
- Risk Assessments
- Capabilities
- Mitigation Strategies and Alternatives
- Plan Maintenance
- Appendices

INTRODUCTION

- Overview of Blair County
- Legal Basis for the Plan
- Multijurisdictional Effort
- Description of the Process

RISK ASSESSMENT

- Hazard Identification
- Four Hazards for Focus in the 2013 Plan
 - Hazardous Material Incident
 - Strong Storms
 - High Winds
 - Flooding
- Deficiencies in Data
- Related Efforts

CAPABILITY ANALYSIS

- Institutional
- Legal
- Fiscal
- Political
- Technical

MITIGATION STRATEGIES & ALTERNATIVES

- Obtain Community Rating System score(s)
- Develop Special Needs Household Database
- Education Programs
- Storm Preparedness Program
- Continue Flood Mitigation from 2008 Plan
- Transportation Improvements
- Discussion of Related Efforts

Obtain CRS Rating

- Municipal and Public Awareness
- Document Prior and Current Actions
- Implement as Municipality is Ready
- Cooperative Effort
 - County and Local Emergency Management
 - County Planning Office
 - Municipal Officials (determined by locality)

Special Needs Database

- Develop Technology, Database, & Protocols
- Market to Targeted Population
- Implement as Soon as Practical
- Involved Parties:
 - County EMA/911 Center
 - County Planning
 - Social Service Agencies

Education Programs

- Public Education Pamphlets and Website
 - Identify High Risk Areas and Populations
 - Develop Material for Hazard Education
 - Publish and Distribute
- Begin Upon Plan Adoption
- Cooperative Effort
 - County EMA and Planning
 - Municipal Officials & Local Emergency Managers

Education Programs

- Responder Training
 - Tabletop Exercises
 - On-Site Simulation Exercises
 - SARA Summit
- Continue Current Efforts
- Primary Responsibility with County EMA
 - Close Coordination w/Local Emergency Personnel
 - Partner with local industries and institutions

Storm Preparedness

- Public Education Program
 - Pamphlets and Electronic
 - CERT Training
 - Promote Available Notification Programs & Tools
- In conjunction with Public Education Program
- Cooperative Effort
 - County EMA and Planning
 - Municipal Outreach for Training
 - Municipal Participation for Distribution

Flood Hazards

- Identification of Vulnerabilities
- Regulatory Mitigation
- Continue Current Efforts as Resources Permit
- Primary Responsibility with County Planning
 - Cooperative Efforts with Municipalities
 - Conservation District (Watershed Efforts)
- Dam Owners Responsible for Dam Maintenance

Transportation Improvements

- Hazardous Material Choke Point Study
- PA 764 Corridor (NHS Portion)
- Lowest Priority – As Resources are Available
- Cooperative Effort
 - County Planning & Altoona MPO
 - PennDOT
 - Municipalities

Related Efforts

- Countywide CFM
- Enhanced Public Information Availability
- Storm Water Management Planning
- Proactive Adaptation of “Designing to Heal”

PLAN MAINTENANCE

- Annual Monitoring
- Ongoing Mitigation Planning Meetings
- Integrate New and Existing Programs
- Increase Public Awareness and Participation
- Target 2017 for Next Updating Effort

APPENDICES

- Important Support Information
- Public Participation Records
- Municipal Participation Records
- FEMA Crosswalk Verification
- Adopting Resolutions
 - County Commissioners
 - Municipal Elected Boards

Hazard Mitigation Plan

July 31, 2013

- APPENDIX D - PUBLIC PARTICIPATION RECORDS

PROOF OF PUBLICATION OF NOTICE IN ALTOONA MIRROR

PUBLIC NOTICE
Hazard Mitigation Plan
Review

April 2, 2013 6:30PM
Tyrone Municipal Building,
1100 Logan Avenue,
Tyrone, PA 16686

April 4, 2013 6:30 PM Mar-
tinsburg Municipal Build-
ing, 110 South Walnut
Street, Martinsburg, PA
16662

April 9, 2013 6:30 PM Lo-
gan Township Municipal
Building, 100 Chief Logan
Circle, Altoona, PA 16602

March 20, 2013

STATE OF PENNSYLVANIA
COUNTY OF BLAIR

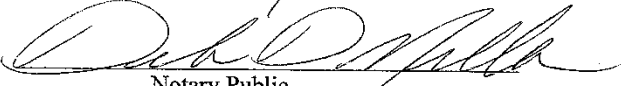
Ray Eckenrode, being duly sworn, says: That he is the General Manager of the ALTOONA MIRROR, a newspaper of general circulation, published at Number 301 Cayuga Avenue, Township of Logan, City of Altoona, County of Blair, and State of Pennsylvania.

That said newspaper was established as a daily newspaper of general circulation on the Thirteenth Day of June 1874, since which date said newspaper has been published daily in the City of Altoona; that a copy of the printed notice, hereto attached, is exactly as the same was printed and published in the regular edition of the daily ALTOONA MIRROR published on the following date, viz:

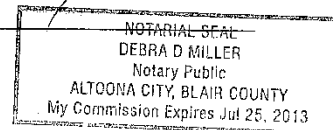
March 20, 2013.

The affiant further deposes and declares that he is not interested in the subject matter of the aforesaid notice of publication and that all allegations in the foregoing statement as to time, place and character of publication are true.

Sworn to and subscribed before me the 22 day of March, 2013.


Notary Public

My Commission expires



Proof of Publication of Legal Notice

In Accordance with the Provisions of "Newspaper Advertising Act"
approved May 16, 1929, P.L. 1784, as amended

Proof of Publication

VS.

State of Pennsylvania
County of Blair

SS:

Copy of Notice or
Advertisement

MISCELLANEOUS LEGAL NOTICE

Public Notice Hazard Mitigation Plan Review

April 2, 2013, 6:30 P.M.-Ty-
rone Municipal Building, 1100
Logan Avenue, Tyrone, PA
16686.

April 4, 2013, 6:30 P.M.-Mar-
tinsburg Municipal Building,
110 S. Walnut St., Martins-
burg, PA 16662

April 9, 2013, 6:30 P.M.-Logan
Township Municipal Building,
100 Chief Logan Circle, Alto-
ona, PA 16602
Tyrone, Martinsburg, Altoona

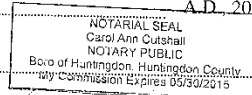
JODY HALL, being duly sworn according to law, deposes that she is
ADMINISTRATIVE ASSISTANT of The Daily Herald, a newspaper of gen-
eral circulation in Blair County, Published at Huntingdon, Pennsylvania,
daily established in 1867 and that the legal notice attached hereto and made
part hereof was published in said Newspaper
March 21, 2013

; that the affiant is not interested in any manner in the subject matter of said
notice or advertisement, and that all of the allegations contained herein as to
the time, place and character of the said publication are true and correct.

Jody Hall

Sworn to and subscribed before me this 21st
day of March A.D. 2013.

My Commission expires



Statement of Advertising Costs

To Blair County Emergency Management Agency	Dr.,	
For publishing Notice or Advertisement attached hereto on above		
dates March 21,	2013	\$22.00
Probating same	PROOF OF PUBLICATION	\$5.25
Total		\$27.25

Publisher's Receipt for Advertising Costs

The Daily Herald, by the publisher or authorized representative whose signature follows, hereby acknowledges receipt of the aforesaid advertising and probation costs and certifies that the same have been fully paid.

THE DAILY HERALD

By _____

Proof of Publication

COMMONWEALTH OF PENNSYLVANIA COUNTY OF BLAIR

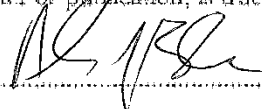
Allan J Bassler

.....being (duly sworn) (affirmed)
according to law deposes and says that (he) (she) is the
(manager) (publisher) of the

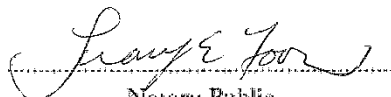
Morrisons Cove Herald

a weekly newspaper, established in 1885 and published
at MARTINSBURG, Blair Co., and that the report of
the Hazard Mitigation Plan Review
..... notice, a true copy of which is hereto
annexed was published in its issues of
Mar 28, 2013

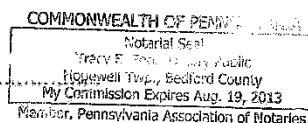
.....
and affiant further states that (he) or (she) is not
interested in the subject of matter of this notice or
advertisement, and that the statement as to time,
place, and character of publication, is true.


.....

Subscribed and (sworn to) (affirmed) before me a
(Notary Public) ~~Justice of the Peace~~ ^{4th} this day of
Apr 1 2013


Notary Public
Justice of the Peace

My commission expires



PROOF

PUBLIC NOTICE – HAZARD MITIGATION PLAN REVIEW

April 2, 2013, 6:30 p.m. – Tyrone Municipal Building, 1100 Logan Ave., Tyrone, PA 16686.
April 4, 2013, 6:30 p.m. – Martinsburg Municipal Building, 110 S. Walnut St., Martinsburg, PA 16662.
April 9, 2013, 6:30 p.m. – Logan Township Municipal Building, 100 Chief Logan Circle, Altoona, PA 16602. 50,11

Northern Public – Meeting @ Tyrone Borough Building April 2, 2013 @ 1900

Jay Young, LEMC Tyrone Boro

William Fink, Mayor Tyrone Borough

Phyllis Gearhart, Interim Borough Manager

Ann Dillon, Antis Township Secretary

Southern Public Meeting @ Martinsburg Borough Building April 4, 2013 @ 1900

Randy Stoltz, Borough Manager

Kerry Hoover, Chief Martinsburg, PD

CJ Terrana, LEMC North Woodbury Township

Central Public Meeting @ Logan Township Municipal Building April 9, 2013 @ 1900

Jeff Blake , LEMC Logan Township

Unnamed citizen, from Hastings, Cambria County

County-wide Public Meeting @ Blair EOC June 13, 2013 @1100

Silke Morrison, Allegheny Township

Lucas Martsof, Antis Township

Donna Isenberg, Altoona / Snyder

Katy Beauhep, Altoona

Bob Carpes, Taylor Township

Albert Lenne, 120 Elm Drive, Altoona

Public input regarding sheltering, warnings, education. Much discussion on special needs database creativity and data input. For education, the questions were what would be included, and how would it be disseminated. Questions on notification process – and how would such notifications be disseminated if there were loss of power. Since HazMat is the top concerned hazard, public discussion ensued regarding transportation including railway. The concerns were addressed. The comments were invited, and those areas not directly affected by the HazMit plan, were answered referencing the Blair County EOP or the Municipal EOP and NARM specific sections.

Hazard Mitigation Plan Public Input Meeting – April 2, 2013

Hazard Mitigation Plan

Public Input Meeting
Northern Blair County
April 2, 2013

Hazard Mitigation Plan: Purpose

- Requirement of Federal Law
- Continuity of Operation
- Elimination of Known and Potential Hazards
- Funding for Identified Hazards
- Basis for response plans
- Basis for Standard Operating Procedures

Hazard Mitigation Plan: Status

- Current Plan Expires 2013
- Identified Projects for Mitigation
- Stakeholder Meetings through 2011 and 2012
- 2008 Plan Focused on Flooding

Hazard Mitigation Plan: Status

- Incomplete Items:
 - Define properties in the floodplain (new maps)
 - Identify repetitive loss properties
 - Address lack of detailed information on structures
- Incomplete municipal items

Hazard Identification: Type

- Natural Hazards
- Human Hazards
- Technological Hazards

Hazard Identification: Probabilities

- Probability of Occurrence (Weighted)
- Probability of Human Injury or Death
- Probability of Property Damage
- Probability of Service Interruption

2013 Hazard Mitigation Plan

Hazard Assessment

Natural Events (Combined)

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service		Rank		
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Major Fire	2	2	2	2	3	3	2	2	27	27	27
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
Extreme Temperature	2	2	1	2	1	2	1	2	23	26	24.5
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5

2013 Hazard Mitigation Plan

Hazard Assessment

Human Events (Combined)

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service		Rank		
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30
Violent Person	2	2	2	3	2	2	2	3	26	28	27
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18
Prison Riot	1	1	1	3	1	3	1	3	13	19	16
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15

2013 Hazard Mitigation Plan

Hazard Assessment

Technological Events (Combined)

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service		Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Transportation Incident	1	2	2	3	2	3	2	3	36	29	22.5
Water/Sewer Loss	1	2	1	1	1	2	2	3	34	26	30
Dam Failure	1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	32	25	18.5
Pipeline Incident	1	1	1	2	2	3	2	3	35	18	16.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	34	17	15.5
Natural Gas Loss	1	1	1	2	1	2	2	3	34	17	15.5
Bridge Failure	1	1	1	1	1	3	1	3	33	17	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	33	16	14.5

2013 Hazard Mitigation Plan

Hazard Assessment

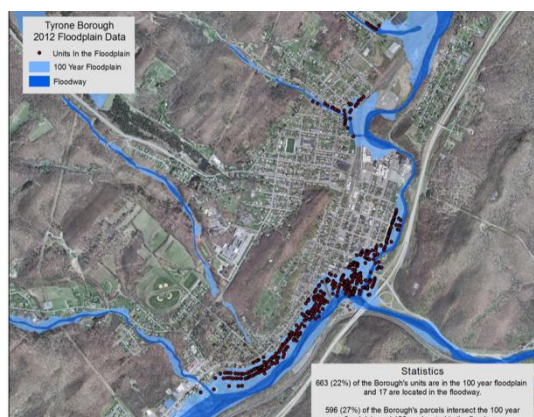
All Events (Combined)

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Violent Person	2	2	2	3	2	2	2	3	26	28	27
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5

2008 Flood Analysis

- Identify Flood Prone Areas
- Identify Properties Affected
- Identify Structures Affected
- Identify Critical Facilities Affected
- Identify Public Properties Affected
- Identify Repetitive Loss Properties
- Determine Availability of Assessment Data
- Carry Results into 2013 Plan to Mitigate

Tyrone Area



Countywide Flood Data

- 3,650 Units Affected by Base Flood
- 1,524 Parcels Affected by Base Flood
- 2 Municipal Buildings Affected by Base Flood
- 1 Police Stations Affected by Base Flood
- 2 Fire Stations Affected by the Base Flood
- 2 EMS Stations Affected by the Base Flood
- 8 Treatment Plants Affected by the Base Flood

2008 Remaining Needs

- Identify Repetitive Loss Properties
- Assessor Data for Flood Information
- Identify Public Properties in Base Flood
- Develop 2013 Flood Mitigation Measures
- Flood Mitigation Awareness Program (Continue into 2013 Plan)

2013 Goals and Objectives

- GOAL: Overall Target
- OBJECTIVE: Measurable Mileposts to Goal
- ACTION STEP: Incremental Steps for each Objective
- PROJECTS: Physical tasks to reach an Objective; a type of Action Step

Next Steps

- Public Outreach Meetings
 - April 2, April 4, April 9 at 6:30 PM
 - Tyrone, Martinsburg, and Logan Township
- Send in additional projects or action steps
 - Email: blairhazmit13@yahoo.com
- Develop Plan Document
- Draft Plan by the End of May, 2013

Questions

Ideas

&

Comments

THANK YOU!

Hazard Mitigation Plan

Public Input Meeting
Northern Blair County
April 2, 2013

Hazard Mitigation Plan Public Input Meeting – April 4, 2013

Hazard Mitigation Plan

Public Input Meeting
Southern Blair County
April 4, 2013

Hazard Mitigation Plan: Purpose

- Requirement of Federal Law
- Continuity of Operation
- Elimination of Known and Potential Hazards
- Funding for Identified Hazards
- Basis for response plans
- Basis for Standard Operating Procedures

Hazard Mitigation Plan: Status

- Current Plan Expires 2013
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- Incomplete municipal items

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- Human Hazards
- Technological Hazards

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- Probability of Property Damage
- Probability of Service Interruption

2013 Hazard Mitigation Plan

Hazard Assessment

Natural Events (Combined)

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Major Storm	2	2	1	2	2	3	2	3	25	28	26.5
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
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Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Subsidence	1	1	3	1	3	3	3	2	15	16	17.5

2013 Hazard Mitigation Plan

Hazard Assessment

Human Events (Combined)

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service		Rank		
Bomb Threat	3	2	1	2	1	1	2	3	34	26	3
Violent Person	2	2	2	3	2	2	2	3	26	28	2
Terrorist Event	1	1	2	3	2	3	3	3	17	19	1
Prison Riot	1	1	1	3	1	3	1	3	13	19	1
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15
Cyber Attack	1	1	1	0	1	2	3	3	15	15	1

2013 Hazard Mitigation Plan

Hazard Assessment

Technological Events (Combined)

Hazard Identification	Probability									Final	
	Occurrence		Human		Property		Service		Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Transportation Incident	1	2	2	3	2	3	2	3	36	29	22.5
Water/Sewer Loss	1	2	1	1	1	2	2	3	34	26	20
Dam Failure	1	1	2	3	3	3	3	3	38	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	32	25	18.5
Pipeline Incident	1	1	1	2	2	3	2	3	35	18	16.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	34	17	15.5
Natural Gas Loss	1	1	1	2	1	2	2	3	34	17	15.5
Bridge Failure	1	1	1	1	1	3	1	3	33	17	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	33	16	14

2013 Hazard Mitigation Plan

Hazard Assessment

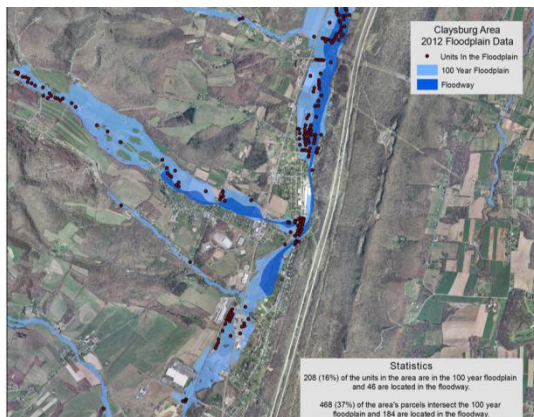
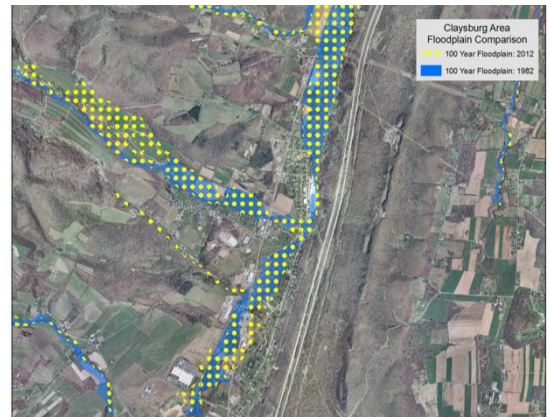
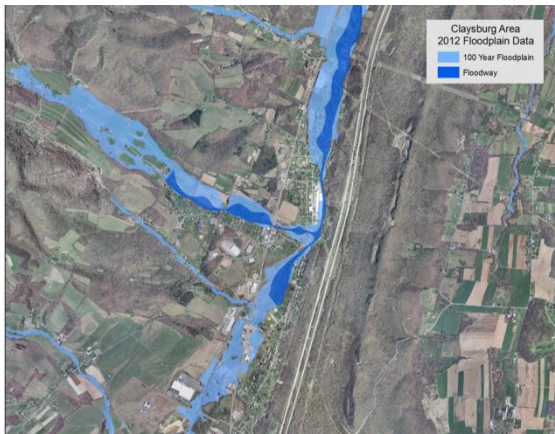
All Events (Combined)

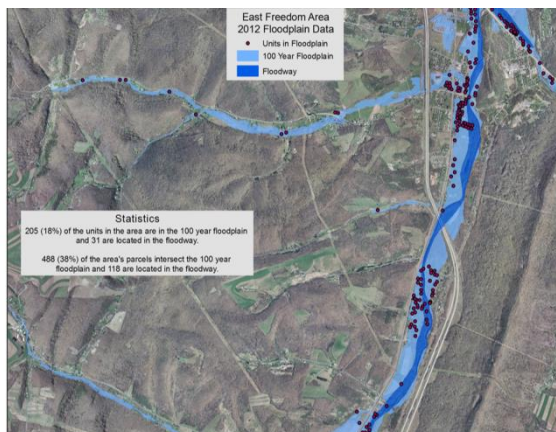
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	Occurrence		Human		Property		Service		Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30
Major Fire	2	2	2	2	3	3	2	2	27	27	27
Violent Person	2	2	2	3	2	2	2	3	26	28	27
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5

2008 Flood Analysis

- Identify Flood Prone Areas
- Identify Properties Affected
- Identify Structures Affected
- Identify Critical Facilities Affected
- Identify Public Properties Affected
- Identify Repetitive Loss Properties
- Determine Availability of Assessment Data
- Carry Results into 2013 Plan to Mitigate

Claysburg Area





Williamsburg Area



Countywide Flood Data

- 3,650 Units Affected by Base Flood
- 1,524 Parcels Affected by Base Flood
- 2 Municipal Buildings Affected by Base Flood
- 1 Police Stations Affected by Base Flood
- 2 Fire Stations Affected by the Base Flood
- 2 EMS Stations Affected by the Base Flood
- 8 Treatment Plants Affected by the Base Flood

2008 Remaining Needs

- Identify Repetitive Loss Properties
- Assessor Data for Flood Information
- Identify Public Properties in Base Flood
- Develop 2013 Flood Mitigation Measures
- Flood Mitigation Awareness Program (Continue into 2013 Plan)

2013 Goals and Objectives

- GOAL: Overall Target
- OBJECTIVE: Measurable Mileposts to Goal
- ACTION STEP: Incremental Steps for each Objective
- PROJECTS: Physical tasks to reach an Objective; a type of Action Step

Next Steps

- Public Outreach Meetings
 - April 2, April 4, April 9 at 6:30 PM
 - Tyrone, Martinsburg, and Logan Township
- Send in additional projects or action steps
 - Email: blairhazmit13@yahoo.com
- Develop Plan Document
- Draft Plan by the End of May, 2013

Questions

Ideas

&

Comments

Hazard Mitigation Plan

Public Input Meeting
Southern Blair County
April 4, 2013

Hazard Mitigation Plan Public Input Meeting – April 9, 2013

Hazard Mitigation Plan

Public Input Meeting
Central Blair County
April 9, 2013

Hazard Mitigation Plan: Purpose

- Requirement of Federal Law
- Continuity of Operation
- Elimination of Known and Potential Hazards
- Funding for Identified Hazards
- Basis for response plans
- Basis for Standard Operating Procedures

Hazard Mitigation Plan: Status

- Current Plan Expires 2013
- Identified Projects for Mitigation
- Stakeholder Meetings through 2011 and 2012
- 2008 Plan Focused on Flooding

Hazard Mitigation Plan: Status

- Incomplete Items:
 - Define properties in the floodplain (new maps)
 - Identify repetitive loss properties
 - Address lack of detailed information on structures
- Incomplete municipal items

Hazard Identification: Type

- Natural Hazards
- Human Hazards
- Technological Hazards

Hazard Identification: Probabilities

- Probability of Occurrence (Weighted)
- Probability of Human Injury or Death
- Probability of Property Damage
- Probability of Service Interruption

2013 Hazard Mitigation Plan

Hazard Assessment

Natural Events (Combined)

Hazard Identification			Probability									Final	
			Occurrence		Human		Property		Service				
High Winds	3	3	1	1	2	3	2	3	35	37	36		
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36		
Flooding	3	3	1	1	2	3	1	3	34	37	35.5		
Major Fire	2	2	2	2	3	3	2	2	27	27	27		
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5		
Pandemic	2	2	3	3	0	0	3	3	26	26	26		
Drought	2	2	1	1	2	2	2	2	25	25	25		
Extreme Temperature	2	2	1	2	1	2	1	2	23	26	24.5		
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5		
Infestation	2	1	1	0	1	2	1	1	23	13	18		
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5		

2013 Hazard Mitigation Plan

Hazard Assessment

Human Events (Combined)

Hazard Identification	Probability								Final		
	Occurrence		Human		Property		Service				
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30
Violent Person	2	2	2	3	2	2	2	3	26	28	27
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18
Prison Riot	1	1	1	3	1	3	1	3	13	19	16
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15

2013 Hazard Mitigation Plan

Hazard Assessment

Technological Events (Combined)

Hazard Identification			Probability									Final	
			Occurrence		Human		Property		Service				
Hazardous Material			3	3	2	3	2	3	3	3	37	39	38
Full Power Loss			2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom			2	2	1	1	1	1	3	3	25	25	25
Transportation Incident			1	2	2	3	2	3	2	3	36	29	22.5
Water/Sewer Loss			1	2	1	1	1	2	2	3	34	26	30
Dam Failure			1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms			1	2	1	1	1	3	0	1	32	25	18.5
Pipeline Incident			1	1	1	2	2	3	2	3	35	18	16.5
Rolling Elec. Outages			1	1	1	2	1	2	2	3	34	17	15.5
Natural Gas Loss			1	1	1	2	1	2	2	3	34	17	15.5
Bridge Failure			1	1	1	1	1	3	1	3	33	17	15
AMD Treatment Fail			1	1	1	2	1	2	1	2	33	16	14.5

2013 Hazard Mitigation Plan

Hazard Assessment

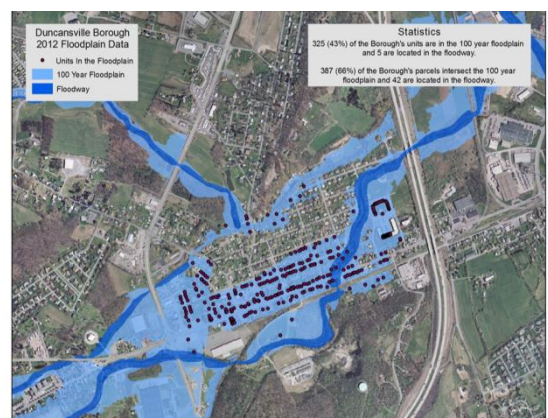
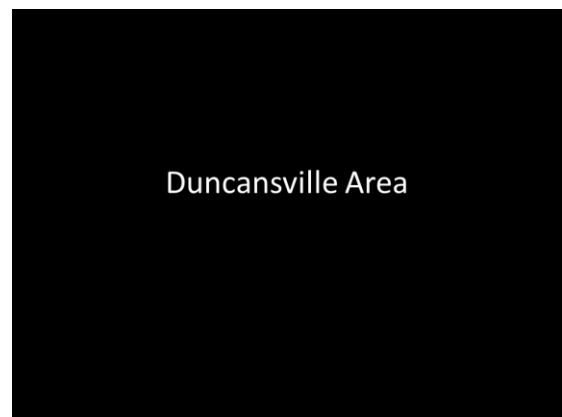
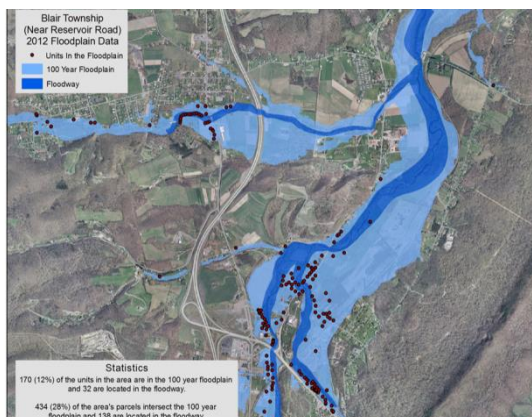
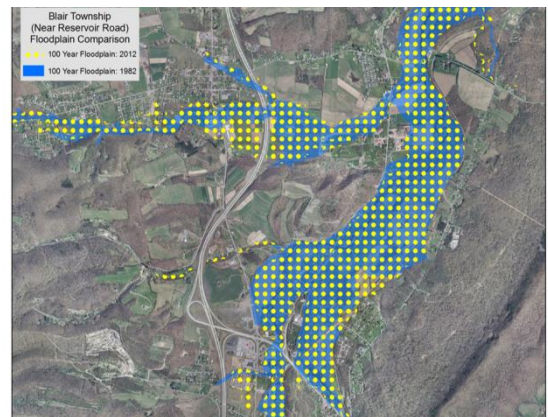
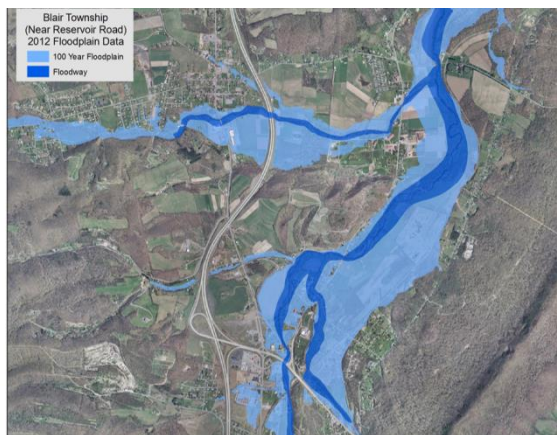
All Events (Combined)

Hazard Identification	Probability								Final		
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Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
High Winds	3	3	1	1	2	3	2	3	35	37	36
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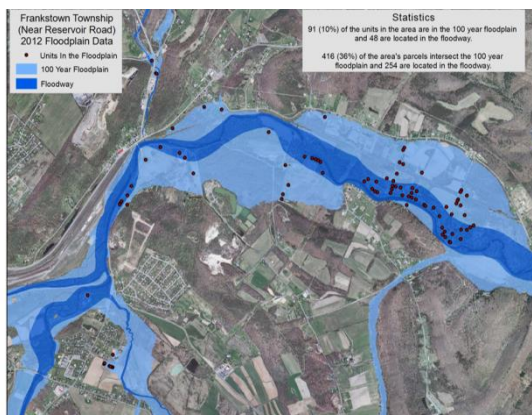
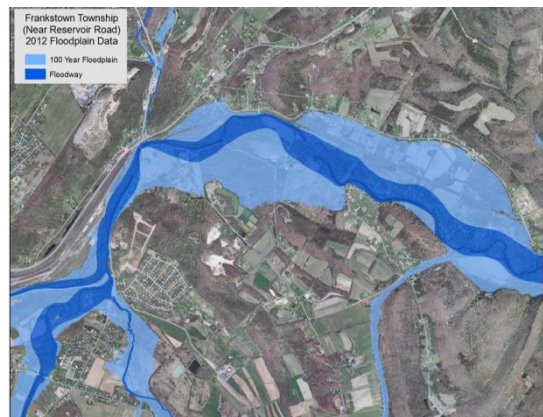
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Newry / McKee Area



Frankstown Area



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- Identify Public Properties in Base Flood
- Develop 2013 Flood Mitigation Measures
- Flood Mitigation Awareness Program (Continue into 2013 Plan)

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 - Email: blairhazmit13@yahoo.com
- Develop Plan Document
- Draft Plan by the End of May, 2013

Questions

Ideas

&

Comments

THANK YOU!

Hazard Mitigation Plan

Public Input Meeting
Central Blair County
April 9, 2013

Proof of Publication of Legal Notice

In Accordance with the Provisions of "Newspaper Advertising Act"
approved May 16, 1929, P.L. 1784, as amended

Proof of Publication

VS.

State of Pennsylvania
County of Blair

SS:

Copy of Notice or
Advertisement

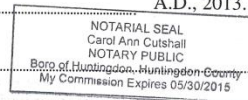


JODY HALL, being duly sworn according to law, deposes that she is ADMINISTRATIVE ASSISTANT of The Daily Herald, a newspaper of general circulation in Blair County, Published at Huntingdon, Pennsylvania, daily established in 1867 and that the legal notice attached hereto and made part hereof was published in said Newspaper June 1, 2013

; that the affiant is not interested in any manner in the subject matter of said notice or advertisement, and that all of the allegations contained herein as to the time, place and character of the said publication are true and correct.

Sworn to and subscribed before me this 4th day of June A.D., 2013.

My Commission expires



Statement of Advertising Costs

To Blair County Emergency Management Agency	Dr.,
For publishing Notice or Advertisement attached hereto on above	
dates June 1, 2013	\$10.25
Probating same PROOF OF PUBLICATION	\$5.25
Total	\$15.50

Publisher's Receipt for Advertising Costs

The Daily Herald, by the publisher or authorized representative whose signature follows, hereby acknowledges receipt of the aforesaid advertising and probation costs and certifies that the same have been fully paid.

THE DAILY HERALD

By

Hazardous Mitigation Planning Meeting
06/13/2013

	NAME	Municipality
1	Gilbert E. Leme	Altoona 120 Elm Drive 941-2427
2	Bob Carles	Taylor Twp
3	Kathy Brantley	Altomna
4	Donna Isenberg	Altomna / Snyder
5	LUCAS MARTSOLF	ALTIS TWP.
6	Silly Mirmson	Allegheny Twp.
7	David McFarland	Blair Planning
8		
9		
10		
11		
12		
13		

Hazard Mitigation Plan Final Public Input Meeting – June 13, 2013

Hazard Mitigation Plan

June 13, 2013

The Need for the Plan

- Ounce of Prevention is Worth a Pound of Cure
- It Happens; Be Prepared
- Federal Expectations
- Continuity from Previous Plan
- Guide Community Leaders in Decision Making
- Shield Community from Liability
- Guide Funding

Vulnerability Analysis

- Three Classes of Hazards
- Many Hazards Considered
- Results Weighted and Ranked
- Top Hazards Overall Selected for Plan
 - Hazardous Material Incident
 - Strong Storm
 - High Wind
 - Flooding

Hazardous Material Incident

- Trucking Crossroads
 - I-99, US 22, US 220, PA 36, PA 453
- Major Rail Corridor
 - Norfolk Southern Mainline
 - Juniata Yards
- Intermodal Pipeline Facility
 - Pipe to Truck and Rail
 - Largest outside Philadelphia and Pittsburgh

Strong Storms

- History of Winter Storms
 - Heavy Snows
 - Accumulating Ice
 - Nor'easters
- History of Summertime Storms
 - Torrential Rain
 - Hailstorms
 - Tropical Storm Remnants

Flooding

- Demonstrated History of Flooding
 - Known Locations
 - Past Mitigation Actions
 - Areas Identified
- Widespread Impact
 - All County Regions Affected
 - Severs Transportation System
 - Negative Impact on Emergency Response

Other Hazards

- Brief Identification of Each
 - What it is
 - Discussion on Blair County Experience
- Reference to Vulnerability Analysis Tables
 - Complete Listing
 - Full Ranking of All Hazards

Public Participation

- Email Address for Comments
- Three Public Meetings in April
 - Held in Tyrone, Martinsburg, and Logan Township
 - Input from local officials on general issues
 - Input from private citizen on Special Needs Issue
- Integrated into Plan Implementation Strategy
- Additional Public Meeting in June
 - Final Opportunity for Comment

Plan Implementation Strategy

- Goal
 - Objective
 - Action Step
 - Action Step
 - Objective
 - Action Step
- Goal
 - Objective
 - Action Step

Plan Implementation Strategy

- Identify:
 - What Needs to be Done
 - General Timeframe for Completion
 - Overall Priority Within the Plan
 - Responsible Parties and/or Agencies
- Oversight
 - County Emergency Management
 - County Planning

Capability Analysis

- Can Blair County Undertake the Action Steps?
 - Professional Capacity
 - Technological Capacity
 - Political Capacity
 - Financial Capacity
- Is Blair County Willing?
- Multi-Jurisdictional Support

Plan Goals

- Education Programs
- Transportation Improvements
- Storm Preparedness Program
- Obtain Community Rating System score(s)
- Continue Flood Mitigation from 2008 Plan
- Develop Special Needs Household Database

Education Programs

- Objectives (for all):
 - Public Information Campaign
 - Identify Appropriate Public Responses to Incidents
- Additional Objectives (HazMat only):
 - Identify Affected Geography and Population
 - Responder Training Program

Education Programs

- Public Information Campaign
 - Identify public information requirements
 - Write materials in understandable language
 - Offer SKY-WARN Course to Public Officials
 - Increase EMA Visibility

Education Programs

- Identify Appropriate Public Response
 - Identify Access Routes and Alternates
 - Identify Evacuation Routes and Alternates
 - Develop Pamphlet with General Information
 - Develop Web Site with Detailed Information
 - Promote the RapidNotify System
 - Increase Awareness of SmartPhone “Apps”

Education Programs

- Identify Affected Geography and Population
 - Map affected areas
 - Develop map-on-the-fly capability for response
 - Develop pamphlet(s) with appropriate information
 - Develop web site with detailed information
 - Identify population with special needs (other goal)

Education Programs

- Responder Training Program
 - Sponsor Routinely-Scheduled Tabletop Exercises
 - Support Periodic On-Site “Mock” Exercises
 - Continue the Annual SARA Summit Program

Transportation Improvements

- Objectives:
 - Identify Hazardous Material Choke Points
 - Improve Burns Avenue/PA 764 Intersection

Transportation Improvements

- Identify Hazardous Material Choke Points
 - Survey Municipalities
 - Review PennDOT History Data
 - Include PennDOT Liaison on Steering Committee
 - Conduct a Traffic/Chemical Flow Study
 - Road Condition Survey in Marcellus Shale Areas

Transportation Improvements

- Improve Burns Avenue/PA 764 Intersection
 - Conduct Traffic Study to ID Proper Treatment
 - Traffic Type
 - Turning Movements
 - Accident History
 - Improve Way-Finding for Haulers
 - Enhance Motorist Awareness

Storm Preparedness Program

- Objectives:
 - Increase Public Awareness
 - Identify Appropriate Public Response to Incident

Storm Preparedness Program

- Increase Public Awareness
 - Promote CERT Program for the General Public
 - Train Elected, Appointed, and Employed Officials
 - Dispense Weather Radios to Vulnerable Homes
 - Promote EAS/Weather Radio
 - Distribute NOAA Severe Weather Material

Storm Preparedness Program

- Identify Appropriate Public Response
 - Identify Access Routes and Alternates
 - Identify Evacuation Routes and Alternates
 - Develop Pamphlet with Information
 - Develop Web Site with Information
 - Promote the RapidNotify System
 - Increase Awareness of SmartPhone “Apps”

Community Rating System

- Objectives:
 - Start Process in Each Municipality
 - Document Qualifying Past Actions
 - Public Education (separate Goal)

Community Rating System

- Start Process in Each Municipality
 - Identify Repetitive Loss Properties
 - FEMA Meeting
 - Establish Structure and “Road Map” to a Rating
 - County Planning and EMA Assist Municipalities

Community Rating System

- Document Qualifying Past Actions
 - Identify Adopted Ordinances and Plan(s)
 - Identify Related Municipal Action(s)
 - Maintain Maps and Elevation Certificates
 - Establish Public Education Program (other goal)

Community Rating System

- Engage Public Education
 - Implement the Public Education Program Goal
 - Document Education Efforts
 - Raise Awareness of the CRS and its Benefits

Continue Flood Mitigation

- Objectives:
 - Continue Identification Program
 - Continue Buyout Program
 - Relocate or Reinforce Vulnerable Facilities

Continue Flood Mitigation

- Continue Identification Program
 - Maintain Map Set Currency
 - Identify Public Lands in the Floodplain
 - Identify Critical Structures in the Floodplain
 - Improve County Database with Flood Information

Continue Flood Mitigation

- Continue Buyout Program
 - Voluntary Participation
 - Expand to Additional Municipalities
 - Tie to Redevelopment via Land Banking
 - Tie to Regional Greenways Plan

Continue Flood Mitigation

- Relocate or Reinforce Critical facilities
 - Relocate schools and libraries where feasible
 - Consider relocating municipal stock yards
 - Reinforce facilities that must be in flood area
 - Enhance flood proofing of sewage plants
 - Maintain water supply dams to optimum level

Special Needs Households

- Objectives:
 - Identify Need on Incoming 911 Calls
 - Identify Need for General Orders
 - Evacuation Assistance
 - Shelter In Place Limitations
 - Direct Assistance to those who need it most
 - Keep Database Current

Special Needs Households

- Identify Need on Incoming 911 Calls
 - Enhanced Database via GIS Attachment
 - Identify Person and Need
 - Maintain HIPAA Compliance

Special Needs Households

- Identify Need for General Orders
 - Map Identification During Incident
 - Needs Identified
 - Assistance with Compliance
 - Evacuate if General 'Shelter In Place' will Injure

Special Needs Households

- Keep Database Current
 - Maintain HIPAA Compliance
 - Establish Regular Update Mechanism
 - Work with Social Service Agencies
 - Tie Through Established Third-Party Database

Plan Implementation Strategy

- Hazards (Complete)
- Goals (Complete)
- Objectives (Complete)
- Action Steps (Complete)
- Time Frame for Implementation
- Priority of Implementation
- Responsible Parties

Hazard Mitigation Plan

June 13, 2013

- APPENDIX E - HAZARD ASSESSMENT FORM

**2013 Hazard Mitigation Plan
Hazard Assessment
Natural Events**

Hazard Identification					Probability						
	Occurrence		Human		Property		Service		Final Rank		
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Tropical Storm	3	2	1	2	2	3	3	3	36	28	32
Conflagration	2	2	3	3	3	3	2	3	28	29	28.5
Winter Storm	2	2	1	2	2	3	2	3	25	28	26.5
Wildfire	2	2	1	1	3	3	3	2	27	26	26.5
Cold Snap	2	2	1	3	1	3	1	3	23	29	26
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
Heat Wave	2	2	2	2	1	1	1	2	24	25	24.5
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5
Tornado	1	1	2	2	2	3	2	3	16	18	17

**2013 Hazard Mitigation Plan
Hazard Assessment
Human Events**

Hazard Identification	Probability											
	Occurrence		Human		Property		Service		Final Rank			
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30	
Active Shooter	1	3	3	3	2	3	3	3	18	39	28.5	
Hostage/Barricade	2	2	2	3	2	3	2	3	26	29	27.5	
Domestic Issue	1	3	1	3	1	1	1	2	13	36	24.5	
Workplace Violence	2	1	2	3	2	2	2	3	26	18	22	
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18	
Prison Riot	1	1	1	3	1	3	1	3	13	19	16	
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5	
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15	

**2013 Hazard Mitigation Plan
Hazard Assessment
Technological Events**

Hazard Identification	Probability								Final Rank		
	Occurrence		Human		Property		Service				
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Clandestine Lab	3	3	2	3	2	3	2	3	36	39	37.5
Highway Incident	2	3	2	3	3	3	3	3	28	39	33.5
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Train Accident	1	2	2	3	2	3	2	3	16	29	22.5
Sewer Loss	1	2	1	1	2	3	2	3	15	27	21
Water Loss	1	2	0	1	0	2	2	3	12	26	19
Dam Failure	1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	12	25	18.5
Pipeline Incident	1	1	1	3	2	3	2	3	15	19	17
Aircraft Accident	1	1	2	3	2	2	1	3	15	18	16.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	14	17	15.5
Natural Gas Loss	1	1	1	2	1	2	2	3	14	17	15.5
Bridge Failure	1	1	1	1	1	3	1	3	13	17	15
Shale Site Incident	1	1	1	1	2	2	2	2	15	15	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	13	16	14.5

2013 Hazard Mitigation Plan
Hazard Assessment
All Events

Hazard Identification	Probability										
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Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Clandestine Lab	3	3	2	3	2	3	2	3	36	39	37.5
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Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Highway Incident	2	3	2	3	3	3	3	3	28	39	33.5
Tropical Storm	3	2	1	2	2	3	3	3	36	28	32
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Hostage/Barricade	2	2	2	3	2	3	2	3	26	29	27.5
Winter Storm	2	2	1	2	2	3	2	3	25	28	26.5
Wildfire	2	2	1	1	3	3	3	2	27	26	26.5
Cold Snap	2	2	1	3	1	3	1	3	23	29	26
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Heat Wave	2	2	2	2	1	1	1	2	24	25	24.5
Active Shooter	1	3	3	3	2	3	3	3	18	39	28.5
Train Accident	1	2	2	3	2	3	2	3	16	29	22.5
Prison Riot	1	1	1	3	1	3	1	3	13	19	16
Sewer Loss	1	2	1	1	2	3	2	3	15	27	21
Water Loss	1	2	0	1	0	2	2	3	12	26	19
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Dam Failure	1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	12	25	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Workplace Violence	2	1	2	3	2	2	2	3	26	18	22
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5
Tornado	1	1	2	2	2	3	2	3	16	18	17
Pipeline Incident	1	1	1	3	2	3	2	3	15	19	17
Aircraft Accident	1	1	2	3	2	2	1	3	15	18	16.5
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	14	17	15.5

**2013 Hazard Mitigation Plan
Hazard Assessment
All Events Continued**

Hazard Identification	Occurrence				Probability				Final Rank		
			Human		Property		Service				
Natural Gas Loss	1	1	1	2	1	2	2	3	14	17	15.5
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15
Bridge Failure	1	1	1	1	1	3	1	3	13	17	15
Shale Site Incident	1	1	1	1	2	2	2	2	15	15	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	13	16	14.5

**2013 Hazard Mitigation Plan
Hazard Assessment
Natural Events (Combined)**

Hazard Identification	Occurrence				Probability				Final Rank		
			Human		Property		Service				
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Major Fire	2	2	2	2	3	3	2	2	27	27	27
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
Extreme Temperature	2	2	1	2	1	2	1	2	23	26	24.5
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5

**2013 Hazard Mitigation Plan
Hazard Assessment
Human Events (Combined)**

Hazard Identification	Probability										
	Occurrence		Human		Property		Service		Final Rank		
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30
Violent Person	2	2	2	3	2	2	2	3	26	28	27
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18
Prison Riot	1	1	1	3	1	3	1	3	13	19	16
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15

**2013 Hazard Mitigation Plan
Hazard Assessment
Technological Events (Combined)**

Hazard Identification					Probability				Final Rank		
					Occurrence		Human				
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Transportation Incident	1	2	2	3	2	3	2	3	16	29	22.5
Water/Sewer Loss	1	2	1	1	1	2	2	3	14	26	20
Dam Failure	1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	12	25	18.5
Pipeline Incident	1	1	1	2	2	3	2	3	15	18	16.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	14	17	15.5
Natural Gas Loss	1	1	1	2	1	2	2	3	14	17	15.5
Bridge Failure	1	1	1	1	1	3	1	3	13	17	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	13	16	14.5

**2013 Hazard Mitigation Plan
Hazard Assessment
All Events (Combined)**

Hazard Identification	Probability										
	Occurrence		Human		Property		Service		Final Rank		
Hazardous Material	3	3	2	3	2	3	3	3	37	39	38
High Winds	3	3	1	1	2	3	2	3	35	37	36
Severe Thunderstorm	3	3	1	1	2	3	2	3	35	37	36
Flooding	3	3	1	1	2	3	1	3	34	37	35.5
Full Power Loss	2	3	1	2	0	2	3	3	24	37	30.5
Bomb Threat	3	2	1	2	1	1	2	3	34	26	30
Major Fire	2	2	2	2	3	3	2	2	27	27	27
Violent Person	2	2	2	3	2	2	2	3	26	28	27
Major Storm	2	2	1	2	2	3	2	3	25	28	26.5
Pandemic	2	2	3	3	0	0	3	3	26	26	26
Drought	2	2	1	1	2	2	2	2	25	25	25
IS/Telecom	2	2	1	1	1	1	3	3	25	25	25
Extreme Temperature	2	2	1	2	1	2	1	2	23	26	24.5
Transportation Incident	1	2	2	3	2	3	2	3	16	29	22.5
Water/Sewer Loss	1	2	1	1	1	2	2	3	14	26	20
Earthquake	1	1	3	2	3	3	3	3	19	18	18.5
Dam Failure	1	1	2	3	3	3	3	3	18	19	18.5
Wind Farms	1	2	1	1	1	3	0	1	12	25	18.5
Infestation	2	1	1	0	1	2	1	1	23	13	18
Terrorist Event	1	1	2	3	2	3	3	3	17	19	18
Subsidence	1	1	3	1	3	3	3	2	19	16	17.5
Pipeline Incident	1	1	1	2	2	3	2	3	15	18	16.5
Prison Riot	1	1	1	3	1	3	1	3	13	19	16
Civil Disturbance	1	1	1	2	1	3	1	3	13	18	15.5
Rolling Elec. Outages	1	1	1	2	1	2	2	3	14	17	15.5
Natural Gas Loss	1	1	1	2	1	2	2	3	14	17	15.5
Cyber Attack	1	1	1	0	1	2	3	3	15	15	15
Bridge Failure	1	1	1	1	1	3	1	3	13	17	15
AMD Treatment Fail	1	1	1	2	1	2	1	2	13	16	14.5

Other Hazards

Earthquakes

As was discussed in the 2008 plan, there is no record of earthquake epicenters in Blair County. Neighboring Cambria County, however, experienced an earthquake before 1960 between magnitudes 3.0 and 3.9 on the Richter scale, and the Charlottesville (VA) earthquake of 2011 was felt in parts of Blair County. The table below indicates the relative frequency worldwide of the various magnitudes of such quakes and their effects.

Earthquake Effects and Frequency

Richter Magnitudes	Earthquake Effects	Frequency of Occurrence
Less than 2.0	Microearthquakes, not felt.	About 8,000 per day
2.0-2.9	Generally not felt, but recorded.	About 1,000 per day
3.0-3.9	Often felt, but rarely causes damage.	49,000 per year (est.)
4.0-4.9	Noticeable shaking of indoor items, rattling noises. Significant damage unlikely.	6,200 per year (est.)
5.0-5.9	Can cause major damage to poorly constructed buildings over small regions. At most slight damage to well-designed buildings.	800 per year

One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this manner. PGA represents the rate in change of motion of the earth's surface during an earthquake as a percent of the established rate of acceleration due to gravity.

According to the USGS, Blair County is estimated to have a low PGA-based earthquake hazard, which means that it has 10 percent exceedance levels (10 percent expectation of being exceeded in a period of 50 years) between 2 and 3 PGA. Roughly, ground acceleration must exceed 15 PGA for significant damage to occur, although soil conditions at local sites are extremely important in controlling how much damage will occur as a consequence of a given amount of ground acceleration. Thus, as in 2008, earthquakes are deemed to be a minor hazard in Blair County.

Landslides/Subsidence

There are several types of land failure hazards; the type with some relevance in Blair County is rockfalls. A rockfall occurs when smaller rock-mass breaks free and disintegrates into blocks that bounce and roll down steep slopes. .

There have been several land failures reported in Pennsylvania but no substantive failures in Blair County. Rockfalls and other slope failures often occur in areas with moderate to steep slopes, conducive geology and high precipitation. With the appropriate geology and topography, most slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms or snowmelt events. Other elements that determine slope stability are vegetative cover and slope. Contributing causes of landslides include erosion, removal of vegetation cover and earthquakes. Human activities that can contribute to slope failure include altering the slope gradient, increasing the soil water content and removing vegetation cover. The Pennsylvania Department of Conservation and Natural Resources describes landslide susceptibility in Blair County as “generally low, but includes local areas of high to moderate.” Those latter areas would tend to be in areas of steep slopes, such as along the Allegheny Front in the western third of the county as well as Brush, Bald Eagle, Canoe, Dunning, Loop, Lock, Short, and Tussey mountains. Thus, landslides/subsidence is deemed to be a relatively minor hazard in Blair County.

Wildfires

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

Wildfires can occur at any time of the year, but 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 the Commonwealth can occur in fields, grass, and brush as well as in forests. In Blair County, most of the county consists of forested areas and cropland. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands.

The greatest potential for wildfires is in the spring months of March, April, and May, and in the autumn months of October and November. In the spring, bare trees allow sunlight to reach the forest floor, warming the ground and drying the previous fall's leaves. In the fall, dried leaves are also fuel for fires.

98 percent of wildfires in Pennsylvania are caused by people, often by debris burns. Several fires have started in a person's backyard and traveled through dead grasses and weeds into bordering woodlands.

Since 1977, there have been more than 230 major wildfires in the Commonwealth resulting in more than 100,000 acres of forest area being destroyed. DCNR Bureau of Forestry maintains data on wildfires on state lands, but data on wildfires on privately owned land was unavailable for review. Relative to other natural hazards, wildfires are deemed to be a low risk to Blair County.

Radon

Radon is a colorless, tasteless and odorless gas that causes lung cancer. Radon gas occurs naturally, forming when uranium breaks down to radium, which in turn breaks down to form radon. As radon decays, it releases radioactive byproducts that are inhaled and can cause lung cancer. Radon can build up to dangerous levels inside homes, schools and other buildings. Exposure to radon is the second leading cause of lung cancer in the United States, after smoking, and is responsible for an estimated 21,000 deaths annually.

Radon is emitted from the ground and enters a home through cracks in walls, basement floors, foundations and other openings. Because radon comes from rock and soil, it can be found anywhere. Exposure to limited concentrations, like those found outdoors, is impossible to avoid. However, when radon gets trapped indoors, it may build up to dangerous concentrations. The most important source of radon gas indoors is the soil and rock surrounding the building. Sealing it to keep radon from getting through cracks and openings can significantly reduce radon levels. Additionally, installing a separate radon ventilation system will remove high levels.

In Blair County, most homes are radon-tested on the private market at the time of sale. This system has been working well here and we see no reason to go beyond that at this point. The recently completed health care assessment for Blair County does not show lung cancer as one of the more numerous causes of death here. Pamphlets are available from the County and several local governments on radon and how to mitigate it.

- APPENDIX F - HAZARD DEFINITIONS

Definitions of Commonly Used Terms

Active Shooter	An individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims.
Aircraft Accident	An occurrence associated with the operation of an aircraft that takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death, or serious injury, or in which the aircraft receives substantial damage.
AMD Treatment Fail	Failure of the treatment of acid mine drainage (AMD) to neutralize acidity and precipitate metal ions in order to meet the relevant effluent limits.
Asset	Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.
Base Flood	Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.
Base Flood Elevation (BFE)	Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.
Bedrock	The solid rock that underlies loose material, such as soil, sand, clay, or gravel.
Bomb Threat	A bomb threat is correspondence or a call that leads a receiver of that information to believe that there is an explosive device in the facility.
Bridge Failure	Loss of a structural component, loss of a bridge's basic functionality, a catastrophic bridge collapse, or any damage condition in between.

Building	A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.
Civil Disturbance	Acts of violence and disorder prejudicial to the public law and order. It includes acts such as riots, acts of violence, insurrections, unlawful obstructions or assemblages.
Clandestine Lab	A clandestine laboratory is simply defined as a place where preparation of illegal substances takes place. These 'labs' are used to manufacture drugs, explosives and even biological or chemical weapons. Most often, the labs are used to manufacture methamphetamine, a potent illegal stimulant drug.
Cold Snap	Extended period of cold and dry weather, that is, or feels significantly colder than the average temperature for our area. Lower dew points contribute to skin drying out faster.
Community Rating System (CRS)	AN NFIP program that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.
Conflagration	A destructive fire, usually an extensive one.
Critical Facility	Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.
Cyber Attack	An attempt to damage, disrupt, or gain unauthorized access to a computer, computer system, or electronic communications network.
Dam Failure	A break in, or imposed threat from, any water retention fixture which may endanger population downstream of the containment area.
Debris	The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a

	wind or water hazard event can cause additional damage to other assets.
Displacement Time	The average time (in days) which the building's occupants typically must operate from a temporary location while repairs are made to the original building due to damages resulting from a hazard event.
Domestic Issue	Any quarrel, which may or may not include violence, within a family or between members of the same household.
Drought	A deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. NOAA together with its partners provides short- and long-term Drought Assessments.
Duration	How long a hazard event lasts
Earthquake	A sudden motion or trembling (seismic wave) that is caused by a release of strain accumulated along a fault plane.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Erosion Hazard Area	Area anticipated to be lost to shoreline retreat over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.
Essential Facility	Elements that are important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.
Extent	The size of an area affected by a hazard or event.

Extratropical Cyclone

Cyclonic storm events like Nor'easters and severe winter low-pressure systems. Both West and East coasts can experience these non-tropical storms that produce gale-force winds and precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called Nor'easters on the East Coast because of the direction of the storm winds, can last for several days and can be very large – 1,000-mile wide storms are not uncommon.

Fault

A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.

Federal Emergency Management Agency (FEMA)

Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.

Fire Potential Index (FPI)

Developed by USGS and USFS to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.

Flash Flood

A rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). However, the actual time threshold may vary in different parts of the country. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood

	waters.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Depth	Height of the flood water surface above the ground surface.
Flood Elevation	Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.
Flood Hazard Area	The area shown to be inundated by a flood of a given magnitude on a map.
Flood Insurance Rate Map (FIRM)	Map of a community, prepared by the Federal Emergency Management Agency, that shows both the special flood hazard areas and the risk premium zones applicable to the community.
Flood Insurance Study (FIS)	A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.
Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.
Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.
Fujita Scale of Tornado Intensity	Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while and F5 indicated severe damage sustained.

Full Power Loss	Loss of electrical power long enough to interrupt a firm's essential business, data processing system, support services, and/or other activities that may result in loss of income or associated liabilities.
Functional Downtime	The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.
Geographic Area Impacted	The physical area in which the effects of the hazard are experienced.
Geographic Information Systems (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Ground Motion	The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions.
Hazard	A source of potential danger or adverse condition. Hazards in this how-to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.
Hazard Event	A specific occurrence of a particular type of hazard.
Hazard Identification	The process of identifying hazards that threaten an area.
Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

Hazardous Material	Any material that has been designated as hazardous and is required to be placarded or any quantity of a material listed as a select agent or toxin.
HAZUS (Hazards U.S.)	A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.
Heat Wave	A period of abnormally and uncomfortably hot and unusually humid weather. Typically a heat wave lasts two or more days. For PA, it is 90 degrees or more for three days or longer.
High Wind	Sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration.
Highway Incident	Any occurrence on a roadway that impedes normal traffic flow.
Hostage/Barricade	An incident where a suspect is holding a person against their will as security for a certain demand or pledge. Also, a criminal suspect who has taken a position in a physical location, most often a structure or vehicle, fortified or not, that does not allow immediate police access and is refusing police orders to exit.
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the north Atlantic Ocean, northeast Pacific Ocean, or the south Pacific Ocean east of 160°E longitude. Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.
Infestation	State of being overrun by pests or parasites in numbers or quantities large enough to be harmful, threatening, or obnoxious.
Infrastructure	Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication

	technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, drydocks, piers and regional dams.
Intensity	A measure of the effects of a hazard event at a particular place.
IS/Telecom	The transmission of information, as words, sounds, or images, usually over great distances, in the form of electromagnetic signals, as by telegraph, telephone, radio, or television.
Landslide	Downward movement of a slope and materials under the force of gravity.
Lateral Spreads	Develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies in a seismic event.
Liquefaction	The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.
Loss of Bearing Strength	Results when the soil supporting structures liquefies. This can cause structures to tip and topple.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.
Magnitude	A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.
Mitigation Plan	A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.
National Flood Insurance Program (NFIP)	Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 CFR §60.3.

National Geodetic Vertical Datum of 1929 (NGVD)	Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.
Natural Gas Loss	Failure of the natural gas system carrying natural gas through pipelines to homes, businesses, etc. (See also: Pipeline Incident)
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow or rain.
Pandemic	(of a disease) prevalent throughout an entire country, continent, or the whole world; epidemic over a large area.
Pipeline Incident	Incidents involving a fatality or injury requiring in-patient hospitalization, \$50,000 or more in total costs, measured in 1984 dollars, highly volatile liquid releases of 5 barrels or more or other liquid releases of 50 barrels or more, or liquid releases resulting in an unintentional fire or explosion.
Planimetric	Describes maps that indicate only man-made features like buildings.
Prison Riot	Act of concerted defiance or disorder by a group of prisoners against the prison administrators, prison officers, or other groups of prisoners in attempt to force change or express a grievance.
Probability	A statistical measure of the likelihood that a hazard event will occur.
Recurrence Interval	The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.
Repetitive Loss Property	A property that has received two or more claim

payments of more than \$1,000 from the National Flood Insurance Program within any rolling 10-year period for a home or business.

Replacement Value

The cost of rebuilding a structure. Usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

Richter Scale

A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

Risk

The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Riverine

Of or produced by a river.

Rolling Electric Outages

A series of intentional electrical blackouts affecting small areas in succession as a means of conserving electricity when supply is low.

Scarp

A steep slope.

Scour

Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

Seismicity

Describes the likelihood of an area being subject to earthquakes.

Severe Thunderstorm

A thunderstorm that produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least 1" in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal to or greater than 40 mph (35 knots) and/or hail of at least 1" is

	defined as approaching severe.
Sewer Loss	Failure of the underground conduit for carrying off sewage or rainwater.
Shale Site Incident	Any incident involving drilling for natural gas in underground shale deposits, i.e. Marcellus Shale.
Special Flood Hazard Area (SFHA)	An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.
Straight-line Winds	Generally, any wind that is not associated with rotation, used mainly to differentiate them from tornadic winds.
Structure	Something constructed. (See also Building)
Subsidence	The hydrologic or geologic sinking down of part of the earth's crust due to underground excavation, such as the removal of groundwater.
Substantial Damage	Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.
Surface Faulting	The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.
Terrorist Event	A surprise attack involving the deliberate use of violence against civilians in the hope of attaining political or religious aims.
Topographic	Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include manmade features.

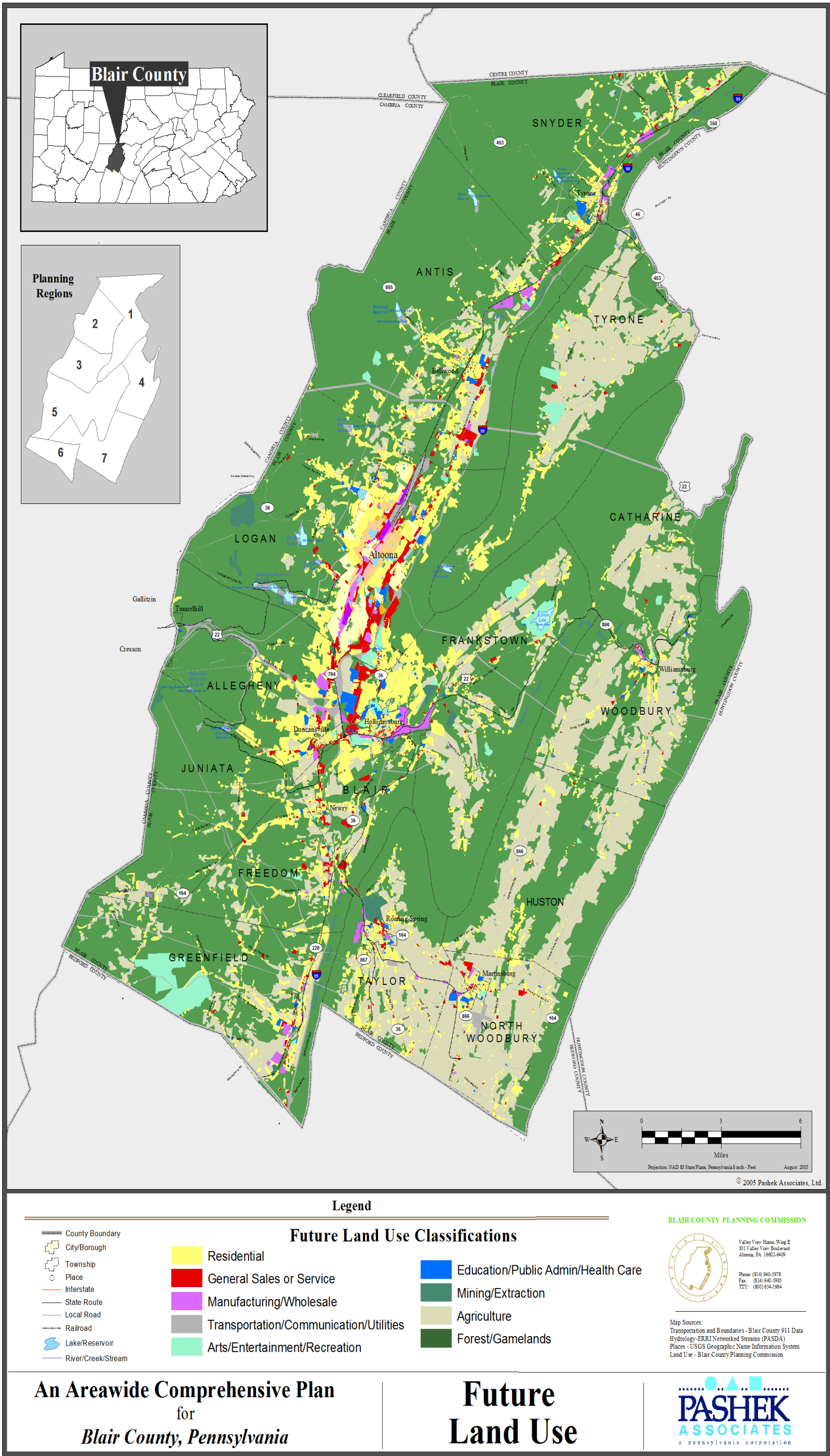
Tornado	A violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local scale, it is the most destructive of all atmospheric phenomena.
Train Accident	Accidents or mishaps involving trains, locomotives, subways, or other components of the railroad – and railway - systems.
Tropical Cyclone	A generic term for a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum 1-minute sustained surface winds greater than 39 mph and less than 74 mph.
Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.
Vulnerability Assessment	The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.
Water Loss	The reduction in performance or complete failure of part or all of the water supply system, due to equipment failure, human acts, (deliberate or accidental) and the results of natural or human made disasters.
Wildfire	An uncontrolled, free burning wildland fire spreading through vegetative fuels, exposing and possibly consuming structures.

Wind Farms	Large groups of wind-driven generators for electricity supply.
Winter Storm	Storms characterized by snowfall, rain, sleet, and ice etc. where temperatures are below freezing point.
Winter Storm Warning	This product is issued by the National Weather Service when a winter storm is producing or is forecast to produce heavy snow or significant ice accumulations. The criteria for this warning can vary from place to place.
Winter Storm Watch	This product is issued by the National Weather Service when there is a potential for heavy snow or significant ice accumulations, usually at least 24 to 36 hours in advance. The criteria for this watch can vary from place to place.
Winter Weather Advisory	This product is issued by the National Weather Service when a low pressure system produces a combination of winter weather (snow, freezing rain, sleet, etc.) that present a hazard, but does not meet warning criteria.
Workplace Violence	Violence or the threat of violence against workers. It can occur at or outside the workplace and can range from threats and verbal abuse to physical assaults and homicide.
Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

- APPENDIX G - EXISTING LAND USE MAP



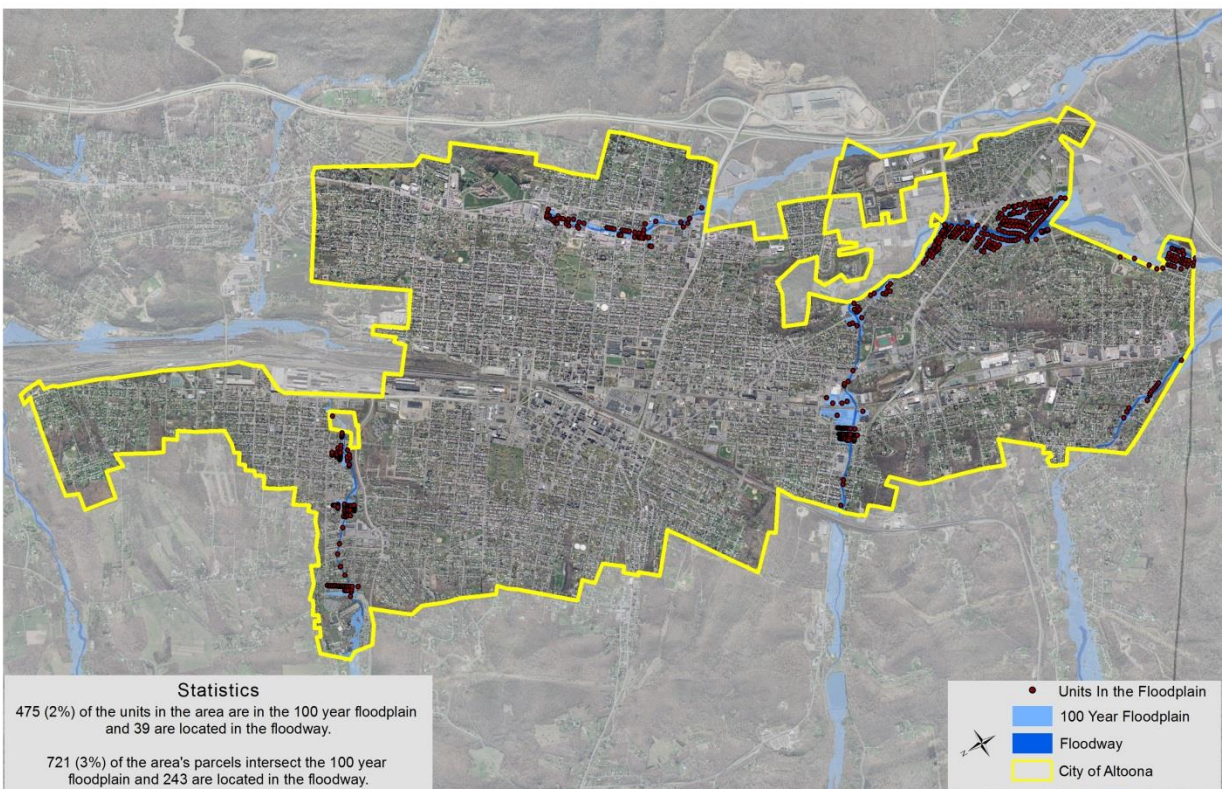
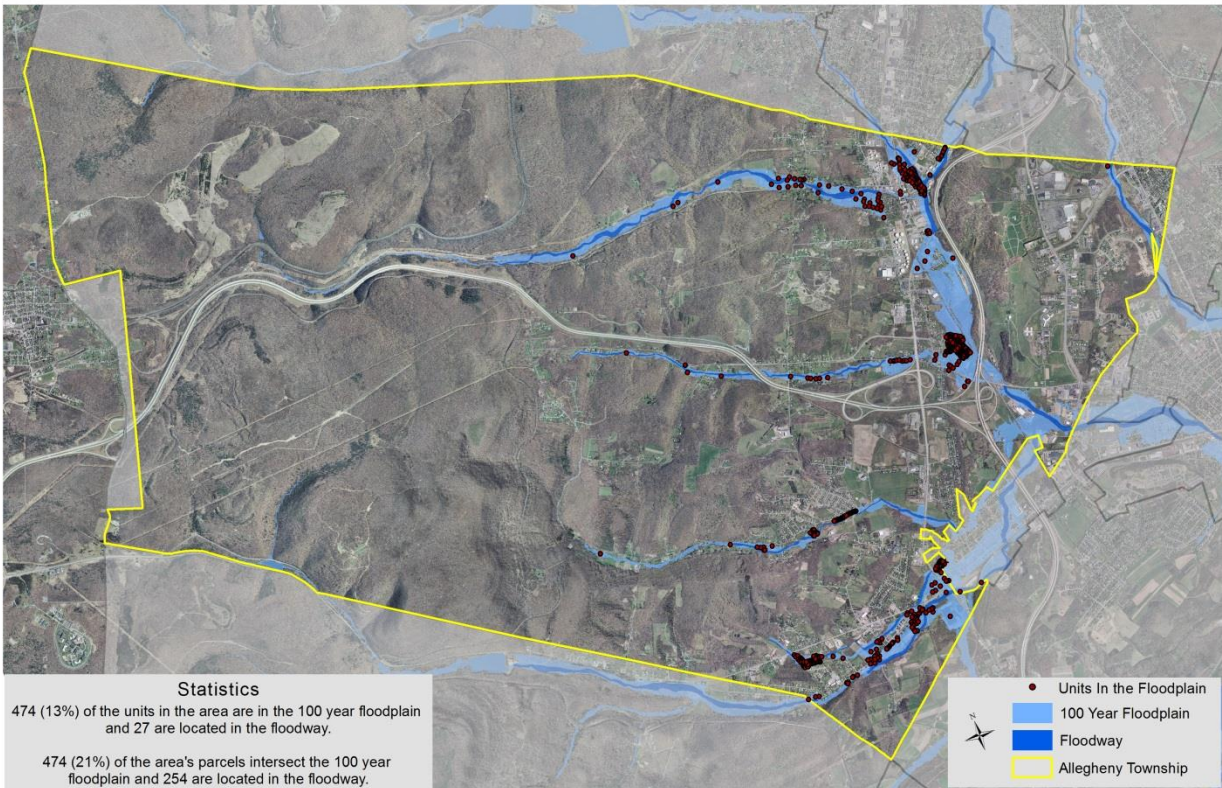
- APPENDIX H - FUTURE LAND USE MAP

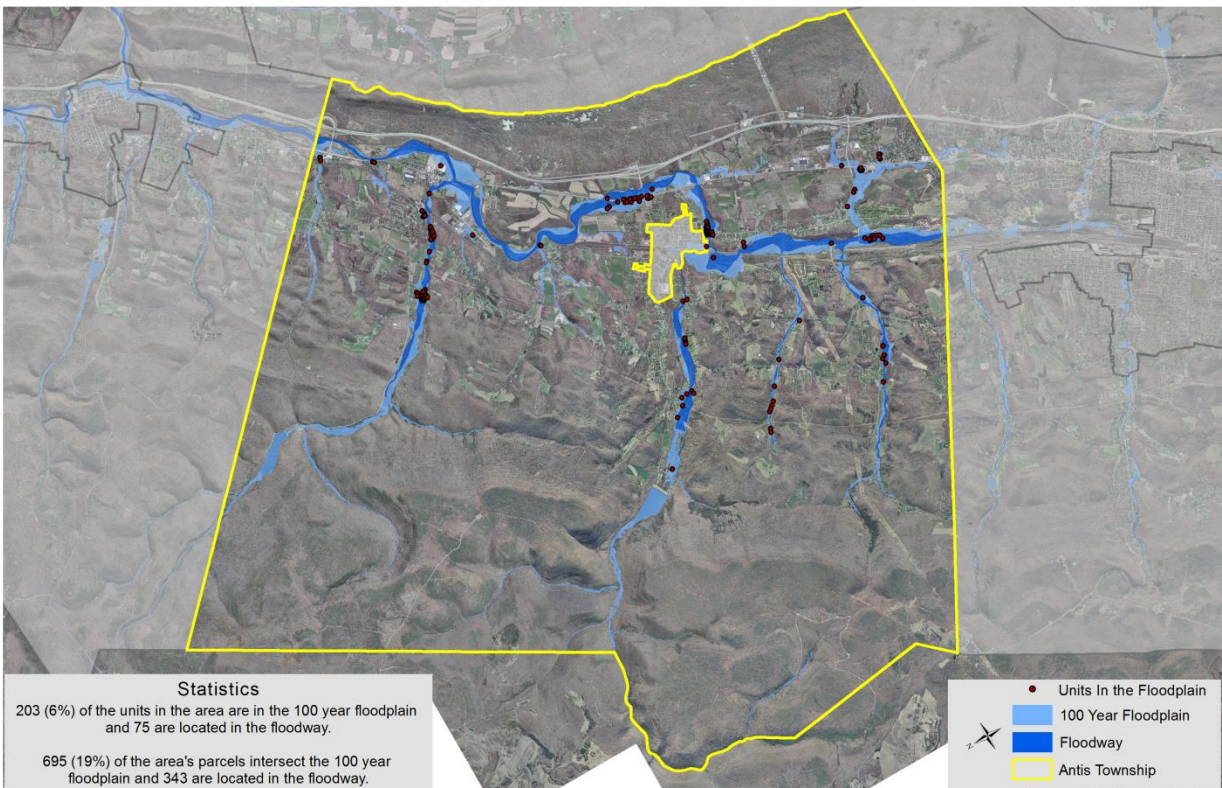


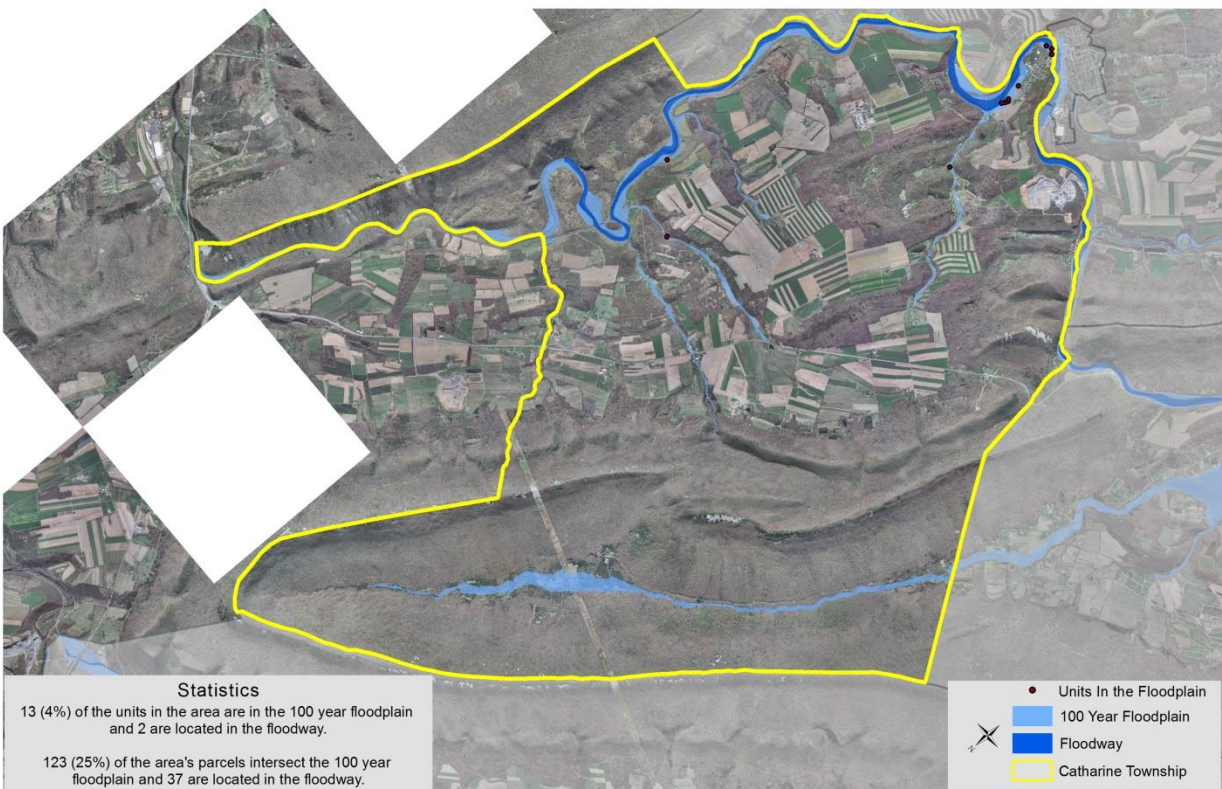
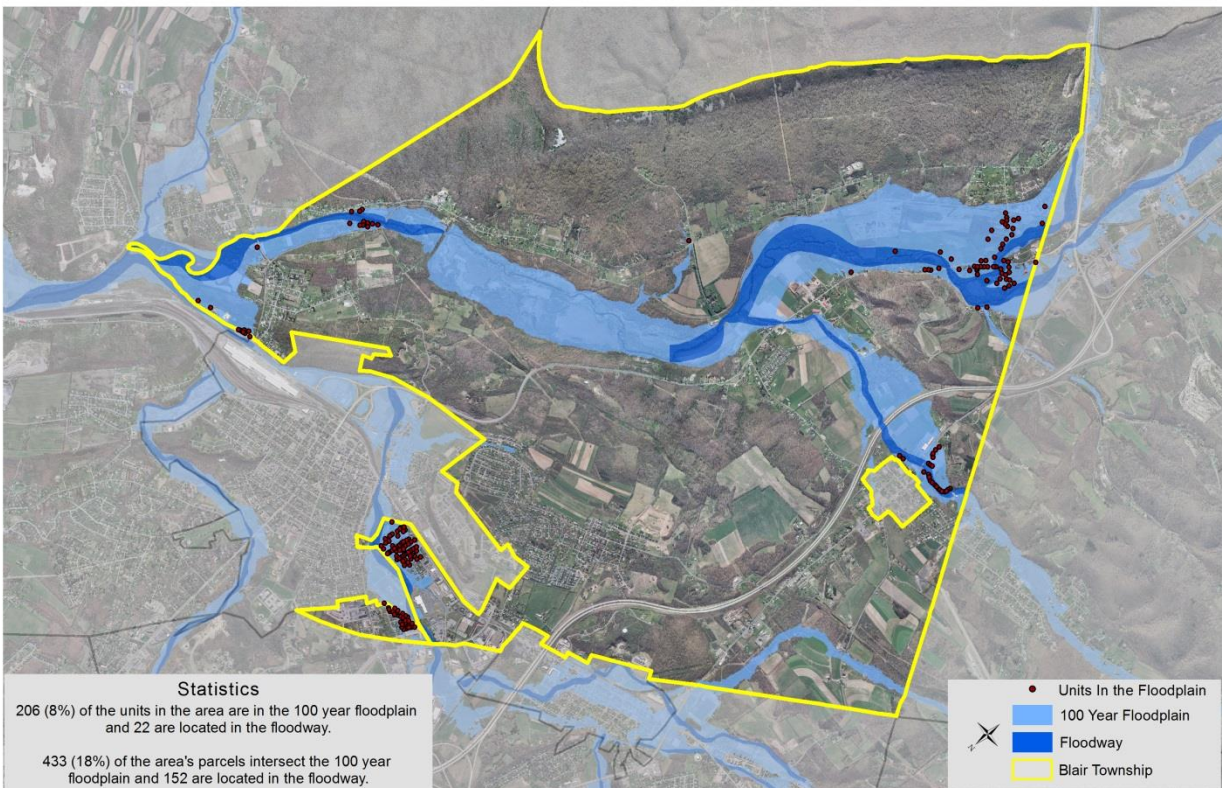
- APPENDIX I -

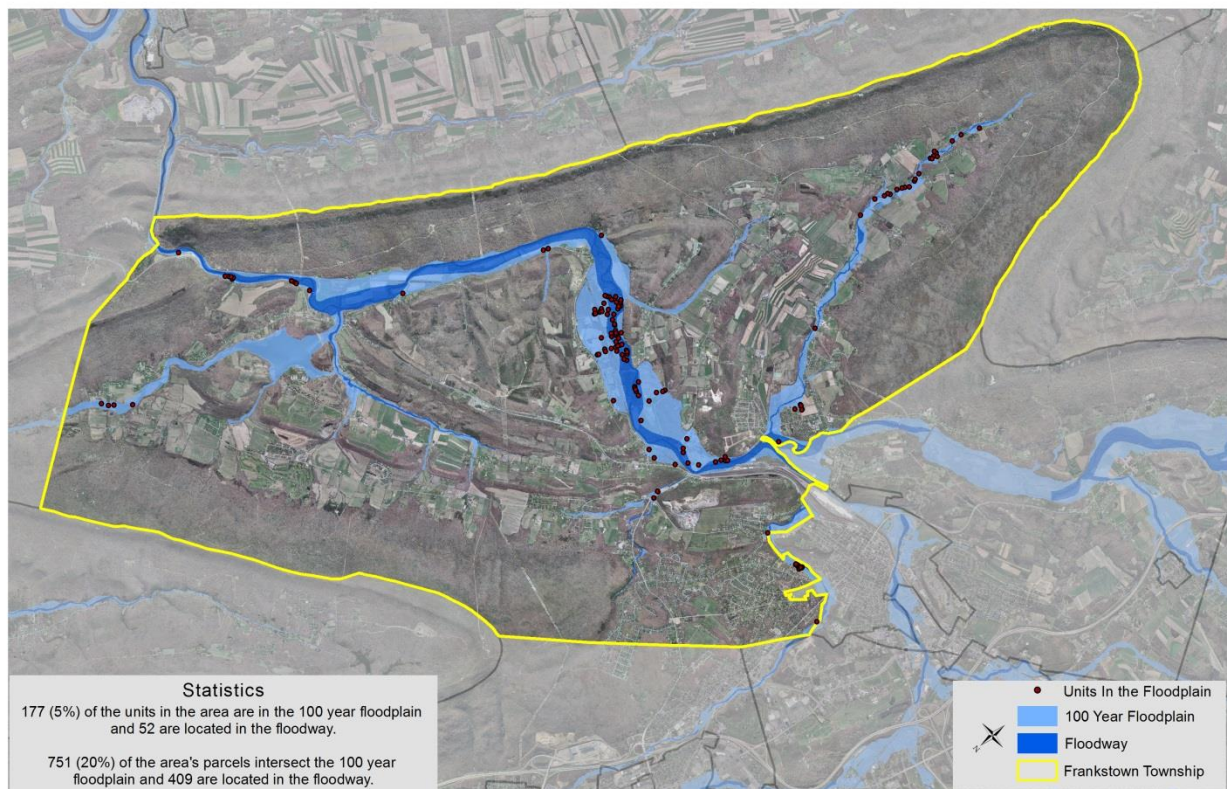
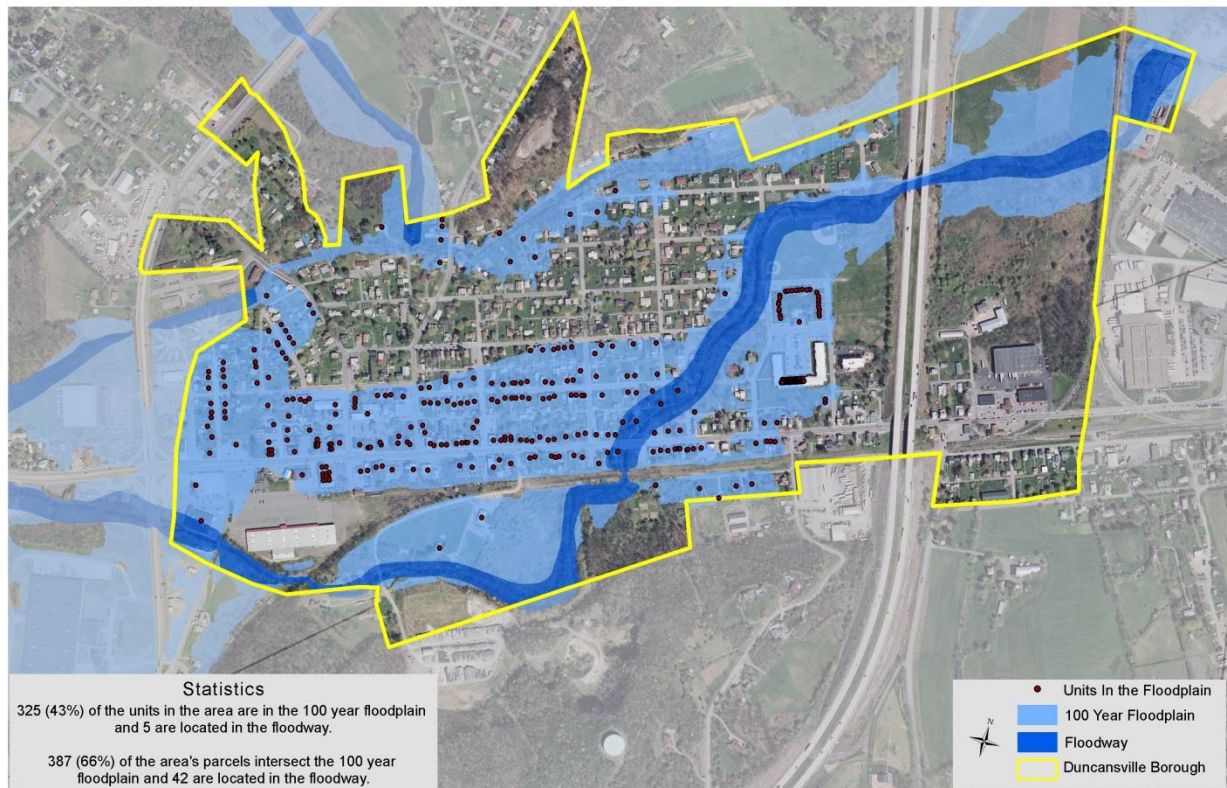
FLOOD-PRONE AREAS WITH

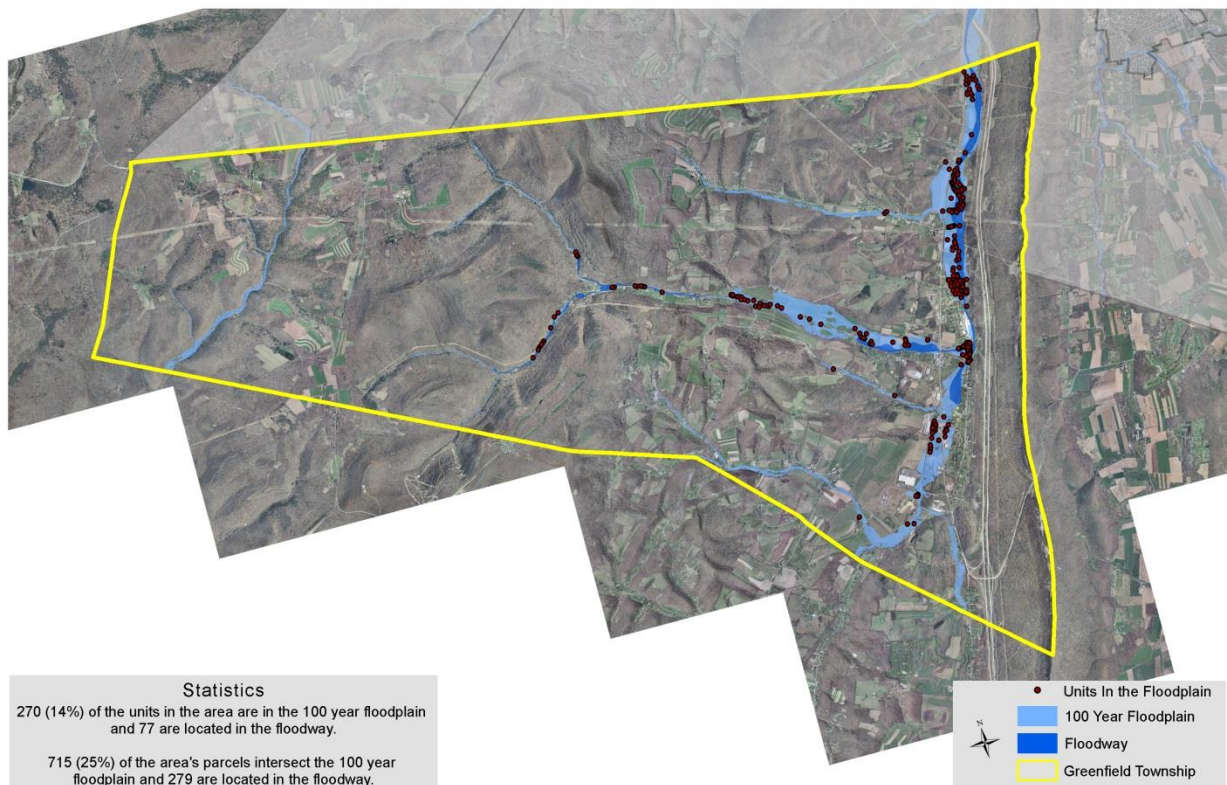
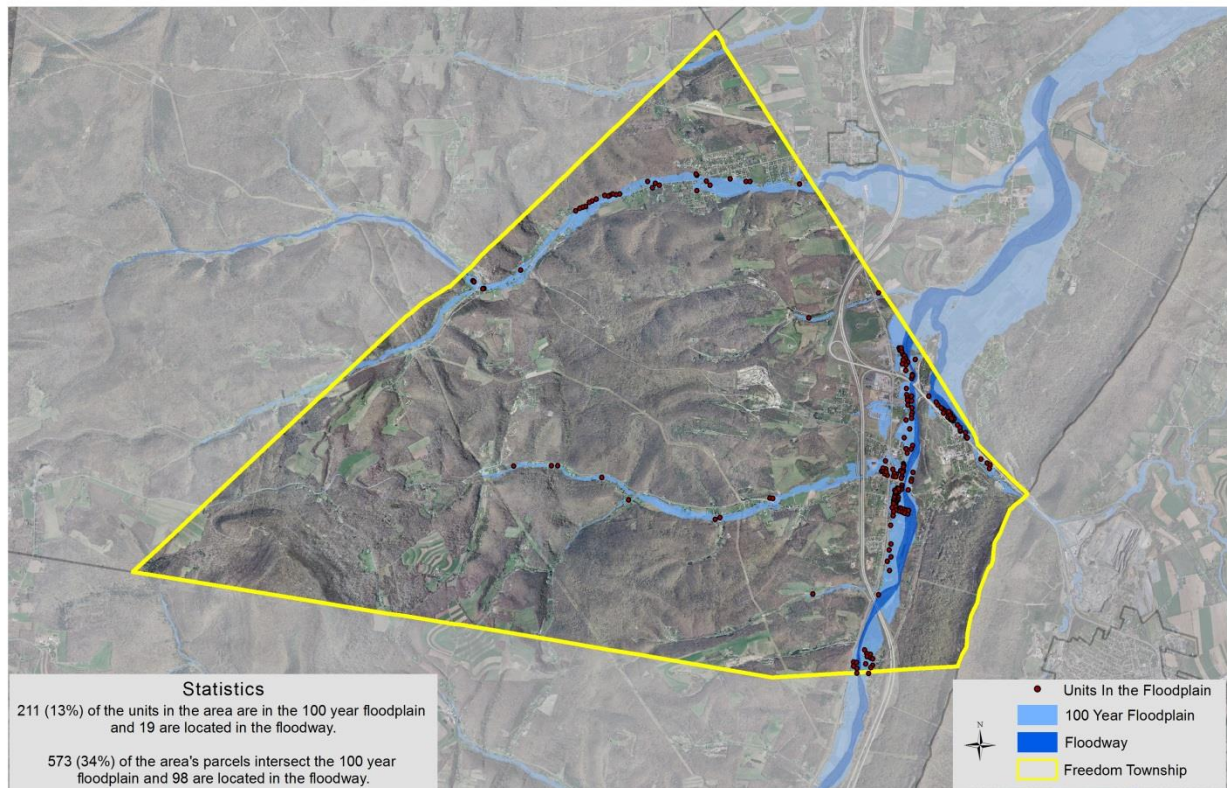
VULNERABLE STRUCTURES

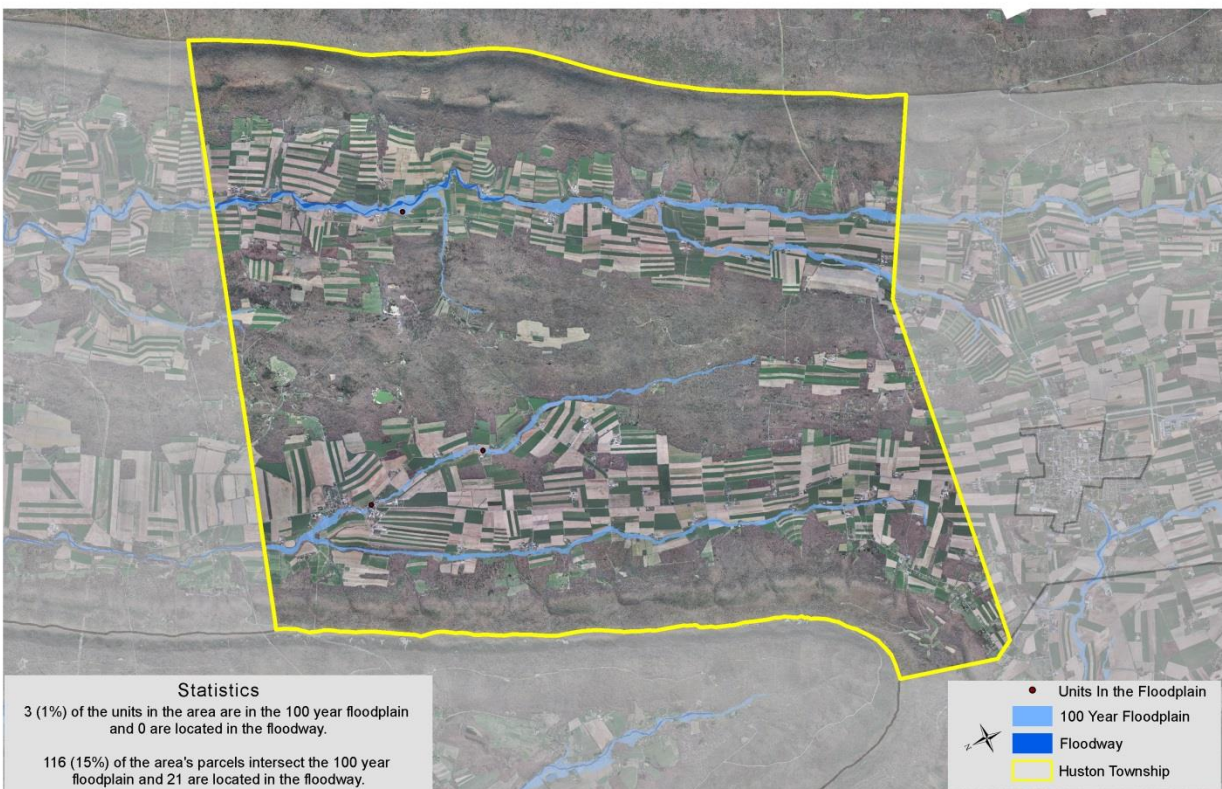
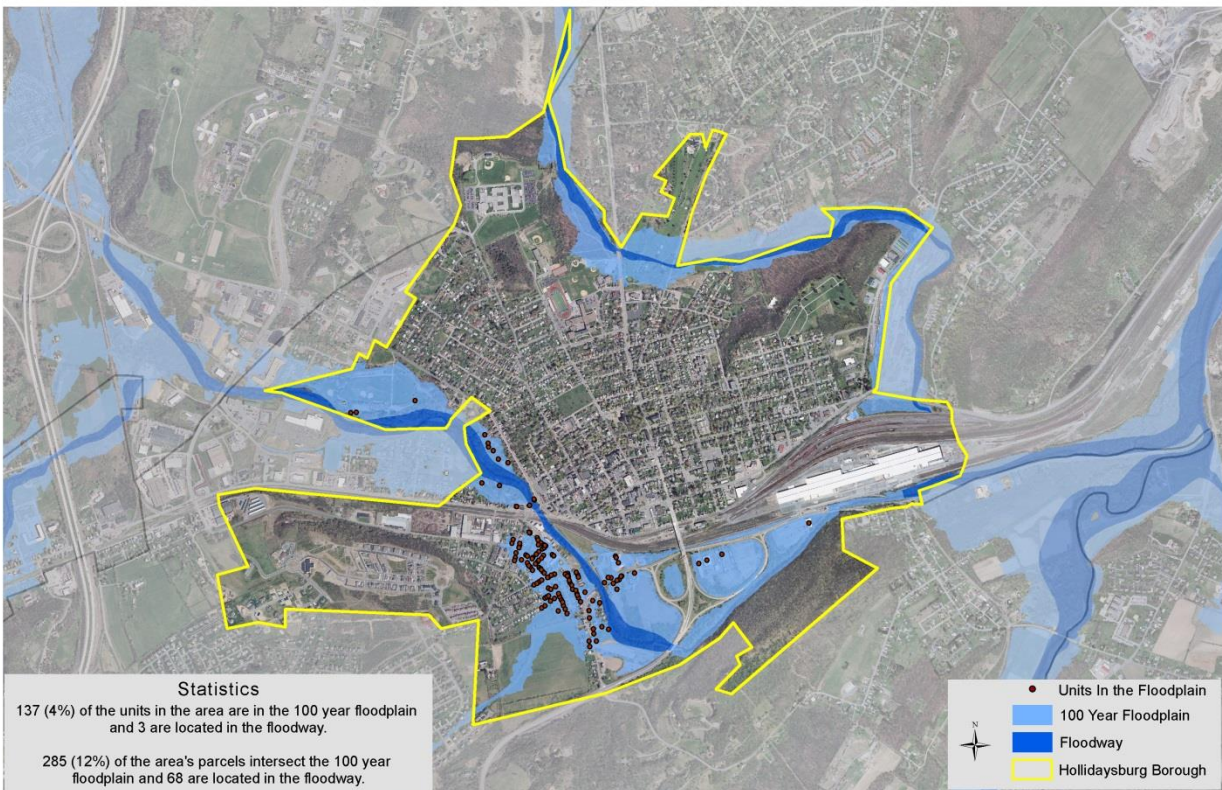


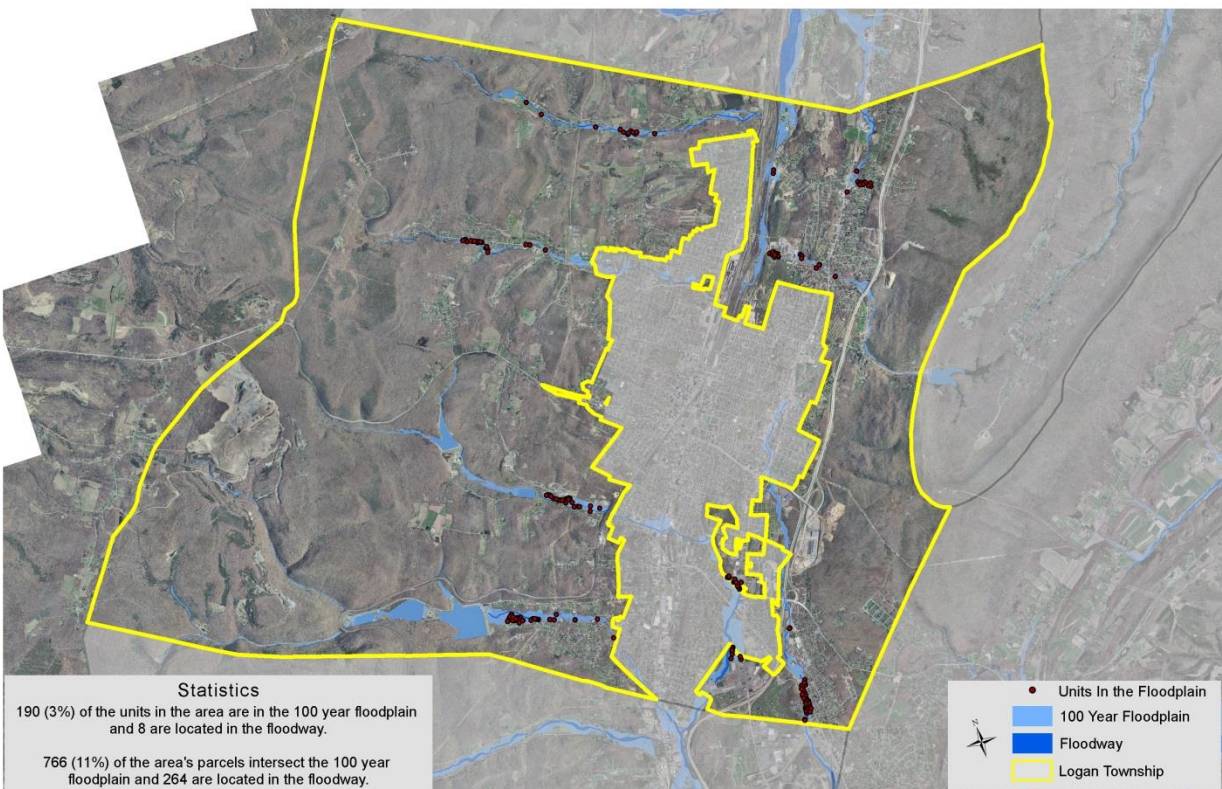
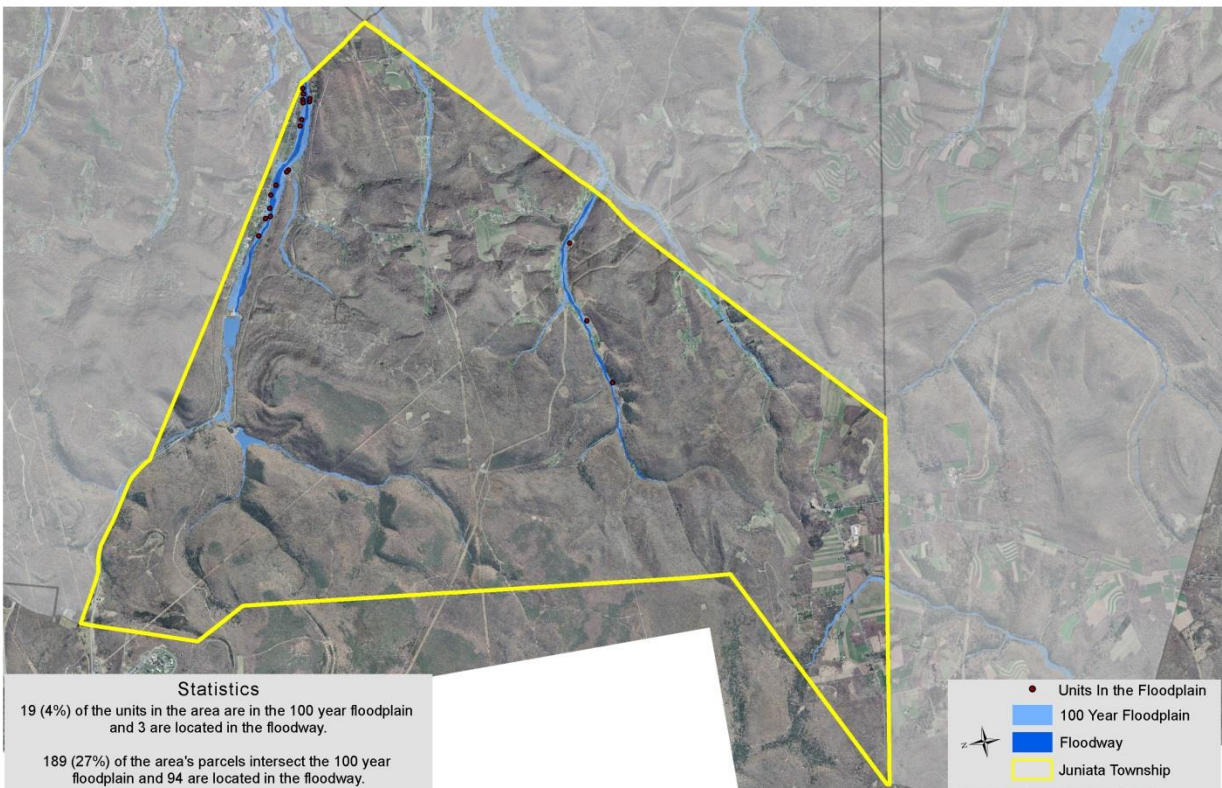


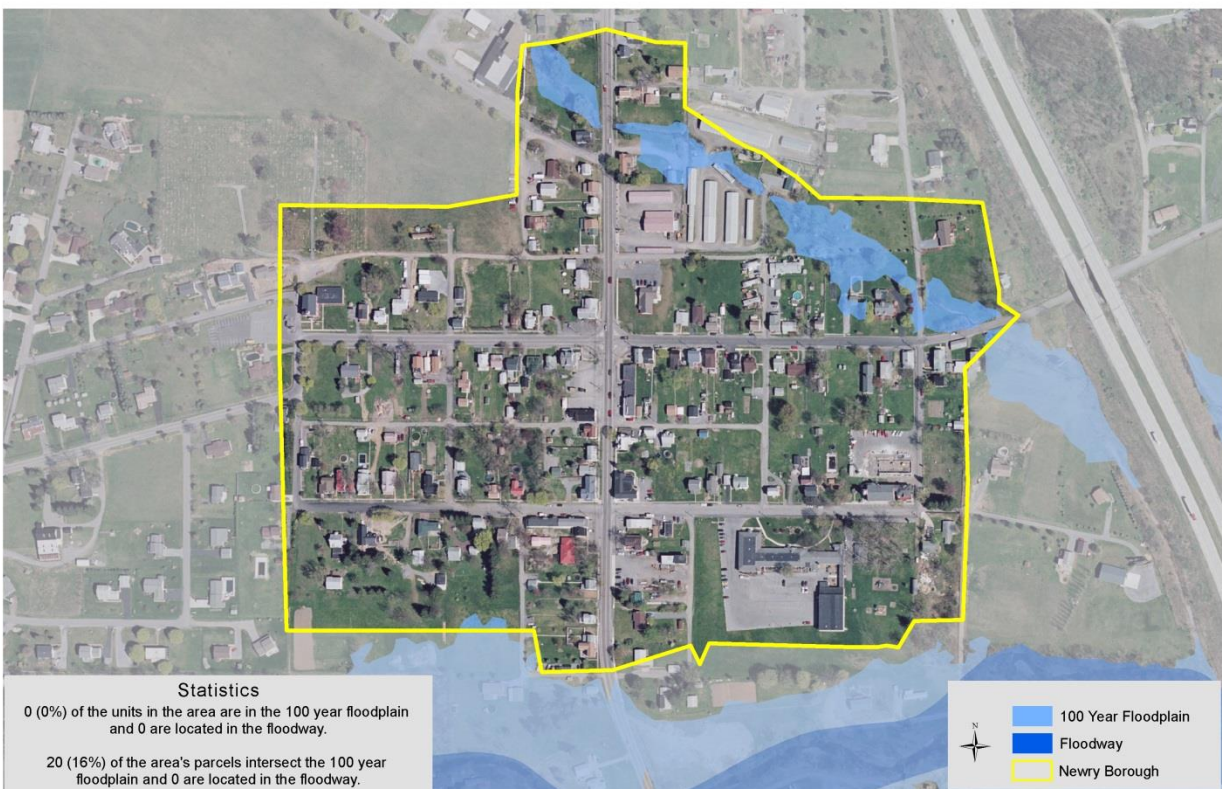
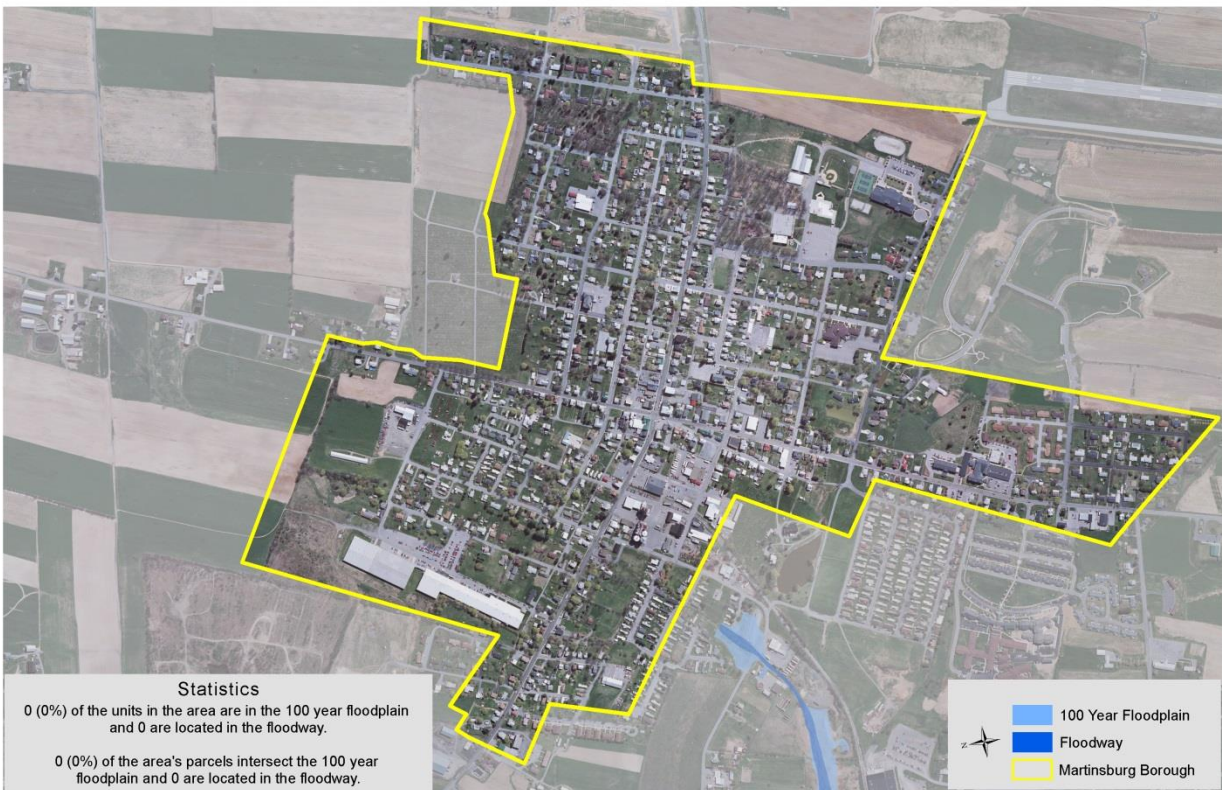


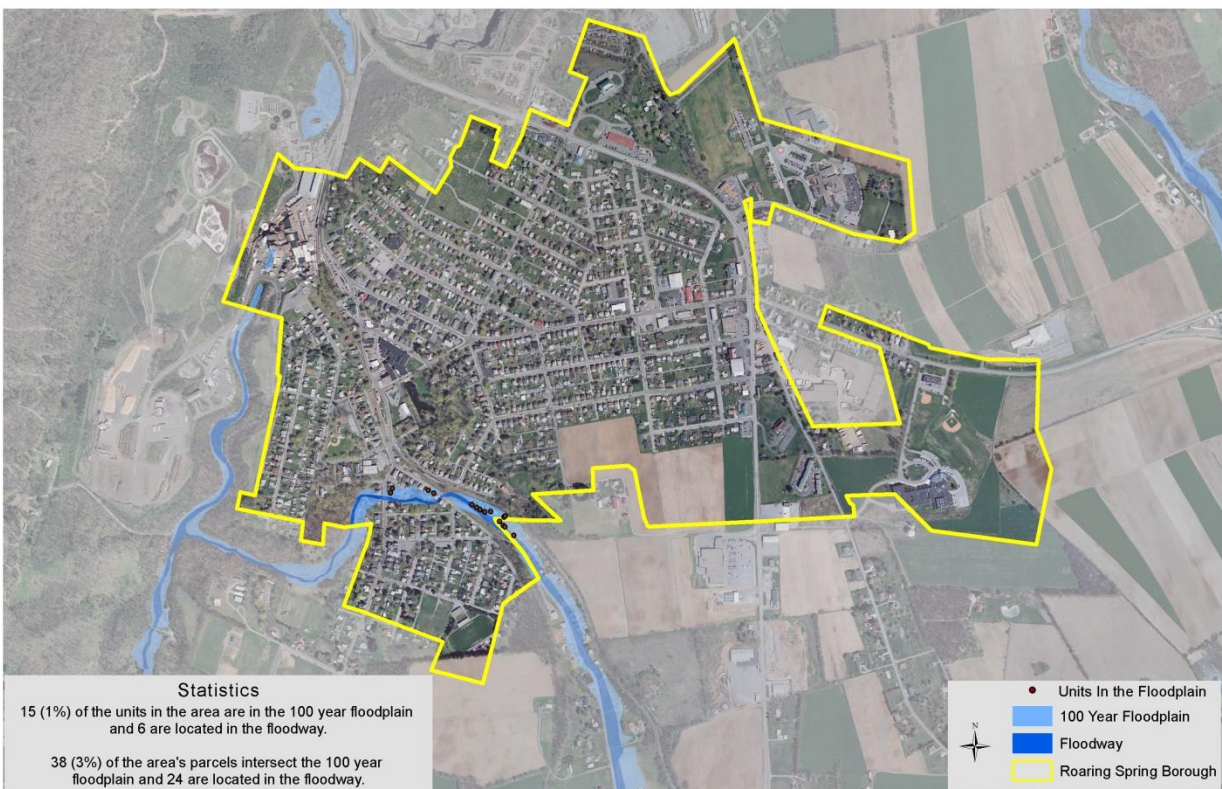
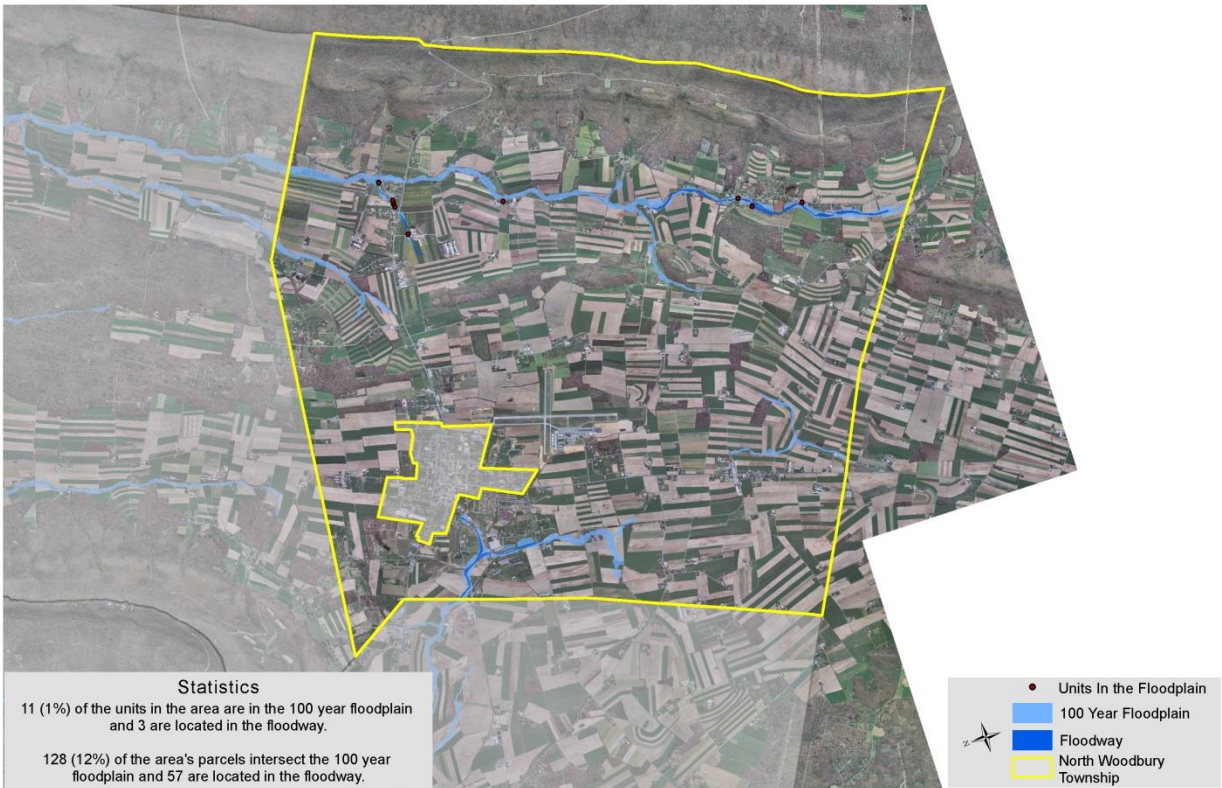


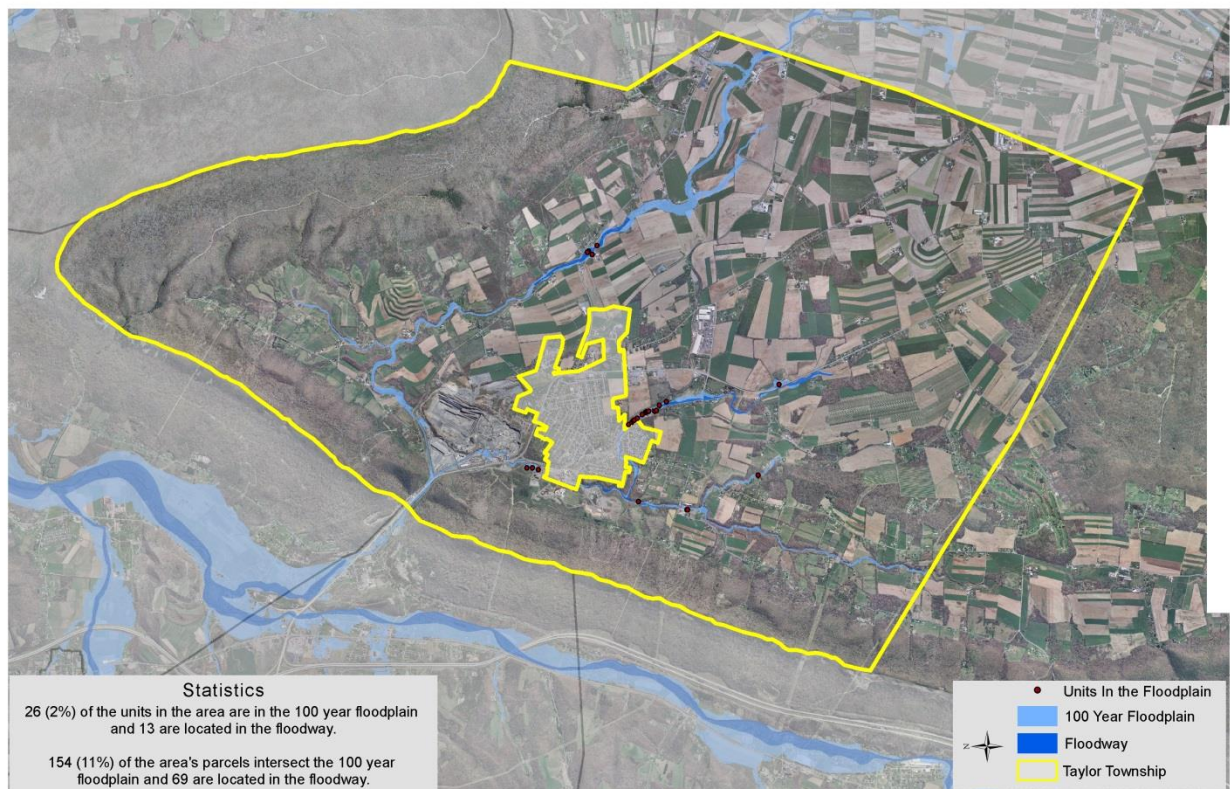
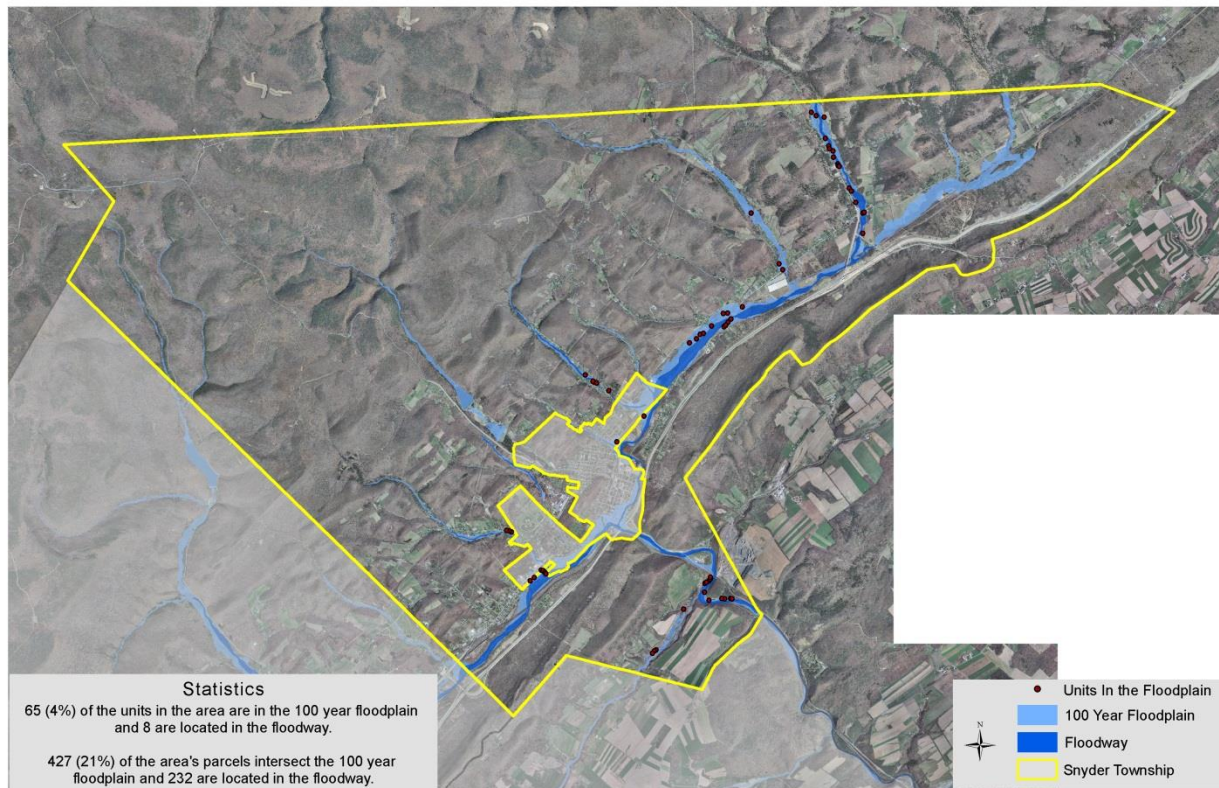


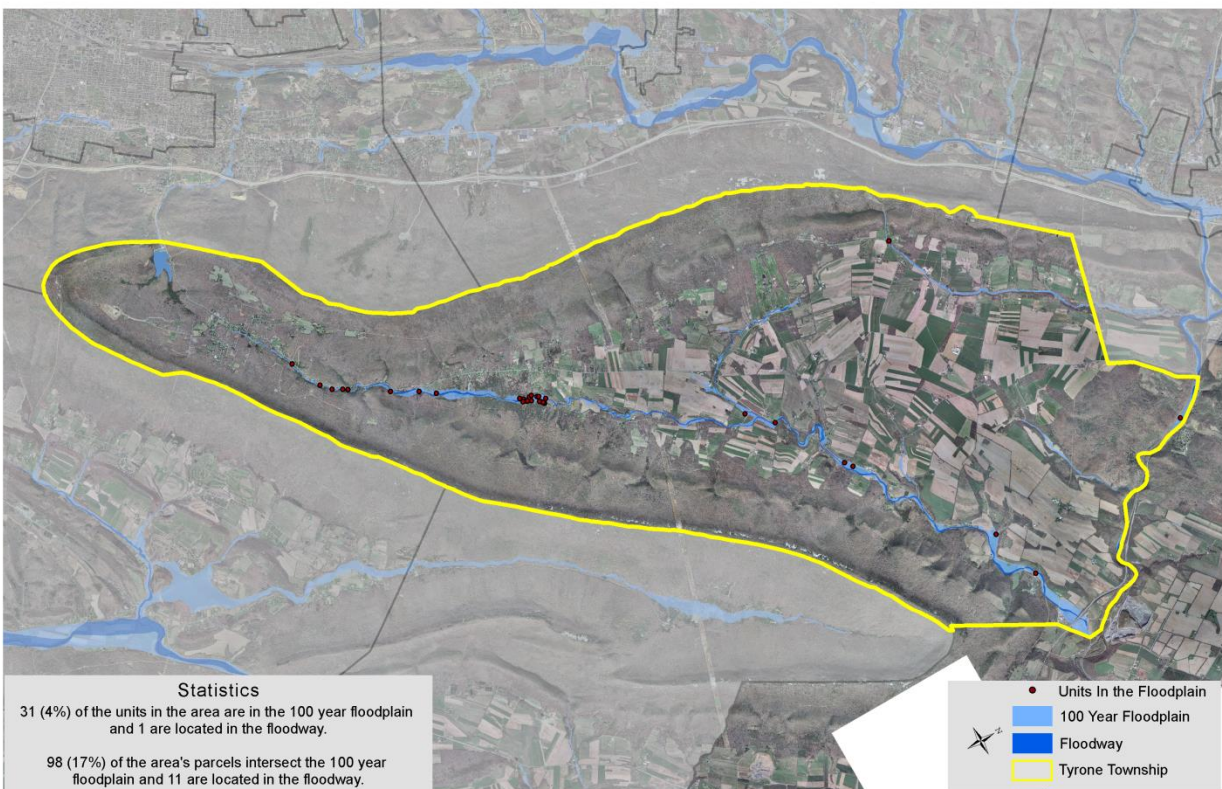
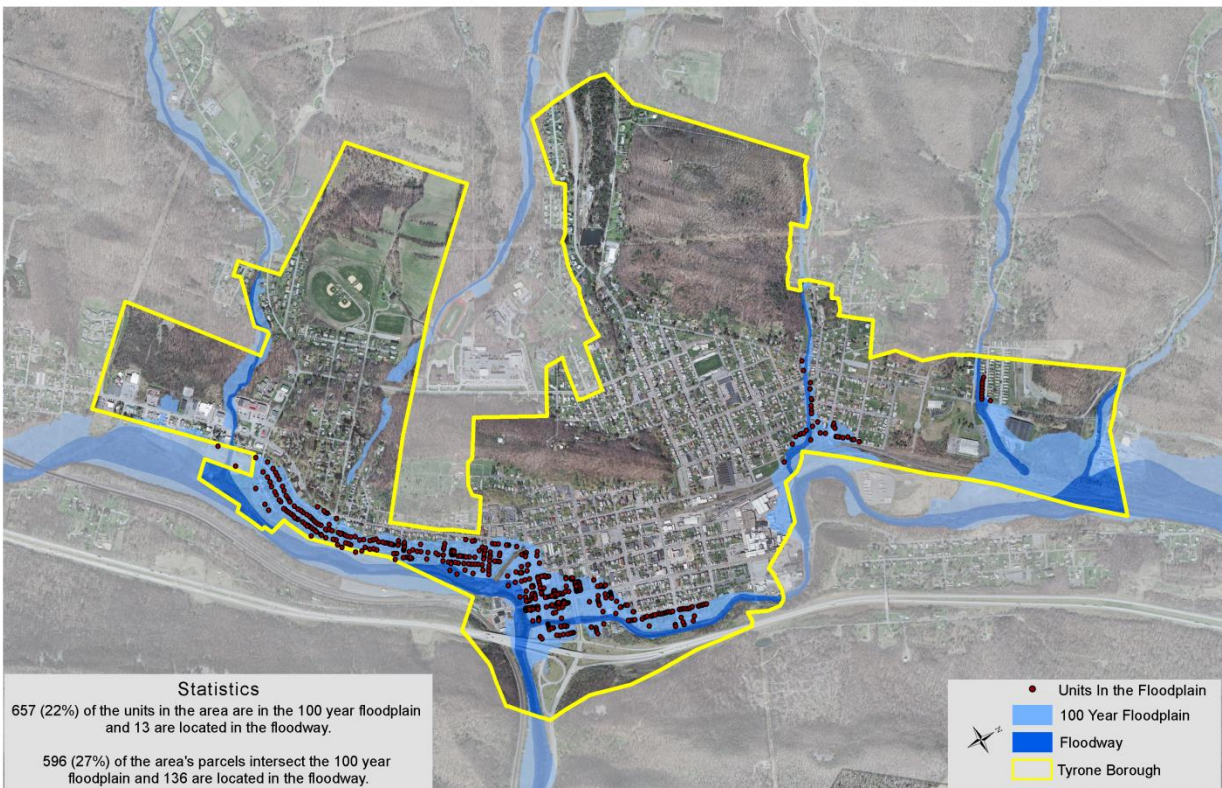


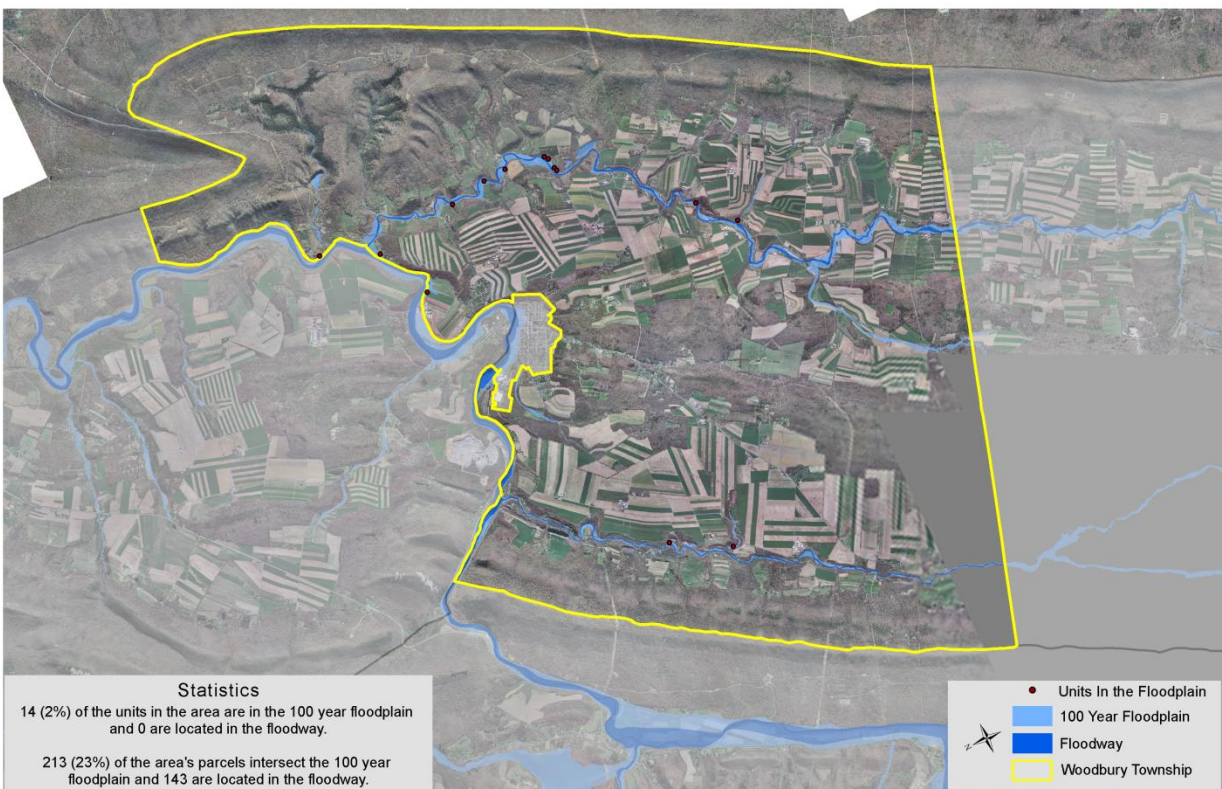
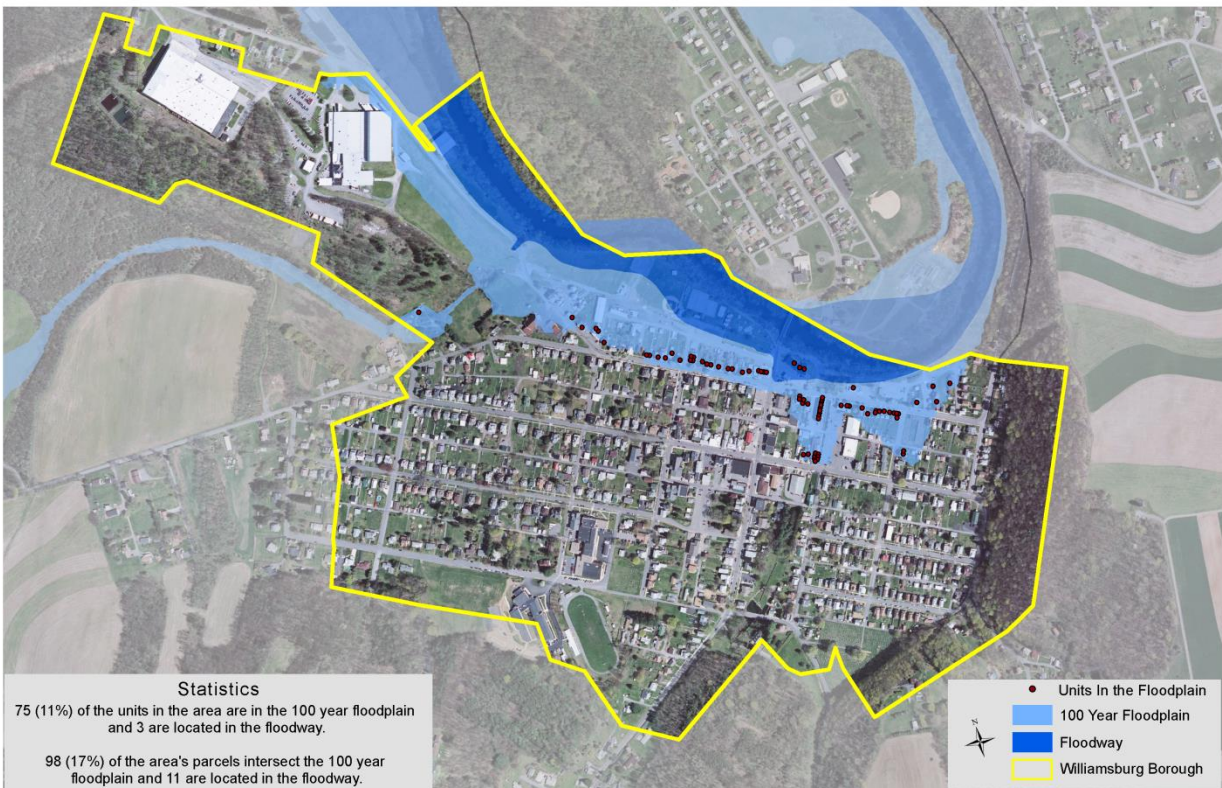












Sources: FEMA Map Service Center (Floodplain) and Blair County Department of Emergency Services (Structures)

- APPENDIX J - RECORD OF COMPLETION OF ACTION STEPS

GOAL: OBTAIN CRS RATING					
Objective: Raise Awareness					
Action Steps:	Raise Awareness of the Community Rating System	County Assistance	Repetitive Loss Property Identification	FEMA Kickoff Meeting	Rating Roadmap
Blair County					
City of Altoona					
Bellwood Borough					
Duncansville Borough					
Hollidaysburg Borough					
Newry Borough					
Martinsburg Borough					
Roaring Spring Borough					
Tunnelhill Borough					
Tyrone Borough					
Williamsburg Borough					
Allegheny Township					
Antis Township					
Blair Township					
Catharine Township					
Frankstown Township					
Freedom Township					
Greenfield Township					
Huston Township					
Juniata Township					
Logan Township					
North Woodbury Township					
Snyder Township					
Taylor Township					
Tyrone Township					
Woodbury Township					
Blair County Planning Commission					

GOAL: OBTAIN CRS RATING				
Objective: Document Actions				
Action Steps:	Identify Adopted Ordinances and Plans	Identify Related Municipal Actions	Maintain Maps and Certificates	Document Education Efforts
Blair County				
City of Altoona				
Bellwood Borough				
Duncansville Borough				
Hollidaysburg Borough				
Newry Borough				
Martinsburg Borough				
Roaring Spring Borough				
Tunnelhill Borough				
Tyrone Borough				
Williamsburg Borough				
Allegheny Township				
Antis Township				
Blair Township				
Catharine Township				
Frankstown Township				
Freedom Township				
Greenfield Township				
Huston Township				
Juniata Township				
Logan Township				
North Woodbury Township				
Snyder Township				
Taylor Township				
Tyrone Township				
Woodbury Township				
Blair County Planning Commission				

GOAL: SPECIAL NEEDS DATABASE					
Objective: Develop Technology, Database, and Protocols					
Action Steps:	Develop Database Attachment	Develop the Database Structure	Develop Update Mechanism	Engage Third-Party Databases for Verification	Ensure HIPAA Compliance
Blair County					
City of Altoona					
Bellwood Borough					
Duncansville Borough					
Hollidaysburg Borough					
Newry Borough					
Martinsburg Borough					
Roaring Spring Borough					
Tunnelhill Borough					
Tyrone Borough					
Williamsburg Borough					
Allegheny Township					
Antis Township					
Blair Township					
Catharine Township					
Frankstown Township					
Freedom Township					
Greenfield Township					
Huston Township					
Juniata Township					
Logan Township					
North Woodbury Township					
Snyder Township					
Taylor Township					
Tyrone Township					
Woodbury Township					
Blair County Planning Commission					
Social Service Agencies					

GOAL: SPECIAL NEEDS DATABASE			
Objective: Market to Targeted Population			
Action Steps:	Identify People, Locations, and Needs	Engage Social Service Agencies	Direct Marketing
Blair County			
City of Altoona			
Bellwood Borough			
Duncansville Borough			
Hollidaysburg Borough			
Newry Borough			
Martinsburg Borough			
Roaring Spring Borough			
Tunnelhill Borough			
Tyrone Borough			
Williamsburg Borough			
Allegheny Township			
Antis Township			
Blair Township			
Catharine Township			
Frankstown Township			
Freedom Township			
Greenfield Township			
Huston Township			
Juniata Township			
Logan Township			
North Woodbury Township			
Snyder Township			
Taylor Township			
Tyrone Township			
Woodbury Township			
Blair County Planning Commission			
Social Service Agencies			

GOAL: HAZARD EDUCATION PROGRAM					
Objective: Identify Populations and Areas					
Actions Steps:	Identify High-Risk Areas and Populations	Map High-Risk Geographic Areas and Populations	Develop Map-On-The-Fly Product	Identify High-Risk Populations	Develop Language Specific Literature
Blair County					
City of Altoona					
Bellwood Borough					
Duncansville Borough					
Hollidaysburg Borough					
Newry Borough					
Martinsburg Borough					
Roaring Spring Borough					
Tunnelhill Borough					
Tyrone Borough					
Williamsburg Borough					
Allegheny Township					
Antis Township					
Blair Township					
Catharine Township					
Frankstown Township					
Freedom Township					
Greenfield Township					
Huston Township					
Juniata Township					
Logan Township					
North Woodbury Township					
Snyder Township					
Taylor Township					
Tyrone Township					
Woodbury Township					
Blair County Planning Commission					

GOAL: HAZARD EDUCATION PROGRAM							
Objective: Develop Materials							
Action Steps:	Increase EMA and LEMA Visibility	Identify Needed Topics	Develop General Information Brochure	Develop Detailed Information Booklet	Ensure Clarity and Comprehension	Promote the Rapid Notify System	Promote Smartphone Apps
Blair County							
City of Altoona							
Bellwood Borough							
Duncansville Borough							
Hollidaysburg Borough							
Newry Borough							
Martinsburg Borough							
Roaring Spring Borough							
Tunnelhill Borough							
Tyrone Borough							
Williamsburg Borough							
Allegheny Township							
Antis Township							
Blair Township							
Catharine Township							
Frankstown Township							
Freedom Township							
Greenfield Township							
Huston Township							
Juniata Township							
Logan Township							

GOAL: HAZARD EDUCATION PROGRAM							
Objective: Develop Materials							
Action Steps:	Increase EMA and LEMA Visibility	Identify Needed Topics	Develop General Information Brochure	Develop Detailed Information Booklet	Ensure Clarity and Comprehension	Promote the Rapid Notify System	Promote Smartphone Apps
North Woodbury Township							
Taylor Township							
Tyrone Township							
Woodbury Township							
Blair County Planning Commission							

GOAL: HAZARD EDUCATION PROGRAM			
Objective: Responder Training			
Action Steps:	Offer Tabletop Simulation Exercises	Offer On- Site Simulation Exercises	Continue Annual SARA Summit
Blair County			
City of Altoona			
Bellwood Borough			
Duncansville Borough			
Hollidaysburg Borough			
Newry Borough			
Martinsburg Borough			
Roaring Spring Borough			
Tunnelhill Borough			
Tyrone Borough			
Williamsburg Borough			
Allegheny Township			
Antis Township			
Blair Township			
Catharine Township			
Frankstown Township			
Freedom Township			
Greenfield Township			
Huston Township			
Juniata Township			
Logan Township			
North Woodbury Township			
Snyder Township			
Taylor Township			
Tyrone Township			
Woodbury Township			
Blair County Planning Commission			

GOAL: STORM PREPAREDNESS					
Objective: Public Education Program					
Action Steps:	Training for General Public	Training for Public Officials	Distribute Severe Weather Literature	Promote the Emergency Activation System	Distribute All-Hazard Weather Radios
Blair County					
City of Altoona					
Bellwood Borough					
Duncansville Borough					
Hollidaysburg Borough					
Newry Borough					
Martinsburg Borough					
Roaring Spring Borough					
Tunnelhill Borough					
Tyrone Borough					
Williamsburg Borough					
Allegheny Township					
Antis Township					
Blair Township					
Catharine Township					
Frankstown Township					
Freedom Township					
Greenfield Township					
Huston Township					
Juniata Township					
Logan Township					
North Woodbury Township					
Snyder Township					
Taylor Township					
Tyrone Township					
Woodbury Township					
Blair County Planning Commission					

GOAL: STORM PREPAREDNESS					
Objective: Public Response					
Action Step:	Develop Informational Pamphlet	Develop Informational Booklet	Provide Sky- Warn Course	Promote Rapid Notify	Promote Smartphone Apps
Blair County					
City of Altoona					
Bellwood Borough					
Duncansville Borough					
Hollidaysburg Borough					
Newry Borough					
Martinsburg Borough					
Roaring Spring Borough					
Tunnelhill Borough					
Tyrone Borough					
Williamsburg Borough					
Allegheny Township					
Antis Township					
Blair Township					
Catharine Township					
Frankstown Township					
Freedom Township					
Greenfield Township					
Huston Township					
Juniata Township					
Logan Township					
North Woodbury Township					
Snyder Township					
Taylor Township					
Tyrone Township					
Woodbury Township					
Blair County Planning Commission					

GOAL: CONTINUE FLOOD MITIGATION				
Objective: Identify Vulnerabilities				
Action Steps:	Maintain Map Currency	Identify All Public Lands Containing Flood Hazard	Identify Critical Facilities Impacted By Flood Hazard	Improve Blair County Assessment Database
Blair County				
City of Altoona				
Bellwood Borough				
Duncansville Borough				
Hollidaysburg Borough				
Newry Borough				
Martinsburg Borough				
Roaring Spring Borough				
Tunnelhill Borough				
Tyrone Borough				
Williamsburg Borough				
Allegheny Township				
Antis Township				
Blair Township				
Catharine Township				
Frankstown Township				
Freedom Township				
Greenfield Township				
Huston Township				
Juniata Township				
Logan Township				
North Woodbury Township				
Snyder Township				
Taylor Township				
Tyrone Township				
Woodbury Township				
Blair County Planning Commission				
Blair County Conservation District				

GOAL: CONTINUE FLOOD MITIGATION			
Objective: Voluntary Buyout Program			
Action Steps:	Promote Voluntary Participation	Expand Communities Participating	Create Land Bank or Greenway in Flood Areas
Blair County			
City of Altoona			
Bellwood Borough			
Duncansville Borough			
Hollidaysburg Borough			
Newry Borough			
Martinsburg Borough			
Roaring Spring Borough			
Tunnelhill Borough			
Tyrone Borough			
Williamsburg Borough			
Allegheny Township			
Antis Township			
Blair Township			
Catharine Township			
Frankstown Township			
Freedom Township			
Greenfield Township			
Huston Township			
Juniata Township			
Logan Township			
North Woodbury Township			
Snyder Township			
Taylor Township			
Tyrone Township			
Woodbury Township			
Blair County Planning Commission			
Blair County Conservation District			

GOAL: CONTINUE FLOOD MITIGATION				
Objective: Address Vulnerable Facilities				
Action Steps:	Relocate Critical Buildings	Relocate Stock and Maintenance Yards	Reinforce Unmovable Facilities	Continue Dam Maintenance
Blair County				
City of Altoona				
Bellwood Borough				
Duncansville Borough				
Hollidaysburg Borough				
Newry Borough				
Martinsburg Borough				
Roaring Spring Borough				
Tunnelhill Borough				
Tyrone Borough				
Williamsburg Borough				
Allegheny Township				
Antis Township				
Blair Township				
Catharine Township				
Frankstown Township				
Freedom Township				
Greenfield Township				
Huston Township				
Juniata Township				
Logan Township				
North Woodbury Township				
Snyder Township				
Taylor Township				
Tyrone Township				
Woodbury Township				
Blair County Planning Commission				
Blair County Conservation District				

GOAL: TRANSPORTATION IMPROVEMENTS			
Objective: PA 764 Corridor Improvement			
Action Steps:	Conduct Traffic Study	Install Way-Finding for Commercial Drivers	Install Warning Notices for Non-Commercial Drivers
Blair County			
City of Altoona			
Bellwood Borough			
Duncansville Borough			
Hollidaysburg Borough			
Newry Borough			
Martinsburg Borough			
Roaring Spring Borough			
Tunnelhill Borough			
Tyrone Borough			
Williamsburg Borough			
Allegheny Township			
Antis Township			
Blair Township			
Catharine Township			
Frankstown Township			
Freedom Township			
Greenfield Township			
Huston Township			
Juniata Township			
Logan Township			
North Woodbury Township			
Snyder Township			
Taylor Township			
Tyrone Township			
Woodbury Township			
Blair County Planning Commission			
PA Department of Transportation			

GOAL: TRANSPORTATION IMPROVEMENTS			
Objective: Identify Hazardous Material Choke Points			
Action Steps:	Engage PennDOT	Conduct County-Wide Survey of Choke Points	Conduct Marcellus Shale Road Survey
Blair County			
City of Altoona			
Bellwood Borough			
Duncansville Borough			
Hollidaysburg Borough			
Newry Borough			
Martinsburg Borough			
Roaring Spring Borough			
Tunnelhill Borough			
Tyrone Borough			
Williamsburg Borough			
Allegheny Township			
Antis Township			
Blair Township			
Catharine Township			
Frankstown Township			
Freedom Township			
Greenfield Township			
Huston Township			
Juniata Township			
Logan Township			
North Woodbury Township			
Snyder Township			
Taylor Township			
Tyrone Township			
Woodbury Township			
Blair County Planning Commission			
PA Department of Transportation			

- APPENDIX K -

2008 HAZARD MITIGATION

PLAN DATA

Table 1.1. Summary of Hazard Identification

Hazard	Why Identified	Source of Information	Disposition
Floods (including dam failure)	Past disaster events in the County	FIRMs and digital Q3 data, past disaster declarations	<i>Profile and vulnerability assessment</i>
Severe weather (tornadoes, windstorms, winter storms, other types)	Frequent occurrences in the County	Input of HMPC, NCDC data	<i>Profile and vulnerability assessment</i>
Drought	Past disaster declarations in the state	Input of HMPC, PEMA data	<i>Profile and vulnerability assessment</i>
Earthquakes	Past occurrences in the state	Input of HMPC, USGS data	Described and considered low risk, therefore not profiled
Landslides/ subsidence/ expansive soil	Past occurrences in the state	Input of HMPC, DCNR data	Described and considered low risk, therefore not profiled
Wildfires	Past occurrences in the state	DCNR data	Described and considered low risk, therefore not profiled
Radon	Past occurrences in the state	EAP report and website	Described and considered low risk, therefore not profiled
Avalanches	Not applicable in this region; not considered further		
Coastal erosion	Not applicable in this region; not considered further		
Coastal storms	Not applicable in this region; not considered further		
Hurricane	Not directly applicable this far inland; residual effects of hurricanes are discussed under sections for floods and tornadoes/windstorms.		
Tsunamis	Not applicable in this region; not considered further		
Volcanoes	Not applicable in this region; not considered further		

Flood Data

HAZUS-MH Flood Model

FEMA's HAZUS-MH software was used to quantify flood vulnerability in the 100-year floodplain for Blair County. The HAZUS-MH model lists stream "reaches" (tributaries) that are in the County; due to modeling constraints, all of these were modeled by PEMA at one time as a "study case". The total economic losses from this study case for the 100-year flood are indicated by HAZUS-MH as **\$141 million**. The summary report from this study case is presented in Appendix A, and it indicates the following:

- 17 buildings destroyed,
- 290 buildings damaged,
- 15,100 tons of debris generated, and
- 1,831 people needing shelter.

Although HAZUS-MH does not list the municipalities that are at risk from flooding, a qualitative visual analysis of the floodplain maps and the HAZUS-MH results in Appendix A indicates that the municipalities at the greatest risk from flooding appear to be as follows:

- Allegheny Township (eastern portion)
- Antis Township
- Blair Township
- Catharine Township (northeast portion on Frankstown Branch of Little Juniata River)
- Frankstown Township
- Hollidaysburg Borough
- Logan Township
- Snyder Township (near Tyrone Borough)
- Tyrone Township (northeast portion on Little Juniata River)

For this plan a Level 1 flood analysis, as defined in the HAZUS-MH User Manual, was conducted for Blair County. This analysis is based on the default data (e.g., general building stock data based on census information) provided with the software. When more site-specific data is obtained for properties in the floodplain, a Level 2 HAZUS-MH flood analysis should be done along with digital FIRM data (when it becomes available), and this would likely give more realistic flood loss estimates.

Repetitive-Loss Properties

Repetitive-loss (RL) properties under the NFIP guidelines include any building with two or more flood losses (occurring more than ten days apart) greater than \$1,000 in any 10-year period since 1978. FEMA maintains a national list of such properties, and Table 1.1 indicates the 73 RL properties in Blair County. FEMA has specifically targeted certain RL

properties (i.e., those with the greatest number of claims).

Table 1.2. Repetitive Flood-Loss Properties

Municipality	No.
Allegheny Township	1
Altoona	10
Antis Township	1
Blair Township	2
Duncansville Borough	4
Frankstown Township	29
Freedom Township	2
Greenfield Township	3
Hollidaysburg Borough	13
Juniata Township	1
Logan Township	1
Tyrone Borough	2
Tyrone Township	2
Williamsburg Borough	2
Total	73

Source: FEMA Region III (December 2003)

These 73 RL properties represent 202 flood-loss claims for \$3.5 million. One of these properties had nine claims and received more than \$120,000 from NFIP, although the assessed value of the home was only \$63,000. Hazard mitigation actions specific to these RL properties have not yet been developed and implemented by the County for these properties. However, as noted in the section labeled Conclusions - Floods, acquisition of properties in the floodplain has been done by Altoona City and Frankstown Township, and this may have included some of the RL properties.

Conclusions – Floods

The following summarizes the salient points identified during the hazard identification, profiling and vulnerability assessment portions of the work that are carried forward as part of the planning process.

Summary of Hazard Vulnerability Assessment

Floods have been and will continue to be a significant threat to the economic and social well-being of selected areas of the County. The main sources of flooding in the County, the Susquehanna River and its tributaries (e.g., Little Juniata River), have produced significant flooding several times in the past with great consequences for the County. The County has had four declared disasters since 1972, including significant events in 1996 and 2003.

Exacerbating the effects of flooding in the County are steep slopes and hazardous materials storage in the floodplain. With an estimated \$141 million in losses from the 100-year flood, flooding is the most significant hazard facing Blair County. The municipalities at the greatest risk from flooding (in order of decreasing relative vulnerability) are:

- Allegheny Township
- Antis Township
- Blair Township
- Catharine Township
- Frankstown Township
- Hollidaysburg Borough
- Logan Township
- Snyder Township
- Tyrone Township

What can be Mitigated?

Determining the aspects of Blair County flood vulnerability that can be mitigated requires a review of the causal factors for floods. In Blair County, flooding is primarily caused by human infringement upon natural processes – simply stated, development has been pursued in naturally occurring floodplains. As a result, available alternatives for mitigation actions (discussed in Section Four – *Alternative Mitigation Actions*) focus on property protection measures as opposed to altering water courses or changing land management practices within the contributing watersheds. Future development in floodplains will be limited through appropriate legislative and administrative actions and procedures.

Two municipalities have acquired properties in the floodplain to date:

- Frankstown Township acquired 57 property parcels between the years of 1997 and 2000, demolished all the structures and converted them to open space.
- Altoona City has purchased 20 properties between the years of 1998 and 2006, with 2 more properties ready to close in 2007. All properties have been or will be demolished and will remain open space (deed restricted).

According to the County's *Areawide Comprehensive Plan*, the following flood control projects have been initiated in Blair County:

- Initiated in the 1970's with assistance from the US Army Corps of Engineers, the Tyrone Metropolitan Multi-Agency Development Project is a program designed to address flooding problems along the Little Juniata River in Tyrone Borough. Flood control measures include an earthen dam, diversion tunnel, and pressure conduit.

A project has been implemented to address flooding along Spring Run, including channel

improvements, streambank stabilization, and rock deflectors.

Severe Weather Data

Table 1.3. History of Tornadoes in Blair County

Location	Date	F-Scale	Death	Injury	Property Damage, \$K
Carson Valley	1949	N/A	N/A	N/A	N/A
Countywide	11/5/1988	F1			2,500
Sickles Corner	7/19/1996	F1			5
Tyrone	6/2/1998	F1			5

Source: NCDC website, County Hazard Vulnerability Analysis

Table 1.4. History of High Winds in Blair County

Location	Date	Death	Injury	Property Damage, \$K
Countywide	4/15/1994			500
Countywide	11/6/1994		3	50
Countywide	11/27/1994			500
Altoona	1/18/1999			10
Martinsburg	6/2/1999			5
Tyrone	7/9/1999			15
Bellwood	7/31/1999			5
Countywide	9/29/1999			100
Altoona	9/29/1999			10
Altoona	10/13/1999			5
Countywide	1/16/2000			20
Duncansville	6/2/2000			10
Bellwood	6/21/2000			2
Countywide	12/12/2000	1	2	500
Countywide	2/10/2001			150
Countywide	3/9/2002			50
Countywide	11/13/2003	3		50
Countywide	9/17/2004			50
Countywide	2/17/2006			20

Source: NCDC website

Table 1.5. History of Winter Storms in Blair County

Location	Date	Type	Death	Injury	Property Damage, \$K
Several counties	Nov 1950	Ice Storm	N/A	N/A	N/A
Statewide	Jan 1966	Winter Storm ¹	N/A	N/A	N/A
Statewide	Feb 1972	Winter Storm ²	N/A	N/A	N/A
Statewide	Jan 1978	Winter Storm ²	N/A	N/A	N/A
Statewide	Feb 1978	Winter Storm ²	N/A	N/A	N/A
Statewide	Mar 1993	Blizzard ²	N/A	N/A	N/A
Statewide	1/6/1994	Record Snowfall ²	0	185	5,000
Several counties	1/27/1994	Ice Storm	0	62	50
Statewide	1/7/1996	Blizzard ²	0	0	635
Several counties	3/4/2001	Heavy Snow	0	0	150
Statewide	2/16/2003	Heavy Snow ²	0	2	263

Source: NCDC website, PEMA website, County Hazard Vulnerability Analysis

Severity

A winter storm can adversely affect roadways, utilities, business activities and can cause loss of life, frostbite, or freezing. Winter storms may contain one or more of the following hazardous weather events:

- **Heavy Snowstorm:** Accumulations of four inches or more in a six-hour period, or six inches or more in a twelve-hour period.
- **Sleet Storm:** Significant accumulations of solid pellets which form from the freezing of raindrops or partially melted snowflakes causing slippery surfaces posing hazards to pedestrians and motorists.
- **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.
- **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.
- **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 time.

Some rural areas of the county are susceptible to isolation during winter storms due to power and communication loss, as well as road closings. Emergency medical, food, and fuel supplies are sometimes required during these storms. About 80 percent of the County's population lives in such areas. Furthermore winter storms may be more severe at higher

¹ Governor's Proclamation of Disaster Emergency

² Governor's Proclamation and President's Declaration of Major Disaster

altitudes, such as in the various mountains in Blair County.

Overview – Other Severe Weather

There are many other kinds of severe weather that can impact Blair County, including:

- Lightning,
- Drought,
- Hail, and
- Extreme heat and cold.

Of these, disasters have only been declared for drought for Pennsylvania regions that include Blair County.

Lightning is generated by the buildup of charged ions in a thundercloud; when that buildup interacts with conducting surfaces, the result is an electrical discharge in the form of lightning. When lightning strikes humans, serious burns or death can occur. Lightning strikes can also cause property damage, fires, and power surges.

Hail is a precipitation of frozen ice pellets that are sometimes formed during a thunderstorm. Although hail is generally small (less than ½-inch diameter), hailstones as large as 2-inch diameter have fallen in Blair County. Hail strikes can cause property damage (e.g., building roofs) and occasionally injury.

Extreme temperatures include severe heat and cold, generally occurring during the summer and winter, respectively. These severe temperatures can be dangerous to those who are exposed to the elements for long periods or to the infirm and elderly. Extremely cold temperatures can cause particular problems in Blair County, such as equipment malfunctions due to freezing. In addition, salt is no longer effective at such temperatures, and thus more accidents may occur outdoors from ice.

A drought is a period of prolonged dryness that contributes to depletion of ground-water and surface-water yields. When droughts occur, they can have significant adverse consequences to:

- Public water supplies for human consumption;
- Rural water supplies for livestock consumption and agricultural operations;
- Water quality;
- Natural soil water or irrigation water for agriculture;
- Water for forests and for fighting forest fires; and
- Water for navigation and recreation.

There is not a significant amount of historical data available for Blair County on damages from lightning, hail or extreme temperatures, although these weather events occur periodically.

Previous Occurrences – Other Severe Weather

Pennsylvania ranks third nationally in the number of lightning injuries each year. Data on lightning strikes in Blair County was not available from NCDC.

Between 1930 and 1994, the Commonwealth of Pennsylvania experienced five significant droughts: 1930-1934, 1939-1942, 1953-1955, 1961-1967 and 1991-1992. From 1999 through early 2003, the region experienced a drought condition per the PA Department of Environmental Protection (DEP). Although County-specific drought data was not available, statewide drought data is shown in Table 1.6.

Table 1.6. History of Drought in Southeastern Pennsylvania

Location	Date	Crop Damage, \$K
Statewide	Sept 1963 ³	N/A
Statewide	July 1991 ⁴	N/A
Statewide	December 1998 ¹⁰	N/A
Statewide	July 1999 ¹⁰	500,000
Statewide	Feb 2002 ¹⁰	N/A

Source: NCDC website, PEMA website

The NCDC includes numerous events of hail and extreme temperatures in Blair County in the past 30 years. For example:

- From January 14 to 21, 1994, an arctic air mass caused temperatures to plunge 20 to 40 degrees below normal. On the morning of the 19th, a temperature of -25°F was recorded at Altoona.
- On July 3, 1996, quarter-size hail fell near Martinsburg, causing “significant crop damage and some roof damage”, although no cost estimate of damages is available.
- Since 1975, there have been 13 events in the County of 0.75-inch to one-inch-diameter hail.

Hazard Profile – Other Severe Weather

Hazard Characteristics

In the US, an average of 73 people are killed each year by lightning, making it deadlier than tornadoes or hurricanes. Lightning is the most constant and widespread threat to people

³ Governor's Proclamation and President's Declaration of Major Disaster

⁴ Governor's Proclamation of Disaster Emergency

and property during the thunderstorm season. The effects of thunderstorms have been discussed previously under flooding and high winds.

Extreme temperatures affect Central Pennsylvania every year, although the impacts vary considerably from one year to the next.

Drought is a normal part of 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.

Probability of Occurrence

Lightning strikes the earth about 100 times every second. Each year in the US about 400 people are struck (about one for every 86,000 lightning flashes in the US), and 17,400 fires are caused by lightning. July is the peak month for lightning strikes in the US.

The probability of hail is also greatest in the summer, and the National Weather Service indicates a two percent probability of hail in July in Central Pennsylvania.

Central Pennsylvania has experienced 25 dry periods (months with rainfall three inches or more below the mean precipitation) in the past 100 years.

The future probability of lightning, drought, hail, and extreme temperatures in Blair County is unknown, but it is assumed to be similar to historical events.

Severity

The severity of lightning, drought, hail, and extreme temperatures is difficult to quantify. However, the Commonwealth uses five parameters to assess drought conditions:

- Streamflows (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 upper Susquehanna River Basin);
- Groundwater elevations in a number of counties (comparing to past month, past year and historic record); and
- The Palmer Drought Index, a measure of soil moisture computed by the National Weather Service.

Phases of drought preparedness in Pennsylvania are:

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

- **Drought Warning:** This phase involves a coordinated response to imminent drought conditions and potential water supply shortages through concerted voluntary conservation measures to avoid or reduce shortages, relieve stressed sources, develop new sources, and if possible forestall the need to impose mandatory water use restrictions. The objective of voluntary water conservation measures during a drought warning is to reduce overall water uses by 10-15 percent in the affected areas. Because of varying conditions, individual water suppliers or municipalities may be asking 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 assure at least minimum water supplies to protect public health and safety, to support essential and high priority water uses and to avoid unnecessary economic dislocations. It is possible during this phase to impose mandatory restrictions on nonessential water uses that is provided for in 4 PA Code Chapter 119, if deemed necessary and if ordered by the Governor of Pennsylvania. The objective of water use restrictions (mandatory or voluntary) and other conservation measures during this phase is to reduce consumptive water use in the affected area by 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 assure equitable sharing of limited supplies.
- **Local Water Rationing:** Although not a drought phase, local municipalities may, with the approval of the PA Emergency Management Council, implement local water rationing to share a rapidly dwindling or severely depleted water supply in designated water supply service areas. These individual water rationing plans, authorized through provisions of 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. [Source: PEMA, 409 Plan]

Hazard Vulnerability – Other Severe Weather

All of Blair County is equally vulnerable to lightning and hail events. Drought and extreme temperatures events would also likely affect the entire County. The impact of lightning and hail would likely be greatest on structures, although there is also risk of injury and death (especially for lightning). The impact of extreme temperatures in Blair County would be greatest on the most vulnerable population (e.g., the elderly and ill).

Drought is a concern for Blair County residents because of the presence of farms and other

water-dependent industry and recreation in the area. A prolonged drought could negatively impact these sectors of the local economy, as well as residents who depend on wells for drinking and other personal uses.

The County Comprehensive Plan indicates that the public water systems in the County obtain water supplies primarily from reservoirs (surface waters), supplemented by wells and springs. Freedom Township, Huston Township, and Tyrone Township do not have any areas served with public water. In addition, portions of Snyder Township, Antis Township, Logan Township, Allegheny Township, Frankstown Township, Catharine Township, Juniata Township, Woodbury Township, North Woodbury Township, Taylor Township, and Greenfield Township do not have public water service. In these areas, private wells are the primary source of water. Given the role of agriculture in the local economy, water supply will likely remain a key issue in the future.

Conclusions – Severe Weather

The following summarizes the salient points identified during the hazard identification, profiling and vulnerability assessment portions of the work that are carried forward as part of the planning process.

Summary of Hazard Vulnerability Assessment

Blair County is vulnerable to tropical storms from hurricanes coming inland, which can cause heavy rainfall and subsequent flooding. There were several major events in the 1990's that caused record flooding levels and damages. The hazard analysis shows that Blair County is also vulnerable to possible tornado activity. Blair County is vulnerable to thunderstorms which can cause high winds, heavy rainfall and subsequent flooding.

Pennsylvania and Blair County experience several winter storms every year that can create power loss, among other obvious adverse effects. The series of storms in early 1994 and 1996 were Presidential-declared disasters. Heavy snowstorm, sleet storm, ice storm, blizzard and severe blizzard are the types of winter storms possible in Blair County. Due to the frequency of past events and a relatively high annual probability for high snow depths, winter storms are very likely to continue affecting normal activity in the County in the coming years.

A drought is a possible hazard to Blair County, since central Pennsylvania experienced 25 dry periods in the past 100 years. The Commonwealth of Pennsylvania experienced five significant droughts from 1930 to 1994. A drought in Blair County can have significant effect on domestic water supply, agriculture and other water-dependent activities. Furthermore a drought can increase the risk of wildfires.

Other Hazards

Earthquakes

Figure 1.1 indicates the earthquake epicenters measured in Pennsylvania before and after 1960; note that there are no records of earthquakes in Blair County. Neighboring Cambria County, however, experienced an earthquake before 1960 between magnitudes 3.0 and 3.9 on the Richter scale. Table 1.7 below indicates the relative frequency worldwide of the various magnitudes of such quakes and their effects.

Figure 1.1. Earthquake Epicenters in and Near Pennsylvania

Source: PA DCNR

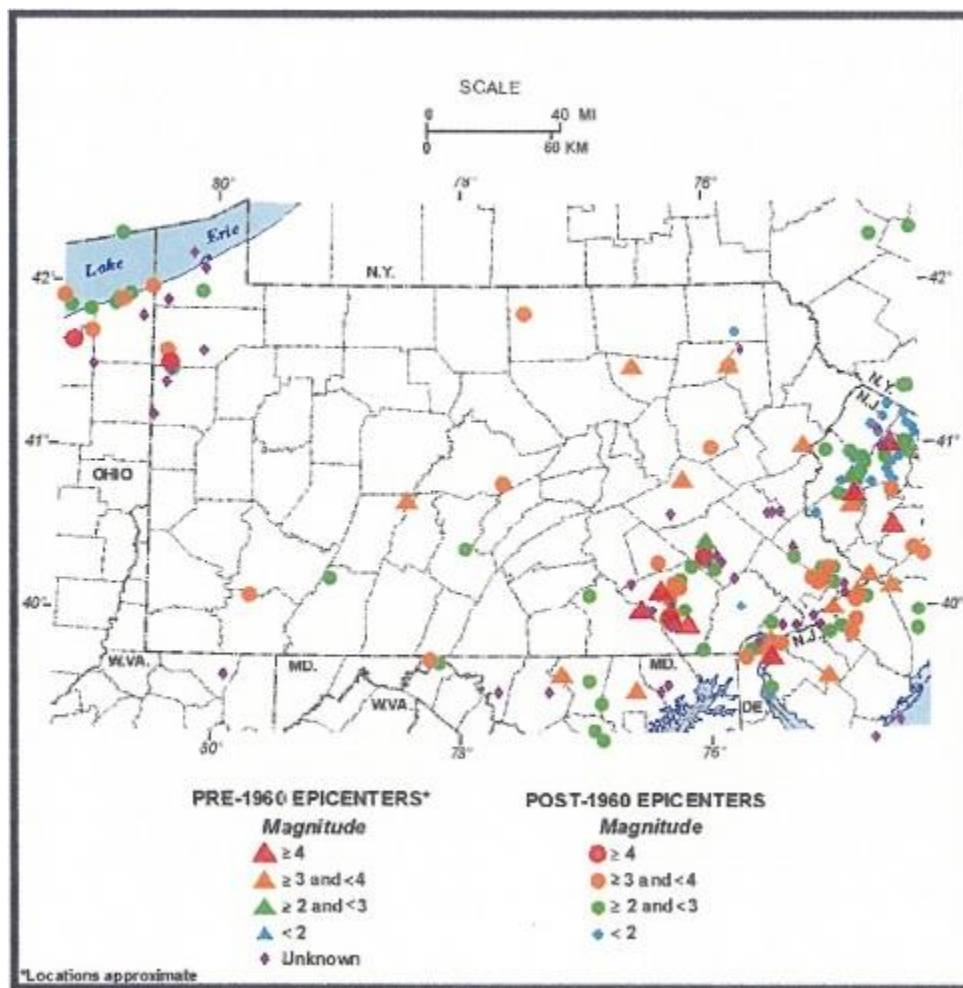


Table 1.7. Earthquake Effects and Frequency

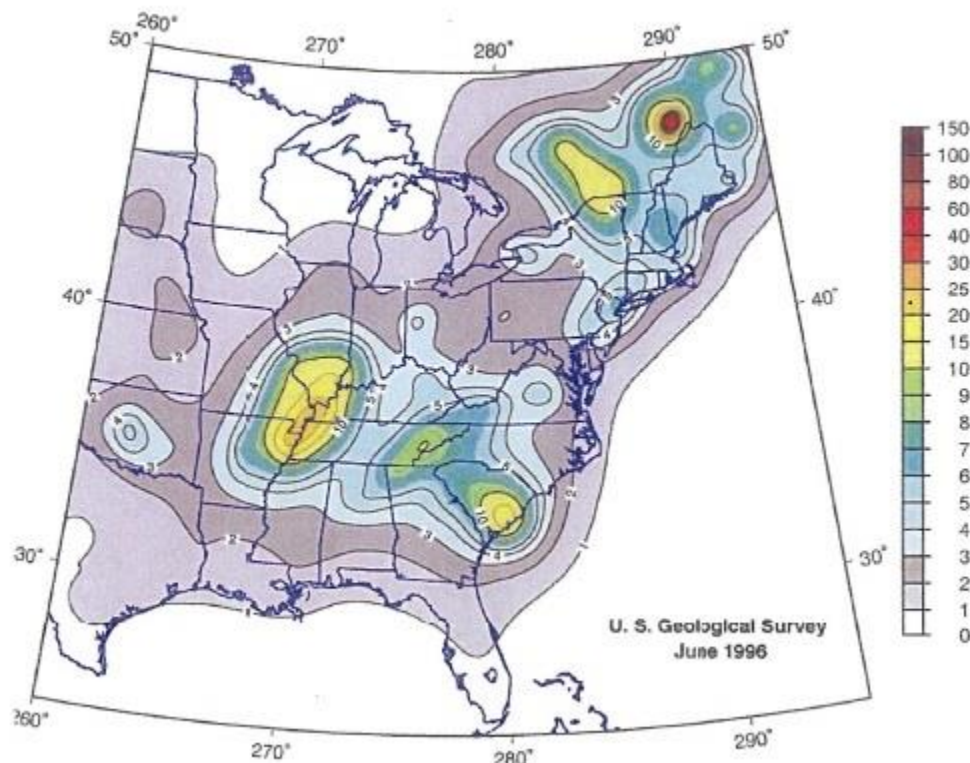
Richter Magnitudes	Earthquake Effects	Frequency of Occurrence
Less than 2.0	Microearthquakes, not felt.	About 8,000 per day
2.0-2.9	Generally not felt, but recorded.	About 1,000 per day
3.0-3.9	Often felt, but rarely causes damage.	49,000 per year (est.)
4.0-4.9	Noticeable shaking of indoor items, rattling noises. Significant damage unlikely.	6,200 per year (est.)
5.0-5.9	Can cause major damage to poorly constructed buildings over small regions. At most slight damage to well-designed buildings.	800 per year

One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this manner. PGA represents the rate in change of motion of the earth's surface during an earthquake as a percent of the established rate of acceleration due to gravity.

Figure 1.2 shows earthquake hazard in the eastern United States as a function of PGA. According to the map, Blair County is estimated to have a low earthquake hazard, which means that it has 10 percent exceedance levels (10 percent expectation of being exceeded in a period of 50 years) between 2 and 3 PGA. Roughly, ground acceleration must exceed 15 PGA for significant damage to occur, although soil conditions at local sites are extremely important in controlling how much damage will occur as a consequence of a given amount of ground acceleration. Thus, earthquakes are deemed to be a minor hazard in Blair County.

Figure 1.2. Peak Ground Acceleration

Source: USGS



Landslides/Subsidence

There are several types of land failure hazards; the type with some relevance in Blair County is rockfalls. A rockfall occurs when smaller rock-mass breaks free and disintegrates into blocks that bounce and roll down steep slopes. .

There have been several land failures reported in Pennsylvania but no substantive failures in Blair County. Rockfalls and other slope failures often occur in areas with moderate to steep slopes, conducive geology and high precipitation. With the appropriate geology and topography, most slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms or snowmelt events. Other elements that determine slope stability are vegetative cover and slope. Contributing causes of landslides include erosion, removal of vegetation cover and earthquakes. Human activities that can contribute to slope failure include altering the slope gradient, increasing the soil water content and removing vegetation cover. The DCNR describes landslide susceptibility in Blair County as “generally low, but includes local areas of high to

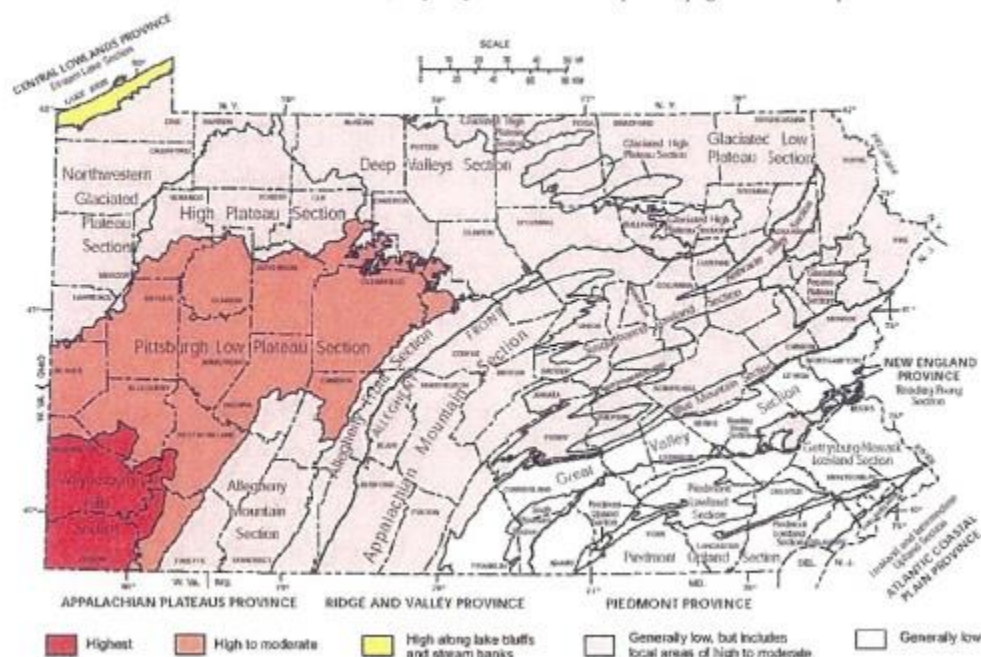
moderate” – see Figure 1.3. Those latter areas would tend to be in areas of steep slopes, such as along the Allegheny Front in the western third of the county and the following mountains:

- Brush
- Bald Eagle
- Canoe
- Dunning
- Loop
- Lock
- Short
- Tussey

Thus, landslides/subsidence is deemed to be a relatively minor hazard in Blair County.

Figure 1.3. Landslide Hazard Susceptibility in Pennsylvania

Source: Delano, H. L., and Wilshusen, J. P., 2001, Landslides in Pennsylvania: Pennsylvania Geological Survey, 4th ser., Educational Series 9, 34 p. <http://www.dcnr.state.pa.us/topogeo/hazards/es9.pdf>



Wildfires

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. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. An urban-wildland interface is a geographical

area where structures and other human development meet or intermingle with wildland or vegetative fuels.

Wildfires can occur at any time of the year, but 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 the Commonwealth can occur in fields, grass, and brush as well as in forests. In Blair County, most of the county consists of forested areas and cropland. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands.

The greatest potential for wildfires is in the spring months of March, April, and May, and in the autumn months of October and November. In the spring, bare trees allow sunlight to reach the forest floor, warming the ground and drying the previous fall's leaves. In the fall, dried leaves are also fuel for fires. 98 percent of wildfires in Pennsylvania are caused by people, often by debris burns. Several fires have started in a person's backyard and traveled through dead grasses and weeds into bordering woodlands.

Since 1977, there have been more than 230 major wildfires in the Commonwealth resulting in more than 100,000 acres of forest area being destroyed. DCNR Bureau of Forestry maintains data on wildfires on state lands, but data on wildfires on privately owned land was unavailable for review. Relative to other natural hazards, wildfires are deemed to be a low risk to Blair County.

Mitigation Plan & Implementation Strategy

Implementation Strategy

The implementation strategy is the last step of the planning process and involves prioritizing the mitigation actions developed by the Blair County planning group. This was done by voting. The mitigation actions were discussed with each of the Blair County HMPC members. Each attendee voted on the mitigation actions that they felt were the highest priority.

The actions that received no votes were considered lower priority and therefore are not included in the implementation strategy, but are covered in Section 4 of this plan. The actions presented below are listed in order of priority with the highest priority actions first. This list of actions is the result of the planning effort led by the HMPC and represents what the County and communities consider most important.

Table 1.8 at the end of this section presents a list of municipality-specific flood mitigation actions, based on the responses to a questionnaire sent to each municipality by the Blair County HMPC.

Highest Priority	Obtain updated detailed flood studies and FIRMs
Hazards	Floods
Objectives	Obtain updated detailed flood studies and FIRMs for areas with the greatest potential damage and threat to residents.
Actions	Apply to FEMA for updates of the many outdated FIRMs and undertake detailed flood studies for County's high-hazard areas to determine BFEs and a full range of flood-recurrence intervals (2, 5, 10, 25, 50, 100, and 500-year events) for use in future refinements of the mitigation plan.
Affected Municipalities	All municipalities in County
Responsible Organization	County government and floodplain manager of township or borough ⁵
Estimated Costs	\$15,000 (assume 500 hours of staff time at average \$30/hour); FEMA's costs are not included
Possible Funding Sources	Federal: HMGP, PDM
Timeline for Implementation	Initiate project within second year after this plan's adoption, finish within five years.

High Priority	Define parcels/buildings and critical facilities in the floodplain.
Hazards	Floods
Actions	<p>Identify by municipality and evaluate protection of existing critical facilities with the highest relative vulnerability in the 100-year floodplain.</p> <ul style="list-style-type: none"> • Develop GIS data on property parcels to allow evaluation of which parcels are in the floodplain. • Develop a list of critical facilities for the County (e.g., hospitals, police stations, fire stations, County/municipal buildings) and determine which are in the floodplain.

⁵ All jurisdictions participating in the NFIP must have a "floodplain manager"; this position is often held by the municipal manager or an elected official.

	<ul style="list-style-type: none"> Identify critical facilities with the highest relative vulnerability; conduct cost-benefit analysis of protection of those assets.
Affected Municipalities	All municipalities in County
Responsible Organization	County government, township/borough floodplain managers
Estimated Costs	\$15,000 (assume 500 hours of staff time at average \$30/hour)
Possible Funding Sources:	Federal: HMGP, PDM
Timeline for Implementation	Initiate project within first year after this plan's adoption, finish within three years.

High Priority	Public outreach/education regarding floods
Hazards	Floods
Objectives	Provide public outreach/education regarding strategies (e.g., floodproofing) for property owners in 100-year floodplain.
Actions	<p>Work with township/borough officials to increase awareness of model floodplain ordinance and with property owners, including informational mailings to property owners in the 100-year floodplain, and sponsoring a series of workshops about costs and benefits of:</p> <ul style="list-style-type: none"> Acquiring and minimizing the cost of flood insurance coverage, and Property acquisitions, relocation, elevation, dry floodproofing, and wet floodproofing.
Affected Municipalities	All municipalities in County
Responsible Organization	Blair County Planning Commission and municipal governments
Estimated Costs	\$9,000 (assume 300 hours of staff time at average \$30/hour)
Possible Funding Sources	Federal: HMGP, PDM

Timeline for Implementation	Initiate project within first year after this plan's adoption, finish within two years.
High Priority	Resolve data deficiencies
Hazards	All hazards
Objectives	Resolve data deficiencies identified in this plan
Actions	Conduct engineering evaluation process to obtain the necessary data for the next review cycle of the hazard mitigation plan
Affected Assets	All
Responsible Organization	Blair County Planning Commission and municipal governments
Estimated Costs	\$100,000
Possible Funding Sources	Federal: HMGP, PDM
Timeline for Implementation	Finish project within five years after this plan's adoption.

Monitoring and Evaluation of the Plan

Monitoring, evaluation and updating of the Plan is critical to maintaining the relevance of the Plan. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for monitoring, evaluation and updating and what those responsibilities entail. The section also lays out the method and schedule of these activities and describes how the public will be involved on a continued basis.

The Plan needs a permanent entity to be in charge and responsible for the plan maintenance processes of monitoring, evaluation and updating. This Plan recommends creating a permanent planning group, the Blair County Hazard Mitigation Committee, with representation from all participating municipalities. The permanent Committee would be an outgrowth of the HMPC, and will represent citizen, municipal, business, educational, volunteer and County interests through a balanced membership. The leadership of the Committee will come from a Mitigation Coordinator, following the HMPC model, in conjunction with the County Director of Emergency Services.

The Committee will oversee the progress made on the implementation of the identified action items and update the plan, as needed, to reflect changing conditions. The Committee will therefore serve as the focal point for coordinating the countywide mitigation efforts.

The proposed Hazard Mitigation Committee will meet quarterly to address all its responsibilities. It will serve in an advisory capacity to the Blair County Board of Commissioners.

The Committee will monitor the mitigation activities by reviewing reports from the agencies identified for implementation of the different mitigation actions. The Committee will request that the responsible agency or organization submit a semi-annual report that provides adequate information to assess the status of mitigation activities. The Committee will then provide their feedback to the individual agencies.

Evaluation of the Plan will not only include checking whether mitigation actions are implemented or not, but also assessing their degree of effectiveness. This will be done by reviewing the qualitative and quantitative benefits (or avoided losses) of the mitigation activities. These will then be compared to the goals and objectives the Plan set out to achieve. The Committee will also evaluate mitigation actions if they need to be discontinued, or modified in any way in light of new developments in the community. The progress will be documented by the Committee and submitted to the Board of Commissioners on an annual basis.

The Plan will be updated every five years, as required by the Disaster Mitigation Act, 2000, or after a disaster. The updated Plan will account for any new developments in the community or special circumstances (e.g. post-disaster). Issues that come up during monitoring and evaluation that require changes in mitigation strategies and actions will be incorporated in the Plan at this stage.

Public Involvement

The Committee will involve the public during the evaluation and update of the Plan through annual public education projects, public workshops and hearings. The public will also have access to information via newsletters, mailings and the different agencies implementing the plan. The County's website (www.Blaircounty.org) can serve as a means of two-way communication by not only providing information about mitigation initiatives within the County, but also having feedback forms and other means for the public to express their views and comments. The Committee will incorporate the public comments in the next update of the Plan.

Incorporation into Existing Planning Mechanisms

Mitigation recommendations in this plan will be incorporated by the city, townships, and boroughs into their comprehensive plans, capital improvement plans, zoning and building codes, site reviews, permitting, job descriptions, staff training, and other planning tools as appropriate for implementation.

The Committee during its annual meetings will provide a mechanism for ensuring that the actions identified in this plan are incorporated into ongoing County planning activities. Blair County currently utilizes a countywide comprehensive plan to guide and control

development in the County. After the County officially adopts the Hazard Mitigation Plan, this existing mechanism will have hazard mitigation strategies integrated into it. After adoption of the Mitigation Plan, the County will require that local municipalities address hazards in their local comprehensive plans and land-use regulations. Specifically, one of the goals in the Mitigation Plan directs County and local governments to protect life and property from natural disasters. The County Planning Department will conduct periodic reviews of the local comprehensive plans and land-use policies and provide technical assistance to municipalities in implementing these requirements. The capital improvement planning that occurs in the future will also contribute to the goals in the Hazard Mitigation Plan. Within three years of the formal adoption of the Mitigation Plan, the policies listed above will be incorporated into the process of existing planning mechanisms.

Updating the Plan

Throughout the hazard analysis and vulnerability assessment, descriptions of missing or inadequate data indicate some areas in which the County and municipalities can improve their ability to identify vulnerable structures. As the County and municipal governments work to increase their overall technical capacity and implement their comprehensive planning goals, they will attempt also to improve their ability to respond to identified hazard vulnerability identification and other needs. In short, the County and municipalities in subsequent versions of this plan will improve upon the hazard identification and vulnerability assessment by actions noted earlier, including:

- Revamping County and municipal building permit and data collection systems to require and keep on file elevation certificates for all new construction, elevated structures, and other substantial improvements within the 100- and 500-year floodplain areas.
- Updating the tax and GIS databases with information like structure location on each parcel, foundation type, construction type, and first-floor elevations for each structure. The updated plan will be better able to identify structures in need of mitigation based on first-floor elevations.

These recommendations are also noted in the action plan. These improvements will produce an even more effective vulnerability assessment and mitigation plan upon revision.

Table 1.8. Municipality-Specific Flood Mitigation Actions

Jurisdiction	Vulnerable Areas	Potential Mitigation Actions
Altoona (City of)	Juniata, Maryland Ave - 58th St.	Property buyout: 58th St. area of Maryland Ave
Antis Township	<ol style="list-style-type: none"> 1. Bellwood Borough 2. Lower Johnson Development in Tipton 3. River Road 4. Pinecroft (near the curves) 5. Bellmeade 6. Fuoss Mills 	Acquisition/elevation of properties
Bellwood Borough	Approx. 12 houses on the North side of town. Stormwater gets into the sanitary sewer system causing backup into the basements of private homes.	Borough is currently working on a corrective action plan to prevent inflow and infiltration.
Blair Township	Residences in four areas: <ol style="list-style-type: none"> 1. Fort Fetter 2. Independence Place 3. East View St. 4. River Road 	Acquisition/elevation of properties
Duncansville Boro	Approx. 20 bldgs. from 13th St. Bridge – Park Foot Bridges	Stabilize stream bank
Frankstown Twp.	Various properties	Property acquisition
Greenfield Twp.	SR 3013 north of Oakdale Road	Property acquisition
Hollidaysburg Boro	Various properties	Acquisition/elevation of properties
Logan Township	Logan Boulevard/Lakemont	Stormwater detention ponds
Martinsburg Borough	<ol style="list-style-type: none"> 1. Nicodemus Street, 100-200-300 block 2. 201 W. and 300 W. Allegheny Street 	<ol style="list-style-type: none"> 1. Bridge has been replaced, dike built around the wastewater plant. 2. Property acquisition
N. Woodbury Twp.	Bridges: Central High Rd & SR 164 Fredricksburg Rd	Central High Road bridge was replaced in 2005
Snyder Township	A great portion of Snyder Twp. is prone to flooding from several rivers and creeks	To be determined

Jurisdiction	Vulnerable Areas	Potential Mitigation Actions
Taylor Township	Damaged Decker Hollow Bridge isolates the development of new residences	Expand bridge structure or replace with larger bridge
Tyrone Borough	1. 10th St. 2. Pennsylvania Ave. 3. S. Logan Ave. 4. Park Ave. (from 3rd to 9th St.)	Buyout of about 200 flood-prone properties. Install sewer check valves.

- Responsible Organization: floodplain manager of township or borough
- Estimated Costs/Possible Funding Sources: to be determined

Timeline for Implementation: initiate projects within five years after this plan's adoption

- APPENDIX L -

SUMMARY OF ARMY CORPS

OF ENGINEERS FLOOD STUDY

IN TYRONE BOROUGH

Summary of the U. S. Army Corps of Engineers Study on Flood Modeling and Mapping for the Borough of Tyrone*

PURPOSE OF STUDY

The purpose of this document is to provide a summary of the hydrologic and hydraulic analysis and floodplain mapping completed by the Planning Division of the U.S. Army Corps of Engineers (USACE), Baltimore District, for the Borough of Tyrone, Blair County, Pennsylvania.

The Borough of Tyrone has a lengthy history of flooding, including the 1936, 1950, 1972 (Agnes) and 2004 (Ivan) floods that caused millions of dollars in damages. Riverine flooding from the Little Juniata River, Bald Eagle Creek, and their tributaries is the primary cause of the damages within the Borough. The most recent hydrologic and hydraulic analysis for these flooding sources is the effective Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS), dated March 2, 2012. Although the date of the FEMA study is recent, the hydrologic and hydraulic analysis within that study is from the mid 1970's. The Borough is in need of a hydrologic and hydraulic analysis, as well as floodplain mapping, that utilizes: (1) the 40 years of data available since the FEMA study; (2) more detailed topographic information for the floodplains and bridges; and (3) better technologies in flood modeling and mapping.

The hydrologic and hydraulic data and floodplain mapping developed in this effort can be used by the Borough to determine the impact to buildings and roadways of flooding of various frequencies, develop solutions to reduce the risk of flooding within the Borough, and develop a flood preparedness plan to assist the Borough of Tyrone with flood response activities. This data may also be used to revise the effective FEMA FIS, as all tasks were completed to comply with FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners, Appendix C: Guidance for Riverine Flooding Analyses and Mapping*, dated November 2009.

AUTHORITY AND ACKNOWLEDGMENTS

This effort was conducted under the Floodplain Management Services (FPMS) Program. The FPMS Program is authorized by Section 206 of the Flood Control Act of 1960, as amended. Under this program USACE is authorized to provide a full range of technical services and planning guidance on floods and floodplain issues to States and local municipalities.

Identifying up-to date riverine limits of flooding for various frequency flood events is the first step in a process to better manage the flood risk in the Borough of Tyrone. Future efforts, such as development of alternatives for flood risk management and addressing stormwater-related flooding issues may be undertaken under the FPMS Program, other USACE authorities, or independently by the Borough through other Federal, State, or local programs.

* Excerpts taken directly from *U.S. Army Corps of Engineers Flood Modeling and Mapping for the Borough of Tyrone*

COORDINATION

Several meetings were held between April 2010 and the date of this document to discuss the flooding issues in Tyrone and outline a potential plan to manage the flood risk. These meetings were held at the Borough of Tyrone offices and were attended by Borough staff, USACE (Planning and Regulatory Divisions), Blair County Emergency Management, Pennsylvania Department of Environmental Protection (PADEP), and State and U.S. Congressional staff.

Several tasks were identified as a result of the meetings, with the following tasks being completed to date and summarized in this document: data collection; bridge and channel survey; hydrologic and hydraulic analyses; and digital flood mapping.

DATA SOURCES

Data was collected from various Federal, State, and local entities to support the analyses. The entities in which data was collected include: FEMA; United States Geological Survey (USGS); National Weather Service (NWS); U.S. Fish and Wildlife Service (USFWS); Pennsylvania Department of Transportation (PennDOT); Pennsylvania State University (PSU) Pennsylvania Spatial Data Access (PASDA); Susquehanna River Basin Commission (SRBC); Altoona Water Authority (AWA); Huntingdon County Mapping Department; Blair County Emergency Management Agency; Centre County Geographic Information Systems (GIS) Office; and American Eagle Paper Mills.

SCOPE OF ANALYSIS

The scope of this analysis includes the development of updated hydrologic and hydraulic data and floodplain mapping for flooding sources within the corporate limits of the Borough of Tyrone. Table 1 lists the limits of analyses for each flooding source.

The Little Juniata River and Bald Eagle Creek analyses extend upstream from the Borough of Tyrone corporate limits into Snyder Township in order to determine potential impacts any structural flood risk management measures (levees, floodwalls, etc...) would have during future efforts undertaken by USACE or other entities. The Little Juniata River analysis extends downstream several miles through several jurisdictions in Blair and Huntingdon Counties in order to establish an accurate downstream boundary condition for the hydraulic model, which is a rating curve at the USGS Gaging Station 01558000, Little Juniata River at Spruce Creek. The upstream limits for all tributaries also extend into Snyder Township in order to be consistent with the effective FEMA FIS.

Eight flood events were included in the analyses, ranging from small, frequent events (such as a 2-year flood, one having a 50-percent chance of occurring in any given year) to large, less frequent events (such as a 500-year flood, one having a 0.2-percent chance of occurring in any given year). A list of the flood events included in the analysis is shown in Table 2.

Table 1 - Limits of Hydrologic and Hydraulic Analyses

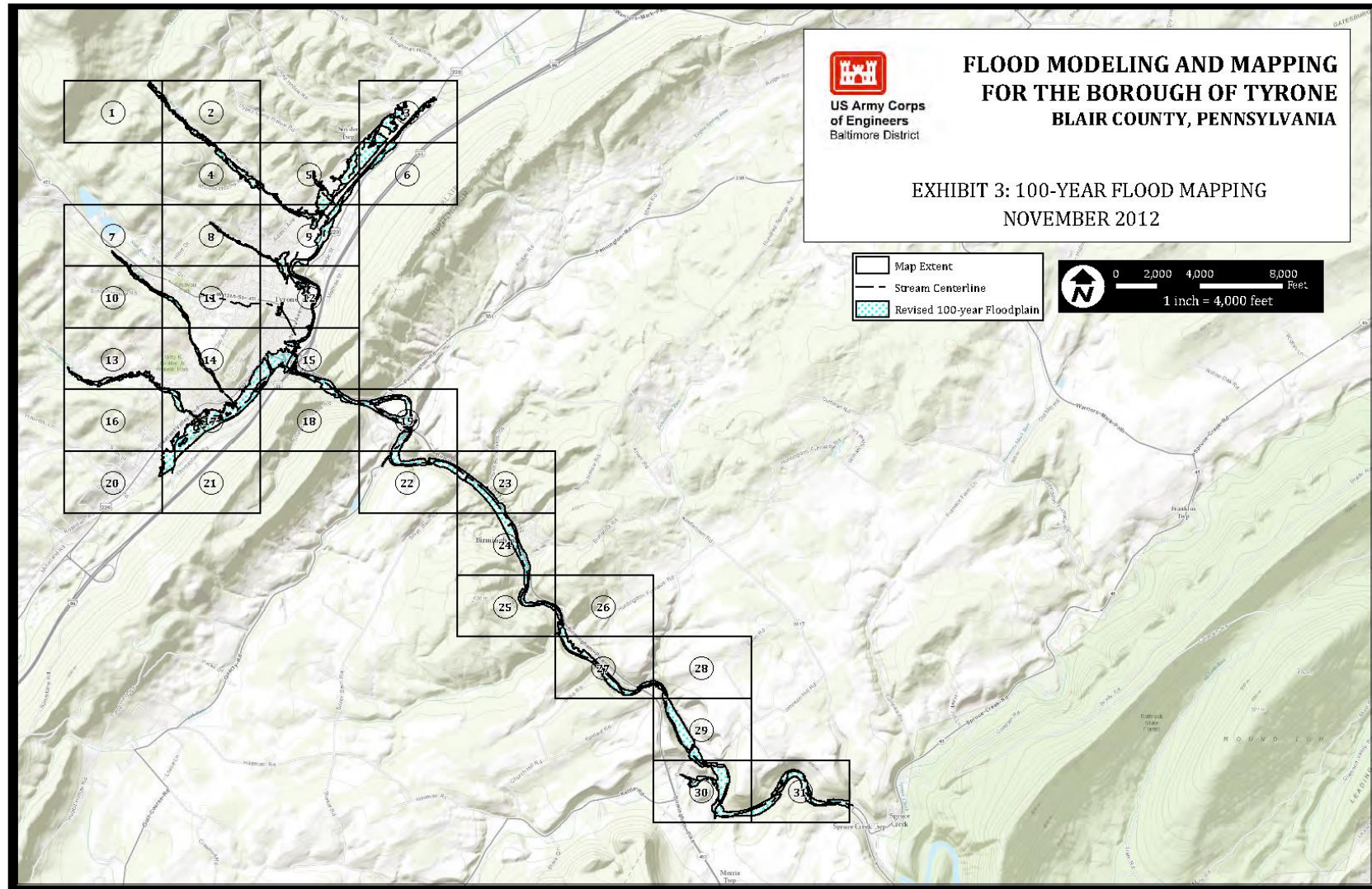
<i>Flooding Source</i>	<i>Stream/River Miles</i>	<i>Upstream Limit</i>	<i>Downstream Limit</i>
Bald Eagle Creek	3.3	Downstream of Old U.S. Route 220 in Vail (Effective FEMA XS Y)	Confluence with Little Juniata River
Cook Hollow Run	1.4	Downstream of Adams Avenue in Snyder Twp.	Confluence with Bald Eagle Creek
Decker Run	2.3	Approximately 2,800 feet upstream of Grazier Drive in Snyder Twp. (Effective FEMA XS AF)	Confluence with Bald Eagle Creek
Gypsy Run	0.4	Approximately 920 feet upstream of Adams Avenue in Snyder Twp.	Confluence with Bald Eagle Creek
Hutchinson Run	1.6	180 Feet Upstream of 3rd Street in Snyder Twp.	Confluence with Little Juniata River
Laurel Run	0.9	0.5 Miles Upstream of Madison Street in Snyder Twp. (Effective FEMA XS J)	Confluence with Bald Eagle Creek
Little Juniata River	10.3	Downstream of Railroad in Grazierville (Effective FEMA XS BK)	USGS Gage 01558000 in Spruce Creek
Schell Run	2.0	Approximately 1,100 feet upstream of Sink Run Diversion Tunnel (Effective FEMA XS K)	Confluence with Little Juniata River
Sink Run	1.1	Approximately 200 feet upstream of State Route 453 (Janesville Pike) in Snyder Twp.	Confluence with Bald Eagle Creek

Table 2 - Flood Events included in Hydrologic and Hydraulic Analyses

<i>Recurrence Interval</i>	<i>Chance of Occurring in Any Given Year</i>	<i>Watershed Rainfall That May Produce Such Storm*</i>
2-year	50-percent	1.8 inches in 12 hours 2.6 inches in 24 hours 2.9 inches in 48 hours
5-year	20-percent	2.7 inches in 12 hours 3.2 inches in 24 hours 3.6 inches in 48 hours
10-year	10-percent	3.2 inches in 12 hours 3.7 inches in 24 hours 4.2 inches in 48 hours
25-year	4-percent	3.8 inches in 12 hours 4.4 inches in 24 hours 5.1 inches in 48 hours
50-year	2-percent	4.3 inches in 12 hours 5.0 inches in 24 hours 5.8 inches in 48 hours
100-year	1-percent	4.9 inches in 12 hours 5.7 inches in 24 hours 6.5 inches in 48 hours
200-year	0.5-percent	5.5 inches in 12 hours 6.4 inches in 24 hours 7.3 inches in 48 hours
500-year	0.2-percent	6.4 inches in 12 hours 7.4 inches in 24 hours 8.4 inches in 48 hours
* Rainfall from National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Point Precipitation Frequency Estimates. Streamflow frequency not directly related to rainfall frequency due to factors such as watershed soil condition prior to rainfall and watershed response to rainfall.		

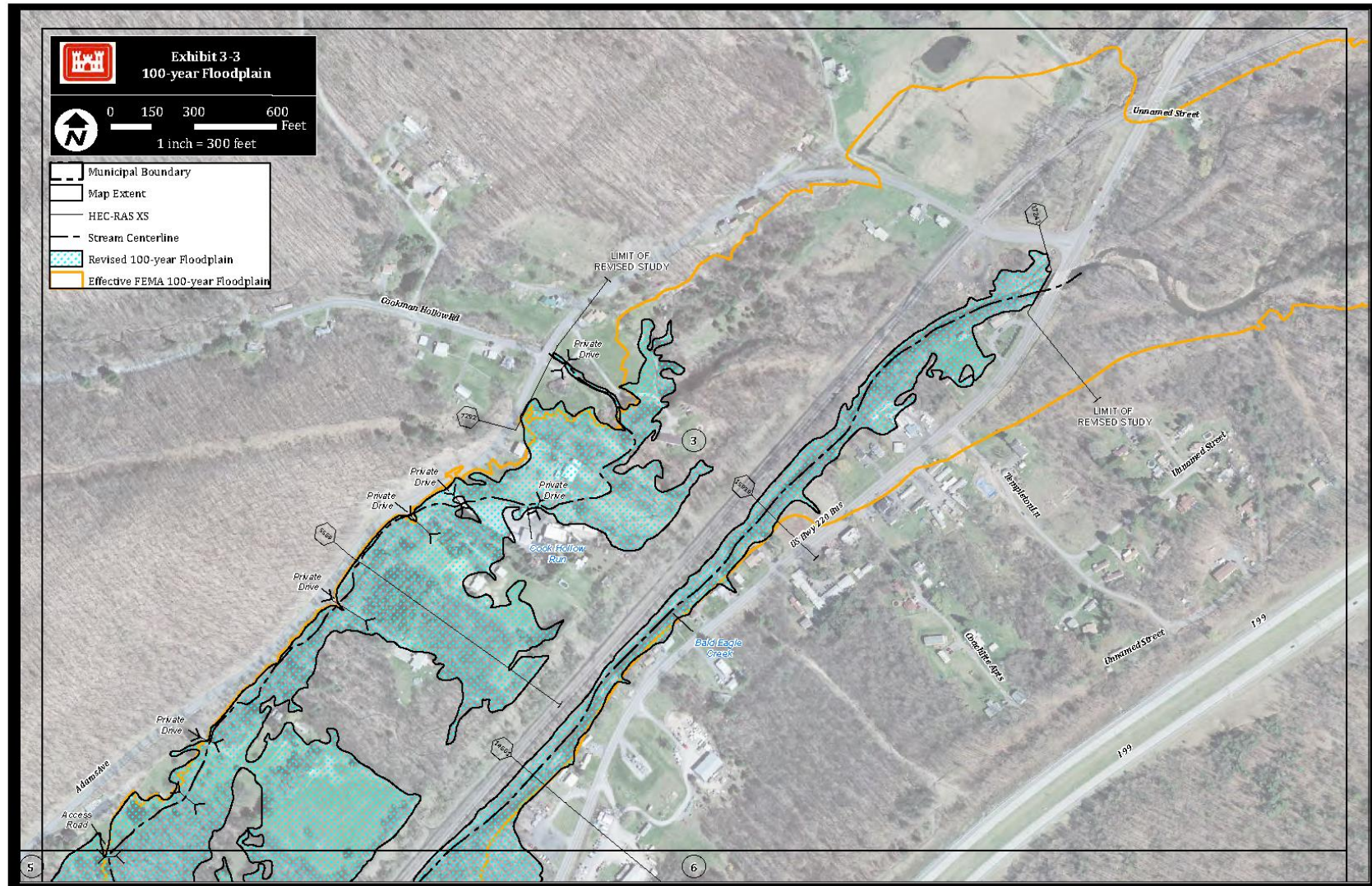
RESULTS

This study resulted in the creation of new hydraulic and hydrologic data that can be utilized to assess potential flood impacts. The resulting 100-year flood mapping based on this data can be used to revise the existing 2012 Flood Insurance Rate Maps for Tyrone Borough. Additionally, a flood map for all storm events was created for the Borough of Tyrone. These maps are included on the following pages. The hydraulic and hydrologic data can be found in the full *U.S. Army Corps of Engineers Flood Modeling and Mapping for the Borough of Tyrone* study.

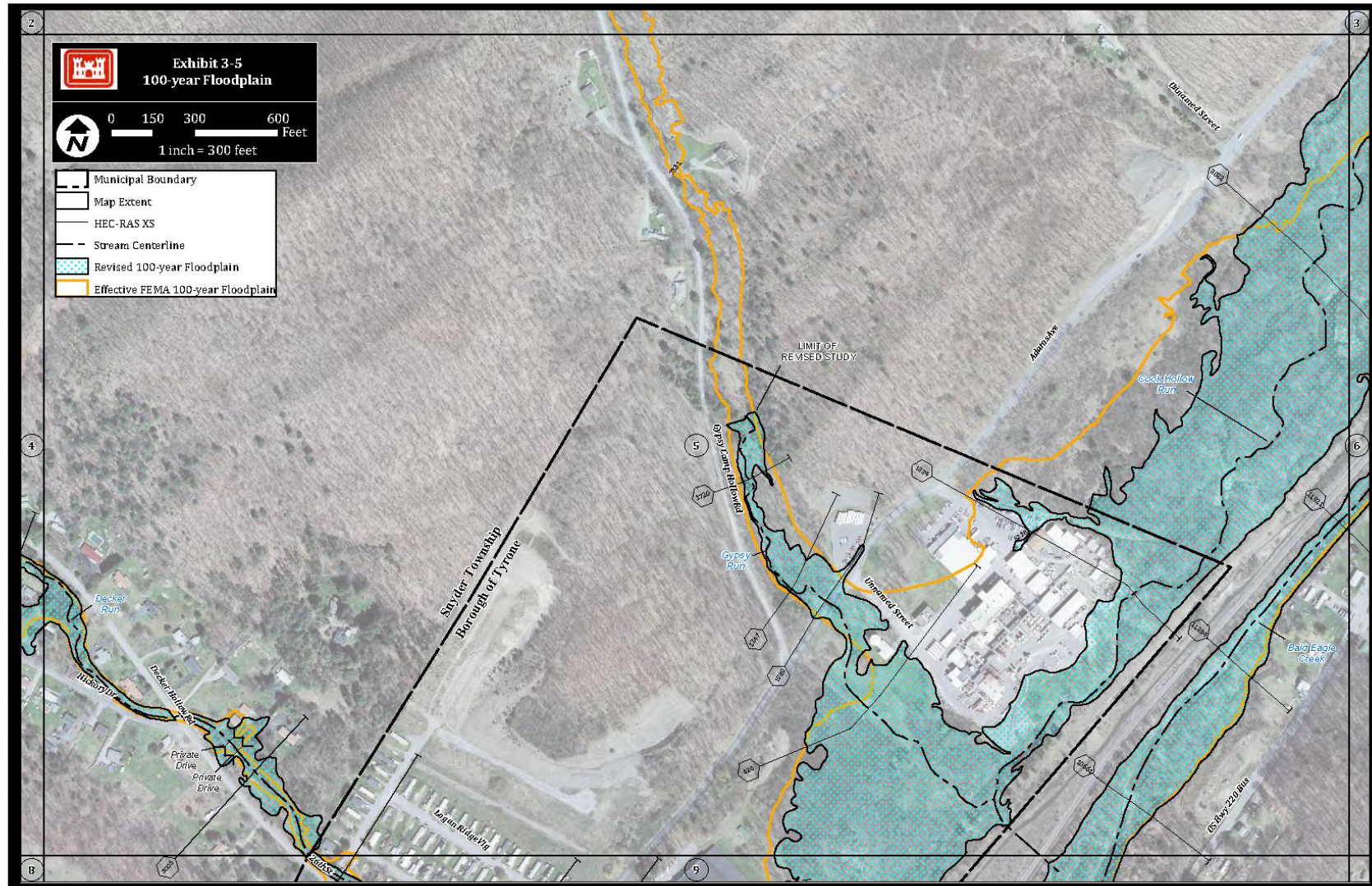




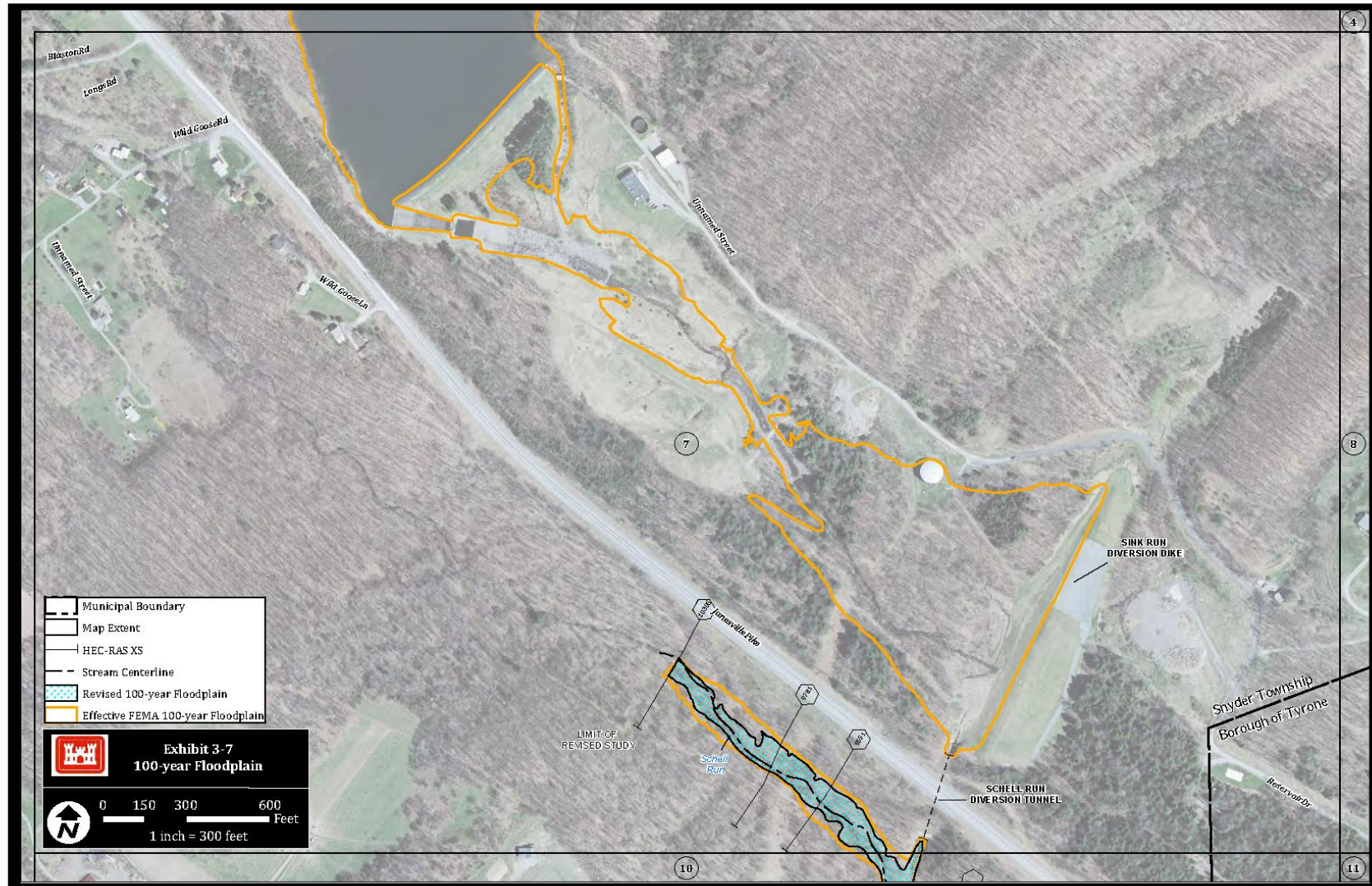


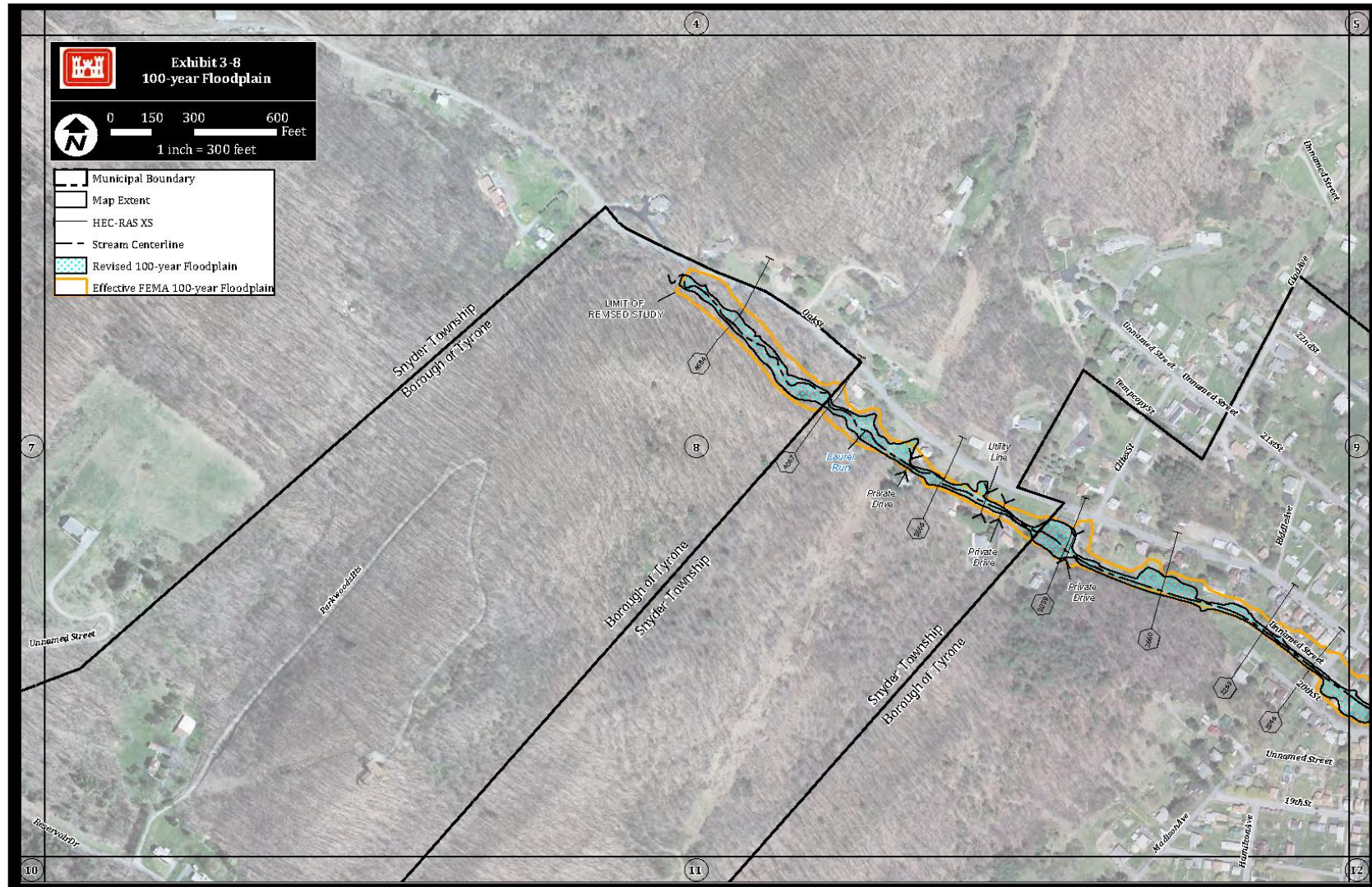


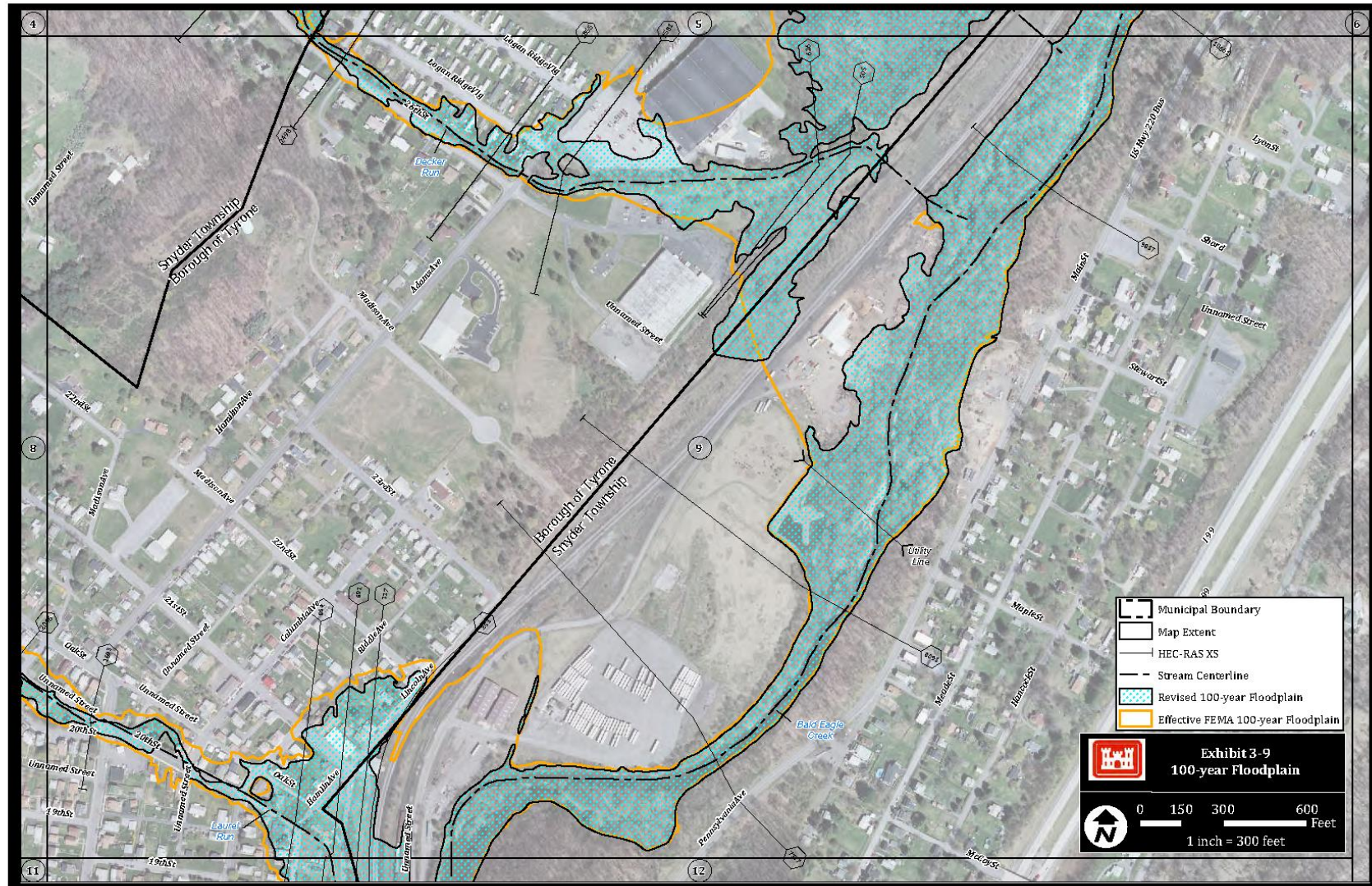




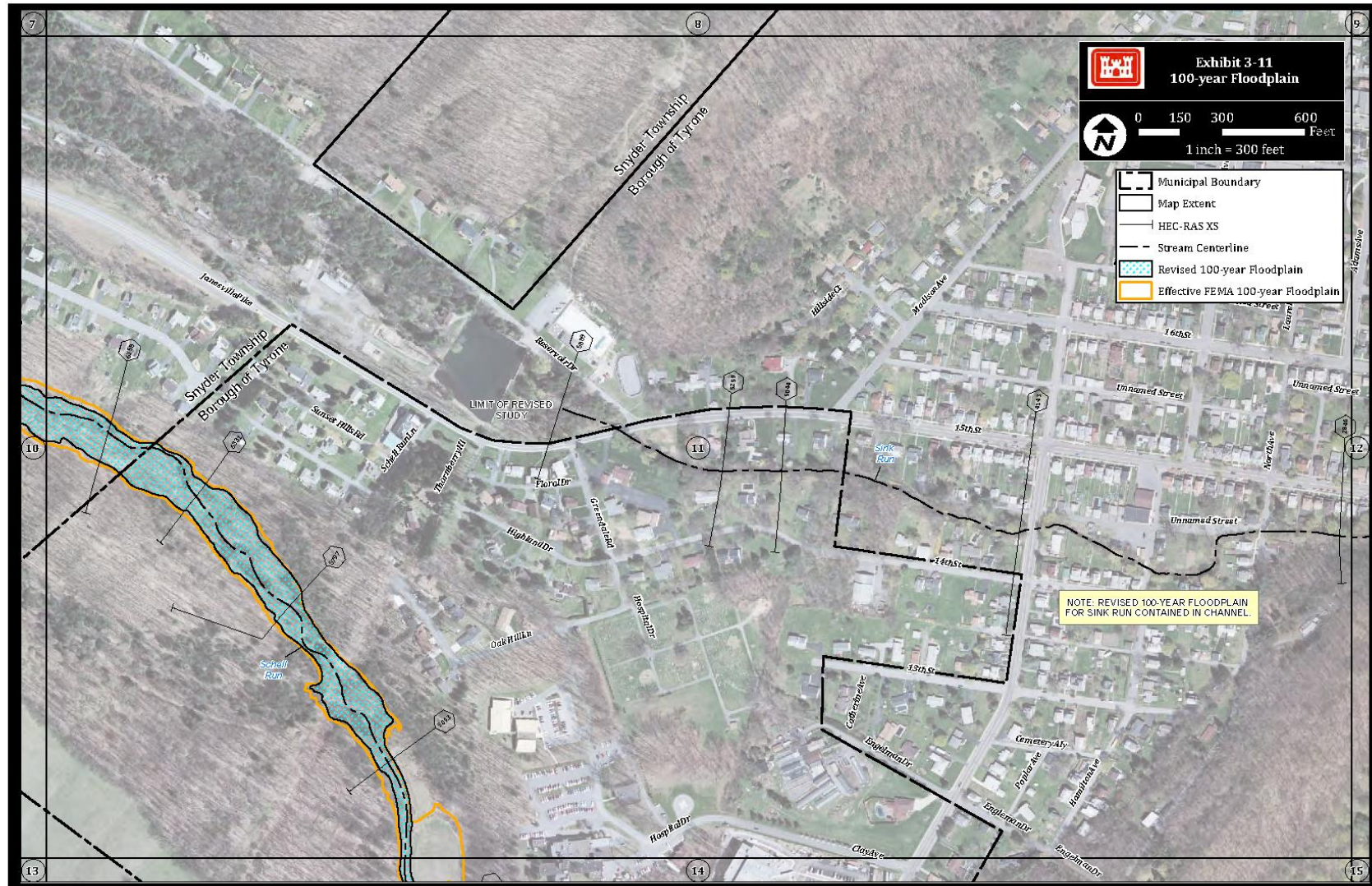


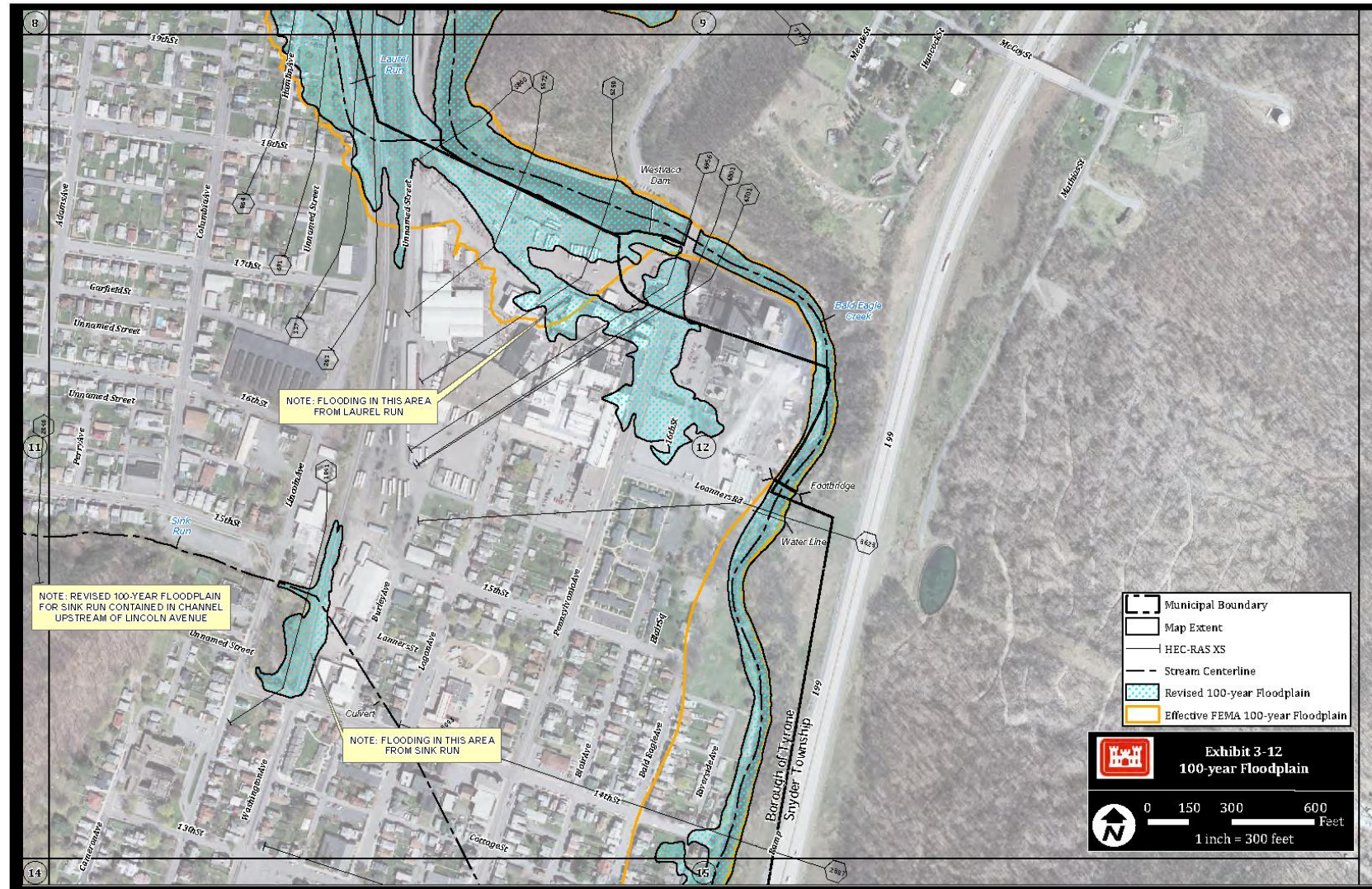


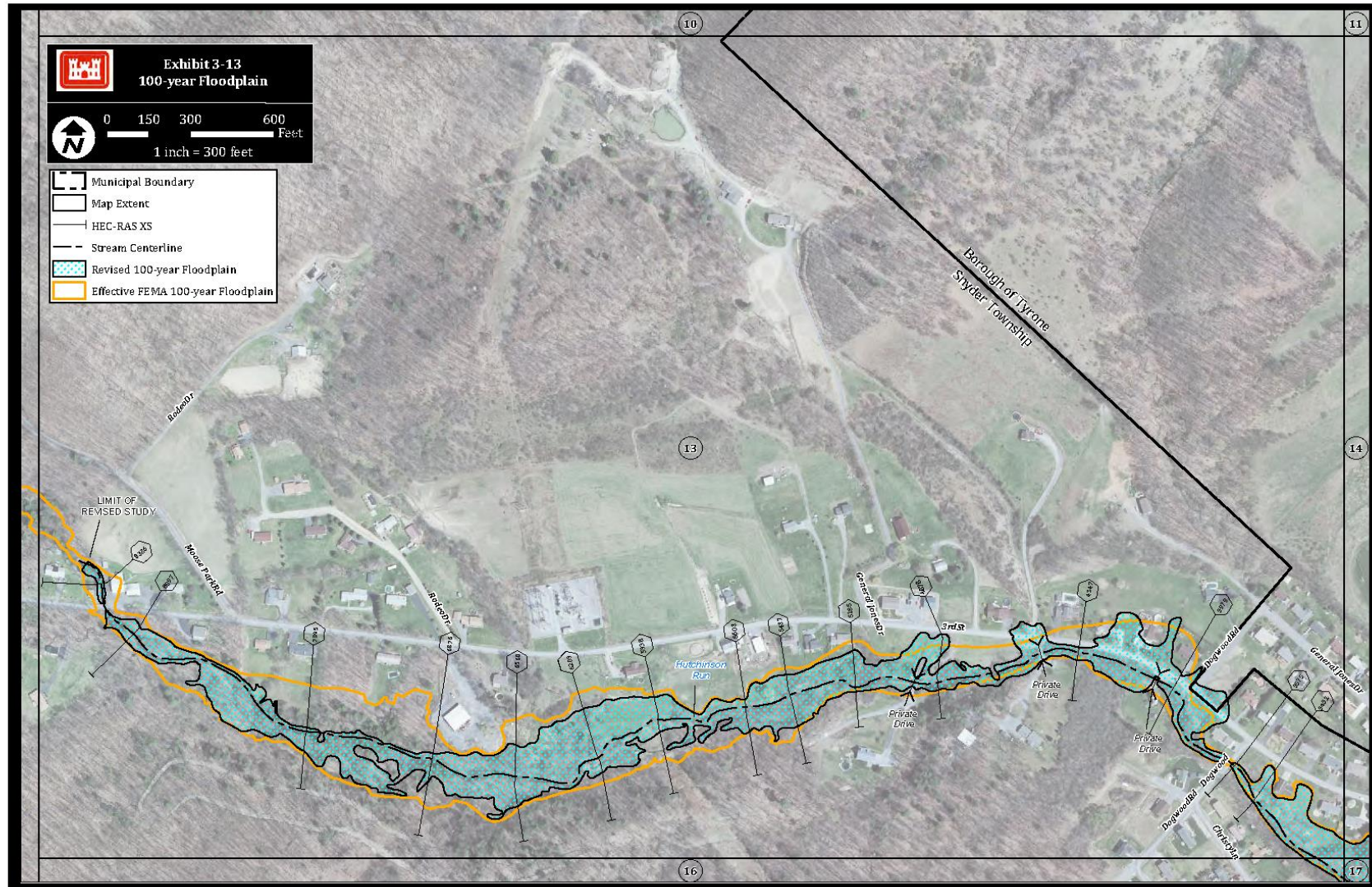


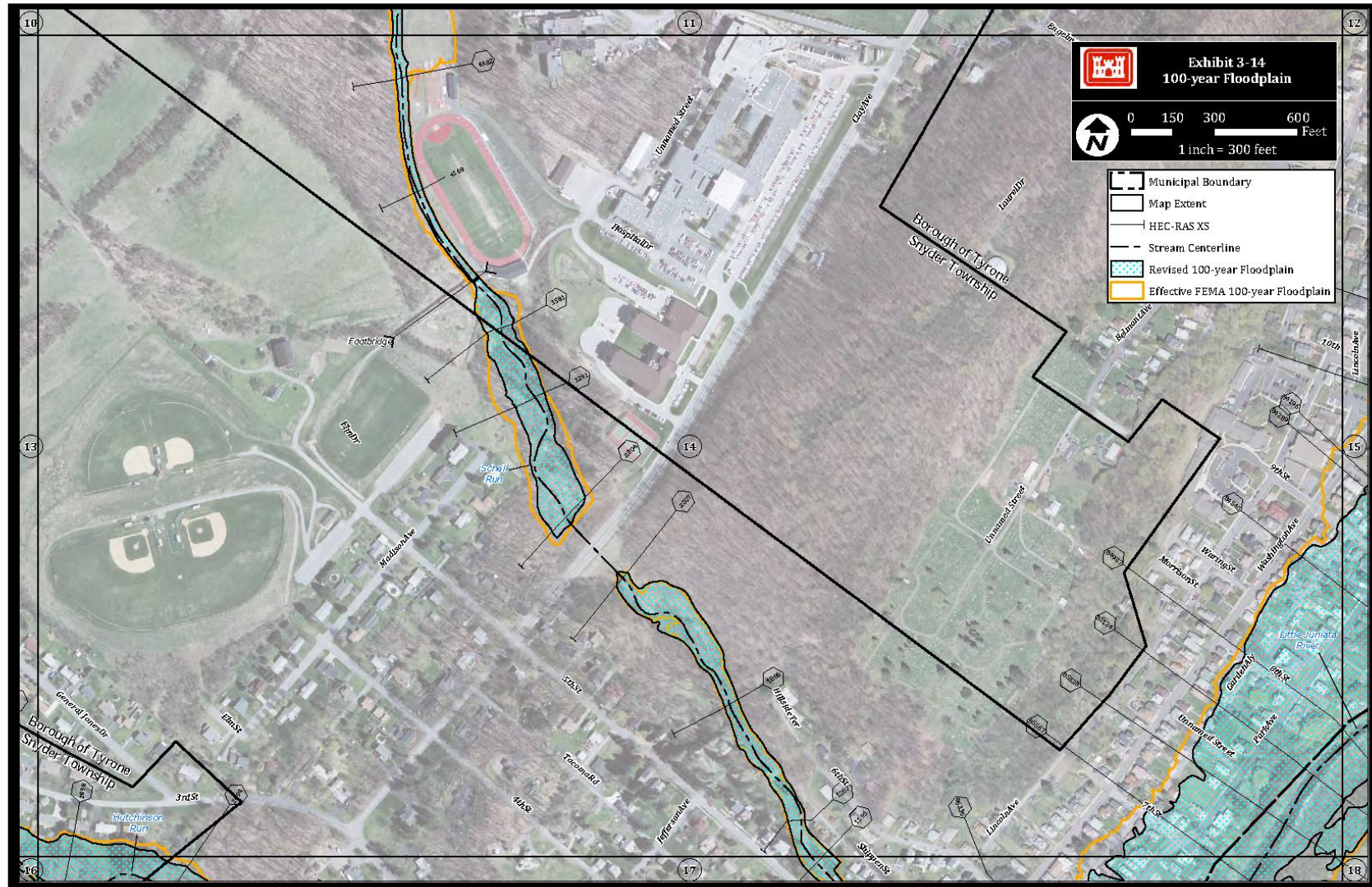


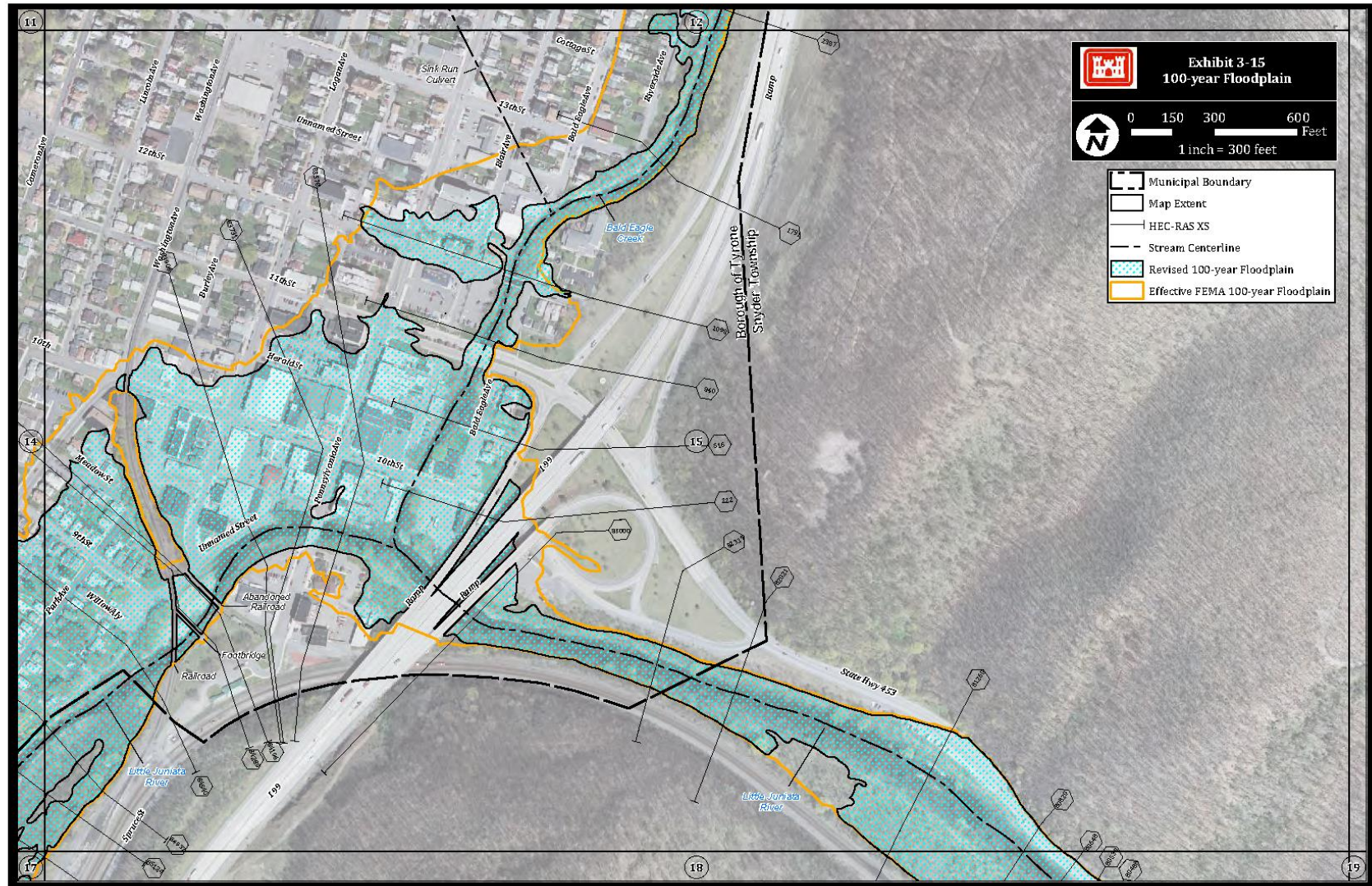




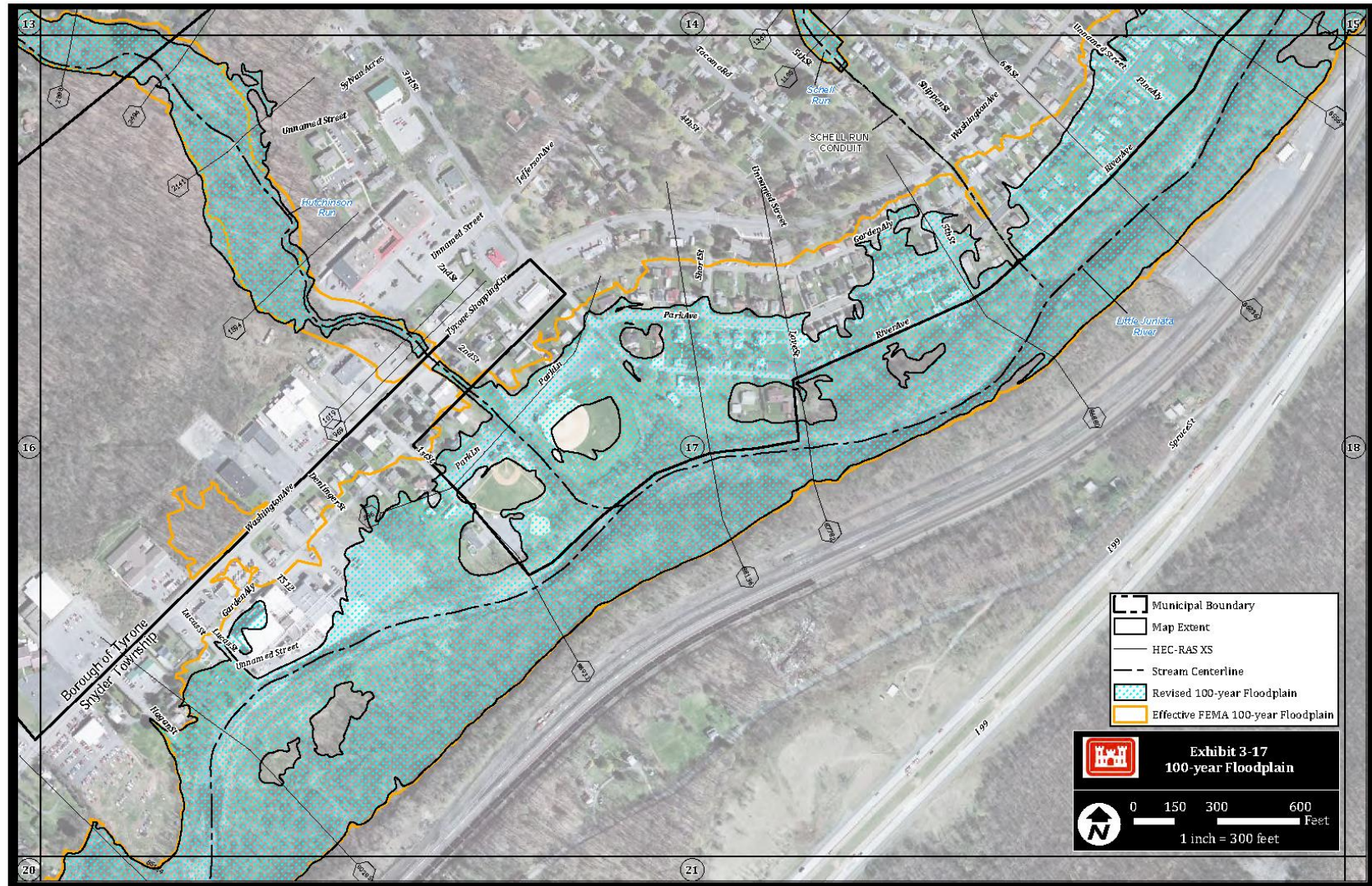




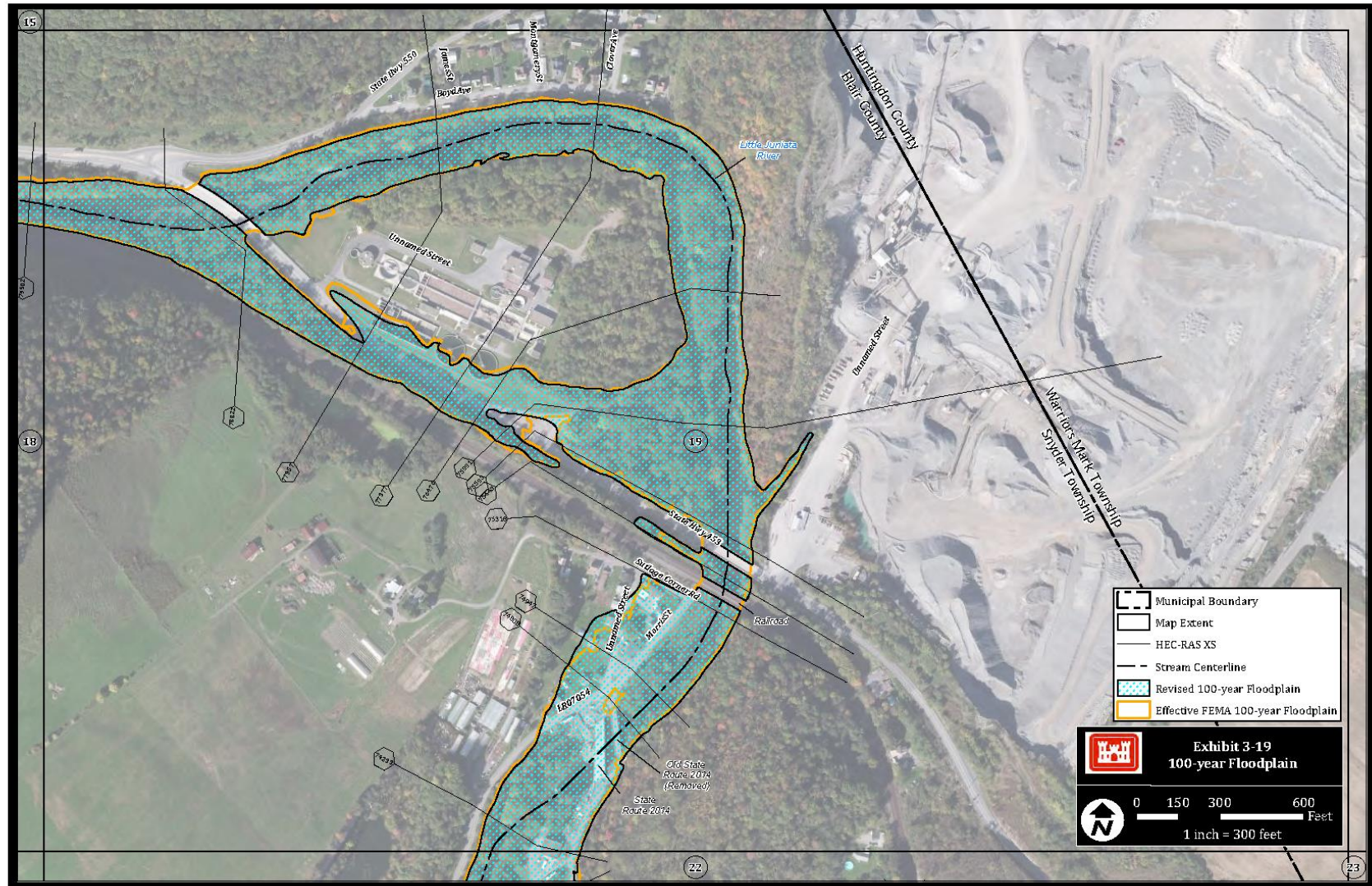


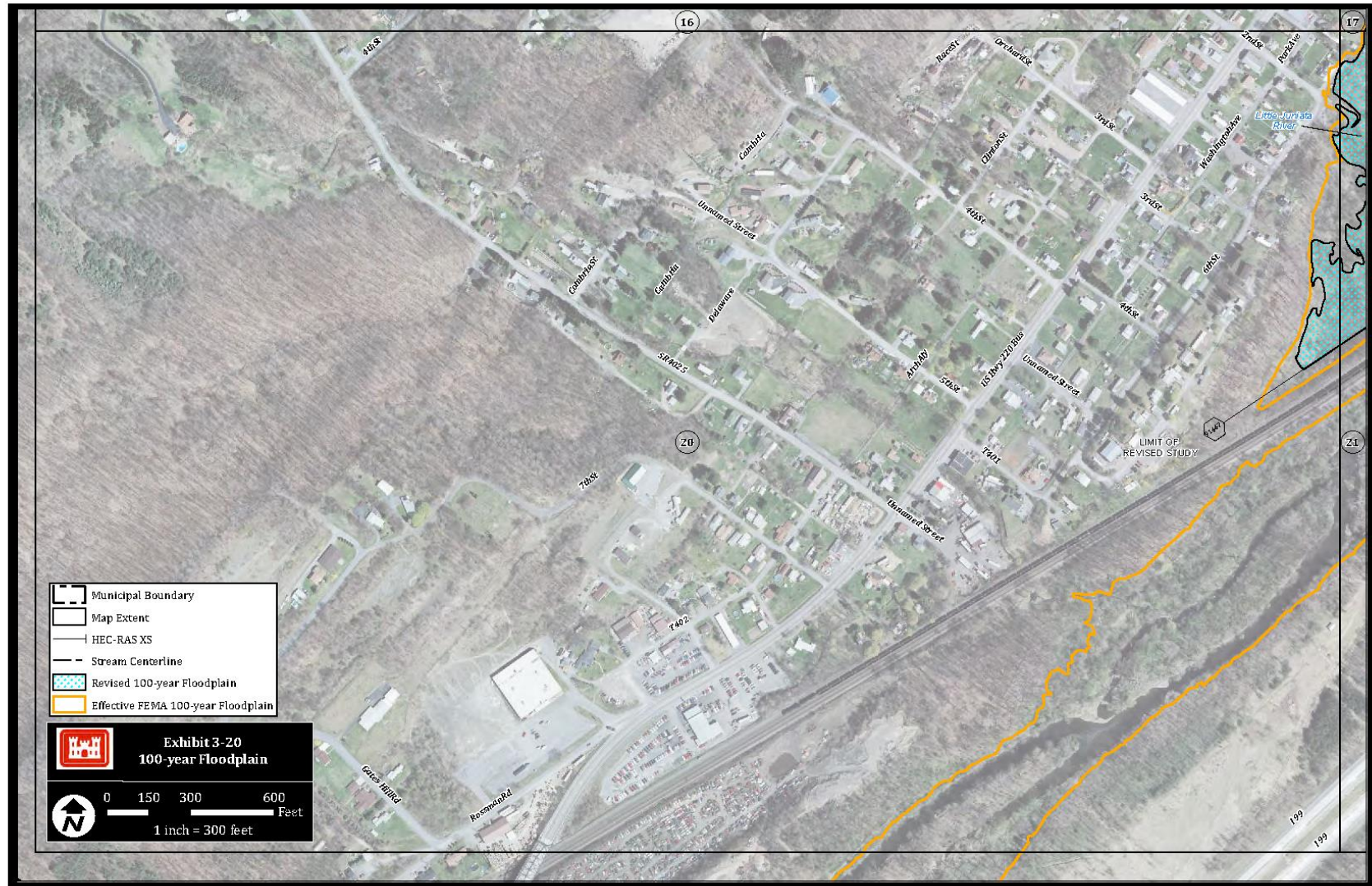




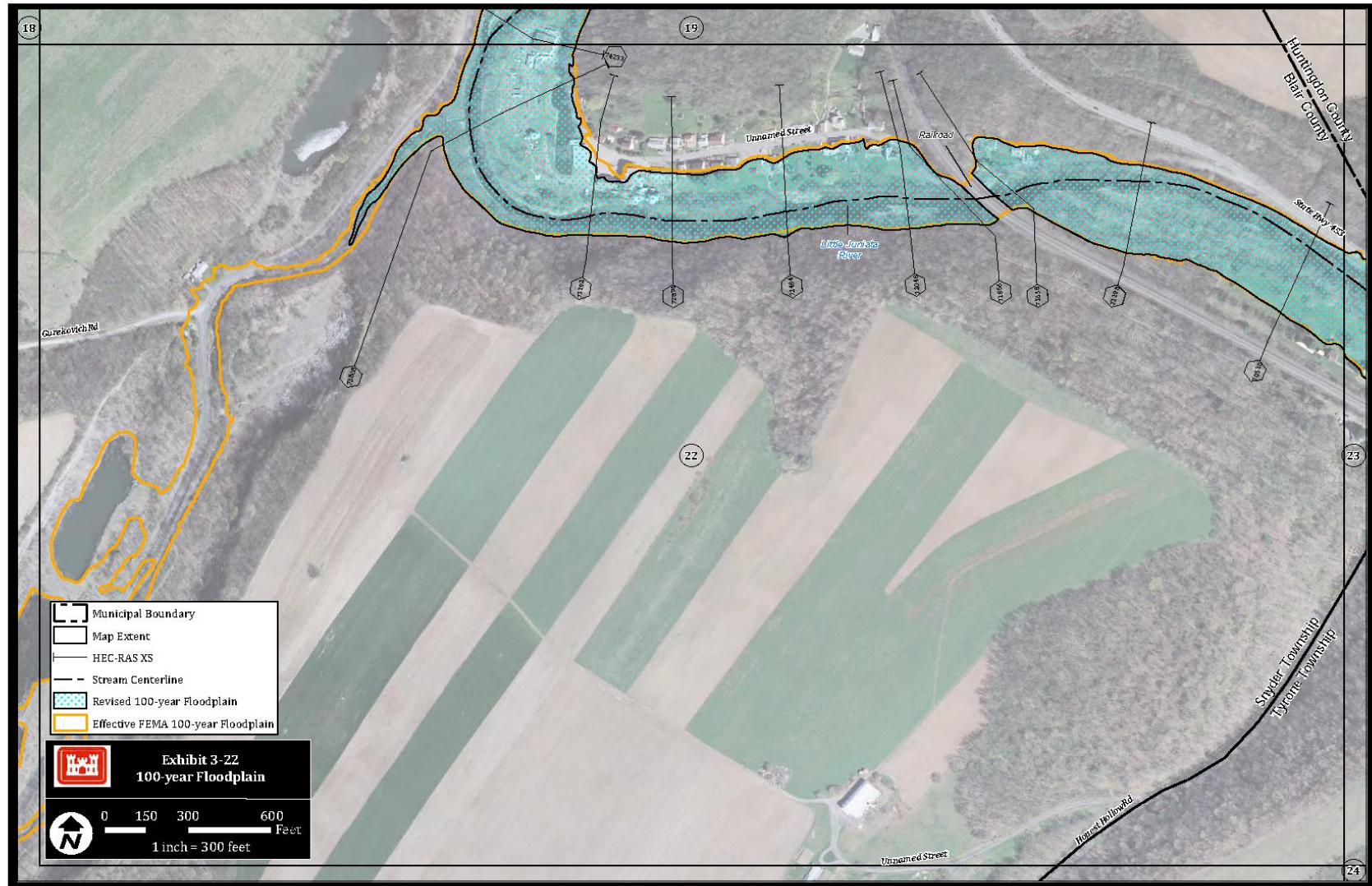


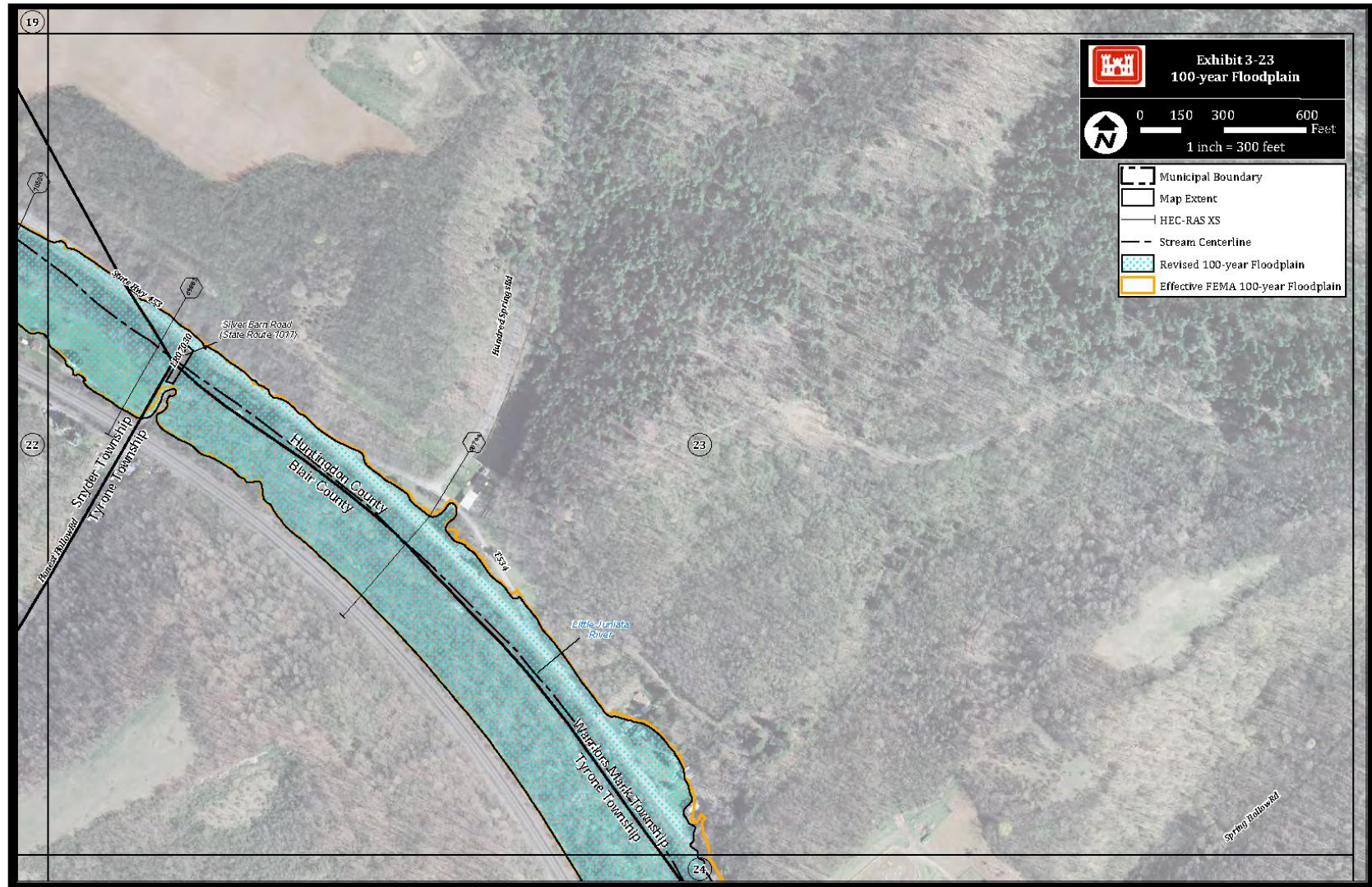


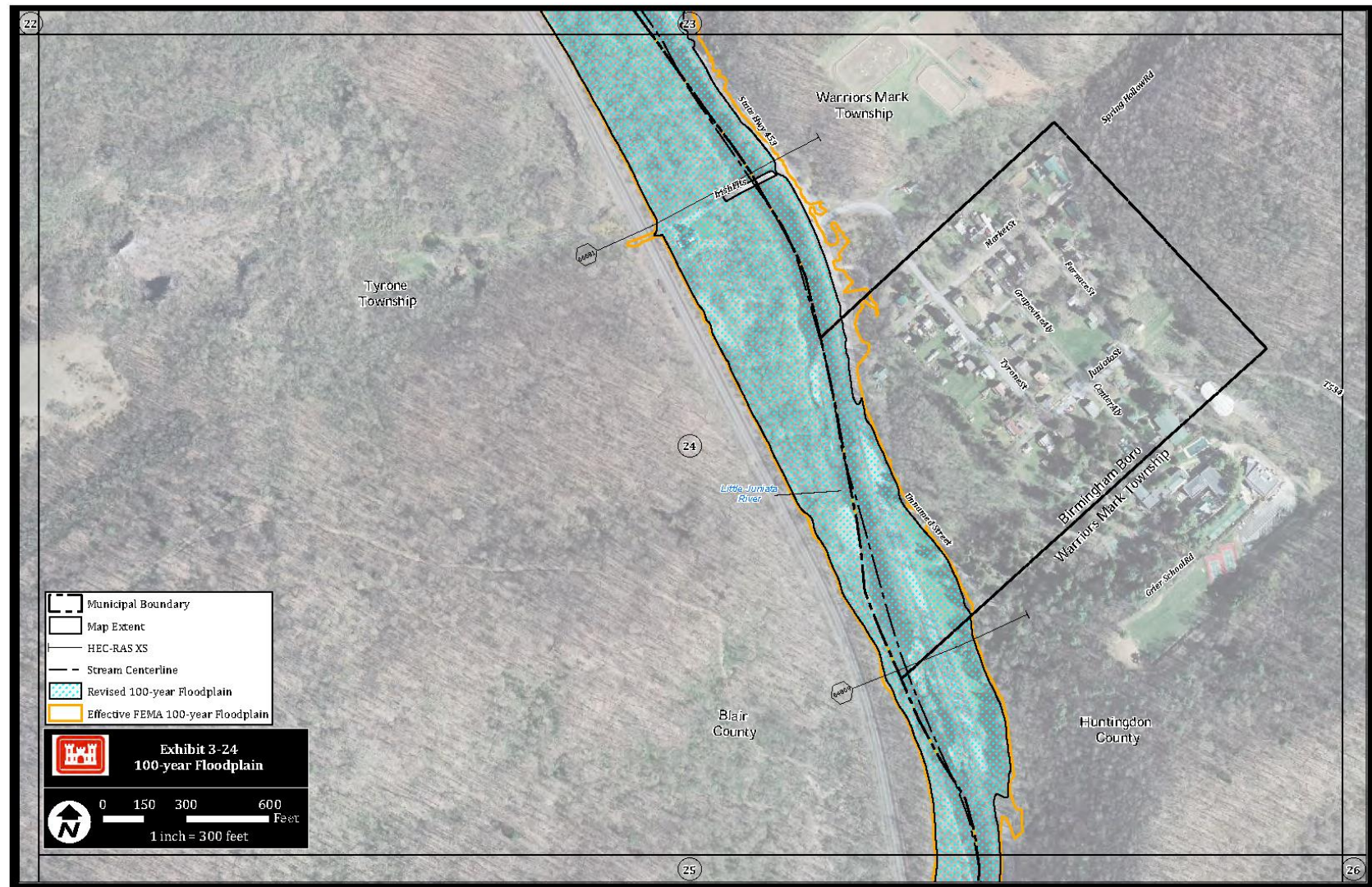


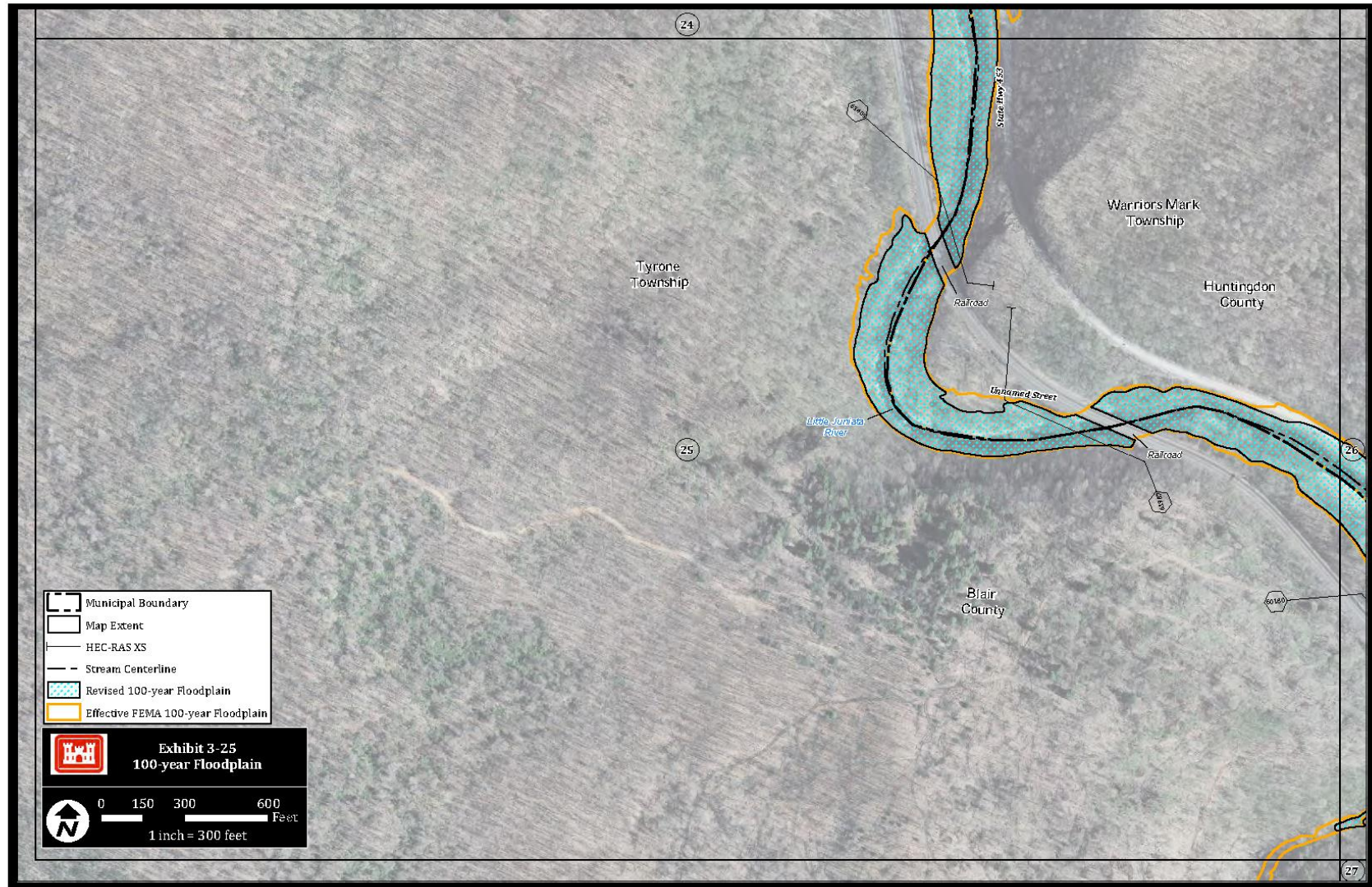




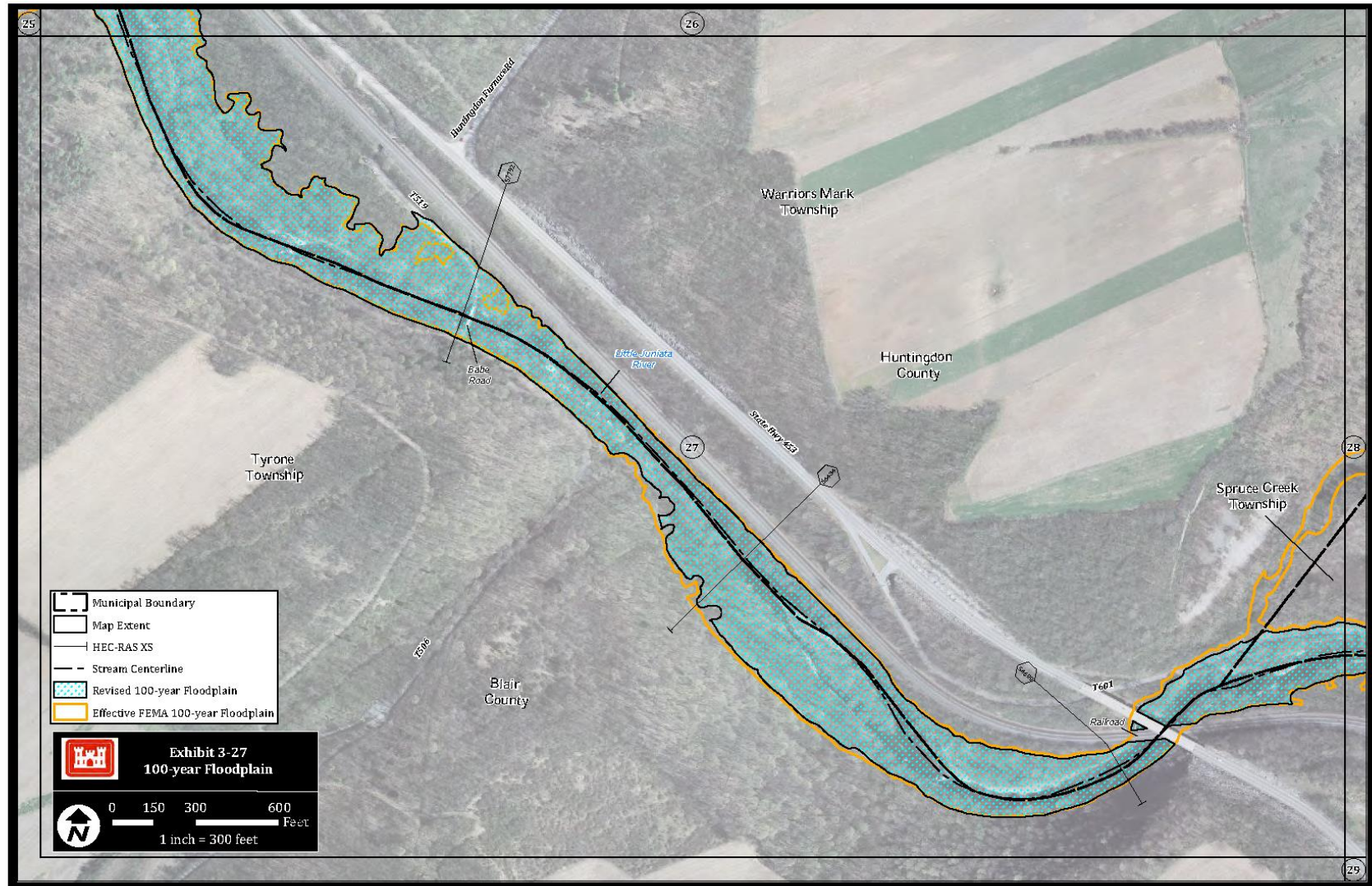






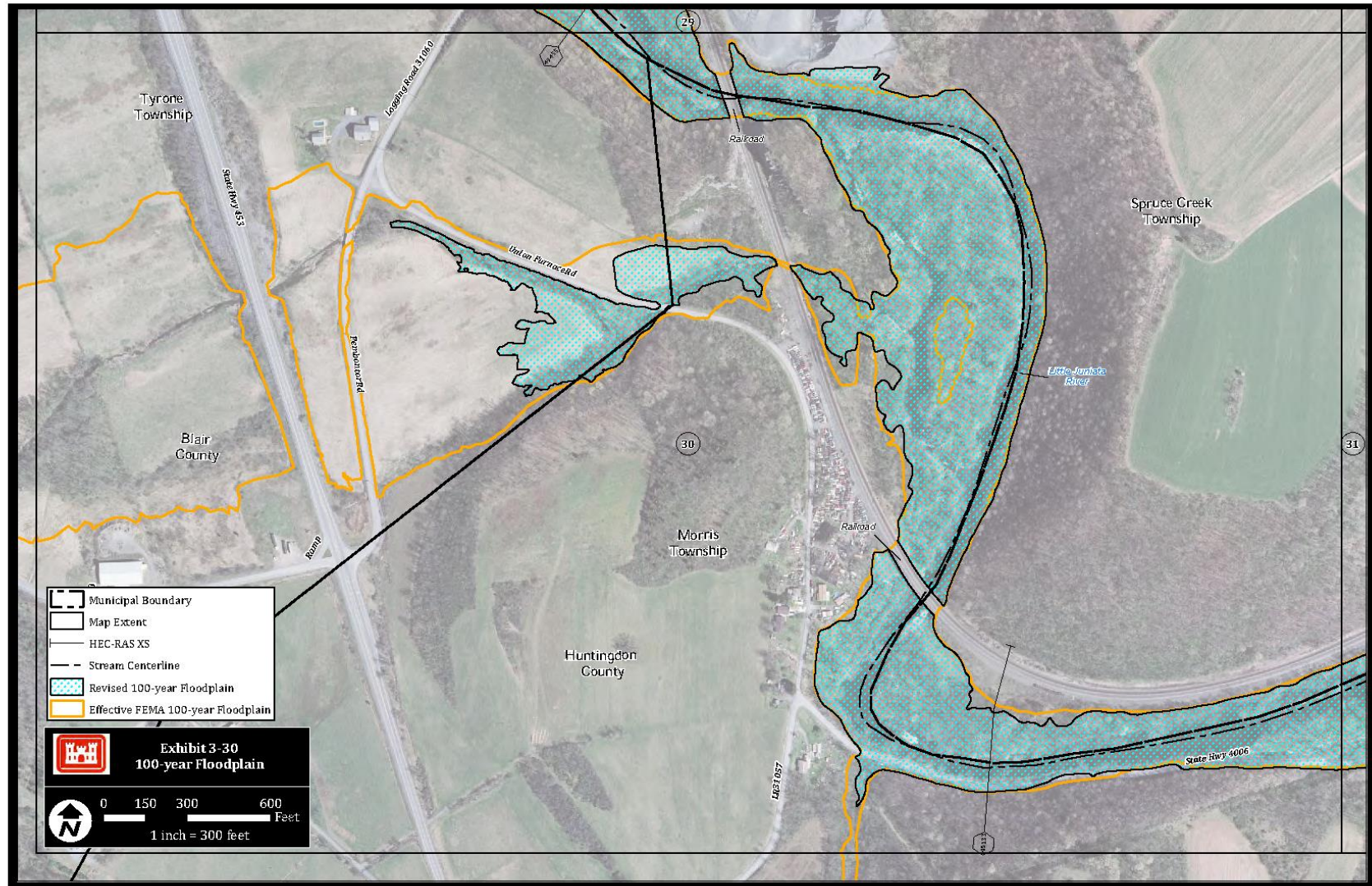


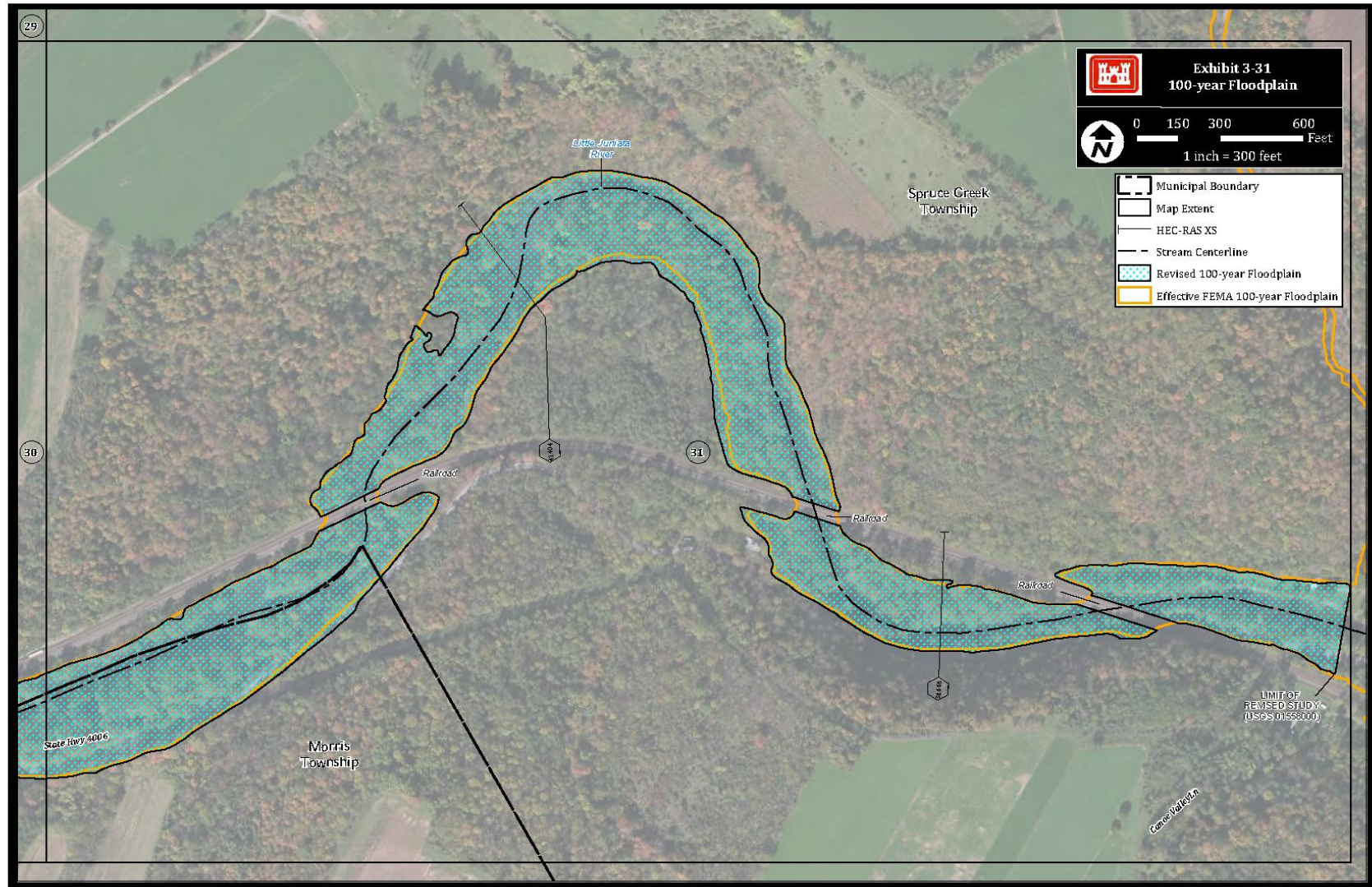


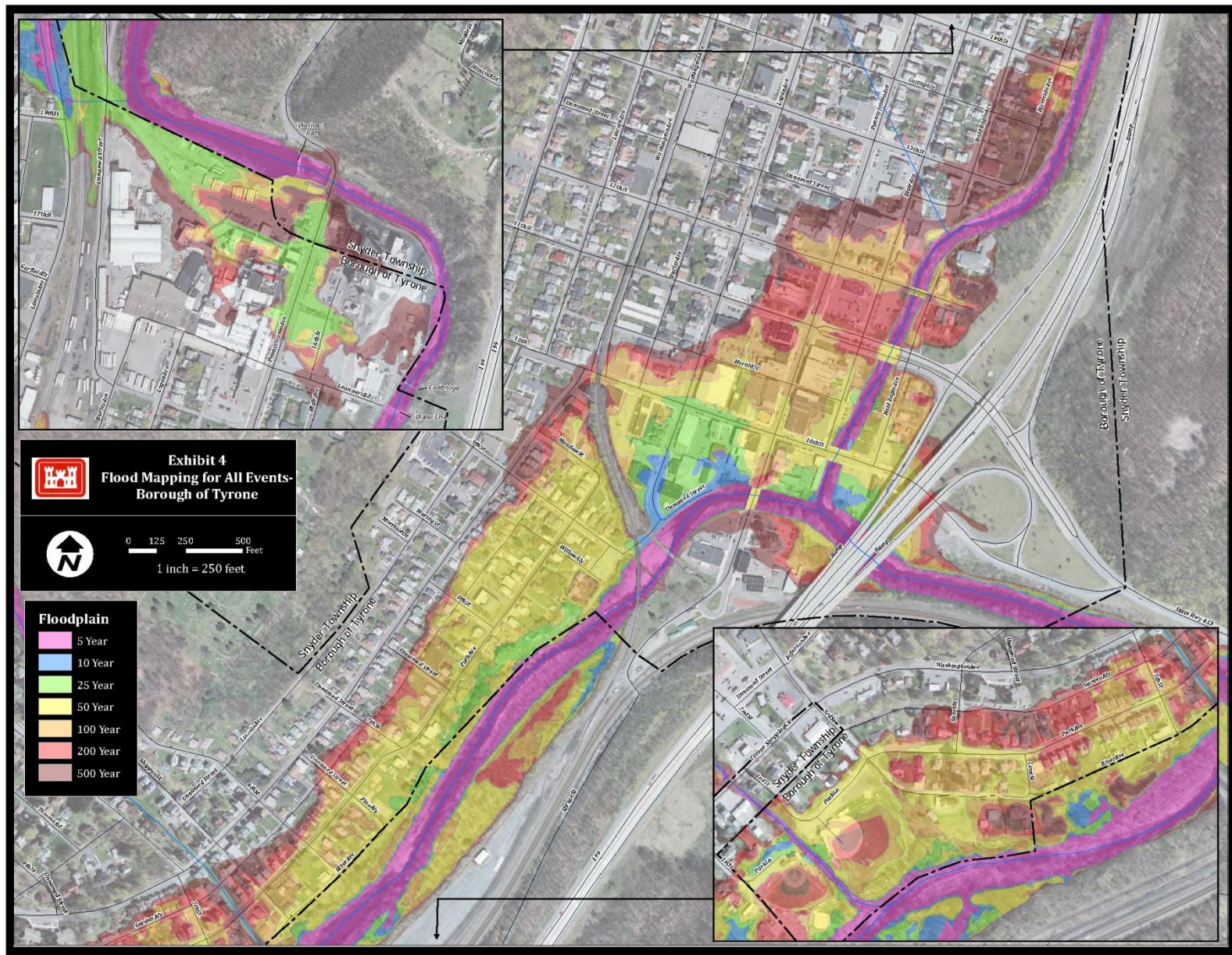












- APPENDIX M -

COMPLETION STATUS OF

PROJECTS LISTED IN 2008

HAZARD MITIGATION PLAN

Completion Status of Municipality-Specific Mitigation Actions from 2008 Hazard Mitigation Plan

Jurisdiction	Vulnerable Areas	Potential Mitigation Actions	Completed?	Comments
Altoona (City of)	Juniata, Maryland Ave - 58th St.	Property buyout: 58th St. area of Maryland Ave	Y	Completed property acquisitions on Burns and Maryland Avenues.
Antis Township	7. Bellwood Borough 8. Lower Johnson Development in Tipton 9. River Road 10. Pinecroft (near the curves) 11. Bellmeade 12. Fuoss Mills	Acquisition/elevation of properties	N	
Bellwood Borough	Approx. 12 houses on the North side of town. Stormwater gets into the sanitary sewer system causing backup into the basements of private homes.	Borough is currently working on a corrective action plan to prevent inflow and infiltration.	N	
Blair Township	Residences in four areas: 5. Fort Fetter 6. Independence Place 7. East View St. 8. River Road	Acquisition/elevation of properties	N	
Duncansville Boro	Approx. 20 bldgs. from 13th St. Bridge – Park Foot Bridges	Stabilize stream bank	In Progress	Obtained a grant and will complete Gillans Run restoration in 2014.
Frankstown Twp.	Various properties	Property acquisition	N	
Greenfield Twp.	SR 3013 north of Oakdale Road	Property acquisition	N	Unable to acquire property.
Hollidaysburg Boro	Various properties	Acquisition/elevation of properties	N	
Logan Township	Logan Boulevard/Lakemont	Stormwater detention ponds	N	
Martinsburg Borough	3. Nicodemus Street, 100-200-300 block 4. 201 W. and 300 W. Allegheny Street	3. Bridge has been replaced, dike built around the wastewater plant. 4. Property acquisition	N	Unable to acquire the two properties on W. Allegheny Street.
N. Woodbury Twp.	Bridges: Central High Rd & SR 164 Fredricksburg Rd	Central High Road bridge was replaced in 2005	N	
Snyder Township	A great portion of Snyder Twp. is prone to flooding from several rivers and creeks	To be determined	N	
Taylor Township	Damaged Decker Hollow Bridge isolates the development of new residences	Expand bridge structure or replace with larger bridge	N	
Tyrone Borough	5. 10th St. 6. Pennsylvania Ave. 7. S. Logan Ave. 8. Park Ave. (from 3rd to 9th St.)	Buyout of about 200 flood-prone properties. Install sewer check valves.	N	

Jurisdiction	Vulnerable Areas	Potential Mitigation Actions	Completed?	Comments
All Municipalities in Blair County	Flood studies and FIRMs are in need of updating.	Obtain updated detailed flood studies and FIRMs for areas with the greatest potential damage and threat to residents.	Y	All of the municipalities have updated their NFIP and most have distributed pamphlets and presentations on Hazard Mitigation.
All Municipalities in Blair County	Hazard awareness and mitigation.	Public outreach/education on potential hazards in Blair County and mitigation strategies.	Y	Blair County EMA did over 30 presentations on Hazard Awareness and Mitigation courses. The audience was Nursing and Personnel Care Homes, municipalities, schools, churches, neighborhoods, Healthcare agencies and neighborhoods. The total amount trained was over 500 and over 3000 pamphlets distributed by municipalities.
All Municipalities in Blair County	There are many parcels in Blair County in the 100-year and 500-year floodplains, but geographic information system data on parcel and building locations is not available.	<p>Identify by municipality and evaluate protection of existing critical facilities with highest relative vulnerability in the 100-year floodplain.</p> <ul style="list-style-type: none"> • Develop GIS data on property parcels to allow evaluation of which parcels are in the floodplain. • Develop a list of critical facilities for the County and determine which are in the floodplain. • Identify critical facilities with the highest relative vulnerability; conduct cost-benefit analysis of protection of those assets. 	Majority Completed	GIS data has been developed to map properties that are in the floodplain as well as to identify critical facilities within the floodplain. Cost-benefit analysis of protection of critical facilities with highest relative vulnerability has not been completed.

- APPENDIX N - FEMA CROSSWALK VERIFICATION

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Blair County, PA	Title of Plan: 2013 Hazard Vulnerability Assessment and Mitigation Plan	Date of Plan: July 31, 2013 Resubmission: January 21, 2014
Local Point of Contact: Dan Boyles	Address: 615 4 th Street Altoona, PA 16602	
Title: Director		
Agency: Blair County Emergency Management Agency		
Phone Number: (814) 940-5905	E-Mail: dboyles@atlanticbbn.net	

State Reviewer:	Title:	Date:
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FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region <i>(insert #)</i>		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1: REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT A. PLANNING PROCESS				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Section 1.7 pg 8 Appendix C pg 79 Appendix D pg 118			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Sections 1.6 pgs 5-7, 1.7 pgs 7-8, 5.3 pgs 73-74			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section 1.7 pgs 7-8			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Sections 1.6 pgs 5-7, 1.7 pgs 7-8, 1.8 pg 9, 3.0 pgs 45-49, 4.8 pgs 68-70			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section 5.3 pgs 73- 74			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section 5.1 pgs 72- 73			
ELEMENT A: REQUIRED REVISIONS				

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Sections 2.1 pg 11, 2.7 pg 43, Table 2.1 pg 12, Appendix E pg 147			
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Sections 2.2.1, 2.2.2, 2.2.3, 2.2.4 pgs 15-39			
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Sections 2.2.1, 2.2.2, 2.2.3, 2.2.4 pgs 15-39			
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Section 2.2.4 pgs 36-37			
<u>ELEMENT B: REQUIRED REVISIONS</u>				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section 3.0 pgs 45-49			
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Sections 4.2 pgs 51-55, 4.6 pgs 63-66			
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section 4.0 pgs 51-70			
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Section 4.0 pgs 51-70			
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section 4.0 pgs 51-70 Appendix J pg 188			
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Sections 3.0 pgs 45-49, 4.8 pgs 68-70, 5.2 pg 73			
<u>ELEMENT C: REQUIRED REVISIONS</u>				

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Sections 2.2 pgs 15-39, 2.5 pg 42			
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Sections 2.2.4 pgs 27-39, 4.1 pg 51, 4.6 pgs 56-59			
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Sections 4.1 pg 44, 4.6 pgs 63-66			
<u>ELEMENT D: REQUIRED REVISIONS</u>				
ELEMENT E. PLAN ADOPTION				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Appendix A pg 75			
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Table 1.1 pg 6, Appendix B pg 77			
<u>ELEMENT E: REQUIRED REVISIONS</u>				
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)				
F1.				
F2.				
<u>ELEMENT F: REQUIRED REVISIONS</u>				

SECTION 2: PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1												
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8												
9												

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							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
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