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***Juniata County Multi-Jurisdictional
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Executive Summary

Introduction

The goal of Juniata County's Multi-Jurisdictional Hazard Mitigation Plan (HMP) is to make residents, businesses, property owners, operators of critical infrastructure, and municipalities less susceptible to the effects of future disasters by increasing the disaster resistance of the County and its municipalities. After suffering the effects of severe winter weather, flooding, drought, and other natural and manmade hazards, the Juniata County Board of Commissioners, in coordination with the Mifflin County Board of Commissioners and the Perry County Board of Commissioners, initiated a multi-jurisdictional hazard mitigation planning effort. This process identified the hazards that affect each individual County and prioritized mitigation strategies to reduce potential loss of life and property damage from those hazards. This process results in each County having its own Multi-Jurisdictional Hazard Mitigation Plan.

This HMP serves as a framework for saving lives, protecting assets, and preserving the economic viability of the County's 17 municipalities. This planning initiative resulted in a comprehensive HMP that meets all the Federal Emergency Management Agency (FEMA) and Pennsylvania Emergency Management Agency (PEMA) requirements established in the Disaster Mitigation Act of 2000 (DMA 2000). The HMP will help the County and its municipalities maintain their eligibility for certain future federal funding, especially the Hazard Mitigation Grant Program (HMGP). A FEMA-approved HMP is also required to participate in the Emergency Management Performance Grant programs (EMPG) and in projects under the Pre-Disaster Mitigation Grant Program (PDM).

Together, Juniata, Perry, and Mifflin Counties selected Delta Development Group, Inc. (Delta), of Mechanicsburg, Pennsylvania, to assist in the planning, analysis, and writing of this plan.

The Planning Process

The planning process for this HMP involved a variety of key decision makers and stakeholders within Juniata County as early as October 2007. The planners were able to customize the process to meet the needs of the municipalities as well as the County. The process was developed around the requirements laid out in FEMA's *Local Hazard Mitigation Crosswalk*, referenced throughout this plan, as well as numerous other guidance documents including, but not limited to: FEMA's State and Local Mitigation Planning How-to Guide series of documents (FEMA 386-series) and the National Fire Protection Association (NFPA) 1600 Standard on Disaster/Emergency Management and Business Continuity Programs.

With the support of the Juniata County Commissioners, Mifflin County, Juniata County, and Perry County collaborated to apply for, and received, a FEMA PDM Grant. Several public meetings with local elected officials were held, as well as Steering Committee meetings and work sessions with the County Planning Director and the Director of the County Office of Public Safety and staff.

At each of the public meetings, Delta, the County's Planning office, and its Emergency Management Agency (EMA) office, respecting the importance of local knowledge, strongly encouraged municipal officials to submit Hazard Mitigation Project Opportunity (HMPO) forms, complete their respective portions of the Capability Assessment Survey, and review and eventually adopt the updated Multi-Jurisdictional HMP. Juniata County will continue to work with all local municipalities to collect local hazard mitigation projects and add them to the plan during the scheduled reviews.

The involvement of both public and private entities within Juniata County offered valuable input which was used to create a detailed and viable HMP. Local knowledge pertaining to hazards and possible mitigation projects further enhanced the value of this Hazard Mitigation Plan to the County and its municipalities.

The HMP planning process consisted of:

- applying for and receiving a PDM grant to fund the planning project;
- announcing the initiative via press releases and postings on the designated project Web site;
- involving elected and appointed County and municipal officials in a series of meetings, training sessions, and workshops;
- inviting input from businesses through certain members of the Juniata County Steering Committee;
- identifying hazards;
- assessing risk and analyzing vulnerabilities;
- identifying mitigation strategies, goals, and objectives;
- developing an implementation plan;
- announcing completion via press releases and postings on the County's Web site;
- adopting the plan at a public meeting of the Juniata County Board of Commissioners;
and
- submitting the plan to FEMA and PEMA.

The Plan

The HMP outlines actions designed to address and reduce the impact of a full range of natural hazards facing Juniata County. After thorough historical research and discussion with municipal officials, Steering Committee members, and the County's Planning office, EMA office, and staff, it was determined that the top three hazards affecting Juniata County are severe winter weather, flooding, and drought. Manmade hazards were also addressed, including transportation accidents, hazardous materials spills, and civil disorders.

A multi-jurisdictional planning approach was utilized to complete this Juniata County HMP, thereby eliminating the need for each municipality to craft its own approach to hazard mitigation and its own planning document. Further, this multi-jurisdictional planning effort resulted in a common understanding of the hazard vulnerabilities throughout the County, a comprehensive list of mitigation projects, common mitigation goals and objectives, and an evaluation of a broad capability assessment examining policies and regulations throughout the County and its municipalities. Each municipality that elected to be part of the multi-jurisdictional planning effort adopted the HMP by resolution.

Hazard Vulnerability Analysis

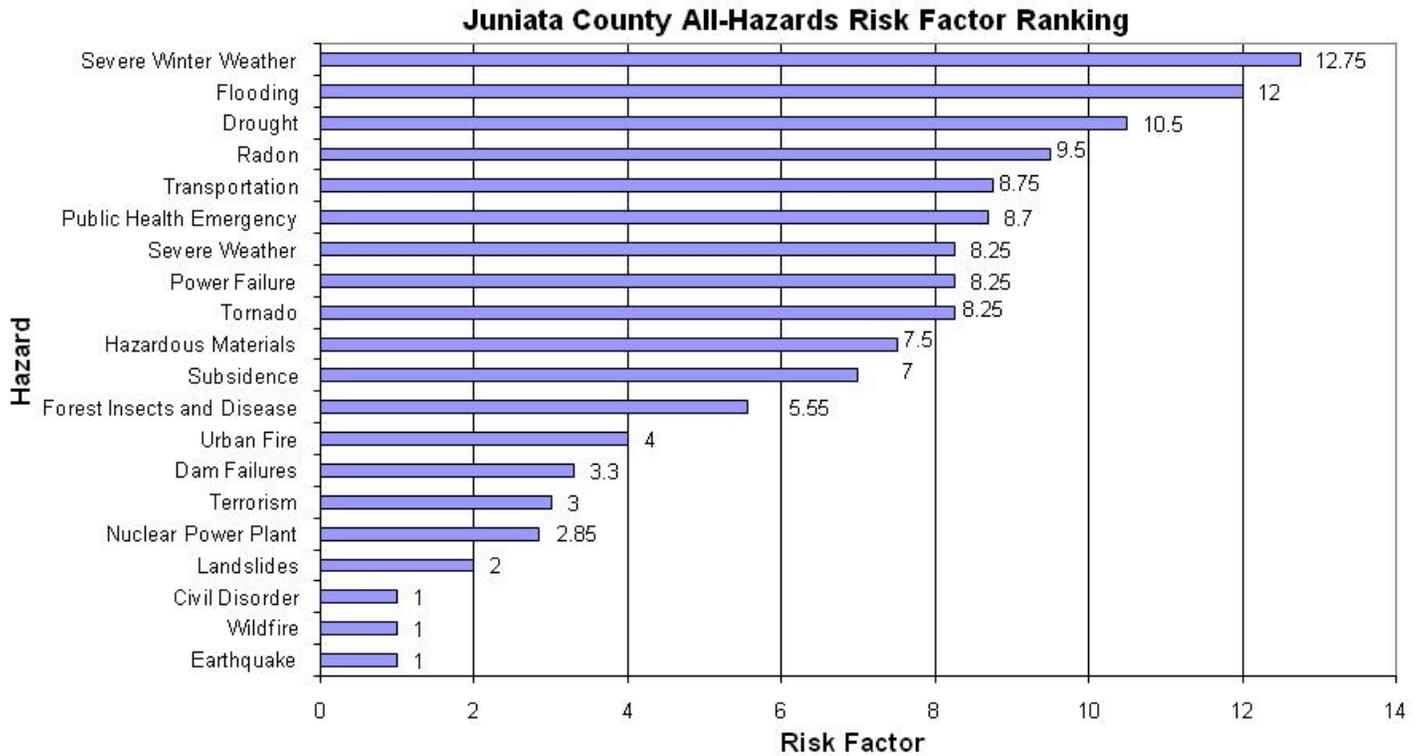
A key component to reducing future losses is to first have a clear understanding of what the current risks are and what steps may be taken to lessen their threat. The development of the Hazard Vulnerability Analysis (HVA) is the critical first step in the entire mitigation process, as it presents an organized and coordinated way of assessing potential hazards and risks. The HVA describes each hazard in terms of its frequency, severity, and County impact, and identifies the effects of both natural and manmade hazards. Numerous hazards were identified as part of the HVA process. The HVA is composed of two primary components — hazard identification and risk assessment.

Hazard Identification

A comprehensive, “all-hazards” list of disasters that have occurred or could occur in Juniata County was developed for the HVA. The hazard profiles section presents data on natural and manmade hazards. The HMP planning team utilized national and state as well as historical data for listings of hazard events. The top three hazards identified in Juniata County were severe winter weather, flooding, and drought. Flooding and severe winter weather are the most common natural hazards in Juniata County and present the greatest potential for significant social and economic impact.

Risk Assessment

The risk associated with each hazard was calculated using a comprehensive risk assessment matrix. The HMP planning team provided the matrix to County officials at an HMP planning meeting for review and comment. The matrix provides a systematic method for assigning a risk factor to a hazard event, based on the impact and frequency of the event and its effect on the population, critical facilities, economy, and environment. This task also involved collecting and integrating data, including an inventory of certain assets that may be affected by natural hazards, such as housing units, critical infrastructure, and Superfund Amendments and Reauthorization Act (SARA) facilities. The following chart illustrates the ranking of all the hazards identified in Juniata County.



Capability Assessment

A Capability Assessment matrix/questionnaire was provided to the municipalities during the planning process at meetings with County officials. These meetings were designed to seek input from key County and municipal stakeholders on legal, fiscal, technical, and administrative capabilities of all jurisdictions. As such, the Capability Assessment helps guide the implementation of mitigation projects and will help evaluate the effectiveness of existing mitigation measures, policies, plans, practices, and programs. Throughout the life of the plan, attention will be given to state, county, or local plans, regulations, and development requirements. These may include, but are not limited to, local plans, zoning ordinances, subdivision and site-specific regulations, building codes, flood insurance programs, natural resources, and conservation statutes. This information was invaluable in preparing the County-wide assessment. The information presented in Section 3 was reviewed and expanded by the Juniata County Planning Department and Emergency Management Agency.

Mitigation Strategy Development

Following the completion of the Hazard Vulnerability Analysis, the HMP planning team developed a mitigation strategy for the County and identified and prioritized project planning goals. The identification and prioritization of project planning goals were based on the findings

of the HVA and were specifically focused on the County's vulnerability to the profiled hazards and the potential severity (i.e., frequency and magnitude) of those hazards. These project planning goals represent the County's vision for minimizing damages caused by flooding and other likely hazards. Mitigation measures and options were developed in terms of preventative measures, property protection, emergency services measures, structural projects, natural resource protection, and public education. They are provided to help the County and local jurisdictions identify appropriate community projects. Critical project information, such as responsibility assignment, guides the implementation of these actions. A process to maintain the plan and update it at least every five years is also included as outlined in "Section 5: Plan Maintenance." The Juniata County EMA is the department directly responsible to the County Board of Commissioners for implementation and maintenance of this HMP.

Hazard Mitigation Plan Goals

The following goal statements denote long-term objectives to reduce or avoid vulnerabilities to flooding and other natural, manmade, and technological hazards profiled.

- Strengthen County and local capabilities to reduce the potential impacts of flooding on existing and future public/private assets, including structures, critical facilities, and infrastructure.
- Increase intergovernmental cooperation and build public/private partnerships to implement activities that will reduce the impact of natural, manmade, and technological hazards.
- Enhance planning and emergency response efforts among state, county, and local emergency management personnel to protect public health and safety.
- Build Juniata County's spatial information resources to strengthen public and private hazard mitigation planning and decision-support capabilities.
- Increase public awareness of both the potential impacts of natural hazards and activities to reduce those impacts.

Plan Review and Adoption

In accordance with federal and state requirements, the governing bodies of each participating jurisdiction must review and adopt by resolution the Juniata County Multi-Jurisdictional Hazard Mitigation Plan. Copies of the adopting resolutions are included in this plan. PEMA and FEMA Region III in Philadelphia will provide the final review and approval for this plan.

Section 1: Overview

Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the Plan (e.g. City Council, County Commissioners, Tribal Council).¹

Introduction

In response to the Disaster Mitigation Act of 2000 (DMA 2000)², the Board of Commissioners for Juniata, Mifflin, and Perry Counties, along with the Tri-County Planning Commission, directed a three-county planning initiative to complete a comprehensive Multi-jurisdictional Hazard Mitigation Plan (HMP) for each of the three Counties and their respective municipalities.

The Juniata County, Mifflin County, and Perry County Board of Commissioners tasked each County's emergency management agency and planning department with preparing the HMP, and each played a critical role in the process. Technical assistance from a Pennsylvania-based consulting firm was also used to prepare this HMP. The Tri-County Planning Commission, working closely with Juniata, Mifflin, and Perry Counties, engaged Delta Development Group, Inc. (Delta), a consulting firm based in Mechanicsburg, Pennsylvania, which provides emergency preparedness consulting services, to help guide each of the three Counties through this multi-jurisdictional planning effort.

Delta assisted in coordinating and leading public involvement meetings and Steering Committee meetings, analysis, and the writing of the Hazard Mitigation Plan. A Federal Emergency Management Agency (FEMA) Hazard Mitigation Planning Grant (HMPG) was secured by the Tri-County Planning Commission and was coupled with local funding from Juniata, Mifflin, and Perry Counties to pay for the preparation of each County's HMP.

Respecting the goals of PEMA and FEMA which require each political jurisdiction to have a FEMA approved HMP; each of the three Counties completed an individual Multi-Jurisdictional HMP. By Juniata, Perry, and Mifflin Counties each having an individual plan, the required five-year maintenance process and the implementation of the planning goals associated with the HMP will be more efficient.

Hazard Mitigation Planning and the Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA 2000) amended the Robert T. Stafford Disaster Relief Emergency Assistance Act by repealing the previous mitigation planning provisions (Section 409) and replacing them with a new set of requirements (Section 322). Through this amendment, Section 322 prescribes new and revitalized approaches to hazard mitigation planning and implementation efforts. Of note to each of the municipalities in Juniata, Mifflin, and

¹ Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

² Disaster Mitigation Act, Public Law 106-390, October 10, 2000.

Perry Counties, is the requirement for state and local governments to have an approved HMP as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds after November 1, 2004.

DMA 2000 – Section 322, Mitigation Planning

“(a) Requirement of Mitigation Plan – As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.”

“(b) Local and Tribal Plans – Each mitigation plan developed by a local or tribal government shall – (1) describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and (2) establish a strategy to implement those actions.”

To implement the new DMA 2000 hazard mitigation planning criteria, FEMA published an Interim Final Rule (the Rule) in the Federal Register at 44 CFR Part 201. The Rule clearly establishes the hazard mitigation planning criteria for state and local plans. According to Section 201.1(b) of the Rule, the purpose of hazard mitigation planning for state, local, and Indian tribal governments is to:

- identify the natural hazards that impact them;
- identify actions and activities to reduce any losses from those hazards; and
- establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

The Rule describes three general types of hazard mitigation plans: standard state mitigation plans, enhanced state mitigation plans, and local mitigation plans. Regardless of the type, the hazard mitigation planning process must be open to the public and provide an opportunity for comment during the drafting stage and prior to the plan approval. Public involvement is important to provide a more comprehensive approach to hazard mitigation planning and to increase the opportunity for successful implementation.

Flood Mitigation Assistance Program³

The Flood Mitigation Assistance (FMA) Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). Although the NFIRA created FMA, the regulations governing this program are found in 44 CFR Part 78. The overall goal of FMA is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other NFIP-insurable structures.

³ <http://www.fema.gov/government/grant/fma/index.shtm>

The program's objectives are to:

- reduce the number of repetitively or substantially damaged structures and the associated claims on the National Flood Insurance program;
- encourage long-term, comprehensive mitigation planning;
- respond to the needs of communities participating in the NFIP to expand their mitigation activities beyond floodplain development review and permitting; and
- complement other federal and state mitigation programs with similar, long-term mitigation goals.

FMA provides grants to communities for projects that reduce the risk of flood damage to structures that have flood insurance coverage. This funding is available for mitigation planning and implementation of mitigation measures only. PEMA is the State Administration Agency (SAA) of the FMA program and is responsible for selecting projects for funding from the applications submitted by all communities within the Commonwealth. PEMA then forwards selected applications to FEMA for an eligibility determination. Individuals cannot apply directly for FMA funds; however, their local government may submit an application on their behalf.

Local Hazard Mitigation Plan Requirements⁴

Local Hazard Mitigation Plan requirements in Section 201.6 of the Rule apply to both local jurisdictions and tribal governments that elect to participate in FEMA mitigation grant programs as a sub-applicant or sub-grantee (henceforth referred to as local jurisdictions). The local mitigation planning requirements in this section encourage agencies at all levels, local residents, businesses, and the nonprofit sector to participate in the mitigation planning and implementation process. This broad public participation enables the development of mitigation actions supported by these various stakeholders and reflects the needs of the community. Private-sector participation, in particular, may lead to identifying local funding that otherwise would not have been considered for mitigation activities.

As with state plans, the DMA 2000 requires that local mitigation plans need only address natural hazards. FEMA recommends, however, that local plans also address manmade and technological hazards, if possible. In many instances, natural disasters have secondary effects, such as dams breaking due to floods, or hazardous material releases due to tornadoes. Multi-hazard plans will better serve communities in the event of such disasters.

States are required to coordinate with local governments in the formation of hazard mitigation strategies. Local strategies combined with initiatives at the state level form the basis for the state mitigation plan. With the information contained in local mitigation plans, states are better able to identify technical assistance needs and prioritize project funding. Furthermore, as communities prepare their plans, states can continually improve the level of detail and comprehensiveness of statewide risk assessments.

⁴ Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000.

For the Pre-Disaster Mitigation (PDM) Program, local jurisdictions must have an approved mitigation plan to receive a project grant. Local jurisdictions must have approved plans by November 1, 2004, to be eligible for Hazard Mitigation Grant Program (HMGP) funding for presidentially declared disasters after this date. Plans approved after November 1, 2004, will enable eligible communities to receive PDM and HMGP project grants.

FEMA's Local Hazard Mitigation Plan Review Crosswalk (Plan Review Crosswalk) provides a checklist of HMP requirements and was used by the respective Counties to ensure this document met the requirements for a Local Hazard Mitigation Plan. The Plan Review Crosswalk is based on the Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000, published by FEMA in March 2004. This Plan Review Crosswalk is consistent with the Disaster Mitigation Act of 2000 (P.L. 106-390), enacted October 30, 2000 and 44 CFR Part 201 – Mitigation Planning, Interim Final Rule (the Rule), published February 26, 2002.

Multi-Jurisdictional Plan Adoption

Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.⁵

A governing body's formal adoption of an HMP is a prerequisite to receiving FEMA's final approval. As such, the Board of Commissioners for Juniata, Mifflin, and Perry Counties, as well as the governing bodies of each participating municipality, executed resolutions proclaiming their approval and acceptance of this Multi-Jurisdictional Hazard Mitigation Plan. Copies of these resolutions are provided in Appendix A.

Adoption of each HMP by the appropriate County and its municipalities will not only allow each municipality to be eligible for disaster mitigation grant funds, but will also provide each municipality with a thorough understanding of its vulnerability to various hazards and a blueprint for mitigating damaging effects.

Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process... Statewide plans will not be accepted as multi-jurisdictional plans.⁶

An open, public process was used in preparing the Juniata, Mifflin, and Perry County HMPs. Meetings with municipal officials, including municipal emergency management coordinators, were conducted to inform and educate them about DMA 2000 and its requirements for Local Hazard Mitigation Plans. In turn, municipal officials provided information related to existing codes and ordinances, the risks and impacts of known hazards on local infrastructure and

⁵ Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

⁶ *Ibid.*

critical facilities, and recommendations for related mitigation opportunities. The pinnacle to the municipal involvement process was the adoption of the final HMP.

Table 1-1 provides a list of the public meetings that were held during the HMP planning process. Each meeting was open to all residents and stakeholders in Juniata, Mifflin, and Perry Counties. Attendance for each meeting is documented in Appendix B.

Table 1-1

Public Meeting Schedule	
Location	Date
Juniata Association of Township Supervisors	11/02/2007
Perry County Council of Governments	11/08/2007
Mifflin County Council of Governments	11/15/2007
Public Meeting for Municipal Officials	02/14/2008
Perry County Association of Township Supervisors	02/23/2008
Juniata County Municipal Officials Work Session	04/29/2008
Mifflin County Council of Governments	05/15/2008
Public Meeting for Municipal Officials	07/17/2008

The Planning Process

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1. An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
- 2. An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private non-profit interests to be involved in the planning process; and*
- 3. Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*

Requirement §201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.⁷

The planning process undertaken to develop the Hazard Mitigation Plan involved a variety of key decision makers and stakeholders within Juniata, Perry, and Mifflin Counties. The initiation

⁷ Ibid.

of the planning process, as early as October 2007, enabled the planners to prepare and customize the process to meet the needs of the participating municipalities, as well as the County. The process was developed around the requirements laid out in FEMA’s Local Hazard Mitigation Crosswalk referenced throughout this plan.

From the beginning of the process, the Board of Commissioners for Juniata, Mifflin, and Perry Counties were proactive in the HMP development process. The key project team, comprised of representatives from the emergency management agency and the planning department for each of the three counties, with the assistance of Delta, selected a steering committee for each County to guide the HMP process. Table 1-2 presents a list of the steering committee members for each of the three Counties.

Table 1-2

Hazard Mitigation Plan Steering Committees			
	Name	Title	Organization
Juniata County	Donna Wood		Greenwood Township
	Ronald L. Miller	Environmental Manager	Empire Kosher
	Kay Hughes	Assistant Superintendent	Juniata County School District
	Tim Manbeck	Township Supervisor	Turnbett Township
	Mark Colussy	Associate Planner	Mifflin/Juniata County
	Allen Weaver	Director	Juniata County EMA
	Bob Kratzer		Juniata Sewage Committee
	Dale S. Shelley	County Commissioner	Juniata County Board of Commissioners
	Teresa L. O'Neal	County Commissioner	Juniata County Board of Commissioners

Table 1-2 (cont.)

Hazard Mitigation Plan Steering Committees			
	Name	Title	Organization
Mifflin County	John Czerniakowski	Assistant Superintendent	Mifflin County School District
	Wilda Fisher	Director	Shelter Services, Inc.
	Roger Breon	Manager, Safety and Security	Lewistown Hospital
	James Tunall	Executive Director	Juniata Valley Area Chamber of Commerce
	Bill Gomes	Planning Director	Mifflin County Planning & Development Department
	Phil Lucas	Director	Mifflin County OPS
	Robert Henry		Juniata Valley Tri-County MH/MR Program
	John E. McCullough	Executive Director	YMCA
	Judy Smith	Chair	Mifflin County Local Emergency Planning Committee
	Rex Fink	Code Enforcement Officer	Lewistown Borough
Perry County	Dave Unger	GIS Coordinator	Perry County
	Jason Finnerty	Planner	Perry County Planning Commission
	Larry Smeigh	EMA Coordinator	Perry County
	Gary Eby		Perry County Transportation
	Dick Amsler		Perry County LEPC
	John McElhiney	Municipal Planner	Perry County
	Stacey Moore		Join Hands Ministry
	Daniel Sheats	Superintendent	Susquenita School District
	Warren R. VanBuskirk	County Commissioner	Perry County Board of Commissioners
	Lori Lower	Children and Youth Services	Perry County

Several public meetings with local elected officials, the Steering Committee, and the key project team were held, as well as work sessions and meetings with each County's Board of Commissioners. At each of the public meetings, municipal officials were strongly encouraged to submit hazard mitigation project opportunity forms, complete their respective portions of the Capability Assessment, and review and eventually adopt the Multi-Jurisdictional HMP. Table 1-3 lists the meetings held during the HMP planning process, as well as what was accomplished at each meeting. Appendix B contains details of who attended each meeting.

Table 1-3

Hazard Mitigation Planning Process Timeline		
Meeting	Date	Outcome
Kick-off Meeting with Perry County Board of Commissioners	09/04/2007	Informed the Commissioners of the HMP process and identified challenges and opportunities to fulfilling DMA 2000. Identified existing studies and sources of information relevant to the HMP. Identified stakeholders and stressed the need for public involvement from the municipalities.
Kick-off Meeting with Mifflin County Board of Commissioners	09/13/2007	
Kick-off meeting with Juniata County Board of Commissioners	10/02/2007	
Juniata Association of Township Supervisors	11/02/2007	Informed the attendants about the hazard mitigation planning process. Sought input for mitigation projects throughout the County. Distributed HMPO forms and Capability Assessment Surveys. Stressed the importance of public involvement from the municipalities.
Perry County Council of Governments	11/08/2007	Informed the attendants about the hazard mitigation planning process. Sought input for mitigation projects throughout the County. Distributed HMPO forms and Capability Assessment Surveys. Stressed the importance of public involvement from the municipalities.
Steering Committee Meeting 1 – Juniata, Mifflin, and Perry Counties	11/13/2007	Provided an overview of the HMP process, discussed the role of the Steering Committee and the importance of its involvement. Distributed HMPO forms and Capability Assessment Surveys and stressed the importance of public involvement from the municipalities and how the Steering Committee can help foster that involvement.
Tri-County MH/MR	11/14/2007	Presented an overview of Delta’s special needs software tool that will be utilized by Juniata, Mifflin, and Perry Counties.
Mifflin County Council of Governments	11/15/2007	Informed the attendants about the hazard mitigation planning process. Sought input for mitigation projects throughout the County. Distributed HMPO forms and Capability Assessment Surveys. Stressed the importance of public involvement from the municipalities.
Project Team Work Session 1	11/29/2007	Discussed the project status, the Hazard Vulnerability Analysis methodology, and early findings.
Steering Committee Meeting 2 – Juniata, Mifflin, and Perry Counties	02/06/2008	Presented the Hazard Vulnerability Analysis findings. The Steering Committee provided feedback and local knowledge to refine the ranking of the top three hazards for each County.

Hazard Mitigation Planning Process Timeline cont.		
Meeting	Date	Outcome
Public Meeting for Municipal Officials of Juniata, Mifflin, and Perry Counties	02/14/2008	Informed the attendants about the hazard mitigation planning process. Sought input for mitigation projects throughout the County. Distributed HMPO forms and Capability Assessment Surveys. Stressed the importance of public involvement from the municipalities. Presented the Hazard Vulnerability Analysis findings and the top three hazards for each County. Discussed the current status of information requested from the municipalities.
Project Team Work Session 2	02/21/2008	Discussed implementation of Delta's special needs software tool. Presented a draft of the Hazard Profiles for each County and finalized the rankings of the top three hazards for each County.
Perry County Association of Township Supervisors	02/23/2008	Informed the attendants about the hazard mitigation planning process. Sought input for mitigation projects throughout the County. Distributed HMPO forms and Capability Assessment Surveys. Stressed the importance of public involvement from the municipalities. Presented the Hazard Vulnerability Analysis findings and the top three hazards for each County. Discussed the current status of information requested from the municipalities.
Project Team Work Session 3	03/26/2008	Discussed issues pertaining to the development of the plan, the adoption process, and implementation of mitigation projects, and developed a strategy to collect outstanding municipal information.
Juniata County Municipal Officials Work Session	04/29/2008	Due to capacity limitations in Juniata County, a work session was held to help municipal officials understand the Hazard Mitigation planning process and their role in filling out the Capability Assessment Survey and the HMPO Forms. All but one Juniata County municipality attended this work session.
Steering Committee Meeting 3	05/06/2008	This meeting focused a status update on the Hazard Mitigation Plan, how best to disseminate the plan for public review and comment, and how the adoption process will take place.
Project Team Work Session 4	05/22/2008	This meeting focused on finalizing the draft plans and preparing for the ranking of the submitted project opportunity forms.
Steering Committee Meeting 4	07/09/2008	At this meeting the Steering Committee was provided a list of the submitted project opportunities and a methodology for raking the submitted project opportunities.

As draft sections of the HMP were developed, they were provided to the Project Team and the Counties' Steering Committee for their review and comment. Each meeting with the Counties' Steering Committee provided opportunity for their feedback on the draft documents.

Once the HMP was prepared and approved at the County level, draft resolutions were prepared for each municipality. The County Board of Commissioners, the County planning offices, and the County emergency management offices assisted in coordinating the adoption process with the municipalities.

The planners, respecting the importance of local knowledge, sought contributions from residents, municipal officials, businesses, and organizations throughout Juniata, Mifflin, and Perry Counties. Extensive efforts were made to incorporate representation from all these groups in the Steering Committees. In this way, hazard vulnerabilities would be assessed from multiple points of view including those of citizens, business owners, school officials, municipal leaders, and county officials.

As the plan was developed, multiple outlets were used to display the HMP documents. Along with public meetings, information regarding each County's HMP was posted on the project Web site created by Delta. A news release invited the public to the presentation of the draft HMP to the County Commissioners and informed the public that the draft HMP was available for review on the County's website during the public review period. These documents are included in Appendix B.

The involvement of both public and private entities within Juniata, Mifflin, and Perry Counties offered valuable input utilized to create a detailed, viable HMP for each County. Local knowledge pertaining to hazards and possible mitigation projects further enhanced the value of this HMP to the County and the municipalities.

Section 2: Hazard Vulnerability and Risk Assessment

Hazard Vulnerability Analysis Methodology

Purpose and Scope

A Hazard Vulnerability Analysis (HVA) evaluates risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposure, and consequences. The Juniata County HVA provides in-depth knowledge of the hazards and vulnerabilities that affect Juniata County and its municipalities. This document uses an all-hazards approach when evaluating the hazards that affect the County, and the associated risks and impacts each hazard present.

This HVA provides the basic information necessary to develop effective hazard mitigation strategies. Moreover, this document provides the foundation for the Juniata County Emergency Operations Plan (EOP), local EOPs, and other public and private emergency management plans.

The Juniata County HVA is not a static document, but rather, requires a five-year review with periodic updates. Potential future hazards and impacts may result from changing technology, new facilities, infrastructure, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area. By contrast, old hazards, such as brownfields and landfills, may pose new threats as the County's development expands.

Using the best information available and Geographic Information Systems (GIS) technologies, the County can objectively analyze its hazards and vulnerabilities. Assessing past events is limited by the number of occurrences, scope, and changing circumstances. For example, ever-changing development patterns in Pennsylvania have a dynamic, and far-reaching impact on traffic patterns, population density and distribution, stormwater runoff, and other related factors.

Methods of Analysis

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancements in technology and methods of operation.

Five criteria were selected to assure a systematic and comprehensive approach to hazard analysis:

History: A record of past events is particularly helpful to evaluate hazards in Juniata County. Both the frequency and severity of past events are useful to predict future events. Past records of the County's hazards also offer valuable information when tempered with the knowledge of preventive efforts, changes in the knowledge of preventive efforts, and advancements in technology that may reduce the frequency or severity of certain events. Other hazards, such as terrorism, must be analyzed based on existing threat elements in and in proximity to Juniata County.

Vulnerability: The susceptibility of a community to property destruction, injury, or death resulting from a hazard event defines the degree of vulnerability. The degree of vulnerability may be related to geographic location (as with floodplains), the type of facility or structure, or the socioeconomics of a given area. Additionally, certain population groups may be more vulnerable to some hazards because of immobility or their inability to take protective action.

Probability: The probability of an occurrence in the future is another important factor to consider when preparing for an all-hazards response. An event that occurs annually with relatively minor impact may deserve more emphasis than a major event that occurs once in 50 or 100 years.

The County relied heavily on existing data sources developed by other Juniata County departments, including the County's existing Hazard Vulnerability Analysis, draft documents of the County Comprehensive Plan, the County Subdivision and Land Development Ordinance, municipal ordinances, digital tax assessment data obtained through the Assessment Department, and GIS data from the Mapping Department.

Information was gathered from a variety of sources to develop hazard profiles. State agency sources included: the PA Department of Environmental Protection (DEP), PA Department of Conservation of Natural Resources (DCNR), and PEMA.

Federal agency sources included: the Bureau of Transportation Statistics, Environmental Protection Agency (EPA), National Climatic Data Center (NCDC), and FEMA.

Maximum Threat: The maximum threat or worst-case disaster should be considered for each hazard. The maximum threat provides an upper boundary for the level of preparedness that may be necessary.

Secondary Effects: Each individual hazard poses certain threats to the County and its municipalities. However, there are also secondary effects of many hazards that can be just as devastating. These secondary effects cause many local hazards to become regional hazards affecting many areas, with differing impacts.

Juniata County Profile

Location and Description

Juniata County, located in the central region of Pennsylvania, is primarily a rural county, rich with natural resources. The County generally lies between the Appalachian Mountain ranges of Shade Mountain and Tuscarora Mountain. Juniata County was created on March 2, 1831, and was taken from a part of Mifflin County, receiving its name from the Juniata River. This river is a tributary of the Susquehanna River and runs 90 miles through central Pennsylvania.

The Juniata River runs through the center of the County from east to west, and is the largest tributary of the Susquehanna River, thus playing a key role in the settlement of the area. The “blue waters” of the Juniata brought early settlers to this region. This river formed an early 18th century region in Pennsylvania, and in the 19th century became a part of the canal system. Mifflintown is set just off of the Juniata River, at the heart of Juniata County, and serves as the county seat.

Today, Juniata County is known for its outdoor recreation, including fishing, seasonal small game hunting, swimming, and boating, along with numerous other activities. Juniata County is also home to the Pomeroy Academia covered bridge, which, at 278 feet, is the longest remaining covered bridge in Pennsylvania. Built in 1902, this single-lane, double-span bridge crosses Tuscarora Creek and is located between Spruce Hill and Beale Townships, Juniata County. The Pomeroy Academia covered bridge is listed on the National Register of Historic Places.

Climate and Weather

The Koppen-Geiger Climate Areas map classifies Juniata County, and the rest of Pennsylvania, as Humid Continental. While the state’s 67 counties share many weather similarities, there are also a few characteristics that are unique to certain regions. Juniata County is labeled as part of the central region, which transitions between the more continental Appalachian Plateaus to the west and north and the relatively more marine southeast. The mountain and ridge-top regions have more extreme climates than the valley bottoms. On average, these mountaintop areas have much lower temperatures, more wind, and more total precipitation. Table 2-1 provides the most applicable data for Juniata County.

Table 2-1

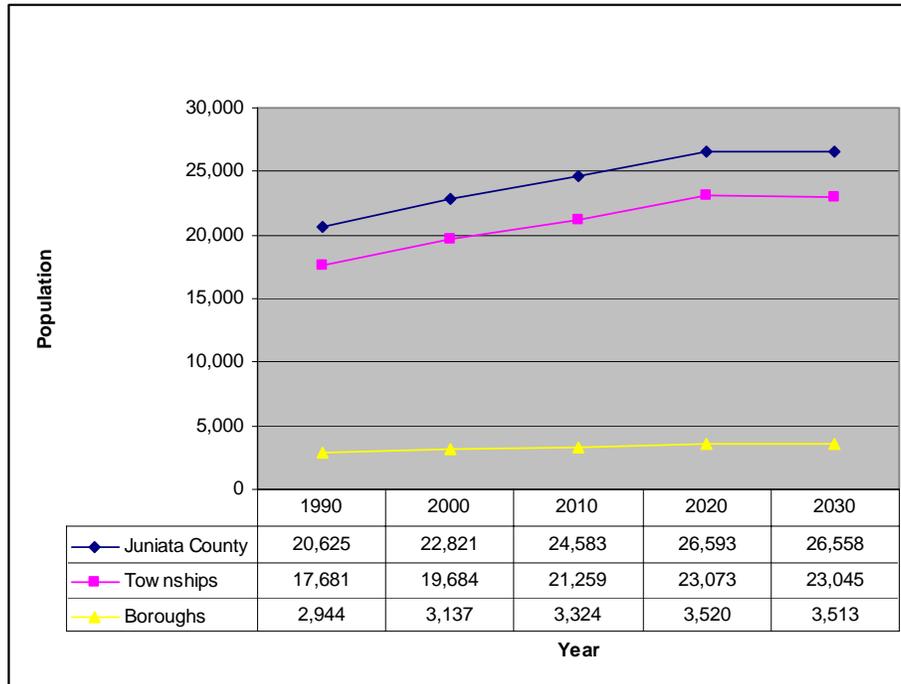
Juniata County Climate – Averages and Records						
Month	Average High	Average Low	Mean Temperature	Average Precipitation	Record High	Record Low
January	36°F	19°F	27°F	2.73 in.	72°F (1967)	-17°F (1994)
February	40°F	20°F	30°F	2.42 in.	78°F (1954)	-12°F (1961)
March	50°F	28°F	39°F	3.37 in.	87°F (1998)	3°F (1993)
April	62°F	38°F	50°F	3.23 in.	92°F (1985)	15°F (1982)
May	73°F	47°F	60°F	4.15 in.	97°F (1962)	28°F (1981)
June	80°F	56°F	68°F	4.58 in.	102°F (1952)	38°F (1986)
July	84°F	61°F	73°F	4.18 in.	102°F (1988)	41°F (1960)
August	83°F	59°F	71°F	3.18 in.	103°F (1948)	35°F (1981)
September	75°F	52°F	64°F	3.58 in.	103°F (1953)	29°F (1963)
October	64°F	40°F	52°F	3.03 in.	95°F (1953)	21°F (1988)
November	52°F	32°F	40°F	3.47 in.	85°F (1950)	8°F (1976)
December	40°F	24°F	32°F	2.93 in.	75°F (1984)	-16°F (1960)

Source: www.weather.com

Population

As shown in Figure 2-1, between 1990 and 2000, Juniata County’s overall population rose by 2,196, or approximately 10.6 percent. The 13 townships within the County accounted for 2,003 individuals, while the four boroughs accounted for the remainder. The largest growth occurred in Milford Township, where the population increased by 25.6 percent, or almost 400 residents, between 1990 and 2000. No population projections can accurately predict all the factors that may affect the County’s future growth rate. However, population projections that are made depend primarily on the economic growth factors in the County and region. Population projections shown in Figure 2-1 indicate that the overall population in Juniata County will rise until 2020 and begin to fall by 2030. Between 2000 and 2030, it is predicted that the overall County population will rise by 16.4 percent.

Figure 2-1



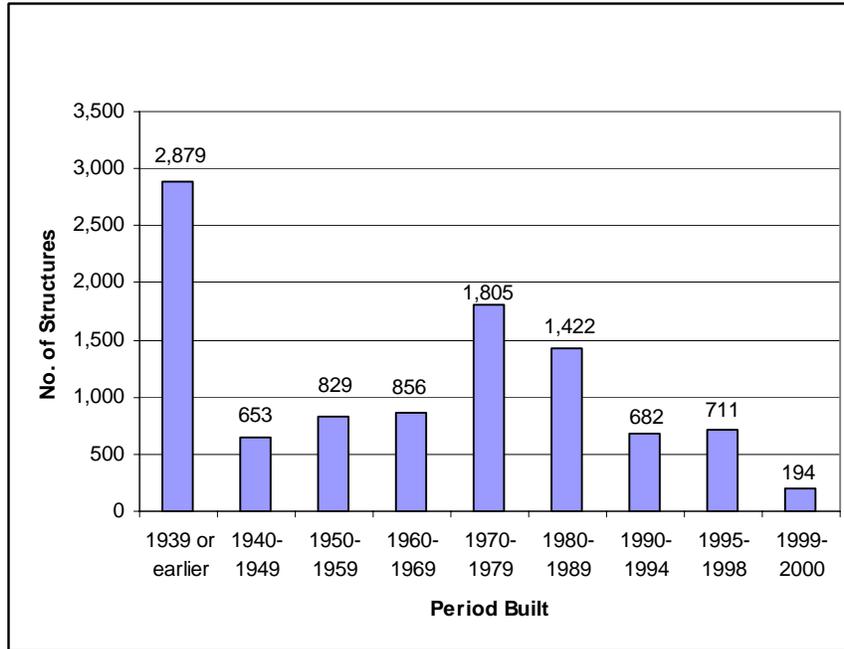
**Source: U.S. Census Bureau, 2000 Census
Projections based on PA Department of Environmental Protection Act 167 Water Plan**

Housing

According to the 2000 census, 74.1 percent of the housing structures in Juniata County are single-family detached structures, and 13.3 percent are mobile homes. Figure 2-2 presents the age of the housing stock in Juniata County. Of the total 10,031 housing units recorded in the 2000 U.S. Census, more than 5,000 were built prior to 1969. Approximately 35 percent of the current total housing stock was built prior to 1950, with almost 29 percent built prior to 1939.

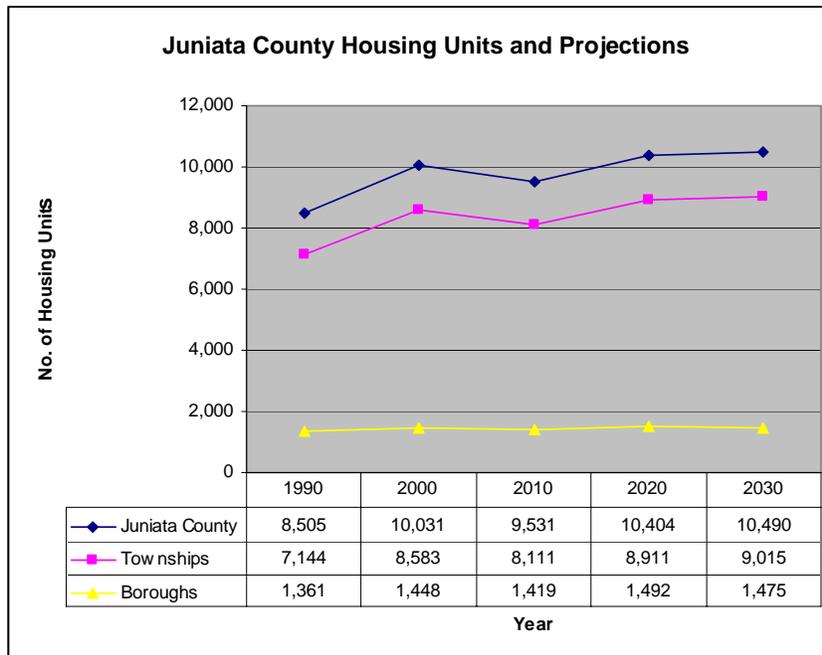
Figure 2-3 presents historical trends in the number of housing units in Juniata County from 1990 and projections through 2030, based on the previous population projections. Although the population is projected to increase, the number of housing structures within the County is expected to grow modestly; between 2000 and 2030, only a 4.5 percent increase is projected.

Figure 2-2



Source: U.S. Census Bureau, 2000 Census

Figure 2-3



Source: U.S. Census Bureau, 2000 Census
Projections based on PA Department of Environmental Protection Act 167 Water Plan

Land Use

Juniata County lies between the Appalachian Mountain ranges of Shade Mountain to the northwest and Tuscarora Mountain to the southeast. The Juniata River snakes through the County from east to west. Approximately 96 percent of Juniata County's total 391 square miles is undeveloped, with around 94 percent of the land devoted to forest and agricultural resources.

Economy

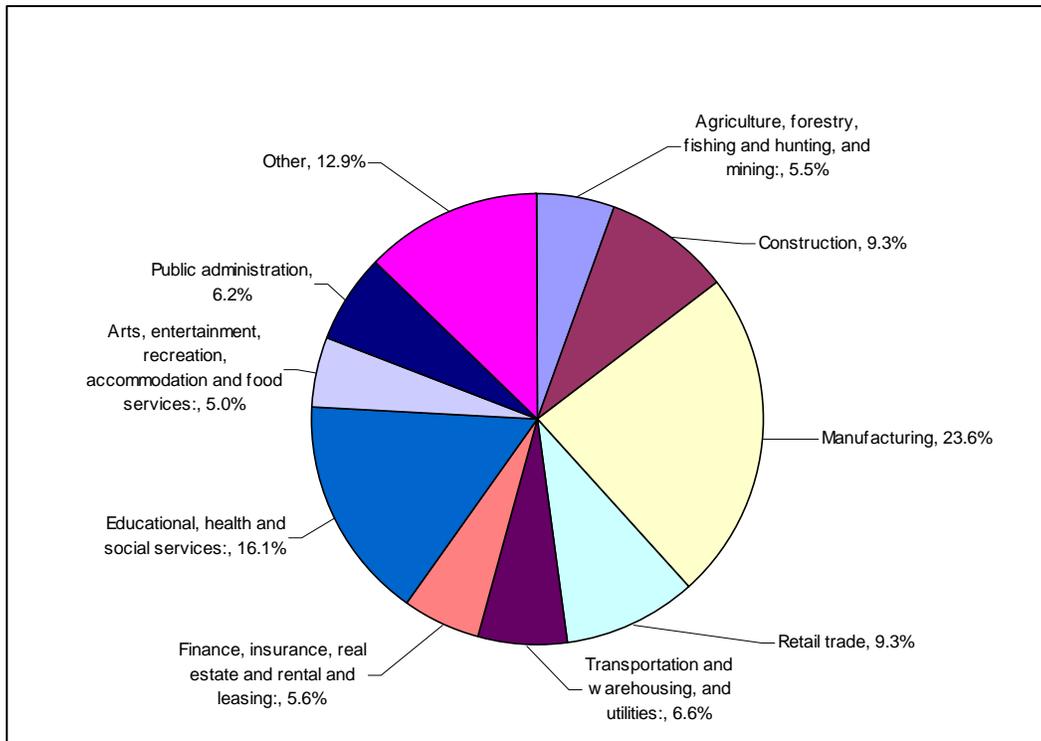
The economy of Juniata County, much like the rest of Pennsylvania, has a rich manufacturing base. Four out of 11 of the County's top employers are in the manufacturing sector. According to data from the Center for Rural Pennsylvania, manufacturing remains the largest industry in Juniata County, accounting for 38 percent of the total workforce. The wholesale and retail trade sector, along with warehousing and transportation, also contribute approximately 30 percent of jobs to the Juniata County workforce.

According to the *Juniata County Land Use and Growth Management Profile*, over 44 percent of Juniata County residents travel outside the County to find employment. Most are commuting to the greater Harrisburg area. Sixty percent of these commuters work in Dauphin, Cumberland, Perry, or York Counties. Other popular destinations are Mifflin, Snyder, and Centre Counties. While 4,678 residents traveled *outside* the County to work according to the 2000 Census, 1,698 traveled from another county *to* Juniata County to work.

The number of businesses in Juniata County grew 6.1 percent between 2004 and 2006. While the number of businesses increased, the number of jobs declined 6 percent between 2004 and 2006.

Figure 2-4 presents the employment by industry breakdown for Juniata County according to the 2000 U.S. Census. Table 2-2 lists the major employers in Juniata County as recorded by the Pennsylvania Department of Labor and Industry.

Figure 2-4



Source: U.S. Census Bureau, 2000 Census

Table 2-2

Juniata County Major Employers	
Employer	Sector
Empire Kosher Poultry, Inc.	Manufacturing
Armstrong Wood Products	Manufacturing
Juniata County School District	Educational Services
Excel Homes Acquisition, LLC	Manufacturing
Zimmerman Truck Lines, Inc.	Transportation and Warehousing
Probuilt Homes, Inc.	Manufacturing
Weis Market, Inc.	Retail Trade
Brookline Manor Nursing Home	Healthcare and Social Assistance
Shiplely Stores, LLC	Accommodation and Food Service
Juniata County	Public Administration
Jay Fulkroad & Sons, Inc.	Construction

Source: Pennsylvania Department of Labor and Industry

Geology

Juniata County is located in the tightly folded and faulted ridge-and-valley region of Pennsylvania. This geologic region is characterized by large amounts of sandstone, shale, and limestone. Layers of the rock are generally in folds. Landforms in this region are most often parallel ridges and valleys eroded from the folded rock. The many ridges and valleys are how the region gets its name.

Geographic formations can restrict the nature and extent of surface development. They can also affect the quality and quantity of groundwater. Juniata County primarily consists of Ordovician bedrock, which is made up of shale, limestone, dolomite, and sandstone-based geographic formations. Limestone formations are highly soluble and can create caverns and cause subsidence and sinkholes (also known as karst topography). Karst topography is sensitive to environmental degradation. The most severe form is the depletion and contamination of groundwater supplies.

Risk Assessment

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.⁸

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.⁹

A comprehensive, all-hazards list of events that have occurred or could occur in Juniata County was developed for this HVA. Appendix C provides a detailed profile of each hazard listed below and describes and analyzes vulnerabilities and risks each hazard presents to Juniata County.

The following hazards were considered:

- civil disorder
- dam failure
- drought
- fire (urban and wildfire)
- flooding
- forest insects and diseases
- geologic hazards (earthquake, landslides, radon, sinkholes, and subsidence)
- hazardous materials spill

⁸ Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

⁹ Ibid.

- nuclear power plant disaster
- public health emergency
- severe weather (hurricanes/tropical storms, winter weather, and extreme temperatures)
- terrorism
- tornados
- transportation accident (air, highway, rail, pipelines)
- utilities failure (electric, water, gas, communications)

Table 2-3 lists the Juniata County Presidential and Governor’s Disaster Declarations that have affected Juniata County from 1954 through 2008, according to the Pennsylvania Emergency Management Agency.

Table 2-3

Pennsylvania Emergency Management Agency Disaster Declaration History Involving Juniata County 1954-2008		
Date	Type	Action
Jun 2006	Proclamation of Emergency - Flooding	Governor, Presidential
Sep 2005	Proclamation of Emergency - Hurricane Katrina	Governor
Sep 2005	Proclamation of Emergency - Hurricane Katrina	Governor
Sep 2004	Tropical Depression Ivan	Governor, Presidential - Major Disaster
Sep 2003	Hurricane Isabel/Henri	Governor, Presidential
Feb 2003	Severe Winter Storm	Governor, Presidential
Sep 1999	Hurricane Floyd	Governor, Presidential - Major Disaster
Aug 1999	Flash Flooding	Governor, Presidential - Major Disaster
Jul 1999	Drought	Governor
Sep 1996	Flooding	Governor, Presidential - Major Disaster
Jan 1996	Severe Winter Storms	Governor, Presidential - Major Disaster
Jan 1996	Flooding	Governor, Presidential - Major Disaster
Jan 1994	Severe Winter Storms	Governor, Presidential - Major Disaster
Mar 1993	Blizzard	Governor, Presidential
Jul 1991	Drought	Governor
Feb 1978	Blizzard	Governor

Pennsylvania Emergency Management Agency Disaster Declaration History Involving Juniata County 1954-2008		
Date	Type	Action
Jan 1978	Heavy Snow	Governor
Oct 1976	Flood	Governor, Presidential - Major Disaster
Sep 1975	Flood (Eloise)	Governor, Presidential - Major Disaster
Apr 1975	High Winds	None
Jun 1972	Flood (Agnes)	Governor, Presidential - Major Disaster
Feb 1972	Heavy Snow	Governor
Jan 1966	Heavy Snow	Governor
Mar 1963	Ice Jam	Governor

Source: Pennsylvania Emergency Management Agency

Note: The Robert T. Stafford Act of 1988 significantly refined criteria for reporting, tracking, and declaring disaster emergencies.

The Juniata County Hazard Risk Assessment Matrix, illustrated in Table 2-4, provides a systematic method for assigning a risk factor to a hazard event, based on the impact and frequency of the event. Values ranging from 1-5 (1 representing a low impact, 5 representing a catastrophic impact) were first assigned to four different vulnerability areas, based on estimated impact: critical facilities, social, economic, and environmental.

These numbers were then weighted by significance. For instance, a high amount of damage to the population (social vulnerability) is more devastating than a high amount of damage to the economy (economic vulnerability). Therefore social vulnerability is weighted at 40 percent while economic vulnerability is weighted at 25 percent. Based on the frequency of occurrence, each hazard is also assigned a value ranging from 1-5 (1 representing an event that occurs once every 31 years or more; 5 representing an annual event). The range of the risk factor score is 0-25. The example below illustrates how a hazard's risk factor is calculated.

$$\text{Risk Factor} = \text{Frequency} \times [(.25 \times \text{Critical Facilities}) + (.40 \times \text{Social}) + (.25 \times \text{Economic}) + (.10 \times \text{Environmental})]$$

An example of this equality in use for a flood can be seen below:

$$5 \times [(.25 \times 1) + (.40 \times 3) + (.25 \times 3) + (.10 \times 2)] = 12$$

Table 2-4

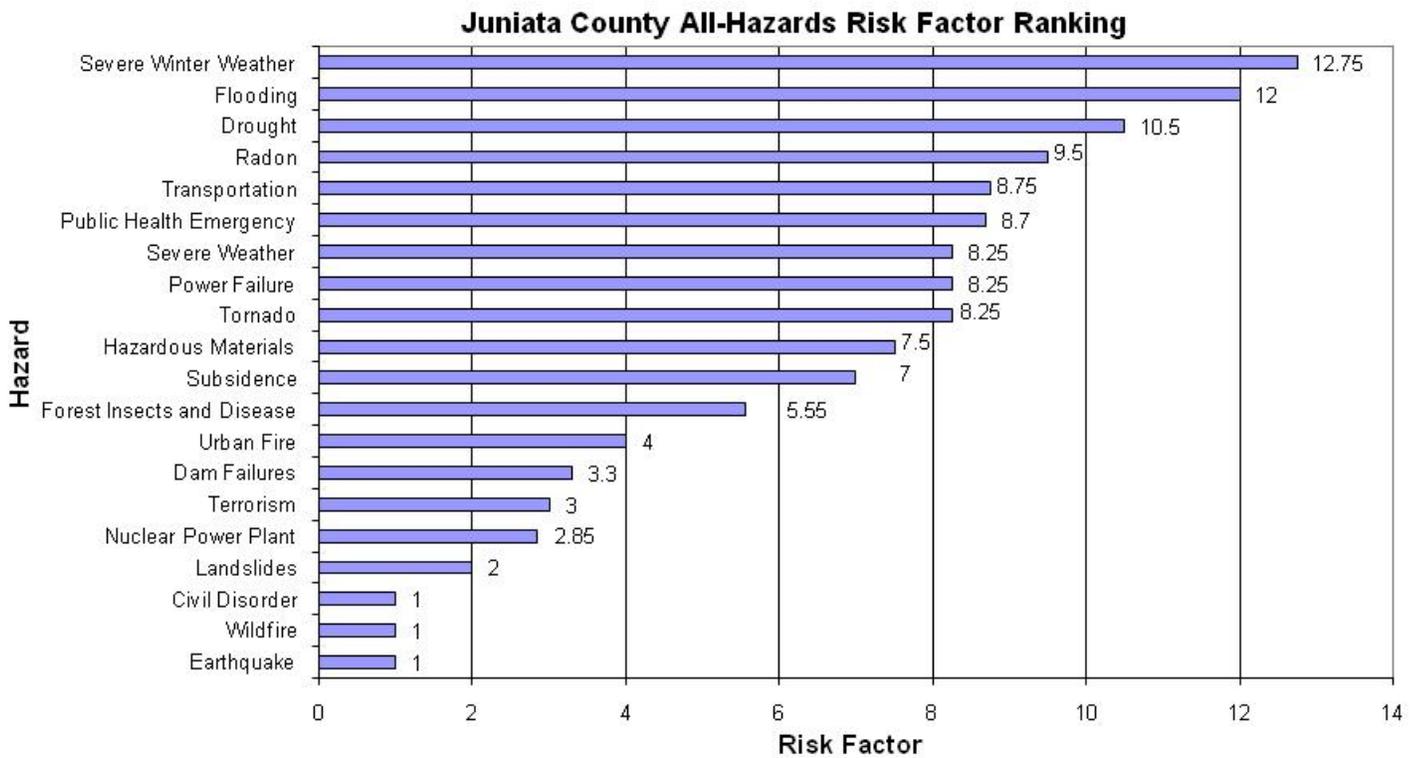
Juniata County Hazard Risk Assessment Matrix														
Frequency		Impact				Risk Factor Index								
Annual Event	5	Catastrophic				$Risk\ Factor = Frequency \times (.25 \times (Critical\ Facilities)) + .40 \times (Social) + .25 \times (Economic) + .10 \times (Environmental)$				2500 - 6.00	Acceptable without review			
Every 5 Years or less	4	Extensive								6.10 - 12.00	Acceptable with review			
Every 10 Years or less	3	High								12.10 - 18.00	Undesirable			
Every 30 Years or less	2	Moderate								18.10 - 25.00	Unacceptable			
Greater than 30 Years	1	Low												
Hazard	Frequency of Occurrence and Likely Location of Event	Impact				Risk Factor	Vulnerability							
		Critical Facilities (25% Vulnerability Factor)	Social (40% Vulnerability Factor)	Economic (25% Vulnerability Factor)	Environmental (10% Vulnerability Factor)		(a) Health and Safety of Persons in the Affected Area at the Time of the Incident (Injury and Death)	(b) Health and Safety of Essential Personnel	(c) Continuity of Government	(d) Property, Facilities, and Infrastructure	(e) Delivery of Services	(f) The Environment	(g) Economic and Financial Condition	
Civil Disorder/Demonstrations - Vulnerabilities and impacts are contingent upon numerous factors including issues, politics, and method of response. Some type of civil disorder occurs annually with minimal impact.	1	Civil Disorder or demonstrations happen often in places such as college campuses. However, the impact of these events is normally low. The County Prison in Mifflintown is the likely location for Civil Disorder.	1	1	1	1	1.000	Nominal impact to the health and safety of people in the affected area.	Nominal impact to first responders. Minor injury from physical confrontations.	Nominal and short-term impact on continuity of government operations.	Impact on property, facilities and infrastructure will likely result from acts of vandalism and will be nominal in scope.	Nominal impact on the delivery of services resulting from work stoppages.	Limited environmental impact unless acts of sabotage are performed.	Economic and financial impact to the community will be nominal.
Dam Failure - Vulnerabilities and impacts are dependent on the type of release (whether gradual or catastrophic), volume released, and its impact to the environment.	2	According to the National Inventory of Dams, Juniata County has no high hazard dams. Licking Creek Dam, the only dam listed in Juniata County by the National Inventory of Dams, is the likely location of a dam failure.	1	2	2	1	3.300	Generally low impact on health and safety. However, the catastrophic, unannounced breach of a high hazard dam could result in a substantial number of deaths and injuries.	Low impact to first responders. Primary threat comes from debris and possible hazardous materials contamination.	Low impact on continuity of government operations unless located in the inundation curve.	Vital lifelines (roads, gas, and water pipelines) may be damaged as a result of released waters.	Moderate impact on the delivery of services to the affected area.	Limited environmental impact that is contingent upon the nature of the inundation area. Urban environments will have higher potential to release hazardous materials.	Impact is contingent upon the nature of the event.
Drought - Vulnerability and impacts are contingent upon the duration of the drought period and area of impact.	5	According to the PA Department of Environmental Protection, Juniata County has been included in 44 drought declarations since 1980. This is a county-wide hazard.	1	2	3	3	10.500	Limited impact. Severe drought conditions may require water rationing and distribution to affected communities.	N/A	Low impact to government. Prolonged drought periods may require the suspension of certain essential services.	Low impact to property, facilities, and infrastructure. Water utilities may lose pressure. Hydroelectric power generation could suffer.	Low impact to the delivery of services. Service providers may be required to make use of alternate water supplies.	Low impact. A reduction to ground water supplies creates situations conducive to sinkholes. Non-domestic animals may be impacted.	Long-term water shortages will have a high impact on agribusiness, public utilities and other industries reliant upon water for production (i.e., plastics) or services (i.e., landscaping).
Earthquake - Vulnerabilities and impacts are contingent upon numerous factors, including geographic location, magnitude, and method of response. The earth is dynamic, and some earthquake events occur annually with minimal impact.	1	No significant earthquakes have been recorded in Juniata County.	1	1	1	1	1.000	Low impact exists for fatalities and injuries. Area of impact generally small.	Moderate impact. Protective actions required to protect responders from fire hazards and environmental concerns.	Low impact, unlikely to cause relocation of government operations.	Low impact to the transportation infrastructure and displaced populations.	Low impact to the delivery of services. Services likely to be temporarily interrupted in the area of impact.	Low impact to area of operations, including animal life, due to limited extent of hazards.	Low impact to the economic and financial community. Primary impact will be to the repair or replacement of structures in the area of operations.
Flooding - Vulnerabilities and impacts are dependent upon the type and location of flooding.	5	According to the National Climatic Data Center, Juniata County has experienced 15 flood events since 1995. Areas along stream and river beds are the most vulnerable.	1	3	3	2	12.000	High impact. Potential for loss of life and injuries, especially in urbanized areas prone to flash flooding.	Potentially high impact to first responders involved in swift water rescue activities. Protective actions required to protect responders from hazards and environmental concerns.	Low impact, unlikely to cause relocation of government operations.	Moderate impact. Utility outages, transportation infrastructure closures, and isolated populations. Varying levels of damage to structures, particularly mobile homes.	Moderate disruption of basic life support systems, typically of short duration.	Environmental impact should be limited to the release of hazardous substances.	Depending on the scope and magnitude of flooding, long-term economic disruption is possible, especially among small businesses.
Forest Insects and Disease - Vulnerabilities and impacts are dependent upon an infestation of a certain insect or forest disease. Impacts can be compounded with other forest stressors such as drought.	3	The invasive Hemlock Woolly Adelgid and Gypsy Moths, among others, are present and monitored in Juniata County.	1	2	2	3	5.550	Low impact to the health and safety of the persons in the affected area. Long term impacts can be greater with deforestation.	Low impact to first responders.	Low impact to the continuity of operations.	Moderate impact to property, facilities, and infrastructure. Forest property will be greatly affected by an infestation.	Nominal impact to the delivery of services. Infestations can limit the supply of timber.	Moderate impact to the environment as infestations can destroy acres of forest land.	Moderate impact to the economy. The wood industry would be most affected.
Hazardous Materials - Vulnerabilities and impacts are dependent on the type of chemical, volume released, its impact to the environment, and meteorology.	5	According to the National Response Center, 16 HAZMAT incidents have occurred in Juniata County between 1990 and 2005. HAZMAT incidents are most likely to occur on or near U.S. Routes 22/322 and 11/15.	1	2	1	2	7.500	High impact to the health and safety of people living in the impacted area.	Protective actions required to protect responders from hazardous materials exposure.	Low impact to continuity of operations.	Moderate impact to property, facilities, and infrastructure.	Low impact to the delivery of services.	Moderate impact to the areas of highest concentration.	Low impact to the economic and financial community of the impacted area.

Juniata County Hazard Risk Assessment Matrix														
Frequency		Impact				Risk Factor Index								
Annual Event	5	Catastrophic				$Risk\ Factor = Frequency \times (.25 \times (Critical\ Facilities)) + .40 \times (Social) + .25 \times (Economic) + .10 \times (Environmental)$								
Every 5 Years or less	4	Extensive												
Every 10 Years or less	3	High												
Every 30 Years or less	2	Moderate												
Greater than 30 Years	1	Low												
2500 - 6.00	Acceptable without review													
6.10 - 12.00	Acceptable with review													
12.10 - 18.00	Undesirable													
18.10 - 25.00	Unacceptable													
Hazard	Frequency of Occurrence and Likely Location of Event	Impact				Risk Factor	Vulnerability							
		Critical Facilities (25% Vulnerability Factor)	Social (40% Vulnerability Factor)	Economic (25% Vulnerability Factor)	Environmental (10% Vulnerability Factor)		(a) Health and Safety of Persons in the Affected Area at the Time of the Incident (Injury and Death)	(b) Health and Safety of Essential Personnel	(c) Continuity of Government	(d) Property, Facilities, and Infrastructure	(e) Delivery of Services	(f) The Environment	(g) Economic and Financial Condition	
Landslides - Vulnerabilities and impacts are contingent upon numerous factors, including geographic location and nature of the slope failure.	2	The Pennsylvania Department of Transportation estimates that spends \$10 million annually to repair roadways damaged by landslides throughout the Commonwealth. This is a county-wide hazard with the greatest impacts occurring along major transportation routes U.S. Routes 22/322 and 11/15.	1	1	1	1	2.000	Nominal impact to the health and safety of people in the affected area unless the landslide is both sudden and catastrophic.	Nominal impact to first responders.	Little or no impact on continuity of government operations.	Vital lifelines (roads, gas, and water pipelines) may be cut as a result of landslides.	Limited impact on the delivery of services.	Limited environmental impact unless the landslide shears pipelines or damages hazardous material storage facilities (above or below ground tanks, etc).	Limited economic and financial impact to the community unless road networks are extensively damaged.
Nuclear Power Plant - Vulnerabilities and impacts contingent upon the type of radiation released, duration of release, direction and speed of winds, and volume of release.	1	Pennsylvania is home to Three Mile Island (TMI), the only nuclear power plant in U.S. history to experience an emergency classification level of General Emergency. Juniata County is outside the 10 mile EPZ but within the 50 mile ingestion zone of the TMI facility.	2	3	3	4	2.850	Potential for significant impact to the health and safety of persons residing in the 10 mile emergency planning zone or 50 mile ingestion pathway zone.	Potential for significant impact. Protective actions and special equipment required to protect responders from radiation exposure.	Low impact to continuity of operations, depending upon the location of the incident. A design basis accident at TMI would have a catastrophic impact on state government operations.	Potentially catastrophic impact to property, facilities, and infrastructure resulting from radionuclide contamination.	Potentially high impact on the delivery of services in and to the affected area.	High impact to the areas of highest concentration of radiological particulate.	High impact to the economic and financial community of the impacted area. Potentially catastrophic impact on agribusiness resulting from radionuclide ingestion and product embargoing.
Power Failure - Vulnerabilities and impacts are contingent upon numerous factors, including time of year, population density, scope of outage area, and duration of the event.	5	Power failures occur annually throughout Juniata County with a minimal impact. Widespread power failures are associated with unusual weather events. This is a county-wide hazard.	1	2	2	1	8.250	Generally low impact on health and safety. However, long-term outages during extremely hot or cold weather can have secondary health consequences.	Nominal impact to first responders.	Low impact on continuity of government operations if emergency backup power sources are available.	Limited impact on property or infrastructure.	Prolonged outages may result in disruption of water/sewage treatment operations.	Environmental impact should be limited to the release of hazardous substances.	Protracted outages could result in substantial disruption of commerce and financial activities, as well as loss of revenue.
Public Health Emergency - Communicable diseases and noncommunicable diseases	3	An avian Bird Flu outbreak in 1986 affected Schuylkill, Northumberland, and Snyder Counties, killing approximately 307,000 chickens and turkeys. This cost the Commonwealth an estimated \$650,000. Juniata County farms are the most likely location for infection.	1	4	3	3	8.700	Potential for significant impact on the general population.	Potential for significant impact on essential personnel. However, with precaution, low impact is expected.	Low impact on continuity of government.	Potential for high impact on property, facilities, and infrastructure, including points of dispensing for Strategic National Stockpile pharmaceuticals.	Low impact on the delivery of services.	Low impact on the environment, unless outbreak of public health emergency would reach animal population and require culling.	A large outbreak could have high impact on the economy of the County.
Radon - No area can be assumed to be risk-free until tests prove so.	5	No home is considered safe from radon until tested. In the first two years of Radon testing in Pennsylvania, approximately 59 percent of all homes tested were found to be contaminated by Radon and Radon products. This is a county-wide hazard.	1	3	1	2	9.500	Over time, impact can be severe. Excessive exposure to Radon is a known cause of lung cancer.	Low impact to first responders. Primary threat comes with exposure over an extended period of time.	Low impact on continuity of government.	Low physical impact on property and facilities. However, untreated high Radon levels can greatly lessen property value.	Low impact on delivery of services.	Radon can have a high impact on the environment if untreated.	Low impact unless high levels of Radon are detected and go untreated, which can severely decrease property value.
Severe Weather (Spring/Summer Storms, High Winds, Hurricanes/Tropical Storms, and Temperature Extremes) - Vulnerability and impacts are a factor of type of event, strength of event, and area of impact.	5	Juniata County is vulnerable to many types of severe weather. Severe weather's impact is county-wide.	1	2	2	1	8.250	Minimal local impact. Minimal potential for loss of life and injuries.	Protective actions require to protect responders from hazards, particularly downed power lines.	Limited impact, unlikely to cause relocation of government operations.	Moderate impact. Utility outages, transportation infrastructure closures, and isolated populations. Varying levels of damage to structures, particularly mobile homes.	Low impact. Local disruption of basic life support systems, typically of short duration.	Low impact on ecosystems.	Limited impact on financial and commercial systems.
Severe Winter Weather (Snow, Hail, Ice, Freezing Rain, and Temperature Extremes) - Vulnerability and impacts are dependent upon the time and intensity of the event.	5	Juniata County is vulnerable to severe winter weather. Severe winter weather can close businesses and schools and disrupt travel. Severe winter weather's impact is county-wide.	2	3	3	1	12.750	Severe winter weather and freezing temperatures can result in hypothermia and other cold-related injuries, especially among the elderly. Snow removal activities can lead to an increase in mortality caused by coronary failure.	Low impact to emergency workers primarily from prolonged exposure to cold temperatures. Secondary danger from vehicular accidents.	Low impact to government. Prolonged severe cold weather periods may require the suspension of services such as public schools.	Low impact. The primary consequence of prolonged severe cold weather is loss of power related to excessive demand, and downed power lines resulting from ice storms.	Limited Impact. The impact to the service delivery would be to medical facilities, nursing homes, and assisted living facilities. Some government offices may be required to shut down.	Moderate impact. There would be limited overall impact to the electric grid.	Prolonged periods of extreme cold weather could have a major impact on business-related heating costs and could lead to short-term fuel shortages and inflation of heating oil and natural gas prices.

Juniata County Hazard Risk Assessment Matrix														
Frequency		Impact				Risk Factor Index				Risk Factor = Frequency x (.25 x (Critical Facilities)) + .40 x (Social) + .25 x (Economic) + .10 x (Environmental))				
Annual Event	5	Catastrophic				2500 - 6.00				Acceptable without review				
Every 5 Years or less	4	Extensive				6.10 - 12.00				Acceptable with review				
Every 10 Years or less	3	High				12.10 - 18.00				Undesirable				
Every 30 Years or less	2	Moderate				18.10 - 25.00				Unacceptable				
Greater than 30 Years	1	Low												
Hazard	Frequency of Occurrence and Likely Location of Event	Impact				Risk Factor	Vulnerability							
		Critical Facilities (25% Vulnerability Factor)	Social (40% Vulnerability Factor)	Economic (25% Vulnerability Factor)	Environmental (10% Vulnerability Factor)		(a) Health and Safety of Persons in the Affected Area at the Time of the Incident (Injury and Death)	(b) Health and Safety of Essential Personnel	(c) Continuity of Government	(d) Property, Facilities, and Infrastructure	(e) Delivery of Services	(f) The Environment	(g) Economic and Financial Condition	
Subsidence - Vulnerabilities and impacts are contingent upon numerous factors, including geographic location, whether it is gradual or catastrophic, and method of response.	5	Subsidence-related events occur several times a year with minimal impact. These events are a characteristic of karst topography that results from dissolution and collapse of carbonate rock, such as limestone and dolomite. Areas of Juniata County with with carbonate rock are the most vulnerable.	1	2	1	1	7.000	Nominal impact to the health and safety of people in the affected area, as most events are not catastrophic in nature.	Nominal impact to first responders.	Little or no impact on continuity of government operations.	Vital lifelines (roads, gas and water pipelines) may be damaged as a result of subsidence.	Limited impact on the delivery of services.	Limited environmental impact unless the subsidence shears pipelines or damages hazardous material storage facilities (above or below ground tanks, etc).	Limited economic and financial impact to the community unless road networks are extensively damaged.
Terrorism, to include CBRNE (Chemical, Biological, Radiological, Nuclear, and Explosive) - Vulnerabilities and impacts are contingent upon the method of the attack, the amount of force applied, and the population density of attack location.	1	While terrorism attacks are not frequent, Pennsylvania has many targets of interest, including political, industrial, historical, agricultural, and military. Farms and major transportation routes are the most likely target in Juniata County.	3	3	3	3	3.000	Moderate impact to the health and safety of people in the affected area.	Protective actions required to protect responders from chemical, nuclear, and biological hazard exposure.	Impact on continuity of operations can range from nominal to catastrophic and will be contingent upon the type and location of the terrorism event.	Impact on property, facilities, and infrastructure can range from nominal to catastrophic and will be contingent upon the type and location of the terrorism event.	Impact on the delivery of services can range from nominal to catastrophic and will be contingent upon the type and location of the terrorism event.	Environmental impact can range from nominal to catastrophic and will be contingent upon the type and location of the terrorism event.	Economic and financial impact to the community can range from nominal to catastrophic and will be contingent upon the type and location of the terrorism event.
Tornado - Vulnerability and impacts are contingent upon the strength of the tornado, time of day, time on the ground, and area of impact.	5	According to the National Climatic Data Center, Juniata County has witnessed 3 tornados since 2003. Generally, flat, low-lying areas are most vulnerable to tornados.	1	2	2	1	8.250	Extensive impact in the affected area. Potential for mass fatalities and large number of injured.	Moderate impact. Personal protective equipment is required for emergency worker safety from downed utility lines, hazardous materials, and debris.	Locally affected government agencies may be forced to relocate some mission-critical operations.	Extensive local impact. Massive failures in electrical, communications, and other critical infrastructure.	Extensive impact in the area of impact. Wide-spread, short term disruptions in basic life support services in affected areas. 911 systems temporarily overwhelmed.	Low impact on ecosystems	Limited impact on financial and commercial systems.
Transportation - Vulnerabilities and impacts are contingent upon numerous factors, including location, timing, and method of response. Some type of transportation event occurs every day with minimal impact.	5	With U.S. Routes 22/322 and 11/15 traveling through Juniata County, transportation incidents occur annually, most often with minimal impacts. Airline, railway, and pipeline incidents are less frequent. Most transportation incidents occur along major transportation routes.	1	2	2	2	8.750	Fatal accidents occur annually.	Nominal risk to first responders.	Low impact on continuity of government operations.	Moderate impact on property or infrastructure.	Nominal impact on the delivery of services	Environmental impact should be limited to the release of hazardous substances.	Nominal impact.
Urban Fire - Vulnerabilities and impacts are contingent upon numerous factors, including geographic location, whether it is gradual or catastrophic, and method of response. Some type of urban fire occurs every day with minimal impact.	4	Urban fires that involve one or more structures occur annually with varying impacts. More populated areas of Juniata County are most vulnerable to these events.	1	1	1	1	4.000	Urban structure fire-related deaths occur annually.	Moderate risk to emergency responders as a result of training and personal protective equipment.	Low impact on continuity of government operations.	Moderate impact on property or infrastructure, structures burned, and displaced populations.	Nominal impact on the delivery of services.	Environmental impact should be limited to the release of hazardous substances.	Nominal impact.
Wildfire - Vulnerabilities and impacts are dependent on the location and climatological / meteorological conditions.	1	According to the National Climatic Data Center, no significant wildfires have been recorded in Juniata County. The size and impact of the incident depends on location, climate conditions, and the response. Rural areas of the County are most vulnerable to wildfire.	1	1	1	1	1.000	Low potential exists for fatalities and injuries.	Moderate impact. Protective actions required to protect responders from fire hazards.	Low impact, unlikely to cause relocation of government operations.	Low impact to the infrastructure.	Low impact to the delivery of services. Services likely to be temporarily interrupted in the area of impact.	Low impact to area of operations, including animal life, due to limited extent of fires.	Low impact to the economic and financial community. Primary impact will be to the replacement of structures in the area of operations.

As illustrated in Figure 2-5, each hazard level is associated with a risk factor. Risk factors help risk management team members differentiate credible high-hazard threats that may result in loss of life and property from less probable risks.

Figure 2-5



The top three hazards as identified in Juniata County are severe winter weather, flooding, and drought. While the HVA focuses on the top three hazards, the analysis illustrates how often these hazards are inter-related, causing or being caused by other hazards. The vulnerability of critical facilities, social, economic, and environmental factors is analyzed by the threat each hazard proposes. A detailed description of all hazards is found in Appendix C: Hazard Profiles.

Vulnerability Assessment: Identifying Assets

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.¹⁰

Critical Facilities Vulnerability Assessment

The location identification of critical facilities in Juniata County is crucial to assess their vulnerability to hazards. Critical facilities in this report are defined as those structures critical to the operation of a community and the key installations of the economic sector. Examples are schools, police stations, government buildings, hospitals and care facilities, air strips, fuel storage depots, food storage facilities, and water supply systems.

It is important to know the threats each hazard poses to these facilities. Juniata County currently does not have a GIS database of the locations of its critical facilities. It is a hazard mitigation planning goal of the County to create and maintain this database to better analyze the impacts certain hazards, such as flooding, have on the County and municipal critical facilities.

While substantial research has not been completed to date, Juniata County should not experience a population growth large enough to project significant expansions to the current number of critical facilities. The Juniata County Comprehensive Plan update, scheduled to be completed by the second quarter of 2009, will provide more information on the projected growth patterns in the County.

Severe Winter Weather

Many parts of Pennsylvania, including Juniata County, are impacted annually by severe winter weather. These severe winter storms can affect critical facilities with a multitude of secondary effects, such as difficult and dangerous traveling conditions, power failures, and extensive flooding during spring thaws.

The critical facilities in Juniata County are moderately impacted by severe winter weather. These facilities can withstand the heavy snow, hail, ice, freezing rain, and temperature extremes caused by severe winter weather. However, the greatest impact of this hazard on critical facilities comes from prolonged power outages and closings of transportation infrastructure. These lengthy periods of cold weather and severe winter storms can lead to widespread closings of schools, daycares, and other public facilities. Power failures as a result of severe winter weather can leave these public facilities without heat and unable to provide their services. Transportation infrastructure closings make it difficult for employees and users to travel to the critical facilities. However, due to the many possible types of severe winter weather, the effects of the hazard may vary depending on the type of storm, its size, and duration.

¹⁰ Ibid.

Refer to Appendix C: Severe Weather Hazard Profile for more detail.

Flooding

Critical facilities' vulnerability to flooding is normally low, because these structures are not often constructed within the 100-year floodplain. Overall, flooding has a low impact on the critical facilities in Juniata County. However, secondary effects of hazards can have a significant effect on critical facilities. Power failures, hazardous material spills, and transportation infrastructure closings are all common secondary effects of flooding events.

Floodplain mapping includes only points within a two-dimensional (longitude and latitude) plane and does not include attribute information for first-floor flooding elevations; this information is essential to assess the base flood elevation's impacts on the County's critical facilities. The GIS database to be created by Juniata County should strive to obtain first-floor flood elevations for all critical facilities.

Refer to Appendix C: Flooding Hazard Profile for more detail.

Drought

Droughts have a low impact on the critical facilities in Juniata County. Usually, these hazard events do not affect the day-to-day operations of most critical facilities. However, prolonged periods of drought may have a greater impact by limiting the response and increasing the vulnerability to other hazards such as severe weather, extreme heat, public health emergencies, urban fires, and wildfires.

Refer to Appendix C: Drought Hazard Profile for more detail.

Social Vulnerability Assessment

The social vulnerability assessment identifies how the top hazards affect the population of Juniata County, and identifies areas of special needs populations, which consist of people with disabilities, people over the age of 65, and people living alone, among others. The special needs population must be identified and targeted in successful mitigation efforts. Table 2-5 presents an overview of the special needs population in Juniata County according to 1990 and 2000 U.S. Census data.

According to the U.S. Census, Juniata County has a growing elderly population, an increasing number of householders living alone, and an increasing number of citizens that do not speak English well. There has also been a significant increase in the number of County residents living below the poverty line. These individuals are just an example of the special needs population of Juniata County. Should a natural or manmade hazard impact these residents, it is important to know their location and their individual needs.

It is a hazard mitigation planning goal of the County to create and maintain a special needs registry to assist in locating and evacuating the special needs population in emergency situations.

Table 2-5

Juniata County Special Needs Population			
	1990	2000	% Change
Total Population	20,625	22,821	10.6%
Urban Population	0	3,340	-
Rural Population	20,625	19,481	-5.5%
Elderly (65+)	2,987	3,462	15.9%
Householder Living Alone	1,549	1,801	16.3%
Renter Occupied Dwellings	1,713	1,913	11.7%
Non-English Speaking Population	63	159	152.3%
Population Living in Poverty	618	2,109	241.3%
Institutionalized Population	333	429	28.8%
Disabilities (age 5+)	-	6,666	-
Sensory Disability	-	800	-
Physical Disability	-	1,613	-
Mental Disability	-	854	-
Self-Care Disability	-	513	-
Go-Outside-Home Disability	-	1,394	-
Employment Disability	-	1,492	-

Source: U.S. Census Bureau

Severe Winter Weather

An array of severe winter weather can affect Juniata County. Severe winter weather has a high impact on the population of Juniata County. High social vulnerability comes as a result of severe winter weather causing businesses and schools to close, travel to become dangerous or impossible, and living conditions to become dangerous as a result of extreme temperatures and prolonged power loss.

Human exposure to prolonged storms can result in hypothermia and can exacerbate other illnesses, especially among the elderly, young children, and the disabled population.

Secondary effects of severe winter weather, including power outages, transportation infrastructure closings, and flooding during spring snow thaws, can also have a great impact on the population. Flooding often occurs following late winter/early spring snow storms that can melt rapidly, adding more groundwater than the local stream system can handle. These flooding events can be worsened by frigid temperatures that may follow the early spring thaw.

Refer to Appendix C: Severe Weather Hazard Profile for more detail.

Flooding

Juniata County is highly vulnerable to floodings. Flooding puts the entire population at some level of risk, whether through the flooding of their homes, businesses, places of employment, or the road, sewer, and water infrastructure that serve them daily.

High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. The secondary effects caused by flooding can add to the damages. Power loss can leave citizens without heat for extended periods of time. The transportation infrastructure of the County can be crippled by flooding events, endangering citizens attempting to travel or evacuate the area, as well as leaving those remaining without goods and services.

The NFIP establishes minimum floodplain management criteria. Property owners in the floodplain should comply with land use floodplain regulations for their communities. The NFIP's Community Ratings System (CRS) discounts flood insurance premiums in communities that establish floodplain management programs that go beyond NFIP minimum requirements. Under the CRS, communities receive credit for more restrictive regulations; acquisition, relocation, or flood-proofing of flood-prone buildings; preservation of open space; and other measures that reduce flood damages or protect the natural resources and functions of the floodplain.

Refer to Appendix C: Flooding Hazard Profile for more detail.

Drought

A drought event has a moderate impact on the population of Juniata County. Most droughts do not directly affect the lives of citizens; however, with prolonged periods of drought, citizens are often forced to limit their water usage. A socioeconomic drought, which refers to a drought that occurs when physical water shortages begin to affect people, can have a great effect on the population of the County.

Low amounts of moisture and precipitation can increase the vulnerability of forests and open fields to wildfires, which may cause injuries, deaths, and extensive damage to property throughout the County.

In addition to the effects drought can have on farming, a drought can also limit the amount of clean water available for drinking, sanitation, and hygiene. This can lead to the outbreak and spread of many life-threatening diseases.

Refer to Appendix C: Drought Hazard Profile for more detail.

Economic Vulnerability Assessment

A community's economic vulnerability is an important factor to consider when assessing the effects of certain hazards. Loss of income or loss of jobs through business interruption or closures can devastate a community. The economic vulnerability of Juniata County when facing the top three hazards (severe winter weather, flooding, and drought) is analyzed in this section. Each hazard presents certain risks to the economy of the County.

This analysis determines the hazard vulnerabilities of economic centers. It is essential to identify the potential negative impacts the greatest hazards may have on the County economy. This enables the prioritization of potential hazard mitigation strategies to eliminate or reduce the risks these hazards present.

Severe Winter Weather

The impact severe winter weather has on the Juniata County economy is high. Prolonged periods of snow and extreme temperatures can hinder travel to and from economic centers in the County. Secondary effects also play a crucial role in the severity of this hazard.

Flooding, as previously discussed, can shut down economic centers, by destroying property, goods, and ruining buildings and equipment. Power loss can shut down businesses for a lengthy period of time. Transportation infrastructure can be closed due to the severe winter weather, making it dangerous or impossible for both consumer and employers to reach places of business. Extended periods of cold can expand business operating expenses with increased heating costs and snow removal costs.

Refer to Appendix C: Severe Weather Hazard Profile for more detail.

Flooding

The Juniata County economy is highly impacted by flooding. The potential impacts on the economy presented by this hazard can lead to long-term economic disruption, especially among small businesses. Flooding can destroy the physical structures, merchandise, and equipment essential for business operations. Secondary effects of flooding include power outages and transportation accidents. Power outages can stop a business from operating, while transportation accidents can hinder the supply of essential goods, services, and supplies.

Refer to Appendix C: Flooding Hazard Profile for more detail.

Drought

The economy of Juniata County is highly impacted by drought events. Commercial areas, farming operations, and agriculture-dependent industries will be affected by a drought. The impact to these areas ultimately affects the financial and economic vitality of the County. Two of Juniata County's major employers, Empire Kosher Poultry Inc. and Armstrong Wood Products, would be directly affected by a drought that could make it difficult to raise poultry and/or could threaten the health of the woodland areas.

Drought conditions often provide too little water to support farming, affecting both the crops grown for human consumption and the grass and grain used to feed livestock. When drought undermines or destroys food sources, people can go hungry both because of the drought's effect on crops and on the health of the livestock population. When the drought is severe and continues over a long period, famine may occur.

The effects of drought also increase the vulnerability to other hazards such as wildfires. Further, low water conditions make any response to fire hazard problematic. The lumber industry in Juniata County would also be directly affected by a drought.

Refer to Appendix C: Drought Hazard Profile for more detail.

Environmental Vulnerability Assessment

An environmental vulnerability assessment identifies environmental resources that may be impacted by hazards and their secondary effects, such as toxic releases during hazardous material spills. Superfund Amendments and Reauthorization Act (SARA) facilities are, according to the EPA, an uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people.¹¹ Further detail on the County's SARA facilities is available through the County Emergency Management Agency.

Juniata County currently does not have a GIS database of the locations of its SARA facilities. It is a hazard mitigation planning goal of the County to create and maintain this database to better analyze the impacts certain hazards, such as flooding, have on the County and SARA facilities.

¹¹ <http://www.epa.gov/reg3hwmd/super/pa.htm> (March 2008).

The location, identification of hazardous material spills, and associated dangers with each of the County's SARA facilities is critical in assessing the potential impacts hazards may have on the environment of Juniata County.

Severe Winter Weather

Severe winter weather has a relatively low impact on the environment of Juniata County. Juniata County's location in central Pennsylvania makes it susceptible to an array of severe winter weather, and, while these hazards can have devastating effects, they do not often pose a direct threat to the environment.

However, secondary effects of severe winter weather can impact the environment. Most notably, flooding after a spring thaw can contaminate ground water with raw sewage, animal carcasses, chemicals, pesticides, or other hazardous materials. Severe winter weather itself can lead to traffic accidents, potentially causing hazardous material spills on roads.

Refer to Appendix C: Severe Weather Hazard Profile for more detail.

Flooding

The environment of Juniata County is moderately impacted by flooding. For the most part, flooding is a natural occurrence and, alone, cannot do much harm to the environment. However, the secondary effects caused by flooding can have negative effects on the County's environment. Often times, when flood waters rise quickly, catching the public off guard or unprepared, they can create contamination. For example, flooding can result in contamination (a secondary hazard) when raw sewage, animal carcasses, chemicals, pesticides, or other hazardous materials are transported through sensitive habitats, neighborhoods, water recharge areas, or business settings. Events such as these require major clean-up and remediation efforts.

The flooding of SARA facilities can be a significant threat to the environment. However, floodplain mapping often includes only points within a two-dimensional (longitude and latitude) plane and does not include attribute information for first-floor flooding elevations; this information is essential to assess the base flood elevation's impacts on the County's SARA facilities. The GIS database to be created by Juniata County should strive to obtain first-floor flood elevations for all SARA facilities.

Refer to Appendix C: Flooding Hazard Profile for more detail.

Drought

The environment in Juniata County is highly impacted by a drought event. Prolonged periods of drought can increase the desertification of the land due to the lack of moisture in the ground. Wind and water erosion of soils can leave the ground barren and without the necessary nutrient soils to grow crops.

Animal species and the fish population can be degraded by a lack of available water. Disease can be more prominent and spread rapidly among the animal and fish population. Plant species are also threatened by a loss of top soils to erosion and a lack of moisture in the ground.

As previously stated, drought events can add to a loss of wildlife areas due to wildfires that spread rapidly in the dry conditions.

Refer to Appendix C: Drought Hazard Profile for more detail.

Vulnerability Assessment: Estimating Potential Property Loss

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area.¹²

Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.¹³

Potential Property Loss due to Flooding

Juniata County currently does not have a GIS database of tax parcels and the assessed value of the structures within each tax parcel. The lack of this data does not allow for the analysis of potential property loss due to flooding.

It is a hazard mitigation planning goal of the County to create and maintain such a database of to better analyze the impacts a flooding event has on the County and its citizens. This database should also include the first-floor flood elevations of the identified structures to allow for a more thorough impact analysis.

Repetitive Loss Properties

FEMA defines a repetitive loss property as any insurable building that has experienced two losses in a 10-year period in which each loss is \$1,000 or more. A repetitive loss property may or may not be currently insured by the NFIP.

The Juniata County HMP attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction are often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

Flooding is the most common cause of repetitive loss in Juniata County. Table 2-6 illustrates the number of repetitive loss properties, by municipality, for Juniata County. According to this data, Juniata County has a total of 20 repetitive loss properties spread throughout nine of its 17 municipalities. Of the 20 recorded repetitive loss properties, eight do not carry insurance. The combined property value for Juniata County's repetitive loss properties is more than \$1.6 million. The potential loss of these properties could greatly impact the County. Due to privacy concerns, detailed information on these properties is retained by the Juniata County Emergency Management Agency.

¹² Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

¹³ Ibid.

Table 2-6

Juniata County Repetitive Loss Properties							
Municipality	Number of Repetitive Loss Properties	Insured	Not Insured	Combined Value	Non-Residential	Single Family	Multi-Family
Delaware Township	1	0	1	\$ 69,500	-	1	-
Fermanagh Township	7	3	4	\$ 488,740	-	7	-
Mifflin Borough	1	1	0	\$ 73,062	-	1	-
Monroe Township	1	1	0	\$ 33,400	-	1	-
Susquehanna Township	2	0	2	\$ 407,374	2	-	-
Thompsontown Borough	1	0	1	\$ 15,000	-	-	1
Turbett Township	3	3	0	\$ 363,736	-	2	1
Tuscarora Township	2	2	0	\$ 125,983	-	2	-
Walker Township	2	2	0	\$ 114,645	-	2	-
Total	20	12	8	\$ 1,691,440	2	16	2

Source: Federal Emergency Management Agency

Vulnerability Assessment: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of the land uses and development trends within the community so that mitigation options can be considered in future land use decisions.¹⁴

Overview

An examination of recent development trends in Juniata County can help identify and anticipate future vulnerabilities to hazards. The impact of these hazards may be affected by the County's growth and development.

Juniata County is projected to see a population increase of 16.4 percent between 2000 and 2030. Significant growth is projected in the most populated municipalities of the County. Fayette Township, Fermanagh Township, Monroe Township, and Walker Township, all of which had more than 2,000 residents in the year 2000, are all projected to see a population increase of greater than 17 percent by the year 2030.

Based on the Juniata County population per household, according to the 2000 U.S. Census, approximately 10,404 housing units are projected for the County by 2020. This represents an increase of 3.7 percent from 2000. Continued conformity with the State Building Codes and local land use ordinances will help to mitigate the effects hazards have on new development.

Impervious Surface Coverage

Impervious surface coverage data from 1985 and 2000¹⁵ was analyzed to determine static development trends and developing areas in relation to corresponding hazards. This information was coupled with the 100-year floodplain dataset to show where development within the floodplain is occurring.

A comparison of impervious surface coverage data provides a logical method of detecting change in the Juniata County growth and development patterns. Impervious surface data, estimated from Thematic Mapper data using algorithms developed by Dr. Toby Carlson at Penn State University, University Park, Pennsylvania, was originally generated to support hydrologic investigations. This data is also useful for assessing urbanization and development patterns over time. Impervious surfaces primarily reflect the urban and built environment that includes rooftops, sidewalks, roads, and parking lots.

By examining impervious surface data in Juniata County, a certain level of vulnerability to certain hazards, such as flooding and transportation issues, can be assumed. This may generate recommendations to examine certain areas in more detail to better mitigate specific hazardous threats, such as flooding.

¹⁴ Ibid.

¹⁵ Pennsylvania State University, 1985 and 2000.

Figures 2-6 and 2-7 on the following pages illustrate the change in impervious surface coverage from 1985 to 2000 in Juniata County. According to Figure 2-6, Juniata County was significantly developed in the Boroughs of Mifflintown and Port Royal.

The 2000 impervious surface coverage, shown in Figure 2-7, illustrates expanded development in and around Mifflintown Borough, as well as significant development in Fermanagh Township along U.S. Route 22/322, Fayette Township, and Thompsontown Borough.

Development can often change the threat level of an area by placing additional critical facilities, businesses, transportation networks, and populations within vulnerable areas. Development in Fermanagh Township has occurred near the floodplain along U.S. Route 22. Thompsontown Borough and Mifflintown Borough's growth has also occurred near the floodplain. Refer to Appendix C: Flooding Hazard Profile for a more detailed discussion of this hazard.

Another common hazard that is affected by development is transportation incidents. Population growth brings a greater demand for goods and services, which can put a strain on the transportation infrastructure. Fermanagh Township's growth has occurred near U.S. Route 22/322, the major transportation route through Juniata County. Most often, development occurs near existing transportation infrastructure because of ease of access to surrounding areas for goods, services, and employment. Therefore, with a greater population of drivers using the transportation network, transportation hazards are likely to increase. Refer to Appendix C: Transportation Hazard Profile and Hazardous Material Profile for a more detailed discussion of these hazards.

While it can be difficult to curb development, it is to the municipalities' advantage to be aware of development trends in order to successfully mitigate future hazards as risks increase. Since local municipalities have enacted floodplain ordinances and building codes future vulnerability to hazards will be minimized.

Table 2-6

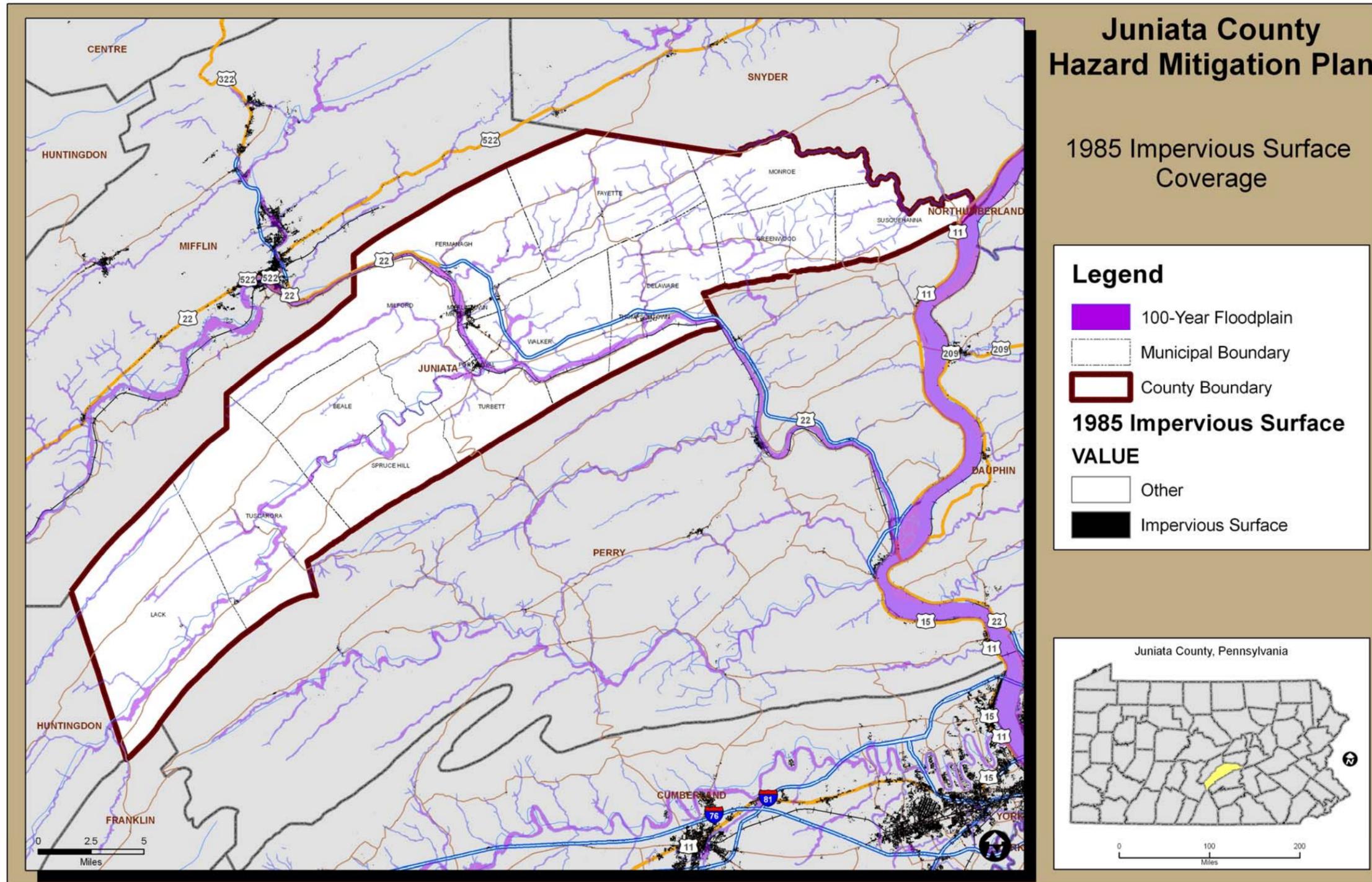
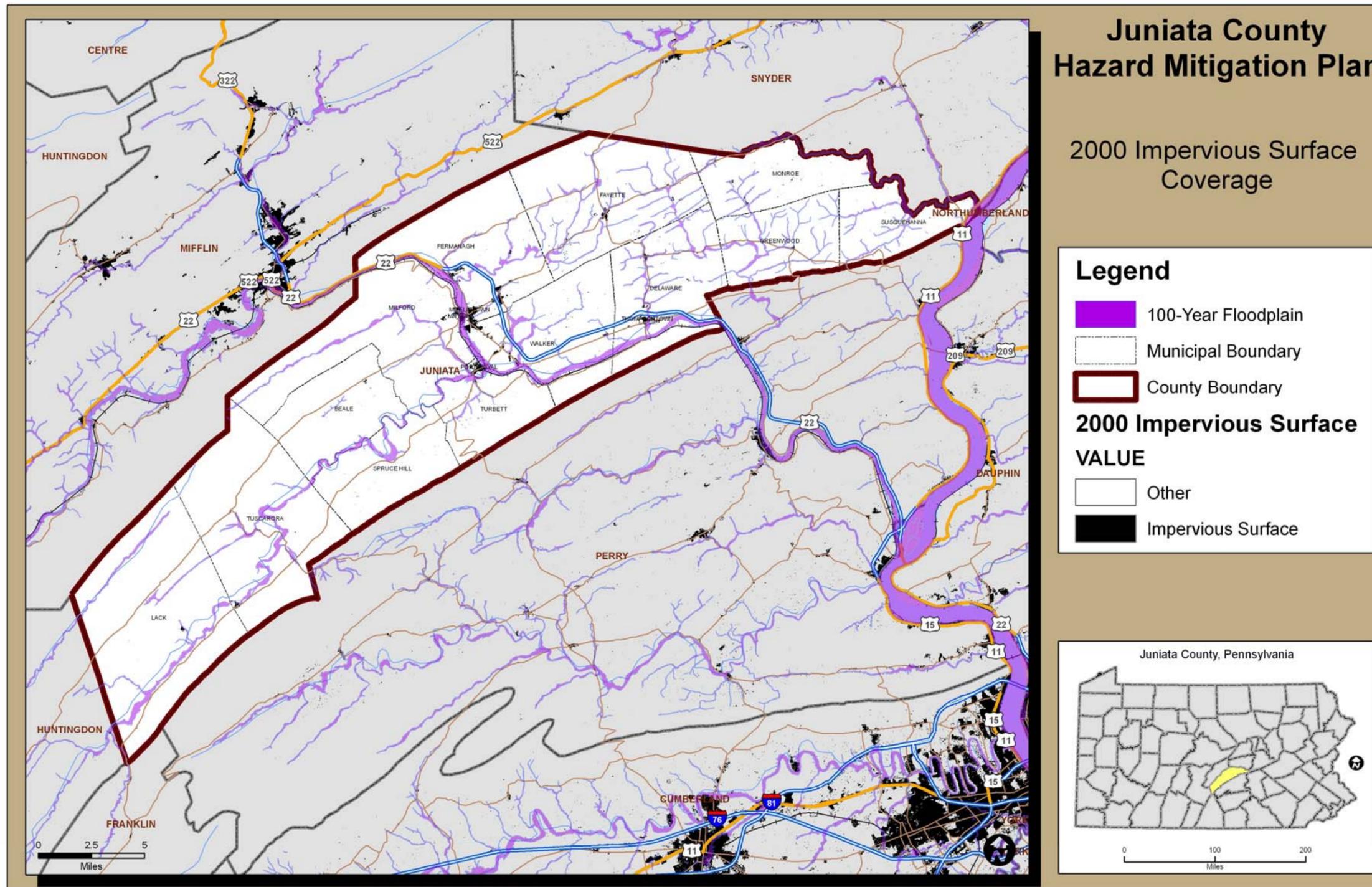


Table 2-7



Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risk where they vary from the risks facing the entire planning area.¹⁶

The top three hazards identified for Juniata County are severe winter weather, flooding, and drought. Flooding affects identifiable locations within the floodplain. However, flooding can also, like many other hazards, affect more than one jurisdiction simultaneously.

Flooding occurs along creeks and river banks in Juniata County. Communities along the Juniata River, Tuscarora Creek, Delaware Creek, Lost Creek, Little Lost Creek, Cocolamus Creek, East Licking Creek, Mahantango Creek, and other small tributaries of the Juniata and Susquehanna Rivers face a flooding risk. The Juniata River poses the greatest threat in the County. While most flooding events cannot be prevented, measures can be taken to limit the losses faced by areas prone to flooding. Refer to Appendix C: Flooding Hazard Profile for more details on this hazard.

Of the other hazards identified, hazardous material spills are often centralized, occurring along major transportation routes. Hazardous material spills stemming from transportation accidents endanger other drivers, local residents, and the environment through adverse driving conditions and pollutants. Within Juniata County, there are two major transportation routes: U.S. Route 11/15 and U.S. Route 22/322. Refer to Appendix C: Transportation Hazard Profile and Hazardous Hazard Material Profile for more details on these hazards.

Dam failures are mostly likely to occur at the locations of the high hazard dams in Juniata County. However, the Raystown Dam in neighboring Huntingdon County also poses a significant threat to Juniata County. While most dam failures are minor, it is critical that the dam inventory be kept up to date with routine inspections and communications among neighboring counties. Refer to Appendix C: Dam Failure Hazard Profile for more detail on this hazard.

While certain hazards occur in a localized area, this does not negate the regional threat each of the identified hazards presents, directly or through secondary effects. First responders may be called upon to assist in incidents outside their municipal or county jurisdiction. Further, secondary effects of a localized hazard may have much greater, far reaching effects, such as pollution of a regional water system or the closing of a major transportation route. Some areas may be more prone to certain hazards than others, yet regional impacts must be considered.

¹⁶ Ibid.

Section 3: Capability Assessment

This Capability Assessment is an evaluation of Juniata County's governmental structure, political framework, legal jurisdiction, fiscal status, policies and programs, regulations and ordinances, and resource availability. Each category is evaluated for its strengths and weaknesses in responding to, preparing for and mitigating the effects of the profiled hazards. The Capability Assessment has two components: (1) an inventory of the County's and municipalities' mission, programs, and policies; and (2) an analysis of their capacity to execute them. A Capability Assessment is an integral part of the hazard mitigation planning process. Here, the County and municipalities identify, review, and analyze what they are currently doing to reduce losses and to identify the framework necessary to implement new mitigation actions. This information will help the County and municipalities evaluate alternative mitigation actions and address shortfalls in the mitigation plan.

The evaluation of the categories listed above – political framework, legal jurisdiction, fiscal status, policies and programs, and regulations and ordinances – allows the mitigation planning team to determine the viability of certain mitigation actions. The Capability Assessment analyzes what Juniata County and its municipalities have the capacity to do and provides an understanding of what must be changed to mitigate loss.

Throughout the planning process the mitigation planning team considered the County's seventeen municipalities. Pennsylvania municipalities have their own governing bodies, pass and enforce their own ordinances and regulations, purchase equipment, and manage their own resources, including critical infrastructure. These capability assessments, therefore, consider the various characteristics and capabilities of municipalities under study.¹⁷

Legal and Regulatory Capability

Municipalities have the authority to govern more restrictively than state and county minimum requirements, assuming they are in compliance with all criteria established in the Pennsylvania Municipalities Planning Code (MPC) and their respective municipal codes. Municipalities can 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 a local ordinance, and enforced through the governmental body or its appointee.

Municipalities regulate land use via the adoption and enforcement of zoning, subdivision and land development, building codes, building permits, floodplain management, and/or storm water management ordinances. When effectively prepared and administered, these regulations can lead to hazard mitigation. For example, the adoption of the National Flood Insurance Program (NFIP) and the Pennsylvania Floodplain Management Act (Act 166 of 1978) established minimum floodplain management criteria. A municipality must adopt and enforce these

¹⁷ National Fire Protection Association – *NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs*, 2004 Edition.

minimum criteria to be eligible for participation in the NFIP. Municipalities have the option of adopting a single-purpose ordinance or incorporating these provisions into their zoning, subdivision and land development, or building codes, thereby mitigating the potential impacts of local flooding. The Capability Assessment details the existing County and municipal legal capabilities to mitigate the profiled hazards. It identifies the County's and the municipalities' existing planning documents and their hazard mitigation potential. Hazard mitigation recommendations are, in part, based on the information contained in the assessment.

Building Codes

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

The Uniform Construction Code (UCC) applies to almost all buildings, excluding manufactured and industrialized housing (which are covered by other laws), agricultural buildings, and certain utility and miscellaneous buildings. The UCC has many advantages. It requires builders to use materials and methods that have been professionally evaluated for quality and safety, as well as inspections, to ensure compliance.

If a municipality has "opted in," all UCC enforcement is local, except where municipal (or third party) code officials lack the certification necessary to approve plans and inspect commercial construction for compliance with UCC accessibility requirements. If a municipality has "opted out," the Department of Labor and Industry is responsible for all commercial code enforcement in that municipality. The Department of Labor and Industry also has sole jurisdiction for all state-owned buildings no matter where they are located¹⁸.

All of the municipalities in Juniata County's adhere to the standards of the UCC. This survey reflects the codes adopted for use under the UCC as of the 2006 International codes issued by the International Code Council. The next code change will occur in 2009 (see Table 1).

Zoning Ordinance

Article VI of the MPC authorizes municipalities to prepare and enact zoning ordinances to regulate land use. Its regulations can apply to:

- the permitted use of land;
- the height and bulk of structures;
- the percentage of a lot that may be occupied by buildings and other impervious surfaces;

¹⁸ Pennsylvania Department of Labor and Industry, *Building Codes: Uniform Construction Code*.

- yard setbacks;
- the density of development; and
- the height and size of signs.

A zoning ordinance has two parts, including the zoning map that delineates zoning districts and the text that sets forth the regulations that apply in each district. According to the results of the survey, nine of Juniata County's municipalities utilize their own local zoning ordinances including Delaware Township, Fayette Township, Fermanagh Township, Greenwood Township, Susquehanna Township, Walker Township, Mifflintown Borough, Port Royal Borough, and Thompsettown Borough (see Table 1).

Subdivision Ordinance

Subdivision and land development ordinances include regulations to control the layout of streets, the planning of lots, and the provision of utilities. The objectives of a subdivision and land development ordinance are to: coordinate street patterns; assure adequate utilities and other improvements are provided in a manner that will not pollute streams, wells and/or soils; reduce traffic congestion; and provide sound design standards as a guide to developers, elected officials, planning commissions, and other municipal officials. According to the results of the survey, 14 of Juniata County's 17 municipalities have local subdivision ordinances.] Article V of the MPC authorizes municipalities to prepare and enact subdivision and land development ordinances. Subdivision and land development ordinances provide for the division and improvement of land (see Table 1).

Floodplain Ordinance/NFIP

Floodplain management is the operation of programs or activities that may consist of both corrective and preventive measures for reducing flood damage, including but not limited to such things as emergency preparedness plans, flood control works, and floodplain management regulations. The Pennsylvania Floodplain Management Act (Act 166 of 1978) requires every municipality identified by the Federal Emergency Management Agency (FEMA) to participate in the NFIP and permits all municipalities to adopt floodplain management regulations.¹⁹ It is in the interest of all property owners in the floodplain to keep development and land usage within the scope of the floodplain regulations for their community. This helps keep insurance rates low and makes sure that the risk of flood damage is not increased by property development.

The NFIP's Community Rating System (CRS) provides discounts on flood insurance premiums in those communities that establish floodplain management programs that go beyond NFIP minimum requirements. Under the CRS, communities receive credit for more restrictive regulations, acquisition, relocation, or flood proofing of flood-prone buildings, preservation of

¹⁹ The U.S. Congress established the National Flood Insurance Program with the passage of the National Flood Insurance Act of 1968.

open space, and other measures that reduce flood damage or protect the natural resources and functions of floodplains.²⁰

The CRS was implemented in 1990 to recognize and encourage community floodplain management activities that exceed the minimum NFIP standards. Section 541 of the 1994 Act amends Section 1315 of the 1968 Act to codify the CRS in the NFIP, and expands the CRS goals to specifically include incentives to reduce the risk of flood-related erosion and to encourage measures that protect natural and beneficial floodplain functions. These goals have been incorporated into the CRS, and communities now receive credit toward premium reductions for activities that contribute to them.²¹

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

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

There are 10 CRS classes. Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction. CRS premium discounts on flood insurance range from 5 percent for Class 9 communities, up to 45 percent for Class 1 communities. The CRS recognizes 18 creditable activities, organized under 4 categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.²²

All 17 of Juniata County's municipalities participate in the NFIP. Four municipalities have a local floodplain ordinance including: Beale Township, Milford Township, Susquehanna Township, Walker Township, and Port Royal Borough. None of the municipalities participate in the CRS program (see Table 1).

²⁰Federal Emergency Management Agency. Federal Insurance and Mitigation Administration. *National Flood Insurance Program*.

²¹Ibid.

²²Ibid.

Stormwater Management Plan/Storm Water Ordinance

The proper management of stormwater runoff can improve conditions and decrease the chance of flooding. According to the Pennsylvania Department of Environmental Protection (DEP), Port Royal Borough has developed stormwater management ordinances. These ordinances were developed in conjunction with the guidelines established in the Pennsylvania Stormwater Management Act (Act 167).

Act 167 confers to counties the responsibility for development of watershed plans. The Act specifies that counties must complete their watershed stormwater plans within two years following the promulgation of these guidelines by the DEP, which may grant an extension of time to any county for the preparation and adoption of plans. Counties must prepare the watershed plans in consultation with municipalities and residents. This is to be accomplished through the establishment of a Watershed Plan Advisory Committee. The county must also establish a mechanism to periodically review and revise watershed plans so they are current. Plan revisions must be done every five years or sooner, if necessary.

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

Port Royal Borough is the only municipality within Juniata County to have a local stormwater management ordinance (see Table 1).

Comprehensive Plan

A comprehensive plan is a policy document that states objectives and guides the future growth and physical development of a municipality. The comprehensive plan is a blueprint for housing, transportation, community facilities and utilities, and land use. It examines how the past led to the present and charts the community's future path. There is no statute that requires Pennsylvania communities to have a comprehensive plan; however, Article III of the Municipalities Planning Code (MPC) enables communities to prepare a comprehensive plan. The MPC does require, however, that a comprehensive plan must consider many factors that influence a community. These factors include location, character, and timing of future development. The plan must also be reviewed and updated every 10 years. Juniata County's

Comprehensive Plan was developed in 1972. However, an update to the Comprehensive Plan is currently being completed. It is estimated that the plan will be completed in the winter 2008.

Six municipalities in Juniata County have local comprehensive plans, Delaware Township, Fayette Township, Fermanagh Township, Greenwood Township, Walker Township, and Thompsettown Borough. Articles III and XI of the MPC authorize municipalities and counties to participate in intergovernmental cooperative planning and implementation efforts (see Table 2).

Keystone Principles & Criteria for Growth, Investment & Resource Conservation

Pennsylvania's Economic Development Cabinet adopted the Keystone Principles & Criteria for Growth, Investment & Resource Conservation (Keystone Principles & Criteria) on May 31, 2005. They were developed by the Interagency Team on Land Use, which is comprised of representatives from each State agency including the Pennsylvania Emergency Management Agency (PEMA) under the Governor's direction concerning impacts land use.

Capital Improvements Plan

The Capital Improvements Plan is a multi-year policy guide that identifies needed capital projects and is used to coordinate the financing and timing of public improvements. Capital improvements relate to streets, stormwater systems, water distribution, sewage treatment, and other major public facilities. A Capital Improvements Plan should be prepared by the respective county's planning commission and should include a capital budget. This budget identifies the highest priority projects recommended for funding in the next annual budget. The Capital Improvements Plan is dynamic and can be tailored to specific circumstances.

Emergency Operations Plan

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

Requirement § 7503.1: Prepare, maintain and keep current a disaster emergency management plan for the prevention and minimization of injury and damage caused by disaster, prompt and effective response to disaster and disaster emergency relief and recovery of consonance with the Pennsylvania Emergency Management Plan.

Juniata County's EOP is an all-hazards plan, complies with the National Incident Management System (NIMS), and is the basis for a coordinated and effective response to any disaster that may affect lives and property in Juniata County. The EOP, or portions thereof, would be implemented when emergency circumstances warrant it (see Table 2).

Post Disaster Recovery Plan/Post Disaster Recovery Ordinance

A Disaster Recovery Plan (DRP) is a comprehensive set of measures and procedures that ensures essential, mission-critical resources and infrastructure are maintained or backed up by alternatives during various stages of a disaster. The DRP is another step to ensure a county's (or a municipality's) preparedness and ability to respond quickly and effectively to restore the community's fundamental needs. It addresses the public sector's responsibilities, including: temporary shelter; refuse disposal; overall damage assessment; restoration of utility services; reconstruction priorities; financial assistance; and dealing with demands.

Administrative and Technical Capability

Juniata County's 17 municipalities include 4 boroughs and 13 townships. Each of these municipalities conducts its daily operations and provides various community services according to local needs and limitations. Some of these municipalities have formed cooperative agreements and work jointly with their neighboring municipalities to provide services such as police protection, fire and emergency response, infrastructure maintenance, and water supply management. 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.

County Planning Commission

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

A planning agency acts as an advisor to the governing body on matters of community growth and development. A governing body may appoint individuals to serve as legal and engineering advisors to the planning agency. In addition to the duties and responsibilities authorized by Article II of the MPC, a governing body may, by ordinance, delegate approval authority to a planning agency for subdivision and land development applications. A governing body has considerable flexibility, not only as to which powers and duties are assigned to a planning agency, but also as to what form an agency will possess. A governing body can create a planning commission, a planning department, or both.

The purpose of the Juniata County Planning Commission is to provide strategic, coordinated, and objective guidance and oversight to the growth, planning, and development activities of Juniata County. Subdivisions are also reviewed and approved by the Juniata County Planning Commission, which works in conjunction with the municipal planning commissions, where applicable. All 17 municipalities within Juniata County are represented by the County Planning Commission (see Table 3).

Municipal Planning Commission

The MPC conveys the planning authority and sets the ground rules a municipality must follow. There are 12 municipalities in Juniata County with their own planning commission (see Table 3).

Municipal Engineer

A municipal engineer performs duties as directed in the areas of construction, reconstruction, maintenance, and repair of streets, roads, pavements, sanitary sewers, bridges, culverts, and other engineering work. The municipal engineer prepares plans, specifications and estimates of the work undertaken by the municipality.

Five municipalities in Juniata County retain their own municipal engineer: Delaware Township, Greenwood Township, Walker Township, Mifflin Borough, and Port Royal Borough (see Table 3).

Personnel Skilled In GIS or HAZUS

Spatial and tabular data are linked in a computerized, visual format through the use of sophisticated Geographic Information Systems (GIS) technology. Through GIS projects it is possible to accomplish environmental restoration, economic development, "smart growth" land-use planning, infrastructure development, and training to use GIS for decision support.

Neither Juniata County, nor any of the municipalities retain personnel skilled in GIS and or HAZUS software.

Emergency Management Coordinator

Emergency management is a comprehensive, integrated program of mitigation, preparedness, response, and recovery for emergencies/disasters of any kind. No public or private entity is immune to disasters, and no single segment of society can meet the complex needs of a major emergency or disaster on its own.

A municipal emergency management coordinator is responsible for emergency management preparedness, response, recovery, and mitigation within his/her respective Authority Having Jurisdiction (AHJ). The responsibilities of the emergency management coordinator are outlined in PA Title 35 §7503:

- Prepare and maintain a current disaster emergency management plan
- Establish, equip, and staff an emergency operations center
- Provide individual and organizational training programs
- Organize and coordinate all locally available manpower, materials, supplies, equipment, and services necessary for disaster emergency readiness, response, and recovery
- Adopt and implement precautionary measures to mitigate the anticipated effects of a disaster
- Cooperate and coordinate with any public and private agency or entity
- Provide prompt information regarding local disaster emergencies to appropriate Commonwealth and local officials or agencies and the general public

- Participate in all tests, drills, and exercises, including remedial drills and exercises, scheduled by the agency or by the federal government

Juniata County and 10 municipalities have an emergency management coordinator (see Table 3).

Intergovernmental Cooperation

Intergovernmental cooperation is one manner of accomplishing common goals, solving mutual problems, and reducing expenditures. Juniata County and its municipalities demonstrate a high level of intergovernmental cooperation on the local, county, and regional level. The intergovernmental cooperation is exhibited through membership in the Susquehanna Economic Development Association Council of Government (SEDA-COG).

Fiscal Capability

Fiscal capability is important to the implementation of hazard mitigation activities. Every jurisdiction must operate within the constraints of limited financial resources. The following information pertains to various financial assistance programs pertinent to hazard mitigation.

State and Federal Grants

During the 1960s and 1970s, state and federal grants-in-aid were available to finance a large number of programs, including streets, water and sewer facilities, airports, and parks and playgrounds. During the early 1980s, there was a significant change in federal policy, based on rising deficits and a political philosophy that encouraged states and local governments to raise their own revenues for capital programs. The result has been a growing interest in “creative financing”²³ (see Table 4).

Capital Improvement Financing

Because most capital investments involve the outlay of substantial funds, local government can seldom pay for these facilities through appropriations in the annual operating budget. Therefore, numerous techniques have evolved to enable local governments to pay for capital improvements over a time period exceeding one year. Public finance literature and state laws governing local government finance classify techniques that are used to finance capital improvements. These techniques include: revenue bonds; lease-purchase, authorities and special districts; current revenue (pay-as-you-go); reserve funds; and tax increment financing²⁴ (see Table 4).

²³ So, Frank S., and Judith Getzels, eds. *The Practice of Local Government Planning*, 2nd ed. (International City Management Association: Washington, D.C. 1988), 451.

²⁴ Kurtz, Thomas. *Intergovernmental Cooperation Handbook*, 4th ed. (Pennsylvania Department of Community and Economic Development: Harrisburg, September 1997), 11.

Incur Debt through General Obligation Bonds

Some projects may be financed with general obligation bonds. With this method, the jurisdiction's taxing power is pledged to pay interest and principal to retire debt. General obligation bonds can be sold to finance permanent types of improvements, such as schools, municipal buildings, parks, and recreation facilities. Voter approval may be required²⁵ (see Table 4).

Council of Governments

A council of government is a general, multi-purpose, cooperative organization. A joint authority is only a hollow framework until organized as a joint sewer authority or joint transit authority, for instance. Councils of Government (COGs) are a special kind of Act 180 organization. COGs are general or multipurpose organizations established to enable a group of municipalities to work together on mutually-beneficial projects. A COG has a broad responsibility; it may study and propose new joint programs and projects and is almost always composed of elected officials.²⁶

Susquehanna Economic Development Association Council of Governments (SEDA-COG) is a regional, multi-county development agency which, under the guidance of a public policy board, provides leadership, expertise, and services to communities, businesses, institutions, and residents. SEDA-COG seeks to enhance growth opportunities in an environmentally sensitive manner while retaining the region's predominantly rural character. The organization is both a direct service provider and a link to other resources that can be applied to a wide range of community and economic needs. SEDA-COG is also an advocate for the interests of its communities at the state and federal levels.

SEDA-COG's strengths include a county-based policy board representing both public and private interests, a high level of staff expertise, a commitment to innovation, and the flexibility to respond to new opportunities and challenges. Two current projects are the Municipal and Regional Planning Agency and the Local Development District (see Table 4).

Municipal Authorities

Municipal authorities are most often used when major capital investments are required. In addition to sewage treatment, municipal authorities have been formed for water supply, airports, bus transit systems, swimming pools, and other purposes. Joint authorities have the power to receive grants, borrow money, and operate revenue generating programs. Municipal authorities are authorized to sell bonds, acquire property, sign contracts, and take similar actions.

²⁵ So, Frank S., and Judith Getzels, eds. *The Practice of Local Government Planning, 2nd ed.* (International City Management Association: Washington, D.C. 1988), 451.

²⁶ Kurtz, Thomas. *Intergovernmental Cooperation Handbook, 4th ed.* (Pennsylvania Department of Community and Economic Development: Harrisburg, September 1997), 11.

Authorities are governed by authority board members, who are appointed by the elected officials of the member municipalities.²⁷

Municipal authorities in Juniata County include the water and public sanitary sewer utilities (see Tables 4 and 5).

Sewer Authorities

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

Water Authorities

Water authorities are multi-purpose authorities with water projects, many of which operate both water and sewer systems. The financing of water systems for lease back to the municipality is among the principal activities of local government facilities' financing authorities. An operating water authority issues bonds to purchase existing facilities or to construct, extend, or improve a system. The primary source of revenue is user fees based on metered usage. The cost of constructing or extending water supply lines can be funded by special assessments against abutting property owners. Tapping fees also help fund water system capital costs. Water utilities are also directly operated by municipal governments and by privately owned public utilities regulated by the Pennsylvania Public Utility Commission. The Pennsylvania Department of Environmental Protection has a program to assist with consolidating small water systems to make system upgrades more cost-effective.

NFPA 1600 – Standard on Disaster/Emergency Management and Business Continuity

NFPA 1600 recommends a responsive financial management and administrative framework that complies with the AHJ's program requirements and is uniquely linked to disaster/emergency operations. The framework should provide for maximum flexibility to expeditiously request, receive, manage, and apply funds in a nonemergency and emergency environment to ensure the timely delivery of assistance. The program should also be capable of capturing financial data for future cost recovery, as well as identifying and accessing alternative funding sources and managing budgeted and specially appropriated funds. It is equally important to have procedures in place that will allow an entity to expedite financial decision making and ensure proper accounting occurs.

²⁷ Kurtz, Thomas. *Intergovernmental Cooperation Handbook, 4th ed.* (Pennsylvania Department of Community and Economic Development: Harrisburg, September 1997), 13, 23.

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 are other, more immediate political concerns. Unfortunately, it often takes a disaster to get people thinking about hazard mitigation. Responding to and recovering from a disastrous event can exhaust local resources, thereby elevating hazard mitigation to the forefront.

Cooperation among planning commission officials, emergency management officials, and other officials is essential to achieve hazard mitigation objectives. Maintaining open lines of communication and sharing up-to-date information is key.

Continuity of Government is a critically important planning principle under the concept of "political capability." NFPA 1600 (referenced above) provides those with the responsibility for disaster and emergency management and continuity of government planning programs with the criteria to assess current programs or to develop, implement, and maintain a program to mitigate, prepare for, respond to, and recover from disasters and emergencies.

Institutional Capability

As detailed previously, Juniata County's 18 municipalities include 14 townships and 4 boroughs. Each municipality conducts daily operations and provides various community services according to local needs and limitations. Some of these municipalities have formed cooperative agreements and work jointly to provide services, such as solid waste disposal and water supply management. These municipalities vary in staff and size, resource availability, fiscal status, service provision, constituent population, and vulnerability to the profiled hazards. In fact, the Capability Assessment indicates that 5 of the 17 municipalities do not have a local planning commission.

Juniata County, in the heart of Pennsylvania, is home to rural farmlands, state game lands, state forests, nature preserves and the Susquehanna River and its tributaries. The County's differing character and landscape also leads to a varying degree of available resources. This is not to say, however, that hazard mitigation is not an important priority in rural areas.

In addition to the institutional capability of the municipal government structure described herein, the County is capable of engaging in hazard mitigation activities. The County has its own mitigation goals and objectives, staff, resources, budget, and equipment. As such, it can mitigate the profiled hazards. When partnered with local municipalities, the state, the federal government, local council of governments, watershed groups, environmental groups, or other entities, the results can be very positive.

Legal and Regulatory Capability

The following table seeks to identify the legal authorities available in Juniata County. Place an **S** for State, a **C** for County, or an **L** for Local Municipality. If the date the ordinance, code, or regulation was adopted or updated is available or known, include that in the appropriate block.

Table 1							
Region	a. Building code	b. Zoning ordinance	c. Subdivision ordinance or regulations	d. Floodplain Ordinance	e. National Flood Insurance Program (NFIP) Members	f. Stormwater Management Plan (Act 167)	g. Stormwater Management Ordinance
Juniata County	—	—	—	—	—	—	—
Beale Township	L(UCC06)	—	L	L	Y	—	—
Delaware Township	L(UCC06)	L	L		Y	—	
Fayette Township	L(UCC06)	L	L		Y	—	
Fermanagh Township	L(UCC06)	L(1979)	L(1983)		Y	—	—
Greenwood Township	L(UCC06)	L	L		Y	—	
Lack Township	L(UCC06)	—	L		Y	—	
Mifflin Borough	L(UCC06)	—	—		Y	—	
Mifflintown Borough	L(UCC06)	L	—		Y	—	
Milford Township	L(UCC06)	—	L		Y	—	
Monroe Township	L(UCC06)	—	—		Y	—	
Port Royal Borough	L(UCC06)	L	L	L(1977)	Y	—	L(2003)
Spruce Hill Township	L(UCC06)	—	L		Y	—	
Susquehanna Township	L(UCC06)	L	L	L	Y	—	
Thompsontown Borough	L(UCC06)	L	L		Y	—	
Turbett Township	L(UCC06)	—	L		Y	—	
Tuscarora Township	L(UCC06)	—	L		Y	—	
Walker Township	L(UCC06)	L	L	L	Y	—	

Legal and Regulatory Capability (Cont'd)

Place an **S** for State, a **C** for County, or an **L** for Local Municipality. If the date the ordinance, code, or regulation was adopted or updated is available or known, include that in the appropriate block.

Table 2					
Region	h. Comprehensive plan	i. A capital improvements plan	j. Emergency Operations Plan (Title 35)	k. A post-disaster recovery plan	l. A post-disaster recovery ordinance
Juniata County	—	—	C	—	—
Beale Township	—	—	C	—	—
Delaware Township	—				
Fayette Township	L				
Fermanagh Township	L				
Greenwood Township	L	—	—	—	—
Lack Township	—				
Mifflin Borough	—				
Mifflintown Borough	—				
Milford Township	—				
Monroe Township	—				
Port Royal Borough	—	—	L(1999)	—	—
Spruce Hill Township	—				
Susquehanna Township	—		C		
Thompsontown Borough	L				
Turbett Township	—				
Tuscarora Township	—				
Walker Township	L				

Administrative and Technical Capability

Place an **S** for State, a **C** for County, or an **L** for Local Municipality

Table 3						
Region	a. County Planning Commission	b. Municipal Planning Commission	c. Municipal Engineer	d. Personnel skilled in GIS and/or HAZUS	e. Emergency Management Coordinator	f. Intergovernmental Cooperation
Juniata County	C			—	C	C
Beale Township		L	—	—	L	—
Delaware Township		L	L	—	L	—
Fayette Township		—	—	—	—	—
Fermanagh Township		L	—	—	—	—
Greenwood Township		L	L	—	L	L
Lack Township		L	—	—	—	L
Mifflin Borough		L	L	—	L	L
Mifflintown Borough		—	—	—	—	L
Milford Township		L	—	—	L	—
Monroe Township		—	—	—	L	—
Port Royal Borough		L(1975)	L	—	L	L
Spruce Hill Township		—	—	—	L	—
Susquehanna Township		L	—	—	L	—
Thompsontown Borough		L	—	—	—	—
Turbett Township		—	—	—	—	—
Tuscarora Township		L	—	—	L	L
Walker Township		L	L	—	—	—

Fiscal Capability

Identify whether your political jurisdiction has access to, or is eligible for, the following financial resources for hazard mitigation. Place a **Y** for Yes, an **N** for No, or an **E** for Eligible.

Table 4							
Region	a. State and Federal Funding	b. Capital improvements financing	c. Authority to levy taxes for specific purposes	d. Incur debt through general obligation bonds	e. Municipal Authorities	f. Member of a Council of Government (COG)	g. Engineer Circuit-Riding Program
Juniata County							
Beale Township	E	E	E	E	E	N	N
Delaware Township							
Fayette Township							
Fermanagh Township							
Greenwood Township	—	—	—	—	—	—	—
Lack Township							
Mifflin Borough							
Mifflintown Borough							
Milford Township							
Monroe Township							
Port Royal Borough	Y	Y	Y	N	Y	Y	N
Spruce Hill Township							
Susquehanna Township	E	E	E				
Thompsontown Borough							
Turbett Township							
Tuscarora Township							
Walker Township							

If your political jurisdiction has a municipal authority within these categories, please list it by name.

Table 5		
Region	Water	Public Sanitary Sewer
Juniata County	—	—
Beale Township		
Delaware Township	Thompsontown Borough Municipal Authority (part)	Thompsontown Borough Municipal Authority (part)
Fayette Township		
Fermanagh Township	Mifflintown Municipal Authority (part)	Twin Boroughs Sanitary Authority (part)
Greenwood Township		
Lack Township		
Mifflin Borough	Mifflintown Municipal Authority	Twin Boroughs Sanitary Authority
Mifflintown Borough	Mifflintown Municipal Authority	Twin Boroughs Sanitary Authority
Milford Township	Mifflintown Municipal Authority (part) Port Royal Municipal Authority (part)	Port Royal Municipal Authority (part)
Monroe Township		
Port Royal Borough	Port Royal Municipal Authority	Port Royal Municipal Authority
Spruce Hill Township		
Susquehanna Township		
Thompsontown Borough	Thompsontown Borough Municipal Authority	Thompsontown Borough Municipal Authority
Turbett Township	Port Royal Municipal Authority (part)	Port Royal Municipal Authority (part)
Tuscarora Township		
Walker Township	Mifflintown Municipal Authority (part)	

Stormwater Management

Juniata County Stormwater Management									
	Act 167 Compliant		General Stormwater Management Ordinances (Not compliant with Act 167)						
			Tuscarora Creek Watershed	Juniata River Watershed	E. Licking Creek Watershed	Mahantango Creek (West) Watershed	Susquehanna River Watershed	Backlog Creek Watershed	Jacks Creek Watershed
Region	Stormwater Management Plan (Act 167)	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance	Stormwater Management Ordinance
Juniata County	—	—							
Beale Township	—								
Delaware Township	—								
Fayette Township	—								
Fermanagh Township	—								
Greenwood Township	—	—							
Lack Township	—								
Mifflin Borough	—								
Mifflintown Borough	—								
Milford Township	—								
Monroe Township	—								
Port Royal Borough	—	L (2003)							
Spruce Hill Township	—								
Susquehanna Township	—								
Thompstontown Borough	—								
Turbett Township	—								
Tuscarora Township	—								
Walker Township	—								

Section 4: Hazard Mitigation Strategies and Implementation

Hazard Mitigation Goals

Requirement §201.6(c)(3)(i): The hazard mitigation plan shall include a description of goals to reduce or avoid long-term vulnerabilities to the identified hazards.²⁸

The goals of the Juniata County Multi-Jurisdictional Hazard Mitigation Plan (HMP) were developed in response to the Hazard Vulnerability Analysis and Risk Assessment (Section 2) and inputs received from the County and the 17 municipalities throughout the public involvement process. The following goal statements denote long-term objectives to reduce or avoid vulnerabilities to flooding and the other natural, manmade, and technological hazards profiled in this plan.

- Strengthen County and local capabilities to reduce potential impacts of flooding on existing and future public/private assets, including structures, critical facilities, and infrastructure.
- Increase intergovernmental cooperation and build public/private partnerships to implement activities that will reduce the impact of natural, manmade, and technological hazards.
- Enhance planning and emergency response efforts among state, county, and local emergency management personnel to protect public health and safety.
- Build Juniata County's spatial information resources to strengthen public and private hazard mitigation planning and decision-support capabilities.
- Increase public awareness on both the potential impacts of natural hazards and activities to reduce those impacts.

Hazard Mitigation Strategies and Implementation

Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.²⁹

The comprehensive mitigation strategy for Juniata County and the 17 municipalities includes mitigation actions that fit into the following categories: emergency services, natural resource protection, preparedness measures, property protection, public information, and structural projects.

²⁸ Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

²⁹ Ibid.

Emergency services measures focus on preparedness opportunities for Juniata County Emergency Management Agency, County GIS staff, Local Emergency Planning Committee (LEPC), and local emergency management coordinators. Such measures include:

- communications and warning;
- emergency operations planning;
- continuity of government planning (using guidelines established in NFPA 1600);
- evacuation route planning;
- critical facilities protection;
- public health and safety marketing;
- standardized street addressing;
- hazardous materials planning;
- damage assessment and reporting;
- Hazards U.S. (HAZUS) training; and
- special needs population identification.

Natural resource protection measures help preserve the County's floodways (regulatory and fringes) and protect public and private property through:

- floodplain and riparian areas protection;
- stormwater management; and
- erosion and sediment control.

Preparedness measures strengthen county- and municipal-level planning and administration activities for all-hazards events through:

- post-disaster recovery and reconstruction; and
- intergovernmental cooperation.

Property protection measures identify and protect both public and privately owned property assets and critical infrastructure. These measures include identifying repetitive-loss properties and identifying opportunities to permanently remove people, property, and businesses from the County's flood-prone areas. Property protection mitigation measures include: identifying repetitive loss structures, flood insurance, business continuity planning, floodplain regulations, and critical infrastructure protection. Through this goal, continued compliance with NFIP will be stressed among all municipalities.

Public information measures are intended to advise officials and the public of hazards and ways to protect people and property from them. Public information measures include: flood maps and data, public advisory and outreach programs, flood warning and responses, and technical and financial assistance.

Structural projects identify capital improvement opportunities to mitigate the effect of flood risks and power outages from severe storms on local critical infrastructure. Examples include: bridge improvements, channel modifications, critical facility relocation, evacuation route improvements, enhancing communications, and evaluating existing power supply.

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.³⁰

The Hazard Vulnerability Analysis contained in Section 2 of the Juniata County HMP evaluated the County's vulnerabilities and risks to a series of natural, manmade, and technological hazards. This analysis determined that Juniata County and its 17 municipalities are most vulnerable to natural hazards, particularly severe winter weather, flooding, and drought.

Found in Appendix D, Tables D-1, D-2, and D-3 identify a comprehensive range of specific mitigation actions and structural projects to reduce the impacts of flooding and other natural, manmade, and technological hazards profiled in Section 2 and Appendix C of this HMP.

Table D-1 illustrates the hazards that each jurisdiction's structural and non-structural projects attempt to mitigate. Table D-2 presents a series of non-structural mitigation measures as well as potential timeframes for their implementation, potential funding source(s), responsible entity(ies), and estimated costs when available.

Table D-3 presents a series of structural projects solicited from Juniata County and the 17 municipalities throughout the hazard mitigation planning process. Appendix E contains a copy of all Hazard Mitigation Project Opportunity Forms submitted to the HMP. These forms correspond with the projects listed in Table D-3. Table D-4 illustrates the scoring of the structural mitigation projects.

Table D-5 presents a list of potential funding sources for structural hazard mitigation and prevention projects. Similar to the rest of this document, this list should be updated frequently as programs end and new programs are announced.

³⁰ Ibid.

Implementation of Mitigation Actions

Requirement §201.6(c)(3)(iii): The mitigation strategy section shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.³¹

The implementation strategy for the mitigation actions is that the projects will be implemented based on their priority scoring. Local mitigation projects will be implemented by the local jurisdiction. This priority scoring represents a holistic cost and benefit evaluation.

The non-structural projects located in Appendix D, Table D-2, are grouped according to the aforementioned categories and by applicable hazard vulnerability. The measures were also given a priority score based on their potential impact and benefit. This prioritization methodology examined each measure's impact and benefit relative to cost, segment of the population affected (countywide vs. local), and long-term benefit to the population served.

The structural projects located in Appendix D, Table D-3, have been thoroughly evaluated and prioritized, and will be implemented and administered according to the specified implementation strategy. The scoring of the structural projects is available in Appendix D, Table D-4.

Steering Committee members prioritized the structural projects by evaluating each project against the seven criteria. First each project was scored based on the following three questions (yes responses were awarded one point):

- Does the project mitigate on the of the County's top three hazards?
- Does the project provide a multi-municipal benefit?
- Does the project address a recurring problem?

Next, each project was evaluated on how well it protects the population, critical facilities, the economy, and the environment. Values ranging from 1-3 (1 representing a low score, 2 representing a medium score, and 3 representing a high score) were first assigned to four different areas, based on the protection of the population, critical facilities, the economy, and the environment. These numbers were then weighted by significance. For instance, population protection was scored as being more significant than protection of the environment. Therefore population protection is weighted at 40 percent while environmental protection is weighted at 10 percent.

³¹ Ibid.

The example below illustrates how a projects ranking could be calculated.

$$\text{Project Score} = (\text{Top Three Hazard?}) + (\text{Multi-Municipal Benefit?}) + (\text{Recurring Problem?}) + [(.40 \times \text{Population}) + (.25 \times \text{Critical Facilities}) + (.25 \times \text{Economy}) + (.10 \times \text{Environment})]$$

An example of how a project could be scored can be seen below:

$$(1) + (0) + (1) + [(.40 \times 2) + (.25 \times 1) + (.25 \times 3) + (.10 \times 1)] = 3.90$$

A thorough cost/benefit analysis will be conducted prior to selecting a hazard mitigation measure to be completed. Funding awards are competitive and assistance goes to projects that are found to be technically feasible actions.

Section 5: Plan Maintenance

Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.³²

Hazard mitigation planning in Juniata County is the responsibility of all levels of government (i.e. county and local), as well as the citizens of the County. The Juniata County Hazard Mitigation Steering Committee, comprised of County representation, municipal representation, and private industry representation (see Section 1 for a listing of Steering Committee members), under the direction of the Juniata County Planning Commission, will be responsible for maintaining this Multi-Jurisdictional Hazard Mitigation Plan (HMP). The Steering committee will meet annually at a designated monthly Planning Commission meeting and following each emergency declaration with the purpose of reviewing the HMP and soliciting new projects from the municipalities. The Progress Report document in Appendix G will be used to document any changes to the Plan.

Each review process will ensure that the Hazard Vulnerability Analysis and Risk Assessment reflect current conditions of the County and its municipalities, the Capability Assessment accurately reflects local circumstances, and the hazard mitigation strategies are updated based on the County's damage assessment reports and local mitigation project priorities. The Steering Committee will complete a progress report to evaluate the status and accuracy of the HMP and record the Steering Committee's findings. The Juniata County Emergency Management office will maintain a copy of these records. The progress report template is found in Appendix G.

As directed by FEMA 386-4, the progress report will include the following information: The hazard mitigation action's objectives; who the lead and supporting agencies responsible for implementation are; how long the project should take, including a delineation of the various stages of work along with timelines (milestones should be included); whether the resources needed for implementation, funding, staff time, and technical assistance are available, or if other arrangements must be made to obtain them; the types of permits or approvals necessary to implement the action; details on the ways the actions will be accomplished within the organization, and whether the duties will be assigned to agency staff or contracted out; and current status of the project, identifying any issues that may hinder implementation.³³

³²Federal Emergency Management Agency, *Plan Review Crosswalk*, Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, March 2004.

³³ Federal Emergency Management Agency, *Bringing the Plan to Life, Implementing the Hazard Mitigation Plan*, State and Local Mitigation Planning How-To Guide, August 2003.

The HMP must be updated on a 5-year cycle. This HMP will be updated within a 5-year period and resubmitted to FEMA for re-approval. The monitoring, evaluating, and updating of the plan every five years will rely heavily on the outcomes of the annual Steering Committee meetings.

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): The plan shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.³⁴

Juniata County Comprehensive Plan

Method

The Juniata County Planning Commission is responsible for maintaining and updating the County Comprehensive Plan and the County Subdivision and Land Development Ordinance. The Commission meets monthly to review, discuss, and comment on municipal subdivision and land development plans. It uses this information to identify necessary revisions and to amend both the Comprehensive Plan and the Subdivision and Land Development Ordinance. The Planning Commission's meetings are open to the public and are advertised according to the Pennsylvania Sunshine Act (65 PA C.S.A.). Delaware, Fayette, Fermanagh, and Walker Township as well as Thompsettown Borough have local comprehensive plans (see Section 3: Capability Assessment).

Technical assistance on community planning matters is provided to the Juniata County Planning Commission and the County Board of Commissioners through the Juniata County Planning Department. The Planning Department administers the County Comprehensive Plan, along with the County Subdivision and Land Development Ordinance. The Planning Department also performs technical reviews of municipal subdivision and land development plans, municipal floodplain ordinances, municipal stormwater management plans and ordinances, and other community planning and development matters.

Maintenance Schedule

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

The update to the Juniata County Comprehensive Plan is currently underway. The Comprehensive Plan update is scheduled to be completed by the second quarter of 2009. This plan will provide general direction and a blueprint for the future of Juniata County and constituent communities.

³⁴ Ibid.

Juniata County Emergency Operations Plan

Method

The Pennsylvania Emergency Management Services Code, 35 PA C.S. Sections 7701-7707, as amended, requires each county and municipality to prepare, maintain, and keep current an Emergency Operations Plan (EOP). The Juniata County Emergency Management office is responsible for preparing and maintaining the County's EOP, which applies to both the County and municipal emergency management operations and procedures.

The EOP is reviewed at least biennially. Whenever portions of the plan are implemented in an emergency event or training exercise, a review is performed and changes are made where necessary. These changes are then distributed to the County's 17 local emergency management coordinators for safekeeping.

Maintenance Schedule

The Juniata County Emergency Management office should consider the County's Multi-Jurisdictional HMP during its biennial review of the County EOP. Recommended changes to the HMP will then be coordinated with the Hazard Mitigation Planning Steering Committee.

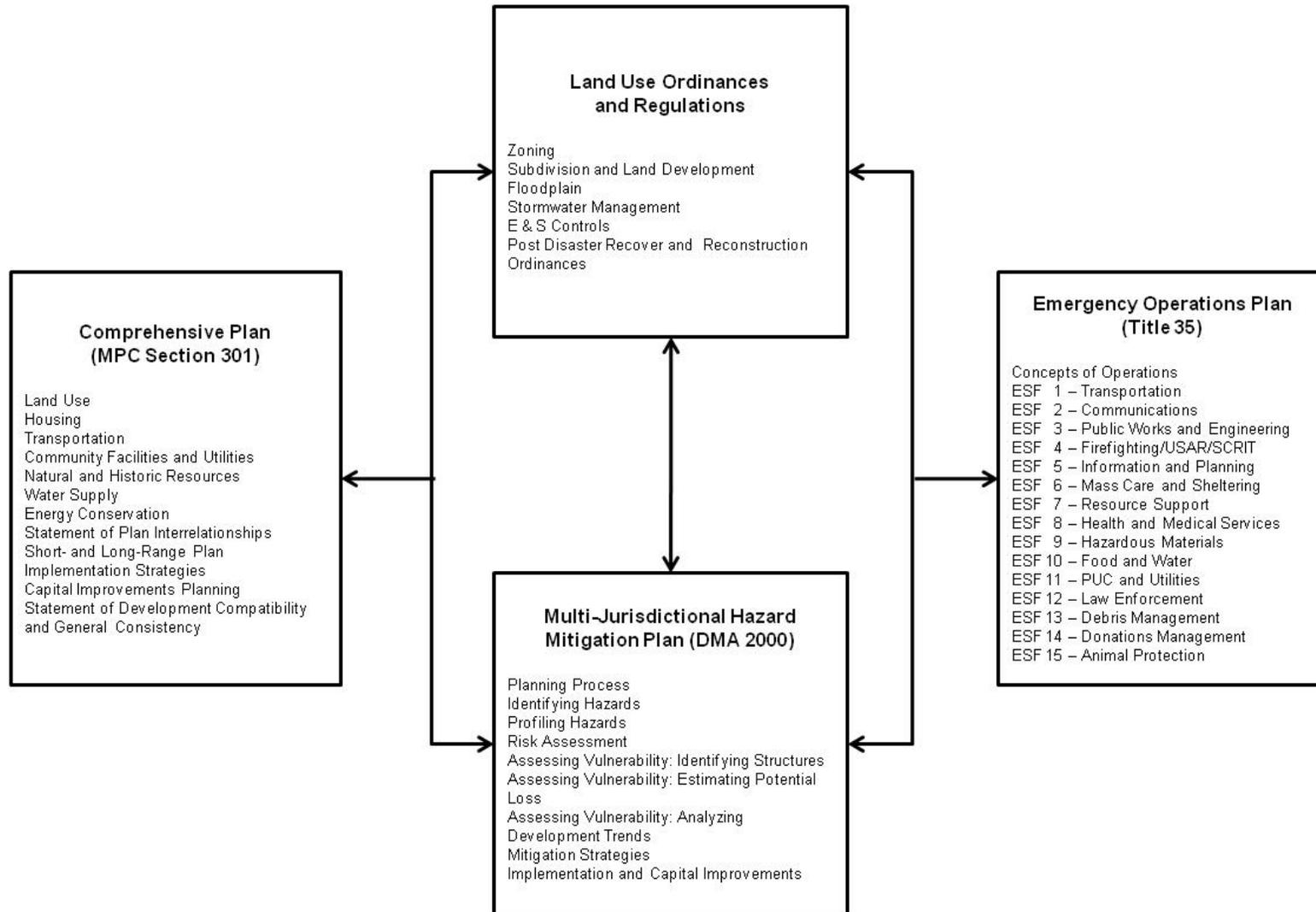
Plan Interrelationships

Figure 5-1 illustrates the interrelationships between the Multi-Jurisdictional HMP, County Comprehensive Plan, County EOP, and other community planning mechanisms. Ensuring consistency between these planning mechanisms is critical. In fact, Section 301 (4.1) of the Pennsylvania Municipalities Planning Code requires that comprehensive plans include a discussion of the interrelationships among their various plan components, "which may include an estimate of the environmental, energy conservation, fiscal, economic development, and social consequences on the environment."

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

To that end, Juniata County and its municipalities must ensure that the components of the HMP are integrated into existing community planning mechanisms and are generally consistent with goals, policies, and recommended actions. Juniata County and the Hazard Mitigation Planning Steering Committee will utilize the existing maintenance schedule of each plan to incorporate the goals, policies, or recommended actions as each plan is updated.

**Figure 5-1
County Plan Interrelationships**



Continued Public Involvement

Requirement §201.6(c)(4)(iii): The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.³⁵

The Juniata County Emergency Management office will ensure that the HMP is posted and maintained on the Emergency Management website, and will continue to encourage public review and comment on the plan.

The citizens of Juniata County are encouraged to submit their comments to elected officials and/or members of the HMP Steering Committee. To promote public participation, Juniata County welcomed comments on the HMP for a 45 day period. This offered the public the opportunity to supply their comments and observations. All comments received will be maintained and considered by the HMP Steering Committee when updating the HMP.

Juniata County will continue to reach out to the municipalities regarding mitigation projects, especially those municipalities that did not submit projects for inclusion in this HMP. Any additional HMPO forms received during the life of this 5-year HMP will be incorporated into the Plan as an interim update and included in the next 5-year Plan update.

The Multi-Jurisdictional Hazard Mitigation Plan is available for review at:
<http://www.co.juniata.pa.us/dHMP.php>

³⁵ Ibid.



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Juniata County Hazard Mitigation Plan

The Juniata County Planning Commission and the Department of Emergency Services are working with the Pennsylvania Emergency Management Agency (PEMA) and the Federal Emergency Management Agency (FEMA) to prepare a countywide, multi-jurisdictional Hazard Mitigation Plan (HMP) that is in compliance with the federal Disaster Mitigation Act of 2000 (DMA 2000).

The draft HMP aims to reduce or eliminate long-term risks to life and property that result from natural and manmade hazardous events, such as floods, severe winter weather, drought, and transportation accidents.

The County and each municipality that adopts the plan will be eligible to apply for federal funds to implement the identified hazard mitigation measures. Once the HMP is adopted by Juniata County and its 17 municipalities, it requires review by PEMA and final approval by FEMA. Once FEMA has approved the HMP, the county and its municipalities can then apply for funding from FEMA's Hazard Mitigation Grant Program to implement the mitigation strategies outlined in the plan.

All political jurisdictions are required to have a FEMA-approved HMP to be eligible for federal hazard mitigation project funding.

The Juniata County Board of Commissioners has made the draft plan available to all interested citizens of the county and encourages their feedback. Please direct all comments in writing to the Juniata County Commissioners Office located at the Juniata County Courthouse, Bousum Building, 26 North Main Street, P.O. Box 68, Mifflintown, Pennsylvania 17059.

AccuWeather.com
Mifflintown, PA
Currently | [Hourly Info](#) | [15 Days](#)
 **Partly sunny**
83°F
RealFeel®: 87°F
Winds: NW at 7 mph

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Get more information about our government representatives at the county, township, borough, state and federal levels.

Download your copy of the [Juniata County Directory](#) today.
(Right-click and choose "save target as" or "save link as" to keep a copy.)

DRAFT Juniata County Multi-jurisdictional Hazard Mitigation Plan

Juniata County residents are encouraged to review and comment on the county's Draft Multi-Jurisdictional Hazard Mitigation Plan (HMP).

All comments must be received by July 31, 2008. If anyone requires special assistance, please call the County Commissioners Office at (717) 436-7704.

Juniata County DRAFT Hazard Mitigation Plan

- ◆ [Juniata Section 00 Executive Summary](#)
- ◆ [Juniata Section 01 HMP Overview](#)
- ◆ [Juniata Section 02 Hazard Vulnerability and Risk Assessment](#)
- ◆ [Juniata Section 03 Capability Assessment](#)
- ◆ [Juniata Section 04 Strategies and Implementation](#)
- ◆ [Juniata Section 05 Plan Maintenance](#)
- ◆ [Juniata Section 06 Authorities and References](#)
- ◆ [Juniata Section 07 Glossary of Acronyms and Definitions](#)
- ◆ [Appendix B Juniata County Steering Committee](#)
- ◆ [Appendix B Kickoff Meeting Article 100207](#)
- ◆ [Appendix B Sentinel article - board discusses HMP 100307](#)
- ◆ [Appendix B Sentinel article - Preparing for emergency 102307](#)
- ◆ [Appendix C-01-Civil Disorder](#)
- ◆ [Appendix C-02-Dam Failure](#)
- ◆ [Appendix C-03-Drought](#)
- ◆ [Appendix C-04-Fire - Urban and Rural](#)
- ◆ [Appendix C-05-Flooding](#)
- ◆ [Appendix C-06-Forest Insects and Diseases](#)
- ◆ [Appendix C-07-Geologic Hazards](#)
- ◆ [Appendix C-08-Hazardous Materials Spill](#)
- ◆ [Appendix C-09-Nuclear](#)
- ◆ [Appendix C-10-Public Health Emergency](#)
- ◆ [Appendix C-11-Severe Weather](#)
- ◆ [Appendix C-12-Terrorism](#)
- ◆ [Appendix C-13-Tornado](#)
- ◆ [Appendix C-14-Transportation](#)
- ◆ [Appendix C-15-Utilities Failure](#)
- ◆ [Appendix D Juniata Co Funding Sources-Table D-4](#)
- ◆ [Appendix D Juniata Co Mitigation Municipal Checklist-Table D-1](#)
- ◆ [Appendix D Juniata Co Nonstructural Mitigation Projects-Table D-2](#)
- ◆ [Appendix D Juniata Co Structural Mitigation Projects-Table D-3](#)
- ◆ [Appendix E Greenwood Twp Bridge No. GWT-1](#)
- ◆ [Appendix E Milford Twp - Dry hydrant opportunity 1](#)
- ◆ [Appendix E Milford Twp - Dry hydrant opportunity 2](#)
- ◆ [Appendix E Milford Twp - Dry hydrant opportunity 3](#)
- ◆ [Appendix E Milford Twp - Dry hydrant opportunity 4](#)
- ◆ [Appendix E Port Royal Boro - Flood Water Protection Sewer Plant](#)
- ◆ [Appendix E Port Royal Boro - Protection of Public Water Supply](#)
- ◆ [Appendix E Turbett Twp - Sandbar in Turbett Twp](#)
- ◆ [Appendix E Walker Twp opportunity form](#)
- ◆ [Appendix F 4th Quarterly Form Juniata](#)

The goal of the county's HMP is to make residents, businesses, property owners, operators of critical infrastructure, and municipalities less susceptible to the effects of future disasters by increasing the disaster resistance of the county and its municipalities.

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Juniata County Directory

Juniata County Courthouse – Bridge & Main Streets

P. O. Box 68 – Mifflintown, PA 17059

Courthouse Office hours are 8:00 A.M. to 4:30 P.M. Monday through Friday.

June, July, August and September the Courthouse closes at 12 Noon on Wednesday.

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Site Design and Maintenance by ComputerAxe

Section 6: Authorities and References

This section lists references used to prepare the Juniata County Hazard Mitigation Plan (HMP). Existing plans and studies were reviewed and integrated into the Plan. The flood insurance study acquired from the FEMA was incorporated into the flood hazard profile. Data from this study was utilized in the Hazard Vulnerability Analysis to detail the flood background for the affected municipalities.

Federal

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14. United States Department of Commerce, Bureau of the Census, <http://www.census.gov>.
15. United States Geological Survey, www.usgs.gov.
16. Federal Aviation Administration, <http://www.faa.gov>.

State

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10. Temple University, University of Pittsburgh, Pennsylvania State University. *The Atlas of Pennsylvania* (Temple University Press: Philadelphia, 1989).

Local

1. Juniata County Home Page, <http://www.co.juniata.pa.us/>

Other

1. Kurtz, Thomas. *Intergovernmental Cooperation Handbook*. 4th ed. Pennsylvania: Department of Community and Economic Development, 1997.
2. National Fire Protection Association (NFPA). *NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs*, 2004.
3. So, Frank S., and Judith Getzels, eds. *The Practice of Local Government Planning*, 2nd ed. Washington, D.C.: International City Management Association, 1988.

Geospatial Data

Pennsylvania Spatial Data Access (PASDA)

Title: Impervious Surface Area for Northeast Pennsylvania, 1985

Short Title: pa1985isaa_ne

Edition: Revision 2003

Type of Data: Raster Digital Data

Publication Information:

Publication Place: University Park, PA

Publisher: Penn State University, Department of Meteorology

Description:

Abstract: Impervious surface area for Pennsylvania was estimated from Thematic Mapper data using algorithms developed by Dr. Toby Carlson. The Value attribute indicates percentage of the 25 meter grid cell that is impervious and ranges from 0 to 100 and uses integers rather than decimal values for reduced storage volume. Date of the imagery ranged from 1985 to 1987, availability depended on extent of cloud cover at time of acquisition. All images were collected for the late spring or summer months (May-August).

Purpose:

The impervious surface data was generated to support hydrologic investigations. Impervious surfaces promote runoff during and following precipitation events. Runoff impacts both quantity and quality of receiving waters. Excessive quantities of runoff promote erosion and flooding. Runoff water acquires pollutants from the impervious surface over which it flows. Pollutants can then be transported to a receiving water body. Impervious surface area is also a useful tool in assessing urbanization and urban sprawl, including the effect of urbanization on surface microclimate.

Title: Impervious Surface Area for Northeast Pennsylvania, 2000

Short Title: pa2000isaa_ne

Edition: Revision 2003

Type of Data: Raster Digital Data

Publication Information:

Publication Place: University Park, PA

Publisher: Penn State University, Department of Meteorology

Description:

Abstract: Impervious surface area for Pennsylvania was estimated from Thematic Mapper data using algorithms developed by Dr. Toby Carlson. The Value attribute indicates percentage of the 25 meter grid cell that is impervious and ranges from 0 to 100 and uses integers rather than

decimal values for reduced storage volume. Date of the imagery ranged from 1999 to 2002, availability depended on extent of cloud cover at time of acquisition. All images were collected for the late spring or summer months (May-August).

Purpose:

The impervious surface data was generated to support hydrologic investigations. Impervious surfaces promote runoff during and following precipitation events. Runoff impacts both quantity and quality of receiving waters. Excessive quantities of runoff promote erosion and flooding. Runoff water acquires pollutants from the impervious surface over which it flows. Pollutants can then be transported to a receiving water body. Impervious surface area is also a useful tool in assessing urbanization and urban sprawl, including the effect of urbanization on surface microclimate.

Title: Pennsylvania County Boundaries, 2007

Short Title: PennDOT – Pennsylvania County Boundaries 2007

Type of Data: Vector Digital Data

Publication Information:

Publication Place: Harrisburg, PA

Publisher: Pennsylvania Department of Transportation

Description:

County boundaries within Pennsylvania as delineated for the PennDOT Type 10 general highway map.

Purpose:

Public information and support for transportation planning, design, and development.

Title: Floodplains of Pennsylvania

Type of Data: Vector Digital Data

Publication Information:

Publication Place: Harrisburg, PA

Publisher: Pennsylvania Department of Environmental Protection

Description:

In an effort to expedite the permit review process for Water Obstruction and Encroachment Applications, the Pennsylvania Department of Environmental Protection has initiated a plan to replace hard-copy maps with digital GIS sets. The project is referred to as the 105 Spatial Data System/8105SDS/9. Pennsylvania river floodplains and coastal floodplains are two of many spatial data sets that were used in the 105SDS project. As a result of work completed by Law Environmental, Inc. on the statewide low-level radioactive waste siting project, DEP received two coverages depicting river and coastal floodplains. However, due to the process used in

constructing these data sets, there were many areas throughout the state in which floodplains were not digitized. The primary purpose of this task was to complete the digital floodplain mapping in these areas.

Purpose:

INTENDED USE OF DATA; Created to do permit reviews for Water Obstruction and Encroachment Applications. LIMITATIONS OF DATA; Due to the nature of transferring the floodplains from the FEMA maps to our plotted 1:24000 scale maps, this coverage should be considered to be the “best representation” of the data but not as accurate as, for example, a map of GPS floodplain coordinates.

Title: Streets and Highways, 2006

Short Title: streetscarto.sdc
Type of Data: Vector Digital Data
Publication Information:
Publication Place: Redlands, CA
Publisher: ESRI

Description:

U.S. Streets Cartographic represents detailed streets, interstate highways, and major roads within the United States.

Purpose:

U.S. Streets Cartographic provides streets with a reduced number of attributes and features that are designed to support cartographic display.

Title: Pennsylvania Active Railroads, 1996

Title: Active Railroads
Type of Data: Vector Digital Data
Publication Information:
Publication Place: Harrisburg, PA
Publisher: Pennsylvania Department of Environmental Protection

Description:

Location of active rail lines in Pennsylvania, digitized from 1:24,000 USGS topographic maps on a stable mylar base.

Purpose:

Educational

Section 7: Glossary of Acronyms and Definitions

Acronyms

AHJ	Authority Having Jurisdiction
CBNRE	Chemical, Biological, Nuclear, Radiological, and/or Explosive
CFR	Code of Federal Regulations
COG	Continuity of Government
COG	Counsel of Government
CRS	Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
DRP	Disaster Recovery Plan
EMC	Emergency Management Coordinator
EMPG	Emergency Management Performance Grant program
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance program
GIS	Geographic Information Systems
HAZMAT	Hazardous Material
HAZUS	Hazards U.S.
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HVA	Hazard Vulnerability Analysis
ICC	International Code Council
MPC	Municipalities Planning Code
MPO	Metropolitan Planning Organization
NCDC	National Climatic Data Center
NIMS	National Incident Management System
NFIP	National Flood Insurance Program
NFIRA	National Flood Insurance Reform Act

NFPA 1600	National Fire Protection Association 1600 Standard
PACC	Pennsylvania Capital City Cooperative Purchasing Program
PDM	Pre-disaster Mitigation Grant
PEMA	Pennsylvania Emergency Management Agency
SAA	State Administration Agency
SARA	Superfund Amendments and Reauthorization Act of 1986
UCC	Uniform Construction Code

Definitions

Agri-terrorism – The malicious use of plant or animal pathogens to cause devastating disease in the agriculture sector. It may also take the form of hoaxes and threats intended to create public fear of such events.

Avian Influenza – This is a version of the flu that affects birds. Most commonly, it is transmitted to humans by birds or through an intermediate host.

Comprehensive Environmental Response, Compensation, and Liability Act – Commonly referred to as Superfund, this law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Debris Flow – Similar to landslides, this is a soil mixed with grain sizes from mud, sand, and boulders, and moves almost as a liquid, such as wet concrete.

Disaster Mitigation Act of 2000 – Amending the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, this legislation reinforces the importance of pre-disaster mitigation planning to reduce the nation's disaster losses, and is aimed primarily at controlling and streamlining the administration of federal disaster relief and mitigation programs.

Emergency Operations Center – A site from which government officials (municipal, county, state, and federal) exercise direction and control in an emergency or disaster (FEMA 229).

Emergency Operations Plan – A plan that describes the basis for a coordinated and effective response to any type of emergency or disaster that affects lives and property in the plan's jurisdiction. This plan defines the roles and responsibilities of the county government, private and volunteer organizations, and state and federal agencies within the county.

Frequency of Occurrence – The probability of a hazard occurring over time.

Hazard Mitigation Plan – A document that determines how to reduce or eliminate the loss of life and property damage resulting from natural or human-caused hazard.

Hazard Vulnerability Analysis – The process of evaluating risk associated with a specific hazard and defined in terms of probability and frequency of occurrence, magnitude, severity, exposure, and consequences.

Hazards U.S. – Hazards U.S. (HAZUS) is a nationally applicable standardized methodology and software program that estimates potential losses from earthquakes, hurricane winds, and floods. HAZUS was developed by the Federal Emergency Management Agency (FEMA).

Hepatitis – A disease affecting the liver, which can affect anyone. Many instances have been seen with both isolated cases and widespread outbreaks. Hepatitis is usually spread person to person.

Hurricane – A violent, tropical, cyclonic storm of the western Atlantic, having wind speeds of or in excess of 72 mph (32 m/sec).

Influenza – “The Flu” – Spread person to person by respiratory droplets that are released when sneezing and coughing. Ten to 20 percent of U.S. residents get the flu each year. Influenza is the cause of death for 36,000 Americans every year.

Ingestion Exposure Pathway – A 50-mile radius around a nuclear facility that could receive radioactive contamination in small amounts. It is more important to monitor the food chain instead of human external exposure because consumption can cause internal exposure.

Landslides – Natural movements of earth down a slope, usually from heavy precipitation.

Mad Cow Disease – (Bovine Spongiform Encephalopathy, BSE) – A fatal brain disease that occurs in livestock. In human cases, it is referred to as Creutzfeldt-Jakob Disease or CJD.

Magnitude “Richter” Scale – A scale of numbers that expresses the relative sizes of earthquakes.

Natural Areas Inventory – An extensive biological summary of natural areas within a defined area.

Pennsylvania Emergency Management Services Code – This code states that every county, city, borough, and township in the Commonwealth is required to have an emergency management coordinator who is selected by the elected officials of the jurisdiction. The emergency management coordinator’s role is to develop plans, conduct training, and coordinate all available resources in the community.

Pennsylvania Municipalities Planning Code – The state law that grants townships, boroughs, and most cities the legal power to regulate and to plan land use through the comprehensive plan, subdivision and land development ordinance, zoning ordinance, official map, and other tools.

Primary Hazard – An initial manmade or natural hazard that occurs. An example includes a tornado, transportation accident, or flood.

Public Health Emergency – Occurrence of imminent threat of exposure to an extremely dangerous condition or the occurrence of a highly infectious disease or toxic agent that poses an imminent threat of substantial harm to the population.

Robert T. Stafford Disaster Relief and Emergency Assistance Act – Enacted to support state and local governments and their citizens when disasters overwhelm them. This law establishes a process for requesting and obtaining a Presidential disaster declaration, defines the type and scope of assistance available under the Stafford Act, and sets the conditions for obtaining that assistance.

Superfund Amendments and Reauthorization Act of 1986 – An act that amended the Comprehensive Environmental Response, Compensation, and Liability Act. It stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites; required Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations; provided new enforcement authorities and settlement tools; increased state involvement in every phase of the Superfund program; increased the focus on human health problems posed by hazardous waste sites; encouraged greater citizen participation in making decisions on how sites should be cleaned up; and increased the size of the trust fund to \$8.5 billion.

SARA Title III Facilities – Facilities at which hazardous chemicals are present in excess of specified thresholds.

Secondary Hazard – A hazard that is the result of another hazard. The hazard occurring before the secondary hazard is known as the primary hazard. An example of a secondary hazard is a flood caused by a dam failure.

Sinkholes – Occurring in areas with limestone, carbonate rock, and salt beds, sinkholes form when the rock below the ground dissolves and an empty space is created. After some time, the land and soil above the hole will suddenly fall and fill the space that was created below the surface.

Subsidence – Sinking of the ground surface due to the removal of large quantities of water or petroleum from the pores of underlying sediments or rocks.

Terrorism – Violent act, or an act dangerous to human life that is in violation of the criminal laws of the U.S. or any state, to intimidate or coerce a government, the population, or a segment thereof in furtherance of political or social objectives.

Tropical Storm – A former hurricane that spins counter-clockwise and has winds of more than 39 mph. Its biggest impact is the flooding it leaves behind.

West Nile Virus – Usually spread by mosquitoes, a mild case of this virus will mimic the flu while a severe case will be life-threatening. No drugs or vaccines are available to treat West Nile Virus.