PEORIA COUNTY

Multi-Jurisdictional Multi-Hazard Mitigation Plan

Participating Jurisdictions

- Village of Bartonville
- City of Chillicothe
- Village of Hanna City
- City of Peoria
- Village of Peoria Heights
- City of West Peoria
- Unincorporated Peoria County
- Peoria Park District
- Greater Peoria Sanitary District

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Contents

1 Introduction

Section 1 provides a general introduction to hazard mitigation, a review of the purpose, authority, and scope of the plan, and a summary of the plan contents. It comprises the following subsections:

- 1.1 Background
- 1.2 Purpose and Need
- 1.3 Scope
- 1.4 Authority
- 1.5 Summary of Plan Contents

Table 1.1 – Section 1 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
Section 1 – Introduction		**Section 1 – Introduction**
	1.0 Introduction	1.1 Background – Formerly part of Unincorporated Peoria County Section 1.2, minor changes.
1.1 Purpose		1.2 Purpose and Need – This section was revised to include discussion of updated content.
1.2 Background and Scope	1.1 Participating Jurisdictions	1.3 Scope – This section was revised to include the scope of the hazard identification and risk assessment.
1.3 The 10-Step Planning Process		See Section 2 – Planning Process
		1.4 Authority – This section was added to note plan applicability for grant programs.
		1.5 Summary of Plan Contents – This section was added to describe the contents of the hazard mitigation plan document.

1.1 Background

Each year in the United States, natural and human-caused hazards take the lives of dozens if not hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because additional expenses incurred by insurance companies and non-governmental organizations are not reimbursed by tax dollars.

Natural and human-caused hazards are a part of our natural and built environment, and in many cases, they will inevitably continue to occur. Many natural disasters are predictable, and much of the damage caused by these events can be reduced or even eliminated. There is much we can do to minimize the impacts of hazards on our communities and prevent them from resulting in disasters.

As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event. Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies selected, prioritized, and implemented.

Every community faces different hazards, has different resources available to combat problems, and has different interests that influence the solutions to those problems. Because there are many ways to deal with hazards and many agencies that can help, there is no one solution for managing or mitigating their effects. Planning is one of the best ways to develop a customized program that will mitigate the impacts of hazards while considering the unique character of a community.

Hazard mitigation includes both structural measures (such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards) and non-structural measures (such as the adoption of land use policies and the creation of public awareness programs). It is widely accepted that the most effective mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made.

A key component of local mitigation planning is to develop, adopt, and update a local hazard mitigation plan, which establishes the broad community vision and guiding principles for reducing hazard risk, and further proposes specific mitigation actions to eliminate or reduce identified vulnerabilities. A comprehensive mitigation strategy addresses both current and future hazard vulnerabilities, considering how development and growth patterns may increase or decrease local vulnerability.

Unincorporated Peoria County previously developed the 2018 Peoria County Multi-Hazard Mitigation Plan and the incorporated jurisdictions participated in the 2019 Tri-County Multi-jurisdictional Natural Hazards Mitigation Plan. This plan draws from both of these previous plans to reevaluate local hazard risks and vulnerabilities, review capabilities, and evaluate mitigation alternatives. Additionally, this update documents the efforts of each jurisdiction to implement identified actions and integrate hazard mitigation principles and practices into routine government activities and functions. The plan remains a living document, with implementation and evaluation procedures established to help achieve meaningful objectives and successful outcomes over time.

1.2 Purpose and Need

The purpose of the Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan is to identify, assess, and mitigate hazard risk to better protect the people and property within the county from the effects of natural and human-caused hazards. This plan documents progress on existing hazard mitigation planning efforts, updates the previous plan to reflect current conditions in the planning area including relevant hazards and vulnerabilities, increases public education and awareness about the plan and planning process, maintains grant eligibility for participating jurisdictions, maintains compliance with state and federal requirements for local hazard mitigation plans, and identifies and outlines strategies the participating jurisdictions will use to decrease vulnerability and increase resiliency.

A well-prepared hazard mitigation plan will allow for all possible activities to be reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and activities, preventing conflicts and reducing the costs of implementing each individual activity. This plan provides a framework for all interested parties to work together toward mitigation. It establishes the vision and guiding principles for reducing hazard risk and proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

1.3 Scope

As previously noted, unincorporated Peoria County developed the 2018 Peoria County Multi-Hazard Mitigation Plan and the incorporated jurisdictions participated in the 2019 Tri-County Multi-Jurisdictional Natural Hazards Mitigation Plan. These communities have remained committed to mitigation and the planning process, which enables regular review of the changing exposure, vulnerability, and risk in the planning area.

The planning area of this Multi-Jurisdictional Multi-Hazard Mitigation Plan update includes Peoria County and the following incorporated municipalities:

- Bartonville
- Chillicothe
- Hanna City
- Peoria
- Peoria Heights
- West Peoria – *new addition to the mitigation plan*
- Peoria County Unincorporated Areas
- Peoria Park District – *new addition to the mitigation plan*
- Greater Peoria Sanitary District – *new addition to the mitigation plan*

The above participating jurisdictions will adopt this plan in accordance with standard local procedures. Copies of adoption resolutions will be provided in Appendix A.

Peoria County and its participating jurisdictions, following the planning process prescribed by FEMA and under the guidance of the Hazard Mitigation Planning Committee (HMPC), led a risk assessment that identified hazards that pose a risk to the planning area, profiled each hazard, assessed the planning area's vulnerability to these hazards, and examined the capabilities in place to mitigate them. The hazards profiled in this plan are as follows:

- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Temperatures
- Flood
- Land Subsidence/Sinkhole
- Landslide
- Severe Weather (Hail, Lightning, and Wind)
- Severe Winter Storms
- Tornado
- Wildfire
- Hazardous Material Incidents
- Terrorism Event
- Active Shooter

1.4 Authority

In an effort to reduce the nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) to invoke new and revitalized approaches to mitigation planning. Section 322 of DMA 2000 emphasizes the need for state and local government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for federal mitigation grant funds. These funds include the Hazard Mitigation Grant Program (HMGP), the Building Resilient Infrastructure and Communities (BRIC) program, which replaced the Pre-Disaster Mitigation (PDM) program, and the Flood Mitigation Assistance (FMA) Program, all of which are administered by the Federal Emergency Management Agency (FEMA) under the Department of Homeland Security. Communities with an adopted and federally approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes.

This plan was prepared in coordination with FEMA Region V and the Illinois Emergency Management Agency (IEMA) to ensure that it meets all applicable federal and state planning requirements. This plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Section 104 of DMA 2000, Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October 2007. A Local Mitigation Plan Review Tool, found in Appendix B, provides a summary of FEMA and IEMA's current minimum standards of acceptability and notes the location within this plan where each planning requirement is met. This plan will be monitored, maintained, and updated in compliance with the above legislation.

This plan was developed in a joint and cooperative manner by members of a Hazard Mitigation Planning Committee (HMPC) which included representatives of local City departments, federal and state agencies, citizens, and other stakeholders. This plan will ensure that Peoria County and its incorporated municipalities remain eligible for federal disaster assistance including FEMA's HMGP, BRIC, and FMA programs.

1.5 Summary of Plan Contents

The Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan is organized into the following sections:

- Section 1: Introduction
- Section 2: Planning Process
- Section 3: Community Profile
- Section 4: Hazard Identification
- Section 5: Hazard Risk & Vulnerability Assessment
- Section 6: Capability Assessment
- Section 7: Mitigation Strategy
- Section 8: Mitigation Action Plan
- Section 9: Plan Implementation and Maintenance
- Appendix A: Plan Adoption
- Appendix B: Local Mitigation Plan Review Tool
- Appendix C: Planning Process Documentation
- Appendix D: Mitigation Alternatives

Section 2: Planning Process provides a step-by-step review of the process used to prepare this plan. This includes the identification of participants on the Hazard Mitigation Planning Committee (HMPC) and a description of how the public and other stakeholders were involved. It also includes a summary of meetings held, an overview of updates and revisions to the plan, a discussion of the multi-jurisdictional planning approach, and a summary of hazard risk and vulnerability as well as adoption, implementation, monitoring, and maintenance.

Section 3: Community Profile provides a general overview of Peoria County, including prevalent geographic, demographic, and economic characteristics. Development and land use patterns are also discussed. This baseline information provides a snapshot of the planning area and helps local officials recognize those social, environmental, and economic factors that play a role in determining the county's vulnerability to hazards.

The Risk Assessment is presented in two sections: Section 4: Hazard Identification and Section 5: Hazard Risk and Vulnerability Assessment. Together, these sections:

- Identify and assess the hazards that pose a threat to the planning area;
- Rank and prioritize these hazards based on conclusions regarding the frequency of occurrence, spatial extent, and potential impact of each hazard; and

- Evaluate the vulnerability of the planning area to each hazard.

Section 6: Capability Assessment provides a comprehensive examination of Peoria County's capacity to implement meaningful mitigation strategies and identifies opportunities to increase and enhance that capacity. Specific capabilities addressed in this section include planning and regulatory capability, staff and organizational (administrative) capability, technical capability, fiscal capability, and political capability. Information was obtained through a Data Collection Guide and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts and to identify those activities that should be built upon in establishing a successful and sustainable local hazard mitigation program.

Section 7: Mitigation Strategy and Section 8: Mitigation Action Plan present the goals and objectives for hazard mitigation in Peoria County, the action evaluation and prioritization process for considering mitigation alternatives, and the ultimate list of specific mitigation actions recommended for implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis is placed on the use of program and policy alternatives to help make Peoria County less vulnerable to the damaging forces of hazards while improving the economic, social, and environmental health of the community. The concept of multi-objective planning was emphasized throughout the planning process, particularly in identifying ways to link, where possible, hazard mitigation policies and programs with complimentary community goals related to disaster recovery, housing, economic development, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety.

Section 9: Plan Implementation & Maintenance details the measures that the participating jurisdictions will take to ensure the plan's implementation as well as the procedures by which the plan will be regularly evaluated and updated to remain a current and meaningful planning document.

2 Planning Process

44 CFR **§201.6(b): An open public involvement process is essential to the development of an effective plan. 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 and nonprofit interests to be involved in the planning process; and
3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
44 CFR **§201.6(c)(1): The plan shall include the following:**
1) Documentation of 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.

Section 2 provides a review of the process followed for the development of the Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan including a summary of the opportunities for public and stakeholder involvement and incorporation of existing plans and information. This section contains the following subsections:

Table 2.1 – Section 2 Summary

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 2 – Planning Process
	2.0 Planning Process	2.1 Overview of Hazard Mitigation Planning
		2.2 History of Hazard Mitigation Planning in Peoria County – This section was added to include a discussion of key updates to the plan.
1.3 The 10-Step Planning Process		2.3 Preparing the Plan – This section outlines the DMA- and CRS-planning processes that were integrated and followed for this plan update.
1.3.1 Phase 1: Organize Resources	2.1 Mitigation Advisory Committee	2.4 Hazard Mitigation Planning Committee – Discussion and summary of HMPC meetings.
	2.2 Public Involvement	2.5 Involving the Public – Description of outreach to the public and participation in the planning process
	2.3 Participation Opportunities for Interested Parties 2.4 Incorporating Existing Planning Documents	2.6 Involving Stakeholders – Description of other coordination with other agencies and other planning efforts
		2.7 Documentation of Plan Progress – This section was added to include a summary of progress made toward implementation of the mitigation action plans.

2.1 Overview of Hazard Mitigation Planning

Local hazard mitigation planning is the process of organizing community resources, identifying, and assessing hazard risks, and determining how to best minimize or manage those risks. This process culminates in a hazard mitigation plan that identifies specific mitigation actions, each designed to achieve both short-term planning objectives and a long-term community vision.

To ensure the functionality of a hazard mitigation plan, responsibility is assigned for each proposed mitigation action to a specific individual, department, or agency along with a schedule for implementation. Plan maintenance procedures are established for the routine monitoring of implementation progress, as well as the evaluation and enhancement of the mitigation plan itself. These plan maintenance procedures ensure that the plan remains a current, dynamic, and effective planning document over time that becomes integrated into the routine local decision-making process.

Communities that participate in hazard mitigation planning have the potential to accomplish many benefits, including:

- Saving lives and property
- Saving money
- Speeding recovery following disasters
- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction
- Expediting the receipt of pre-disaster and post-disaster grant funding
- Demonstrating a firm commitment to improving community health and safety

Mitigation planning has the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. The goal of hazard mitigation is that the investments made before a hazard event will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community and the local economy back on track with less interruption.

Mitigation planning can also achieve multiple objectives in the community beyond risk reduction. For example, the acquisition of land in known hazard areas can preserve open space, maintain environmental health, and enhance recreational opportunities. Thus, it is essential that any local mitigation planning process be integrated with other concurrent local planning efforts and that the identification of mitigation strategies consider other community goals or initiatives that will complement or hinder implementation.

2.2 History of Hazard Mitigation Planning in Peoria County

This 2023 plan update brings together the unincorporated areas of Peoria County and local Peoria County jurisdictions of the Village of Bartonville, City of Chillicothe, Village of Hanna City, City of Peoria, and the Village of Peoria Heights. The unincorporated areas of Peoria County were previously addressed in the FEMA approved 2018 Peoria County Hazard Mitigation Plan. The local jurisdictions of Peoria County were previously addressed in the FEMA approved 2019 Tri-County Regional Hazard Mitigation Plan. Additionally, this 2023 plan update includes the additional participating jurisdictions of the City of West Peoria, Greater Peoria Sanitary District, and the Peoria Parks District.

2.2.1 Updates and Revisions by Section

A comparison table is included at the beginning of each section of this plan and presents the previous plan section titles for both the 2018 Peoria County Hazard Mitigation Plan and the 2019 Tri-County Regional Hazard Mitigation Plan along with the 2023 updated Plan Section and a detailed description of the updates and revisions that were made.

2.2.2 Summary of Key Updates

This hazard mitigation plan update involved a comprehensive review and update of each section of the existing plan and an assessment of the success of the County and participating municipalities in evaluating, monitoring, and implementing the mitigation strategy outlined in their existing plans. Only the information and data still valid from the existing plan was carried forward as applicable into this update. The following requirements were addressed during the development of this plan update:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to inventories; and
- Incorporate new action recommendations or changes in action prioritization.

provides a comparison of the hazards addressed in the 2018 Illinois Mitigation Strategy, the 2018 Peoria County plan, and the 2019 Tri-County Natural Hazards Mitigation Plan and provides the final decision made by the HMPC as to which hazards should be included in the updated 2023 Peoria County Multi-Jurisdictional Plan.

Hazard	Included in 2018 State HMP?	Included in 2018 Peoria County HMP?	Included in 2019 Tri-County HMP?	Included in 2023 Peoria County HMP?
Dam/Levee Failure	Yes	Yes	Yes	Yes
Drought	Yes	Yes	Yes	Yes
Earthquake	Yes	Yes	Yes	Yes
Extreme Temperatures	Yes	Yes	Yes (Heat Only)	Yes
Flooding	Yes	Yes	Yes	Yes
Land Subsidence/Sinkhole	Yes	No	Yes	Yes
Landslide	Yes	Yes	Yes	Yes
Severe Thunderstorm (Hail, Lightning, and Wind)	Yes	Yes	Yes (Includes Hail, Lightning, Heavy Rain)	Yes
Severe Winter Storms	Yes	Yes	Yes	Yes
Tornado	Yes	Yes	Yes	Yes
Wildfire	Yes	Yes	No	Yes
Wind	Yes (Severe Thunderstorm)	Yes (Severe Thunderstorm)	No	Yes (Severe Thunderstorm)
Hazardous Materials Incident	No	Yes	No	Yes
Terrorism	No	Yes	No	Yes
Active Shooter	No	Yes	No	Yes

Table 2.2 – Hazard Identification Summary

Hazard	Included in 2018 State HMP?	Included in 2018 Peoria County HMP?	Included in 2019 Tri-County HMP?	Included in 2023 Peoria County HMP?
Dam/Levee Failure	Yes	Yes	Yes	Yes
Drought	Yes	Yes	Yes	Yes

Earthquake	Yes	Yes	Yes	Yes
Extreme Temperatures	Yes	Yes	Yes (Heat Only)	Yes
Flooding	Yes	Yes	Yes	Yes
Land Subsidence/Sinkhole	Yes	No	Yes	Yes
Landslide	Yes	Yes	Yes	Yes
Severe Thunderstorm (Hail, Lightning, and Wind)	Yes	Yes	Yes (Includes Hail, Lightning, Heavy Rain)	Yes
Severe Winter Storms	Yes	Yes	Yes	Yes
Tornado	Yes	Yes	Yes	Yes
Wildfire	Yes	Yes	No	Yes
Wind	Yes (Severe Thunderstorm)	Yes (Severe Thunderstorm)	No	Yes (Severe Thunderstorm)
Hazardous Materials Incident	No	Yes	No	Yes
Terrorism	No	Yes	No	Yes
Active Shooter	No	Yes	No	Yes

In addition to the specific changes in hazard analyses in Section 5, the following items were also addressed in this plan update:

- GIS was used, to the extent data allowed, to analyze the priority hazards as part of the vulnerability assessment.
- Assets at risk to identified hazards were identified by property type and values of properties based on parcel data and a critical facilities inventory provided by Peoria County.
- A discussion on climate change and its projected effect on specific hazards was included in each hazard profile in the risk assessment.
- Public outreach and agency coordination efforts were conducted throughout the plan update process in order to meet the more rigorous requirements of the 2017 CRS Coordinator's Manual, in addition to DMA requirements.

2.3 Preparing the Plan

The planning process for preparing the Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan was based on DMA planning requirements and FEMA's associated guidance. This guidance is structured around a four-phase process:

1) Planning Process;
2) Risk Assessment;
3) Mitigation Strategy; and
4) Plan Maintenance.

Into this process, the planning consultant integrated a more detailed 10-step planning process used for FEMA's Community Rating System (CRS) program. Thus, the modified 10-step process used for this plan meets the requirements of six major programs: FEMA's Hazard Mitigation Grant Program (HMGP); Building Resilient Infrastructure and Communities (BRIC) Program; CRS Program; Flood Mitigation Assistance (FMA) Program; Severe Repetitive Loss Program; and new flood control projects authorized by the U.S. Army Corps of Engineers.

Table 2.3 shows how the 10-step CRS planning process aligns with the four phases of hazard mitigation planning pursuant to the Disaster Mitigation Act of 2000.

Table 2.3 – Mitigation Planning and CRS 10-Step Process Reference Table

DMA Process	CRS Process
Phase I – Planning Process	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4. Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5. Assess the Problem
Phase III – Mitigation Strategy	
§201.6(c)(3)(i)	Step 6. Set Goals
§201.6(c)(3)(ii)	Step 7. Review Possible Activities
§201.6(c)(3)(iii)	Step 8. Draft an Action Plan
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate and Revise the Plan

The process followed for the preparation of this plan, as outlined in Table 2.3 above, is as follows:

Phase I – Planning Process

Planning Step 1: Organize to Prepare the Plan

With Peoria County's commitment to participate in the DMA planning process, community officials worked to establish the framework and organization for development of the plan. An initial meeting was held with key community representatives to discuss the organizational aspects of the plan development process. The Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee (HMPC) led the County's effort to reorganize and coordinate for the plan update. Consultants from WSP, Inc. assisted the County through the planning process and preparation of the plan document.

Planning Step 2: Involve the Public

Public involvement in the development of the plan was sought through open public meetings and workshops, a plan website, a survey, and other various methods, as detailed in Section 2.5.

Planning Step 3: Coordinate

The HMPC formed for development of the 2018 plan was reconvened for this plan update. More details on the HMPC are provided in Section 2.4. Stakeholder coordination was incorporated into the formation of the HMPC and was sought through additional outreach methods, detailed in Section 0.

Coordination with Other Community Planning Efforts and Hazard Mitigation Activities

In addition to stakeholder involvement, coordination with other community planning efforts was also seen as paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. Peoria County and its participating jurisdictions use a variety of planning mechanisms, such as land use plans, subdivision regulations, building codes, and ordinances to guide growth and development. Integrating existing planning efforts, mitigation policies, and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs. As detailed in Table 2.4, the development of this plan incorporated information from existing plans, studies, reports, and initiatives as well as other relevant data from neighboring communities and other jurisdictions.

These and other documents were reviewed and considered, as appropriate, during the collection of data to support the planning process and plan development, including the hazard identification, vulnerability assessment, and capability assessment.

Table 2.4 – Summary of Existing Planning Mechanisms Reviewed

Resource Referenced	Use in this Plan
Peoria County Flood Insurance Study (FIS)	The FIS report, 09/01/1979, and associated FIRM panels, dated 06/01/1983, are referenced in the preparation of flood hazard profile in Section 5.8.
Bartonville FIS	The FIS report, 03/16/1981, and associated FIRM panels, dated 11/02/1983, are referenced in the preparation of flood hazard profile in Section 5.8.
Chillicothe FIS	The FIRM panel, dated 02/02/1977, is referenced in the preparation of flood hazard profile in Section 5.8.
Peoria Heights FIS	The FIS report, 02/17/2017, and associated FIRM panels, dated 09/17/2010, are referenced in the preparation of flood hazard profile in Section 5.8.
City of Peoria FIS	The FIS report, 08/01/1979, and associated FIRM panels, dated 02/01/1980, are referenced in the preparation of flood hazard profile in Section 5.8.
Illinois Hazard Mitigation Plan, 2018	The State Hazard Mitigation Plan was referenced for the hazard identification in Section 4 and in the development of hazard profiles in Section 5.
Peoria County HMP, 2018	The previous hazard mitigation plan was referenced throughout this entire plan update, including in identifying and evaluating hazards in Section 4 and Section 5, reporting on implementation of existing actions in Section 2, developing the Mitigation Action Plans in Section 8, and developing the Capability Assessment in Section 6.
Tri-County HMP, 2019	The previous hazard mitigation plan was referenced throughout this entire plan update, including in identifying and evaluating hazards in Section 4 and Section 5, reporting on implementation of existing actions in Section 2, developing the Mitigation Action Plans in Section 8, and developing the Capability Assessment in Section 6.
Stormwater Management and Flood Damage Prevention Ordinances	Local ordinances were referenced in the Capability Assessment in Section 6 and where applicable for updates in Mitigation Action Plans in Section 8.
Building and Zoning Codes and Ordinances	Local ordinances were referenced in the Capability Assessment in Section 6 and where applicable for updates in Mitigation Action Plans in Section 8.
Long-Range Transportation Plan 2045	This guide for future development and maintenance of the Peoria-Pekin Urbanized Area transportation system was referenced for the Community Profile and addressing future development.
Mutual Aid Agreements	Mutual aid was evaluated as part of the Capability Assessment in Section 6.
Land Use Maps	Land use maps were consulted to understand growth and development trends, discussed in Section 3, and to evaluate the potential impact of these trends on hazard risk in Section 5.
Critical Facilities Maps	Critical facilities maps were prepared for this plan update using data from Peoria County. These maps were incorporated into the risk assessment in Section 5.
Peoria Parks District Water Intrusion Plan	This planning document outlining actions to be taken when a water intrusion problem occurs was evaluated as part of the Capability Assessment in Section 6.

Phase II – Risk Assessment

Planning Steps 4 and 5: Identify/Assess the Hazard and Assess the Problem

The HMPC completed a comprehensive effort to identify, document, and profile all hazards that have, or could have, an impact on the planning area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities. A draft of the risk and vulnerability assessment was made available on the plan website for the HMPC, stakeholders, and the public to review and comment. A more

detailed description of the risk assessment process and the results are provided in Section 4 Hazard Identification and Section 5 Hazard Risk & Vulnerability Assessment.

The HMPC also conducted a capability assessment to review and document the planning area's current capabilities to mitigate risk and vulnerability to hazards. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the HMPC could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. This information can be found in Section 6 Capability Assessment.

Phase III – Mitigation Strategy

Planning Steps 6 and 7: Set Goals and Review Possible Activities

WSP facilitated brainstorming and discussion sessions with the HMPC that described the purpose and process of setting broad planning goals, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Section 7 Mitigation Strategy.

Planning Step 8: Draft an Action Plan

A complete first draft of the plan was prepared based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7. This draft was shared for HMPC, stakeholder, and public review and comment via the plan website. Comments were received from the HMPC and were integrated into the final draft, which was submitted to the Illinois Emergency Management Agency (IEMA) and FEMA Region 5 to review and approve, contingent upon final adoption by all participating jurisdictions.

Phase IV – Plan Maintenance

Planning Step 9: Adopt the Plan

To secure buy-in and officially implement the plan, the plan will be reviewed and adopted by all participating jurisdictions. Adoption is discussed in Section 9, and resolutions will be provided in Appendix A.

Planning Step 10: Implement, Evaluate and Revise the Plan

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. Each jurisdiction participating in this plan is responsible for plan implementation within their jurisdiction. Elected officials, officials appointed to head County and City departments, and community staff are charged with leading implementation of various activities in the plan. Each participating jurisdiction will need to decide which action(s) to undertake first based on the priority assigned to the actions in the planning process and the availability of funding and administrative support. Regular monitoring and maintenance, led by Peoria Emergency Management and Preparedness, and conducted by the HMPC, will ensure continued progress toward implementation.

Section 9 Plan Implementation and Maintenance provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. Section 9 also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

2.4 Hazard Mitigation Planning Committee

As with the previous plan, this Hazard Mitigation Plan was developed under the guidance of a Hazard Mitigation Planning Committee (HMPC). The HMPC represents a community-based planning team made up of representatives from various municipal departments and other key stakeholders identified to serve as critical partners in the planning process. To reconvene the committee, a letter was sent to all contacts from the previous planning effort. Where there were vacancies on the committee, new members were invited to participate.

For the Peoria County HMPC, "participation" meant the following:

- Providing facilities for meetings;
- Attending and participating in the HMPC meetings;
- Collecting and providing requested data (as available);
- Providing information on local capabilities;
- Providing an update on previously adopted mitigation actions;
- Managing administrative details;
- Making decisions on plan process and content;
- Identifying mitigation actions for the plan;
- Reviewing and providing comments on plan drafts;
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan;
- Coordinating and participating in the public input process; and
- Coordinating the formal adoption of the plan by local governing bodies.

During the planning process, the HMPC members communicated through video conference meetings, email, and telephone conversations. This continued communication ensured that coordination was ongoing throughout the entire planning process despite the fact that not all HMPC members could be present at every committee meeting. Additionally, draft documents were distributed via a plan update website so that the HMPC members could easily access and review them and provide comments.

Members of the HMPC are listed in Table 2.5 by jurisdiction and agency. Stakeholder representatives, who provided input to support all jurisdictions in the planning process, included state government, hospitals, businesses, and other public organizations.

Table 2.5 – HMPC Members

Jurisdiction	Representative	Role, Agency	Stakeholder
Bartonville	Patrick Meyer	Village Engineer, Village of Bartonville	
Bartonville	Larry Nelson	Director, Bartonville ESDA	
Chillicothe	Jeremy Cooper	Police Chief, City of Chillicothe Police Department	
Greater Peoria Sanitary District	Brian Johnson	Executive Director, Greater Peoria Sanitary District	
Greater Peoria Sanitary District	Tim Leach	Director of Planning and Construction, Greater Peoria Sanitary District	
Hanna City	Brian Baylor	Administrator, Village of Hanna City	
Peoria	Sie Maroon	Deputy Director of Operation, City of Peoria	
Peoria	Joshua Naven	Senior Urban Planner, City of Peoria	
Peoria	Kerilyn Weick	Senior Urban Planner, City of Peoria	
Peoria - West Peoria	Kinga Krider	City Administrator, City of West Peoria	
Peoria County	Andrew Braun	Assistant Director, Peoria County Planning and Zoning	
Peoria County	Jason Marks	Emergency Preparedness Coordinator, Peoria County	
Peoria County	Kathi Urban	Director, Peoria County Planning and Zoning	
Peoria County	Jack Weindel	Planner I, Peoria County Planning and Zoning	
Peoria Heights	Dustin Sutton	Village Administrator and Police Chief, Village of Peoria Heights	
Peoria Heights	Sarah Witbracht	Administrative Assistant, Village of Peoria Heights	
Peoria Park District	Cody Haines	Environmental Health Safety Manager, Peoria Park District	
Peoria Park District	Mike Miller	Supervisor of Environmental and Interpretive Services, Peoria Park District	
Business Community	John Callear	General Contractor, Home Builders Association (C & L Homes)	✓
Business Community	Richard Corrie	Plant Operations Director, Lutheran Hillside Village	✓
Business Community	Dorey Dewitt	Managing Broker/Realtor, Women's Council of Realtors	✓
Business Community	Shelly Heiden	Executive Director, Lutheran Hillside Village	✓
Business Community	Patrick Kirchhofer	Manager, Peoria County Farm Bureau	✓
Business Community	Terry Ruhland	President/Owner, Home Builders Association (Plum Creek Builders)	✓
Environmental Organization	Joyce Blumenshine	Conservation Co-Chair, Sierra Club (Heart of Illinois Chapter	✓
Healthcare	Troy Erbentrout	Director of the Office of Preparedness and Response, OSF Saint Francis	✓
Healthcare	Nick Orr	IT Disaster Recovery Specialist, OSF Healthcare	✓
Healthcare	Melody Shake	VP Quality & Compliance, Heartland Health Services	✓
Public Organization	Reema Abi-Akar	Senior Planner, Tri-County Regional Planning Commission	✓
Public Organization	Michael Bruner	Senior Planner, Tri-County Regional Planning Commission	✓
Public Organization	Beth Crider	Regional Superintendent, Peoria Regional Office of Education	✓

Jurisdiction	Representative	Role, Agency	Stakeholder
Public Organization	Ryan Krolicki	Supervisor, Illinois American Water	✓
Public Organization	Amy McLaren	County Engineer (Highway Department), Peoria County	✓
Public Organization	Tony O'Neal	Emergency Response Specialist, Ameren Illinois	✓
Public Organization	Heather Stanley	Meteorologist, National Weather Service	✓
Public Organization	Alan Tamm	Levee Safety Program Manager, US Army Corps of Engineers	✓
Volunteer	Guy Hathaway	Disaster Services Volunteer, American Red Cross	✓
Volunteer	Mike Krost	Member, Friends of River Beach Drive	✓
Volunteer	Julie Learned	Disaster Program Manager, American Red Cross	✓
Volunteer	Eric Rezba	American Red Cross	✓
Volunteer	Lisa Rogers	Member, Friends of River Beach Dr	✓
Volunteer	Gerald Traenkenschuff	Retired	✓

The formal HMPC meetings followed the 10 CRS Planning Steps. These meetings were essential for facilitating discussion, gaining consensus, and initiating data collection efforts with local government staff, community officials, and other identified stakeholders. More importantly, the meetings and workshops prompted continuous input and feedback from relevant participants throughout the drafting stages of the plan. The meeting dates, locations, and topics discussed are summarized in Table 2.6. More details on each meeting, including agendas, minutes, and sign-in sheets for the HMPC meetings are included in Appendix C. All HMPC meetings were open to the public; however, separate public meetings were also held and are summarized in Table 2.7.

In many cases, routine discussions and additional meetings were held by local staff to accomplish planning tasks specific to their department or agency. For example, completing the capability assessment, reporting on the status of existing actions, or seeking approval of specific mitigation actions for their department or agency to undertake and include in their Mitigation Action Plan. These meetings were informal and are not documented here.

Table 2.6 – Summary of HMPC Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
HMPC Mtg. #1 – Project Kickoff	1) Introduction to DMA and CRS requirements and the planning process 2) Trends in disasters and justification for planning 3) Review of HMPC responsibilities and the project schedule 4) Public involvement discussion 5) Preliminary risk assessment discussion	December 14th, 2022 1:30 p.m.	In-Person
HMPC Mtg. #2	1) Review Draft Hazard Identification & Risk Assessment (HIRA) 2) Current planning process and progress 3) Discuss mitigation action plan requirements	February 15th, 2023 1:30 p.m.	Zoom Video Conference Call
HMPC Mtg. #3	1) Review plan goals and objectives 2) Discuss new mitigation action alternatives	March 15th. 2023 1:30 p.m.	In-Person and Conference Call
HMPC Mtg #4	1) Review Plan Document	May 23, 2023 1:30pm	Zoom Video Conference Call

2.4.1 Multi-Jurisdictional Participation and Special Considerations

This plan update includes Peoria County's incorporated municipalities, unincorporated areas, and larger communities. The DMA planning regulations and guidance stress that to satisfy multi-jurisdictional participation requirements, each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC;
- Detail where within the planning area the risk differs from that facing the entire area;
- Identify potential mitigation actions; and
- Formally adopt the plan.

To satisfy multi-jurisdictional participation requirements, each participating jurisdiction was required to perform the following tasks:

- Designate representatives for the HMPC to participate in mitigation planning meetings;
- Report on the status of existing mitigation projects; and
- Update their local Mitigation Action Plan.

In developing the Peoria County Mitigation Action Plan, stakeholder groups and outside agencies were also involved in the planning effort and participated on the HMPC. These stakeholders were encouraged to support targeted mitigation efforts within their expertise that benefit all jurisdictions, such as protection and back-up power generation for non- City-owned or County-owned critical facilities.

To support each jurisdiction's evaluation of mitigation alternatives, Appendix D reviews a selection of actions considered within each mitigation category.

As a basis for each jurisdiction identifying their own mitigation strategies, jurisdiction-specific information was developed on current conditions, assets and exposure, risk and vulnerability, and capability. Current conditions information is provided in Section 3 Community Profile, which has a countywide summary of geographic and demographic data. Asset and exposure data is detailed by jurisdiction in Section 5.3. The risk assessment also provides jurisdictional specific vulnerability data, such as repetitive loss counts for flood. At the end of each hazard profile for natural hazards, a hazard summary table provides a discussion of jurisdictional differences and a priority rating by jurisdiction to note any variations in risk across the planning area. Jurisdictional-level capability information is summarized in Section 6.

2.5 Involving the Public

An important component of any mitigation planning process is public participation. Individual citizen and community-based input provides the entire planning team with a greater understanding of local concerns and increases the likelihood of successfully implementing mitigation actions by developing community "buy-in" from those directly affected by the decisions of public officials. As residents become more involved in decisions that affect their safety, they are more likely to gain a greater appreciation of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community's overall mitigation strategy aimed at making a home, neighborhood, school, business, or entire planning area safer from the potential effects of hazards.

Public involvement in the development of the plan was sought using various methods including open public meetings, an interactive plan website, a public participation survey, and by making copies of draft plan documents available for public review online. Additionally, HMPC meetings were open to the public.

All public meetings were advertised on the plan website, which was shared on local community websites. Copies of meeting announcements are provided in Appendix C. The public meetings held during the planning process are summarized in Table 2.7.

Table 2.7 – Summary of Public Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
Public Meeting #1	1) Introduction to DMA and CRS planning process and justification for planning 2) Review of preliminary risk assessment information 3) Plan website and public survey overview	Feb 1st, 2023 5:30 p.m.	Zoom Video Conference Call
Public Meeting #2	1) Review Draft Hazard Mitigation Plan 2) Solicit comments and feedback	March 15, 2023 5:30 p.m.	In person

2.5.1 Outreach Efforts

The HMPC agreed to employ a variety of public outreach methods including established public information mechanisms and resources within the community. Table 2.8 details public outreach efforts employed during the preparation of this plan.

Table 2.8 – Public Outreach Efforts

Location	Date	Event/Message
Plan Website	Ongoing	Meeting announcements, meeting materials, and description of hazards; contact information provided to request additional information and/or provide comments
Facebook	March 2023	The Tri-County Regional Planning Commission posted to Facebook public meeting announcements and links to the public survey.
Twitter	March 2023	The Tri-County Regional Planning Commission posted to Twitter public meeting announcements and links to the public survey.
LinkedIn	March 2023	The Tri-County Regional Planning Commission posted to LinkedIn public meeting announcements and links to the public survey.
Public Survey	February 2023 & March 2023	Survey hosted online on plan website and made available via shareable link. Additionally, hard copies of the questionnaire will be distributed at all public meetings and presentations to stakeholder groups.
Plan website - Draft Plan	May 2023	Full draft plan made available for review and comment online

A public outreach survey was made available in March 2023 and remained open for response throughout the planning process. The public survey requested public input into the Hazard Mitigation Plan planning process, including the prioritization of hazards and the identification of mitigation activities to lessen the risk and impact of future hazard events. The survey is shown in Appendix C along with detailed response data. The survey was available on the plan website and publicized through local government and social media. In total, 28 survey responses were received.

The following is a list of high-level summary results and analysis derived from survey responses:

- 61% of responses were from City of Peoria, 14% from unincorporated Peoria County, and additional responses from Bartonville, Chillicothe, Dunlap, East Peoria, Elmwood, Peoria Heights, and Tazewell County
- 61% of respondents had not experienced or been impacted by a disaster event, but the majority of respondents were extremely (21%) or somewhat (64%) concerned about the possibility of a disaster event.
- The majority of respondents say they somewhat (54%) prepared for a hazard event; while 32% feel prepared, and 14% feel not at all prepared. No respondent felt very prepared.
- Text message, email, and TV news and ads are the top three preferred methods for receiving information about hazard events and information on how to reduce local risk.

- Tornadoes were rated the most significant hazard, followed by severe thunderstorms/high wind, winter storms, extreme temperatures, flood, active shooter, hazardous materials incidents, drought, land subsidence/sinkholes, earthquake, terrorism events, dam/levee failure, landslide, and wildfire.
- For mitigation actions, respondents favored providing back-up power for critical facilities (water system pumps, hospitals, nursing homes, schools, etc.); hazard education and risk awareness programs; and local plans and regulations that influence the way land and buildings are developed and built.

Detailed survey results are provided in Appendix C.

2.6 Involving Stakeholders

In addition to representatives of each participating jurisdiction, the HMPC included a variety of stakeholders. Stakeholders on the HMPC included representatives from Peoria Regional Office of Education; Peoria County; Tri-County Regional Planning Commission; local healthcare entities including OSF Saint Francis Medical Center, OSF Healthcare Systems, and Heartland Health Services; the business community including local homebuilder's associations, the Woman's Council of Realtors, and Peoria County Farm Bureau; public organizations including the National Weather Service and US Army Corps of Engineers (USACE); and representatives from a local chapter of the environmental advocacy group, the Sierra Club.

Input from additional stakeholders was solicited through invitations to the open public meetings and distribution of the public survey and plan website. The list of additional stakeholders invited to participate in the planning process is provided in Appendix C and includes 7 federal agencies, 15 state agencies, and 16 local stakeholders including neighboring communities. If any additional stakeholders representing other agencies and organizations participated through the public survey, that information is unknown due to the anonymous nature of the survey.

To specifically address high hazard potential dams (HHPD), input was solicited through invitations to the USACE and the Illinois Department of Natural Resources. Additionally, the Chief of the Dam Safety Program was contacted directly to discuss the HHPDs within Peoria County. Private dam owners were addressed as the general public and were welcome to attend the open public meetings, to participate in the public survey, and review information on the plan website.

2.7 Documentation of Plan Progress

The hazards addressed in this plan were chosen by the HMPC based on the previous Peoria County plan, the 2018 Illinois State Mitigation Strategy, the 2019 Tri-County Multi-Jurisdictional Natural Hazards Mitigation Plan, and consideration of geographic area affected (percentage of people), probability of future occurrence (frequency), magnitude/severity (injuries, fatalities, personal property, and infrastructure), population, and population growth.

The conclusions drawn from each individual hazard profile and vulnerability assessment were used to prioritize all potential hazards to Peoria County using a hazard rating, as developed by the State of Illinois. Each of the profile categories is assigned a weighted point value which is then combined with a point value for the population of Peoria County and the projected population growth. The overall hazard rating, as the sum of the point values for each category, was used by the HMPC to prioritize those hazards of greatest significance to the planning area, thus enabling each jurisdiction to focus resources where they are most needed. Those hazards that occur infrequently or have little or no impact on the planning area were determined to be of low significance. Those hazards determined to be of severe or high significance were characterized as priority hazards that required further evaluation.

Table 2.9 below summarizes the planning significance for the hazards addressed in this plan.

Table 2.9 – Planning Significance of Hazards

Hazard	Geographic Location	Probability of Future Events	Magnitude / Severity	Hazard Rating	Hazard Rating Variation for other jurisdictions
Natural Hazards					
Severe Winter Weather	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Thunderstorm	High	High	Medium	Severe	
Flood	Medium	High	High	Severe	Guarded *Chillicothe, Peoria Heights* Low *Hanna City*
Extreme Temperatures	High	Medium	Medium	High	
Drought	High	Low	Low	Elevated	
Dam/Levee Failure	Low	Low	High	Elevated	Low Chillicothe, Peoria Heights
Landslide	Low	Medium	Low	Guarded	Low Hanna City
Land Subsidence	Medium	Low	Low	Guarded	Low Chillicothe, Peoria Heights
Wildfire	Medium	Low	Low	Low	
Earthquake	Low	Low	Low	Low	
Man-made Hazards					
Hazardous Materials Incidents	Medium	High	Low	High	
Active Shooter				Elevated	
Terrorism Events	Low	Low	Low	Elevated	

2.7.1 Mitigation Strategy Revisions

Progress on the mitigation strategy developed in the previous plan is also documented in this plan update. Table 2.10 details the status of mitigation actions from the previous plan. Table 2.11 on the following pages details all completed and deleted actions from the 2018/2019 plans. Detail on the actions being carried forward is provided in Section 8 Mitigation Action Plan.

Table 2.10 – Status of Previous Mitigation Actions

Jurisdiction	Completed	Deleted	Carried Forward
Bartonville	0	0	16
Chillicothe	0	0	13
Hanna City	1	2	10
Peoria, City of	0	0	13
Peoria Heights	4	1	8
West Peoria	N/A	N/A	N/A
Peoria County Unincorporated Areas	3	0	32
Peoria Park District	N/A	N/A	N/A
Greater Peoria Sanitary District	N/A	N/A	N/A

Table 2.11 – Completed and Deleted Actions from the 2018/2019 Plans

Hazard	Action #	Action Description	Jurisdictions	2023 Status	2023 Implementation Comments
Multi-Hazard	2	Purchase a stand-alone server with software to back up the Village's computer files.	Hanna City	Completed	Completed with the assistance of Cloud Tech.
Flood	6	Conduct a sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	Hanna City	Deleted	Similar to existing mitigation action #7 addressing sewer lines.
Earthquake	13	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the Village.	Hanna City	Deleted	Not likely to be completed.
Flood	1	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.	Peoria Heights	Completed	
Earthquake	3	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.	Peoria Heights	Deleted	Not a priority, might be a part of Tri-County's GIS data
Multi-Hazard	10	Locate and label all public hydrants in the City to assist in street identification in the event of widespread natural hazard damage.	Peoria Heights	Completed	
Multi-Hazard	12	Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.	Peoria Heights	Completed	
Multi-Hazard	13	Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural hazard events.	Peoria Heights	Completed	
Multi-Hazard	11	Special needs/oxygen-user registration program	Peoria County	Completed	PremierALERT offered by City of Peoria
Flood	19	Prepare Repetitive Loss Area (RLA) Analyses for each of the identified RLAs.	Peoria County	Completed	Included in Hazard Mitigation Plan
Flood	21	Update landscape ordinance to provide homeowner credit for use of native plantings.	Peoria County	Completed	Adopted 2019

3 Community Profile

Section 3 provides an overview of the current conditions in Peoria County and its municipalities.

Table 3.1 – Section 3 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 3 – Community Profile
	1.1.3 County Profile	3.1 Overview of the Community – This section provides a brief overview of the County and its jurisdictions, orienting the places within Illinois.
2.1.1 Geography and Topography 2.1.2 Climate		3.2 Geography and Climate – This section expands on the information presented in the previous plan and provides historical and current trends for precipitation and temperature.
3.3.2 Community Assets		3.3. Transportation – This section outlines the existing transportation infrastructure and highlights upcoming projects.
3.3.2 Community Assets		3.4 Cultural, Historic and Natural Resources – This section notes cultural features, lists historic properties, and briefly examines waterbodies in the county.
2.1.3 Population/Demographics		3.5 Population – This section expands on population changes and trends and notes important demographic information.
2.1.5 Economy/Industry		3.6 Economy – This section expands on employment and industry and includes information on unemployment, income, major employers, and poverty level.
3.3.2 Community Assets		3.7 Housing – This section expands on housing statistics and includes information on occupancy rates, home ownership, types of units, and housing age estimates.
		3.8 Social Vulnerability – This is a new section that discusses social vulnerability, who is more vulnerable, and why.
2.2.2 Land Use and Development Trends		3.9 Land Use – This section addresses current land use and future development trends.
2.2.2 Land Use and Development Trends		3.10 Growth and Development Trends – This is a new section that briefly describes population growth trends for the county.

3.1 Overview of the Community

Peoria County is in the heart of Illinois on the west bank of the Illinois River midway between Chicago and St. Louis, approximately 180 miles from each.

The county seat is the City of Peoria, which is the largest city in the county. The county is surrounded by six other Illinois counties, Stark (north), Marshall (northeast), Woodford (east), Tazewell (south), Fulton (southwest), and Knox (northwest). Peoria County encompasses approximately 631 square miles, 15 of which are water. Elevations range from approximately 828 feet near Lawn Ridge and the boundary with Marshall County to approximately 440 feet in the southeast corner of the County along the Illinois River.

According to the Census Bureau's Population Estimates Program (PEP), in 2021, the estimated total population of Peoria County was 179,432, making the average population density 284.4 inhabitants/sq. mile.

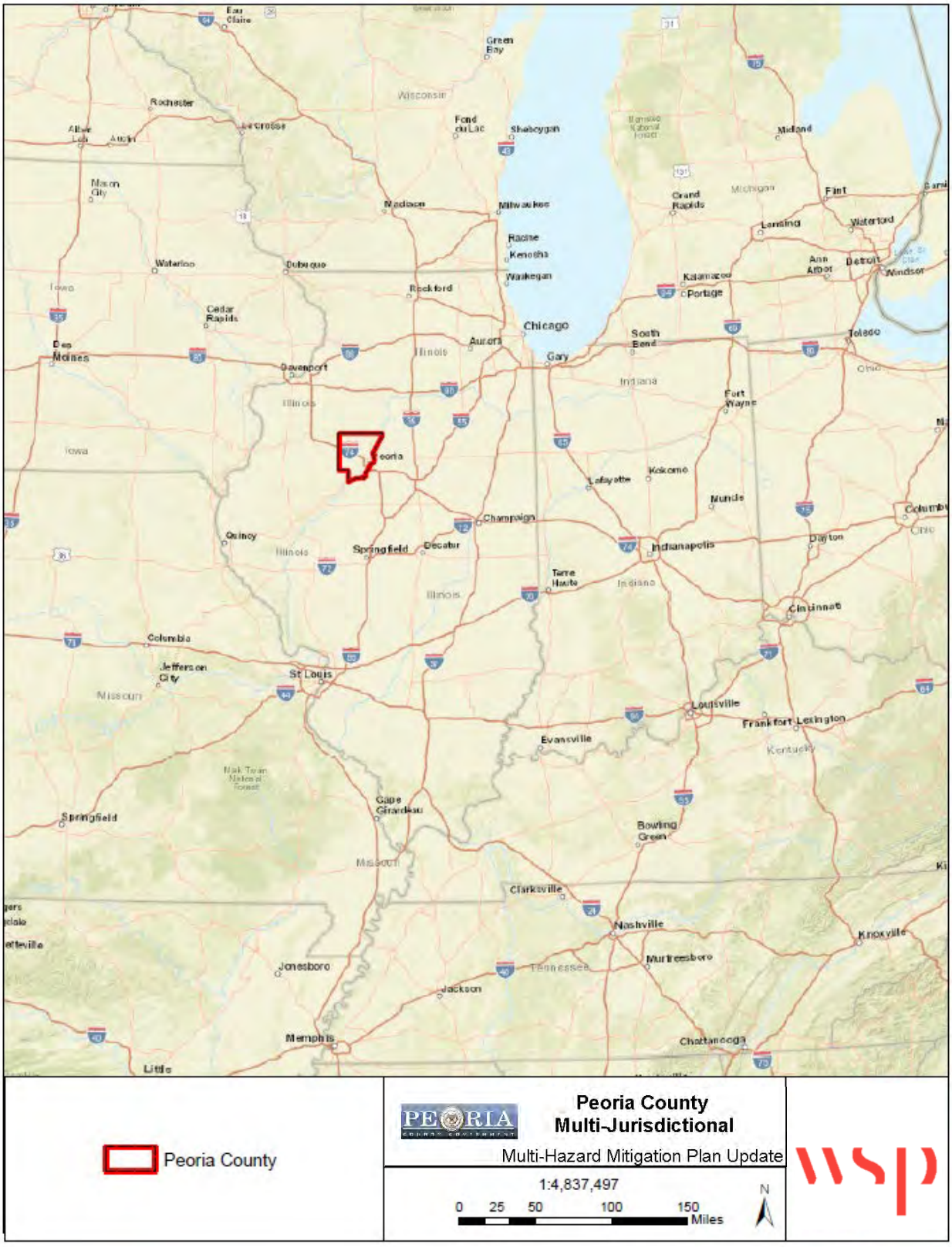
The Peoria Park District's boundaries encompass approximately 60 square miles in Peoria County. Park and open space holdings in the City of Peoria, Peoria Heights and outlying townships approach nearly 9,000 acres. Based on its ratio of open-space holdings to population, the Peoria Park District ranks first in Illinois and is one of the top public park systems in the country.

Services in Peoria County are provided by the following entities:

- Education (local public schools): Peoria County School Districts
- Higher Education: Illinois Central College's Downtown and North Campuses, Bradley University, Robert Morris University, Saint Francis Medical Center College of Nursing and Methodist College, University of Illinois College of Medicine Peoria, University of Illinois Peoria Center
- Public Water & Sewer Utilities: Illinois American Water Company is responsible for water in Peoria County. The Greater Peoria Sanitary District, a special unit of local government, was formed in 1927 to collect and clean the domestic and industrial wastewater within Peoria County.
- Power Utilities: Ameren Illinois
- Transportation Services: General Wayne A. Downing Peoria International Airport, Mount Hawley Auxiliary Airport; BNSF, Canadian National, Norfolk Southern, and Union Pacific (freight service); Peoria Public Transit (CityLink)

Figure 3.1 on the following page provides a general location map of Peoria County.

Figure 3.1 – Location Map

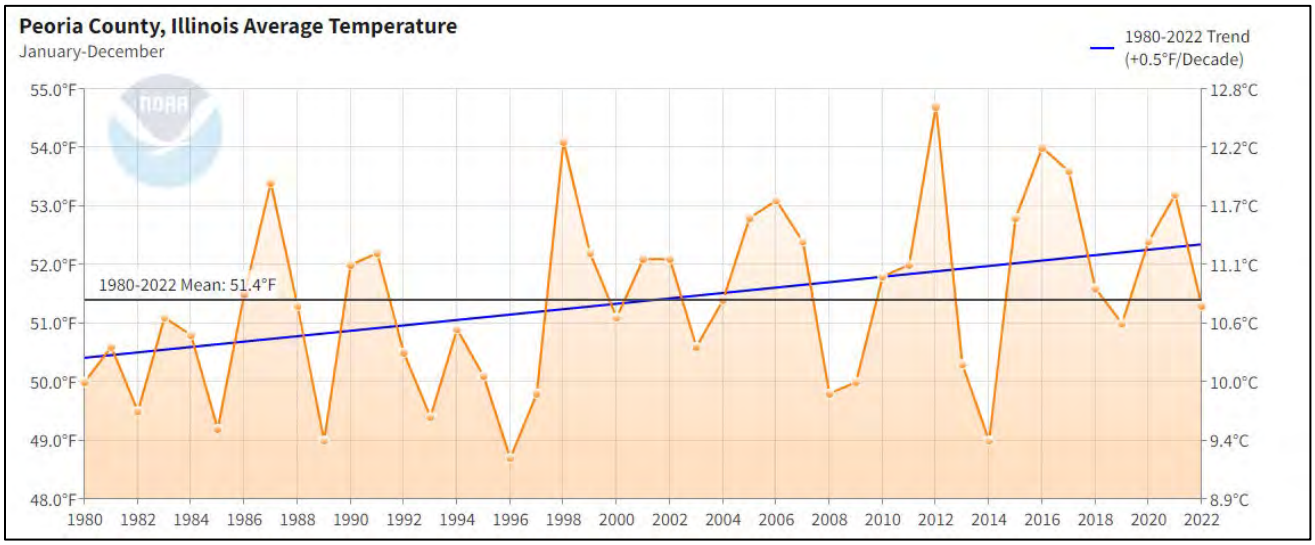


3.2 Geography and Climate

According to the Köppen climate classification system, Peoria County is classified as subtype Dfa (humid continental climate) characterized by four distinct seasons with relatively high temperatures in the summer and evenly distributed precipitation throughout the year.

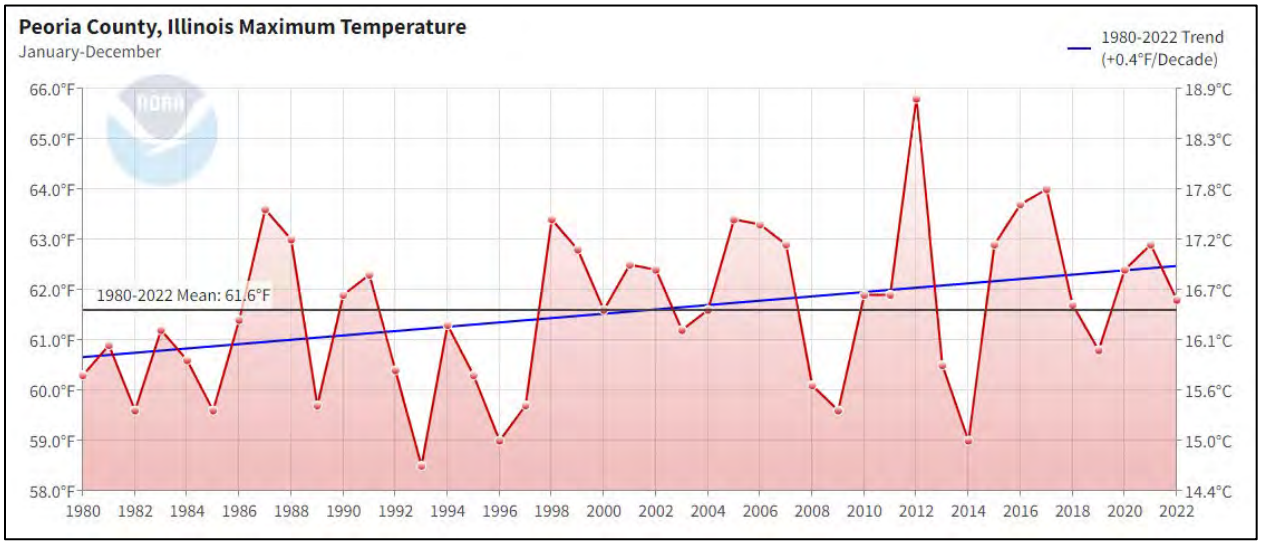
The following charts from the National Oceanic and Atmospheric Administration (NOAA) show the annual average temperature, average precipitation, average maximum temperature, and average minimum temperature for Peoria County from 1980 to 2022.

Figure 3.2 – Average Temperature Trends for Peoria County, 1980-2022



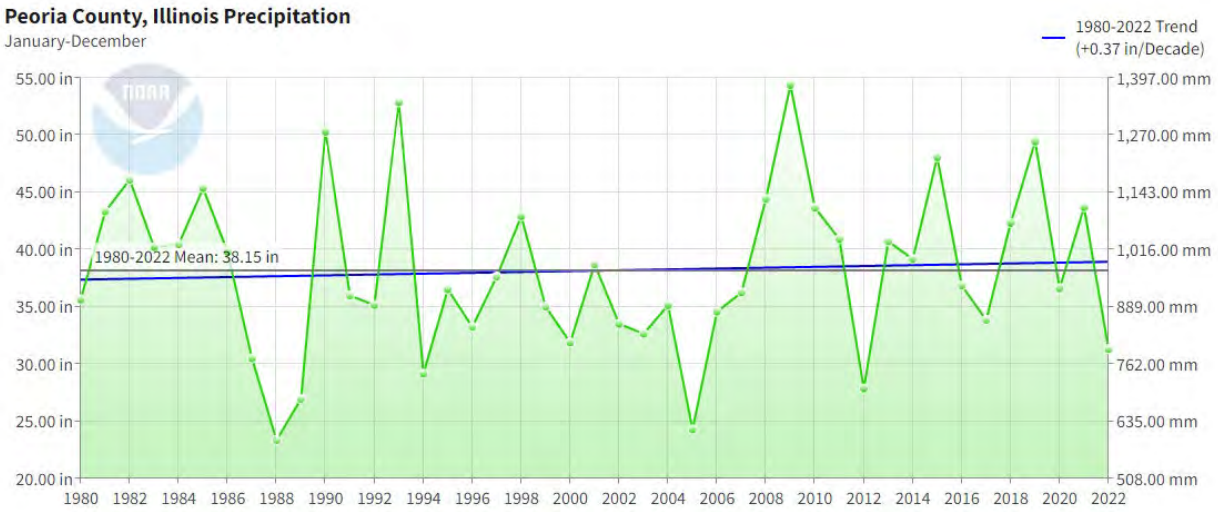
Source: NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published February 2023, retrieved on February 22, 2023, from https://www.ncdc.noaa.gov/cag/

Figure 3.3 – Maximum Temperature Trends for Peoria County, 1980-2022



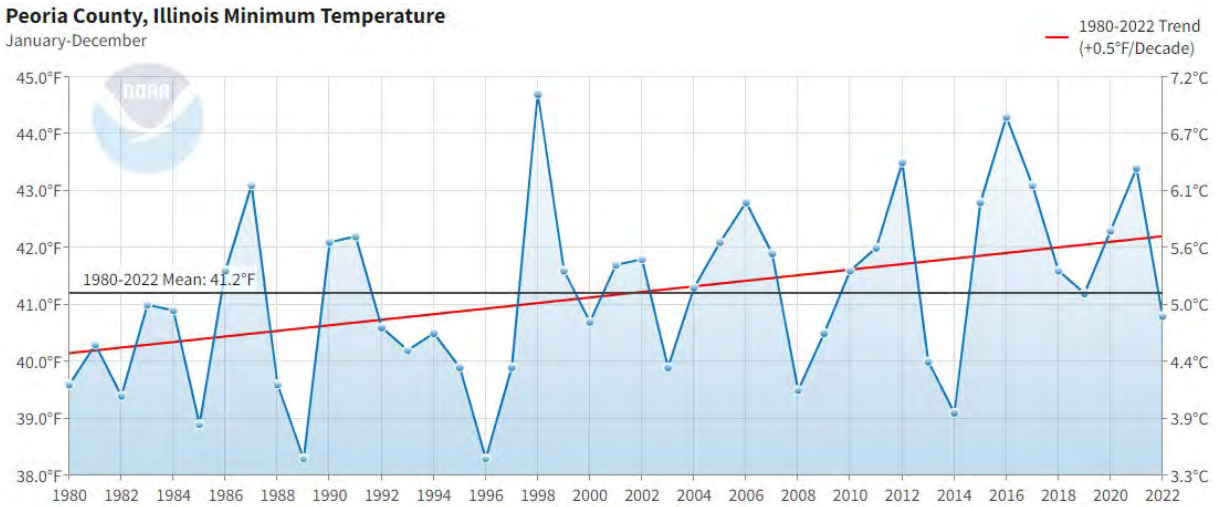
Source: NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published February 2023, retrieved on February 22, 2023, from https://www.ncdc.noaa.gov/cag/

Figure 3.4 – Minimum Temperature Trends for Peoria, 1980-2022



Source: NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published February 2023, retrieved on February 22, 2023, from https://www.ncdc.noaa.gov/cag/

Figure 3.5 – Precipitation Trends for Peoria County, 1980-2022



Source: NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published February 2023, retrieved on February 22, 2023, from https://www.ncdc.noaa.gov/cag/

According to the *Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin* (USDA Agriculture Handbook 296, 2022), Peoria County is situated in the Land Resource Region of Central Feed Grains and Livestock Region. Peoria County specifically consists of the Major Land Resource Areas (MLRA) of Illinois and Iowa Deep Loess and Drift and Central Mississippi Valley Wooded Slopes. The Illinois and Iowa Deep Loess and Drift covers the northwestern region of Peoria county and is characterized by loess sediment and is extensively used to product cash crops. The Central Mississippi Valley Wooded Slopes region, covering the southeast region of Peoria County, consists of loess-covered hills bordering river valleys and is used for cash crops and livestock.

Illinois State Prairie Research Institute found that Peoria County has an average slope of 1.82%, with elevations ranging from 420 feet above to sea level to greater than 830 feet. The lowest elevation area in Peoria County is the Illinois River valley, which runs through the City of Peoria.

Peoria County is situated within the Illinois River drainage basin. The County has a substantial floodplain area of varying widths both along the Illinois River and along several smaller tributaries throughout the County. Kickapoo Creek and Dry Run Creek drain most of the central portion of the County landscape. Other watersheds involved in County drainage include LaMarsh Creek (southeastern), Copperas Creek (southwestern), Senachwine Creek (northeastern), and the Spoon River (northwestern).

3.3 Transportation

Major Highways

Primary highway corridors in the County include:

- Interstate 74 in Illinois
- Interstate 474
- U.S. Route 24 in Illinois
- U.S. Route 150 in Illinois

Additional highway routes in the County include:

- SR 6
- SR 8
- SR 9
- SR 29
- SR 40
- SR 78
- SR 90
- SR 91
- SR 116
- SR 174
- SR 175

Peoria County has a road network that includes a mix of interstate highways, federal highways, state routes and several local roads. Interstate 74 runs northwest–southeast across the central portion of Illinois and Peoria County. Interstate 474 is an auxiliary circumferential loop route that provides a southwestern bypass around the city of Peoria. It splits off Interstate 74 northwest of Peoria and joins back with I-74 southeast of the city. U.S. 24 runs east-west and cuts through the city of Peoria in a north-south orientation and parallels the Illinois River.

None of these routes are registered on the 2021 FMCSA National Hazardous Materials Route Registry.

Rail Lines

Passenger rail service is not available in Peoria County. However, freight service is provided by four Class I railroads: Norfolk Southern, Canadian National, BNSF, and Union pacific. Various Class II and Class III rail services provide freight services through Peoria County.

Public Transit

Peoria County provides public transportation services through CityLink. CityLink is a public transit system consisting of 23 routes throughout Peoria County, concentrated mostly on city of Peoria. This also includes CityLift, which is a paratransit service and CountyLink which is a door-to-door service outside of Peoria city limits.

Airports

The General Wayne A. Downing Peoria National Airport (PIA) serves Peoria County. The airport is a civil/military public airport. PIA currently provides service to 13 destinations on three airlines. A second smaller airport, Mount Hawley Auxiliary Airport, also operates in Peoria County and is in the city of Peoria business district. This airport is publicly owned and operated by the Metropolitan Airport Authority of Peoria, and it is primarily used by corporate and private clients for business and recreational purposes.

Future Transportation Systems and County Transportation Priorities

Local and regional plans recommend a variety of short- and long-range transportation planning initiatives and projects that are in various stages of implementation.

The Long-Range Transportation Plan 2045 (LRTP-2045) addresses automobile, transit, bicycle, pedestrian, and freight infrastructure improvements in the Peoria-Pekin Urbanized Area over the next 25 years. The LRTP-2045 covers a broad range of issues as they relate to transportation, including the environment, land use, public health, the economy, safety, security, and connectivity. The LRTP-2045 also identifies regionally significant transportation projects. Projects included in the plan can be implemented with federal, state, and local dollars expected to be available through 2045.

3.4 Cultural, Historic and Natural Resources

Peoria County, the oldest European settlement in Illinois, was formed in 1825. It was named for the Peoria tribe, a Native American tribe that was part of a group referred to as the Illiniwek. Peoria County's borders originally included most of the western valley of the Illinois River up to the Chicago River portage. Following its formation in 1825, the county border changed several times as new counties (Mercer, Warren, and Tazewell) were able to organize governments and break away. Peoria County's present borders were established in 1831.

Peoria County is rich in historic, cultural, and natural resources. The National Register of Historic Places (NRHP) has 35 listings in Peoria County, including 4 historic districts. Majority of these listings are in Peoria proper, with the rest in varying smaller communities. These properties and historic districts are provided in Table 3.2 below. All historic districts are shown in Figure 3.6.

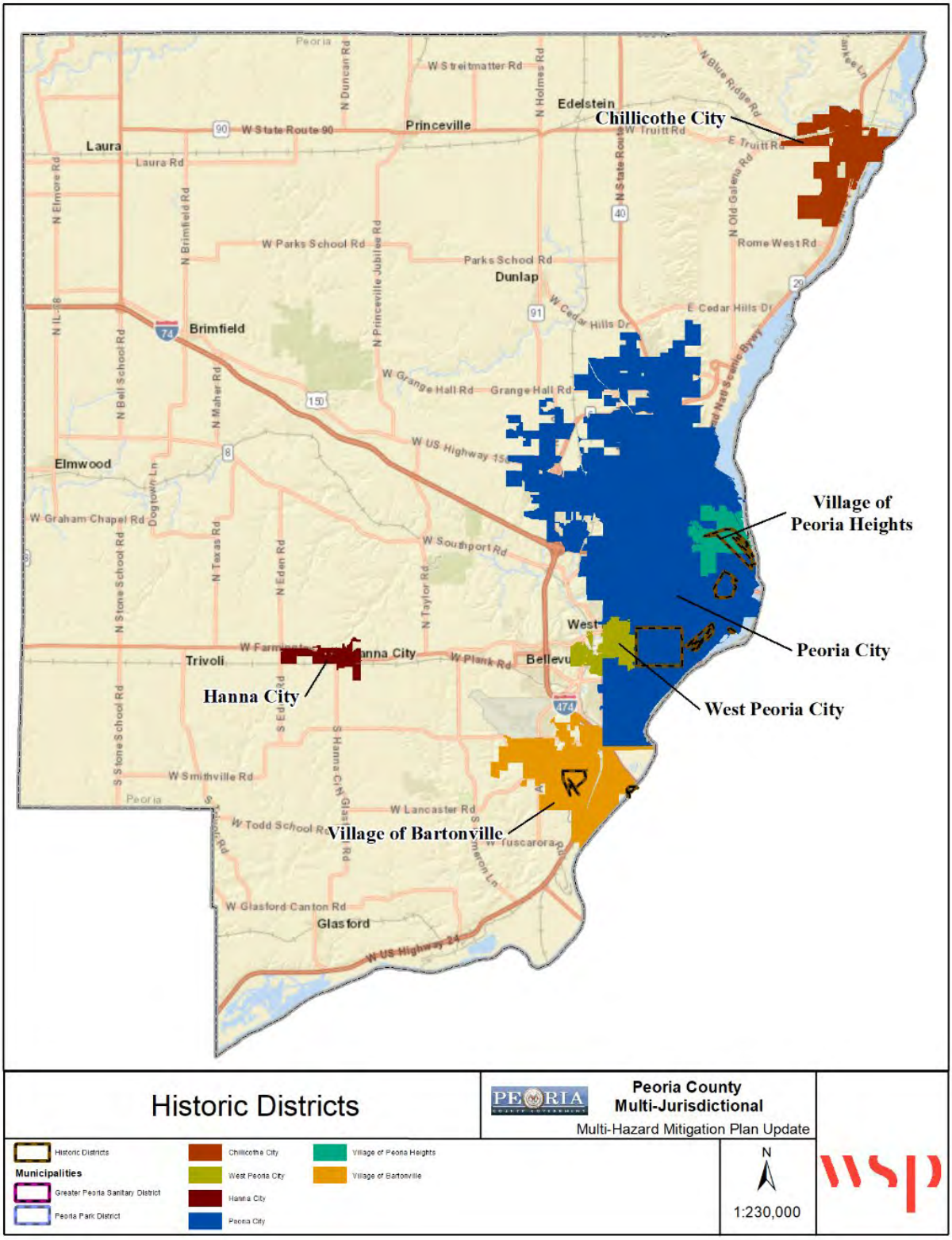
Table 3.2 – NRHP Historic Property Listings in Peoria County

	Name on the Register	Date Listed	Location	City
1	Central National Park Building	12/18/1978	103 SW Adams St.	Peoria
2	Christ Church of Lower Kickapoo	2/10/1983	W of Norwood Park on Christ Church Rd.	Norwood Park
3	Cumberland Presbyterian Church	3/18/1980	405 N. Monson St.	Peoria
4	Downtown Peoria Historic District	12/10/2018	Roughly between N William Kumpf Blvd., Perry Ave., Fulton, Fayette & Water Sts.	Peoria
5	Flanagan, Judge, Residence	9/5/1975	942 NE Glen Oak Ave.	Peoria
6	Gale, Judge Jacob, House	3/19/1982	403 NE Jefferson St.	Peoria
7	Grand Army of the Republic Memorial Hall	7/13/1976	416 Hamilton Blvd.	Peoria
8	Grand View Drive	9/27/1996	Roughly bounded by N. Prospect Rd., the Illinois River bluffs, Adams St., and the Grand View Dr. W. right of way	Peoria
9	Illinois Waterway Project Office	3/10/2004	257 Grant St.	Peoria
10	International Harvester Building	11/15/2005	1301-1309 Southwest Washington St.	Peoria

	Name on the Register	Date Listed	Location	City
11	Jubilee College	1/4/1972	NW of Kickapoo on U.S. 150 and I-74	Kickapoo
12	Kickapoo Building	12/31/2013	726 W. Main St.	Peoria
13	Lincoln Branch Peoria Public Library	5/28/2014	1312 W. Lincoln Ave.	Peoria
14	Madison Theatre	11/28/1980	502 Main St.	Peoria
15	Marquette Apartments	12/27/2016	701 Main St.	Peoria
16	North Side Historic District	11/21/1983	Roughly bounded by Perry, Caroline, Madison and Fayette Sts.	Peoria
17	Peace and Harvest	2/16/1994	Jefferson and Hamilton Sts.	Peoria
18	Peoria Automobile Club	8/4/1995	100 Park Blvd.	Chillicothe
19	Peoria City Hall	2/6/1973	419 Fulton St.	Peoria
20	Peoria Cordage Company	3/19/1982	Address restricted	Peoria
21	Peoria Mineral Springs	3/5/1982	701 W. 7th Ave.	Peoria
22	Peoria State Hospital	2/6/1973	Ricketts Ave. and U.S. 24	Bartonville
23	Peoria Warehouse Historic District	9/17/2014	Roughly along Adams, May, Oak, Persimmon, State, Walnut & Washington Sts.	Peoria
24	Peoria Waterworks	3/18/1980	Lorentz Ave.	Peoria
25	Pere Marquette Hotel	8/12/1982	501 Main St.	Peoria
26	Pettingill-Morron House	4/2/1976	1212 W. Moss Ave.	Peoria
27	Pioneers, The	5/4/2001	Central Park, N,. Magnolia St.	Elmwood
28	Pleasant Grove School	5/19/1994	.6 mi. W of Eden Rd., on Pleasant Grove Rd.	Eden
29	Proctor, John C., Recreation Center	9/6/1979	300 S. Allen St	Peoria
30	Rock Island Depot and Freight House	12/22/1978	32 Liberty St.	Peoria
31	Springdale Cemetery	12/10/2004	3014 N. Prospect Rd.	Peoria
32	U.S. Post Office and Courthouse	10/14/2012	100 NE. Monroe St.	Peoria
33	Wear, Washington C., House	8/19/1993	1 mi. S and 0.4 mi. W of jct. of IL 90 and IL 91	Princeville
34	West Bluff Historic District	12/17/1976	Randolph, High and Moss Sts., E of Western St.	Peoria
35	YWCA Building	5/17/2007	301 NE Jefferson	Peoria

Source: National Register of Historic Places Database

Figure 3.6 – Historical Districts in Peoria County
(Identified with brown-black striped line)



3.4.1 Parks, Preserves, and Conservation

The Park District of Peoria County, Illinois, organized in 1894, was the first park system formed within the State of Illinois. This district covers nearly 9,000 acres of public land within 60 square miles of Peoria County. This district is managed by a volunteer based, elected Board of Trustees. It is a system of over 70 parks located in the City of Peoria and surrounding areas. These parks offer many opportunities for recreational activities including playgrounds, basketball, volleyball, and tennis courts, nature trails and hiking, fishing, pickleball, sled hills, soccer fields, and much more. Many parks are pet friendly and offer open areas for playing and picnicking. The Peoria Park District has a Historic Preservation ordinance that protects structures that are examples of past styles or have significance to Peoria County.

3.4.2 Water Bodies and Floodplains

Natural floodplains in the county include wetland areas and low-lying land along the major rivers around the county. Natural floodplains reduce damage by allowing flood waters to spread out over large areas, aiding infiltration into the ground, reducing flow rates and acting as a flood storage area to reduce downstream peaks.

Peoria County is located within the Illinois River drainage basin. The major sources of flooding in Peoria are the Illinois River, Dry Creek and Kickapoo Creek. The floodplains of these waterways vary in width.

Natural and Beneficial Floodplain Functions

Floodplains in riverine areas perform natural functions that cannot be replicated elsewhere. When kept open and free of development, floodplains provide the necessary flood water conveyance and flood water storage needed by a stream or river. When the floodplain is able to perform its natural function, flood velocities and peak flows are reduced downstream. Natural floodplains reduce wind and wave impacts and their vegetation stabilizes soils during flooding.

Floodplains in their natural state provide many beneficial functions beyond flood reduction. Water quality is improved in areas where natural cover acts as a filter for runoff and overbank flows; sediment loads and impurities are also minimized. Natural floodplains moderate water temperature, reducing the possibility of adverse impacts on aquatic plants and animals. Floodplains can act as recharge areas for groundwater and reduce the frequency and duration of low flows of surface water. They provide habitat for diverse species of flora and fauna, some of which cannot live anywhere else. They are particularly important as breeding and feeding areas.

Wetlands

Wetlands benefit the ecosystem by storing, changing, and transmitting surface water and groundwater. Through these processes, pollution is removed, nutrients are recycled, groundwater is recharged, and biodiversity is enhanced. Wetland composition varies extensively. Within Peoria County there are freshwater emergency wetlands, freshwater forested/shrub wetlands, and riverine wetlands.

Threatened and Endangered Species

The U.S. Fish and Wildlife Service maintains a regular listing of threatened species, endangered species, species of concern, and candidate species for counties across the United States. Peoria County has nine species that are listed with the U.S. Fish and Wildlife Services. Table 3.3 below shows the species identified as threatened, endangered, or other classification for Peoria County.

Table 3.3 – Threatened and Endangered Species

Group	Common Name	Scientific Name	Federal Status
Flowering Plants	Decurrent False Aster	*Boltonia decurrens*	Threatened

Group	Common Name	Scientific Name	Federal Status
Flowering Plants	Eastern Prairie Fringed Orchid	*Platanthera leucophaea*	Threatened
Mammals	Indiana Bat	*Myotis sodalis*	Endangered
Mammals	Little Brown Bat	*Myotis lucifugus*	Under Review
Insects	Monarch Butterfly	*Danaus plexippus*	Candidate
Mammals	Northern Long-Eared Bat	*Myotis septentrionalis*	Threatened
Insects	Regal Fritillary	*Speyeria idalia*	Under Review
Insects	Rusty Patched Bumble Bee	*Bombus affinis*	Endangered
Mammals	Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered

Source: U.S. Fish & Wildlife Service: Listed species believed to or known to occur in Peoria, Illinois (fws.gov)

3.5 Population

Peoria County and its municipalities have had minimal population change over the past two decades, with a general trend of decreasing population. Bartonville, Peoria, and Peoria Heights have experienced an overall decrease in population. Peoria County had 186,494 residents at the time of the 2010 Decennial Census and in 2021, the population estimate decreased to 179,432 residents. The population increased in the early 2000s and then decreased in the 2010s. Overall population density in the County decreased from 301.4 persons per square mile in 2010 to 293.9 persons per square mile in 2020. Trends suggest that this number is likely to continue decreasing over the next decade. Table 3.4 provides population counts from 2000, 2010, 2020, and estimate for 2021 for each of the participating jurisdictions.

Table 3.4 – Peoria County Population Counts

Jurisdiction	2000 Census Population	2010 Census Population	2020 Census Population	2021 ACS Population 5-year Estimate	Total Change 2010-2021	% Change 2010-2019
Peoria County	**183,433**	**186,494**	**181,830**	**182,439**	**-4,055**	**-2.17%**
Bartonville	6,310	6,471	5,945	6,005	-466	-7.20%
Chillicothe	5,996	6,097	6,128	6,272	+175	+2.87%
Hanna City	1,013	1,225	1,253	1,372	+147	+12%
Peoria	112,936	115,007	113,150	113,672	-1,335	-1.16%
Peoria Heights	6,635	6,156	5,908	5,940	-216	-3.51%
West Peoria	4,762	4,458	4,263	4,300	-158	-3.54%

Source: U.S. Census Bureau, Decennial Census 2000, Decennial Census 2010 Decennial Census 2020; American Community Survey 2017-2021 5-Year Estimates Demographic characteristics of the county are summarized in Table 3.5.

According to 2021 American Community Survey, the median age in Peoria County is estimated to be 38.6. Of the population aged 25 years and over, 92.2 percent have a high school degree or higher and 32.9 percent have a bachelor's degree or higher. While most Peoria County residents speak only English at home, approximately 8.6 percent of the residents speak a language other than English at home with 2.3 percent speaking English "less than very well." The racial characteristics of the participating jurisdictions are presented in Table 3. and 3.8.

Table 3.5 – Demographic and Social Characteristics Compared to the State and Nation

Demographic & Social Characteristics	Peoria County	Illinois	United States
Median Age	**38.6**	38.3	38.8
% of Population Under 5 years old	**6.6%**	5.6%	5.7%
% of Population Over 65 years old	**17.9%**	16.6%	16.8%
% of Population over 25 with high school diploma or higher	**92.2%**	89.9%	88.9%

Demographic & Social Characteristics	Peoria County	Illinois	United States
% of Population over 25 with bachelor's degree or higher	**32.9%**	36.2%	33.7%
% with Disability	**8.8%**	7.5%	8.7%

Source: US Census Bureau

Table 3.6 – Demographic and Social Characteristics, Jurisdictions

Demographic & Social Characteristics	Bartonville	Chillicothe	Hanna City	Peoria	Peoria Heights	West Peoria
Median Age	**41.5**	43.3	54.7	35.4	38.2	40.5
% of Population Under 5 years old	4.3	6.7	3.9	7.2	5.0	7.1
% of Population Over 65 years old	14.8	24.1	26.4	16.0	17.0	18.7
% of Population over 25 with high school diploma or higher	**93.0**	92.9	N/A	90.8	96.1	N/A
% of Population over 25 with bachelor's degree or higher	**21.5**	25.3	N/A	37.0	26.4	N/A
% with Disability	**6.2**	7.8	N/A	9.6	9.8	N/A

Source: US Census Bureau; N/A – data not available

Table 3.7 – Demographics by Race and Sex

Peoria County	Population (2021)	%
Total Population	*182,439*	
Sex		
Male	88,947	48.8%
Female	93,492	51.2%
Race and Ethnicity		
White alone	125,490	68.8%
Hispanic or Latino	9,293	5.1%
Black or African American alone	32,161	17.6%
Asian alone	7,755	4.3%
American Indian and Alaska Native alone	164	0.09%
Native Hawaiian and Other Pacific Islander alone	15	0.01%
Some other race alone	394	0.2%
Two or more races	7,167	3.9%

Source: US Census Bureau

Table 3.8 – Demographics by Race and Sex, Jurisdictions

	Bartonville		Chillicothe		Hanna City		Peoria, City of		Peoria Heights		West Peoria	
	Population (2021)	%	Population (2021)	%	Population (2021)	%	Population (2021)	%	Population (2021)	%	Population (2021)	%
Total Population	6,005		6,042		1,372		110,915		5,827		4,300	
Sex												
Male	3,224	53.7	2,695	44.6	695	50.7	51,261	46.2	2,727	46.8	2,150	50
Female	2,781	46.3	3,347	55.4	677	49.3	59,654	53.8	3,100	53.2	2,150	50
Race and Ethnicity												
White alone	5,596	93.2	5,426	89.8	1,319	96.1	60,992	55.0	5046	87.3	3,076	71.5
Hispanic or Latino	128	2.1	254	4.2	15	1.1	7,273	6.6	140	2.4	0	0.0
Black or African American alone	58	1.0	48	0.8	2	0.1	26,315	23.7	204	3.5	699	16.3
Asian alone	40	0.7	18	0.3	20	1.5	6,678	6.0	87	1.5	140	3.3
American Indian and Alaska Native alone	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0	0	0.0	0	0.0	91	0.1	0.0	0.0	0	0.0
Some other race alone	0	0.0	0	0.0	0	0.0	614	0.6	0.0	0.0	0	0.0
Two or more races	183	3.0	314	5.2	16	1.2	8,952	8.1	402	6.9	385	9.0

Source: US Census Bureau

3.6 Economy

The Greater Peoria region has a diverse and vibrant business base and is home to a variety of firms that focus on innovation, research, and development. While agriculture and the manufacturing giants of Caterpillar and Komatsu still have a firm presence, the region's industries over the last 10 years have noticeably expanded and grown to encompass healthcare, education, banking, biotech, and craft distilling, among others. In 2022, according to the Peoria Journal Star, the largest employer in the Peoria area was OSF HealthCare, followed by Caterpillar and Carle Health. Other notable employers include Peoria Public Schools, the universities throughout Peoria County, and Advanced Technology services.

3.6.1 Wages and Employment

The 2021 American Community Survey indicates that the median household income for Peoria County is $58,426 which is notably lower than that of the state, which is $72,563. At over $60,000, Bartonville village and Hanna City village have higher median household incomes than the other jurisdictions, while West Peoria city has the lowest at $51,724. On the other hand, per capita income statistics reflect a slightly different pattern, with the state having the highest per capita income ($39,571), followed by that of Peoria County ($35,345). Bartonville village has the lowest per capita income at $30,499. Compared to the state (11.8%), a larger proportion of the population is living below the poverty level in the county (15.6%), Chillicothe city (14.6%), Peoria city (19.7%), and Peoria Heights village (14.9%). Bartonville village has a lower proportion with about 5.8% living below the poverty level. Hanna City village and West Peoria city also have a lower poverty proportion with 7.7% and 10.9%, respectively. The percentage of the population that lacks health insurance across the county is about the same as that of the state, while Bartonville village and Chillicothe city have slightly higher percentages. These patterns start to highlight some areas of social vulnerability of the county's population.

Table 3.9 shows economic statistics for each jurisdiction compared to the state average and Table 3.10 shows employment statistics for the county compared to the state average.

Table 3.9 – Peoria County Economic Statistics, 2021

Jurisdiction	Median Household Income	Per Capita Income	Unemployment Rate (%)	% of Individuals Below Poverty Level	% Without Health Insurance
Peoria County	**$58,426**	**$35,345**	**7.3%**	**15.6%**	**6.6%**
Bartonville	$60,218	$30,499	4.0%	5.8%	10.7%
Chillicothe	$54,297	$32,759	5.5%	14.6%	11.5%
Hanna City	$62,550	$33,552	2.6%	7.7%	1.6%
Peoria	$53,568	$35,232	9.5%	19.7%	7.2%
Peoria Heights	$51,826	$37,072	5.9%	14.1%	5.5%
West Peoria	$51,724	$35,191	0.9%	10.9%	2.5%
State of Illinois	$72,563	$39,571	6.2%	11.8%	7.0%

Source: U.S. Census Bureau, American Community Survey 2017-2021 5-Year Estimates

Table 3.10 – Peoria County Employment by Industry, 2021

Industry	Peoria County	Illinois
Agriculture, forestry, fishing and hunting, and mining	**1.2%**	1.0%
Construction	**6.2%**	5.4%
Manufacturing	**14.2%**	11.9%
Wholesale trade	**2.3%**	2.7%
Retail trade	**10.2%**	10.3%
Transportation and warehousing, and utilities	**5.0%**	6.9%
Information	**1.0%**	1.7%
Finance and insurance, and real estate and rental and leasing	**6.0%**	7.6%
Professional, scientific, and management, and administrative and waste management services	**10.8%**	12.8%
Educational services, and healthcare and social assistance	**28.2%**	23.7%
Arts, entertainment, and recreation, and accommodation and food services	**8.2%**	7.8%
Other services, except public administration	**3.6%**	4.3%
Public administration	**3.1%**	4.0%

Source: U.S. Census Bureau, American Community Survey 2017-2021 5-Year Estimates

The largest industry sector in the county in 2021 was "Educational services, and healthcare and social assistance," comprising 28.2 percent of employment across the county. The "Manufacturing" industry sectors provide the second largest amount of employment, comprising 14.2 percent. Other notable industry sectors include "Professional, scientific, and management, and administrative and waste management services" (10.8%), "Retail trade" (10.2%), and "Arts, entertainment, and recreation, and accommodation and food services" (8.2%).

With around 12,000 employees each, Caterpillar Inc. and OSF Saint Francis Medical Center are the county's largest employers. Each of these companies consist of 6.82% of Peoria County's total employment.

Table 3.11 summarizes the top ten largest employers in Peoria County.

Table 3.11 – Major Employers, Peoria County

Company	Industry
Caterpillar Inc	Construction
OSF Saint Francis Medical Center	Health Care
Carle Health	Health Care
Peoria School District 150	Educational Services
Bradley University	Educational Services
Advanced Technology Services	Industrial Maintenance
Keystone Steel and Wire Co.	Steel
City of Peoria	Government
County of Peoria	Government
CEFCU	Finance (Bank)

Source: 2020 Comprehensive Annual Financial Report, 759 (peoriacounty.org)

3.7 Housing

Table 3. provides details on housing characteristics for the county and incorporated jurisdictions as well as a comparison to the State of Illinois, and Table 3. provides further detail for Peoria County.

The American Community Survey estimates that there are 83,034 housing units in Peoria County, of which 88.7 percent are occupied. In comparison to the state (91.1%), occupancy rates are lower in most jurisdictions, with Chillicothe (95.4%) and Hanna City (91.4%) with the highest occupancy rates. Renter-occupied units comprise 34.3 percent of the housing stock in Peoria County, which is similar to the state renter occupied unit percentage of 33.5%. With 14.4 percent of its occupied units belonging to renters, Bartonville has the lowest percentage of renter-occupied units of any jurisdiction in the county. In Peoria, renters occupy 42.9 percent of occupied units. A high percentage of renters is an indicator of higher pre- and post-disaster vulnerability as renters often do not have the financial resources of homeowners, are more transient, are less likely to have information about or access to recovery aid following a disaster and are more likely to require temporary shelter following a disaster (Cutter, et al. 2003). Higher rates of home ownership in some jurisdictions, such as Bartonville and Hanna City, where owner-occupied housing rates are above 75 percent, may indicate that more residents in these areas are able to implement certain types of mitigation in their homes. The lowest percentage of owner-occupied housing is in Peoria (57.1%).

Peoria County experienced a 2.26 percent increase in housing units between 2010-2021, which is similar to that of the state (2.2%). Of all the jurisdictions in the county, Hanna City experienced the highest increase in housing units during this time with a large increase of 31.5 percent. However, Bartonville experienced a decrease in housing units by 2.24%.

At $133,000, the median home value for Peoria County is higher than that of its incorporated jurisdictions, however, it is below the state's median home value of $212,600. Of the County's owner-occupied housing units, 60.4 percent have a mortgage.

Detached single-family homes comprise 72.2 percent of the total housing units in Peoria County. The next most common housing type is multi-family units, which consist of 33.2 percent of the total housing units. This percentage consists of 2-unit properties, 3- or 4-unit properties, 5-to-9-unit properties, 10-to-19-unit properties, as well as properties with 20 or more units. Mobile homes make up 1.3 percent of the housing stock. Mobile home units can be more vulnerable to certain hazards, such as tornadoes and windstorms, especially if they are not properly secured with tie downs. Of the total occupied housing units in Peoria County, approximately 9.1 percent of householders have no vehicle available to them, which could cause difficulty in the event of an evacuation.

Most of the county's housing stock (42.1%) was built in the four decades between 1960 and 1999. Housing units built before 1939 comprise 22.3 percent of all housing in Peoria County. Age can indicate the potential vulnerability of a structure to certain hazards. For example, Peoria County joined the National Flood Insurance Program in 1975. Therefore, based on housing age estimates, at least 57 percent of housing in the County was built before any floodplain development restrictions were required.

Table 3.12 – Peoria County and Incorporated Jurisdictions, Housing Characteristics, 2021

Jurisdiction	Housing Units (2010)	Housing Units (2020)	Housing Units (2021)	Percent Change (2010-2021)	Occupied Units, % (2021)	Owner-Occupied Units, % (2021)	Renter-Occupied Units, % (2021)	Median Home Value (2021)
Peoria County	**83,034**	**85,074**	**84,914**	**+2.26%**	**88.7%**	**65.7%**	**34.3%**	**$133,000**
Bartonville	2,812	2,815	2,749	-2.24%	89.3%	85.6%	14.4%	$110,400
Chillicothe	2,719	2,827	2,966	+9.08%	95.4%	76.8%	23.2%	$114,200
Hanna City	584	616	768	+31.5%	91.4%	77.5%	22.5%	$106,600
Peoria	52,621	54,388	54,570	+3.7%	87.5%	57.1%	42.9%	$129,400
Peoria Heights	3,093	3,127	3,302	+6.76%	87.0%	59.7%	40.3%	$92,000
West Peoria	2,123	2,116	2,137	+0.66%	83.5%	74.2%	25.8%	$89,700
Illinois	5,296,715	5,426,429	5,412,995	+2.20%	91.1%	66.5%	33.5%	$212,600

Source: U.S. Census Bureau 2010 & 2020 Decennial Census, American Community Survey 2017-2021 5-Year Estimates

Table 3.13 – Peoria County Housing Characteristics, 2021

Housing Characteristics	Peoria County	Illinois
Average Household Size	**2.35**	2.48
% of Housing Units with no Vehicles Available	**9.1%**	10.8%
% of Housing Units that are mobile homes	**1.3%**	2.3%
% Population Cost Burden*	**46.6%**	47.0%

Source: U.S. Census Bureau 2010 Decennial Census, American Community Survey 2017-2021 5-Year Estimates
*Cost burden is defined as spending more than 30 percent of household income on rent

In 2021, the median cost for rent in Peoria County was $840 compared the state median of $1,097. The large majority (81.2%) of renters in the county paid between $500 and $1,500 a month. Over 46 percent of the population was paying 30 percent or more of their income on housing. The U.S. Department of Housing and Urban Development (HUD) defines those who pay more than 30 percent of their income for housing as cost burdened, indicating they may have difficulty affording necessities such as food, clothing, transportation, and medical care. This population could also be especially vulnerable when responding to a disaster.

3.8 Social Vulnerability

Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human caused threats, such as toxic chemical spills. That is to say that even if different groups share similar exposure to a hazard, some groups may have a greater capacity to anticipate, cope, and recover from a disaster than others. Social vulnerability often refers to the population characteristics that have historically made certain groups of people more or less at risk when they are exposed to the impacts of a hazard event (Cutter, 2003; Berke et al., 2019). Common and determining characteristics include age, gender, income, race, and ethnicity, and language capacity (Cutter et al., 2003; Berke et al., 2015). However, additional characteristics can include social networks, education, cultural knowledge, and political power (Otto et al., 2017). Social vulnerability considerations were included in this plan update to identify areas across the County that might be more vulnerable to hazard impacts based on a number of factors.

The Center for Disease Control and Prevention (CDC) has developed a social vulnerability index (SVI) as a way to measure the resilience of communities when confronted by external stresses such as natural or human-caused disasters or disease outbreaks. The SVI is broken down to the census tract level and provides insight into particularly vulnerable populations to assist emergency planners and public health officials

identify communities more likely to require additional support before, during, and after a hazardous event. The SVI indicates the relative vulnerability within census tracts based on 15 social factors: poverty, unemployment, income, education, age, disability, household composition, minority status, language, housing type, and transportation access. Higher social vulnerability is an indicator that a community may be limited in its ability to respond to and recover from hazard events. Therefore, using this SVI information can help the County and jurisdictions to prioritize pre-disaster aid, allocate emergency preparedness and response resources, and plan for the provision of recovery support.

Figure 3. displays social vulnerability information for Peoria County by census tract according to most recent data and analysis by the Centers for Disease Control and Prevention (CDC). Results are presented via a score that ranges from 0 (lowest vulnerability) to 1 (highest vulnerability). The SVI score for the entire county is 0.6785 which indicates a medium to high level of vulnerability. Within the county, the most vulnerable residents live in the southeastern part of the county, primarily centered around the City of Peoria and the northwestern region of the county.

Non-English Speaking Population

Over eight percent of the county population speaks a language other than English. Of that population, about 2.3% percent speak English "less than very well." The most prominent language spoken other than English is Spanish, with 3.1 percent of the non-English speaking population speaking Spanish.

In its justification of SVI indicators, the CDC explains that disaster communication is made increasingly difficult for those with limited English proficiency. This difficulty is especially true in communities whose first language is neither English nor Spanish, and for whom translators and/or accurate translations of advisories may be scarce.

Special Needs Population

According to the American Community Survey, an estimated 23,168 residents, or 12.9 percent, of Peoria County's population identify as having some form of disability including hearing, vision, cognitive, ambulatory, self-care, and/or independent living difficulties. Lack of public transportation options could pose significant issues for special needs population during an emergency or disaster.

Homeless Population

In 2018, for the first time, HUD's Annual Homeless Assessment Report included the number of people experiencing homelessness who were sheltering in locations specifically for people displaced by presidentially declared natural disasters. The report found 3,864 displaced and homeless individuals. Additionally, the National Low Income Housing Coalition explains that people experiencing homelessness are particularly vulnerable during natural disasters and are often subject to discrimination during recovery. Resources are often prioritized for those displaced during disasters, despite the case that there is no difference between those that were made homeless by a hazard event and those who otherwise lack stable housing.

The homeless population in Peoria County and across the state is monitored and supported by the Department of Community Affairs, which conducts a "Point in Time" (PIT) count every other January to estimate the number of homeless individuals in counties throughout Illinois through the "Continuum of Care" (CoC) reports. There are 19 CoC districts in Illinois that report on homelessness in their designated areas. The combined results from these reports help to predict the rate of homeless across the state. These efforts support the requirements by the U.S. Department of Housing and Urban Development (HUD) for each state to collect and maintain data on their homeless populations.

As of 2022, the CoC reports to HUD reported that Illinois had an estimated 7,035 households experiencing homelessness on any given day. The 2022 Point in Time Count for IL-507, including Peoria County, indicated that there were 283 households, consisting of 337 people, characterized as literally homeless, as defined by HUD. About 9 percent of this homeless population were found to be living in unsheltered conditions, while the majority (90.5%) were in emergency or transitional housing. Approximately 6 percent of this population was children (under age 18) or youth (under age 24). There are several homeless shelters throughout the county, as well as a list of resources and agencies that can support those experiencing homelessness.

Inmates

The Illinois Department of Correction's 2022 inspection indicates that there are about 270 inmates in the Peoria County jail, with a capacity of 492 inmates. This incarcerated population could require special planning during a hazard event depending on the location of jail facilities in the county. Additional planning for food, water, and health care may need to be considered.

Poverty

According to 2017-2021 American Community Survey estimates, 15.6 percent of the total Peoria County population was below the poverty level. In its justification of SVI indicators, the CDC explains that individuals in poverty are disproportionately affected by disasters. Low-income residents are less likely to have the income or assets necessary to prepare for a possible disaster or to recover after a disaster (Cutter et al. 2003). For low-income households, lost or damaged property is proportionately more expensive to replace, especially without homeowner's or renter's insurance. Similarly, for unemployed individuals may not have access to benefits plans that provide income and health cost assistance in the event of injury. Additionally, housing quality and access is closely tied to socio-economic status. Low-income households may live in less structurally sound houses or mobile homes, which are particularly vulnerable to strong storm or earthquakes.

Of the 14 census tracts in the county that are characterized as Highly Vulnerable (scores greater than 0.7501), an average of almost 55 percent of the population lives below the poverty line.

Minority Status

Of the 14 census tracts in the county that are characterized as Highly Vulnerable, an average of 63% of the population is people of color. In comparison, the census tracts with the lowest vulnerability rating (scores less than 0.2501), only have an average of 13% people of color living in those areas.

The CDC indicates that, "social and economic marginalization of certain racial and ethnic groups, including real estate discrimination, has rendered minority populations more vulnerable at all stages of disaster and hazard events." Similarly, the Urban Sustainability Network explains that, in the U.S., race is a major determinant of life outcomes. Like housing, it is inextricably tied to income and wealth. Further, race is a reliable predictor of hazard risk, including vulnerability to many of the hazards projected to intensify under changing climate conditions.

Historical and current discriminatory practices have resulted in the inequitable distribution of resources and access to opportunities for many lower-income populations and communities of color. The result is that social inequities can increase disproportionate risk and vulnerability in these communities.

It should be noted that 3.39 percent of the County's population includes non-U.S. citizens, however, this number is likely under-reported. Immigrants and undocumented residents often face increased vulnerability during and after hazard events. Challenges include limited language proficiency; limited knowledge of local environmental conditions, including natural hazards, legal framework and institutions, and markets; limited social networks; lack of trust in authorities; restrictions on mobility; and discrimination. All these challenges

can make it difficult for immigrant communities to access necessary information, resources, and opportunities to prepare, cope with, and recover from hazard events.

3.9 Land Use

Land use data was obtained from the 2009 Peoria County Comprehensive Plan. The intent of the Comprehensive Plan is to serve as a planning document that guides the growth and development decisions of Peoria County and its incorporated areas. The Comprehensive Plan serves as a countywide implementation guide to promote local goals related to economic development, land use, transportation, housing, and cultural and natural resources.

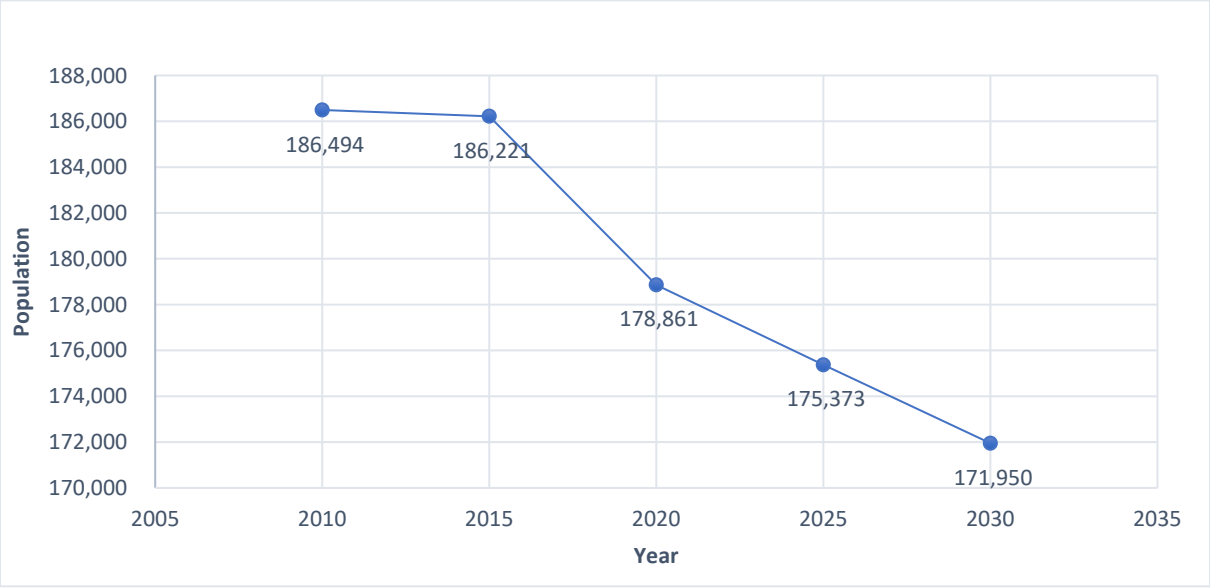
Within Peoria County, 32.4% of the housing are rental properties and 64.7% are owner occupied properties. The median rent is $840, and the median housing value is $129,900. Despite relatively affordable housing, in Peoria County, there is little to no market demand for the housing stock and land in Peoria's Southside, resulting in significant blight, abandonment, and disinvestment in the area. Currently, improvement plans for the Southside area of Peoria are in various degrees of development: the Warehouse District, MacArthur Highway and Western Avenue. The goal in these development areas is for road improvements to spark residential and retail development, followed by deeper business investments in the future.

The City of Peoria has a 2011 comprehensive plan that was developed independently. The City of West Peoria and City of Chillicothe each have a 2014 comprehensive plan. The Village of Peoria Heights adopted a comprehensive plan in May of 2021 that has a 20-year planning horizon. The plans provide character areas maps that lay out a vision and goals for the Cities, as well as future land use maps that define general land use districts for future growth and change.

3.10 Growth and Development Trends

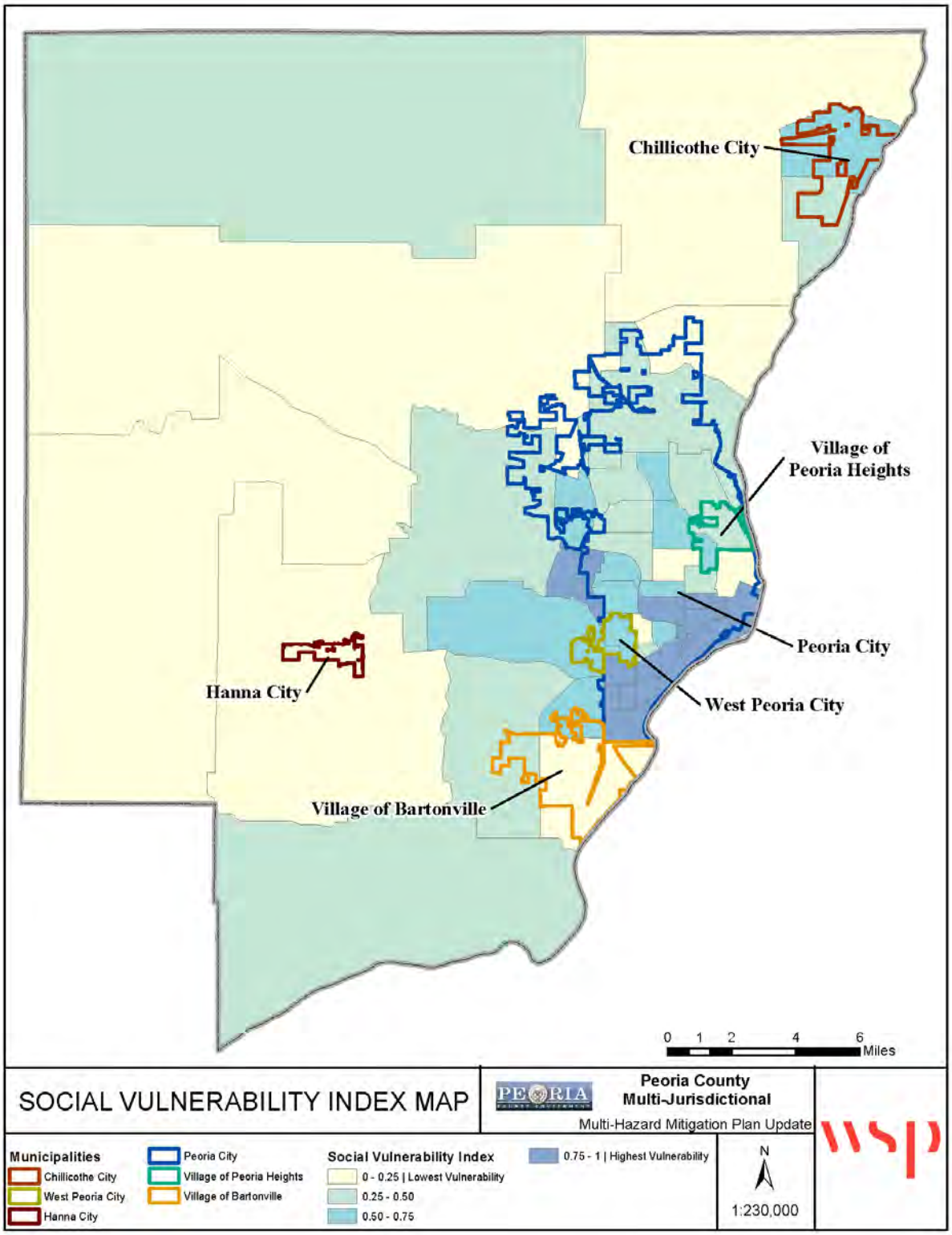
According to the Illinois Department of Public Health, Peoria County is projected to reach a population of 171,959 by 2030, which represents a 5.75 percent decrease from the 2021 population. The population projections from the IDPH estimate the average annual decline for the county to be about 2 percent through 2030.

Figure 3.7 – Population Projections for Peoria County 2010-2030



Source: Illinois Department of Public Health; American Community Survey 2017-2021 5-Year Estimates

Figure 3.8 – Social Vulnerability Index by Census Tract, 2020



Source: Centers for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) / Geospatial Research, Analysis, and Services Program (GRASP)

Contents

4 Hazard Identification

44 CFR §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.
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.

This section documents the Hazard Identification process for the development of the Peoria County Multi-Jurisdictional Hazard Mitigation Plan. It contains the following subsections:

- 4.1 Overview
- 4.2 Hazard Identification
- 4.3 Past Occurrences and Disaster Declarations
- 4.4 Hazard Evaluation
- 4.5 Hazard Identification Results

Table 4.1 – Section 4 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 4 – Hazard Identification
		4.1 Overview
3.1.3 Review of Existing Mitigation Plans	3.0 Risk Assessment	4.2 Full Range of Hazards Evaluation – This section presents the list of hazards considered during the hazard identification process based on existing state and local mitigation plans.
3.1.1 Disaster Declaration History		4.3 Past Occurrence and Disaster Declarations – This section includes presidential and emergency declarations and summary data on past hazard occurrences.
3.1.2 Research Additional Sources		4.4 Hazard Evaluation – This section presents the range of hazards evaluated and new HMPC determinations.
3.1.4 Hazards Identified		4.5 Hazard Identification Results

4.1 Overview

Peoria County is vulnerable to a wide range of natural and human-caused hazards. FEMA regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards, but evaluation of human-caused hazards is not required for plan approval. However, Peoria County has included an assessment of both types of hazards in this plan in order to comprehensively evaluate risk and mitigation opportunities.

The hazard identification process was as follows:

1. The HMPC created a list of the full range of hazards to be considered for inclusion in this plan update, detailed in Section 4.2.
2. Past hazard occurrences and disaster declarations in the planning area were reviewed, as detailed in Section 4.3.

3. Based on preliminary information including past occurrences, disaster declarations, information from the previous plan, and other data, each hazard was reviewed to determine whether it was significant to the planning area and warranted further assessment, as summarized in Section 4.4.
4. The HMPC produced the final list of hazards to be included in this plan update, provided in Section 4.5.

4.2 Full Range of Hazards Considered

To identify hazards relevant to the planning area, the HMPC began with a review of the list of hazards identified in the 2018 Illinois Hazard Mitigation Strategy, the 2018 Peoria County Hazard Mitigation Plan, and the 2019 Tri-County Hazard Management Plan as summarized in Table 4.2. The HMPC used these lists to identify a full range of hazards for potential inclusion in this plan update and to ensure consistency across these planning efforts. All hazards on the below list were evaluated for inclusion in this plan update.

Table 4.2 – Full Range of Hazards Evaluated

Hazard	Included in 2018 Illinois HMP?	Included in 2018 Peoria County HMP?	Included in 2019 Tri-County HMP?
Dam/Levee Failure	Yes	Yes	Yes
Drought	Yes	Yes	Yes
Earthquake	Yes	Yes	Yes
Extreme Temperatures	Yes	Yes	Yes (Heat Only)
Flooding	Yes	Yes	Yes
Land Subsidence/Sinkhole	Yes	No	Yes
Landslide	Yes	Yes	Yes
Severe Weather (Hail, Lightning, and Wind)	Yes	Yes	Yes (Includes Hail, Lightning, Heavy Rain)
Severe Winter Storms	Yes	Yes	Yes
Tornado	Yes	Yes	Yes
Wildfire	Yes	Yes	No
Wind	Yes (Severe Thunderstorm)	Yes (Severe Thunderstorm)	No
Hazardous Materials Incident	No	Yes	No
Terrorism	No	Yes	No
Active Shooter	No	Yes	No

4.3 Past Occurrences and Disaster Declarations

The HMPC evaluated the above list of hazards using existing hazard data, past disaster declarations, local knowledge, and information from the 2018 State Plan and the relevant county plans to determine the significance of these hazards to the planning area. Significance was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries, as well as property and economic damage.

One key resource in this effort was the National Oceanic and Atmospheric Administration's National Center for Environmental Information (NCEI), which has been tracking various types of weather events since 1950. NCEI's Storm Events Database contains an archive by county of destructive storm or weather data and information which includes local, intense, and damaging events. It should be noted that NCEI is not a complete record of all past weather events because it relies on local reporting of weather and storm events. NCEI receives storm data from the National Weather Service (NWS), which compiles their information from

a variety of sources, including but not limited to county, state and federal emergency management officials; local law enforcement officials; SkyWarn spotters; NWS damage surveys; newspaper clipping services; the insurance industry and the general public, among others. Reports can include multiple events within one episode. The NCEI database contains 308 records of storm events that occurred in Peoria County in the 10-year period from 2011-2021. These 308 storm events took place on 130 days out of the 10-year period. Table 4.3 summarizes these events.

Table 4.3 – NCEI Severe Weather Data for Peoria County, 2011-2021

Type	# of Events	Property Damage	Crop Damage	Deaths	Injuries
Blizzard	3	$750,000	$0	0	0
Cold/Wind Chill	4	$0	$0	4	0
Dense Fog	0	$0	$0	0	0
Drought	7	$0	$34,300,000	0	0
Excessive Heat	4	$0	$0	2	0
Extreme Cold/Wind Chill	5	$0	$0	1	0
Flash Flood	19	$130,000,000	$0	0	2
Flood	6	$28,000,000	$0	1	0
Freezing Fog	0	$0	$0	0	0
Frost/Freeze	0	$0	$0	0	0
Funnel Cloud	0	$0	$0	0	0
Hail	96	$3,070,000	$0	0	0
Heat	0	$0	$0	0	0
Heavy Rain	0	$0	$0	0	0
Heavy Snow	6	$0	$0	0	0
High Wind	2	$10,000	$0	0	0
Hurricane	0	$0	$0	0	0
Ice Storm	2	$1,700,000	$0	0	0
Lightning	6	$277,000	$0	0	2
Strong Wind	3	$60,500	$0	0	0
Thunderstorm Wind	131	$2,610,000	$5,000	1	0
Tornado	9	$1,675,000	0	0	0
Tropical Storm	0	$0	$0	0	0
Winter Storm	2	$0	$0	0	0
Winter Weather	3	$0	$0	0	0
Total:	**308**	**$168,152,500**	**$34,305,000**	**9**	**4**

Source: National Center for Environmental Information Events Database, retrieved February 2023, data available through 11/22
Note: Losses reflect totals for all impacted areas for each event.

Note that the NCEI period of record varies by hazard. For the more in-depth evaluation of historical occurrences in each hazard profile, the full period of record available in NCEI was used.

The HMPC also researched past events that resulted in a federal and/or state emergency or disaster declaration for Peoria County to identify significant hazards. Federal and/or state disaster declarations may be granted when the Governor certifies that the combined local, county and state resources are insufficient, and that the situation is beyond their recovery capabilities. When the local government 's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the

disaster is so severe that both the local and state government capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

Records of designated counties for FEMA major disaster declarations start in 1964. Since then, Peoria County has been designated in nine major disaster declarations, as detailed in Table 4.4, and six emergency declarations, as detailed in Table 4.5.

Table 4.4 – FEMA Major Disaster Declarations, Peoria County

Disaster #	Dec. Date	Incident Type	Event Title	Individual Assistance Applications Approved	Total Individual and Households Program Dollars Approved	Total Public Assistance Grant Dollars Obligated
373	04/26/1973	Flood	Severe Storms, Flooding	--	--	--
438	06/10/1974	Flood	Severe Storms, Flooding	--	--	--
583	04/30/1979	Flood	Severe Storms, Flooding	--	--	--
674	12/13/1982	Severe Storm	Severe Storms, Tornadoes, Flooding	--	--	--
735	03/29/1985	Flood	Severe Storms, Flooding	--	--	--
1800	10/03/2008	Severe Storm	Severe Storms and Flooding	27,937	$64,663,906.53	$27,884,821.59
1960	03/17/2011	Snowstorm	Severe Winter Storm and Snowstorm	--	--	$ 48,259,660.62
4116	05/10/2013	Flood	Severe Storms, Straight-Line Winds, And Flooding	62,413	$ 169,344,800.88	$29,762,490.92
4489	03/26/2020	Biological	COVID-19 Pandemic	17,801	$ 122,548,757.97	$1,193,149,975.02

Source: FEMA Disaster Declarations Summary, February 28th, 2023, https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties

Note: Number of applications approved and all dollar values represent totals for all counties in the state included in the disaster declaration.

Table 4.5 – FEMA Emergency Declarations, Peoria County

Disaster #	Dec. Date	Incident Type	Event Title/Description
3068	01/16/1979	Snowstorm	Blizzards and Snowstorms
3134	01/08/1999	Snowstorm	Winter Snowstorm
3161	01/17/2001	Snowstorm	Severe Winter Storm
3230	09/07/2005	Hurricane	Hurricane Katrina Evacuation
3269	12/29/2006	Snowstorm	Snow
3435	03/13/2020	Biological	COVID-19

Source: FEMA Disaster Declarations Summary, February 28th, 2023, https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties

4.4 Hazard Evaluation

Using the above information and additional discussion, the HMPC evaluated each hazard's significance to the planning area in order to decide which hazards to include in this plan update. Table 4.6 summarizes how and why the determination for each hazard was made.

Table 4.6 – Hazard Evaluation

Hazard	Included in this Plan Update?	How Was Determination Made?	Why Was Determination Made?
Natural Hazards			
Coastal Hazards (Storm Surge & Coastal Flooding)	No	- N/A	- Coastal hazards would not impact the planning area due to its inland location.
Dam/Levee Failure*	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of Illinois Dam Safety Program data	- Included in the 2018 Peoria County HMP - There are 1900 state regulated dams in Illinois, of which 258 are classified as High Hazard (Class I) Potential, 389 are classified as Significant Hazard (Class II) Potential and 1253 are classified as Low Hazard Potential (Class III).
Drought	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of U.S. Drought Monitor data	- Included in the 2018 Peoria County HMP - The U.S. Drought Monitor recorded severe to exceptional drought conditions in 6 of the last 20 years in Peoria County.
Earthquake	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of USGS seismic hazard maps	- Included in the 2018 Peoria County HMP - Earthquakes have occurred in and around Illinois. Illinois is at risk from two major seismic zones, the Wabash Valley Seismic Zone and the New Madrid Seismic Zone (NMSZ). The state is affected by the Charleston and Eastern Tennessee seismic zones. - According to USGS seismic hazard maps, the peak ground acceleration (PGA) with a 2% probability of exceedance in 50 years for Peoria County is approximately 4-10%g; FEMA recommends that earthquakes be evaluated for mitigation in areas with a PGA of 3%g or more.
Extreme Temperature	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of weather station data	- Included in the 2018 Peoria County HMP - According to the National Weather Service, in 2021, Peoria area in IL, broke 90 degrees in 4 months
Flooding	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP	- Included in the 2018 Peoria County HMP - NCEI records indicate that Peoria County has experienced 19 flash flood events and 6 flood events in

Hazard	Included in this Plan Update?	How Was Determination Made?	Why Was Determination Made?
		- Review of 2019 Tri-County HMP - Review of NCEI data and disaster declarations	the 10 years from 2011-2021. The planning area has also received 5 disaster declarations for flood-related events.
Land Subsidence & Sinkhole	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of Illinois State Geological Survey	- Included in the 2018 Illinois State HMP - 11.8% of Peoria County falls in a mine subsidence zone
Landslide	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of US Landslide Inventory	- Included in the 2018 Peoria County HMP - According to USGS, 3 probable landslide occurrences in Peoria county in the last 10 years
Hurricane & Tropical Storm	No	- N/A	- Hurricane and tropical storms would not affect the planning area due to its inland location
Severe Thunderstorm (Hail, Wind & Lightning)	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of NCEI data and disaster declarations	- Included in the 2018 Peoria County HMP - NCEI records indicate that Peoria County has experienced 5 damaging lightning events and 4 damaging hail events in the 10-year period from 2011-2021.
Severe Winter Storms	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2019 Tri-County HMP - Review of NCEI data and disaster declarations	- Included in the 2018 Peoria County HMP - The planning area received 5 disaster declarations for a severe winter storm. - NCEI records indicate that Peoria County has experienced 2 winter storm events, 3 winter weather events, 2 ice storm events, and 6 heavy snow events in the 10-year period from 2011-2021.
Tornado	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of 2018 Tri-County HMP - Review of NCEI data	- Included in the 2018 Peoria County HMP - NCEI records indicate that Peoria County has experienced 9 tornados causing over $1.6 million in property damages in the 10 years from 2011-2021.
Wildfire	Yes	- Review of IL State HMP - Review of 2018 Peoria County HMP - Review of WUI data	- Included in the 2018 Peoria County HMP - Wildland Urban Interface data indicates areas of risk
Technological and Human-Caused Hazards			
Active Shooter	Yes	- Review of IL State HMP	- Included in 2018 IL State HMP

Hazard	Included in this Plan Update?	How Was Determination Made?	Why Was Determination Made?
		- FBI Study of Active Shooter Incidents	- Between the years of 2000 and 2022, 9 active shooter incidents have occurred in the state of Illinois
Hazardous Materials Incident	Yes	- Review of 2018 Peoria County HMP	- Included in the 2018 Peoria County HMP - There are over 54,000 structures in Peoria County within a 1-mile buffer of a Tier II facility
Terrorism	Yes	- Review of 2018 Peoria County HMP	- Included in the 2018 Peoria County HMP but not considered a significant enough threat to warrant continued assessment. - 23 active hate groups in Illinois

4.5 Hazard Identification Results

Below is the final list of hazards selected by the HMPC for inclusion in this plan:

Natural Hazards

- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Temperatures
- Flood
- Land Subsidence/Sinkhole
- Landslide
- Severe Weather (Hail, Lightning, and Wind)
- Severe Winter Storms
- Tornado
- Wildfire

Technological/Human-Caused Hazards

- Hazardous Material Incidents
- Terrorism Event
- Active Shooter

5 Hazard Risk & Vulnerability Assessment

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

44 CFR §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the 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. Plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B): An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; and

(C): Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

This section describes and documents how Peoria County met Step 4: Assess the Hazard, and Step 5: Assess the Problem from the 10-step planning process. It includes detailed hazard profiles with risk and vulnerability assessment data for each of the hazards identified in Section 4. It contains the following subsections:

Overview

- 5.1 Overview
- 5.2 Methodology
- 5.3 Asset Inventory

Natural Hazards

- 5.4 Dam/Levee Failure
- 5.5 Drought
- 5.6 Earthquake
- 5.7 Extreme Temperatures
- 5.8 Flood
- 5.9 Land Subsidence/Sinkhole
- 5.10 Landslide
- 5.11 Severe Weather (Hail, Lightning, and Wind)
- 5.12 Severe Winter Storms
- 5.13 Tornado
- 5.14 Wildfire

Technological & Human-Caused Hazards

- 5.15 Hazardous Material Incidents
- 5.16 Terrorism Event
- 5.17 Active Shooter

Conclusions

- 5.18 Conclusions on Hazard Risk & Vulnerability

Table 5.1 – Section 5 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Section and Description of Changes
		Section 5 – Hazard Risk & Vulnerability Assessment
3.1 Hazard Identification	3.0 Risk Assessment	5.1 Overview – This section combines the overview sections and study area section of the previous plan. Minor updates to text.
3.2 Hazard Profiles	3.0 Risk Assessment	Details on the potential impacts of climate change on each hazard are now incorporated into each hazard profile.
3.3.1 Methodology	3.0 Risk Assessment	5.2 Methodology – This section details the methodology employed for the risk and vulnerability assessment and incorporates detail on the data sources used for each hazard.
3.3.2 Community Assets	3.0 Risk Assessment	5.3 Asset Inventory – The asset inventory was updated with current parcel data, critical facility data, social vulnerability data, and growth and development trends.
3.2 Hazard Profiles	3.0 Risk Assessment	5.4-5.18 Hazard Profiles have been updated with new data and evaluation to the extent possible. Vulnerability assessment results have been incorporated into the hazard profiles.
3.3.3 Vulnerability by Hazard	3.0 Risk Assessment	5.19 Conclusions on Hazard Risk & Vulnerability – This section combines the conclusions of the previous hazard risk and vulnerabilities assessments into a single section. It classifies each hazard as either High, Moderate, or Low Risk so that it may be prioritized for mitigation.

5.1 Overview

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. "It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." This section presents detailed hazard profiles for each of the hazards identified in Section 4 as significant enough to warrant further evaluation. Each hazard profile includes a general description of the hazard, its location, extent, past occurrences, and the probability of future occurrences as well as a detailed vulnerability assessment identifying the assets at risk and potential loss estimates. Each profile also includes specific items noted by

members of the HMPC as they relate to unique historical or anecdotal hazard information for the planning area.

The hazard risk assessment includes all of Peoria County and its incorporated municipalities: the villages of Bartonville, Peoria Heights, and Hanna City, as well as the cities of Chillicothe, Peoria Heights, West Peoria and Peoria. This hazard risk assessment also applies to the unincorporated areas of Peoria County, Peoria Park District, and the Greater Peoria Sanitary District.

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, infrastructure, and other assets to these hazards. The process allows for a better understanding of the potential risks natural hazards pose in the county and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events. This risk assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (FEMA 386-2, 2002), which breaks the assessment down to a four-step process:

5.2 Methodology

The Disaster Mitigation Act of 2000 requires that the HMPC evaluate the risks associated with each of the hazards identified in the planning process. Each hazard was evaluated to determine where it may occur, the severity of potential events, records of past events, the probability of future occurrences, and potential impacts from the hazard. A vulnerability assessment was conducted for each hazard using quantitative and/or qualitative methods depending on the available data, to determine its potential to cause significant losses to life or property. A consequence analysis was also completed for each hazard.

Detailed profiles for each of the identified hazards include information categorized as follows:

5.2.1 Hazard Description

This section consists of a general description of the hazard and the types of impacts it may have on a community.

5.2.2 Geographic Area Affected (Percentage of People)

This section describes the geographic extent or area affected by the hazard in the planning area focusing on the relationship of where people live in or near the hazard area. Where available, maps are utilized to indicate the areas of the planning area that are vulnerable to the subject hazard. The geographic location was assigned a rank as defined in the following manner, per the 2018 Illinois Natural Hazard Mitigation Plan:

- **High** - More than 25% of the total population adversely affected should the hazard occur
- **Medium** – Between 10% to 25% of the total population adversely affected should the hazard occur
- **Low** - Less than 10% of the total population adversely affected should the hazard occur

5.2.3 Previous Occurrences

This section includes information on historic incidents and their impacts based upon the sources described in Section 3.1 Hazard Identification and the information provided by the Hazard Mitigation Planning Committee.

5.2.4 Probability of Future Occurrence (Frequency)

The frequency of past events is used to gauge the likelihood of future occurrences. Where possible, the probability or chance of occurrence was calculated based on historical data. Probability was determined by the number of times that a hazard event has occurred in the past 60 years. The probability was assigned a rank as defined in the following manner, per the 2018 Illinois Natural Hazard Mitigation Plan:

- **High** - More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)
- **Medium** - 12 to 60 occurrences in the last 60 years
  (20-100% chance of occurrence each year)
- **Low** - 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

5.2.5 Magnitude/Severity (Injuries, Fatalities, Personal Property, and Infrastructure)

The magnitude of the impact of a hazard event (past and perceived) is related directly to the vulnerability of the people, property, and the environment it affects. This is a function of when the event occurs, the location affected the resilience of the community, and the effectiveness of the emergency response and disaster recovery efforts.

The magnitude of each profiled hazard is classified in the following manner, per the 2018 Illinois Natural Hazard Mitigation Plan:

- **High** - Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.
- **Medium** - Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
- **Low** - Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

5.2.6 Explanation of Data Sources

The data collected for the hazard profiles and vulnerability assessment was obtained from multiple sources covering a variety of spatial areas including county- and jurisdictional-level information. Table 5.2 summarizes the primary data sources and risk assessment methodology for each of the profiled hazards.

Table 5.2 – Summary of Hazard Data Sources and Geographic Coverage

Hazard	Hazard Data Sources	Vulnerability Methodology
Dam/Levee Failure	NID, FEMA, USACE	GIS Spatial Analysis
Drought	USDM, NDMC, USGS	Qualitative Analysis
Earthquake	USGS, NCEI, FEMA	Hazus 4.2
Extreme Temperature	NWS, NOAA	Qualitative Analysis
Flooding	NCEI, FEMA	Hazus 4.2

Hazard	Hazard Data Sources	Vulnerability Methodology
Severe Weather (Hail, Wind & Lightning)	USGS	Qualitative Analysis
Severe Winter Storms	NWS, NCEI	Qualitative Analysis
Tornado	NWS, NCEI	UGA Hazus Report
Wildfire	US Census, USGS NLCD	GIS Spatial Analysis
Hazardous Material Incidents	EPA, USDOT	GIS Spatial Analysis
Terrorism	Internet Research	Qualitative Analysis
Active Shooter	FBI	Qualitative Analysis

CDC = Centers for Disease Control and Prevention; EPA = United States Environmental Protection Agency; FEMA = Federal Emergency Management Agency; NCEI = National Centers for Environmental Information; NDMC = National Drought Mitigation Center; Center; NID = National Inventory of Dams; NOAA = National Oceanic and Atmospheric Administration; NWS = National Weather Service; USACE = United States Army Corps of Engineers; USDM = United States Drought Monitor; USDOT =United States Department of Transportation; USGS = United States Geological Survey; NLCD = National Land Cover Data; WHO = World Health Organization; FBI = Federal Bureau of Investigation

5.3 Asset Inventory

An inventory of assets was compiled to identify the total count and value of property exposure in Peoria County. This asset inventory serves as the basis for evaluating exposure and vulnerability by hazard. Assets identified for analysis include buildings, critical facilities, and critical infrastructure. Building exposure was estimated by summarizing tax parcel data provided by Peoria County. Critical facilities were provided by Peoria County GIS. Additional critical infrastructure was identified through data FEMA's Hazus software.

For all non-spatially defined hazards, this full asset inventory represents the extent of property exposed to risk. For spatially defined hazards, property exposure is detailed in the hazard profile.

5.3.1 Building Exposure

Table 5.3 provides building exposure by jurisdiction according to tax parcel data provided by Peoria County. All occupancy types were summarized into the following categories: Agriculture, Commercial, Education, Government, Industrial, Religious, and Residential. Where occupancy was not provided, residential occupancy was assumed.

Content value estimations were based on the FEMA Hazus methodology of estimating value as a percent of improved structure values by property type. The residential property type assumes a content replacement value equal to 50% of the building value. Agricultural, commercial, education, government, and religious property types assume a content replacement value equal to 100% of the building value. The industrial property type assumes a content replacement value equal to 150% of the building value.

Table 5.3 – Peoria County Building Exposure by Jurisdiction and Structure Type

Occupancy	Structures	Structure Value	Estimated Content Value	Total Value
Chillicothe City	**2,729**	**$898,907,463**	**$644,736,662**	**$1,543,644,125**
Agriculture	7	$1,082,413	$1,082,413	$2,164,826
Commercial	273	$263,002,128	$263,978,422	$526,980,550
Education	6	$54,462,300	$54,462,300	$108,924,600
Government	2	$1,972,853	$2,778,521	$4,751,374
Industrial	20	$34,225,628	$49,622,055	$83,847,683
Religion	2	$1,463,764	$1,463,764	$2,927,527
Residential	2,419	$542,698,376	$271,349,188	$814,047,564

Occupancy	Structures	Structure Value	Estimated Content Value	Total Value
Hanna City	**576**	**$179,495,293**	**$116,859,105**	**$296,354,398**
Agriculture	2	$309,261	$309,261	$618,522
Commercial	47	$46,049,707	$46,049,707	$92,099,414
Industrial	2	$3,931,975	$5,897,962	$9,829,937
Residential	525	$129,204,350	$64,602,175	$193,806,526
Peoria City	**43,478**	**$18,163,190,936**	**$13,183,107,881**	**$31,346,298,817**
Agriculture	50	$27,543,858	$27,543,858	$55,087,716
Commercial	3,492	$5,370,480,737	$5,488,638,085	$10,859,118,822
Education	72	$654,759,233	$664,806,322	$1,319,565,555
Government	27	$83,716,771	$100,418,324	$184,135,095
Industrial	308	$910,265,866	$1,305,895,289	$2,216,161,155
Religion	47	$75,187,540	$75,187,540	$150,375,081
Residential	39,482	$11,041,236,930	$5,520,618,463	$16,561,855,393
Village of Bartonville	**2,969**	**$1,150,639,740**	**$941,266,218**	**$2,091,905,958**
Agriculture	19	$41,159,592	$41,159,592	$82,319,183
Commercial	221	$258,006,114	$260,696,186	$518,702,300
Education	4	$60,331,305	$60,331,305	$120,662,610
Government	5	$5,339,880	$6,924,991	$12,264,871
Industrial	83	$183,344,514	$270,313,638	$453,658,152
Religion	2	$1,222,676	$1,222,676	$2,445,351
Residential	2,635	$601,235,660	$300,617,830	$901,853,490
Village of Peoria Heights	**2,756**	**$868,270,020**	**$625,300,011**	**$1,493,570,031**
Agriculture	1	$277,085	$277,085	$554,171
Commercial	263	$270,297,240	$270,894,259	$541,191,499
Education	4	$46,140,420	$46,140,420	$92,280,841
Government	5	$4,496,736	$6,138,185	$10,634,920
Industrial	19	$28,979,632	$42,205,600	$71,185,232
Religion	3	$1,210,015	$1,210,015	$2,420,031
Residential	2,461	$516,868,891	$258,434,446	$775,303,337
West Peoria City	**2,070**	**$563,945,834**	**$391,563,593**	**$955,509,426**
Agriculture	1	$775,319	$775,319	$1,550,638
Commercial	128	$154,658,936	$154,658,936	$309,317,872
Education	4	$24,808,607	$24,808,607	$49,617,213
Government	3	$3,430,387	$4,479,482	$7,909,870
Industrial	9	$15,877,427	$23,816,140	$39,693,566
Religion	1	$1,655,060	$1,655,060	$3,310,119
Residential	1,924	$362,740,098	$181,370,049	$544,110,147
Unincorporated Peoria County	**18,948**	**$7,713,239,616**	**$5,471,787,183**	**$13,185,026,799**
Agriculture	804	$292,223,884	$292,223,884	$584,447,768

Occupancy	Structures	Structure Value	Estimated Content Value	Total Value
Commercial	670	$882,460,583	$885,162,645	$1,767,623,228
Education	15	$110,459,697	$110,459,697	$220,919,394
Government	13	$21,825,389	$21,825,389	$43,650,778
Industrial	250	$961,284,544	$1,427,441,994	$2,388,726,538
Religion	11	$24,361,632	$24,361,632	$48,723,264
Residential	17,185	$5,420,623,887	$2,710,311,941	$8,130,935,828

5.3.2 Critical Facilities Exposure

Of significant concern with respect to any disaster event is the location of critical facilities and infrastructure in the planning area. Critical facilities are often defined as those essential services and lifelines that, if damaged during an emergency event, would result in severe consequences to public health, safety, and welfare. Critical facilities in Peoria County are listed in Table 5.4 and shown in Figure 5.1.

Table 5.4 –Critical Facilities

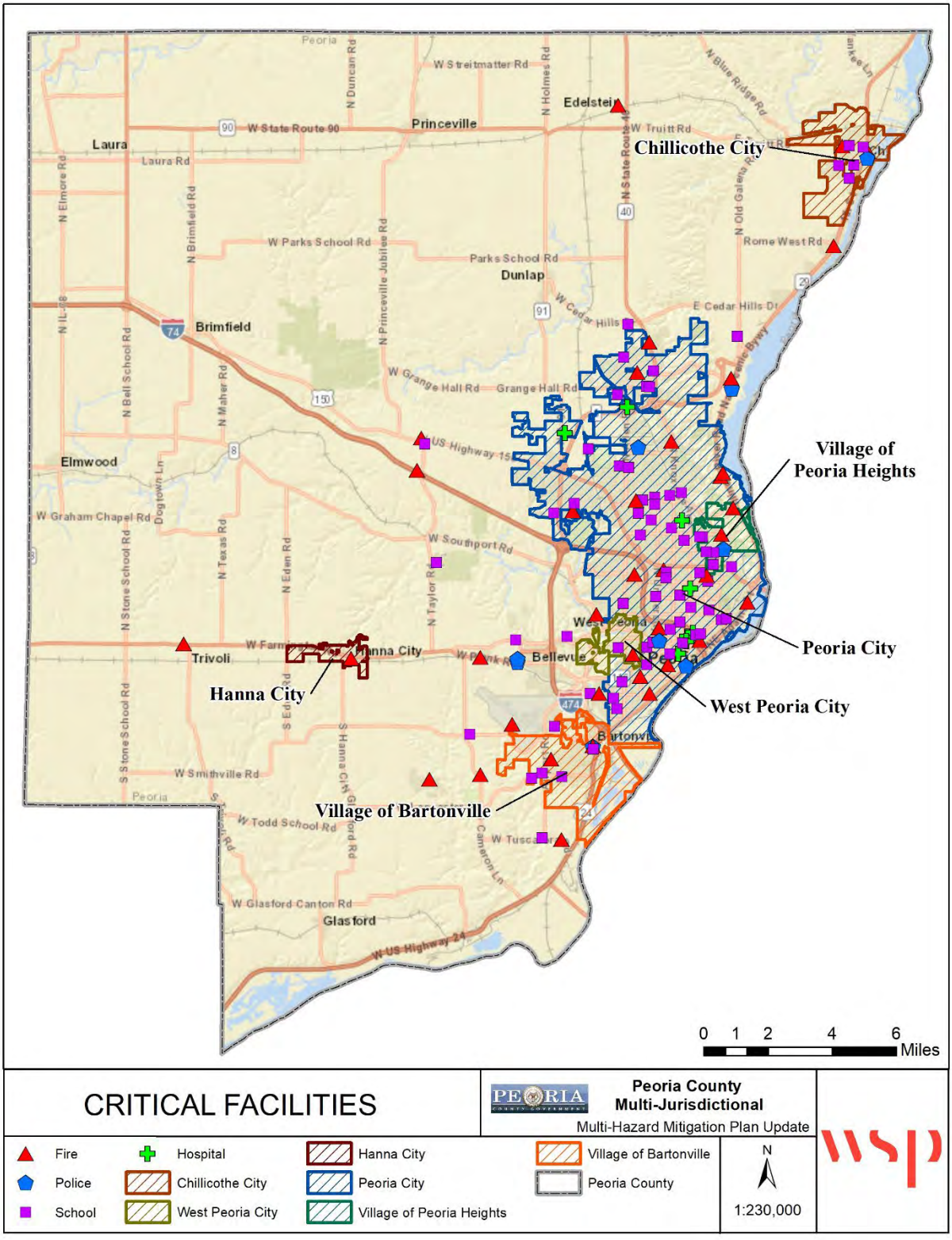
Name	Type	Jurisdiction
Chillicothe Community FPD Station 1	Fire	Chillicothe City
Chillicothe Fire Station 2	Fire	Chillicothe City
Chillicothe Elementary Center	School	Chillicothe City
Illinois Valley Central High School	School	Chillicothe City
South Elementary School	School	Chillicothe City
Chillicothe Police Department	Police	Chillicothe City
Calvary Baptist Academy	School	Chillicothe City
St Edward's Catholic School	School	Chillicothe City
Logan Trivoli Fire Protection	Fire	Hanna City
Peoria Fire Station 4	Fire	Peoria City
Roosevelt Magnet School	School	Peoria City
Whittier Primary School	School	Peoria City
Bradley University	School	Peoria City
Peoria Fire Station 3	Fire	Peoria City
Peoria Fire Station 8	Fire	Peoria City
OSF HealthCare Transitional Care Hospital	Hospital	Peoria City
Carle Health - Methodist Hospital	Hospital	Peoria City
OSF Saint Francis Medical Center	Hospital	Peoria City
Peoria High School	School	Peoria City
Peoria Fire Department	Fire	Peoria City
Peoria Fire Station 12	Fire	Peoria City
Von Steuben Middle School	School	Peoria City
Peoria Fire Department	Fire	Peoria City

Name	Type	Jurisdiction
Peoria Christian School	School	Peoria City
UnityPoint Health - Proctor Hospital	Hospital	Peoria City
Illinois Central College	School	Peoria City
Rolling Acres Middle School	School	Peoria City
Northmoor Primary School	School	Peoria City
Northmoor Fire Station	Fire	Peoria City
Richwoods High School	School	Peoria City
Fire Station 13	Fire	Peoria City
Fire Station 11	Fire	Peoria City
Thomas Jefferson Primary School	School	Peoria City
Fire Station 17	Fire	Peoria City
Peoria Fire Department Training Tower	Fire	Peoria City
Peoria Fire Station 15	Fire	Peoria City
Fire Station 20	Fire	Peoria City
Fire Station 19	Fire	Peoria City
Mark W Bills Middle School	School	Peoria City
Charter Oak Primary School	School	Peoria City
Police Sub-Station 2	Police	Peoria City
Peoria Police Department	Police	Peoria City
Bradley University Police	Police	Peoria City
Franklin Primary School	School	Peoria City
Quest Academy High School	School	Peoria City
Quest Charter Academy Middle School	School	Peoria City
Sterling Middle School	School	Peoria City
Manual High School	School	Peoria City
Trewyn Middle School	School	Peoria City
Harrison Primary School	School	Peoria City
Wilder-Waite Grade School	School	Peoria City
Hickory Grove Elementary School	School	Peoria City
Ridgeview Elementary School	School	Peoria City
Peoria Academy	School	Peoria City
Kellar Primary School	School	Peoria City
Hines Primary School	School	Peoria City
Peoria Notre Dame High School	School	Peoria City
Washington Gifted Middle School	School	Peoria City
Lincoln K-8 School	School	Peoria City
Woodruff High School	School	Peoria City
Glen Oak Community Learning Center	School	Peoria City

Name	Type	Jurisdiction
UnityPoint Health Multi-Specialty - Methodist Hosp	Hospital	Peoria City
OSF Healthcare Children's Hospital of Illinois	Hospital	Peoria City
Methodist Medical Center	Hospital	Peoria City
OSF Saint Francis Center for Health	Hospital	Peoria City
Peoria Fire Department Station 4	Fire	Peoria City
Valeska Hinton Early Childhood	School	Peoria City
University of Illinois College of Medicine Peoria	School	Peoria City
Children's Home Association of Illinois	School	Peoria City
St Philomena Catholic School	School	Peoria City
Concordia Lutheran School	School	Peoria City
Saint Vincent de Paul Catholic School	School	Peoria City
PALS Praise & Leadership Schools	School	Peoria City
Little Friends Early Education and Preschool	School	Peoria City
AppleTree Academy Inc.	School	Peoria City
St. Jude Catholic School	School	Peoria City
Saint Francis Medical Center College of Nursing	School	Peoria City
PALS Praise & Leadership Schools	School	Peoria City
Liberty Leadership Middle School	School	Peoria City
Medina Township Sheriff	Police	Unincorporated
Air Guard	Fire	Unincorporated
Limestone Firestation	Fire	Unincorporated
Tuscarora Firestation	Fire	Unincorporated
Pleasant Valley Elementary	School	Unincorporated
Norwood Elementary	School	Unincorporated
Pleasant Hill School	School	Unincorporated
Monroe School	School	Unincorporated
Limestone Walters School	School	Unincorporated
Mossville Jr. High and Elementary School	School	Unincorporated
Banner Elementary	School	Unincorporated
Hollis School	School	Unincorporated
Peoria Regional Learning Center	School	Unincorporated
EOC	Fire	Unincorporated
Chillicothe Community FPD Station 4	Fire	Unincorporated
Logan Trivoli FPD, Lake Camelot Fire Station	Fire	Unincorporated
Dunlap Fire Station 2	Fire	Unincorporated
Limestone Township Fire Protection District	Fire	Unincorporated
Bellevue Police Department	Police	Unincorporated
Peoria County Sheriff's Office	Police	Unincorporated

Name	Type	Jurisdiction
Logan-Trivoli Fire Protection	Fire	Unincorporated
Wyoming Fire Dept Speer Unit (Speer Ambulance)	Fire	Unincorporated
Limestone Firehouse 4	Fire	Unincorporated
Limestone Township 2 FPD	Fire	Unincorporated
Brimfield Community Fire Department Station 2	Fire	Unincorporated
Chillicothe Community FD Mossville Station	Fire	Unincorporated
St Mary's School	School	Unincorporated
Bartonville Fire Department Firehouse No.2	Fire	Village of Bartonville
Limestone Community High School	School	Village of Bartonville
Bartonville Police Department	Police	Village of Bartonville
Bartonville Village Fire Department	Fire	Village of Bartonville
Bartonville Grade School	School	Village of Bartonville
Special Education Association of Peoria County	School	Village of Bartonville
Oak Grove School	School	Village of Bartonville
Peoria Heights High School	School	Village of Peoria Heights
Peoria Heights Grade School	School	Village of Peoria Heights
Fire Department of the Village of Peoria Heights	Fire	Village of Peoria Heights
Fire Department of the Village of Peoria Heights	Fire	Village of Peoria Heights
Peoria Heights Police Department	Police	Village of Peoria Heights
Peoria Christian Middle School	School	Village of Peoria Heights
St Thomas Catholic School	School	Village of Peoria Heights
Cadence Academy Preschool	School	Village of Peoria Heights
West Peoria Fire Department	Fire	West Peoria City
Calvin Coolidge Middle School	School	West Peoria City
GPDT Treatment Plan	WWTP	Greater Peoria Sanitary District

Figure 5.1. Critical Facilities



5.4 Dam/Levee Failure

Hazard Description

Dam Failure

A dam is a barrier constructed across a watercourse that stores, controls, or diverts water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet. One acre-foot is the volume of water that covers one acre of land to a depth of one foot. Dams can benefit farmland, provide recreation areas, generate electrical power, and help control erosion and flooding issues. A dam failure is the collapse or breach of a dam that causes downstream flooding. Dam failures may be caused by natural events, human-caused events, or a combination. Dam failures are of particular concern because the water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property, especially if the structure is breached or significantly damaged. Failure can result in the release of the reservoir contents—this can include water, mine wastes, or agricultural refuse—causing negative impacts upstream or downstream or at locations far from the dam. Negative impacts of primary concern are loss of human life, property damage, lifeline disruption, and environmental damage.

Dam failures can result from any one or a combination of the following:

- Prolonged periods of rainfall and flooding
- Inadequate spillway capacity, resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage or piping
- Poor operation or improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components
- Improper design, including the use of improper construction materials and construction practices
- Negligent operation, including the failure to remove or open gates or valves during high flow periods
- Failure of upstream dams on the same waterway
- High winds, which can cause significant wave action and result in substantial erosion

Levee Failure

FEMA defines a levee as "a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water in order to reduce the risk from temporary flooding." Levee systems consist of levees, floodwalls, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices. Levees often have "interior drainage" systems that work in conjunction with the levees to take water from the landward side to the water side. An interior drainage system may include culverts, canals, ditches, storm sewers, and/or pumps.

Levees and floodwalls are constructed from the earth, compacted soil or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. Levees and floodwalls are typically built parallel to a waterway, most often a river, in order to reduce the risk of flooding to the area behind it.

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events. Levees reduce, not eliminate, the risk to individuals and structures behind them. A levee system failure or overtopping can create severe flooding and high water velocities. It is important to remember that no levee provides protection from

events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

For both dam and levee failure events, there is generally very little warning time. A failure resulting from heavy rains and flash flooding can occur within hours of the first signs of breaching. Due to the lack of advance warning, failures resulting from natural events, such as earthquakes, landslides, or heavy rainfall and flooding may be particularly severe. Depending on the cause, other failures and breaches can take much longer to occur, from days to weeks. The duration of the flood will vary but may last as long as a week.

Location

Dam Failure

There are 49 dams located within Peoria County (See Table 5.5 and Figure 5.2). Three of those dams are owned and regulated by the IL Department of Natural Resources, three are owned by the City of Peoria/Peoria County, and one is owned by the Metropolitan Airport Authority of Peoria. Eight dams in Peoria County are high hazard dams. The remaining dams are privately owned and are classified as significant to low hazard dams. All dams in Peoria County are 100% state regulated.

Table 5.5 – Dam Inventory for Peoria County, IL

Dam Name	NIDID	Height (Ft.)	Storage (acre-feet)	Owner	Primary Purpose	Hazard Potential
Peoria County						
Big Timber Lake Dam	IL00294	46	137	Private	Recreation	Low
Chippewa Estates Dam	IL01106	32	59	Private	Recreation	Low
Cowen Pond Dam	IL01105	40	44	Private	Recreation	Low
Darwish Dam	IL50459	40	109	Private	Fish and Wildlife Pond, Recreation	Low
Don Johnson Pond Dam	IL40127	29	28	Private	Fish and Wildlife Pond, Recreation	Low
E. D. Edwards Station Ash Pond	IL50710	25	950	Private	Other	High
Elmore Stock Farm Pond Dam	IL01131	21	55	Private	Recreation	Low
Glenview Farms Lake Dam	IL01184	35	48	Private	Recreation	Low
Grahams Lake Dam	IL00357	32	90	Private	Other, Recreation	Low
Griffin South Pond Dam	IL00305	26	29	Private	Recreation	Low
Hidden Point Dam	IL50507	39	62	Private	Recreation	High
Hillcrest Dairy Wastewater Lagoon Dam	IL50424	20	136	Private	Other	Low
Hollis Park Dam	IL01005	51	820	Private	Recreation	High
Heuerman Pond Dam	IL40129	Unknown	Unknown	Unknown	Recreation	Significant
Lake Camelot Dam	IL00293	56	784	Private	Recreation, Water Supply	High
Lake Holiday Dam	IL00311	40	143	Private	Recreation	Low
Lake of The Woods Dam	IL00296	58	378	Private	Recreation	High
Lake Lancelot Dam	IL01147	54	1,271	Private	Recreation	High
Lake Shore Drive Pond Dam	IL00722	35	17	Private	Recreation	Low

Dam Name	NIDID	Height (Ft.)	Storage (acre-feet)	Owner	Primary Purpose	Hazard Potential
Midland/Elm Mine/Fresh Water Lake Dam	IL00290	41	550	Private	Other	Low
Midland/Elm Mine/ Slurry Lake 1 Dam	IL00291	28	512	Private	Other	Low
Mulvaney Pond Dam	IL01196	38	53	Private	Recreation	Low
Radnor Rod and Gun Club Lake Dam	IL00301	31	116	Private	Recreation	Low
Rose Estates Dam	IL50530	47	102	Private	Recreation	Low
Roy Demanes Pond Dam	IL40128	44	70	Private	Fish and Wildlife Pond, Recreation	Low
Smith Lake Dam	IL00313	47	138	Private	Recreation	Significant
South Warner Pond Dam	IL00319	25	52	Private	Recreation	Low
Staab Pond Dam	IL00314	30	34	Private	Recreation	Low
Taylor Lake Dam	IL50518	36	196	State	Fish and Wildlife Pond, Recreation	Low
Underwood Pond Dam	IL00316	34	74	Private	Recreation	Low
Walnut Point Dam	IL50460	58	275	Private	Fish and Wildlife Pond, Recreation	Low
Bartonville						
Cobblestone Lake Dam	IL50184	64	105	Private	Recreation	Low
Chillicothe						
Arrowhead Country Club Lake Dam	IL00302	35	96	Private	Other, Recreation	Low
Sante Fe Lake Dam	IL01103	57	528	Private	Recreation	Significant
Hanna City						
Lakeland Lake Dam	IL00295	29	39	Private	Recreation	Low
Peoria						
Caboose Lake Dam	IL50517	25.5	57	State	Fish and Wildlife Pond, Recreation	Low
Charter Oak North Lake Dam	IL01107	39	208	Private	Recreation	Significant
Charter Oak South Lake Dam	IL01108	33	43	Private	Recreation	Low
Deep Lake Dam	IL50516	47	348	Private	Fish and Wildlife Pond, Recreation	Low
Franciscan Prairie Pointe Dam	IL50532	10.7	166	Private	Flood Risk Reduction, Other	High
Huntington Pointe Dam	IL50380	34	16	Government	Recreation	Low
Lake Long Bow Dam	IL50631	12	60	Private	Recreation	High
Lake Lynnhurst Dam	IL00297	44	159	Private	Recreation	Low
Leisure Oak Lake 1 Dam	IL00298	31	73	Private	Recreation	Low
Leisure Oak Lake 2 Dam	IL01104	31	41	Private	Recreation	Low
Peoria City-County Landfill 2 Dam	IL50403	22	51	Government	Other	Low
Small Timber Lake Dam	IL00315	34	34	Private	Recreation	Low
Thirteen Club Dam	IL50630	30	100	Private	Recreation	Significant

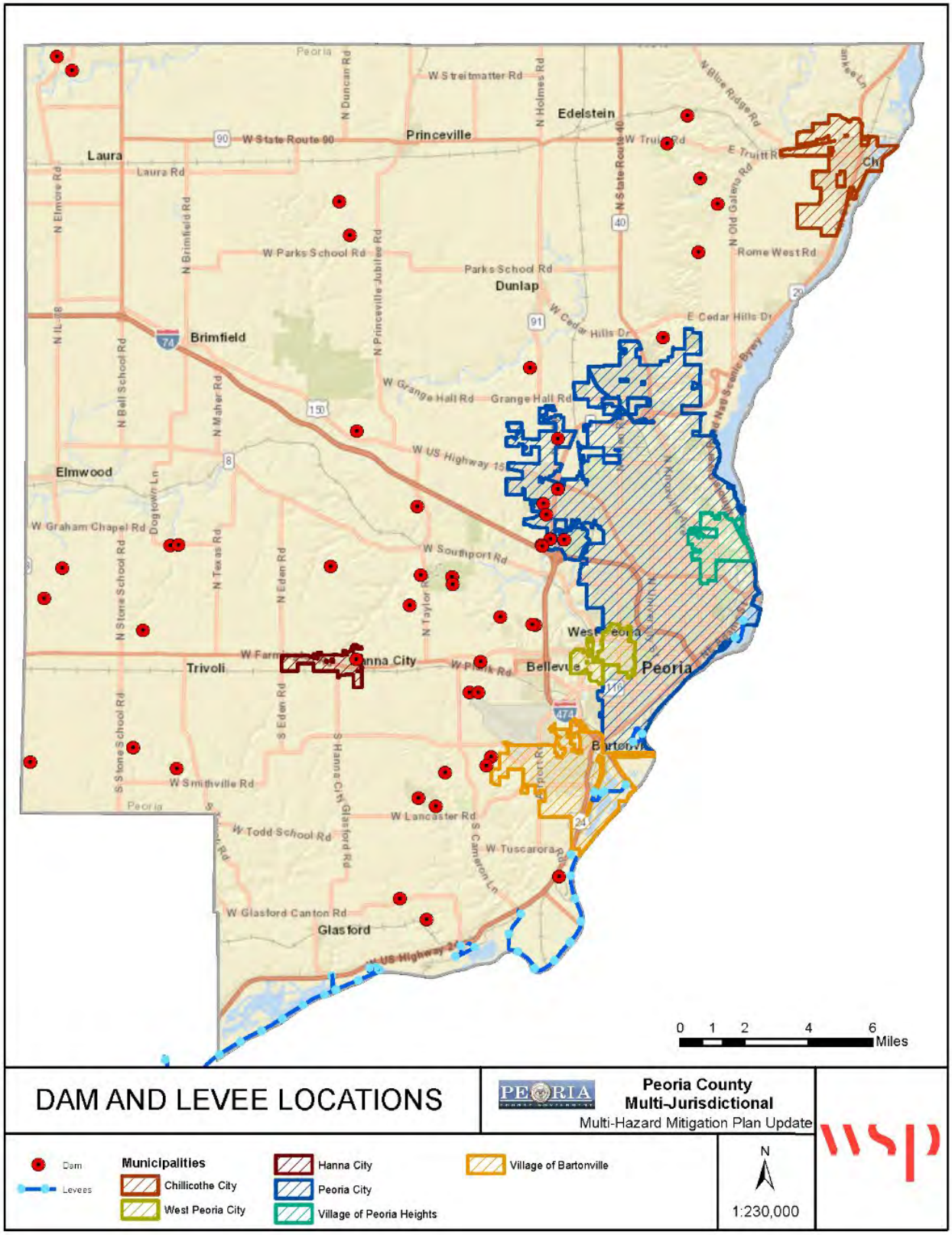
Dam Name	NIDID	Height (Ft.)	Storage (acre-feet)	Owner	Primary Purpose	Hazard Potential
Weaver Ridge Lake Dam	IL50379	44	109	Private	Irrigation	Low

Source: National Inventory of Dams, February 2023
Note: Dam jurisdiction is the one it is closest to, not necessarily within the limits

Point location data was not available from the NID, therefore Figure 5.2 below provides a snapshot of dam locations according to the NID database, as well as levees in Peoria County.

Information on the inundation areas of the above-listed dams was unavailable; however, in most cases the inundation area of any single dam is unlikely to exceed 10 percent of the planning area.

Figure 5.1 – Dam Locations in Peoria County



Levee Failure

The U.S. Army Corps of Engineers (USACE) maintains information on the nation's levees in the National Levee Database (NLD), which includes information on the levees located in Peoria County along the Illinois River. Table 5.6 below shows all the levees in Peoria County.

Table 5.6 – Levee Inventory for Peoria County, IL

Levee	River	Total Length (miles)	Maximum Height	Risk	Population Behind Levee	Property Value Behind Levee
Banner Marsh State Fish and Wildlife Area	Illinois	8.59	17.5	Low	19	$1.07 M
Banner Special Levee & Drainage District	Illinois	2.26	4	Low	6	$202K
Banner Special Levee - Segment #5	Illinois	0.36	--	--	--	--
Banner Special Levee - Segment #6	Illinois	0.53	--	--	--	--
Evonik Mapleton Plant Site Levee	Illinois	0.96	--	--	224	$54.1M
Greater Peoria Sanitary District	Illinois	1.25	--	Low	70	$156M
Keystone Steel	Illinois	0.81	--	--	--	--
Keystone Steel 2	Illinois	0.91	--	--	---	--
Komatsu Levee	Illinois	0.82	--	--	2	$176M
Lonza	Illinois	0.54	--	--	--	--
Pekin And La Marsh Drainage & Levee District	Illinois	7.12	20	Low	14	$5.69M

Figure 5.3 shows the location of the levees within Peoria County, with them mostly on the Illinois River and county border.

Although there have been no documented failures of state-regulated dams in the planning area and the probability of failure is low, if failure were to occur at a high hazard dam, there is a high probability for loss of life or substantial economic loss in excess of that which would naturally occur downstream of the dam. Data is not available to specifically address potential magnitude of failure in quantitative terms. If additional development occurs in downstream areas where inundation would occur, the severity of failure would also increase.

The geographic location of dams and levees in the planning area is given a rank of **low**:

- **Low -** Less than 10% of the total population adversely affected should the hazard occur

Figure 5.3– Levees in Peoria County

Source: National Levee Database

Extent

Dam Failure

Each state has definitions and methods to determine the Hazard Potential of a dam. In Illinois, a dam is considered all obstructions, walls, embankments, or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool. The height of a dam is from the highest point on the crest of the dam to the lowest point on the downstream toe, and the storage capacity is the volume impounded at the elevation of the highest point on the crest of the dam. A dam is regulated only if it is deemed that its failure would result in loss of human life.

The Illinois Dam Safety Program, operated by the Illinois Department of Natural Resources' (IDNR) Division of Water Resource Management (DWRM), was created to protect the public from dam failures. IDNR inspects dams for safety and requires that dams meet stability and spillway standards for the owners to

obtain and maintain an operating permit. Dams are inspected depending on the hazard potential category of the dam.

IDNR's Office of Water Resources (OWR) oversees the state's dam safety program primarily through permitting and inspection of dams. In Illinois, dams are categorized and regulated according to their hazard classification:

- High Hazard (Class I) Potential - Class I dams are located where failure has a high probability for causing loss of life or substantial economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed.
- Significant Hazard (Class II) Potential - Class II dams are located where failure has a moderate probability for causing loss of life or may cause substantial economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed.
- Low Hazard (Class III) Potential - Class III dams are located where failure has low probability for causing loss of life, where there are no permanent structures for human habitation, or minimal economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed.

According to Illinois Administrative Code (Part 3702),

- Class I dams shall retain an engineer or other qualified personnel to make inspections and reports as required annually.
- Class II dams require this inspection and report every 3 years.
- Class III dams operate on a 5-year schedule for inspections.

National Inventory of Dams (NID) classifications are provided. The NID database tracks dams that meet any of the following criteria:

1) High hazard potential classification - loss of human life is likely if the dam fails,
2) Significant hazard potential classification - no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns,
3) Equal or exceed 25 feet in height and exceed 15 acre-feet in storage,
4) Equal or exceed 50 acre-feet storage and exceed 6 feet in height.

Based on these criteria there are 7 high hazard dams in Peoria County (see following table). Given the presence of several high hazard dams in the planning area, potential impact is considered critical. It is also possible that dams in the planning area present greater risk than when they were last evaluated due to downstream development and increased exposure, but without a reevaluation of these dams it is difficult to draw any conclusions. Additionally, the NID reports that the average age of dams in Peoria County is 52 years. While age does not equate to hazard potential, according to the 2021 Report Card for America's Infrastructure, it does indicate that many dams were not built to current standards and/or may require rehabilitation or other action to ensure their continued safe operation.

Although there have been no documented failures of state-regulated dams in the planning area and the probability of failure is low, if failure were to occur at a high hazard dam, there is a high probability for loss of life or substantial economic loss in excess of that which would naturally occur downstream of the dam. Data is not available to specifically address potential magnitude of failure in quantitative terms. If additional development occurs in downstream areas where inundation would occur, the severity of failure would also increase.

- **High —** Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.

Levee Failure

The NLD assigns levee risk classifications according to the likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences. The NLD's risk classification is provided on a scale of 1 (very high) to 5 (very low).

As shown in Table 5.6, risk for levees in Peoria County are either low or not calculated. The NLD defines the low classification (4) risk characteristics as:

- Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.

Historical Occurrences

There are 2 records of dam failure that impacted Peoria County.

- Waltonville Lake Dam located in Jefferson County, IL failed in June 2011 resulting in temporary flooding of the state highway. 15 ac-ft of water was released in this failure. Incident ID: IL00169-1081
- A private dam for farming purposes failed in May 2013 resulting in downstream damage at Bartholomew Road. A portion of the roadway was washed away leaving a recent culvert upgrade intact. (See Figure 5.4)

Figure 5.4 - Bartholomew Roadway Damage following Upstream Dam Failure, 2013

There is one record of levee failure that impacted Peoria County.

- A farm levee along Kickapoo Creek breached in April 2013 following a heavy rainfall event. Twenty families were evacuated from the community of Edwards following the breach.

Probability of Future Occurrence

The Illinois Dam Safety Program, operated by the IDNR Division of Water Resource Management (DWRM), was created to protect the public from dam failures. IDNR inspects dams for safety and requires that dams meet stability and spillway standards for the owners to obtain and maintain an operating permit. Dams are inspected every 1, 3, or 5 years depending on the hazard potential category of the dam. Because dam failure is generally a secondary effect of other causes and hazards, calculating probability is difficult.

The USACE federally constructed levees (Banner Marsh, Banner Special, and Pekin and LaMarsh) have been turned over to the public sponsor for operations and maintenance. The Greater Peoria levee was locally constructed and is locally operated and maintained.

Based on the past performance of dam and levee structures during flooding conditions, the HMPC determined that the probability of this hazard is low. Frequent inspections can identify needed repairs or improvements that may be necessary to prevent failure.

- **Low -** 0 to 12 occurrences in the last 60 years

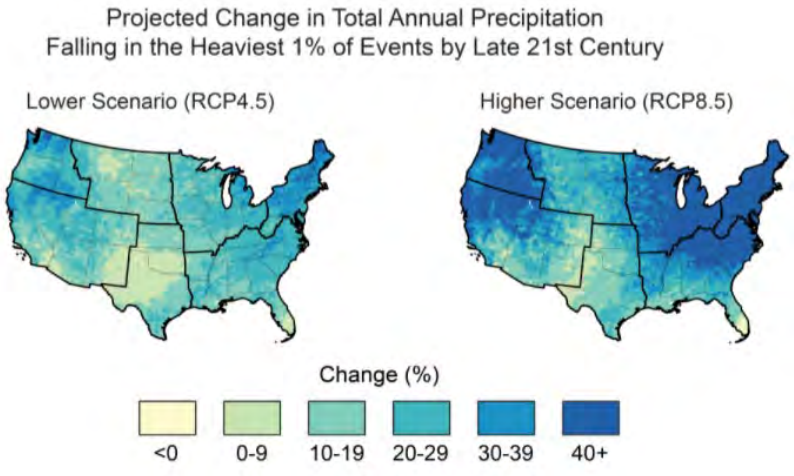
Climate Change

A study from the Norwegian University of Science and Technology was conducted to investigate the impact of climate change scenarios on hydropower dam safety with a focus on impacts related to changes in precipitation and flood. Climate change projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on dams and increasing likelihood of dam failure. This study evaluated changes in design floods and concluded that outflow floods and flood water levels will increase in the future, the total hydrological failure probability of a dam will increase, and the extent and depth of flood waters will increase by the future dam break scenario (Chernet et al. 2014).

A study on the impacts of climate change on dams and reservoirs produced for the UK Department of Environment, Food and Rural Affairs indicates that concrete and masonry dams may be relatively resilient to climate change, but earthen embankments are most likely to be vulnerable to climate change because their structure may be weakened by increased erosion, more extreme fluctuations in water levels, and changes in vegetation and prolonged drying during hot weather. Increasing frequency and size of flows as well as increases in debris and vegetation may also increase vulnerability (Atkins, 2013).

There were no studies available on the local impacts of climate change on dams in Peoria County or Illinois: however, these international studies can be taken as an indication that the risk of dam failure may increase in the future. In the US, the EPA states that more extreme weather events will strain water infrastructure. Heavy rainfall events can cause dam and levees to fail. With heavy rain events becoming more frequent and intense, as shown in Figure 5.5, conditions conducive to dam failure may occur more frequently as well.

Figure 5.5 – Projected Change in Heavy Rainfall Events



Source: Fourth National Climate Assessment

Consequence Analysis

Factors that influence the potential severity of a full or partial dam/levee failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

Category	Consequences
Public	Major casualties and loss of life could result. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas. While impacts will mirror those of a flood event, residents who might be impacted by a dam/levee failure may believe themselves to be protected from flood events and may not anticipate the event.
Responders	Response capabilities may be challenged as responders will likely need to attempt to assist residents who are trapped in their homes or in flood waters. Responders may have difficulty accessing homes or other structures where support is needed.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the inundation area may require temporary relocation of some operations. Localized disruption of roads and/or utilities may postpone delivery of some services. Overall continuity of operations is unlikely to be affected as the event would likely be localized and most operations facilities are not at risk.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the inundation area of the incident. Potentially catastrophic damages to roads, bridges, and homes are possible. Localized power outages could occur. Natural gas distribution networks may be damaged. Phone and internet systems could be impacted on a local scale.
Environment	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas. Consequences include erosion, water quality degradation, wildlife displacement or destruction, and habitat destruction. Ecosystems and habitats in the affected river/stream/lake could be destroyed.
Economic Condition of the Jurisdiction	Local economy and finances may be adversely affected, possibly for an extended period of time, depending on damage extent.
Public Confidence in the Jurisdiction's Governance	Localized impact expected to adversely affect only the dam owner and local entities. A catastrophic failure could result in more widespread loss of public confidence. Residents may view a dam/levee failure as a failure of government to property regulate and control the dam/levee.

Vulnerability Assessment

People

There are 7 high hazard dams in the planning area, which by definition would cause probable loss of life in the event of a failure (see following table). A person's immediate vulnerability to a dam failure is directly associated with the person's distance downstream of the dam as well as proximity to the stream carrying the floodwater from the failure. For dams that have an Emergency Action Plan (EAP), the vulnerability of loss of life for persons in their homes or on their property may be mitigated by following the EAP evacuation procedures. According to NID records, an estimated 86 percent of high hazard dams in the planning area have an Emergency Action Plan, which means 14 percent of dams that should have an EAP in place do not. Additionally, even if they can evacuate in time, displaced persons may still incur sheltering costs.

People are also vulnerable to the loss of the uses of the lake upstream of a dam following failure. Several uses are minor, such as aesthetics or recreational use. However, one reservoir in the planning area serves as drinking water supply and its loss could disrupt the drinking water supply and present a public health problem.

The following table presents, for each of the high hazard dams, the status of the Emergency Action Plan, the date of the last inspection, and the approximate number of structures and population downstream of the dam based upon the currently mapped floodplain.

High Hazard Potential Dam Inventory for Peoria County, IL

Dam Name	EAP Prepared	EAP Last Revision Date	Last Inspection Date	Number of Structures Downstream[1] (1mi.)	Population Downstream[2] (1mi.)
E. D. Edwards Station Ash Pond	Yes	unknown	9/14/2022	N/A	N/A
Franciscan Prairie Pointe Dam	Yes	08/17/1982	9/14/2022	1	2
Hidden Point Dam	Yes	05/06/2004	4/26/2023	2	5
Hollis Park Dam	Yes	08/17/1982	4/28/2023	10	24
Lake Camelot Dam	Yes	08/15/1989	11/23/2022	4	9
Lake Lancelot Dam	Yes	08/15/1989	11/23/2022	11	26
Lake Long Bow Dam	Yes	01/01/2014	4/26/2023	7	16
Lake of the Woods Dam	Yes	1/1/2021	12/2/2020	1	2

Source: National Inventory of Dams, February 2023; IDNR OWR Chief Dam Safety Section

1 – Structures located within mapped Zone A, downstream from dam

2 – Population based upon 2.35 persons per household per US Census

Please note, the E.D. Edwards Station Ash Pond is a part of the E.D. Edwards coal plant, which was to close at the end of 2022. The company that owns the coal plant, Vista Corp. based in Houston, TX, has submitted an application to the Illinois EPA to also close the ash pond. The proposal includes leaving the coal ash in place and discharging the free liquids from the pond into the Illinois River. The Illinois EPA is set to review the application for the pond closure plan. Once approved, this dam is anticipated to be removed from the national dam inventory with dewatering completed and the pond capped.

Property

No other data could be obtained on dam inundation areas; therefore, property exposure could not be estimated for each dam. There are no historical dam or levee failures on which to estimate annualized loss.

Vulnerability of the built environment includes damage to the dam itself and any structures located within the inundation area caused by the dam failure. Downstream of the dam, vulnerability includes potential damage to homes, personal property, commercial buildings and property, and government owned buildings and property; destruction of bridge or culvert crossings; weakening of bridge supports through scour; and damage or destruction of public or private infrastructure that cross the stream such as water and sewer lines, gas lines and power lines. Water dependent structures on the lake upstream of the dam, such as docks/piers, floating structures, or water intake structures, may be damaged by the rapid reduction in water level during the failure.

Property exposure to levee failure was estimated based on the extent of the area with reduced risk due to levee as mapped on the FEMA FIRM. Property and critical facilities may be exposed to flood risk in the event of a levee failure or overtopping. Property exposure by type in the area protected by the local levees are summarized in Table 5.7.

Table 5.7 – Property Exposure to Levee Failure

Property Type	Levee Name(s)	Estimated Structure Count	Structure Value	Estimated Content Value	Total Value
Peoria					
Commercial	Greater Peoria Sanitary District	17	$154,814,000	$983,000	$155,797,000
Industrial	Komatsu Levee	7	$41,679,536.57	$62,519,304.89	$104,198,841.46
Peoria County					
Agriculture	Pekin And La Marsh D&Ld	3	$5,066,818.47	$7,600,227.72	$12,667,046.19
Commercial	Pekin And La Marsh D&Ld	2	$34,618,012.80	$51,927,019.20	$86,545,032.00
Industrial	▪Banner Special Drainage and Levee District ▪Banner Special Levee - Segment #6 ▪Evonik Mapleton Plant Site Levee ▪Lonza ▪Pekin And La Marsh D&Ld	35	$45,271,956.64	$63,566,228.49	$108,838,185.13
Residential	Pekin And La Marsh D&Ld	4	$4,411,346.28	$6,617,019.44	$11,028,365.72
Total		**48**	**$129,610,343.94**	**$190,073,809.50**	**$319,684,153.44**

Environment

Aquatic species within the reservoir of the dam will either be displaced or destroyed. The velocity of the flood wave will likely destroy riparian and instream vegetation and destroy wetland function. The flood wave can cause erosion within and adjacent to the stream. Deposition of eroded deposits may choke instream habitat or disrupt riparian areas. Sediments within the lake bottom and any low oxygen water from within the lake will be dispersed, potentially causing fish kills or releasing heavy metals found in the lake sediment layers.

Changes in Development

Development downstream of dams can significantly increase exposure. Dams are rated based on the potential impact of their failure. As development occurs, exposure downstream of a Category II dam may increase to the point that the dam should be rated as a Category I dam and require the associated Emergency Action Plan and more regular inspections. However, because inspections of Category II dams occur less frequently, there may be a delay in recognizing and acting on increases in risk.

It is also important to note that many residents of existing and new development may not know that they are located downstream of a dam. Similarly, residents in levee-protected areas may consider themselves safe from flooding as a result of the levee and may not understand their risk in the event of a levee failure.

Key Issues

- All high hazard dams have an Emergency Action Plan (EAP). Other dams not rated high hazard do not require EAPs yet may have the potential to cause significant damage or loss of life due to subsequent downstream development.
- Residents and/or property owners may not be aware that they are located in a dam inundation area or a leveed area. This lack of awareness may increase vulnerability if residents and property owners are unprepared and/or unequipped to react in the event of a dam or levee failure.
- Related hazards: Flood

Hazard Summary by Jurisdiction

The following table summarizes dam/levee failure risk by jurisdiction. Warning time and duration are inherent to the hazard and remain constant across jurisdictions. For jurisdictions with levees or dams upstream or within their boundaries, probability of failure is possible. Additionally, spatial extent of any dam failure will be small relative to the planning area, spatial extent of levee failure is inherent to the leveed area. For all other jurisdictions, probability is unlikely and spatial extent is negligible. Jurisdictions with high hazards dams upstream or within their boundaries were assigned an impact score of critical. Jurisdictions with low hazard dams upstream or within their boundary were assigned an impact rating of limited; all other jurisdictions were given an impact rating of minor.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Low	Low	High	Elevated
Chillicothe	Low	Low	Low	Low
Hanna City	Low	Low	High	Elevated
Peoria	Low	Low	Low	Low
Peoria Heights	Low	Low	High	Elevated
West Peoria	Low	Low	High	Elevated
Peoria County Unincorporated Areas	Low	Low	High	Elevated
Peoria Park District	Low	Low	High	Elevated
Greater Peoria Sanitary District	Low	Low	High	Elevated

5.5 Drought

Hazard Background

Drought is a deficiency in precipitation over an extended period. It is a normal, recurrent feature of climate that occurs in virtually all climate zones. The duration of a drought varies widely. The amount of precipitation at a particular location varies from year to year but, over a period of years, the average amount is constant. Table 5.8 details the average monthly precipitation for Peoria. There are cases when drought develops relatively quickly and lasts a very short period, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. Studying the paleoclimate record is often helpful in identifying when long-lasting droughts have occurred. Common types of droughts are detailed below in Table 5.9.

Table 5.8—Precipitation Summary (inches), 2006-2020 National Climatic Data Center Normals

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Peoria 5 NW	2.06	2.24	3.01	4.59	4.71	5.58	3.77	3.69	4.96	3.70	2.80	2.77	43.88
Peoria Int'l Airport	2.13	2.29	3.17	4.60	4.81	4.63	3.59	3.29	4.14	3.48	2.59	2.76	41.48

Source: Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 2006 - 2020, National Oceanic and Atmospheric Administration; Data Search | National Centers for Environmental Information (NCEI) (noaa.gov)

Table 5.9 – Types of Drought

Type	Details
Meteorological Drought	Meteorological Drought is based on the degree of dryness (rainfall deficit) and the length of the dry period.
Hydrological Drought	Hydrological Drought is based on the impact of rainfall deficits on the water supply such as stream flow, reservoir and lake levels, and ground water table decline.
Agricultural Drought	Agricultural Drought is based on the impacts to agriculture by factors such as rainfall deficits, soil water deficits, reduced ground water, or reservoir levels needed for irrigation.
Socioeconomic Drought	Socioeconomic drought is based on the impact of drought conditions (meteorological, agricultural, or hydrological drought) on supply and demand of some economic goods. Socioeconomic drought occurs when the demand for an economic good exceeds supply as a result of a weather-related deficit in water supply.

The wide variety of disciplines affected by drought, its diverse geographical and temporal distribution, and the many scales drought operates on make it difficult to develop both a definition to describe drought and an index to measure it. Many quantitative measures of drought have been developed in the United States, depending on the discipline affected, the region being considered, and the particular application.

The **U.S. Drought Monitor** provides a summary of drought conditions across the United States and Puerto Rico. Often described as a blend of art and science, the Drought Monitor map is updated weekly by combining a variety of data-based drought indices and indicators and local expert input into a single composite drought indicator.

The **Palmer Drought Severity Index** (PDSI) is a measure of meteorological drought devised in 1965, and was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to calculate water supply and demand, incorporates soil moisture, and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief. It is more complex than the Standardized Precipitation Index (SPI) and the Drought

Monitor. One benefit of the PDSI is that it can capture impacts of climate change on drought because it accounts for key measures in evapotranspiration.

The **Standardized Precipitation Index** (SPI) is a way of measuring drought that, like the PDSI, is negative for drought and positive for wet conditions. However, the SPI is a probability index that considers only precipitation, while Palmer's indices are water balance indices that consider water supply (precipitation), demand (evapotranspiration) and loss (runoff).

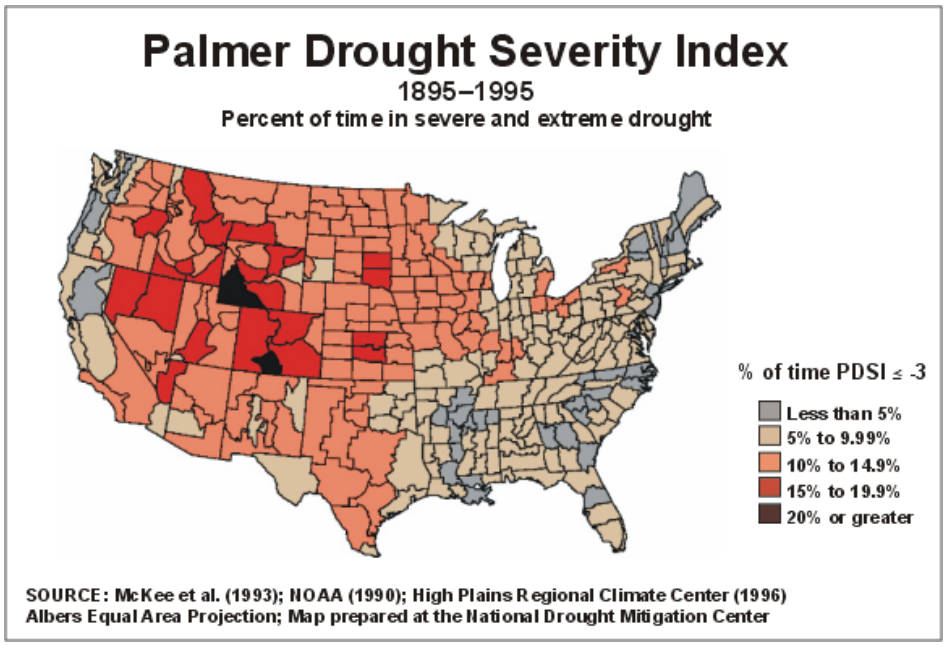
By definition, drought develops and worsens over a period of time. It inherently has a slow speed of onset and a long duration. Additionally, due to the variety of indices for tracking drought, there is significant time to issue hazard warnings. Drought warnings can be regularly updated and allow for response to escalate depending on the severity of conditions.

The State of Illinois adopted the Drought Preparedness and Response Plan in 2011 that specifies response strategies to varying levels of declared drought. These rules provide the framework to coordinate statewide response to drought.

Location

Drought is a regional hazard that can cover the entire planning area, and in some cases the entire state. Figure 5.6 shows the Palmer Drought Severity Index for the United States from 1895 to 1995, which indicates that drought affects the entire United States but tends to be less severe in the Eastern Central U.S. Over the 100-year period shown, Peoria County spent between 10-14.9% of the time in severe to extreme drought conditions.

Figure 5.6 – Historical Palmer Drought Severity Index, 1895-1995



Source: National Drought Mitigation Center

Figure 5.7 provides the U.S. Drought Monitor's drought ratings for the Midwest as of February 28th, 2023; as of that date, Peoria County was experiencing no drought. The figure illustrates the large-scale, regional nature of drought.

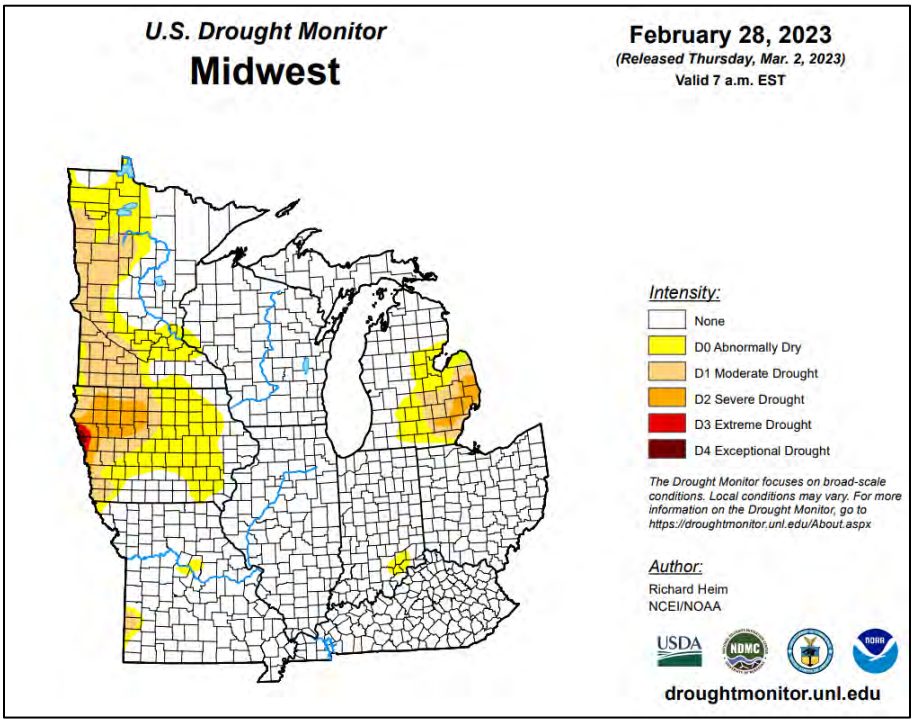
Drought tends to affect broad regions and the entire planning area is subject to drought occurrence at roughly equal probability. The impacts of prolonged drought are most significant in agricultural areas of

the County. According to the U.S. Department of Commerce, in 2012, 250,263 acres of land in Peoria County was used for row crops. The County GIS zoning information presented 93-percent of the unincorporated area as zoned for agriculture. However, not all land zoned for agriculture is used for traditional row-crop farming. Some of the land zoned for agriculture is forests and water bodies. The 2009 Peoria County Comprehensive Land Use Plan states that 56.19% of the total land area in the County is agricultural or vacant.

Therefore, the geographic area affected by this hazard is **high**:

- **High -** More than 25% of the total population adversely affected should the hazard occur

Figure 5.7 – US Drought Monitor for Week of Feb 28th, 2023



Source: U.S. Drought Monitor

Extent

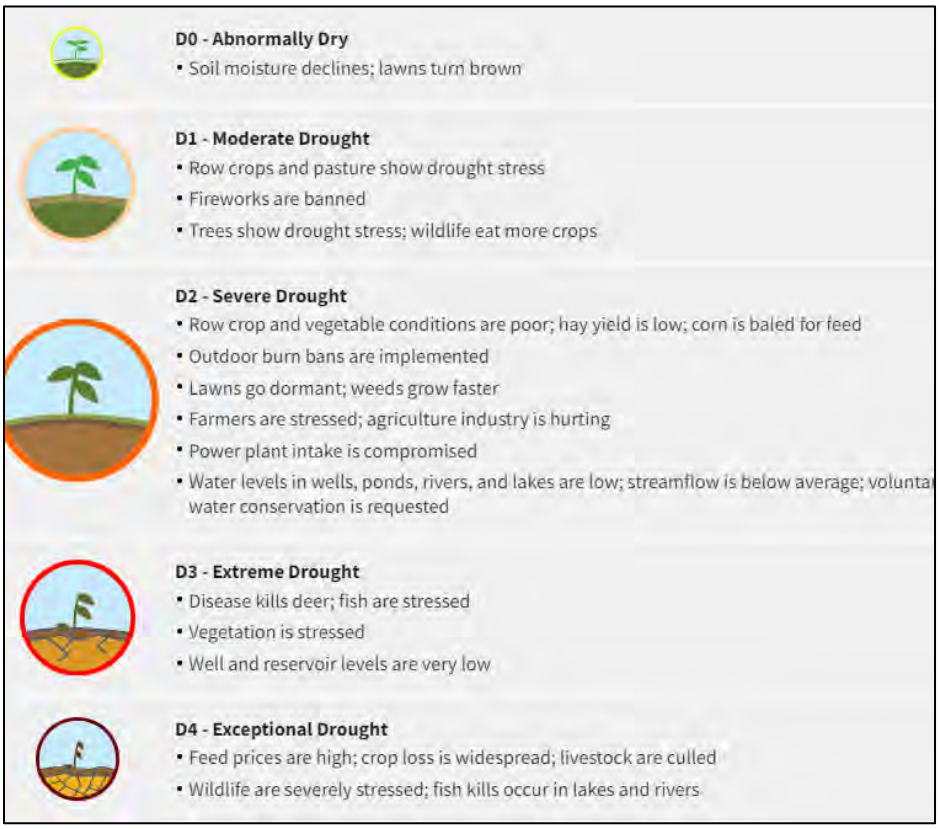
Drought extent can be defined using the U.S. Drought Monitor scale. The Drought Monitor Scale measures drought episodes with input from the Palmer Drought Severity Index, the Standardized Precipitation Index, the Keetch-Byram Drought Index, soil moisture indicators, and other inputs as well as information on how drought is affecting people. Figure 5.8 details the classifications used by the U.S. Drought Monitor and Figure 5.9 details possible impacts specific to Illinois.

Figure 5.8 – U.S. Drought Monitor Classifications

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Source: U.S. Drought Monitor

Figure 5.9 – Possible Impacts by U.S. Drought Monitor Category in Illinois



Source: U.S. Drought Monitor

The most intense drought to impact Peoria County in the past 20 years occurred when the county spent 43 weeks from June 2005 to April 2006 in severe or worse drought. At the drought's peak from July through September 2005, between 23.84% and 100% of the county was considered in D3 (extreme) drought. Majority of the weeks in this period, 100% of the county was in extreme drought. Overall drought conditions persisted from May 2005 through December 2006.

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. The most significant impacts associated with drought in Illinois are those related to agriculture. A prolonged drought could have severe economic impacts.

Additionally, drought can severely limit public water supplies due to depletion of natural water sources and greatly increased demand. Problems due to limited treatment capacity or limited distribution system capacity are an additional concern.

Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. An ongoing drought may also leave an area more prone to wildfires. Drought increases the uncertainty of wildfire management and worsens treatment effectiveness in fuel management and restoration efforts, decreasing ecological resilience. In response to the potential for wildfires during drought conditions, the Illinois Pollution Control Board and the Illinois Environmental Protection Agency regulate open burning to minimize the potential for wildfire incidents.

The magnitude/severity for this long duration hazard is low:

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Historical Occurrences

U.S. Drought Monitor records drought intensity weekly throughout the country. Table 5.10 presents the number of weeks that any portion of Peoria County spent in drought by intensity over the period from 2000 through 2022, for which the Drought Monitor has records for 1,144 weeks. Each week is attributed to the most severe drought category present in the County for that week.

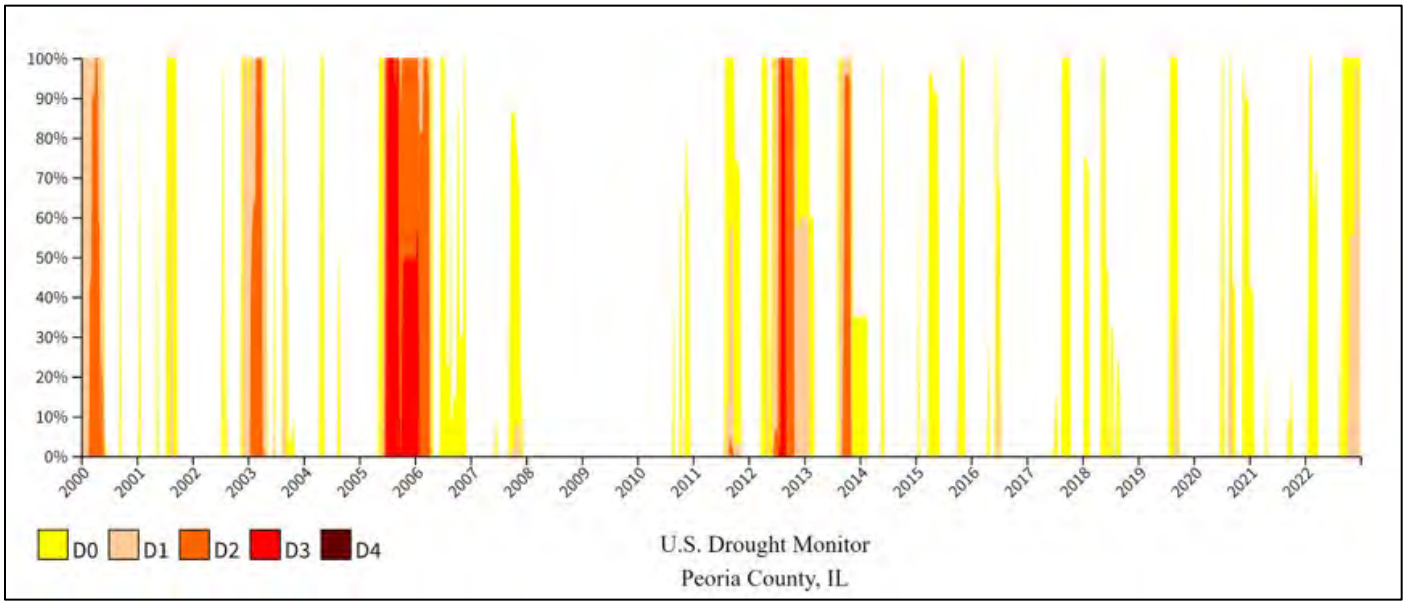
Table 5.10 – Weeks in Drought, 2001-2020

Weeks in Drought						% Of Time in Severe Drought or Worse
Total	D0	D1	D2	D3	D4	
727	407	187	98	35	0	11.6%

Source: U.S. Drought Monitor

Figure 5.10 shows the historical periods where the county was considered in some level of drought condition. Between 2000 and 2022, Peoria County was in some level of drought 63.5% of the time.

Figure 5.10 – US Drought Monitor Historical Trends – Peoria County



Source: U.S. Drought Monitor

Table 5.11 summarizes the U.S. Drought Monitor data shown above to indicate the most severe drought condition reported each year.

Table 5.11 – Summary of Historical Drought Severity in Peoria County

Year	Severity
2000	Severe (D2)
2001	Moderate (D1)
2002	Moderate (D1)
2003	Severe (D2)
2004	Abnormally Dry (D0)
2005	Extreme (D3)
2006	Extreme (D3)
2007	Moderate (D1)
2008	No drought conditions

2009	No drought conditions
2010	Abnormally Dry (D0)
2011	Severe (D2)
2012	Extreme (D3)
2013	Severe (D2)
2014	Abnormally Dry (D0)
2015	Abnormally Dry (D0)
2016	Moderate (D1)
2017	Abnormally Dry (D0)
2018	Abnormally Dry (D0)
2019	Moderate (D1)
2020	Moderate (D1)
2021	Abnormally Dry (D0)
2022	Moderate (D1)

Source: U.S. Drought Monitor

Data from the State of Illinois's Climatologist was also reviewed to obtain additional information on historical drought events that may have been larger in scale or more regional in nature. These events are identified in Table 5.12. No additional records were noted by the State Climatologist since 2012.

Table 5.12 – Notable Historical Drought Occurrences in the State of Illinois

Year	Area Affected	Notes
1902	Regional Drought	Affected most of the midwestern and western US
1915	Central and Western IL	Regional Drought
1930s	Statewide	One of most severe of century, Affected most of the US
1940	Statewide	Regional drought
1950s	Statewide	One of most severe of century, Affected most of midwestern and eastern U.S.
1964	Statewide	Affected most of midwestern U.S.
1988-1989	Statewide	Regional drought
2012	Statewide	Regional drought

Source: US Drought Monitor, IL State Climatologist

The National Drought Mitigation Center (NDMC), located at the University of Nebraska in Lincoln, provides a clearinghouse for information on the effects of drought, based on reports from media, observers, impact records, and other sources. According to the NDMC's Drought Impact Reporter, during the 20-year period from 2002 through 2022, 357 county-level drought impacts were noted for the State of Illinois, of which 55 were reported to affect Peoria County. Table 5.13 summarizes the number of impacts reported by category and the years impacts were reported for each category. Note that the Drought Impact Reporter may assign multiple categories to each impact, and multiple impacts may be reported for a single year.

Table 5.13 – Drought Impacts Reported for Peoria County, 2002-2022

Category	Impacts	Years Reported
Agriculture	2	2012, 2021
Business & Industry	3	2011, 2012, 2021
Fire	0	
Plants & Wildlife	1	2016, 2021
Relief, Response & Restrictions	2	2011, 2012
Water Supply & Quality	0	

Source: Drought Impact Reporter, http://droughtreporter.unl.edu

The following events were reported by local officials and noted in the previous HMP as having significant impacts on Peoria County:

- The Illinois Drought Preparedness and Response Plan notes drought occurrences within the State since 1895 include 1902, 1915, 1931, 1934, 1936, 1954, 1964, 1988, and 2005. The 1930s and 1950s were outstanding in both the frequency and severity of drought.
- The worst case was the summer of 1934 with a statewide PDSI of -6.48. In second place was the summer of 1931 with -6.39. In third place was 1954 with -6.09. All three of these events fall into the category of extreme drought.
- From 2012 to 2022, there were four USDA Disaster Declarations caused by drought: two recorded in 2012, one in 2015, and one 2019. Additionally, according to the USDA's Risk Management Agency, insured crop losses in Peoria County as a result of drought conditions from 2003 to 2022 totaled $17,820,146.

Probability of Future Occurrence

Lack of precipitation for a given area is the primary contributor to drought conditions. Since precipitation levels cannot be predicted in the long term, it is difficult to determine the probability of future occurrences of drought. Figure 5.6 shows the Palmer Drought Severity Index for the U.S. from 1895-1995. Peoria County is in a region of Illinois that experienced severe and extreme drought 10-14.9 percent of the time during that 100-year period. Considering this historical data as well as more recent periods of drought, the HMPC determined the probability of future occurrence of drought to be **low:**

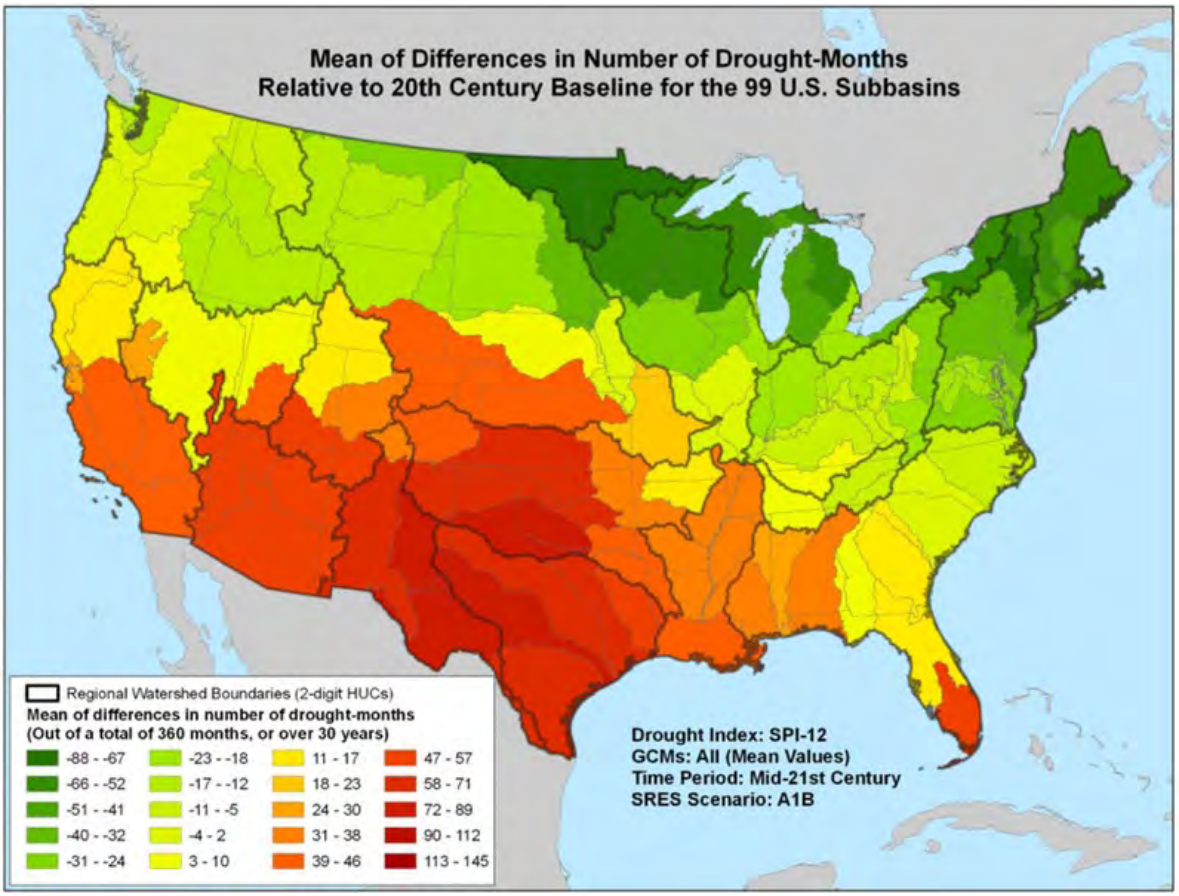
- **Low -** 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Climate Change

The Fourth National Climate Assessment reports that warm-season temperatures are projected to increase more in the Midwest than any other region of the United States. Increases in humidity are expected to increase rainfall. Heavy precipitation events are becoming more frequent, meaning that there will likely be an increase in the average number of consecutive dry days between rainfall events. In the past, human activity has not been a large factor in drought, but future projections show that Midwest surface soil moisture likely will transition from excessive levels in spring to insufficient levels in summer, causing more moisture to be lost through evaporation, increasing the drought risk.

Research conducted at the MIT Joint Program on the Science and Policy of Global Change suggests decreasing frequency of drought across much of the Midwest, with the Peoria County area and much of Illinois projected to experience an average decrease of 18 to 23 months of drought over a 30-year period, as shown in Figure 5.11

Figure 5.11 – Projected Mean Changes in the Number of Drought Months



Source: Strzepek et al., 2010

Consequence Analysis

Category	Consequences
Public	Drought can cause anxiety or depression about economic losses, conflicts over water shortages, reduced incomes, and fewer recreational activities. Farmers and agricultural producers are particularly vulnerable. Efforts to mitigate, such as using irrigation, have a high initial cost, including the need for an increase in management, cost of operations and maintenance, and lack of good quality water resources affected during drought.
Responders	Impacts to responders are unlikely. Exceptional drought conditions may impact the amount of water immediately available to respond to structure fire and wildfires.
Continuity of Operations (including Continued Delivery of Services)	Drought would have minimal impacts on continuity of operations due to the relatively long warning time that would allow for plans to be made to maintain continuity of operations. During prolonged or intense drought, alternative water supplies may be needed.
Property, Facilities and Infrastructure	Drought has the potential to affect water supply for residential, commercial, institutional, industrial, and government-owned areas. Drought can reduce water supply in wells and reservoirs. Utilities may be forced to increase rates and seek alternate supplies. Irrigation and outdoor landscaping would be affected, as would recreational uses, such as Peoria County Parks District.
Environment	Environmental impacts include strain on local plant and wildlife; increased probability of wildfire; and decreased water quality. Pollution may increase due to lack of rainwater to dilute industrial and agricultural chemical runoff. Dry soil may result in instability, leading to

Category	Consequences
	erosion. These changes may cause habitat degradation through loss of wetlands, lake capacity, and vegetation.
Economic Condition of the Jurisdiction	Farmers may face crop losses or increased livestock costs. Businesses that depend on farming may experience secondary impacts. Extreme drought has the potential to impact local businesses in landscaping, recreation and tourism, and public utilities
Public Confidence in the Jurisdiction's Governance	Public confidence is unlikely to be severely impacted. However, when drought conditions persist with no relief, local or State governments must often institute water restrictions, which may impact public confidence.

Vulnerability Assessment

People

Drought can affect people's physical and mental health. For those economically dependent on a reliable water supply, drought may cause anxiety or depression about economic losses, reduced incomes, and other employment impacts. Conflicts may arise over water shortages. People may be forced to pay more for water, food, and utilities affected by increased water costs. Drought may cause health problems due to poorer water quality from lower water levels. If accompanied by extreme heat, drought can also result in higher incidents of heat stroke and even loss of life.

Property

Drought is unlikely to cause damages to the built environment, but it may cause severe property loss for the agricultural industry in terms of crop and livestock losses. According to the 20-year period from USDA's Risk Management Agency, the amount of claims paid for crop damage because of drought in Peoria County was $17,820,147. According to the 2021 Illinois Crop Insurance Profile from USDA's Risk Management Agency, 48 percent of the insurable crops in Illinois are insured with USDA Crop Insurance. To factor in estimated losses to insurable crops that are not insured, the 48 percent crop insurance coverage was factored in to provide an adjusted estimate of losses. According to this calculation, estimated annualized losses total $1,856,265 (see Table 5.14).

Considering the value of crops from the 2017 Census of Agriculture as baseline crop exposure, the estimated annual losses from drought was determined minimal compared to the value of the insurable crops.

Table 5.14 – Estimated Insurable Annual Crops Lost Resulting from Drought

20-Year Drought Insurance Paid	Adjusted 20-Year Drought Losses (considering 92% insured)	Estimated Annualized Losses	2017 Value of Crops	Annualized Crop Loss ratio (Losses/Value)
$17,820,147	$37,125,306	$1,856,265	$145,196,000	1.2%

Source: Crop Insurance Paid is from the USDA's Risk Management Agency for 2007-2021; Crop Insurance Coverage is from USDAs 2021 State Crop Insurance Profile for Illinois; and crop value is from USDA 2017 Census of Agriculture

Environment

Drought can affect local wildlife by shrinking food supplies and damaging habitats. Sometimes this damage is only temporary, and other times it is irreversible. Wildlife may face increased disease rates due to limited access to food and water. Increased stress on endangered species could cause extinction.

Another concern during a drought is that contaminants such as pesticides and fertilizers may concentrate in the soil as precipitation wanes and then enter waterways during heavy rains and flooding. This can threaten water quality with repercussions for agriculture, drinking water supply, and local plants and wildlife.

Drought conditions can also provide a substantial increase in wildfire risk. As plants and trees die from a lack of precipitation, increased insect infestations, and diseases—all of which are associated with drought—they become fuel for wildfire. Long periods of drought can result in more intense wildfires, which bring additional consequences for the economy, the environment, and society. Drought may also increase likelihood of wind and water erosion of soils.

Changes in Development

Drought is predominantly controlled by larger weather patterns and less by human development. However, increased development and associated increases in impervious surfaces would mean less surface water would be able to directly infiltrate into the ground. Additionally, as population grows, water demand will likely increase, which could lower the threshold for socioeconomic drought – an inability of water supply to meet water demand.

A Drought Preparedness and Response Plan was prepared for the State of Illinois and adopted by the State Water Plan Task Force in October 2011. The goal of the Plan is to assist community and state officials and the public with information and tools that promote better decision-making in water supply planning and reduce drought-related impacts, water competition, and conflicts of use.

According to the USDA Census of Agriculture, from 2012 to 2017, Peoria County's acres of farmland decreased from 250,263 acres to 250,070 acres, and total farms decreased from 917 to 884. This trend suggests that changes in development are resulting in lower overall agricultural exposure to drought.

Key Issues

- In the County, Agriculture is responsible for 535 jobs and a total output of over $43 million. Extended periods of drought in the County may have large economic impacts.
- USACE maintenance of local dams may result in reduced water releases and thus reduced flows on the Illinois River, affecting local water supply.
- Related Hazards: Extreme Heat, Wildfire

Hazard Summary by Jurisdiction

The following table summarizes drought hazard risk by jurisdiction. Drought risk is largely uniform across the planning area. Warning time, duration, and spatial extent are inherent to the hazard and remain constant across jurisdictions. The majority of damages that result from drought are to water- and agriculture-dependent industries, which require water supply for irrigation and maintenance; therefore, the magnitude of the impacts is typically greater in areas with these industries. In more heavily developed areas, drought impacts may be limited to lawns and local gardens, but potential impacts on local water supplies may arise during severe, prolonged drought.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	High	Low	Low	Elevated
Chillicothe	High	Low	Low	Elevated
Hanna City	High	Low	Low	Elevated
Peoria	High	Low	Low	Elevated
Peoria Heights	High	Low	Low	Elevated

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
West Peoria	High	Low	Low	Elevated
Peoria County Unincorporated Areas	High	Low	Low	Elevated
Peoria Park District	High	Low	Low	Elevated
Greater Peoria Sanitary District	High	Low	Low	Elevated

5.6 Earthquake

Hazard Background

An earthquake is a movement or shaking of the ground. Most earthquakes are caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

Earthquakes can affect hundreds of thousands of square miles and can cause major damage to property and loss of life or injury in the affected area. Most property damage and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site, and regional geology.

Earthquakes generally occur with little to no warning and last for a short period of time. However, earthquakes can often be followed by periods of aftershocks that vary in severity but can compound damages.

Location

The United States Geological Survey (USGS) Quaternary faults database was consulted to determine the sources of potential earthquakes within range of Peoria County. Quaternary faults are active faults recognized at the surface which have evidence of movement in the past 2.58 million years. Illinois is affected by the New Madrid and the Wabash Valley Fault. The New Madrid Seismic Zone (NMSZ) extends from west-central Mississippi northward past Cape Girardeau, Missouri. The center of this seismic zone is in New Madrid, Missouri, which is approximately 350 miles southeast of Peoria County. It is the major source of seismic activity east of the Rocky Mountains. Although activity in the New Madrid Seismic Zone is less frequent than that along the West Coast, when tremblers do occur, the destruction covers over more than 20 times the area of an equivalent West Coast earthquake because of the underlying geology. Earthquakes are generally felt over a wide area, with impacts occurring hundreds of miles from the epicenter. Therefore, any earthquake that impacts Peoria County is likely to be felt across most, if not all of the planning area.

With Peoria County located over 300 miles from the two identified seismic zones, the geographic area affected by this hazard was determined to be consistent county-wide and was assigned a rank of **low**:

- **Low -** Less than 10% of the total population adversely affected should the hazard occur.

Extent

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. A description of the Richter Scale is given in Table 5.15.

Table 5.15 – Richter Scale

Magnitude	Effects
Less than 3.5	Generally, not felt, but recorded.
3.5 – 5.4	Often felt, but rarely causes damage.
5.4 – 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.

Magnitude	Effects
6.1 – 6.9	Can be destructive in areas up to 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8.0 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: FEMA

Although the Richter scale is usually used by the news media when reporting the intensity of earthquakes and is the scale most familiar to the public, the scale currently used by the scientific community in the United States is the Modified Mercalli Intensity (MMI) scale. The MMI scale is an arbitrary ranking based on observed effects. It describes the intensity of an earthquake at a particular location. Lower numbers of the MMI scale generally deal with the manner in which the earthquake is felt by people, while higher numbers are generally based on observed structural damage. Figure 5.12 shows descriptions for levels of earthquake intensity on the MMI scale.

Figure 5.12 – Modified Mercalli Intensity (MMI) Scale Felt Intensities

CIIM Intensity	People's Reaction	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		
III	Felt by several; vibration like passing of truck.	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows with the community.	Trees and bushes shaken noticeably.
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread wiht increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

Source: USGS

Table 5.16 approximates the Richter Scale magnitudes that would correspond with certain intensities on the MMI scale.

Table 5.16 – Comparison of Modified Mercalli Scale and Richter Scale

MMI Scale	Corresponding Richter Scale Magnitude
I	-
II	<4.2
III	-
IV	-
V	<4.8
VI	<5.4
VII	<6.1
VIII	-
IX	<6.9
X	<7.3
XI	<8.1
XII	>8.1

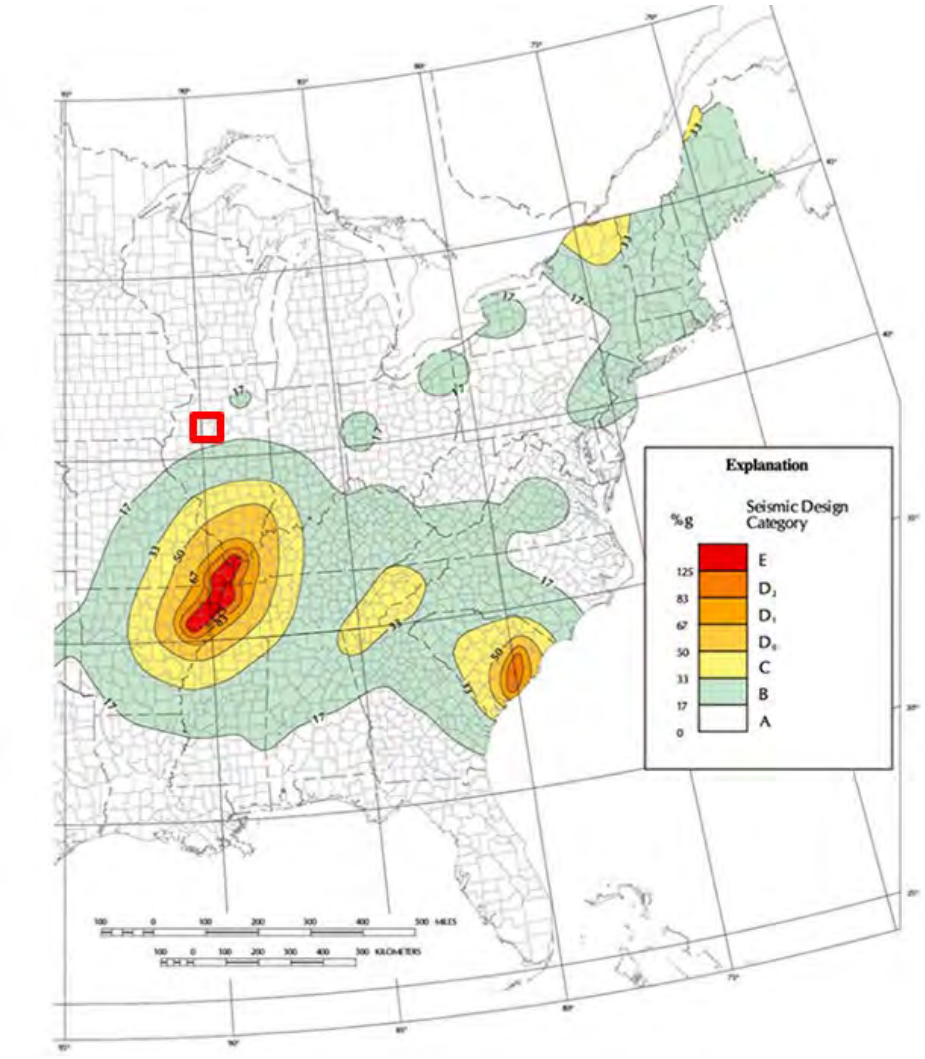
Source: FEMA

According to FEMA's Seismic Design Category (SDC) mapping shown in Figure 5.13, Peoria County (shown in the red rectangle) borders SDC Category B, which indicates potential for shaking of moderate intensity but only slight damage with a few instances of fallen plaster and/or moved furniture.

Peoria County has adopted the International Code Council (ICC) Building Code Program with local design criteria specifying a seismic design category of A, for very small seismic vulnerability. The magnitude/severity for this hazard is **low**:

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Figure 5.13 – Seismic Design Category Mapping for the Eastern U.S.



Source: FEMA
Note: Peoria County indicated by red rectangle.

Historical Occurrences

The USGS Earthquake Hazards Program maintains a database of historical earthquakes of a magnitude 2.5 and greater. Given the long distances across which earthquake impacts can be felt and the long potential return periods between events, these events do not encompass all earthquakes that may have affected the planning area.

NCEI (formerly the National Geophysical Data Center) maintains a database of the felt intensity of earthquakes from 1638 to 1985 including the maximum intensity for each locality that felt the earthquake. According to this database, during this 347-year period, there were 8 earthquakes felt in the planning area; with many of these earthquakes were reported in multiple jurisdictions. These earthquakes are detailed in Table 5.17.

Table 5.17 – Historical Earthquakes Felt in Peoria County, 1638-1985

Date	Magnitude	MMI	Epicentral Distance (km)
Chillicothe			
9/15/1972	3.7	5	74
Hanna City			
9/15/1972	3.7	4	104
Peoria			
9/1/1886	*N/A*	3	1214
3/1/1925	7	2	1708
4/27/1925	*N/A*	3	348
11/1/1935	*N/A*	*N/A*	1082
11/9/1968	5.3	4	313
4/3/1974	4.7	5	266
Peoria County			
3/1/1942	*N/A*	3	64
11/9/1968	5.3	6	247
9/15/1972	3.7	4	103
4/3/1974	4.7	3	264
Peoria Heights			
11/9/1968	5.3	4	318

Source: NCEI U.S. Earthquake Intensity Database

The U.S. Earthquake Intensity Database is no longer being updated. The USGS database did not contain any earthquakes above a magnitude 4.5 since 1985 within 100 miles of the planning area. There are no recorded earthquakes within a 50-mile radius of central Peoria County since 1973 as reported by the Advanced National Seismic System (ANSS) Comprehensive Catalog.

Probability of Future Occurrence

Ground motion is the movement of the earth's surface due to earthquakes or explosions. It is produced by waves generated by a sudden slip on a fault or sudden pressure at the explosive source and travels through the earth and along its surface. Ground motion is amplified when surface waves of unconsolidated materials bounce off of or are refracted by adjacent solid bedrock. The probability of ground motion is depicted in USGS earthquake hazard maps by showing, by contour values, the earthquake ground motions that have a common given probability of being exceeded in 50 years.

Figure 5.14 on the following page reflects the seismic hazard for Peoria County (indicated in the red rectangle) based on the national USGS map of peak acceleration with two percent probability of exceedance in 50 years. To produce these estimates, the ground motions being considered at a given location are those from all future possible earthquake magnitudes at all possible distances from that location. The ground motion coming from a particular magnitude and distance is assigned an annual probability equal to the annual probability of occurrence of the causative magnitude and distance. The method assumes a reasonable future catalog of earthquakes, based upon historical earthquake locations and geological information on the recurrence rate of fault ruptures. When all the possible earthquakes and magnitudes have been considered, a ground motion value is determined such that the annual rate of its being exceeded has a certain value. Therefore, for the given probability of exceedance, two percent, the locations shaken more frequently will have larger ground motions. Peoria Count is located within the green zone, with peak acceleration of 4-8% g, which indicates low earthquake risk.

In simplified terms, based on the record of past occurrences over a 382-year period from 1638 to 2020 there was one earthquake that have or could have caused building damage, defined for this purpose as an MMI of 6 or greater. Using past occurrences as an indicator of future probability, there is a less than 1 percent annual chance of an earthquake causing some building damage in the planning area.

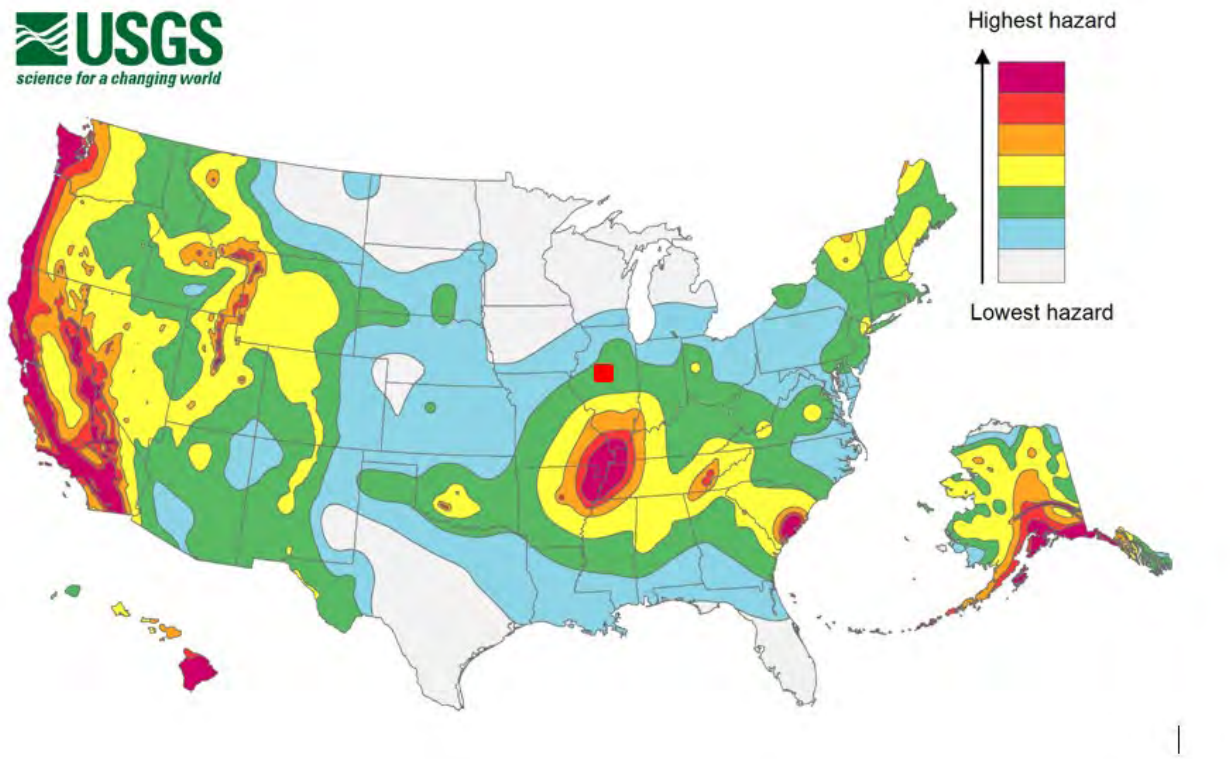
Based on historical occurrences and modeled data, it can be reasonably assumed that an earthquake event affecting Peoria County is possible. The HMPC determined the probability of future occurrence of earthquakes to be **low**:

- **Low** - 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Climate Change

According to NASA's Global Climate Change Program, scientists are beginning to believe there may be a connection between climate change and earthquakes. Changing ice caps and sea-level redistribute weight over fault lines, which could potentially have an influence on earthquake occurrences. However, currently no studies quantify the relationship to a high level of detail, so recent earthquakes should not be linked with climate change. Additionally, it's possible that increased groundwater pumping as a result of climate change-driven increases in drought could add to stress buildup in tectonic plates and hasten the occurrence of earthquakes. Again, this relationship is hypothetical and not yet well studied. While not conclusive, early research suggest that more intense earthquakes may eventually be added to the adverse consequences that are caused by climate change.

Figure 5.14 – Seismic Hazard Information for Peoria County



Source: USGS Earthquake Hazards Program
Note: Red square shows the approximate location of Peoria County.

Consequence Analysis

Category	Consequences
Public	In this area, earthquakes are generally not high impact events. The public may experience shaking and the greatest threat to health and well-being is often from objects falling from shelves.
Responders	Minimal expected impact on responders given only moderate events. If a more severe incident occurs, responders may need to enter compromised structures or infrastructure.
Continuity of Operations (including Continued Delivery of Services)	Little to no disruption expected to services or operations.
Property, Facilities and Infrastructure	Damage to buildings and infrastructure determined by severity of the earthquake, soil characteristics, and the quality of the impacted structures. Wood-frame multi-unit structures, mobile homes, and unreinforced masonry buildings are most vulnerable. Impacts to buildings could include cracked foundations, chimneys breaking at the roof line, wood frames coming off their foundations, and racking of cripple walls.
Environment	No severe impacts expected, but damage to key infrastructure, utility systems, or facilities that house hazardous materials could harm the surrounding environment and may require remediation.
Economic Condition of the Jurisdiction	Economic loss is unexpected with moderate events, but could include property damage, business interruption costs, cost to repair public infrastructure, and debris removal costs.
Public Confidence in the Jurisdiction's Governance	Public confidence is unlikely to be affected from an earthquake event.

Vulnerability Assessment

Methodology & Assumptions

FEMA's loss estimation software, HAZUS was utilized to analyze a 500-year probabilistic scenario earthquake event. This earthquake scenario is equivalent to a 10 percent probability of exceedence in 50 years. The earthquake scenario utilized is based on a probabilistic scenario, rather than a deterministic scenario. Therefore, this is not a magnitude-based scenario, but is rather based on ground shaking using the probabilistic mapping done by USGS (http://earthquake.usgs.gov/hazards/products/conterminous/).

People

The HAZUS Earthquake module reports earthquake damage by census tract. As a result, it is not possible to separate the resulting damage amounts by incorporated area, as the census tract boundaries are not the same as the incorporated area boundaries. Impacts do not vary significantly by time of day. The majority of casualties are minor injuries, with a few requiring hospitalization, and the potential for a life-threatening

Property

In a severe earthquake event, buildings can be damaged by the shaking itself or by the ground beneath them settling to a different level than it was before the earthquake (subsidence). Buildings can even sink into the ground if soil liquefaction occurs. If a structure (a building, road, etc.) is built across a fault, the ground displacement during an earthquake could seriously damage that structure.

Earthquakes can also cause damages to infrastructure, resulting in secondary hazards. Damages to dams or levees could cause failures and subsequent flooding. Fires can be started by broken gas lines and power lines. Fires can be a serious problem, especially if the water lines that feed the fire hydrants have been damaged as well. Impacts of earthquakes also include debris clean-up and service disruption. Per the Hazus analysis, the annualized loss scenario and the 1886 Charleston earthquake scenario would produce an estimated 54,000 tons of debris.

Table 5.18 details the annualized building loss estimates, as modeled by Hazus. Note that building value estimates are inherent to Hazus, which relies on 2010 Census data, and do not necessarily reflect damages to the asset inventory generated using Peoria County's tax parcel data.

Table 5.18 Peoria County, Illinois Estimated Economic Losses—500 Year Probabilistic Earthquake Event

	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses						
Wage	$0	$70,000	$1,710,000	$50,000	$120,000	$1,950,000
Capital-Relocated	$0	$30,000	$1,300,000	$30,000	$20,000	$1,380,000
Rental	$360,000	$350,000	$860,000	$20,000	$40,000	$1,630,000
Relocation	$1,330,000	$240,000	$1,200,000	$100,000	$310,000	$3,180,000
Subtotal	$1,690,000	$690,000	$5,070,000	$190,000	$500,000	$8,140,000
Capital Stock Losses						
Structural	$3,440,000	$780,000	$2,000,000	$370,000	$490,000	$7,090,000
Non-Structural	$5,920,000	$1,730,000	$2,460,000	$380,000	$620,000	$11,110,000
Content	$880,000	$230,000	$750,000	$200,000	$180,000	$2,230,000
Inventory	$0	$0	$10,000	$30,000	$0	$50,000
Subtotal	$10,240,000	$2,740,000	$5,230,000	$980,000	$1,290,000	$20,480,000
Total	**$11,930,000**	**$3,430,000**	**$10,300,000**	**$1,170,000**	**$1,790,000**	**$28,630,000**

Table 5.19 provides the anticipated numbers of buildings by type and damage category that would result according to the HAZUS analysis. The estimated building types and counts are from the HAZUS damage

outputs utilizing census block data. According to this analysis, three buildings would suffer complete damage, 37 would have extensive damage, 316 buildings would have moderate damage and 1,132 would have slight damage. The majority of buildings in the planning area (nearly 67,600) would not be damaged.

Table 5.19 Expected Building Damage by Building Occupancy Type—500 Year Probabilistic Earthquake Event

Use Type	None	Slight	Moderate	Extensive	Complete
Agricultural	28	1	0	0	0
Commercial	1,473	46	15	2	0
Education	15	0	0	0	0
Government	100	3	1	0	0
Industrial	206	6	2	0	0
Other Residential	4,599	128	40	2	0
Religious	124	4	1	0	0
Single Family	61,011	944	256	32	3
Total	**67,556**	**1,132**	**316**	**37**	**3**

All critical facilities should be considered at risk to minor damage should an earthquake event occur. However, none of the essential facilities included in Hazus—which include 13 hospital, 91 schools, 24 fire stations, 9 police stations, and 1 emergency operation facility—were estimated to sustain moderate or worse damages. All were estimated to maintain at least 50 percent functionality after day one following an event. Additionally, Hazus did not project any impacts to utility system facilities, pipelines, or transportation infrastructure.

Environment

An earthquake is unlikely to cause substantial impacts to the natural environment in Peoria County. Impacts to infrastructure, such as a ruptured gas line, could cause secondary damages to the surrounding environment. However, this type of damage is unlikely based on historical occurrences and Hazus model results.

Changes in Development

Development since 2018 has increased overall exposure in Peoria County. However, development changes have not affected the risk characteristics of earthquakes. The probability, impact, spatial extent, warning time, and duration of earthquakes in Peoria County have not changed, nor are they expected to in the near future.

Key Issues

- Poorly constructed masonry buildings that lack reinforcement may be vulnerable to the magnitude of earthquake that could be expected to impact Peoria County; these structures could be retrofitted for earthquake resilience.

Hazard Summary by Jurisdiction

The following table summarizes earthquake hazard risk by jurisdiction. Earthquake risk is uniform across the planning area.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Low	Low	Low	Low
Chillicothe	Low	Low	Low	Low
Hanna City	Low	Low	Low	Low
Peoria	Low	Low	Low	Low
Peoria Heights	Low	Low	Low	Low
West Peoria	Low	Low	Low	Low
Peoria County Unincorporated Areas	Low	Low	Low	Low
Peoria Park District	Low	Low	Low	Low
Greater Peoria Sanitary District	Low	Low	Low	Low

5.7 Extreme Temperatures

Hazard Background

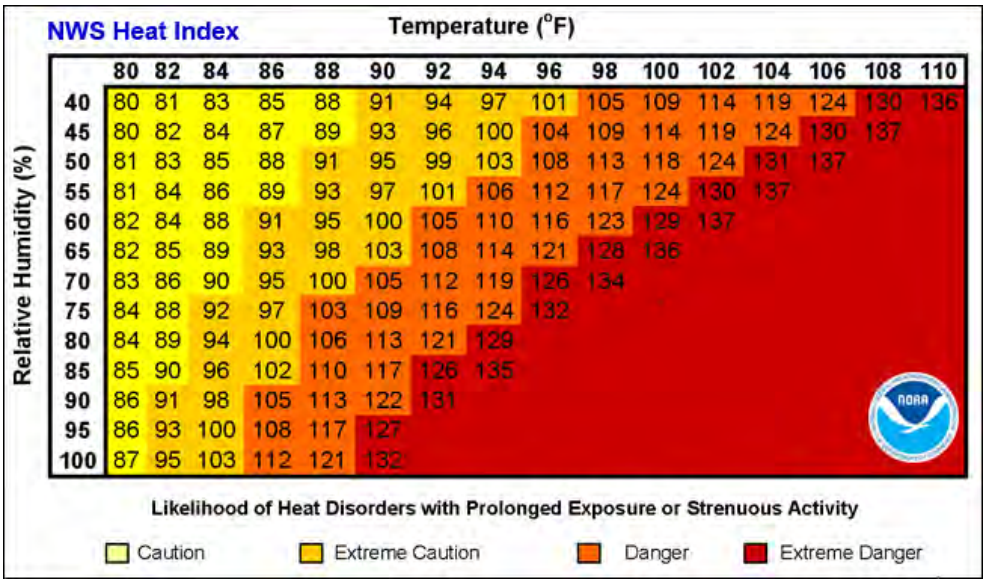
Extreme Heat

As defined by FEMA, in most of the United States extreme heat is classified by a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. However, the 2018 Illinois Natural Hazard Mitigation Strategy notes that extreme heat for a region is temperatures that hover 10 degrees or more above the average high temperature for several days to several weeks. Extreme heat is often referred to as a "heat wave."

According to the National Oceanic and Atmospheric Administration (NOAA), heat is one of the leading weather-related killers in the United States. Under extreme heat conditions, the human body has difficulties cooling through the normal method of the evaporation of perspiration and must work harder to maintain a normal temperature. Health risks rise when a person is overexposed to heat. The most dangerous place to be during an extreme heat incident is in a permanent home, with little or no air conditioning. Per the National Weather Service (NWS), certain populations are more vulnerable to heat, including young children and infants, older adults, people with chronic medical conditions, and pregnant women. People who are socially isolated are also at heightened risk, as are individuals who work outside under direct sun exposure. Even young and healthy individuals are susceptible to heat-related disorders if they participate in strenuous physical activities during hot weather or are not acclimated to hot weather.

Ambient air temperature and relative humidity determine the relative intensity of heat conditions. The relationship of these factors creates what is known as the apparent temperature. The Heat Index Chart, shown in Figure 5.15, uses temperature and humidity to produce a guide for the apparent temperature, to better inform the public of heat dangers.

Figure 5.15 – Heat Index Chart



Source: National Weather Service (NWS) https://www.weather.gov/safety/heat-index

The Heat Index Chart was devised for shady locations. Exposure to direct sun can increase Heat Index values by as much as 15°F.

Impacts of extreme heat are not only focused on human health; prolonged heat exposure can have negative impacts on infrastructure as well. Prolonged high heat exposure increases the risk of pavement deterioration, as well as railroad warping or buckling. High heat also puts a strain on energy systems and consumption, as air conditioners are run at a higher rate and for longer; extreme heat can also reduce transmission capacity over electric systems.

The NWS has a system in place to initiate alert procedures (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. The National Weather Service sets the following criteria, which apply for heat advisory and excessive heat:

- **Heat Advisory** – heat index of at least 105°F but less than 115°F for less than three hours per day, or nighttime lows above 80°F for two consecutive days.
- **Excessive Heat Watch** – heat indices in excess of 105ºF (41ºC) during the day, combined with nighttime low temperatures of 80ºF (27ºC) or higher, are forecast to occur for two consecutive days.
- **Excessive Heat Warning** – heat index of at least 105°F for more than three hours per day for two consecutive days, or heat index more than 115°F for any period of time.

While heat conditions may last several days, a warning can be issued even for one day of expected heat conditions.

Extreme Cold

The National Weather Service will issue a Wind Chill Advisory in Peoria when wind-chill temperatures are expected to reach –15°F to –20°F. In 2001, NWS implemented an updated Wind Chill Temperature (WCT) index shown in Figure 5.16. This index was developed by the National Weather Service to describe the relative discomfort/danger resulting from the combination of wind and temperature.

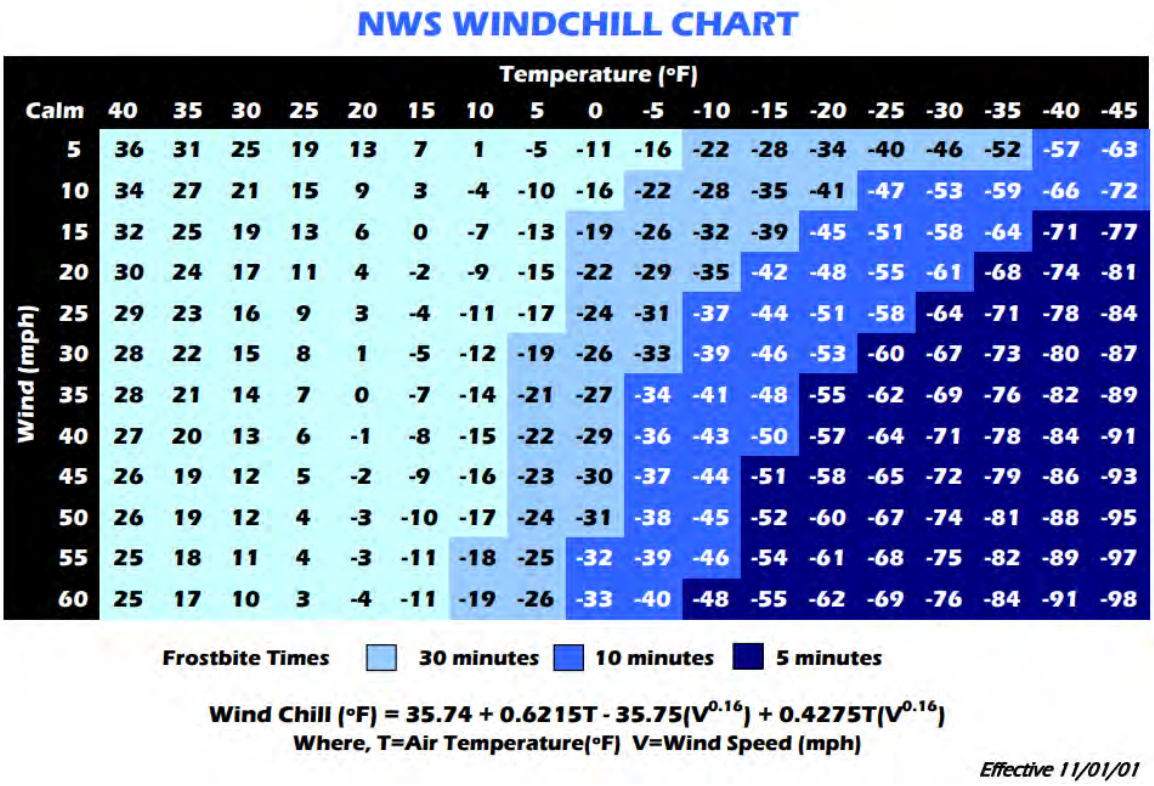
Specifically, the new WCT index:

- Calculates wind speed at an average height of five feet (typical height of an adult human face) based on readings from the national standard height of 33 feet (10m);
- Is based on a human face model;
- Incorporates modern heat transfer theory (heat loss from the body to its surroundings, during cold and breezy/windy days);
- Lowers the calm wind threshold to 3 mph;
- Uses a consistent standard for skin tissue resistance; and
- Assumes no impact from the sun (i.e., clear night sky).

Extreme cold can cause hypothermia (an extreme lowering of the body's temperature), frostbite and death. Infants and the elderly are particularly at risk, but anyone can be affected. While there are no firm data on hypothermia (cold) death rates, it is estimated that 25,000 older adults die from hypothermia each year. The National Institute on Aging estimates that more than 2.5 million Americans are especially vulnerable to hypothermia, with the isolated elderly being most at risk. About 10 percent of people over the age of 65 have some kind of temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

Also at risk are those without shelter or who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fires, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

Figure 5.16—Wind Chill Temperature Index



NWS WINDCHILL CHART

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T=Air Temperature(°F) V=Wind Speed (mph)

Effective 11/01/01

Source: Wind_Chill_Temperature_Index.pdf (weather.gov)

Location

Extreme heat and cold typically impacts a large area and cannot be confined to any geographic or political boundaries. The entire planning area is susceptible to extreme temperature events. The geographic area affected is assigned a value of **high**:

- **High -** More than 25% of the total population adversely affected should the hazard occur

Extent

Extreme Heat

The heat index chart, shown in Figure 5.15, provides a measure of the severity of extreme heat. Per the NWS, heat index values above 90°F can cause heat-related disorders affecting public health and safety.

The extent of extreme heat in the planning area can be defined by the historical maximum temperature reached. The National Weather Service National Oceanic and Atmospheric Administration historic data was used to compile data on historical maximum temperatures in the planning area. Table 5.20 provides the monthly highest maximum temperature on record for Peoria Area, IL.

Table 5.20– Monthly Highest Max Temperature, Peoria Area, IL 2000-2022

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	64	70	78	77	86	88	88	96	87	84	80	43	97
2001	42	57	58	84	90	92	96	96	89	80	73	67	96
2002	61	64	70	91	91	93	98	93	90	86	67	64	98
2003	57	49	77	86	85	92	93	98	85	87	75	53	98
2004	65	62	71	85	87	90	92	90	86	80	68	59	92
2005	64	55	74	82	86	96	104	96	95	87	71	50	104
2006	60	60	71	85	94	94	97	98	85	93	75	57	98
2007	51	48	78	86	88	94	92	96	94	90	69	56	96
2008	67	51	69	80	82	92	91	94	92	84	74	63	94
2009	46	65	75	82	85	95	87	90	83	68	75	56	95
2010	48	41	79	84	91	91	92	94	88	85	73	56	94
2011	38	64	74	86	91	93	98	95	100	84	73	57	100
2012	61	61	82	85	93	100	104	97	91	79	72	70	104
2013	64	54	61	85	88	93	97	99	98	86	70	55	99
2014	47	53	67	82	91	91	91	96	90	79	70	54	96
2015	49	47	79	82	87	93	94	94	98	83	75	68	98
2016	55	68	74	84	90	96	93	93	92	87	77	57	96
2017	60	74	80	82	87	94	96	91	94	86	67	65	96
2018	60	67	63	81	97	95	92	94	94	89	56	59	96
2019	61	53	71	80	89	94	95	90	91	88	58	63	95
2020	54	61	70	80	88	93	96	95	86	83	76	59	96
2021	48	58	73	84	87	95	93	93	91	87	67	69	95
2022	43	56	75	83	93	97	98	93	96	82	78	65	98
Mean	**55**	**58**	**73**	**83**	**89**	**94**	**95**	**94**	**92**	**84**	**71**	**59**	**97**
Max	**67**	**74**	**82**	**91**	**97**	**100**	**104**	**99**	**100**	**93**	**80**	**70**	**104**
(Year)	*2008*	*2017*	*2012*	*2002*	*2018*	*2012*	*2012*	*2013*	*2011*	*2006*	*2000*	*2012*	*2012*

Source: NOAA (weather.gov)

Per this historical temperature data, the highest temperature on record for the planning area during the last 20 years was 104°F, recorded in July 2005 and July 2012. Considering the potential wind and the NWS classification of danger for heat cramps, heat exhaustion, and heat stroke at this temperature, the magnitude/severity of heat in the Peoria County planning area is considered **medium**:

- **Medium -** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Extreme Cold

The wind chill temperature chart, shown in Figure 5.16, provides a measure of the severity of extreme chill. Per the CDC, hypothermia can occur at temperatures above 40°F. Hypothermia and frostbite are both dangerous conditions and pose a risk to public safety in times of extreme cold.

The extent of extreme heat in the planning area can be defined by the historical minimum temperature reached. The National Weather Service National Oceanic and Atmospheric Administration historic data was used to compile data on historical minimum temperatures in the planning area. Table 5.21 provides the monthly lowest minimum temperature on record for Peoria Area, IL.

Table 5.21– Monthly Lowest Min Temperature, Peoria Area, IL 2000-2022

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	-4	9	22	28	37	45	52	56	37	28	10	-12	-12
2001	0	-3	14	28	41	48	51	54	37	30	27	7	-3
2002	6	12	-4	23	33	53	57	58	40	27	16	10	-4
2003	-7	0	7	26	36	41	55	56	36	27	17	6	-7
2004	-10	2	17	29	34	51	54	47	42	29	15	-4	-10
2005	1	15	17	33	28	52	55	56	41	31	13	-5	-5
2006	21	-4	18	30	41	50	54	58	41	28	19	-4	-4
2007	2	-7	13	20	38	50	54	55	38	32	20	10	-7
2008	-8	2	10	28	36	53	56	55	49	27	16	-3	-8
2009	-21	2	12	29	40	47	55	48	48	32	25	3	-21
2010	-11	0	22	32	35	57	58	54	43	27	20	-1	-11
2011	-6	-9	21	29	33	54	61	56	40	30	21	9	-9
2012	5	11	16	30	43	48	62	52	37	29	16	10	5
2013	2	1	10	23	35	48	51	51	47	25	10	-2	-2
2014	-14	-13	-6	27	38	52	55	57	41	32	12	5	-14
2015	-8	-7	3	26	37	50	58	54	47	32	11	18	-8
2016	-3	4	14	25	41	50	58	56	50	37	22	-6	-6
2017	-2	10	13	35	36	49	58	54	45	25	19	-9	-9
2018	-16	-2	20	14	49	54	57	55	44	26	10	13	-16
2019	-20	5	-2	29	41	50	59	56	54	23	5	13	-20
2020	1	-9	26	27	30	53	63	54	43	30	20	6	-9
2021	7	-8	20	24	37	49	59	58	49	37	18	15	-8
2022	-5	-4	9	29	42	53	59	56	40	27	13	-9	-9
Mean	-4	0	13	27	37	50	57	55	43	29	16	3	-9
Min *(Year)*	**-21** *2009*	**-13** *2014*	**-6** *2014*	**14** *2018*	**28** *2005*	**41** *2003*	**51** *2013*	**47** *2004*	**36** *2003*	**23** *2019*	**5** *2019*	**-12** *2000*	**-21** *2009*

Source: NOAA (weather.gov)

Per this historical temperature data, the lowest temperature on record for the planning area during the last 20 years was -21°F, recorded in January 2009. Considering the potential windchill temperature and the NWS

classification of danger for frostbite and hypothermia at this temperature, the magnitude of extreme cold in the Peoria County planning area is considered **medium**:

- **Medium -** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Historical Occurrences

There are 25 extreme temperature events listed in the NCDC database for Peoria County between 1996 and 2022 (26 years). Event descriptions are presented below Table 5.22.

Table 5.22—NCDC Extreme Temperature Events for Peoria County, 1996-2022

Type	Date	Property Damage	Crop Damage	Deaths	Injuries
Cold/Wind Chill	2/2/1996	0	0	1	0
Heat	7/26/1997	0	0	0	0
Heat	6/26/1998	0	0	1	0
Cold/Wind Chill	1/5/1999	0	0	0	0
Heat	7/20/1999	0	0	1	0
Heat	7/28/1999	0	0	0	0
Heat	7/22/2005	0	0	0	0
Heat	7/30/2006	0	0	1	0
Heat	8/1/2006	0	0	0	0
Extreme Cold/Wind Chill	1/15/2009	0	0	0	0
Excessive Heat	8/11/2010	0	0	0	0
Excessive Heat	8/2/2011	0	0	0	0
Excessive Heat	6/29/2012	0	0	0	0
Excessive Heat	7/1/2012	0	0	1	0
Extreme Cold/Wind Chill	1/6/2014	0	0	0	0
Extreme Cold/Wind Chill	1/27/2014	0	0	0	0
Extreme Cold/Wind Chill	1/7/2015	0	0	0	0
Cold/Wind Chill	12/18/2016	0	0	1	0
Extreme Cold/Wind Chill	12/30/2017	0	0	1	0
Extreme Cold/Wind Chill	1/1/2018	0	0	0	0
Excessive Heat	7/17/2019	0	0	1	0
Cold/Wind Chill	1/20/2020	0	0	1	0
Cold/Wind Chill	2/13/2020	0	0	1	0
Cold/Wind Chill	1/20/2021	0	0	1	0
Extreme Cold/Wind Chill	12/23/2022	0	0	0	0
Total		**$0**	**$0**	**11**	**0**

Source: NCDC Storm Events Database; https://www.ncdc.noaa.gov/stormevents/

Below is a description of select temperature events that occurred in Peoria County:

- **February 2-4, 1996** - Bitterly cold weather took hold of Central Illinois on the 2nd, 3rd, and 4th of this month. New record low temperatures were made with a low of minus 19 in both Peoria and Springfield on February 3rd. Also, new record low high temperatures were made when the temperatures at Peoria and Springfield never went above zero on the 2nd and 3rd. Many people

experienced problems with cars and frozen pipes. However, two deaths were reported due to the extreme cold. A 78-year-old man in Springfield froze to death within a few feet of his own front door. He reportedly could not find his house keys and fell. His wife could not help him and they were not found for several hours. She was treated for exposure and released. In Peoria, a 79-year-old woman froze to death on her front porch. Apparently, she mistakenly thought she was locked out of her home.

- **January 5, 1999** - A clear sky, light winds and thick snowcover set the stage for record cold morning temperatures across the region. A new state record low was set at Congerville, where the mercury plunged to 36 degrees below zero. Other bitterly cold record readings came from: Champaign and Lincoln both with 25 degrees below zero, Springfield with 21 below and Peoria with 19 degrees below zero.
- **January 15-16, 2009** - Bitterly cold air poured into central Illinois in the wake of a departing storm system. Thanks to clear skies over a fresh snow cover, early morning temperatures on January 15th and 16th plunged well below zero in much of central and eastern Illinois. In addition, brisk northwesterly winds created wind-chill values in the 25 below to 40 below zero range. As a result of the extreme cold, a man in Bloomington-Normal lost his life due to hypothermia.
- **August 11-13, 2010** - A large upper-level ridge of high pressure over the southern U.S. produced an extended period of hot and humid weather across central Illinois from August 9th through August 14th. With actual air temperatures well into the 90s and dewpoints in the upper 70s...heat index values soared above 105 degrees....with readings occasionally in excess of 110 degrees along and south of a Shelbyville to Paris line.
- **August 2, 2011** - A large ridge of high pressure in the central United States combined with high levels of humidity to produce excessive heat conditions in west central Illinois August 1st and all of central Illinois August 2nd. There were no reports of heat related fatalities during this relatively short heat episode.
- **June 29-30, 2012** - An extended period of excessive heat and humidity occurred across central and southeast Illinois from June 29th through July 7th. Afternoon high temperatures ranged from 95 to 105 degrees...while overnight lows generally remained in the 70s. Peak heat index values approached 110 degrees on many days.
- **July 1-7, 2012** - A 64-year-old Chillicothe man died as a result of heat stroke on July 5th. The high temperature at the Peoria Airport reached 101 degrees that day, while heat index values ranged from 105 to 110 degrees.
- **January 6-7, 2014** - A bitterly cold airmass spilled into central and southeast Illinois on January 6th and 7th after passage of an Arctic cold front. Due to clearing skies and diminishing winds over a fresh snow cover, record low temperatures of -10 to -20 were established across much of the area on the morning of January 6th. In addition to the extremely cold temperatures, northwesterly winds created dangerous wind-chill readings of -35 to -45. As a result, schools and numerous businesses closed for the day. Several locations also activated warming centers for those without heat. One person died as a result of exposure to the cold.
- **January 27-28, 2014** - Another bitterly cold airmass settled into central Illinois on January 27th and 28th after passage of an Arctic cold front. High temperatures on January 27th remained in the single digits, while overnight lows dropped into the -5 to -12 range. These cold temperatures combined with northwesterly winds created wind-chill readings of -20 to -30 at times.

- **January 7-8, 2015** - A bitterly cold airmass spilled into central Illinois behind a departing storm system on January 7th and 8th. Actual air temperatures bottomed out between 0 and -10F during the early morning of January 8th. Thanks to a continued northwesterly wind of 5 to 10 mph, wind-chill values dropped to between -25 and -30F along and north of a Galesburg...to Peoria...to Bloomington line.
- **December 18-19, 2016** – Canadian high pressure building into the Plains brought a very cold airmass into central Illinois form December 18th through December 19th. Early morning lows on the 18th dropped between 0 and -10F… while wind-chills dipped as low as -15 to -25F. A Peoria man succumbed to the extreme cold and was found dead on a sidewalk due to hypothermia at approximately 10am on December 18th.
- **July 17-21, 2019 –** A large ridge of high pressure building over the Midwest brought a period of hot and humid weather to central Illinois from July 17th through July 21st. High temperatures routinely topped out in the lower to middle 90s during that time frame, while overnight lows only cooled into the middle to upper 70s. High relative humidity values helped push maximum afternoon heat index values to 105 degrees or higher. A 61-year-old woman died from heatstroke in Peoria on July 21st. She was found inside a 97-degree house with no air conditioning.
- **February 13-14, 2020** – A bitterly cold airmass spilled into central Illinois behind a departing cold front on February 13th. High temperatures were initially in the lower 30s shortly after midnight, followed by failing temperatures and increasing winds throughout the day. Air temperatures eventually bottomed out near zero by the early morning of February 14th, while wind-chill values dipped as low as 10 below to 20 below zero. Due to the frigid temperatures, a man 64-year-old homeless man in Peoria lost his life due to hypothermia.
- **January 20, 2021** – A 57-year-old man died as a result of hypothermia after he fell outside his Chillicothe home and could not get back inside. Weather conditions were near normal for the time of year, with early morning lows in the teens and afternoon highs reaching the middle 30s.

Additionally, from 1991-2020, the PEORIA GTR PEORIA AP, IL Weather Station has reported the annual number of days the maximum temperature was above 90° F to be 18.7 and the annual number of days the minimum temp was below 32° F to be 115.9. Averaged temperature maximums and minimums for each month are shown in Table 5.23. Temperature extremes for the last 50 years are presented in Table 5.24.

Table 5.23—Average Max and Min Temperature by Month, 1991-2022

Month	Average High Temperature	Average Low Temperature	Month	Average High Temperature	Average Low Temperature
January	32.9	17.4	**July**	85.7	66.2
February	37.7	20.8	**August**	84.1	64.4
March	50.9	31.6	**September**	78.0	56.3
April	63.0	41.8	**October**	65.0	44.4
May	73.6	52.7	**November**	50.3	32.8
June	82.8	62.3	**December**	38.3	23.3

Source: https://www.weather.gov/wrh/climate?wfo=ilx

Table 5.24—Monthly Extreme Temperature, 1972-2022

Month	High (°F)	Year	Low (°F)	Year
January	70	1989	-25	1977
February	74	2017	-19	1996
March	86	1986	-6	2014
April	92	1986	14	2018
May	97	2018	28	2005
June	105	1988	39	1993
July	104	2012	47	1972
August	103	1988	41	1986
September	100	2011	29	1995
October	93	2006	19	1972
November	80	2000	-2	1977
December	71	1982	-23	1989
Annual	105	1988	-25	1977

Source: https://www.weather.gov/wrh/climate?wfo=ilx

Probability of Future Occurrence

Based on 25 extreme temperature events listed in the NCDC database for Peoria County between 1996 and 2022 (26 years), the probability of occurrence is 96 percent. An extreme heat event is more likely to occur in the summer months of June, July, and August; and an extreme cold event is more likely to occur in the winter months of December, January, and February. Therefore, the HMPC determined the magnitude/severity of extreme temperatures on the planning area to be **medium**:

- **Medium -** 12 to 60 occurrences in the last 60 years
  (20-100% chance of occurrence each year)

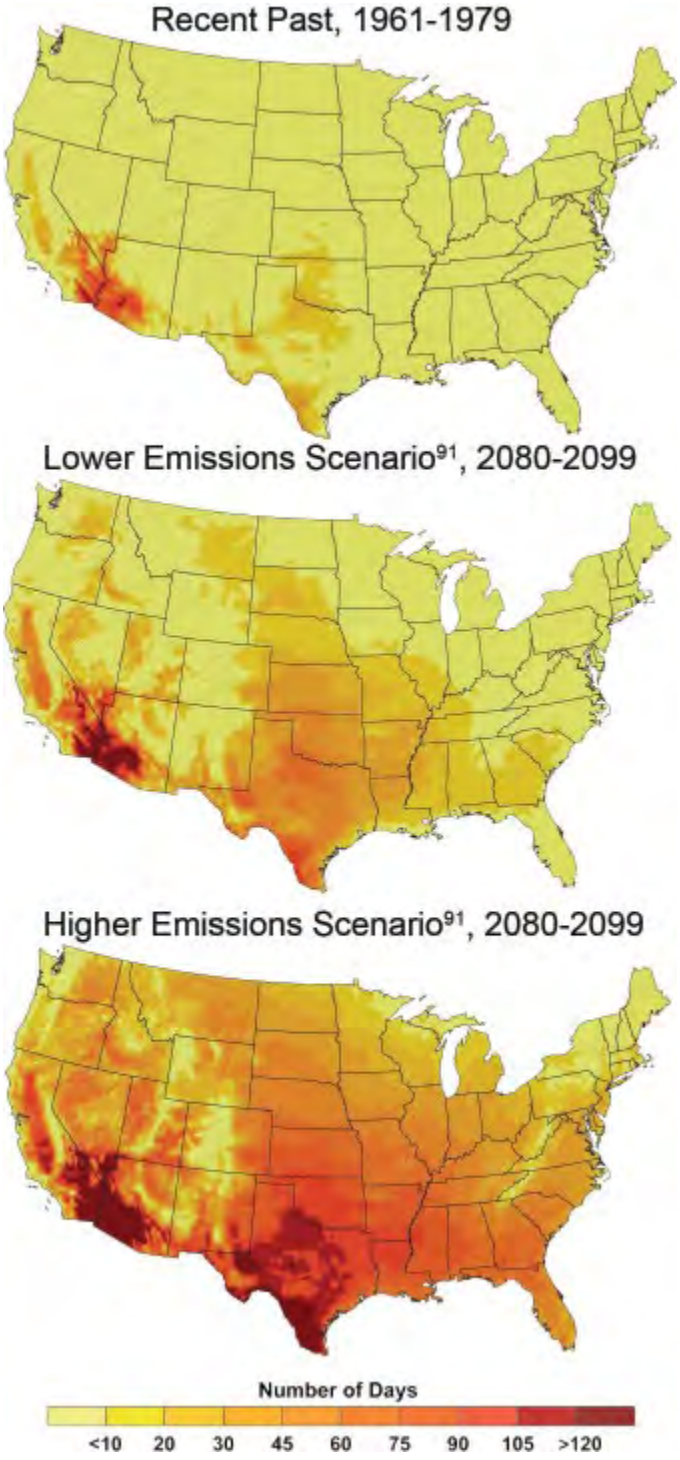
Climate Change

According the 2014 Climate Change Fact Sheet from the White House, Office of the Press Secretary, for Illinois and the Midwest, the average Midwest air temperature increased by more than 1.5°F. With the higher temperatures:

- Degraded air quality due to human-induced emissions and increased pollen season duration are projected to be amplified; and
- Approximately 95% of the electrical generating infrastructure in the Midwest is susceptible to decreased efficiency.

Figure 5.17 below depicts the current number of 100-degree days across the US and the increase based on two different emission scenarios.

Figure 5.17—100 Degree Days, Past and Future



Source: https://www.climate.gov/news-features/featured-images/100%C2%B0-days-past-and-future

Consequence Analysis

Category	Consequences
Public	Extreme heat may cause illness and/or death. Children and infants, older adults, individuals with chronic conditions, and pregnant women are particularly vulnerable.
Responders	Consequences may be greater for responders if their work requires physical exertion, sun exposure, and/or wearing heavy protective gear.
Continuity of Operations (including Continued Delivery of Services)	Extreme heat would have minimal impacts on continuity of operations. Complications may arise if electricity demand results in power outages; however, this should be managed for critical operations with backup power and system redundancies.
Property, Facilities and Infrastructure	Minor impacts may occur, including possible damages to road surfaces, rail lines, and power lines as well as increased strain on power generation and water systems infrastructure.
Environment	Environmental impacts include strain on local plant and wildlife, including potential for illness or death. Crops and livestock may be affected.
Economic Condition of the Jurisdiction	Short term impacts could include reduced local spending if individuals are encouraged to stay inside. Farmers may face crop losses or increased livestock costs resulting in income loss.
Public Confidence in the Jurisdiction's Governance	Extreme heat is unlikely to impact public confidence because these events are frequent and the public likely understands the potential impacts.

Vulnerability Assessment

People

Extreme Heat

Extreme heat can cause heat stroke and even loss of human life. Older adults and very young children are most at risk to the effects of heat. Table 5.25 summarizes the percent of young children and older adults in the population by jurisdiction. Based on these statistics, exposure of vulnerable populations may be greater than average in Hanna City, which has a larger population of older adults, and Chillicothe City which has a higher population of both vulnerable communities.

Table 5.25– Population Under 5 Years of Age and Over 65 Years of Age by Jurisdiction

Jurisdiction	Population under 5 years of age (%)	Population over 65 years of age (%)
Bartonville	4.3	14.8
Chillicothe City	6.7	24.1
Hanna City	3.9	26.4
Peoria	7.2	16.0
Peoria County	6.8	17.1
Peoria Heights	5.0	17.0
West Peoria	7.1	18.7
State Average	*5.8*	*15.7*

Source: U.S. Census Bureau, American Community Survey 2017-2021 5-year estimates

People with chronic health conditions, pregnant women, people who are isolated, and people who work outdoors with sun exposure are also more vulnerable to extreme heat, however demographic data on these groups was not available. Table 5.26 lists typical symptoms and health impacts of heat exposure according to the severity classifications shown in the heat index chart.

Table 5.18– Typical Health Impacts of Extreme Heat

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

Source: National Weather Service, https://www.weather.gov/ama/heatindex

Extreme Cold

Extreme cold temperatures can case hypothermia, frostbite, and even death. Infants and the elderly are particularly at risk. The percentage of these vulnerable populations for each jurisdiction was shown above in Table 5.25. Other communities that are particularly vulnerable to extreme cold are the homeless population and housing without HVAC.

Property

According to the NCEI Storm Database, there was no reported property damage resulting from extreme temperature events.

According to the twenty-year period from USDA's Risk Management Agency, the amount of claims paid for crop damage as a result of heat in Peoria County was $702,263. According to the 2021 Illinois Crop Insurance Profile from USDA's Risk Management Agency, 48 percent of the insurable crops in Illinois are insured with USDA Crop Insurance. To factor in estimated losses to insurable crops that are not insured, the 48 percent crop insurance coverage was factored in to provide an adjusted estimate of losses. According to this calculation, estimated annualized losses total $ (see Table 5.27).

Considering the value of crops from the 2017 Census of Agriculture as baseline crop exposure, the estimated annual losses from drought was determined minimal compared to the value of the insurable crops.

Table 5.27—Estimated Insurable Annual Crop Loss Resulting from Excessive Heat

20-Year Heat Insurance Paid	Adjusted 20-Year Heat Losses (considering 48% insured)	Estimated Annualized Losses	2017 Value of Crops	Annualized Crop Loss ratio (Losses/Value)
$702,263	$1,463,048	$73,152	$145,196,000	0.05%

Source: Crop Insurance Paid is from the USDA's Risk Management Agency for 2006-2015; Crop Insurance Coverage is from USDAs 2015 State Crop Insurance Profile for Illinois; and crop value is from USDA 2012 Census of Agriculture

Environment

Wild animals are vulnerable to heat disorders similar to humans, including mortality. Vegetation growth will be stunted, or plants may be killed if temperatures rise above or below their tolerance extremes.

Changes in Development

Increases in impervious surface area can exacerbate heat conditions through the urban heat island effect, whereby the concentration of structures, infrastructure, and human activity, traps and stores heat, resulting in localized "heat islands." As development occurs, the area impacted by the urban heat island effect may grow. The severity of the urban heat island effect may be mitigated through the installation of cool roofs, urban trees, and other interventions that reflect heat or provide shade in urban areas.

Key Issues

- Populations most vulnerable to the effects of excessive heat and extreme cold are children under the age of 5 and those over the age of 65.
- Individuals without access to air conditioning and heat, especially older adults and individuals with underlying conditions making them more susceptible to heat stroke, are more vulnerable to extreme heat events. Cooling centers, fan distribution, and other mitigation actions could reduce vulnerability.
- Related Hazards: Drought

Hazard Summary by Jurisdiction

The following table summarizes extreme heat hazard risk by jurisdiction. Extreme heat risk does not vary significantly by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	High	Medium	Medium	High
Chillicothe	High	Medium	Medium	High
Hanna City	High	Medium	Medium	High
Peoria	High	Medium	Medium	High
Peoria Heights	High	Medium	Medium	High
West Peoria	High	Medium	Medium	High
Peoria County Unincorporated Areas	High	Medium	Medium	High
Peoria Park District	High	Medium	Medium	High
Greater Peoria Sanitary District	High	Medium	Medium	High

5.8 Flooding

Hazard Background

Flooding is defined by the rising and overflowing of water onto normally dry land. As specified by FEMA, a flood is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties. Inland flooding generally results from excessive precipitation and can stem from an overflow of inland waters or an unusual accumulation or runoff of surface waters from any source.

Inland flooding can typically be classified under two categories: general riverine flooding, which is defined by precipitation over a given river basin for a long period of time, and flash flooding, which is the product of heavy localized precipitation over a short period of time. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, the degree of vegetative clearing, and impervious surface.

Flooding is the most frequent and costly natural hazard in the United States and has caused more than 10,000 death(s) since 1900. Approximately 90 percent of presidentially declared disasters result from flood-related natural hazard events.

Sources and Types of Flooding

Flooding in Peoria County can be attributed to three main sources: riverine flooding, flash flooding, and localized stormwater flooding.

Riverine Flooding: Peoria County has numerous rivers, streams, and tributaries running throughout its jurisdiction that are susceptible to overflowing their banks during and following excessive precipitation events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include many independent river basins. Riverine flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with soils already saturated from previous rain events. The duration of riverine floods may vary from a few hours to many days. Factors that directly affect the amount of flood runoff include precipitation, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface areas due to urbanization. The area adjacent to a river channel is its floodplain. In its common usage, "floodplain" most often refers to that area that is inundated by the 100-year flood, the flood that has a 1-percent chance in any given year of being equaled or exceeded. The 1-percent annual flood is the national standard to which communities regulate their floodplains through the National Flood Insurance Program. Riverine flooding is mapped and evaluated based on the floodplain, which is the area adjacent to rivers and streams that is expected to experience periodic flooding. Floodplains are discussed further under "Flooding and Floodplains" below.

Flash Flooding: A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, possibly from severe thunderstorms, hurricanes, or tropical storms, and sometimes combined with saturated soil or impermeable surfaces. Flash flooding can also result from dam or levee failures, which are discussed in Section 5.4, or from a sudden release of water held by a retention basin or other stormwater control facility.

Flash flooding can happen anywhere, in or out of floodplains. Flash flood hazards caused by surface water runoff are common in urbanized areas, where greater impervious surface (e.g., pavement and buildings) increases the amount of surface water generated.

Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. The rapid onset allows little or no time for protective measures. Flash flood waters move at very fast speeds and can

damage buildings and infrastructure, tear out trees, and scour channels. Flash flooding can result in higher loss of life, both human and animal, than slower developing river and stream flooding.

Localized Stormwater Flooding: While riverine and flash flooding can affect urban areas, localized stormwater flooding refers specifically to flooding that occurs when heavy rainfall and an accumulation of runoff overburden the stormwater drainage system of an urban area. Localized stormwater flooding can be attributed to large amounts of developed and impervious land, which limit ground absorption and increases surface water runoff.

The following structural drainage issues may cause or exacerbate localized stormwater flooding:

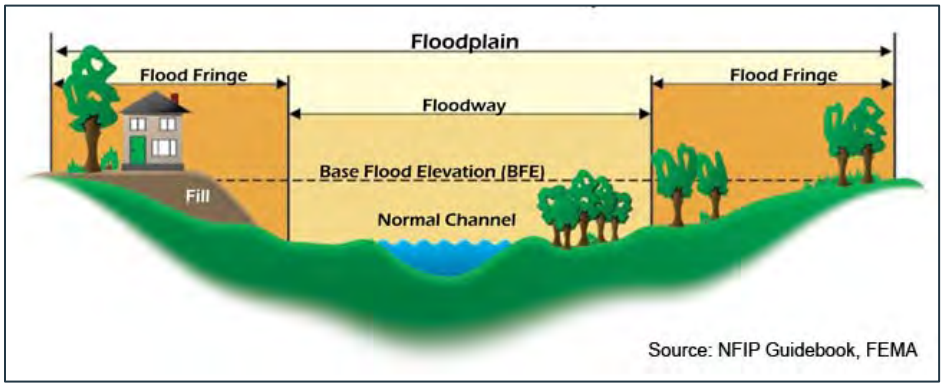
- Inadequate Capacity – An undersized/under capacity pipe system can cause water to back-up behind a structure which can lead to areas of ponded water and/or overtopping of banks.
- Clogged Inlets – Debris covering the asphalt apron and the top of grate at catch basin inlets may contribute to an inadequate flow of stormwater into the system. Debris within the basin itself may also reduce the efficiency of the system by reducing the carrying capacity.
- Blocked Drainage Outfalls – Debris blockage or structural damage at drainage outfalls may prevent the system from discharging runoff, which may lead to a back-up of stormwater within the system.
- Improper Grade – Poorly graded asphalt around catch basin inlets may prevent stormwater from entering the catch basin as designed. Areas of settled asphalt may create low spots within the roadway that allow for areas of ponded water.

While localized flooding may not be as destructive riverine or coastal flooding, it is a chronic problem. The repetitive damage caused by such flooding can add up. Sewers may back up, yards can be inundated, and mechanical systems can be damaged when homes, businesses, and vehicles are flooded. These impacts, and other localized flooding impacts, can create public health and safety concerns. Drainage and sewer systems not designed to carry the capacity currently needed to handle increased storm runoff will only continue to cause flooding without mitigation.

Flooding and Floodplains

A floodplain, as shown in Figure 5.19., is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

Figure 5.19 – Characteristics of a Floodplain



Source: FEMA

Floodplains are defined by the flood recurrence interval that is expected to cover them. In its common usage, the floodplain most often refers to the area that is inundated by the "100-year flood," better defined as the "1-percent-annual-chance flood" because it is the flood that has a 1 percent chance in any given year of being equaled or exceeded. The National Flood Insurance Program (NFIP) utilizes the 1-percent-annual-chance flood as a basis for floodplain management. The "500-year flood" or "0.2-percent-annual-chance flood" is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year.

The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. Similarly, a change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

The 1-percent-annual-chance flood, which is the minimum standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. Participation in the NFIP requires adoption and enforcement of a local floodplain management ordinance which is intended to prevent unsafe development in the floodplain, thereby reducing future flood damages. Participation in the NFIP allows for the federal government to make flood insurance available within the community as a financial protection against flood losses. Since floods have an annual probability of occurrence, have a known magnitude, depth and velocity for each event, and in many cases, have a map indicating where they will likely occur, they are in many ways often the most predictable and manageable hazard.

While weather forecasting can project periods of heavy rain, the likelihood of flooding is difficult to predict, leaving limited warning time for flood events. Especially as heavy rain events become more common, as discussed below under Climate Change, warning time for flooding may decrease, thereby increasing risk to those in harm's way.

Location

Peoria County is located within the Illinois River drainage basin. The major sources of flooding in Peoria are the Illinois River, Dry Creek and Kickapoo Creek. The floodplains of these waterways vary in width. The main flood prone areas in Peoria County are along the Illinois River from the southern border of Chillicothe to the southern Peoria County boundary and the Kickapoo Creek watershed. A Hazard Mitigation Plan for the Kickapoo Creek watershed was developed in 1997. A Hazard Mitigation Plan for the areas along the Illinois River was developed in 1985 and updated in 2001.

Peoria County has an extremely proactive history in regard to floodplain management as well as identifying and prioritizing potential vulnerable areas. As a part of the National Flood Insurance Program (NFIP), floodplains and floodways on the Illinois River, and many local streams have been established and are regulated by the local floodplain management ordinance.

Regulated floodplains are illustrated on inundation maps called Flood Insurance Rate Maps (FIRMs). A FIRM is the official map for a community on which FEMA has delineated both the Special Flood Hazard Areas (SFHAs) and the risk premium zones applicable to the community. SFHAs represent the areas subject to inundation by the 1-percent-annual-chance flood event. SFHAs and risk premium zones in Peoria County were identified using the FIRMs, effective as of June 1, 1983.

The SFHA in Peoria County includes Zone A and Zone AE. Structures located within the SFHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage. The FIRMs also delineate Shaded X Zones/B Zones, which are subject to inundation from the 0.2-percent-annual-chance-flood. Descriptions of all mapped flood zones identified by the FIRM are provided in Table 5.28.

Table 5.28 – Mapped Flood Insurance Zones within Peoria County

Zone	Description
AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. They represent the flood profile determined by hydrologic and hydraulic investigations. Base Flood Elevations (BFEs) are shown.
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
B	Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annualchance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. (Zone X (shaded) is used on new and revised maps in place of Zone B.)
C	Minimal risk areas outside the 1-percent and 0.2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Zone X (unshaded) is used on new and revised maps in place of Zone C.

Source: FEMA.

It is important to note that while FEMA digital flood data is recognized as the best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Floods can and do occur outside of the SFHA and Shaded X Zone.

Of the 87,508 parcels within Peoria County, 13,034 parcels are located within the identified special flood hazard area (SFHA). With approximately 15% of parcels within the SFHA, the geographic location was assigned a rank of **medium:**

- **Medium –** Between 10% to 25% of the total population adversely affected should the hazard occur

Extent

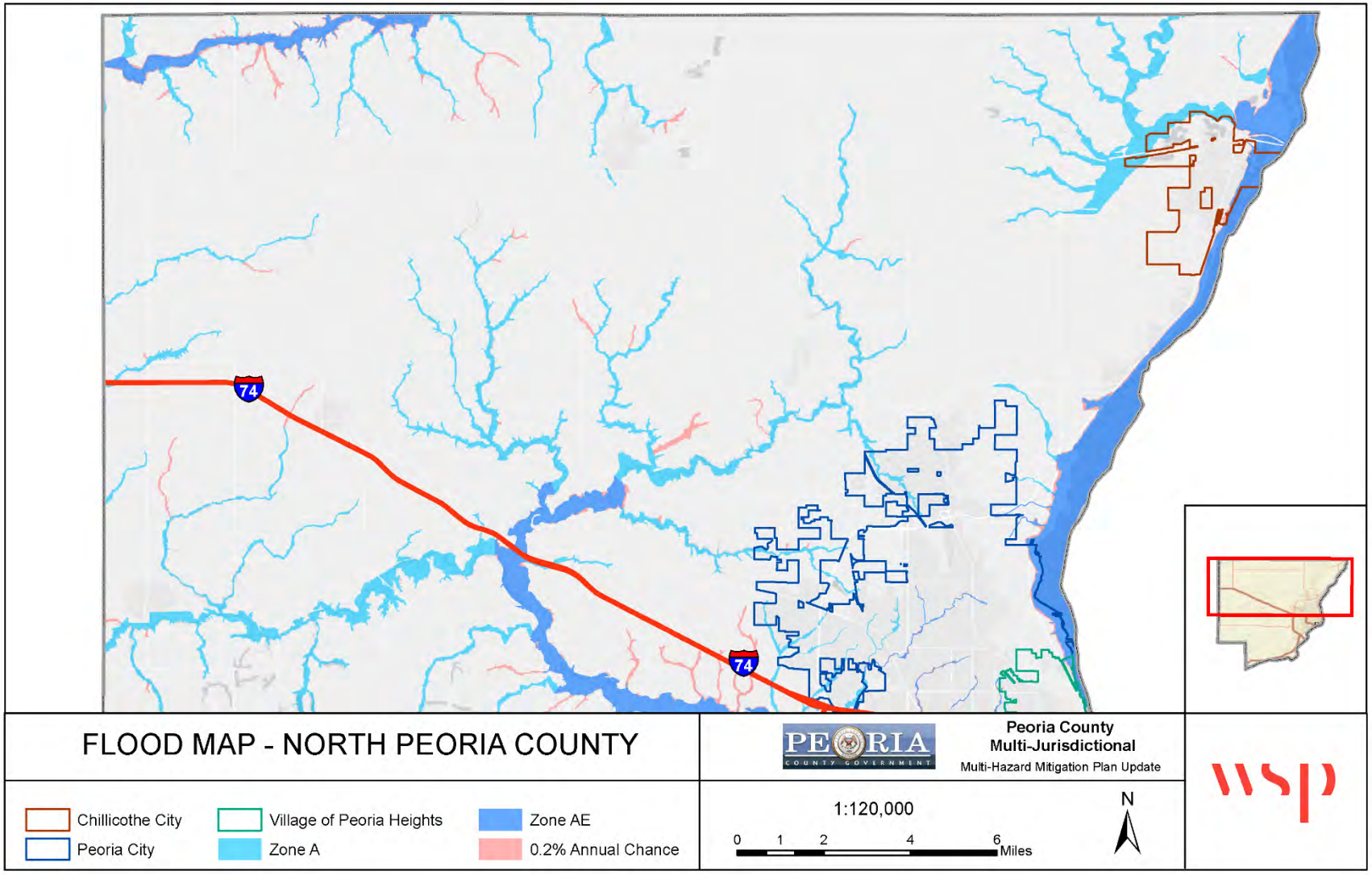
Flood extent can be defined by the amount of land in the floodplain, detailed above, and the potential magnitude of flooding as measured by flood depth. Figures 5.20-5.26 shows the flood extents predicted from a 1.0- and a 0.2-percent-annual-chance floods. Flood damage is closely related to depth, with greater flood depths generally resulting in more damages. Table 5.29 shows the area of each flood zone within Peoria County, as well as the percentage of flood area within the county.

The 100-year floodplain, as presented on the Flood Insurance Rate Maps (FIRM) for Peoria County, does encompass several residential structures indicating that some property damage from will occur during larger events.

The most frequent type of flooding and damages are as a result of the frequent flash flood events. These are especially problematic in the urban areas where development increases the rate of water flow and decreases the ability for water to be absorbed into the ground. The HMPC determined the magnitude of floods on the planning area to be **high**:

- **High —** Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.

Figure 5.20 – Flood Zones in Peoria County



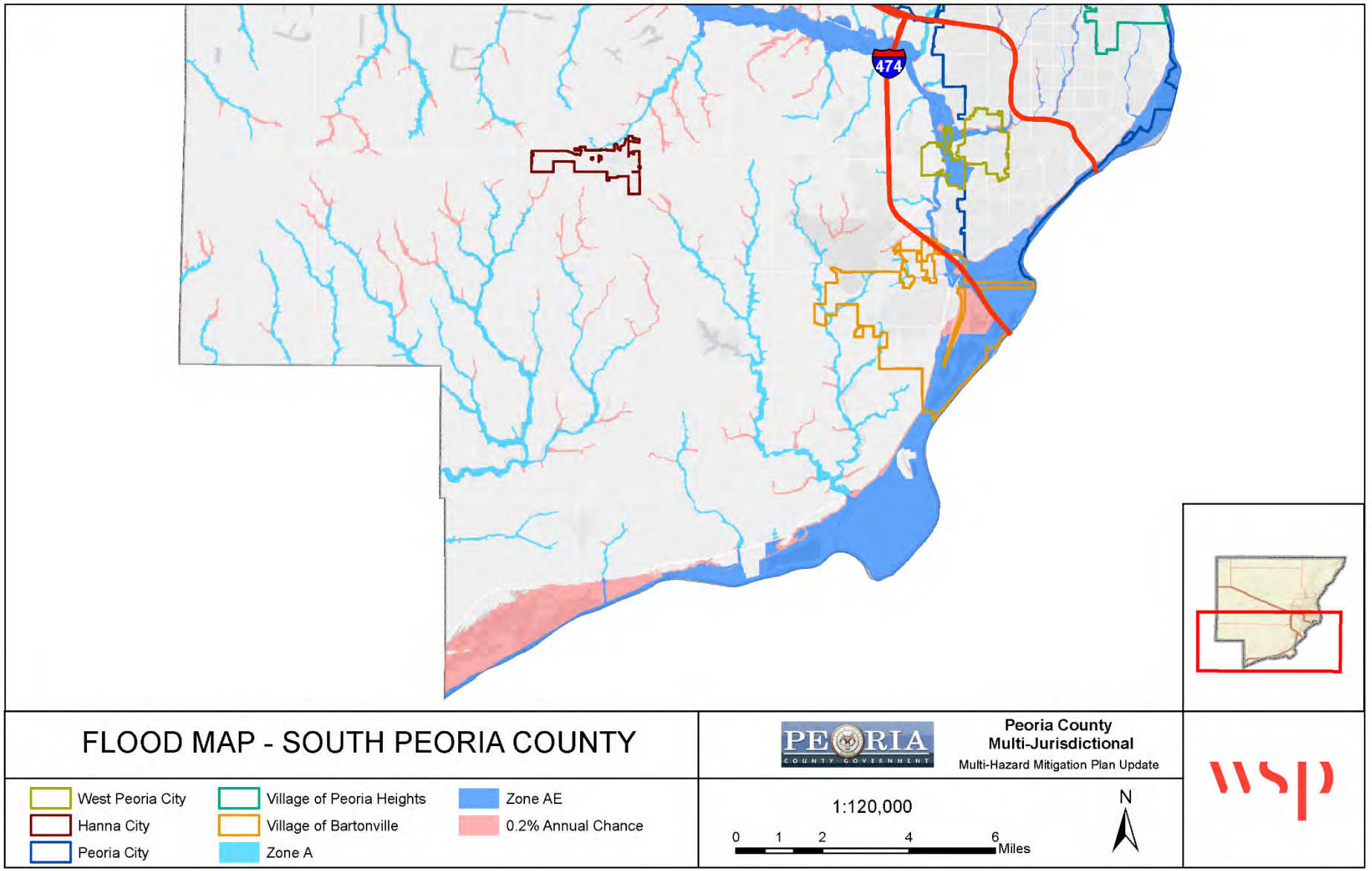

474
FLOOD MAP - SOUTH PEORIA COUNTY
West Peoria City
Hanna City
Peoria City
Village of Peoria Heights
Village of Bartonville
Zone A
Zone AE
0.2% Annual Chance
PEORIA COUNTY GOVERNMENT
Peoria County
Multi-Jurisdictional
Multi-Hazard Mitigation Plan Update
1:120,000
0 1 2 4 6 Miles
N
wsp

Figure 5.21 – Flood Zones in Village of Bartonville

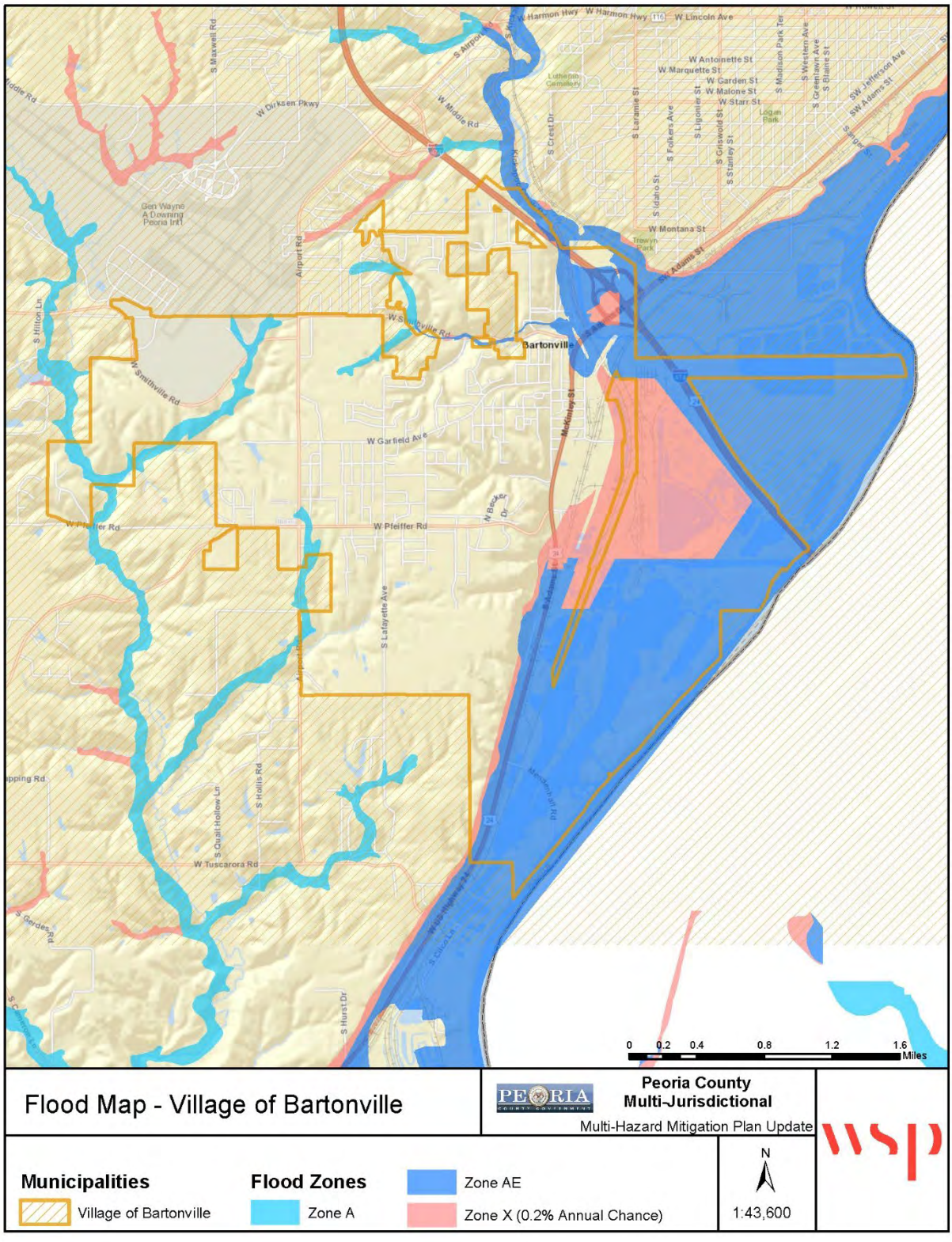


Figure 5.22 – Flood Zones in Chillicothe City

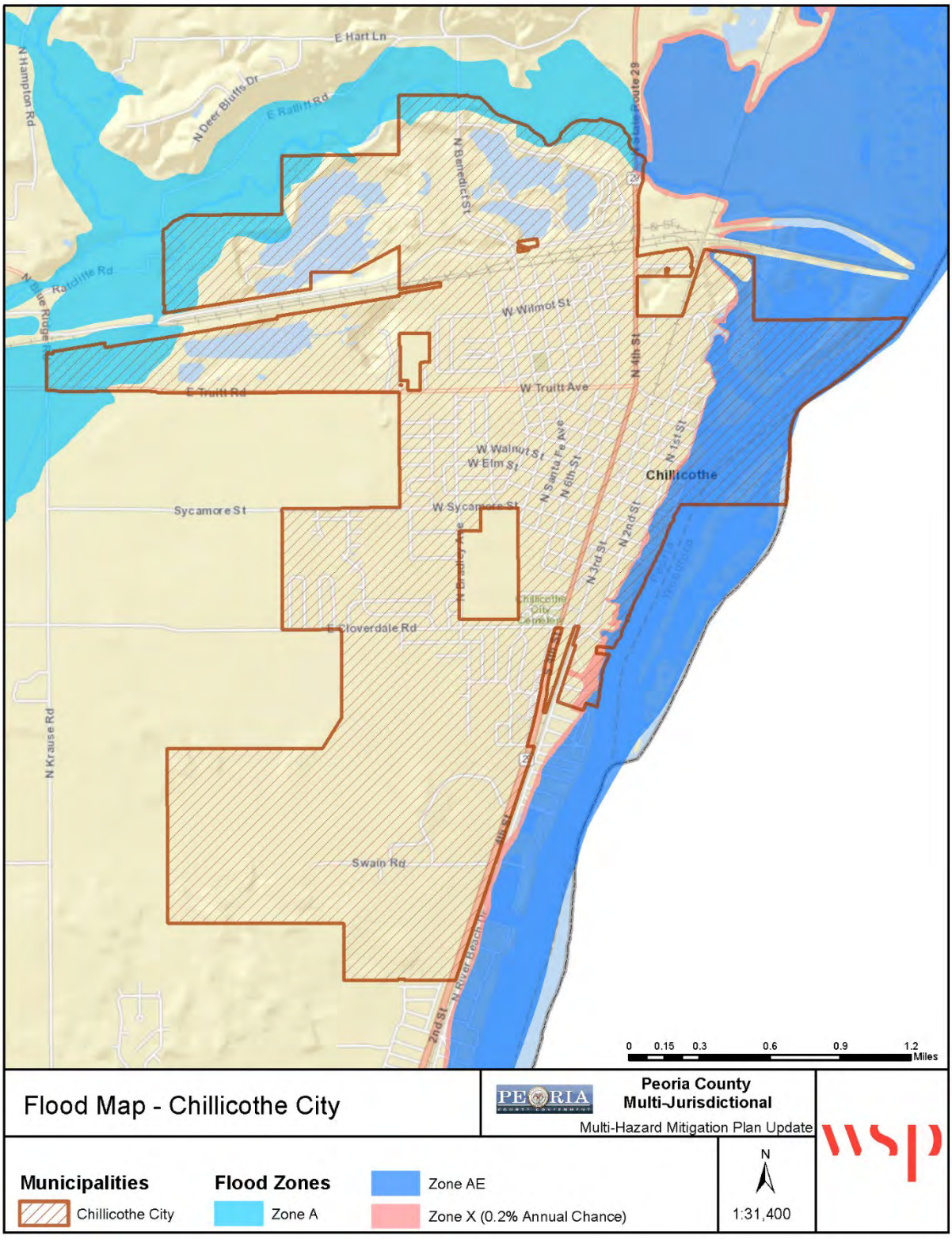


Figure 5.23 – Flood Zones in Hanna City

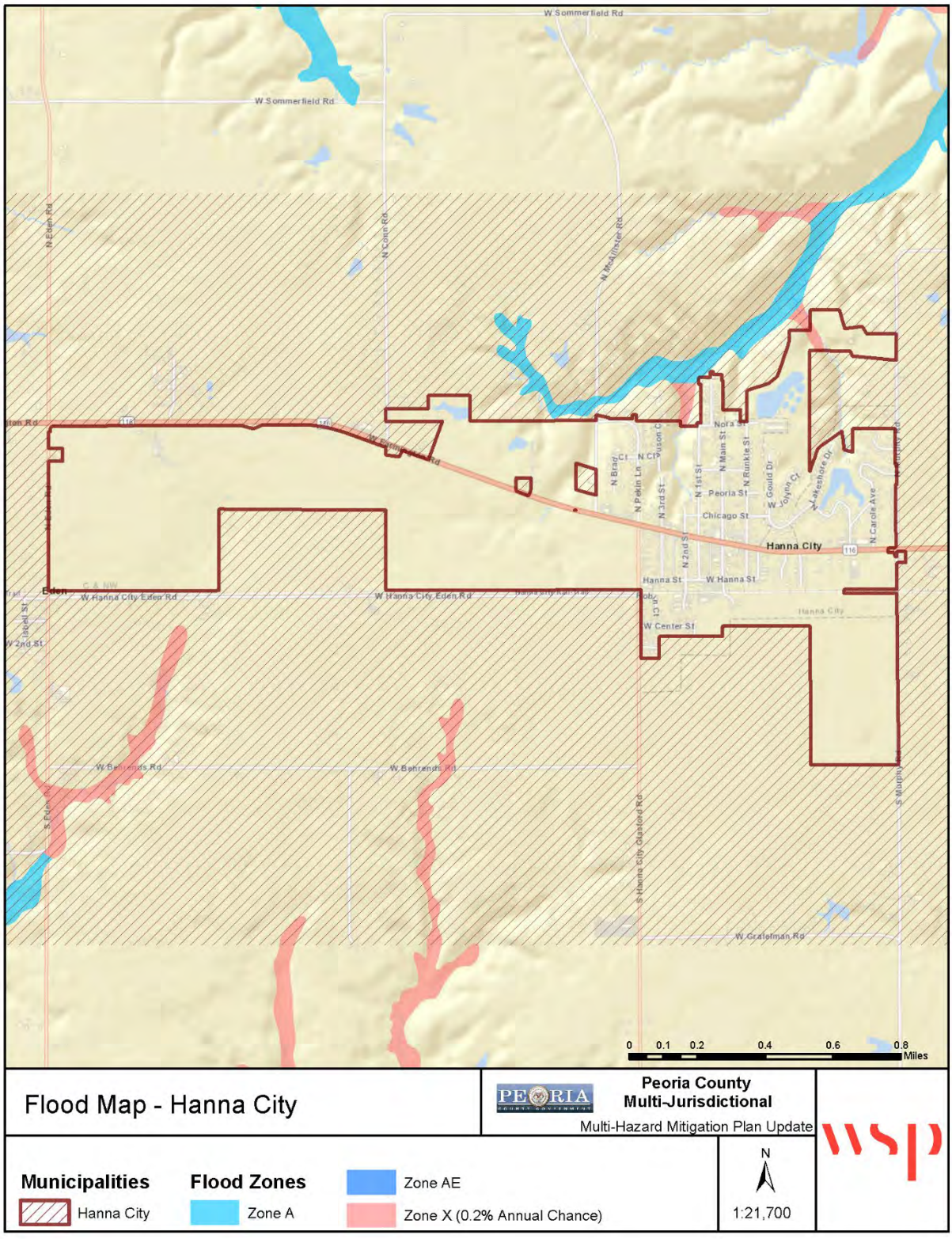


Figure 5.24 – Flood Zones in Peoria City

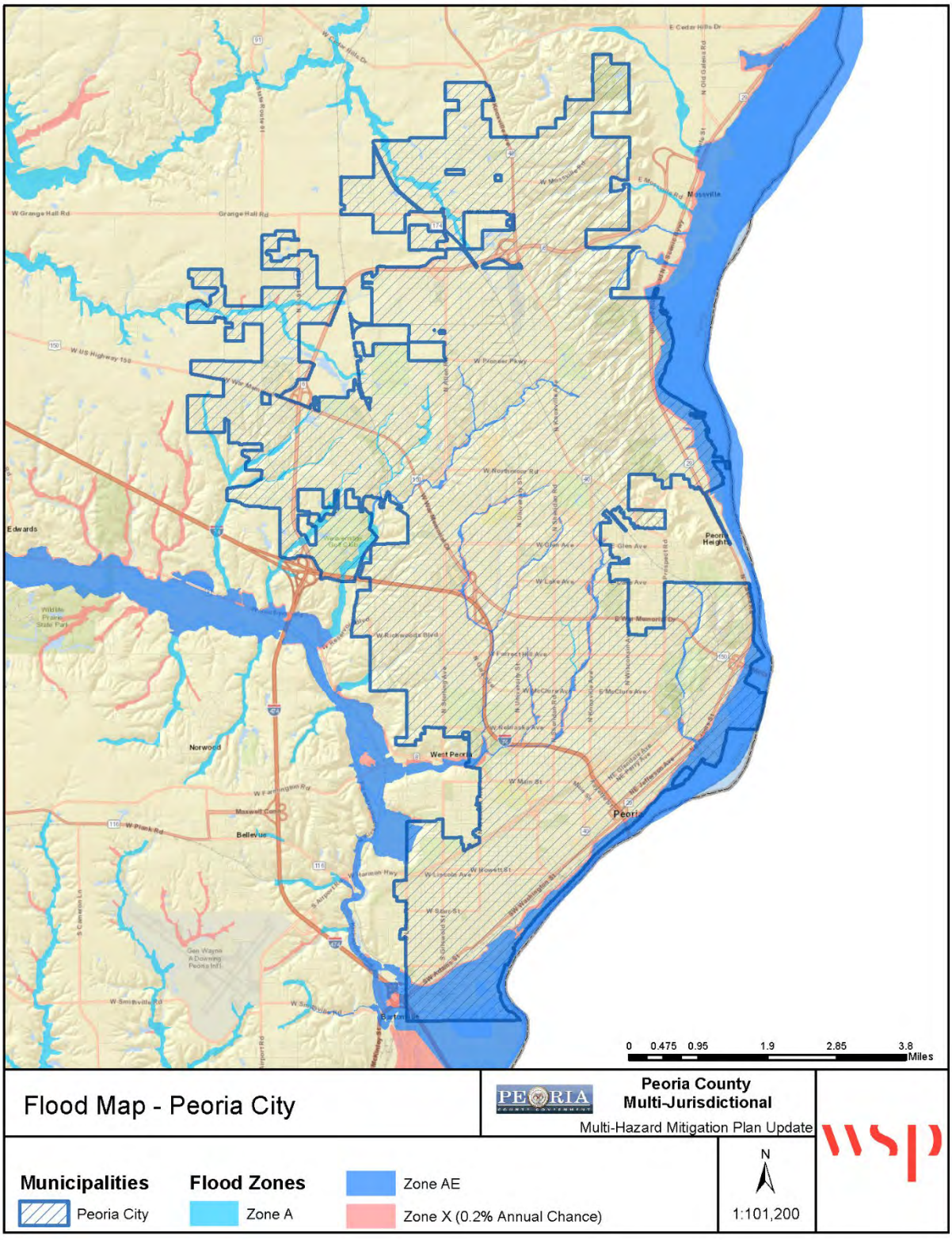


Figure 5.25 – Flood Zones in Village of Peoria Heights

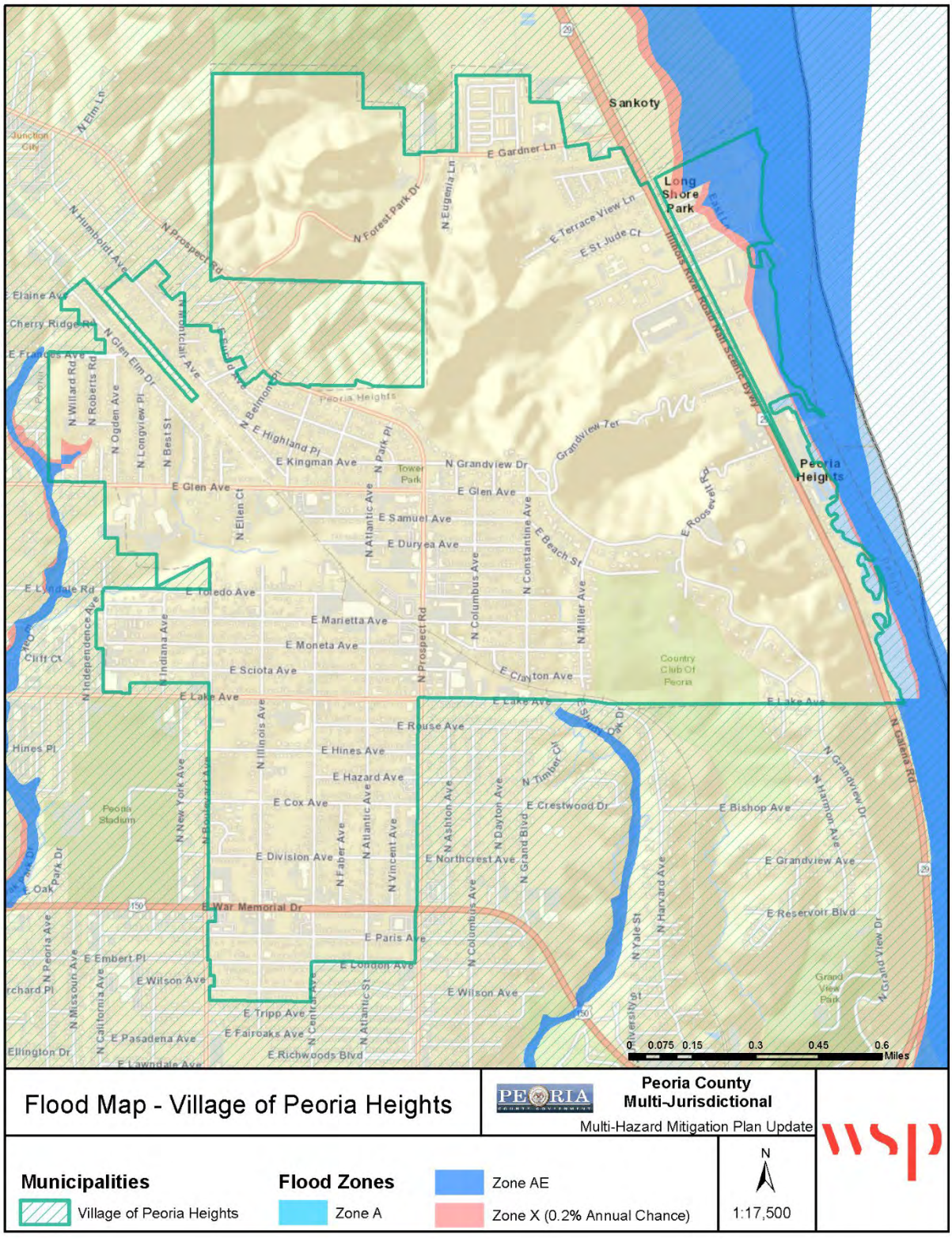
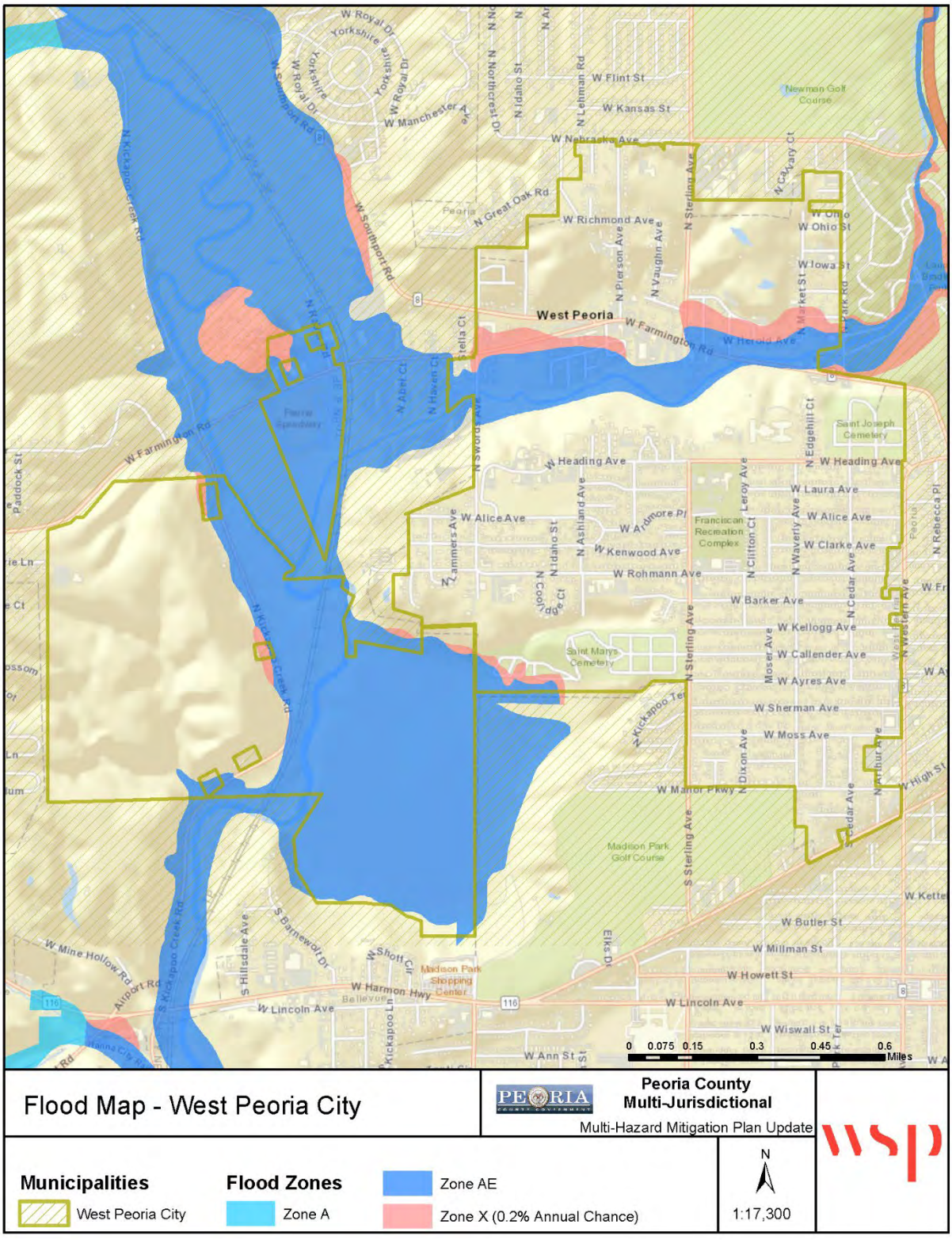


Figure 5.26 – Flood Zones in West Peoria City



Historical Occurrences

According to the NCEI Storm Events Database, Peoria County has experienced 44 flood-related events, including 34 flash flood events, since 1996, as detailed in Table 5.29. Note that only those historical occurrences listed in the NCEI database are shown here, and other unrecorded or unreported events may have occurred within the planning area during this timeframe.

Table 5.29 – NCEI Recorded Flooding Events, 1996-2020

Location	Date	Deaths/Injuries	Reported Property Damage	Reported Crop Damage
Flash Flood				
Mossville (Peoria County)	6/6/1996	0/0	$0	$0
Countywide	5/11/2002	0/0	$0	$0
Rome (Peoria County)	7/9/2003	0/0	$0	$0
South Portion (Peoria County)	5/18/2004	0/0	$0	$0
Peoria	5/30/2004	0/0	$0	$0
Brimfield (Peoria County)	5/30/2004	0/0	$0	$0
(PIA) Gtr Peoria Arpt	9/12/2008	0/0	$0	$0
Peoria	9/13/2008	0/0	$0	$0
Elmore (Peoria County)	5/15/2009	0/0	$0	$0
Elmore (Peoria County)	5/15/2009	0/0	$0	$0
Elmore (Peoria County)	5/13/2010	0/0	$0	$0
Elmore (Peoria County)	5/25/2010	0/0	$0	$0
Elmore (Peoria County)	6/2/2010	0/0	$0	$0
Elmwood (Peoria County)	6/22/2010	0/0	$0	$0
North Chillicothe	6/23/2010	0/0	$0	$0
Kickapoo (Peoria County)	6/15/2011	0/0	$0	$0
Sankoty (Peoria County)	4/17/2013	0/2	$100,000,000	$0
Elmore (Peoria County)	5/26/2013	0/0	$0	$0
Elmore (Peoria County)	6/24/2013	0/0	$30,000,000	$0
Southport (Peoria County)	6/7/2014	0/0	$0	$0
Rome (Peoria County)	6/7/2015	0/0	$0	$0
Elmore (Peoria County)	6/10/2015	0/0	$0	$0
Elmore (Peoria County)	6/14/2015	0/0	$0	$0
Glasford (Peoria County)	6/28/2015	0/0	$0	$0
Flood				
Peoria (Zone)	2/21/1997	0/0	$0	$0
Peoria (Zone)	3/1/1997	0/0	$0	$0
Peoria (Zone)	5/14/2002	0/0	$0	$0
Elmore (Peoria County)	3/10/2009	0/0	$0	$0
Sankoty (Peoria County)	4/18/2013	0/0	$0	$0
North Chillicothe	4/19/2013	0/0	$0	$0
North Chillicothe	5/1/2013	1/0	$28,000,000	$0
Elmore (Peoria County)	5/27/2013	0/0	$0	$0
Edelstein (Peoria County)	4/29/2017	0/0	$0	$0
Chillicothe	6/17/2017	0/0	$0	$0
	Total	**1/2**	**$158,000,000**	**$0**

Source: NCEI

According to NCEI, 44 recorded flood-related events occurring across 40 separate days affected the planning area in the 25-year period from 1996 through 2020. These events caused an estimated $158,000,000 in property damage, with 2 direct injuries and 1 fatality. These records do not specifically note flood impacts in all participating jurisdictions, but there are several countywide events on record.

The following event narratives are provided from the NCEI Storm Events Database to illustrate the impacts of flood events on the county:

June 6, 1996 - Several homes sustained minor flood damage when between 3 and 4 inches of rain fell in a short amount of time in Mossville. Route 29 was flooded for a while. The flooding uprooted numerous trees which were strewn over the Route 6. No injuries were reported and no damage estimate was available.

February 21, 1997 - A strong storm system produced very heavy rainfall along the Illinois River basin on the 20th and 21st. The area received 2-day totals of 3 to 4.5 inches of rain, which fell on frozen grounds. This caused numerous tributaries of the Illinois River to flood and in response the Illinois River began to rise. It rose over flood stage in Havana on the 21st, on the 22nd in Henry and Peoria, and on the 23rd in Beardstown. Another storm system moved through central Illinois on the 26th and produced between 1 and 2 inches of rain over the Illinois River basin, which just aggravated the flooding situation. The result was the 6th worst flood in history at Peoria and the 7th worst flood in history at Henry. The river was continuing to rise at the end of February with the crests to occur in the beginning of March. All points along the Illinois River crested by March 6th. Several homes just south of Spring Bay were flooded as well as several homes in Liverpool. No damage estimate was available.

March 1, 1997 - Flooding continued along the Illinois River in March with the river cresting at Henry on the 2nd, Peoria on the 3rd, Havana on the 4th, and at Beardstown on the 6th. It took over two weeks to a month for the river to fall below flood stage. It was the 6th worst flood in history for Peoria and the 7th worst flood in history for Henry. A few homes in Henry were inundated by flood waters and a few buildings on the east side of Sparland were damaged. Also, some homes immediately adjacent to the river in Peoria experienced minor property damage and some residences in Liverpool were flooded. No damage estimate was available.

May 14, 2002 - After several rounds of precipitation over Central Illinois during the first couple weeks of May, area rivers rose above flood stage at most locations. The following rivers were in flood during May: Spoon River, Illinois River, Mackinaw River, Sangamon River, Embarras River and the Little Wabash. The death of the 8-year-old boy in Mason County occurred when he was playing in a boat that was tied to the shore in a flooded part of the Illinois River. The rope got loose and the boat started to drift away. He panicked and jumped into the water and drowned. As far as property damage is concerned, few homes were affected despite record or near record crests on many of the rivers in Central Illinois. Since the 1993 floods, many levees were built or existing ones were extended to prevent widespread flooding. The Mechanicsburg (Sangamon Co.) water treatment plant was inundated on the 13th by the Sangamon River. Also, several homes in the Riverton and Rochester areas were flooded due to the Sangamon River. In Cass County, the Bell Levy near Chandlerville was breached on the 15th. This caused Illinois Route 78 to be closed and seven homes were affected by the water. In southeastern Illinois, the Embarras River crested at a record 24.27 feet on May 16th in Lawrenceville. Several homes in town near the river were flooded. In

southwestern Crawford County, a levy on the Embarras River near Landes was breached on the evening of the 14th. No structures were threatened, but several roads and farm fields in the area were flooded.

May 15, 2009 - Heavy rain of 2.00 to 3.00 inches on already saturated ground produced widespread flash flooding of most roads across western Peoria County. U.S. Route 150 from 2 miles west of Brimfield to 1 mile east of Brimfield was impassible. Another round of thunderstorms with 1.00 to 1.50 inches of rain resulted in renewed flash flooding in western Peoria County. The heavy rain caused many roads, particularly in rural areas, to be impassible.

May 25, 2010 - A slow moving single cell thunderstorm, which also spawned a brief landspout tornado northwest of Princeville, produced nearly 3.00 inches of rain in one hour across a small part of northwest Peoria County. Most rural roads were inundated from the heavy rain. Illinois Route 91 north of Princeville, and Illinois Route 90 between Princeville and Laura were closed due to the flooding.

June 23, 2010 - Rainfall amounts of 1.50 to 2.00 during the evening fell on saturated ground from previous flooding. This resulted in widespread flash flooding across nearly all of Peoria County, including the city of Peoria. Many streets in Peoria were flooded, which caused vehicles to become stranded and forced up manhole covers. Outside of the city, many rural roads were impassable, as were portions of State Highway 8, 28, 90, 91 and 116.

June 15, 2011 - Thunderstorms moved along the Illinois River, producing a band of heavy rainfall in eastern Peoria County and the city of Peoria during the early morning hours. More than 2.50 of rain occurred in less than 90 minutes after Midnight LST. Many streets in Peoria were flooded, and numerous rural roads were impassable.

April 17/18, 2013 - Torrential rainfall of 4.00 to 8.00 inches resulted in damage to thousands of houses and businesses in the county, including the city of Peoria where two houses collapsed into the basement injuring two people. Every creek and stream in the county was flooded. Nearly every road in the county was impassable, including parts of Interstate 74 which had to be closed. Numerous water rescues were made. Mudslides were also reported along the eastern bluffs along the Illinois River. The flash flooding was so significant that creeks stayed in flood and most roads remained closed until the afternoon of April 22nd.

April 19, 2013 - Numerous homes along the Illinois River in Chillicothe, Rome, Mossville and Mapleton suffered damage due to record river levels. Several businesses along the Illinois River in downtown Peoria were also damaged by the flooding. The river stage at Peoria climbed to a record level of 29.35 feet on April 23rd at 19:30 local time, which was nearly 12 feet above flood stage. High impact flooding continued into the month of May 2013.

May 1, 2013 - High impact flooding on the Illinois River continued from April.
Numerous homes along the Illinois River in Chillicothe, Rome, Mossville and Mapleton suffered flood damage due to record river levels. Several businesses were damaged, and numerous streets were flooded, along the Illinois River in downtown Peoria. A total of 505 homes and businesses were damaged by the flooding in Peoria County. Early in the morning on May 4th a man drowned when he drove his vehicle into

the floodwaters northeast of downtown Peoria. High impact flooding subsided when the river level at Peoria fell below a stage of 22 feet on May 8th.

June 24, 2013 - Thunderstorms moving over the same areas multiple times resulted in 3.00 to 7.50 inches of rain in the northeast half of Peoria County during the early morning hours of June 24th. The locations that experienced the greatest impacts from the flooding included Princeville, Rome, Mossville, Dunlap and the north and west portions of the city of Peoria. Multiple roads were closed, motorists were stranded, and homes were flooded. Several state highways were impassable, including Highway 6, 29, 40, 78, 90 and 91. A box culvert was also damaged on a rural road outside of Princeville. This was the second major flash flood to impact Peoria County since mid-April. Most of the flash flooding subsided by mid-afternoon.

June 7, 2014 - Persistent thunderstorms produced 2.50 to 4.00 inches of rain in a large part of Peoria County late in the evening of June 7th. This resulted in flash flooding in the western and northern sections of the city of Peoria, as well as rural roads and highways in central Peoria County. Sections of Illinois Route 116 and Route 8 were closed toward Hanna City and Edwards. Roads in the northern suburbs of Peoria, toward Alta and Dunlap were also impassable due to the flooding.

June 7, 2015 - Thunderstorms produced 2.50 to 5.00 of rainfall in a large part of Peoria County, including the city of Peoria, between 1800 and 2000 local standard time. Flash flooding rapidly developed, which made many streets impassable on the south side of Peoria. U.S. Highway 24 near the Fulton/Peoria County line to Bartonville was also impassable. Most secondary roads in rural areas were also inundated from Bartonville to Smithville and Kickapoo to Mossville.

June 10, 2015 - Heavy rainfall of 2.50 to 5.00 was measured in a large part of Peoria County, mainly outside the city of Peoria, on ground already saturated from flooding three days prior. Parts of Illinois Routes 8, 29, 40, 6, 90 and 91 were impassable. Streets in Chillicothe, Mossville, Princeville and Elmwood were also flooded.

June 17, 2017 – Torrential rainfall of 2.00 to 3.00 inches was reported within a 90-minute period during the evening hours, which resulted in rapid flash flooding. Numerous streets from the northwest side of Peoria to Dunlap, and in the village of Chillicothe were flooded. Several county highways were also impassable from Kickapoo to Mossville. Additional rainfall during the late evening and overnight hours kept many roads flooded. The flooding subsided by daybreak on June 18th.

May 29, 2019 – A line of thunderstorms produced nearly 2.00 inches of rain in less than one hour during the late evening of May 28th. Due to recent heavy rain and an already saturated ground, flash flooding developed rapidly in Peoria County. Multiple streets were flooded in Peoria, Bellevue and Princeton, and numerous rural roads were impassable. The flooding subsided during the early morning hours of May 29th.

May 25, 2020 – Scattered strong to severe thunderstorms developed along residual outflow boundaries from previous convection during the late afternoon and evening of May 25th. Despite weak wind shear and slow storm-movement, some of the cells produced wind gusts of 50-60 mph which created pockets of wind damage. In addition, locally heavy rainfall of 2 to 3 inches caused flash flooding from East Peoria

eastward to near Roanoke in Woodford County. Two feet of water was standing at the intersection of Central Avenue and East Tripp Avenue.

August 2, 2022 – A persistent frontal boundary draped across central Illinois continued to be the focus for strong to severe thunderstorm development during the morning of August 2nd. A low-level jet interacting with the boundary triggered the first cluster of storms across portions of Sangamon and Logan counties during the pre-dawn hours, with additional cells forming from Galesburg to near Lawrenceville as the morning progressed. The storms gradually dissipated and shifted east of the region by early afternoon. Scattered wind damage and flash flooding occurred. North Sommer Street was closed between Pioneer Parkway and Candletree Drive due to flooding.

Figure 5.27 - April 19, 2013, Flood Event, Homes along Route 29 toward Mossville, Rome and Chillicothe

Source: Peoria Journal Star; http://blogs.pjstar.com/eye/2013/04/22/peoria-flood-from-the-air/

National Flood Insurance Program (NFIP) Participation

Peoria County currently participates in the National Flood Insurance Program (NFIP) and is rated Class 5 in the Community Rating System. This class rating results in a 25% reduction in flood insurance premiums for NFIP policy holders. Tables 5.30 through 5.50 provide additional details on NFIP participation as well as flood insurance policies and claims for the County categorized by occupancy type, flood zone, Pre-FIRM and Post-FIRM. It is likely that many additional instances of flood loss in Peoria County were either uninsured, denied claims payment, or not reported.

Table 5.30—NFIP Policy and Claims Data

Jurisdiction	Status/Date	Effective FIRM Date	Policies in Force (6/6/2016)	Insurance in Force ($)	Number of Paid Losses Since 1978	Total Losses Paid ($)	Substantial Damage Claims Since 1978
Unincorporated Peoria County	--	06/01/1983	192	$28,210,000.00	1,812	$16,999,287.35	159
Bartonville		11/02/1983	5	$1,106,000.00	24	$66,225.22	0
Chillicothe		02/02/1977	13	$2,542,000.00	167	$1,419,236.06	10
Hanna City		-	-	-	-	-	
Peoria, City of		02/01/1980	114	$24,580,000.00	429	$3,174,887.30	18
Peoria Heights		02/17/2017	25	$4,358,000.0	368	$3,665,670.83	32
West Peoria		-					
Peoria Park District		-					
Greater Peoria Sanitary District		-					

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.31—NFIP Policy and Claims Data by Occupancy Type, PEORIA COUNTY

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
Single Family	180	$130,179	$26,350,000	1,612	$14,324,821.64
2-4 Family	4	$1,737	$447,000	34	$436,493.50
All Other Residential	0	$0	$0	16	$187,841.33
Non-Residential	8	$20,026	$1,413,000	149	$2,043,229.8
TOTAL	192	$151,942	$28,210,000	1,811	$16,992,386.35

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.32—NFIP Policy and Claims Data by Flood Zone, PEORIA COUNTY

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	145	$112,455	$17,469,000	1,426	$13,379,681.27
A Zones	12	$20,124	$2,130,000	225	$1,615,561.78
B, C, & X Zones					
- Standard	35	$19,363	$8,611,000	37	$402,091.15
- Preferred	0	$0	$0	12	$88,693.01
TOTAL	192	$151,942	$28,210,000	1,700	$15,486,027.21

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.33—NFIP Policy and Claims Data by Flood Zone, Pre-Firm, PEORIA COUNTY

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	126	$103,964	$13,314,000	1,370	$12,099,786.54
A Zones	8	$7,654	$955,000	219	$1,442,478.14
B, C, & X Zones	14	$10,287	$3,367,000	44	$449,000.44
- Standard	14	$10,287	$3,367,000	37	$402,091.15
- Preferred	0	$0	$0	7	$46,909.29
TOTAL	148	$121,905	$17,636,000	1,633	$13,991,265.12

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.34—NFIP Policy and Claims Data by Flood Zone, Post-Firm, PEORIA COUNTY

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	19	$8,491	$4,155,000	56	$1,279,894.73
A Zones	4	$12,470	$1,175,000	6	$173,083.64
B, C, & X Zones	21	$9,076	$5,244,000	5	$41,783.72
- Standard	21	$9,076	$5,244,000	0	$0.00
- Preferred	0	$0	$0	5	$41,783.72
TOTAL	44	$30,037	$10,574,000	67	$1,494,762.09

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.35—NFIP Policy and Claims Data by Occupancy Type, BARTONVILLE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
Single Family	3	$1,438	$206,000	7	$45,126.95
2-4 Family	0	$0	$0	3	$2,985.35
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	2	$2,841	$900,000	4	$18,112.92
TOTAL	5	$4,279	$1,106,000	14	$66,225.22

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.36—NFIP Policy and Claims Data by Flood Zone, BARTONVILLE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	4	$4,111	$1,056,000	5	$27,000.13
A Zones	0	$0	$0	6	$6,955.54
B, C, & X Zones					
- Standard	1	$168	$50,000	0	$0.00
- Preferred	0	$0	$0	1	$29,978.56
TOTAL	5	$4,279	$1,106,000	12	$63,934.23

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.37—NFIP Policy and Claims Data by Flood Zone, Pre-Firm, BARTONVILLE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	3	$1,438	$206,000	4	$27,000.13
A Zones	0	$0	$0	6	$6,955.54
B, C, & X Zones	1	$168	$50,000	1	$29,978.56
- Standard	1	$168	$50,000	0	$0.00
- Preferred	0	$0	$0	1	$29,978.56
TOTAL	4	$1,606	$256,000	11	$63,934.23

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.38—NFIP Policy and Claims Data by Flood Zone, Post-Firm, BARTONVILLE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	1	$2,673	$850,000	1	$0.00
A Zones	0	$0	$0	0	$0.00
B, C, & X Zones	0	$0	$0	0	$0.00
- Standard	0	$0	$0	0	$0.00
- Preferred	0	$0	$0	0	$0.00
TOTAL	1	$2,673	$850,000	1	$0.00

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.39—NFIP Policy and Claims Data by Occupancy Type, CHILLICOTHE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
Single Family	13	$12,607	$2,542,000	135	$1,072,047.03
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	6	$100,798.12
Non-Residential	0	$0	$0	26	$246,390.91
TOTAL	13	$12,607	$2,542,000	167	$1,419,236.06

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.40—NFIP Policy and Claims Data by Flood Zone, CHILLICOTHE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	9	$10,326	$1,377,000	129	$1,202,649.19
A Zones	0	$0	$0	13	$59,380.62
B, C, & X Zones					
- Standard	4	$2,281	$1,165,000	25	$157,206.25
- Preferred	0	$0	$0	0	$0.00
TOTAL	13	$12,607	$2,542,000	167	$1,419,236.06

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.41—NFIP Policy and Claims Data by Flood Zone, Pre-Firm, CHILLICOTHE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	7	$9,551	$877,000	122	$1,156,437.81
A Zones	0	$0	$0	13	$59,380.62
B, C, & X Zones	1	$481	$115,000	25	$157,206.25
- Standard	1	$481	$115,000	25	$157,206.25
- Preferred	0	$0	$0	0	$0.00
TOTAL	8	$10,032	$992,000	160	$1,373,024.68

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.42—NFIP Policy and Claims Data by Flood Zone, Post-Firm, CHILLICOTHE

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	2	$775	$500,000	7	$46,211.38
A Zones	0	$0	$0	0	$0.00
B, C, & X Zones	3	$1,800	$1,050,000	0	$0.00
- Standard	3	$1,800	$1,050,000	0	$0.00
- Preferred	0	$0	$0	0	$0.00
TOTAL	5	$2,575	$1,550,000	7	$46,211.38

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.43—NFIP Policy and Claims Data by Occupancy Type, CITY OF PEORIA

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
Single Family	48	$34,366	$9,023,000	291	$1,797,033.84
2-4 Family	4	$1,325	$910,000	25	$97,952.65
All Other Residential	39	$5,979	$4,624,000	1	$1,340.00
Non-Residential	23	$85,567	$10,023,000	112	$1,278,560.81
TOTAL	114	$127,237	$24,580,000	429	$3,174,887.30

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.44—NFIP Policy and Claims Data by Flood Zone, CITY OF PEORIA

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	75	$102,029	$12,295,000	237	$1,628,281.78
A Zones	1	$354	$81,000	31	$160,081.56
B, C, & X Zones					
- Standard	38	$24,854	$12,204,000	90	$373,573.41
- Preferred	0	$0	$0	22	$629,337.97
TOTAL	114	$127,237	$24,580,000	380	$2,791,274.72

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.45—NFIP Policy and Claims Data by Flood Zone, Pre-Firm, CITY OF PEORIA

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	71	$97,697	$11,697,000	235	$1,547,681.78
A Zones	1	$354	$81,000	31	$160,081.56
B, C, & X Zones	26	$13,276	$8,411,000	106	$959,365.34
- Standard	26	$13,276	$8,411,000	87	$330,027.37
- Preferred	0	$0	$0	19	$629,337.97
TOTAL	98	$111,327	$20,189,000	372	$2,667,128.68

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.46—NFIP Policy and Claims Data by Flood Zone, Post-Firm, CITY OF PEORIA

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	4	$4,332	$598,000	2	$80,600.00
A Zones	0	$0	$0	0	$0.00
B, C, & X Zones	12	$11,578	$3,793,000	6	$43,546.04
- Standard	12	$11,578	$3,793,000	6	$43,546.04
- Preferred	0	$0	$0	0	$0.00
TOTAL	16	$15,910	$4,391,000	8	$124,146.04

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.47—NFIP Policy and Claims Data by Occupancy Type, PEORIA HEIGHTS

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
Single Family	24	$20,979	$4,035,000	297	$2,461,474.44
2-4 Family	0	$0	$0	1	$2,065.00
All Other Residential	0	$0	$0	23	$269,031.93
Non-Residential	1	$13,352	$323,000	47	$933,099.46
TOTAL	25	$34,331	$4,358,000	368	$3,665,670.83

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.48—NFIP Policy and Claims Data by Flood Zone, PEORIA HEIGHTS

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	18	$30,428	$2,341,000	281	$2,895,013.60
A Zones	0	$0	$0	8	$114,477.80
B, C, & X Zones					
- Standard	7	$3,903	$2,017,000	27	$210,779.24
- Preferred	0	$0	$0	7	$46,598.35
TOTAL	25	$34,331	$4,358,000	323	$3,266,868.99

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.49—NFIP Policy and Claims Data by Flood Zone, Pre-Firm, PEORIA HEIGHTS

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	16	$29,860	$2,032,000	280	$2,847,247.76
A Zones	0	$0	$0	8	$114,477.80
B, C, & X Zones	6	$3,359	$1,737,000	32	$251,550.28
- Standard	6	$3,359	$1,737,000	27	$210,779.24
- Preferred	0	$0	$0	5	$40,771.04
TOTAL	22	$33,219	$3,769,000	320	$3,213,275.84

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Table 5.50—NFIP Policy and Claims Data by Flood Zone, Post-Firm, PEORIA HEIGHTS

Structure Type	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Number Total of Closed Paid Loses
A01-30 & AE Zones	2	$568	$309,000	1	$47,765.84
A Zones	0	$0	$0	0	$0.00
B, C, & X Zones	1	$544	$280,000	2	$5,827.31
- Standard	1	$544	$280,000	0	$0.00
- Preferred	0	$0	$0	2	$5,827.31
TOTAL	3	$1,112	$589,000	3	$53,593.15

Source: FEMA Community Information System (CIS), Note: This claims data pre-dates the consideration of the relevant jurisdictions

Repetitive Loss Analysis

A repetitive loss property is a property for which two or more flood insurance claims of more than $1,000 have been paid by the NFIP within any 10-year period since 1978. An analysis of repetitive loss was completed by the County to examine repetitive loss properties against FEMA flood zones. According to 2016 NFIP records, there are a total of 123 mitigated and 126 unmitigated repetitive loss properties within Peoria County. Fifteen properties are classified as severe repetitive loss. Of the fifteen severe repetitive loss properties, five remain unmitigated. The unmitigated repetitive loss properties are located within seven repetitive loss areas. Repetitive loss areas include the individual repetitive loss properties and all nearby properties with the same or similar flooding conditions. The location of repetitive loss areas throughout Peoria County are shown in Figure 5.28 through 5.35.

Figure 5.28— Repetitive Loss Areas in Peoria County

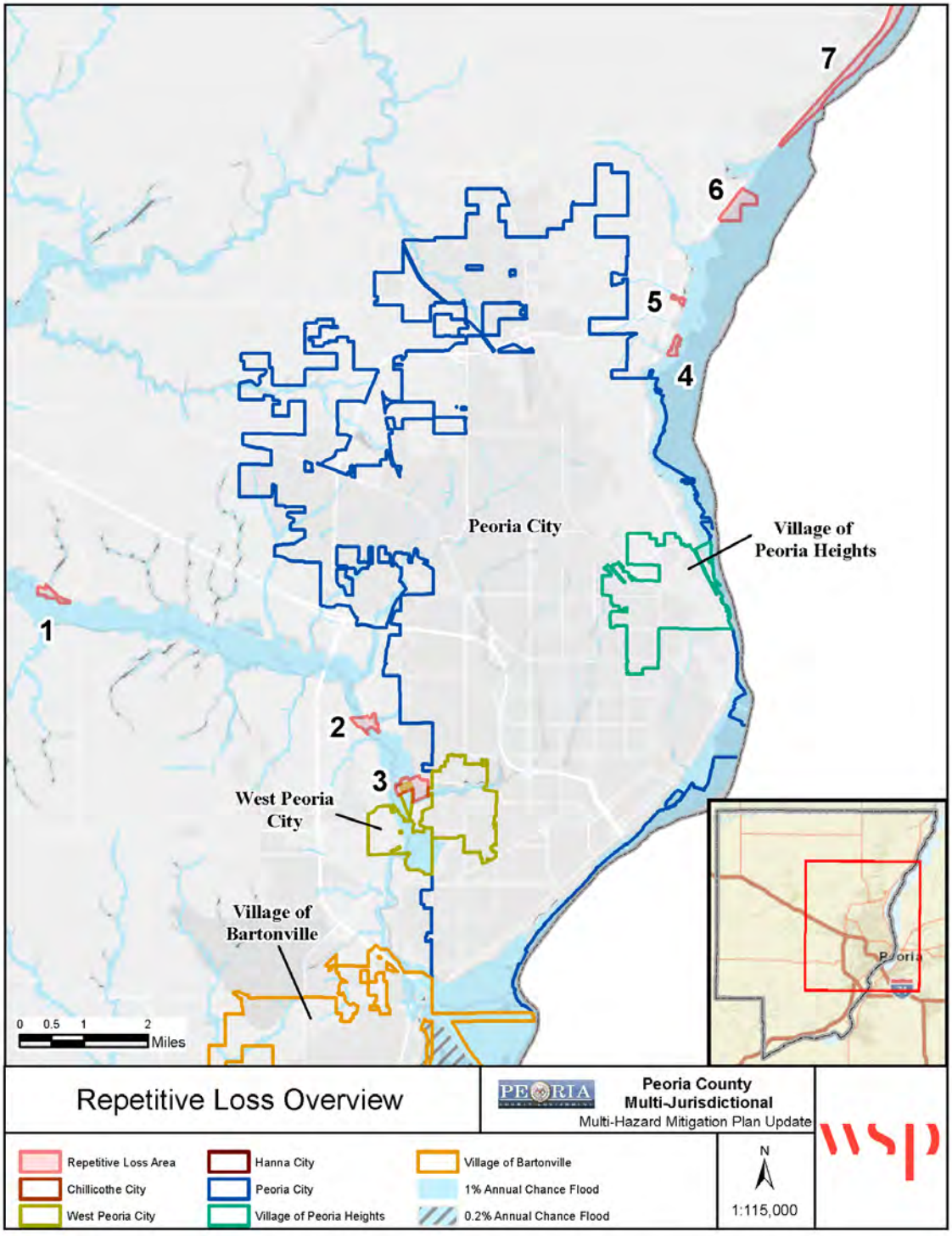


Figure 5.29— Repetitive Loss Area #1, Edwards

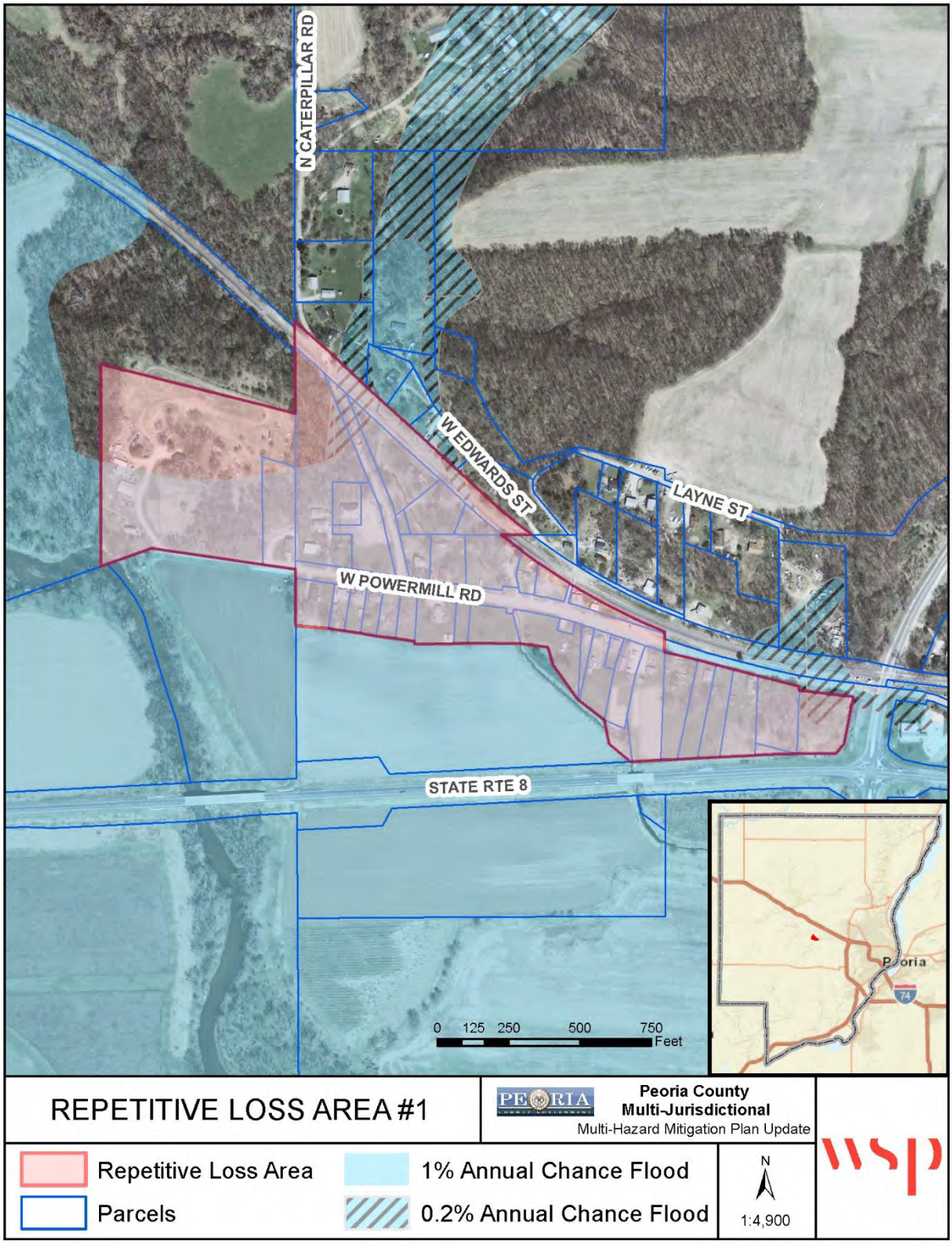


Figure 5.30— Repetitive Loss Area #2, Pottstown

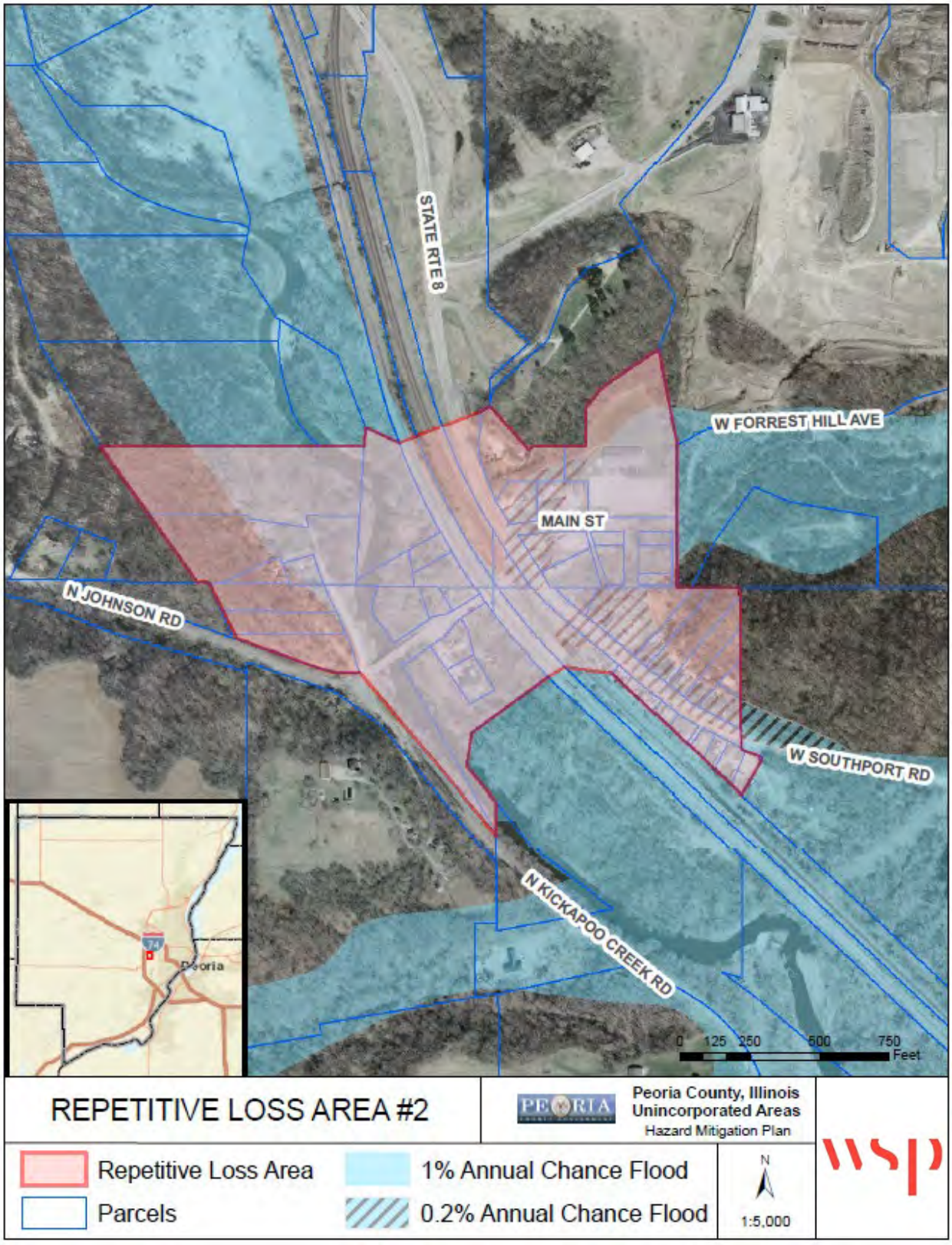


Figure 5.31— Repetitive Loss Area #3, Farmington Road/Kickapoo and Dry Run Creek Confluence

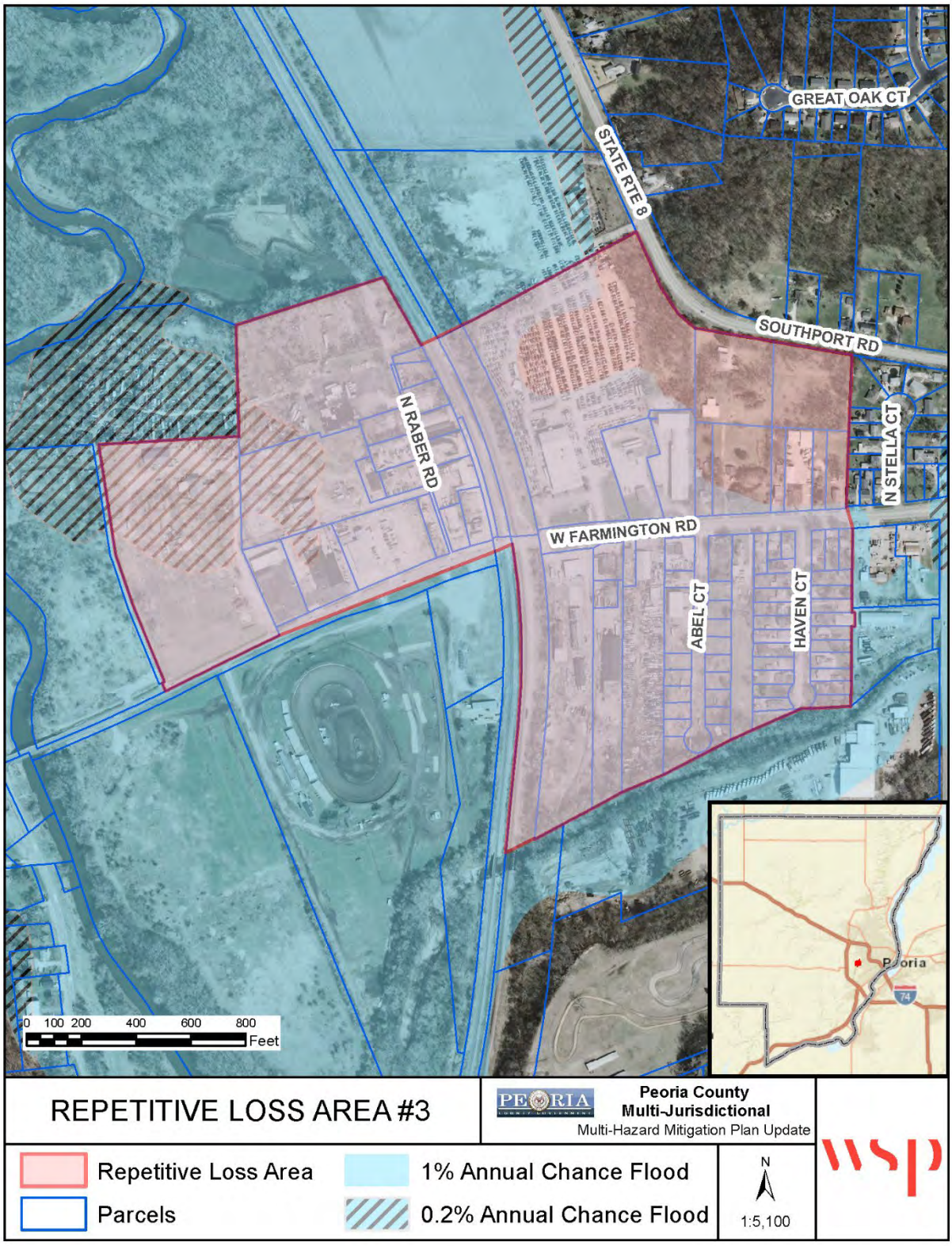


Figure 5.32— Repetitive Loss Area #4, South Mossville

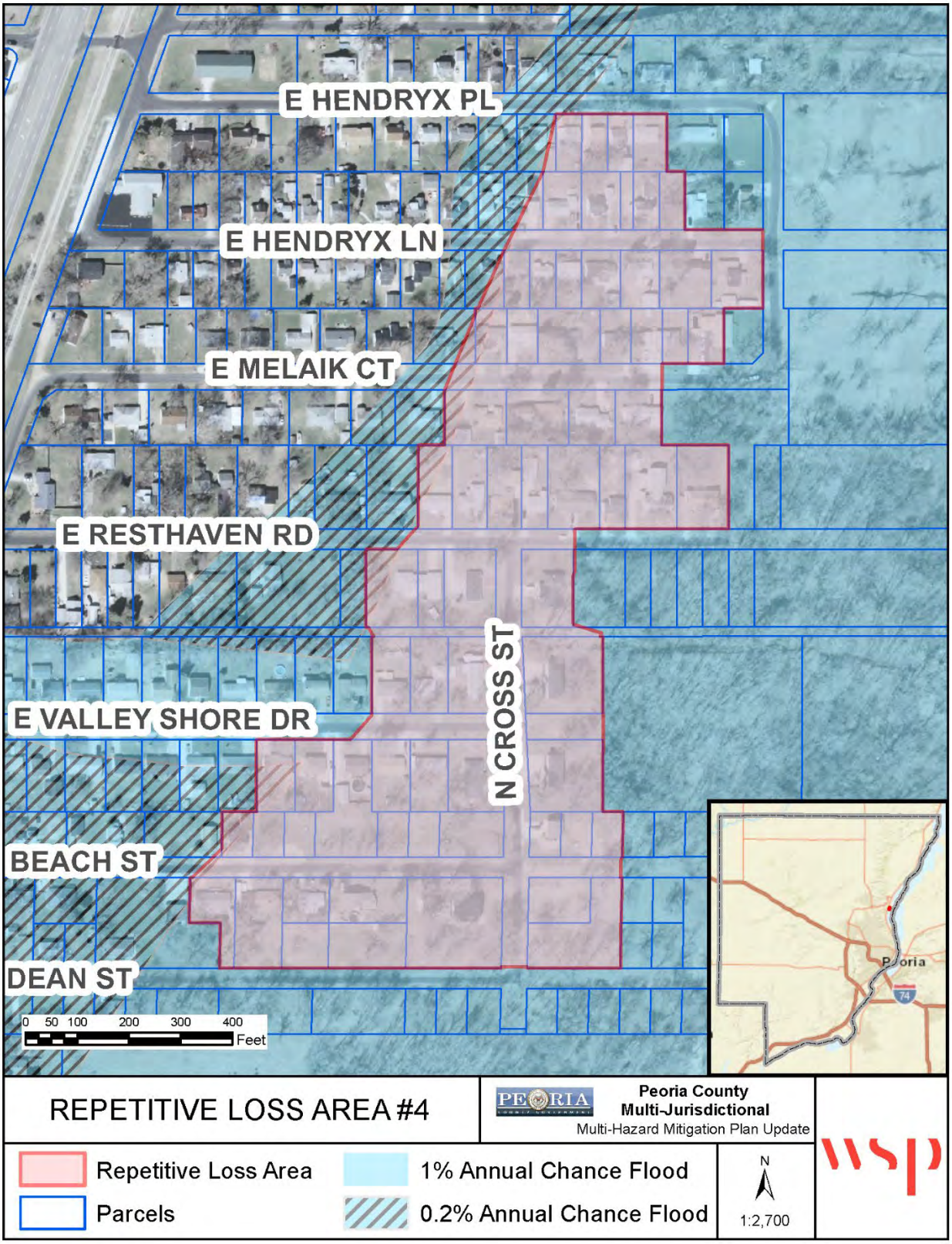


Figure 5.33—Repetitive Loss Area #5, Mossville

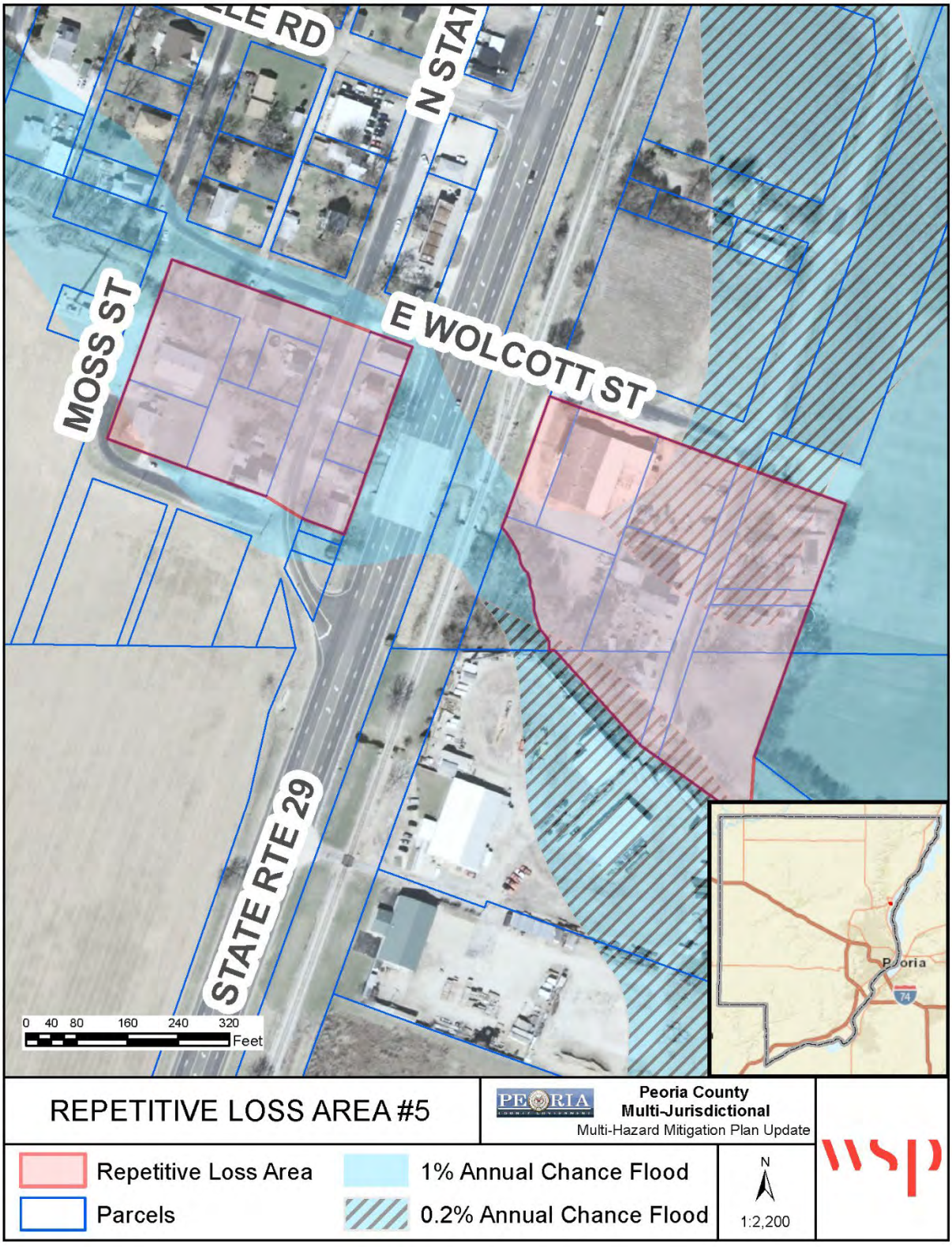


Figure 5.34—Repetitive Loss Area #6, North Mossville

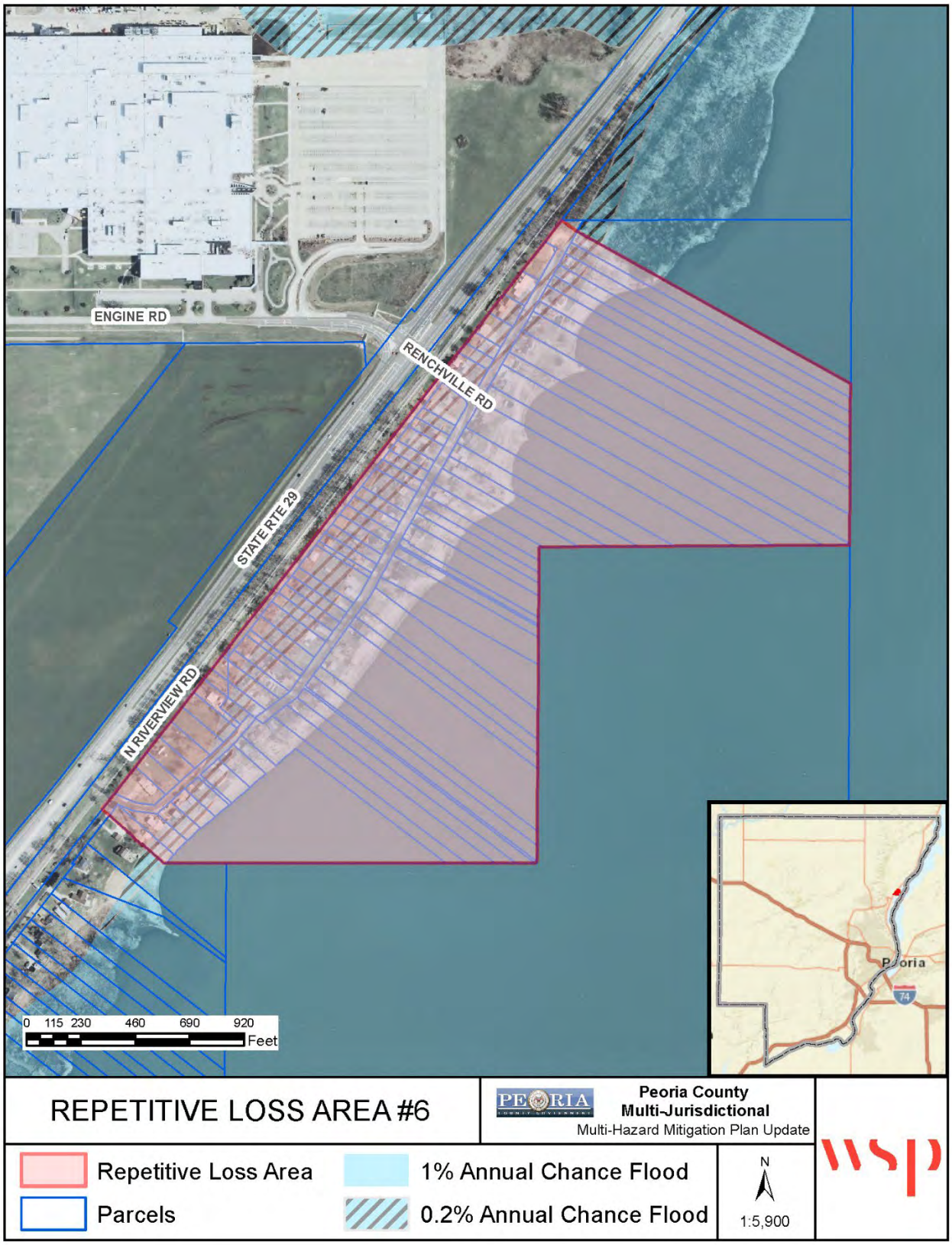
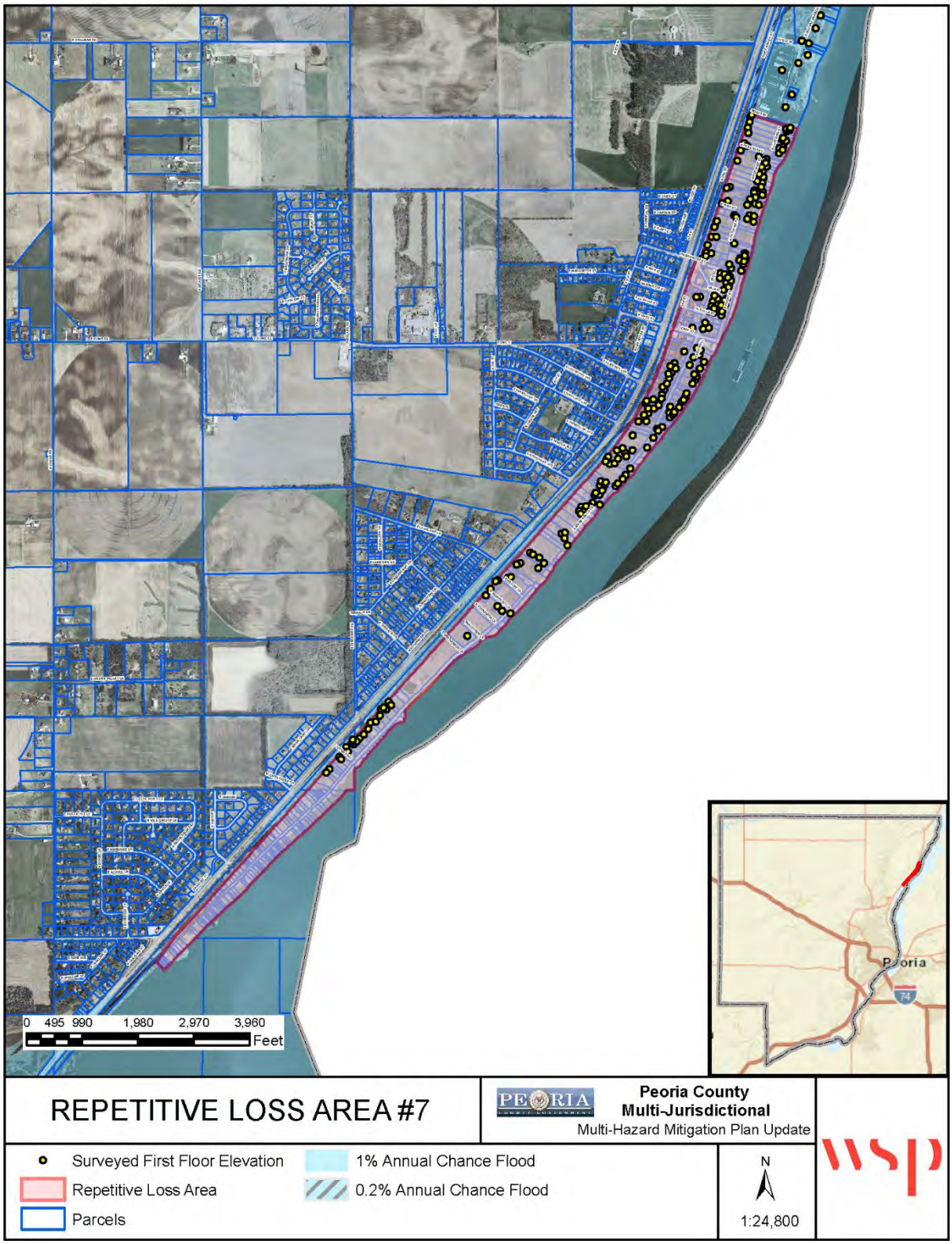


Figure 5.35—Repetitive Loss Area #7, Rome



The table below details the claims data for reach repetitive loss area.

Table 5.51—NFIP Policy and Claims Data by Flood Zone

Repetitive Loss Area	Number of Repetitive Loss Properties	Number of Neighboring Properties	Total Assessed Value	Total Land Value	Total Improvement Value
1	1	38	$280,426	$93,486	$186,940
2	3	44	$451,620	$134,430	$317,190
3	4	83	$1,914,720	$515,090	$1,399,630
4	8	64	$1,569,260	$189,960	$1,379,300
5	2	17	$352,378	$101,128	$251,250
6	11	78	$1,761,550	$295,820	$1,465,730
7	140	279	$8,568,700	$1,273,640	$7,295,060
TOTAL	**174**	**598**	**$14,898,654**	**$2,603,554**	**$12,295,100**

Source: FEMA CIS

Each repetitive flood loss in Peoria County is detailed below:

Repetitive Loss Area 1 - Edwards

Edwards is an unincorporated community within Peoria County. Repetitive flooding has resulted in this area due to the carrying capacity of Kickapoo Creek and following a farm levee breach in 2013 along Kickapoo Creek. Peoria County applied for funding through FEMA's Hazard Mitigation Grant Program (HMGP) to acquire 13 substantially damaged structures within this area including demolition of 9 single family residences.

Repetitive Loss Area 2 - Pottstown

Pottstown is an unincorporated village within Peoria County. The area contains single-family residences in the northern portion and primarily a vegetated area in the southern portion. The Chicago & Northwestern (C&NW) railway and Kickapoo Creek form the eastern and western boundaries of the area, respectfully. Repetitive flooding has resulted in this area due to flooding along the Kickapoo Creek, structures along the east bank are located below the elevation of the creek. Once floodwaters overtop the east bank, prolonged inundation occurs.

Repetitive Loss Area 3 – Farmington Road/Kickapoo and Dry Run Creek confluence

This area includes approximately 128 acres bound by Kickapoo Creek on the west, Dry Run Creek along the south, and State Route 8 along the northeast. This area north of Dry Run Creek contains commercial businesses and family residences.

Residential subdivisions located along Dry Run Creek are affected by stormwater runoff originating from the West Bluff Area. These residential locations are also regularly subjected to sheet flooding as well as storm sewer backups.

Repetitive Loss Areas 4, 5, 6 and 7 – Rome and Mossville Areas

Repetitive flooding for Areas 4, 5, 6 and 7 is due to the Illinois River, which forms the eastern border of Peoria County. Flooding along the river is normally a slow event, caused by rain upstream of Peoria County as it makes its way down the river for eventual inundation of areas including Chillicothe, Rome, Mossville, Peoria, and Mapleton. In addition, the Illinois River is fed by seven major streams within unincorporated Peoria County, including Kickapoo Creek. Catastrophic flood events have occurred within these Repetitive Loss Areas in 1979, 1982 (2 events), 1983, 1995, and 2013, with the April 2013 flood event inundated over 300 properties, causing over 2.5 million dollars in damages.

These Repetitive Loss Areas include industrial, commercial and residential development. Industrial development began due to the access of transporting raw materials to local companies by the use of barges. Commercial development was fostered with the uprising popularity of water-related activities such as boating and fishing. Residential development occurred as homes were constructed as summer cottages. Many houses were located along the river to take advantage of the various amenities associated with the close proximity to the river.

Probability of Future Occurrence

By definition, SFHAs are those areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year, and the Shaded X Zone is the area that will be inundated by the flood event having a 0.2-percent chance of being equaled or exceeded in any given year. This delineation is a useful way to identify the most at-risk areas. However, flooding does not occur in set intervals; any given flood may be more or less severe than the defined 1-percent-annual-chance flood. There is also risk of localized stormwater flooding in areas outside the SFHA and at different intervals than the 1-percent-annual-chance flood.

Floods of varying severity occur regularly in Peoria County. NCEI reports 44 flood-related events in the 20-year period from 2002 through 2022, which equates to an annual probability of 220%, or an average of 2.2 flood events per year. Overall, flood events remain a threat in Peoria County, and the probability of future occurrences remains highly likely. Flood events will continue to occur with varying magnitudes and probabilities. It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk and probability varies throughout Peoria County.

The probability was assigned a rank of **high**:

- **High -** More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)

Climate Change

According the 2014 Climate Change Fact Sheet from the White House, Office of the Press Secretary, for Illinois and the Midwest, extreme rainfall events and flooding have increased during the last century, and these trends are expected to continue, causing erosion, declining water quality, and negative impacts on transportation, agriculture, human health, and infrastructure. In addition, flooding in local areas can be affected by multiple factors, including land-use change, dams, and diversions of water for use. Most significant are increasing trends for floods in Midwest and Northeast, and a decreasing trend in the Southwest.

Consequence Analysis

Category	Consequences
Public	Localized impact expected to be severe for flooded areas. People may become stranded in their homes or vehicles. Flooding may cause injuries or loss of life. People may also suffer large financial losses, especially if they do not have flood insurance for their home and/or contents.
Responders	First responders are at risk when attempting to rescue people from their homes or vehicles. They are subject to the same health hazards as the public. Flood waters may prevent access to areas in need of response or the flood may prevent access to the critical facilities themselves which may prolong response time.
Continuity of Operations (including Continued Delivery of Services)	Floods can severely disrupt normal operations, especially when there is a loss of power or when flooding blocks access to facilities or travel routes. Damage to facilities in the affected area may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities may postpone delivery of some services.
Property, Facilities and Infrastructure	Buildings and infrastructure, including transportation and utility infrastructure, may be damaged or destroyed. Impacts are expected to be localized to the area of the incident. Severe damage is possible.
Environment	Chemicals and other hazardous substances may contaminate local water bodies. Wildlife and livestock deaths are possible. Flooding may adversely impact crops and other vegetation through inundation and impacts to the soil. Conversely, flooding in wetlands can support biodiversity and may control invasive water weeds.
Economic Condition of the Jurisdiction	Local economy and finances will be adversely affected, possibly for an extended period of time. During floods (especially flash floods), roads, bridges, buildings and vehicles can be destroyed. Businesses may need to shut down if they are damaged. According to the NFIP, almost 40 percent of small businesses that are impacted by a flood never reopen their doors. It may take years for affected communities to rebuild and recover and for business to return to normal.
Public Confidence in the Jurisdiction's Governance	Public confidence is often impacted by flood events, especially when impacted individuals do not have flood insurance, or when government aid for recovery is needed, which can be a difficult process to navigate. The ability to respond and recover may be questioned and challenged if planning, response, and recovery are not timely and effective.

Vulnerability Assessment

Methodology & Assumptions

WSP performed a Level 2 flood loss analysis in Hazus 4.2 by leveraging tax parcel data provided by Peoria County. WSP leveraged a depth raster for all Zone AE portions of the SFHA as well as areas of Zone A with base flood elevations made available in the FEMA database; this depth raster was then loaded in Hazus along with the parcel data. An additional depth raster was available for the 0.2% annual chance flood, and also included areas of the Shaded X Zone. Losses were calculated based on Hazus standard depth damage functions. Only areas that were contained within the extent of available LiDAR (and by extension the depth grid) were analyzed; this accounted for 99% of all structures in the SFHA and Shaded X Zone with available base flood elevations.

Flood damage is directly related to the depth of flooding by the application of a depth damage curve. In applying the curve, a specific depth of water translates to a specific percentage of damage to the structure, which translates to the same percentage of the structure's replacement value. Table 5.52 provides the depth damage factors that were used to calculate flood losses for the planning area. These depth damage factors are based on the default depth damage curve in Hazus.

Table 5.52 – Depth Damage Percentages

Depth (ft)	Percent Damaged (%)						
	Agricultural	Commercial	Education	Government	Industrial	Religious	Residential
0	0	1	0	0	1	0	18
1	6	9	5	5	10	10	22
2	11	14	7	8	12	11	25
3	15	16	9	13	15	11	28
4	19	18	9	14	19	12	30
5	25	20	10	14	22	12	31
6	30	23	11	15	26	13	40
7	35	26	13	17	30	14	43
8	41	30	15	19	35	14	43
9	46	34	17	22	29	15	45
10	51	38	20	26	42	17	46
11	57	42	24	31	48	19	47
12	63	47	28	37	50	24	47
13	70	51	33	44	51	30	49
14	75	55	39	51	53	38	50
15	79	58	45	59	54	45	50
16	82	61	52	65	55	52	50
17	84	64	59	70	55	58	51
18	87	67	64	74	56	64	51
19	89	69	69	79	56	69	52
20	90	71	74	83	57	74	52
21	92	74	79	87	57	78	53
22	93	76	84	91	57	82	53
23	95	78	89	95	58	85	54
24	96	80	94	98	58	88	54

Source: Hazus

People

Flood events pose many threats to public health and safety. While such problems are often not reported, three general types of health hazards accompany floods: physical hazards from the water itself, environmental hazards in the aftermath of the flood, and long-term psychological hazards. These common health and safety hazards are detailed below:

- **Contaminated water**: Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept or where their wastes are stored can contribute polluted waters to the receiving streams. Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines, or wastewater treatment plants may be flooded or over loaded. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E.coli and other disease causing agents. Private sewer and septic systems may also introduce pollutants into floodwaters. Private wells may become contaminated through infiltration of polluted water. Given the many potential sources of contamination, direct or indirect contact with floodwaters poses a significant health risk for contraction of infectious disease.
- **Debris**: During a flood, debris carried by floodwaters can cause physical injury from impact. During the recovery process, people may often need to clear debris out of their properties but may encounter dangers such as sharp materials or rusty nails that pose a risk of tetanus.

- **Unsafe food**: If floodwaters come into contact with food items, that food may no longer be safe for consumption due to the potential contaminants in the floodwaters. Foods stored in cardboard, plastic bags, jars, bottles, and paper packaging may all be subject to contamination. Even if foods don't come into direct contact with floodwaters, the introduction of mold and mildew from flooding may cause foods to spoil faster. Additionally, power outages may cause refrigerated and frozen foods to spoil.
- **Mosquitos and animals**: After most of the water has receded, stagnant pools can become breeding grounds for mosquitoes, which may carry infectious diseases such as West Nile virus or St. Louis encephalitis. Wild animals such as snakes or rodents may carried by floodwaters or lose their habitat and seek shelter in buildings. Snakes may also be swimming in floodwaters seeking higher ground. People may be at risk for bites or disease if they come in contact with these animals or animal carcasses.
- **Mold and mildew**: Areas of a building that were exposed to excessive moisture can breed mold and mildew. Molds can start to grow in only 24 to 48 hours and will continue to grow without steps to dry out and disinfect the affected surface. Some molds are allergens, while others can produce harmful mycotoxins. Exposure to mold can cause respiratory problems; nasal and sinus congestion; eye, nose, and throat irritation; aches and pains; and effects on the nervous system. Infants, children, immunocompromised individuals, elderly adults, pregnant women, and individuals with respiratory conditions are all at higher risk.
- **Reentering a flooded building**: Health hazards may occur when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the public water systems lose pressure, public water supplies may be contaminated, and a boil order may be issued to protect people and animals from contaminated water.
- **Mental stress**: Long-term psychological impacts can result after having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home can also put a severe strain on people, especially individuals who were unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Floods can also result in fatalities. Individuals face high risk when driving through flooded streets.

Another important consideration for the health and safety of residents and visitors is the ability to safely evacuate flooded areas. Peoria County Emergency Services and Disaster Agency coordinates sheltering and evacuation for the planning area.

An estimate of population at risk to flooding was developed based on the Hazus average annualized loss estimates for residential property. Counts of residential buildings at risk were multiplied by the average household size for each jurisdiction, as reported in the 2017-2021 American Community Survey estimates. The resulting estimates of population at risk are shown in Table 5.53. Overall, approximately 8,177 people are exposed to flooding every year.

Table 5.53– Peoria County Population at Risk to Flood

Jurisdiction	Household Factor	Residential Structures at Risk	Population at Risk
Bartonville	2.45	125	307
Chillicothe City	2.18	1	3
Hanna City	1.95	--	--
Peoria	2.30	52	120

Jurisdiction	Household Factor	Residential Structures at Risk	Population at Risk
Peoria County	2.35	3,261	7,664
Peoria Heights	2.03	36	74
West Peoria	2.22	4	9
Total	**--**	**3,479**	**8,177**

Source: FEMA; U.S. Census Bureau 2017-2021 ACS 5-Year Estimates; Hazus Average Annualized Loss

Property

Residential, commercial, and public buildings, as well as critical facilities and infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. Table 5.54. summarizes the property exposure by occupancy for the average annualized loss throughout the planning area. Figure 5.36 depicts the average annualized loss for Peoria County.

Table 5.54 – Property Exposure by Jurisdiction and Occupancy

Occupancy	Structures	Structure Value	Estimated Content Value	Total Value
Chillicothe City	**2**	**$1,255,000**	**$937,000**	**$2,192,000**
Commercial	1	$620,000	$620,000	$1,240,000
Residential	1	$635,000	$317,000	$952,000
Peoria City	**78**	**$45,460,000**	**$35,037,000**	**$80,497,000**
Commercial	22	$22,390,000	$22,390,000	$44,780,000
Government	1	$323,000	$323,000	$646,000
Industrial	2	$1,303,000	$1,303,000	$2,606,000
Religious	1	$599,000	$599,000	$1,198,000
Residential	52	$20,845,000	$10,422,000	$31,267,000
Peoria County	**3,513**	**$1,207,835,000**	**$691,862,000**	**$1,899,687,000**
Agriculture	57	$16,004,000	$16,004,000	$32,008,000
Commercial	129	$80,304,000	$80,888,000	$161,192,000
Education	4	$15,112,000	$15,112,000	$30,224,000
Government	3	$1,193,000	$1,193,000	$2,386,000
Industrial	46	$31,123,000	$41,116,000	$72,239,000
Religious	13	$10,956,000	$10,956,000	$21,912,000
Residential	3,261	$1,053,143,000	$526,593,000	$1,579,736,000
Village of Bartonville	**146**	**$58,476,000**	**$47,913,000**	**$106,389000**
Commercial	15	$10,816,000	$10,885,000	$21,701,000
Education	1	$906,000	$906,000	$1,812,000
Government	2	$488,000	$488,000	$976,000
Industrial	3	$12,500,000	$18,750,000	$31,250,000
Residential	125	$33,766,000	$16,844,000	$50,650,000
Village of Peoria Heights	**37**	**$10,315,000**	**$5,255,000**	**$15,570,000**
Industrial	1	$196,000	$196,000	$392,000
Residential	36	$10,119,000	$5,059,0000	$15,278,000
West Peoria City	**452**	**$141,248,000**	**$92,080,000**	**$233,328,000**
Agriculture	2	$763,000	$763,000	$1,526,000

Occupancy	Structures	Structure Value	Estimated Content Value	Total Value
Commercial	34	$27,954,000	$27,954,000	$55,908,000
Education	3	$2,967,000	$2,967,000	$5,934,000
Industrial	9	$3,446,000	$4,117,000	$7,623,000
Religious	4	$6,314,000	$6,314,000	$13,828,000
Residential	400	$99,804,000	$49,905,000	$149,709,000
County Total	**4,228**	**$1,464,589,000**	**$873,084,000**	**$2,337,673,000**

Source: FEMA Hazus

Figure 5.36—Average Annualized Loss for Peoria County

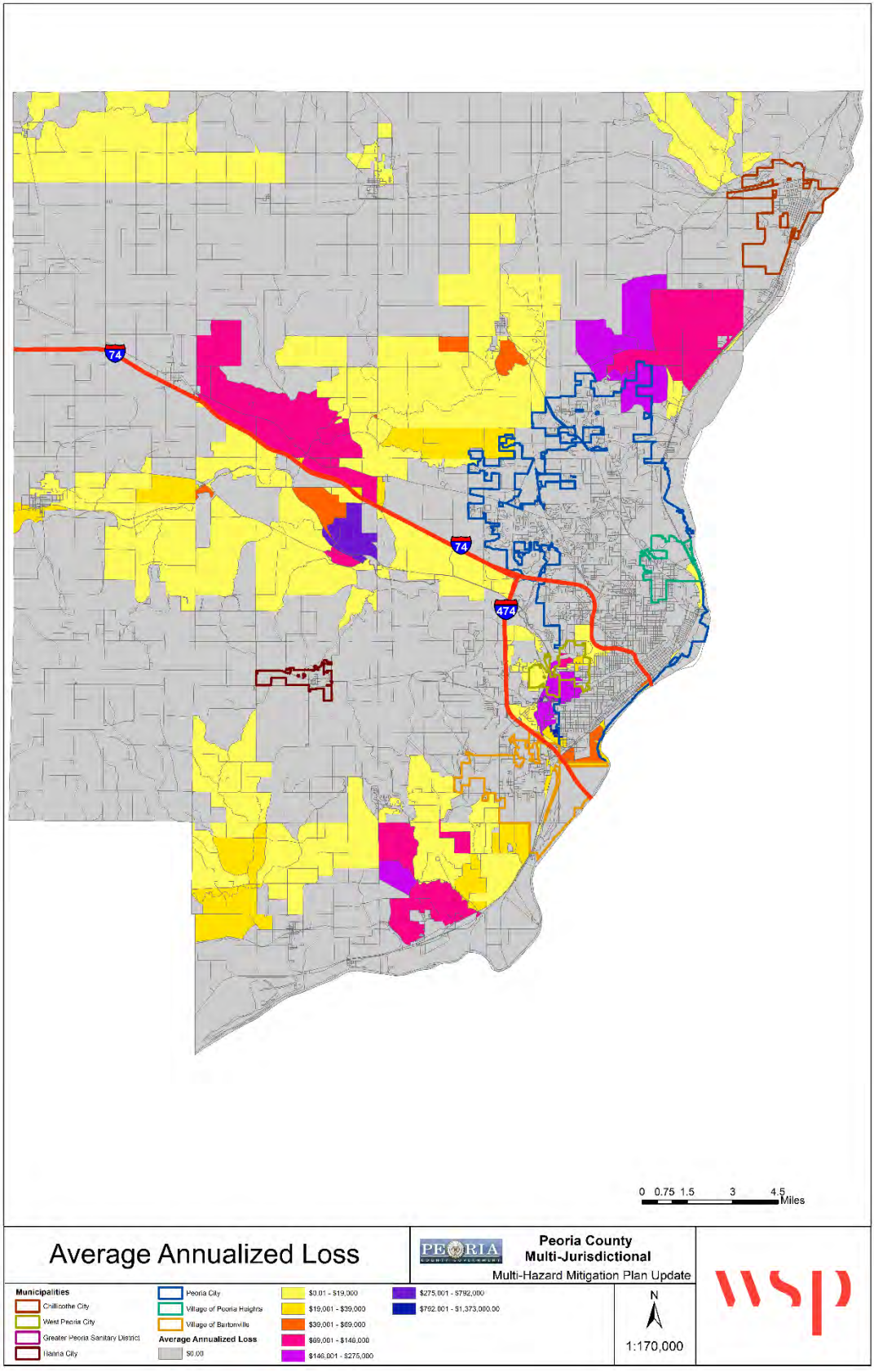


Table 5.55 details the estimated losses for the 1%-annual-chance flood for the entire planning area. The total damage estimate value is based on damages to the total of improved building value and contents value. Land value is not included in any of the loss estimates as generally land is not subject to loss from floods.

Table 5.55 – Estimated Building Damage and Content Loss for 1% Annual Chance Flood

Total Improved Value	Improved Value in Floodplain	Estimated Losses	Loss Ratio	Residential Properties in Floodplain	Average Household Size	Est. Impacted Population (#)
$915,388,034	$141,436,273	$45,259,607	0.20	952	2.35	2,238

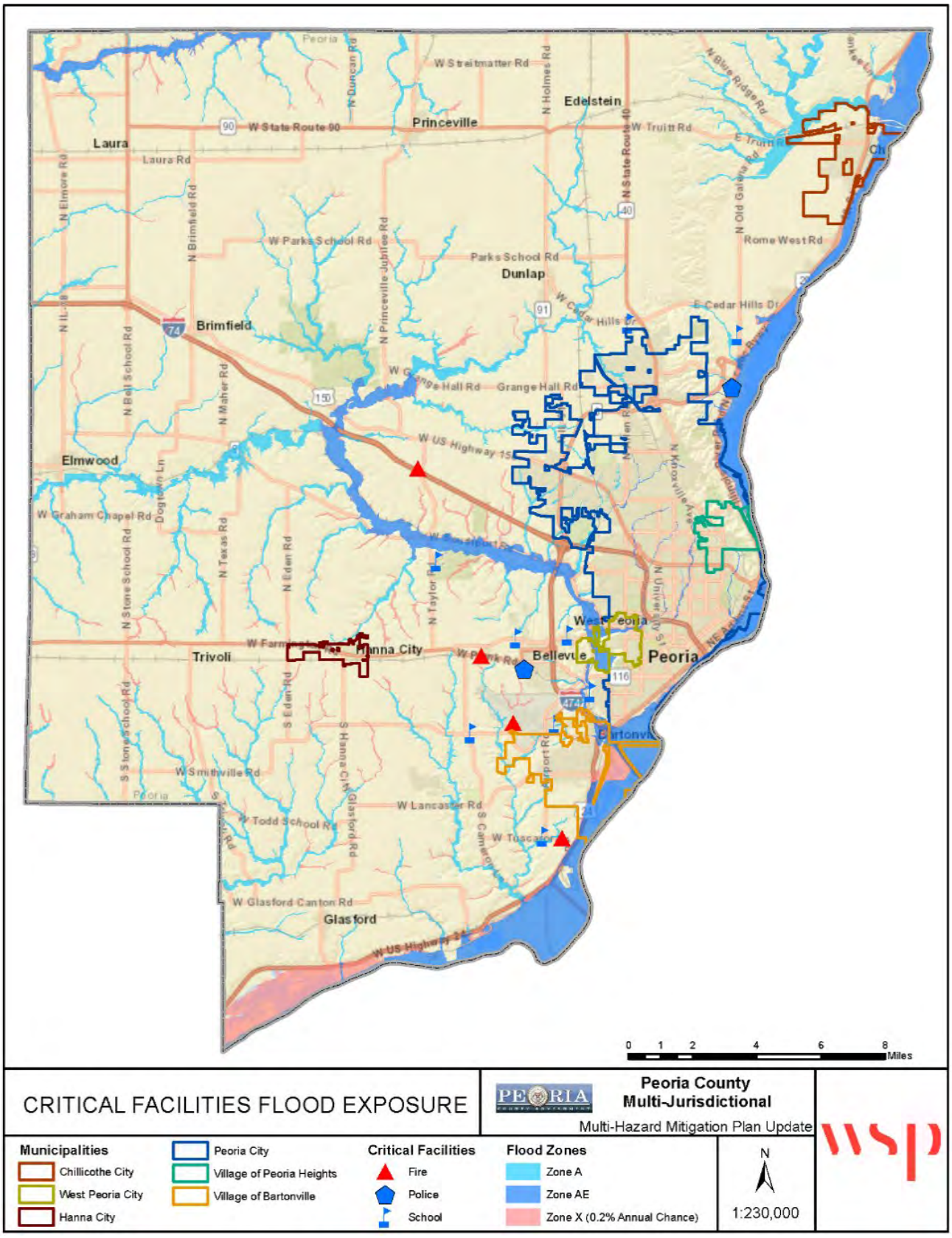
The loss ratio is the loss estimate divided by the total potential exposure (i.e., total of improved and contents value for all buildings located within the flood zones included in this Hazus analysis) and displayed as a percentage of loss. FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from a flood.

Critical facilities are shown in relation to the mapped flood zones in Figure 5.37. Table 5.56 summarizes critical facilities exposed to flooding.

Table 5.56 – Summary of Critical Facilities Exposed to Flood

Jurisdiction	Critical Facilities within SFHA
Bartonville	0
Chillicothe	0
Hanna City	0
City of Peoria	1
Peoria Heights	0
West Peoria	0
Unincorporated Peoria County	2
Total	**3**

Figure 5.37 – Critical Facilities and FEMA Flood Hazard Areas



Environment

During a flood event, chemicals and other hazardous substances may end up contaminating local water bodies. Flooding kills animals and in general disrupts the ecosystem. Snakes and insects may also make their way to the flooded areas.

Floods can also cause significant erosion, which can alter streambanks and deposit sediment, changing the flow of streams and rivers and potentially reducing the drainage capacity of those waterbodies.

Changes in Development

It is very likely that development can and will change the flood hazard and increase risk. While specific plans for development are not known, there are general trends in development that may affect future flooding conditions.

Areas Subject to Future Flooding

Areas subject to continued or worsening flooding in the future include existing floodplain areas, surrounding moderate risk areas, and urbanized areas with inadequate stormwater management. The following factors may influence future flooding:

- Changes in floodplain development and demographics may result in increased exposure and increased vulnerability. If development occurs in the floodplain without proper flood protection, these properties will be vulnerable to flood. Additionally, encroachments, such as new development and/or fill in the flood fringe, which is the area of the floodplain outside the floodway, reduce the natural floodplain and limit natural floodplain functions. Encroachments can cause a rise in the base flood elevation, putting new and existing development at greater risk. Increases in socially vulnerable populations, discussed in Section 3, within the floodplain can also increase future flood risk.
- Development in the watershed may alter flood patterns and increase flood frequency and intensity. Increased development anywhere in the planning area will likely lead to increased impervious surfaces; such development will limit infiltration and increase runoff. This is especially true of increased development within or near identified floodplains where development may contribute to increased runoff and simultaneously reduce natural floodplain areas and limit natural floodplain functions. There will be a greater strain on stormwater infrastructure to convey runoff and a possibility for more flash flooding and urban flooding where system capacity is overwhelmed.
- Climate change, as discussed above, may cause an increase in the frequency and intensity of heavy rainfall events. These changes could result in more frequent flooding and/or flooding of greater magnitude.

Key Issues

- Peoria County and West Peoria have the greatest number of structures located within the SFHA.
- Flood insurance coverage in the jurisdictions is limited. Education and outreach is a suggested mitigation measure to inform citizens of the availability of flood insurance.
- By being a member of the NFIP's CRS program, Peoria County is taking steps beyond the basic NFIP requirements to reduce flood risk.
- Peoria County has 174 repetitive loss properties; Mitigation strategies should prioritize these structures.
- Related Hazards: Hurricane, Severe Weather

Hazard Summary by Jurisdiction

The following table summarizes flood hazard risk by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Medium	High	High	Severe
Chillicothe	Low	Medium	High	Guarded
Hanna City	Low	Low	Low	Low
Peoria	Medium	High	High	Severe
Peoria Heights	Low	Medium	High	Guarded
West Peoria	Medium	High	High	Severe
Peoria County Unincorporated Areas	Medium	High	High	Severe
Peoria Park District	Medium	High	High	Severe
Greater Peoria Sanitary District	Medium	High	High	Severe

5.9 Land Subsidence/Sinkhole

Hazard Background

Subsidence is caused when the ground above manmade or natural voids collapses. Subsidence can be related to mine collapse, water and oil withdrawal, or natural causes such as shrinking of expansive soils, salt dissolution (which may also be related to mining activities), and cave collapses. The surface depression is known as a sinkhole. If sinkholes appear beneath developed areas, damage or destruction of buildings, roads and rails, or other infrastructure can result. The rate of subsidence, which ranges from gradual to catastrophic, correlates to its risk to public safety and property damage.

Land subsidence in Illinois is typically attributed to mine subsidence due to the large coal mining industry. While Illinois has historically been one of the largest coal producing states, there are currently only 30 active coal mines. Currently, there is no way to predict when or how often land subsidence will occur.

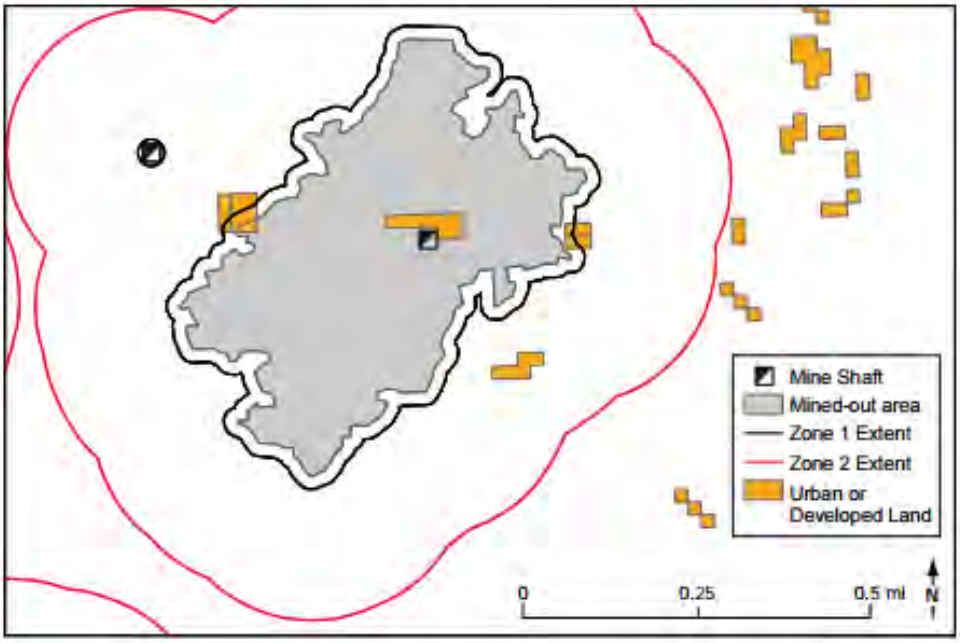
Two types of mine subsidence that occur in Illinois are pit subsidence and sag subsidence. Pits are steep-sided holes that form over mines that are less than 180 feet deep. Pits generally do not cause structural damage to houses and other damages can be minimized or avoided if the pit is backfilled promptly. Sags are large, relatively shallow depressions that form at the ground surface as the result of failures within underground room and pillar mines. Sags can take 3 to 5 years to fully develop.

Location

In 2009, the Illinois State Geological Survey (ISGS) completed a study, "The Proximity of Underground Mines to Urban and Developed Lands in Illinois." Geographic Information Systems (GIS) software was used to assess the proximity of underground mines to urban and developed areas in Illinois. Geospatial map layers for underground coal and industrial mines, land cover, and U.S. census blocks were spatially combined, and GIS was used (1) to spatially apply zones of specific distance from the mines to individual mine-extent boundaries, and (2) to calculate and tabulate statistics on the acreages and numbers of housing units within each zone and land cover classification.

The study established two zones. Zone 1 includes the land over or adjacent to mines that, on the basis of the mapped extent and general depth of the mine, could be affected by subsidence. Zone 2, which surrounds Zone 1, represents additional land that could be affected due to uncertainty about the exact location of the mine and the extent of its workings. These zones are associated only with known underground mines.

Figure 5.38 – Zones of Mine Proximity



Source: https://www.isgs.illinois.edu/sites/isgs/files/files/coal-maps/c575.pdf

The results of the Mine Risk Assessment are presented in Table 5.57 below. Figure 5.39 illustrates mine locations within Peoria County.

Table 5.57—Structures in Mine Proximity

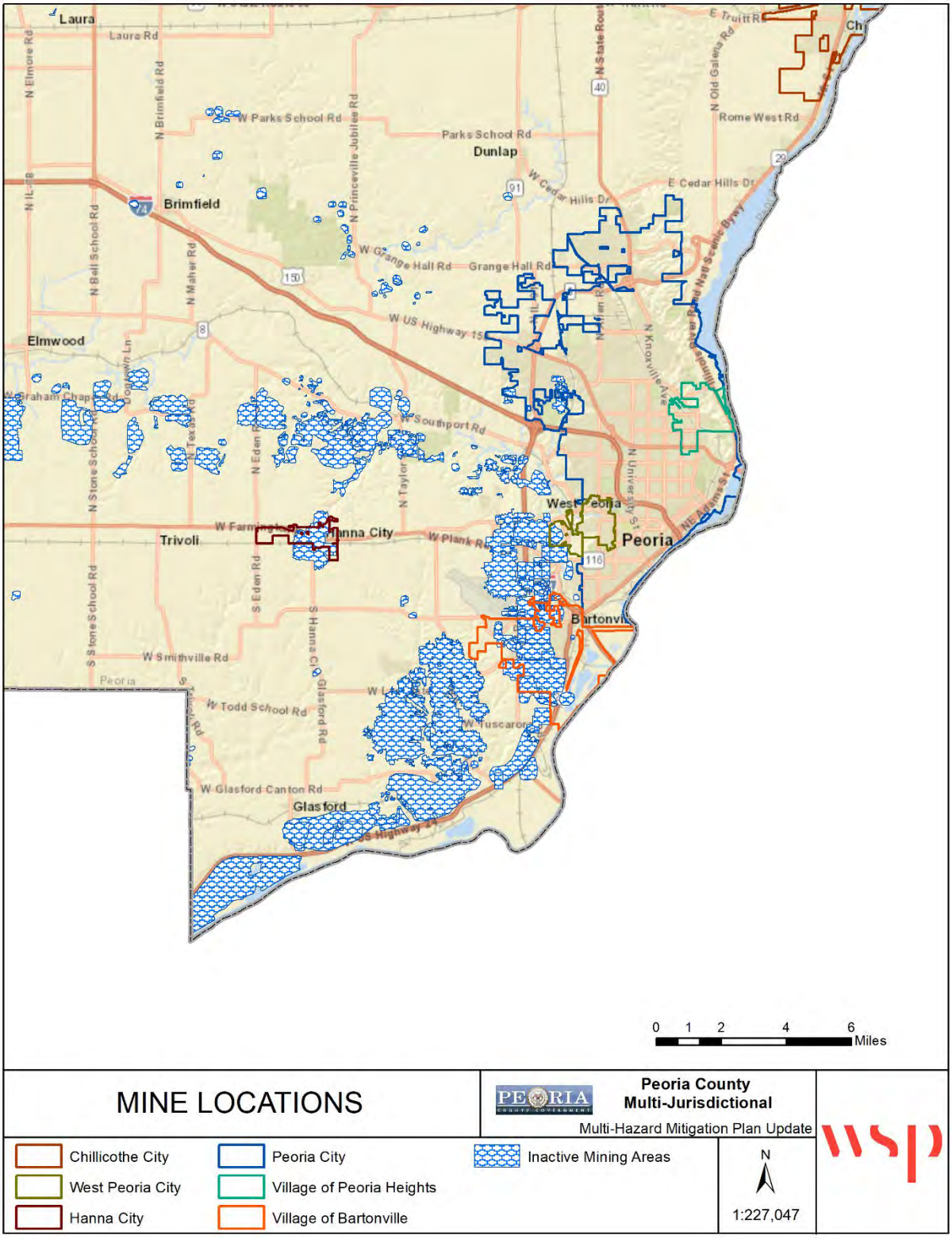
Type of Mine	Property Type	Number of Structures
Bartonville		
Underground	Agriculture	17
Underground	Commercial	123
Underground	Education	1
Underground	Government	3
Underground	Industrial	25
Underground	Religion	1
Underground	Residential	1579
Hanna City		
Underground	Agriculture	1
Underground	Commercial	43
Underground	Industrial	2
Underground	Residential	360
Peoria		
Underground	Commercial	27
Underground	Residential	491
Peoria County		
Indefinite Mine Boundary	Agriculture	1
Surface	Agriculture	9
Underground	Agriculture	45
Surface	Commercial	12
Underground	Commercial	136
Underground	Education	5
Surface	Government	1
Underground	Government	3

Surface	Industrial	1
Underground	Industrial	25
Underground	Religion	2
Indefinite Mine Boundary	Residential	16
Surface	Residential	48
Underground	Residential	3,113
	Total	6,090

With 11.8% of the County identified as located within a mine subsidence zone, and 11.5% of the housing units located within a mine subsidence zone, the HMPC determined the geographic extent of the hazard to be **medium**:

- **Medium –** Between 10% to 25% of the total population adversely affected should the hazard occur

Figure 5.39—Mines within Peoria County



Extent

The susceptibility of land to mine subsidence depends in a large part on the type of mining that was practiced in an area. In longwall mining, all of the coal was removed from sections of a mine, so that ground subsidence occurred almost immediately after mining. Room and pillar mining left columns or pillars of coal in place to support the overburden. Over time, these pillars can weaken and fail, causing ground subsidence, generally of the sag type.

Of approximately 133 mines located in Peoria County, only one practiced longwall mining. The rest of the mines were room and pillar. Consequently, it is unknown if the majority of mines that existed in Peoria County have already subsided or if future subsidence could occur.

With no previous occurrences of reported injuries or damages, the HMPC determined this hazard's magnitude/severity on the planning area to be low. In addition, when subsidence does occur, impacts are limited to a fairly small area. The HMPC determined the magnitude of floods on the planning area to be **low**:

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Historical Occurrences

In Illinois, mine subsidence has occurred over all types of underground mines. Most subsidence events are related to coal mines because of the large number and area underlain by coal mines. Two of the largest subsidence events to date, however, have been over lead and zinc mines, including the Bautsch Mine in Galena, Illinois in 1972.

Within Peoria County, noted occurrences of mine subsidence include:

- US Route 24 - During the installation of soldier piles for a retaining wall in Peoria County, IL, the Illinois Department of Transportation (IDOT) encountered underground cavities filled with water. It was determined that the cavities were related to the existence of an abandoned underground coal mine under the retaining wall foundation and US Route 24.

Figure 5.40—Mine Subsidence Incident, Airport Road, 2014

Source: Peoria County Highway Department

Additionally, HMPC members recalled the previous occurrences at the following locations:

- Charter Oak Road, approximately 10 to 15 years ago a mine subsidence incident was noted impacting 2 houses, 2005-2010;
- South Airport Road, 2014; and
- Bellevue area.

Probability of Future Occurrence

In preparation for potential future events, all insurance companies writing property insurance in Peoria County must include coverage for mine subsidence, although, a policy owner may reject the coverage by signing a waiver provided by the insurance company. In addition, a subsidence plan has been developed to define the procedure for the observations, monitoring, and reporting that will be conducted at the Peoria City/County Landfill No. 3 related to on-site mine subsidence.

Based on limited number of previous occurrences and percentage of the County located within a mine subsidence zone (11.8%), the HMPC determined this hazard's probability to be **low**:

- **Low -** 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Climate Change

No information was available to discuss the impacts that climate change might have on the frequency or severity of mine subsidence for this region of the US.

Consequence Analysis

Category	Consequences
Public	Localized impact expected to be moderate to light for incident areas and light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be moderate to light for incident areas and moderate to light for other areas affected by the sinkhole.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response and recovery not timely and effective.

Vulnerability Assessment

People

There are no particular risk factors that make a population more vulnerable to land subsidence and sinkholes. Table 5.58 below estimates the population at risk for land subsidence and sinkholes at 13,026.

Table 5.58—Peoria County Population at Risk for Land Subsidence and Sinkholes

Jurisdiction	Household Factor	Residential Structures at Risk	Population at Risk
Bartonville	2.45	1,579	3,869
Chillicothe City	2.18	--	--
Hanna City	1.95	360	702
Peoria	2.30	491	1,130
Peoria County	2.35	3,117	7,325
Peoria Heights	2.03	--	--
West Peoria	2.22	--	--
Total		**5,547**	**13,026**

Source: Hazus and American Community Study 2017-2021 5-year Estimate

Property

Structures located near underground mines are most at risk to a land subsidence event. Any development that takes place in these areas will place more people and structures in the risk area for land subsidence events. To analyze vulnerability to land subsidence events, buildings located within the mapped underground mine areas was calculated. Table 5.59 describes the properties exposed to land subsidence and sinkholes, as well as predicted monetary loss.

Figure 5.59—Property Exposure in Peoria County

Property Type	Number of Structures	Structure Value	Content Value	Total
Bartonville				
Agriculture	17	$2,516,629.95	$1,258,314.98	$3,774,944.93
Commercial	123	$9,828,305.27	$4,914,152.63	$14,742,457.90
Education	1	$314,522.12	$157,261.06	$471,783.17
Government	3	$788,613.80	$394,306.90	$1,182,920.69
Industrial	25	$4,551,840.28	$2,275,920.15	$6,827,760.42
Religion	1	$168,748.42	$84,374.21	$253,122.62
Residential	1579	$354,023,891.98	$177,011,945.99	$531,035,837.97
Hanna City				
Agriculture	1	$483,271.12	$241,635.56	$724,906.67
Commercial	43	$45,950,367.60	$45,950,367.60	$91,900,735.20
Industrial	2	$447,900.25	$223,950.13	$671,850.38
Residential	360	$71,119,521.36	$35,559,760.79	$106,679,282.15
Peoria				
Commercial	27	$6,057,900.28	$3,028,950.13	$9,086,850.41
Residential	491	$83,870,862.22	$41,935,431.16	$125,806,293.38
Peoria County				
Agriculture	55	$10,766,350.06	$5,383,175.04	$16,149,525.10
Commercial	48	$30,770,980.98	$15,385,490.49	$46,156,471.46
Education	5	$896,055.51	$448,027.76	$1,344,083.27
Government	4	$679,561.88	$339,780.94	$1,019,342.82
Industrial	26	$21,656,903.55	$10,828,451.78	$32,485,355.33
Religion	2	$370,906.20	$185,453.10	$556,359.31
Residential	3,117	$659,340,312.76	$329,670,156.40	$989,010,469.16
Total	**6,090**	**$1,304,603,445.57**	**$675,276,906.77**	**$1,979,880,352.34**

Table 5.60—Critical Facilities within High Susceptibility or High Incidence of Landslide

Jurisdiction	Critical Facilities within Mining Zone
Bartonville	3
Chillicothe	0
Hanna City	1
City of Peoria	0
Peoria Heights	0
West Peoria City	0
Unincorporated Peoria County	7
Total	**11**

Environment

Sinkholes and subsidence can cause massive damage to the natural environment, uprooting trees, and other debris within the extent. Damage from sinkholes can require construction Groundwater reserves may become polluted from soil movement, as well as any pollutants from the surface entering the environment. Sinkholes also accelerate soil erosion and increase surface drainage.

Changes in Development

While increased development will not impact the incidence of sinkholes, it will lead to more groundwater demand, which in turn may increase risk. Increased mining for the energy needed for development, especially coal mining, can increase risk.

Key Issues

- Broken electrical, water, gas, and sewage lines that can result in injury or illness; and
- Disrupted roadways and railways that can endanger motorists and disrupt transport and access to health care.

Hazard Summary by Jurisdiction

The following table summarizes hurricane hazard risk by jurisdiction. Most aspects of hurricane risk, particularly related to wind, do not vary substantially by jurisdiction; however, mobile home units are more vulnerable than other housing types to wind damage. Therefore, impacts from wind may be more severe in Hephzibah and Blythe. Despite these differences, all jurisdictions have the possibility for critical impacts.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Medium	Low	Low	Guarded
Chillicothe	Medium	Low	Low	Low
Hanna City	Medium	Low	Low	Guarded
Peoria	Medium	Low	Low	Guarded
Peoria Heights	Medium	Low	Low	Low
West Peoria	Medium	Low	Low	Guarded
Peoria County Unincorporated Areas	Medium	Low	Low	Guarded
Peoria Park District	Medium	Low	Low	Guarded

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Greater Peoria Sanitary District	Medium	Low	Low	Guarded

5.10 Landslide

Hazard Background

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- Erosion by rivers, glaciers, or ocean waves create over steepened slopes;
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains;
- Earthquakes create stresses that make weak slopes fail;
- Earthquakes of magnitude 4.0 and greater have been known to trigger landslides;
- Volcanic eruptions produce loose ash deposits, heavy rain, and debris flows; and
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore from waste piles or from man-made structures may induce weak slopes to fail.

Landslides constitute a major geologic hazard because they are widespread, occurring in all 50 states, and cause $1 to 2 billion in damages and more than 25 fatalities, on average, each year. Landslides pose serious threats to highways and to structures that support fisheries, tourism, timber harvesting, mining, and energy production, as well as general transportation. Landslides commonly happen concurrently with other major natural disasters such as earthquakes and floods, which exacerbate relief and reconstruction efforts. Expanded development and other land uses have increased the incidence of landslide disasters.

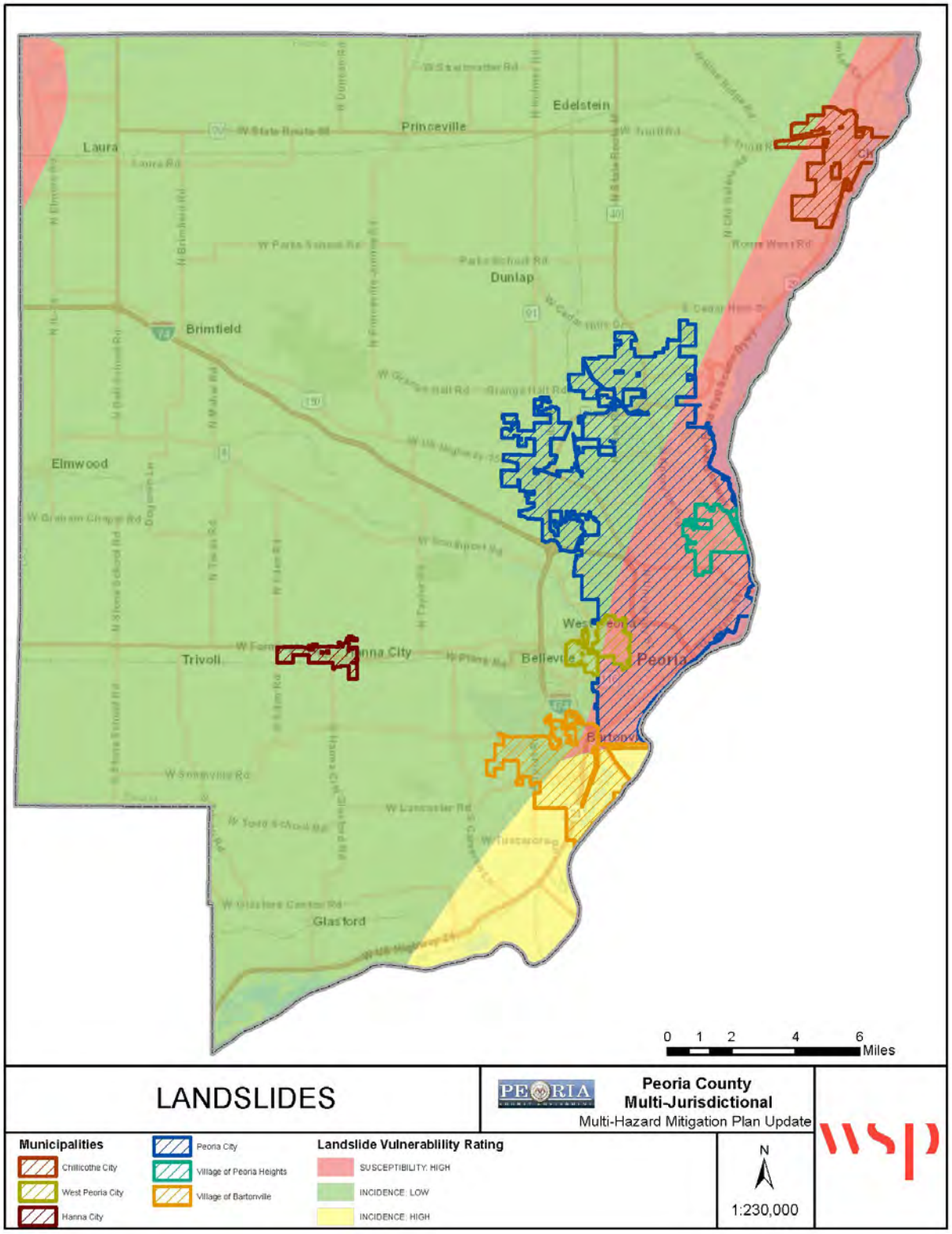
Location

The areas where large numbers of landslides have occurred and areas which are susceptible to land sliding in the conterminous United States is presented in Figure 5.41. The majority of Peoria County is within the low landslide incidence category, 504 square miles or 91% of Peoria County. A path of high susceptibility low incidence follows the Illinois River and a small portion in the northwest tip of the County for a total of 31.3 square miles or 5% of Peoria County. A small portion of the southeastern portion of the County is located within the high landslide incidence category, 16.3 square miles or 3% of Peoria County.

With only 8% of the County area identified as having high incidence landsliding and/or high susceptibility, the HMPC determined the geographic extent of the hazard to be **low**:

- **Low -** Less than 10% of the total population adversely affected should the hazard occur

Figure 5.41—Landslide Risks, 1982



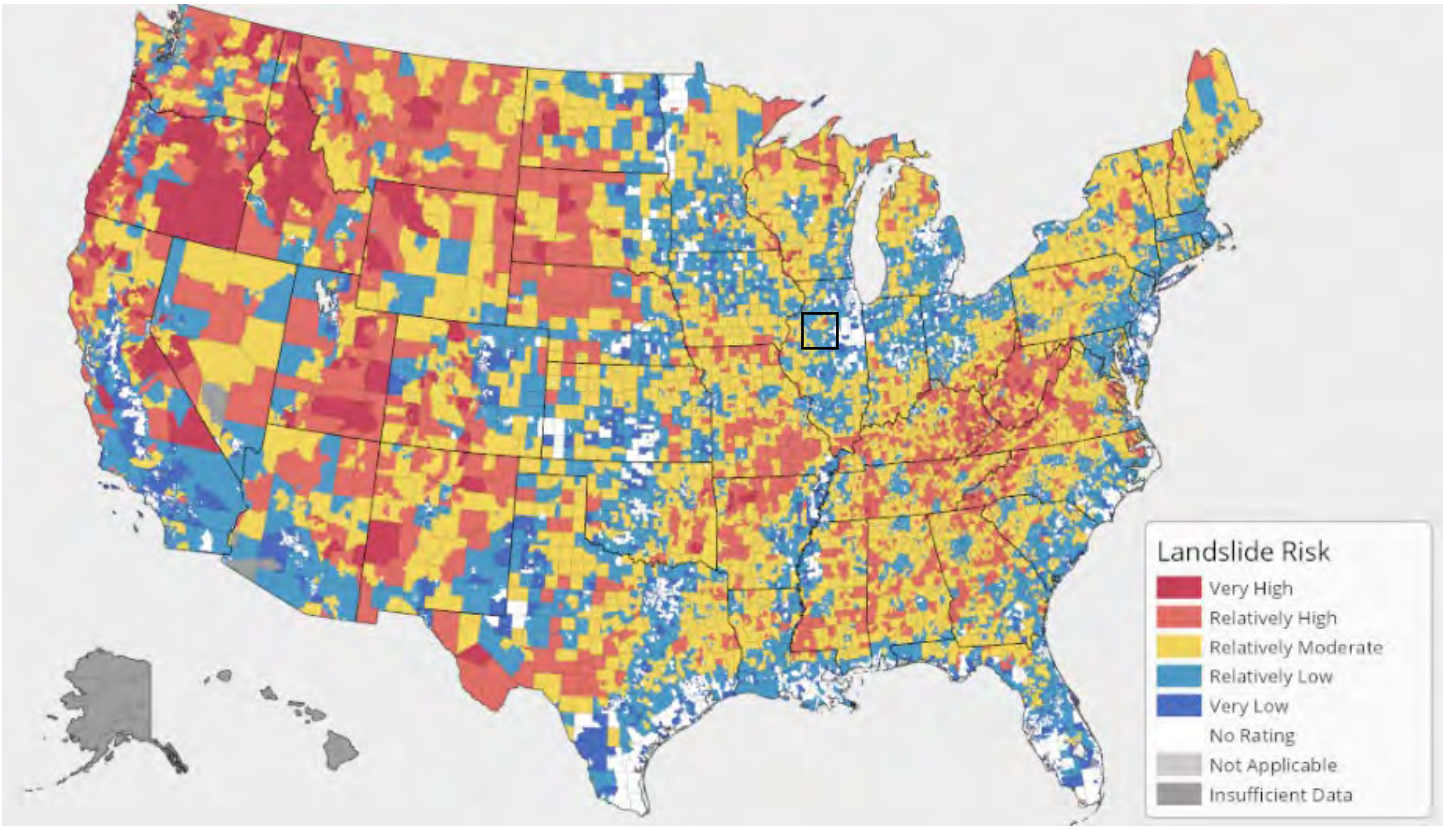
Extent

FEMA's National Risk Index has a landslide portion, the Landslide Risk Index Score. A Landslide Expected Annual Loss score and rating represent a community's relative level of expected building and population loss each year due to Landslides when compared to the rest of the United States. Figure 5.42 below shows the relative risk for the US. Peoria County, in the lighter blue, falls into the relatively low category for landslide risk.

The HMPC determined the magnitude and severity to be **low**:

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Figure 5.42—Landslide Risk Index



Source: FEMA, Note: Peoria County is indicated by the black square

Historical Occurrences

According to the US Landslide Inventory, a landslide occurred on June 1, 2018. This landslide was given a confidence level of 2, meaning probable landslide in the area. The description states:

- Massive rock slide has shut down a long section of Kickapoo Creek Road, leaving Peoria County officials pondering how to remove the sudden, mammoth roadblock. Boulders crashed down from a bluff onto Kickapoo Creek Road Thursday night about a half-mile south of Harmon Highway. Rocks and trees continued to obstruct the two-lane pavement Friday, prompting the county to close the road for about two miles, from Harmon Highway to Bartonville. The fall-off measured about 40 feet wide, with the biggest boulder about 30 feet wide. Rocks, soil and tress tumbled from

as high as 50 feet up the bluff. Recent rains may have contributed to the slide by loosening the shale rock, causing sandstone boulders to fall.

Figure 5.43—Landslide Incident, Kickapoo Creek Road, 2018

Source: Peoria County Highway Department

A report published in 1985 by the Illinois Geological Survey presents a Landslide Inventory of Illinois with events dating back to 1928. Although the report did not include cost of damage information for landslides within Peoria County, 14 landslides were noted on available mapping. Causes include:

- Natural earth flow (1);
- Natural earth slump (2);
- Man-induced earth slump on bedrock surface (1);
- Man-induced rock fall (3);
- Man-induced unclassified landslide (5);
- Man-induced rock slump (1); and
- Man-induced earth slump (1)

Additionally, HMPC members recalled the previous occurrences at the following locations:

- Kickapoo Creek Road, discussed above
- Parks School Road, telephone poles impacted by landslide.

Figure 5.44 – Illinois Landslide Inventory Map, 1984

NATURAL	MAN-INDUCED	TYPE OF LANDSLIDE
■	□	Rock fall—Mostly rock; may include some glacial material
▼	▽	Rock slump—Slump block consisting of rock and any overlying glacial material
▲	△	Earth slump—Slump block consisting of glacial material
◣	◺	Earth slump on bedrock surface
◆	◇	Earth flow—Any flow of earth or sand, regardless of rate of movement
●	○	Unclassified landslides
*		Rock creep—Continual movement of boulders at barely perceptible rates

Probability of Future Occurrence

Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land use management regulations can reduce landslide hazards. For Peoria County, 14 landslides between 1928 and 1985 (57 years) relates to a probability of 24 percent chance of occurrence.

The probability was assigned a rank of **high**:

- **Medium -** 12 to 60 occurrences in the last 60 years (20-100% chance of occurrence each year)

Climate Change

According the 2014 Climate Change Fact Sheet from the White House, Office of the Press Secretary, for Illinois and the Midwest, extreme rainfall events and flooding have increased during the last century, and these trends are expected to continue, causing erosion, declining water quality, and negative impacts on transportation, agriculture, human health, and infrastructure.

Consequence Analysis

Category	Consequences
Public	Localized impact expected to be moderate to light for incident areas and light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be moderate to light for incident areas and moderate to light for other areas affected by the sinkhole.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response and recovery not timely and effective.

Vulnerability Assessment

People

Structures located within sloped areas, cut and filled areas, and where previous landslides occurred are most at risk to a landslide event. Any development that takes place in these areas will place more people and structures in the risk area for land subsidence events. To determine the number of people at risk in each area, the residential structures were multiplied by the household factor for each jurisdiction. Table 5.61 below shows there are approximately 81,000 people living in a risk area of a landslide occurring. The landslide ratings taken into consideration as living in a risk area were high incidence areas and high susceptibility areas.

Table 5.61—Peoria County Population at Risk for Landslides

Jurisdiction	Household Factor	Residential Structures at Risk	Population at Risk
Landslide Rating: High Susceptibility			
Bartonville	2.45	482	1,181
Chillicothe City	2.18	2,419	5,273
Hanna City	1.95	--	--
Peoria	2.30	24,796	57,131

Jurisdiction	Household Factor	Residential Structures at Risk	Population at Risk
Peoria County	2.35	2,358	5,542
Peoria Heights	2.03	2,461	4,996
West Peoria	2.22	1,730	3,841
Total		**34,246**	**77,964**
Landslide Rating: High Incidence			
Bartonville	2.45	682	1,671
Chillicothe City	2.18	--	--
Hanna City	1.95	--	--
Peoria	2.30	--	--
Peoria County	2.35	610	1,434
Peoria Heights	2.03	--	--
West Peoria	2.22	--	
Total		**1,292**	**3,105**
All Landslide Ratings		**35,538**	**81,069**

Property

Buildings and property located in landslide hazard areas, such as steeply sloped and highly eroded areas, are more likely to be affected and damaged by a landslide. Hazus was used in coordination with Peoria County GIS data to determine the potential impact of a landslide event. Table 5.62 below details the potential financial impact for all landslide ratings in Peoria County. The landslide ratings taken into consideration as living in a risk area were high incidence areas and high susceptibility areas.

Table 5.62—Structures Exposed to Landslides Risk

Jurisdiction	Property Category	Structures at Risk	Structure Value	Content Value	Total
Landslide Rating: High Susceptibility					
Bartonville	Commercial	55	$21,433,244.42	$10,716,622.18	$32,149,866.60
Bartonville	Education	1	$712,639.15	$356,319.57	$1,068,958.72
Bartonville	Government	2	$641,149.00	$320,574.50	$961,723.50
Bartonville	Industrial	8	$1,561,205.61	$780,602.81	$2,341,808.42
Bartonville	Religion	1	$15,235,693.00	$15,235,693.00	$30,471,386.00
Bartonville	Residential	482	$1,153,415,685.20	$1,153,415,685.20	$2,306,831,370.40
Chillicothe City	Agriculture	7	$1,065,285.94	$532,642.97	$1,597,928.92
Chillicothe City	Commercial	273	$45,432,683.48	$22,716,341.85	$68,149,025.33
Chillicothe City	Education	6	$741,146.89	$370,573.45	$1,111,720.33
Chillicothe City	Government	2	$3,150,710.24	$1,575,355.13	$4,726,065.37
Chillicothe City	Industrial	20	$9,934,190.30	$4,967,095.14	$14,901,285.44
Chillicothe City	Religion	2	$966,542.23	$483,271.11	$1,449,813.34
Chillicothe City	Residential	2,419	$1,407,024,901.24	$703,512,450.62	$2,110,537,351.86
Peoria	Agriculture	6	$1,107,669.62	$553,834.81	$1,661,504.43
Peoria	Commercial	2,281	$1,854,959,215.49	$927,479,606.60	$2,782,438,822.09
Peoria	Education	51	$24,388,739.84	$24,388,739.84	$48,777,479.67

Jurisdiction	Property Category	Structures at Risk	Structure Value	Content Value	Total
Peoria	Government	20	$60,547,022.60	$60,547,022.60	$121,094,045.20
Peoria	Industrial	230	$149,289,742.97	$149,289,742.97	$298,579,485.94
Peoria	Religion	36	$14,347,495.98	$14,347,495.98	$28,694,991.96
Peoria	Residential	24,796	$65,760,891,869.52	$98,641,337,804.28	$164,402,229,673.80
Peoria County	Agriculture	58	$650,685,290.20	$650,685,290.20	$1,301,370,580.40
Peoria County	Commercial	130	$126,922,123.77	$126,922,123.77	$253,844,247.54
Peoria County	Education	2	$7,083,628.22	$7,083,628.22	$14,167,256.44
Peoria County	Government	3	$474,653.72	$237,326.86	$711,980.58
Peoria County	Industrial	29	$6,580,762.24	$3,290,381.12	$9,871,143.37
Peoria County	Religion	1	$180,008.04	$90,004.02	$270,012.06
Peoria County	Residential	2,358	$756,829,101.04	$378,414,549.34	$1,135,243,650.38
Peoria Heights	Agriculture	1	$568,708.65	$284,354.33	$853,062.98
Peoria Heights	Commercial	263	$92,337,929.24	$46,168,964.62	$138,506,893.87
Peoria Heights	Education	4	$1,921,665.83	$960,832.91	$2,882,498.74
Peoria Heights	Government	5	$2,131,577.93	$1,065,788.96	$3,197,366.89
Peoria Heights	Industrial	19	$15,248,781.85	$7,624,390.93	$22,873,172.78
Peoria Heights	Religion	3	$1,659,427.52	$829,713.76	$2,489,141.27
Peoria Heights	Residential	2,461	$1,758,657,722.68	$879,328,860.11	$2,637,986,582.79
Peoria Heights	Agriculture	1	$568,708.65	$284,354.33	$853,062.98
West Peoria	Commercial	77	$88,550,051.59	$88,550,051.59	$177,100,103.18
West Peoria	Education	2	$2,300,001.34	$2,300,001.34	$4,600,002.68
West Peoria	Government	3	$3,450,002.01	$3,450,002.01	$6,900,004.02
West Peoria	Industrial	2	$1,358,333.53	$679,166.77	$2,037,500.30
West Peoria	Religion	1	$568,234.78	$284,117.39	$852,352.17
West Peoria	Residential	1,730	$1,128,148,199.78	$564,074,099.89	$1,692,222,299.67
Total		**37,850**	**$75,172,503,036.66**	**$104,495,251,122.74**	**$179,667,754,159.40**
Landslide Rating: High Incidence					
Bartonville	Agriculture	6	$1,319,158.81	$659,579.41	$1,978,738.22
Bartonville	Commercial	101	$25,169,037.09	$12,584,518.49	$37,753,555.58
Bartonville	Education	1	$156,812.28	$78,406.14	$235,218.42
Bartonville	Industrial	70	$10,901,451.68	$5,450,725.86	$16,352,177.54
Bartonville	Residential	682	$22,597,131,840.80	$22,597,131,840.80	$45,194,263,681.60
Peoria County	Agriculture	22	$19,748,395.59	$19,748,395.59	$39,496,791.18
Peoria County	Commercial	29	$1,097,321,456.10	$1,097,321,456.10	$2,194,642,912.20
Peoria County	Education	1	$530,506.34	$530,506.34	$1,061,012.69
Peoria County	Government	1	$1,686,634.39	$1,686,634.39	$3,373,268.78
Peoria County	Industrial	82	$13,931,987.37	$6,965,993.70	$20,897,981.07
Peoria County	Residential	610	$161,404,484.76	$80,702,242.38	$242,106,727.14
Total		**1,605**	**$23,929,301,765.21**	**$23,822,860,299.20**	**$47,752,162,064.41**
All Landslide Ratings		**39,455**	**$99,101,804,801.87**	**$128,318,111,421.94**	**$227,419,916,223.81**

Table 5.63—Critical Facilities within High Susceptibility or High Incidence of Landslide

Jurisdiction	Critical Facilities within High Susceptibility or High Incidence
Bartonville	4
Chillicothe	8
Hanna City	0
City of Peoria	50
Peoria Heights	8
West Peoria City	2
Unincorporated Peoria County	6
Total	**78**

Environment

Landslides can disrupt the natural environment, including vegetation damage, agricultural loss, and water blockage. The additional sediment and debris released during a landslide can negatively impact water quality and flood streams.

Changes in Development

Development is not expected to impact the incidence of landslide. As the county grows, overall asset exposure will increase, which may increase risk.

Key Issues

- Related Hazards: Flood, Hurricane, Tornado

Hazard Summary by Jurisdiction

The following table summarizes severe weather hazard risk by jurisdiction. Most aspects of severe weather risk do not vary substantially by jurisdiction; however, mobile and manufactured home units are more vulnerable to structural damage. These housing types may therefore face more severe impacts from severe weather events. Where priority ratings vary between, lightning, and hail for impact and spatial extent, these scores represent an average rating with greater weight given to lightning because it occurs much more frequently.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Low	Medium	Low	Guarded
Chillicothe	Low	Medium	Low	Guarded
Hanna City	Low	Medium	Low	Low
Peoria	Low	Medium	Low	Guarded
Peoria Heights	Low	Medium	Low	Guarded
West Peoria	Low	Medium	Low	Guarded
Peoria County Unincorporated Areas	Low	Medium	Low	Guarded
Peoria Park District	Low	Medium	Low	Guarded
Greater Peoria Sanitary District	Low	Medium	Low	Guarded

5.11 Severe Weather (Hail, Lightning, and Wind)

Hazard Background

Hail

As defined by NOAA, hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere causing them to freeze. The raindrops form into small frozen droplets and then continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen rain droplet can continue to grow and form hail. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow.

At the time when the updraft can no longer support the hailstone, it will fall to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 mph, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 mph. The largest hailstone recorded in the United States was found in Vivian, South Dakota on July 23, 2010; it measured eight inches in diameter, almost the size of a soccer ball. While soccer-ball-sized hail is the exception, but even small pea sized hail can cause damage.

Hailstorms in Illinois cause damage to property, crops, and the environment, and kill and injure livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are the other things most commonly damaged by hail. Hail has been known to cause injury to humans; occasionally, these injuries can be fatal.

The onset of thunderstorms with hail is generally rapid. However, advancements in meteorological forecasting allow for some warning. Storms usually pass in a few hours.

Lightning

Lightning is a sudden electrical discharge released from the atmosphere that follows a course from cloud to ground, cloud to cloud, or cloud to surrounding air, with light illuminating its path. Lightning's unpredictable nature causes it to be one of the most feared weather elements.

All thunderstorms produce lightning, which often strikes outside of the area where it is raining and is known to fall more than 10 miles away from the rainfall area. When lightning strikes, electricity shoots through the air and causes vibrations creating the sound of thunder. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start building fires and wildland fires, and damage electrical systems and equipment.

The watch/warning time for a given storm is usually a few hours. There is no warning time for any given lightning strike. Lightning strikes are instantaneous. Storms that cause lightning usually pass within a few hours.

Wind

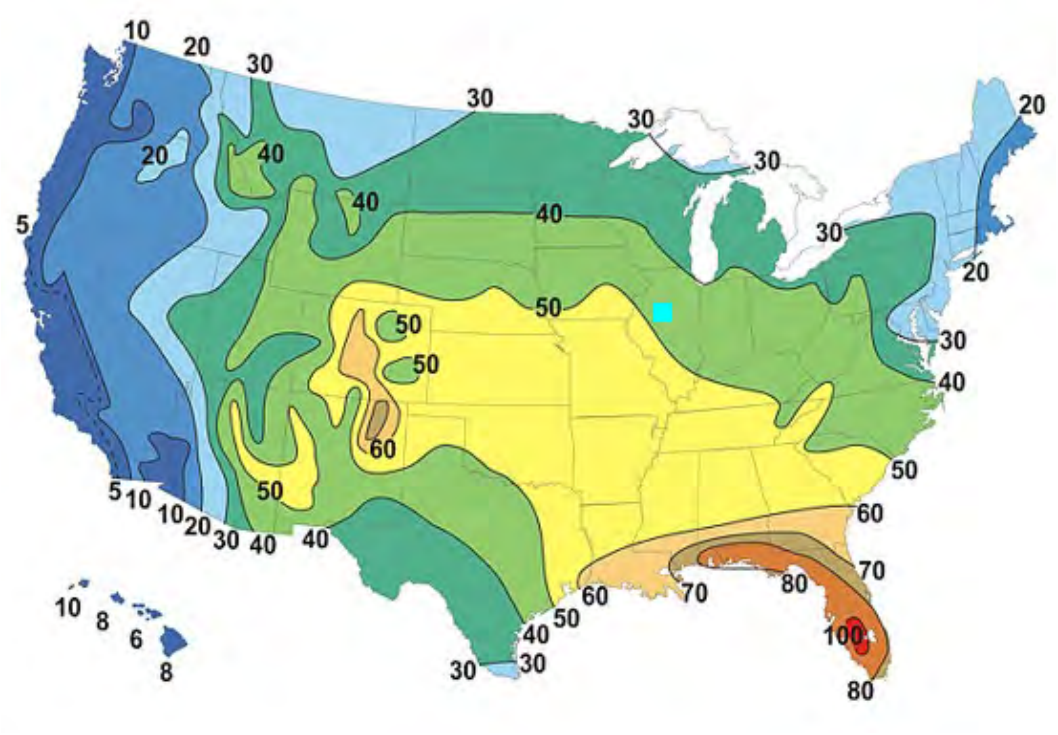
A severe thunderstorm can produce winds that can cause as much damage as a weak tornado and these winds can be life threatening. The damaging winds of thunderstorms include downbursts, microbursts, and straight-line winds. Downbursts are localized currents of air blasting down from a thunderstorm, which induce an outward burst of damaging wind on or near the ground. Microbursts are minimized downbursts covering an area of less than 2.5 miles across. They include a strong wind shear (a rapid change in the direction of wind over a short distance) near the surface. Microbursts may or may not include precipitation and can produce winds at speeds of more than 150 miles per hour. Damaging straight-line winds are high winds across a wide area that can reach speeds of 140 miles per hour.

Location

Lightning, hail, and wind events do not have a defined vulnerability zone. The scope of these hazards is generally confined to the footprint of its associated thunderstorm.

The figure below indicates the average number of thunderstorms in the US. Peoria County falls in the 40-day region.

Figure 5.45--Average Number of Thunderstorm Days per Year, 2010



Source: National Weather Service; http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.htm
Note: Blue square indicates approximate location of Peoria County

Hail

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. However, large-scale hail tends to occur in a more localized area within the storm.

Lightning

While the total area vulnerable to a lightning strike corresponds to the footprint of a given thunderstorm, a specific lightning strike is usually a localized event and occurs randomly. While lightning is most often affiliated with severe thunderstorms, it may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall. All of Peoria County is exposed to lightning.

Wind

Intense wind frequently accompanies thunderstorms, so their locations and spatial extents coincide. However, the heaviest wind tends to occur in a more localized area within the storm.

The geographic location was assigned a rank of **high**, the entire planning area is subject to severe weather including hail, lightning and wind and all participating jurisdictions are affected.

- **High -** More than 25% of the total population adversely affected should the hazard occur

Extent

Hail

The National Weather Service classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Table 5.64 indicates the hailstone measurements utilized by the National Weather Service.

Table 5.64 – Hailstone Measurement Comparison Chart

Average Diameter	Corresponding Household Object
.25 inch	Pea
.5 inch	Marble/Mothball
.75 inch	Dime/Penny
.875 inch	Nickel
1.0 inch	Quarter
1.5 inch	Ping-pong ball
1.75 inch	Golf ball
2.0 inch	Hen egg
2.5 inch	Tennis ball
2.75 inch	Baseball
3.00 inch	Teacup
4.00 inch	Softball
4.5 inch	Grapefruit

Source: National Weather Service

The Tornado and Storm Research Organization (TORRO) has further described hail sizes by their typical damage impacts. Table 5.65 describes typical intensity and damage impacts of the various sizes of hail.

Table 5.65 – Tornado and Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > softball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University
Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity.

Peoria County has had multiple incidences of hailstones larger than 2"'; the largest hailstone recorded was 2.75". Records of hailstones this size date from 1980 to the most recent occurrence on April 19, 2011. The largest hailstone ever recorded in the U.S. fell in Vivian, SD on June 23, 2010, with a diameter of 8 inches and a circumference of 18.62 inches.

The magnitude for this hazard is classified as **medium**:

- **Medium —** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Lightning

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the National Weather Service to define lightning activity into a specific categorical scale. The LAL, shown in Table 5.66., is a common parameter that is part of fire weather forecasts nationwide.

Table 5.66 – Lightning Activity Level Scale

Lightning Activity Level Scale	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground lightning strikes in a five-minute period
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a five-minute period
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a five-minute period
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a five-minute period
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag warning

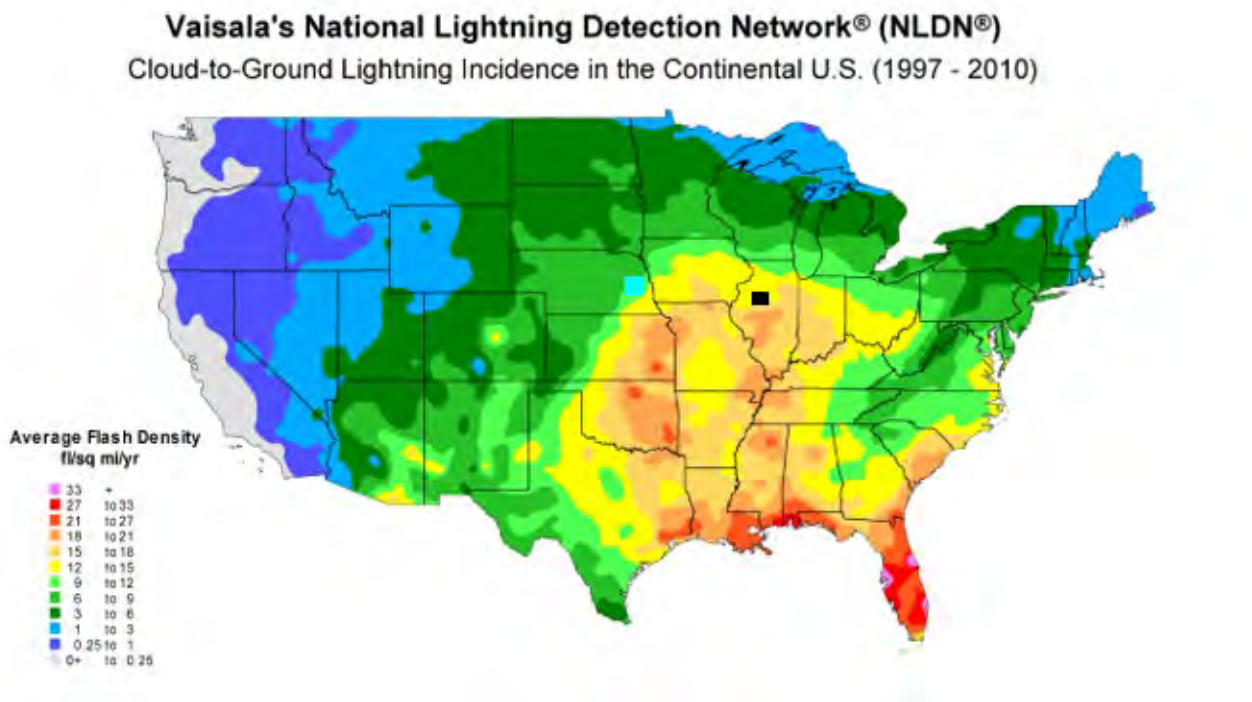
Source: National Weather Service

With the right conditions in place, the entire county is susceptible to each lightning activity level as defined by the LAL. Most lightning strikes cause limited damage to specific structures in a limited area, and cause very few injuries or fatalities, and minimal disruption on quality of life. Figure 5.46 below depicts the lightning incidence in the continental US. Peoria County, shown by the yellow color, experiences a flash density of 12 to 15 flashes per square mile per year.

The magnitude for this hazard is classified as **medium**:

- **Medium —** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Figure 5.46—Annual Frequency of Lightning, 1997-2010



Source: http://www.vaisala.com/VaisalaImages/Product%20and%20services/NLDN%20CG%20Flash%20Density%20Miles%201997-2010.png, **Note:** Black square indicates approximate location of Peoria County

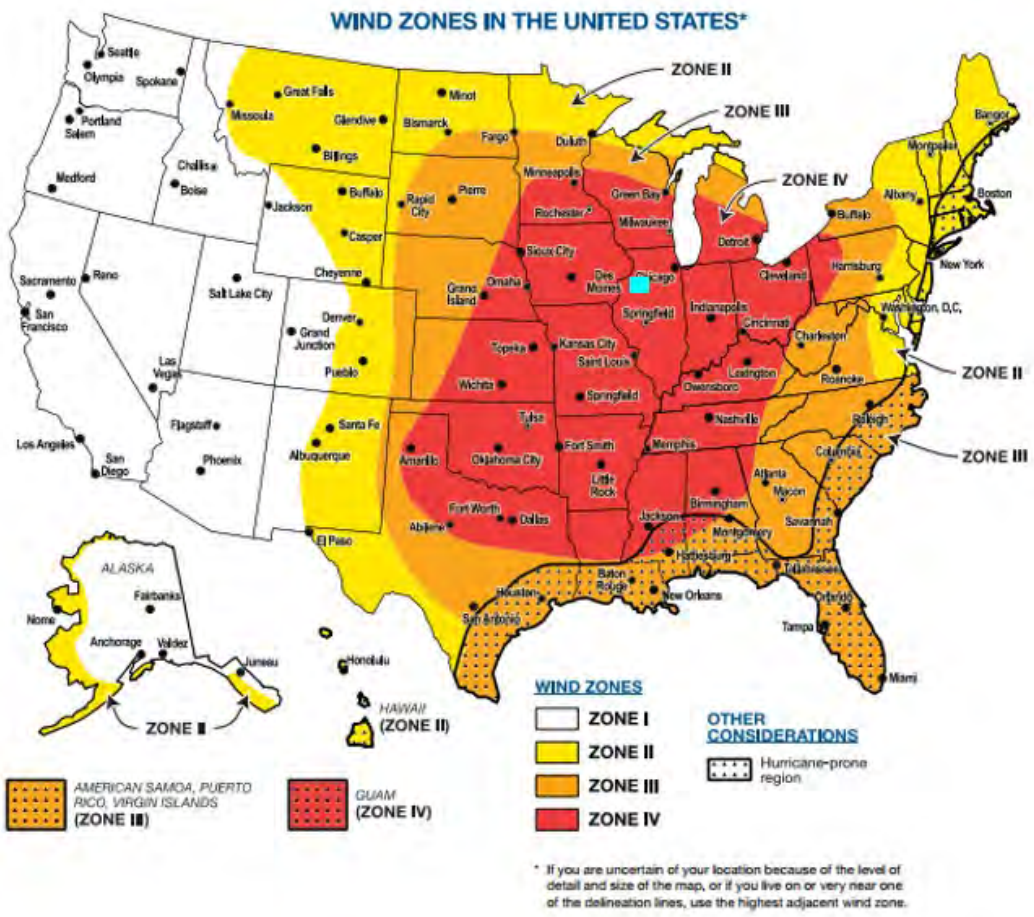
Wind

FEMA wind zones indicate the maximum wind sped to be expected in specific US regions (Figure 5.47). Peoria County is located in Zone IV, where speeds can reach up to 250 mph. This region also experiences the greatest risk of extreme windstorms.

The magnitude for this hazard is classified as **medium**:

- **Medium —** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Figure 5.47—Wind Zones in the US



Source: FEMA; https://www.fema.gov/media-library-data/1418837471752-920f09bb8187ee15436712a3e82ce709/FEMA_P-320_2014_508.pdf;
Note: Blue square indicates approximate location of Peoria County

Historical Occurrences

Hail

NCEI began recordkeeping of hail events in 1955. NCEI records 200 hail incidents across 116 days between 1955 and 2022 in Peoria County. These events caused a reported $3,070,000 in property damage and $0 in crop damage. No deaths or injuries were reported. The largest diameter hail recorded in the County was 2.75 inches, which most recently occurred July 9th, 1990. The average hail size of all events in the County was just over 1.1 inch in diameter. Table 5.67 summarizes hail events in Peoria County.

Table 5.67 – Summary of NCEI Recorded Hail Events, 1955-2022

Hail Size	Number of Events	Property Damage
< 0.88 in	56	$0
0.88 in.	21	$0
1.00 in.	66	$0
1.25 in.	10	$1,000,000
1.50 in.	10	$70,000
1.75 in.	27	$2,000,000
2.00 in.	6	$0
2.25 in.	0	$0
2.50 in.	1	$0
2.75 in.	3	$0
Total	**200**	**$3,070,000**

Source: NCEI

The following narratives provide detail on select hailstorms from the above list of NCEI recorded events:

- **May 13, 2008** – Scattered thunderstorms developed during the afternoon and early evening hours ahead of a cold front. The initial storms produced a few severe wind gusts, though the storms rapidly evolved to significant hail producers.
- **June 1, 2009 –**. A slow-moving cold front triggered widespread thunderstorms across parts of central Illinois during the afternoon and evening of June 1st. The storms primarily affected locations along and north of a Rushville...to Lincoln...to Danville line. Numerous reports of large hail were received, as well as some scattered wind damage.
- **May 21, 2011**– A strong cold front interacting with a highly unstable airmass triggered several rounds of thunderstorms across central Illinois during the afternoon of May 22nd. Numerous reports of large hail were received, with up to golfball-sized stones occurring across parts of Mason County.
- **April 9, 2015** – A strong cold front interacting with a moderately unstable and sheared environment triggered widespread strong to severe thunderstorms across central Illinois during the late afternoon and evening of April 9th. Many of the storms produced large hail and damaging wind gusts, with the largest hailstones of around 3 inches in diameter being reported near Mahomet in Champaign County
- **July 11, 2020** – Two rounds of strong to severe thunderstorms impacted central Illinois during the afternoon and evening of July 11th. The first round developed along an outflow boundary from previous convection that had tracked across northern Illinois around midday. These cells formed along the I-74 corridor and brought large hail and locally heavy rainfall during the late afternoon hours. Hail as large as tennis balls or 2.5 inches in diameter was reported in Bartonville in Peoria County. Meanwhile, hailstones as large as 2 inches in diameter caused considerable damage to car dealerships in Savoy and numerous roofs on the east side of Urbana in Champaign County.

Lightning

NCEI recordkeeping of lightning began in 1996. According to NCEI data, there were 9 lightning strikes reported from 1996 to 2022. The events recorded property damage totaling approximately $387,000, which was mostly recorded as fire damage ignited by lightning. The highest rate of property damage recorded for a single incident was $200,000. One event caused 2 injuries, and none caused fatalities. It should be noted that lightning events recorded by the NCEI are only those that are reported; it is certain that additional lightning incidents have occurred in Peoria County. Table 5.68. details NCEI-recorded lightning strikes from 1996 to 2022.

Table 5.68 – Recorded Lightning Strikes in Peoria County, 1996-2022

Location	Date	Time	Fatalities	Injuries	Property Damage	Crop Damage
Bartonville	8/18/2015	16:30	0	0	$10,000	$0
Peoria	6/20/2011	04:30	0	0	$10,000	$0
Peoria County	8/13/2008	18:23	0	0	$45,000	$0
Peoria County	6/20/2011	05:15	0	0	$25,000	$0
Peoria County	6/16/2012	19:20	0	0	$200,000	$0
Peoria County	5/26/2017	13:15	0	2	$0	$0
Peoria County	6/19/2018	15:30	0	0	$32,000	$0
Peoria County	8/2/2022	08:00	0	0	$50,000	$0
West Peoria	7/7/2008	04:05	0	0	$15,000	$0
Total			**0**	**2**	**$387,000**	**$0**

Source: NCEI

The following are a selection of narrative descriptions recorded in NCEI for lightning events that occurred in Peoria County:

- **August 13, 2008.** A small bowing segment of thunderstorms moved into the upper Illinois River valley from the northwest, one of which produced a lightning strike that struck two houses, setting them ablaze, in the city of Peoria. The occupants were able to flee without injury. Lightning struck two houses in the same neighborhood in the far northern sections of the City of Peoria. Both houses were set on fire as a result of the lightning. One house had minor damage to the roof and siding, while the other house lost the entire roof. There were no injuries.

- **June 20, 2011.** A few widely scattered thunderstorms across north central Illinois produced wind damage across Marshall County. They also resulted in two house fires started by lightning strikes in Peoria County. A lightning strike started a fire at the home of the Dunlap Fire Chief. His wife and daughters escaped without injury. Damage was confined to the roof and upper parts of the house**.**

- **June 16, 2012.** An upper-level disturbance interacting with an approaching cold front triggered scattered thunderstorms across north-central Illinois during the late afternoon and evening of June 16th. A few of the storms became severe, producing spotty wind damage and large hail. In addition, lightning caused a house fire in Dunlap in Peoria County. A lightning strike set a house on fire on Pauli Road in Dunlap. The house burned to the ground and was a total loss.

- **June 19, 2018.** A stationary frontal boundary draped along the I-80 corridor triggered scattered strong to severe thunderstorms across central Illinois during the afternoon and early evening of June 19th. The storms primarily impacted areas along and north of I-72 with scattered wind damage and

locally heavy rainfall. In addition, a lightning strike caused a house fire in Peoria. A lightning strike cause a house fire on Willard Road in Peoria Heights. The electricity from the strike was carried to a second house, causing a fire two doors down.

- **August 8, 2022.** A persistent frontal boundary draped across central Illinois continued to be the focus for strong to severe thunderstorm development during the morning of August 2nd. A low-level jet interacting with the boundary triggered the first cluster of storms across portions of Sangamon and Logan counties during the pre-dawn hours, with additional cells forming from Galesburg to near Lawrenceville as the morning progressed. The storms gradually dissipated and shifted east of the region by early afternoon. Scattered wind damage and flash flooding occurred. A house was struck by lightning near the intersection of Highway 91 and Streitmatter Road causing a fire that damaged the attic.

Wind

NCEI began recordkeeping of wind events in 1955. NCEI records 351 wind incidents across 210 days between 1955 and 2022 in Peoria County. These events caused a reported $5,569,700 in property damage and $475,000 in crop damage. These events resulted in one injury and one death. Table 5.69 summarizes the more recent wind events in Peoria County from 1955-2022. These events only caused 1 death and 7 injuries, with $5,570,000 in property damage and $475,000 in crop damage.

Table 5.69–-Wind Events in Peoria County, 1955-2022

Type	Number of Events	Injuries	Deaths	Average Magnitude (kts)	Property Damage	Crop Damage
Bartonville						
Thunderstorm Wind	13	0	0	55	$106,000	$0
Chillicothe						
Thunderstorm Wind	12	0	0	53.6	$95,000	$0
Hanna City						
Thunderstorm Wind	5	0	0	55.4	$0	$0
Peoria						
Thunderstorm Wind	61	2	0	53.8	$483,150	$0
Peoria County						
High Wind	13	0	0	46.8	$39,000	0$
Strong Wind	3	0	0	40.3	$60,500	$0
Thunderstorm Wind	225	5	0	54.5	$4,646,050	$475,000
Peoria Heights						
Thunderstorm Wind	15	0	1	54.6	$105,000	$0
West Peoria						
Thunderstorm Wind	4	0	0	54.3	$35,000	$0
Totals	**351**	**7**	**1**	**--**	**$5,569,700**	**$475,000**

Source: National Climatic Data Center Storm Events Database

Summaries of some of the more severe events are provided below:

- **June 3, 2003:** Strong to severe thunderstorms developed across central Illinois during the evening of June 3rd. The worst of the storms were centered along the I-72 corridor from near Winchester northeastward to Champaign-Urbana, where numerous reports of hail and gusty winds were received.

- **July 21, 2008:** During the early morning hours of 7/21/08, thunderstorms quickly began to develop across Iowa in response to a 30 to 35kt low-level jet and an upper-level disturbance tracking eastward out of the Plains. The storms materialized and tracked along a subtle low-level moisture boundary that stretched from central Iowa into central Illinois. As they rolled eastward, they began to pick up momentum and soon began producing widespread damaging winds. The storms headed east-southeast into Knox, Fulton, and Peoria counties, where winds between 60 and 70 mph downed numerous trees and powerlines. Widespread wind damage continued further east in a large swath across Marshall, Woodford, Tazewell, and northern McLean counties where severe winds of 60 to 81 mph were reported.

- **June 18, 2009:** A line of severe thunderstorms produced wind gusts of 60 to 85 mph, large hail, torrential rainfall, and nearly continuous lightning across much of central and southeast Illinois during the early morning of June 18th. The high winds resulted in multiple power outages, downed trees and power lines, and damage to light poles, outbuildings, and several homes.

- **April 28, 2014:** A strong spring storm system tracking from Colorado to the southern Great Lakes brought strong to severe thunderstorms to parts of central Illinois during the late afternoon and evening of April 28th. The storms primarily developed along a warm front extending eastward from the system into the area. Large hail up to the size of quarters and damaging wind gusts of 60 to 70 mph were reported with some of the cells.

- **June 14, 2017:** An upper-level disturbance interacted with a warm and humid airmass to trigger scattered severe thunderstorms during the afternoon and early evening of June 14th. Most of the storms were focused across the Illinois River Valley, where numerous trees were blown down and hail up to the size of quarters was reported.

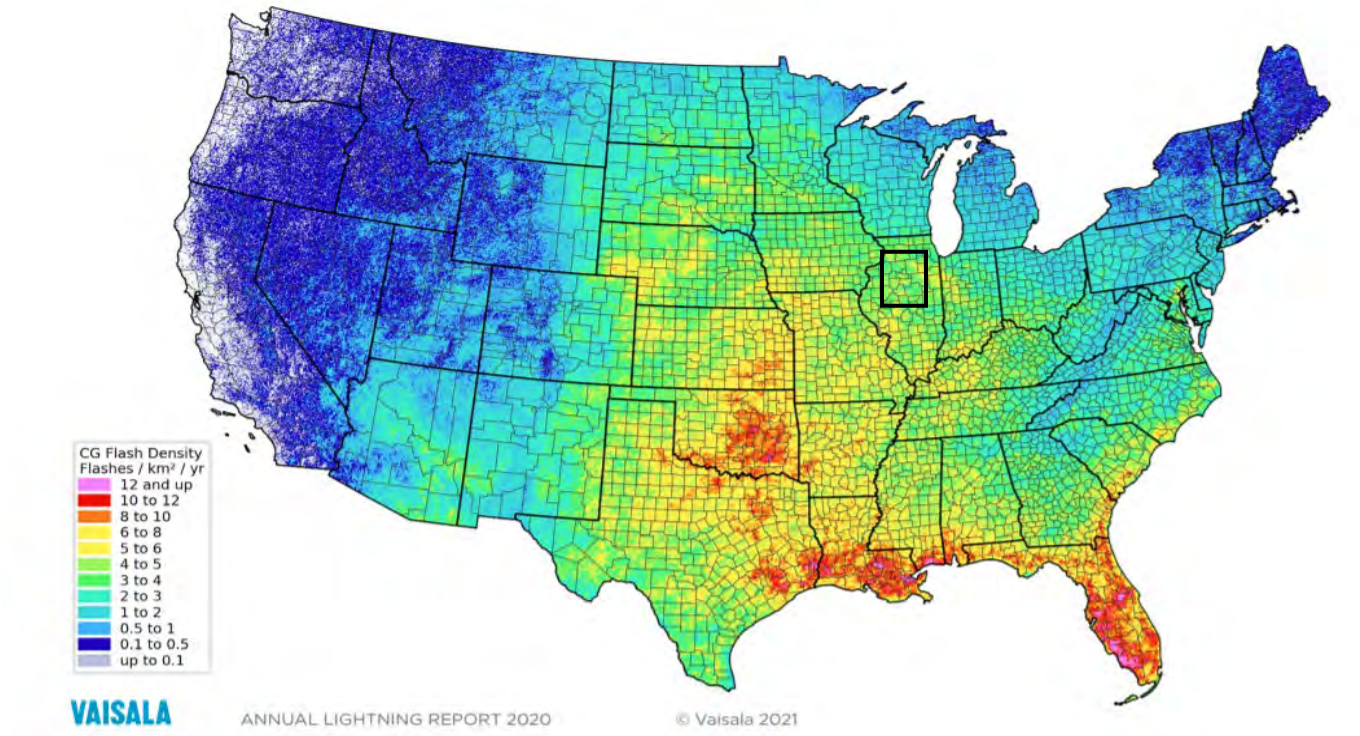
- **November 11, 2020:** A cold front interacting with an unseasonably warm and humid airmass triggered scattered strong to severe thunderstorms across the Illinois River Valley during the afternoon of November 10th. The storms produced wind gusts of 50 to 70 mph and caused periodic damage, especially in Elmwood and Kickapoo in Peoria County where a couple roofs were blown off.

Probability of Future Occurrence

According to NCDC, between 2001 and 2022 (21 years), there were 160 wind events, 22 events with hail 1.75 inches in diameter and larger, and nine lightning events in Peoria County. According to the figure below, located below, the county is in a green and yellow region. This means Peoria County is more likely to experience 4-6 lightning flashes per square kilometer per year.

According to the Vaisala 2020 Annual Lightning Report, Illinois had the eleventh most cloud-to-ground lightning flashes and in 2019 the state has the sixth highest flash density per square mile. According to Vaisala's flash density map, previously shown in Figure 5.48, the majority of Peoria County is in an area that experiences 12 to 15 flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.

Figure 5.48 – Average Cloud-to-Ground Lightning Flash Density (2015-2019)



Source: Vaisala
Note: Peoria County is within the black square

Based on past occurrences, there is a 100% annual chance that the County will experience severe weather.

The magnitude for this hazard is classified as **high**:

- **High -** More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)

Climate Change

Higher temperatures and humidity may increase atmospheric variability associated with the origination of severe thunderstorms and tornadoes, and early research suggests that continued climate change and greenhouse forcing are likely to increase severe thunderstorm occurrence (Diffenbaugh, et al. 2013). Decreases in vertical wind shear can result in fewer or weaker severe thunderstorms and tornadoes. However, this decrease is most likely to occur when convective available potential energy is high in spring and summer, which could result in more frequent severe storms. There has been a surge in the number of severe storms reported over the past 50 years, but this increase could at least be partially attributed to technological developments that allow for better identification and reporting of such storms.

Consequence Analysis

Category	Consequences
Public	Impacts from lightning and hail can result in injuries and fatalities if a person is struck. Fatalities and injuries most often occur when a person is exposed and in outdoor conditions during a storm. Exposure to water and open areas also increases the likelihood that a person will be struck by lightning.

Category	Consequences
Responders	Hail and lightning can affect responders who are often more susceptible to events due to the nature of their work which often forces police and emergency medical providers to be exposed to the elements. In these cases, responders are at risk of Injuries; fatalities; potential impacts to response capabilities.
Continuity of Operations (including Continued Delivery of Services)	Lightning can shut down large parts of the power grid due to blowing a transformer, and hail can have impacts on continuity of operations as the warning time is usually shorter. Hail stones could potentially knock out power supplies or other critical resources which can affect operations temporarily.
Property, Facilities and Infrastructure	Possibility of structure fire ignition; potential for disruptions in power and communications infrastructure; destruction and/or damage to any exposed property, especially windows, cars and siding; mobile homes see increased risk
Environment	Lightning can affect power and energy sources through strikes which can shut down power for hours and sometimes days. Lightning can ignite wildfires that can result in widespread damage to property. Depending on the size, hailstones can damage roofs or other parts of homes, business, or any type of facility or infrastructure.
Economic Condition of the Jurisdiction	Damages to power-related infrastructure could cause economic strain to return the system to full capacity. Hail damages to property can lead to costly recovery efforts.
Public Confidence in the Jurisdiction's Governance	Public confidence is not generally affected by severe weather events.

Vulnerability Assessment

People

People and populations exposed to the elements are most vulnerable to severe weather. Risk of being struck by lightning is greater in open areas, at higher elevations, and on the water.

Lightning can also cause cascading hazards, including power loss. Loss of power could critically impact those relying on energy to service, including those that need powered medical devices. Additionally, the ignition of fires is always a concern with lightning strikes.

The availability of sheltered locations such as basements, buildings constructed using hail-resistant materials and methods, and public storm shelters, all reduce the exposure of the population. Residents living in mobile homes are more vulnerable to hail events due to the lack of shelter locations and the vulnerability of the housing unit to damages. According to the 2021 American Community Survey (ACS) 5-Year Estimates, 1,124 housing units (1.3 percent) in Peoria County are classified as "mobile homes or other types of housing. Individuals who work outdoors may also face increased risk.

Since 1955, NCEI records one fatality attributed to lightning, wind, or hail events in Peoria County, however, one injury from lightning and one injury from wind have been reordered. There is a potential for injury or fatality from such events.

Property

Property damage caused by lightning usually occurs in one of two ways – either by direct damages through fires ignited by lightning, or by secondary impacts due to power loss. According to data collected on lightning strikes in Peoria County, the majority of recorded property damage was due to fires.

NCEI records lightning impacts over 24 years (1998-2022), with $387,000 in property damage recorded. Based on these records, the planning area experiences an annualized loss of $16,125 in property damage. The average impact from lightning per incident in Peoria County is $43,000.

General damages to property from hail are direct, including destroyed windows, dented cars, and building, roof and siding damage in areas exposed to hail. Hail can also cause enough damage to cars to cause them to be totaled. The level of damage is commensurate with both a material's ability to withstand hail impacts, and the size of the hailstones that are falling. Construction practices and building codes can help maximize the resistance of the structures to damage. Large amounts of hail may need to be cleared from roadways and sidewalks, depending on accumulation. Hail can cause cascading impacts, including power loss.

NCEI reported $3,070,000 in property damage from 1955 to 2022 as a direct result of hail. This damage occurred in a period of 200 events. However, the damage occurred from 2 storms.

It should be noted that property damage due to hail is usually insured loss, with damages covered under most major comprehensive insurance plans. Because of this, hail losses are notoriously underreported by the NCEI. It is difficult to find an accurate repository of hail damages in Peoria County, thus the NCEI is still used to form a baseline.

Property damage caused by wind includes falling limbs and debris, roof damages, overturned vehicles and light structures, and downed power poles resulting in some loss of electric service. Construction practices and building codes can help maximize the resistance of the structures to damage. Peoria County has adopted the International Code Council (ICC) Building Code Program with local design criteria specifying a residential design wind speed of 90 miles per hour (mph) and commercial risk categories as follows: #1 is 105 mph; #2 is 115 mph; and #3 and #4 are 120 mph.

NCEI reported $5,509,000 in property damage and $475,000 in crop damage from 1955 to 2022 as a result of thunderstorm wind and high wind. This occurred over 348 events, resulting in an average of $15,830 of property damage per event. The crop damage was reported on only 2 events, so accurate estimates cannot be provided.

Table 5.70 provides the estimated annualized property damages resulting from thunderstorms, including lightning, hail and wind. This annualized damage has been compared to the total building exposure for Peoria County and the level of damage is minimal compared to the value of building exposure.

Table 5.70—Estimated Annualized Property Damages From Severe Thunderstorms (2013-2022)

Building Exposure	Hail/Lightning/Thunderstorm Wind Property Damages		Annualized Property Damages
$915,388,034	Hail	$3,070,000	$432,750
	Lightning	$387,000	
	Thunderstorm Wind	$4,344,000	
	Total	**$7,801,000**	

Table 5.71 provides the insured crop losses for resulting from hail and wind. The insured loss has been adjusted to estimate losses to all insurable crops by considering that 84 percent of insurable crops in the State were insured (2015 Illinois Crop Insurance Profile from USDA's Risk Management Agency).

Table 5.71—Estimated Insurable Annualized Crop Damages Resulting from Severe Thunderstorms

Crop Exposure (2012)	Insurance Paid (2003-2012)		Adjusted Crop Damages considering 84% Insured	Annualized Adjusted Crop Damages
$163,591,000	Hail	$324	$79,992	$7,999
	Other (incl. Lightning)	$53,162		
	Wind	$13,707		
	Total	**$67,193**		

Environment

Lightning may also result in the ignition of wildfires. This is part of a natural process, however, and the environment will return to its original state in time. Since large hail often appears near the area within a thunderstorm where tornadoes are most likely to form, people should be cautious that a tornado could be nearby and seek appropriate shelter.

Hail and wind can cause extensive damage to the natural environment, pelting animals, and damaging trees and vegetation. Melting hail can also increase both river and flash flood risk.

Changes in Development

Development is not expected to impact the incidence of severe weather. As the county grows, overall asset exposure will increase, which may increase risk.

Key Issues

- Severe weather events are highly likely to continue occurring in Peoria County. Communities should consider examining power redundancy and surge protection solutions for critical facilities to maintain operations in the event of a power outage.
- Past severe weather events caused injuries to individuals outside and/or in high-risk locations during these events. Solutions might include an awareness campaign to educate the public on severe weather risk and preparedness, with particular outreach focused on support for homeless and those with insecure housing options.
- The population living in areas with a larger share of mobile home units are more vulnerable to thunderstorms and hail events, particularly if there are high wind impacts.
- Related Hazards: Flood, Hurricane, Tornado

Hazard Summary by Jurisdiction

The following table summarizes severe weather hazard risk by jurisdiction. Most aspects of severe weather risk do not vary substantially by jurisdiction; however, mobile and manufactured home units are more vulnerable to structural damage. Just above 1 percent of the housing stock in Peoria County comprises manufactured housing units. These communities may therefore face more severe impacts from severe weather events. Where priority ratings vary between, lightning, and hail for impact and spatial extent, these scores represent an average rating with greater weight given to lightning because it occurs much more frequently.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	High	High	Medium	Severe
Chillicothe	High	High	Medium	Severe
Hanna City	High	High	Medium	Severe
Peoria	High	High	Medium	Severe
Peoria Heights	High	High	Medium	Severe
West Peoria	High	High	Medium	Severe
Peoria County Unincorporated Areas	High	High	Medium	Severe
Peoria Park District	High	High	Medium	Severe
Greater Peoria Sanitary District	High	High	Medium	Severe

5.12 Severe Winter Storms

Hazard Background

Winter weather can range from a moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Events may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation and can be accompanied by extreme cold temperatures. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Heavy snow might also cause significant property damages, such as roof collapses on older buildings.

All winter storm events—snow, sleet, ice, freezing temperatures, etc.—have the potential to present dangerous conditions to the affected area. The typical elements of winter storm events are described below:

Heavy snow events are defined by the National Weather Service (NWS) as an accumulation of 4 or more inches in 12 hours or less. Larger snowfalls pose a greater risk, reducing visibility due to blowing snow and making driving conditions treacherous. However, even small accumulations may cause costly damage or disruptions.

Ice storms are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold, stably-stratified air entrenched against the eastern slopes of a north-south oriented mountain range. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case, the re-frozen water particles are ice pellets (sleet). Sleet typically bounces when it hits the ground and does not stick to the surface but instead accumulates like snow, posing similar problems. It has the potential to accumulate into a layer of ice on surfaces. Freezing rain usually sticks to the ground, creating a sheet of ice on roadways and other surfaces.

All winter storm elements—snow, sleet, ice, freezing temperatures, etcetera—have the potential to cause significant hazard to a community. Even small accumulations can down power lines and tree limbs, create hazardous driving conditions, and disrupt communication and power for days.

Advancements in meteorology and forecasting usually allow for mostly accurate forecasting a few days in advance of an impending storm. Most storms have a duration of a few hours; however, impacts can last several days after the initial incident until cleanup is completed.

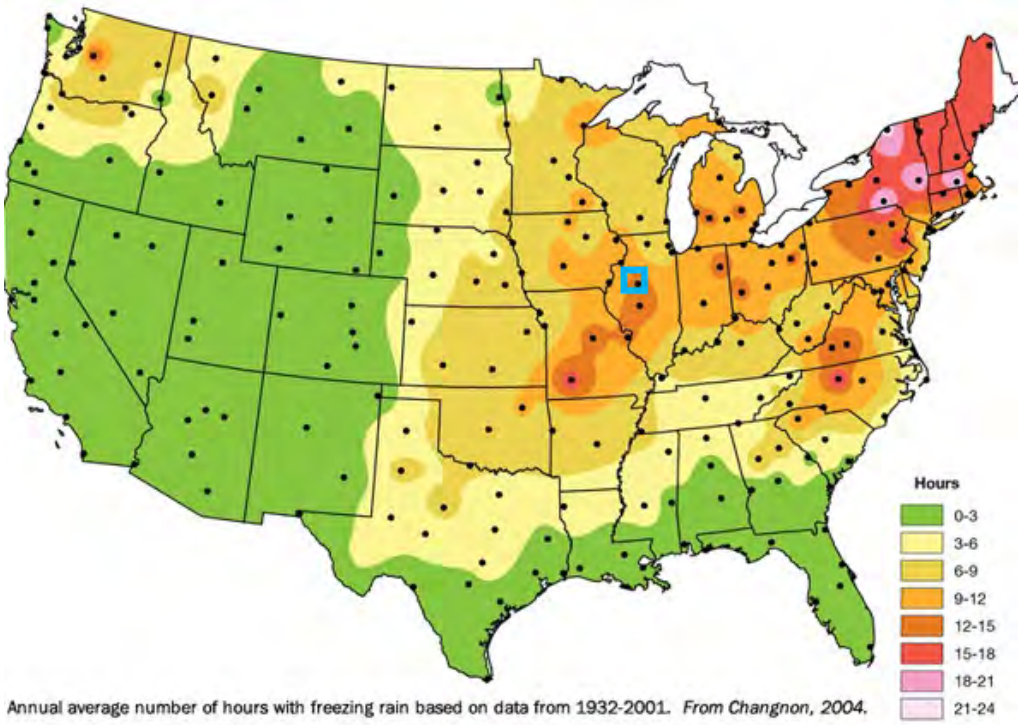
Location

Severe winter weather is usually a countywide or regional hazard, impacting the entire county at the same time. The entirety of Illinois is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Peoria County is accustomed to severe winter weather conditions and is most likely to receive winter weather from December to February. Figure 5.49 shows that Peoria County falls in a zone that receives 12-15 hours of freezing rain per year. Given the atmospheric nature of the hazard, severe winter weather can occur anywhere in the county.

The geographic location was assigned a rank of **high**, the entire planning area is subject to extreme temperatures and all participating jurisdictions are affected.

- **High -** More than 25% of the total population adversely affected should the hazard occur

Figure 5.49 – Average Number of Hours per Year with Freezing Rain in the US, 1932-2001



Source: http://mrcc.isws.illinois.edu/living_wx/icestorms/
Note: Blue square indicates approximate location of Peoria County

Extent

Severe winter weather often involves a mix of hazardous weather conditions. The magnitude of an event can be defined based on the severity of each of the involved factors, including precipitation type, precipitation accumulation amounts, temperature, and wind.

NOAA uses the Regional Snowfall Index (RSI), shown in Table 5.72, to assess the societal impact of winter storms. The index uses the spatial extent of a storm, the amount of snowfall, and the juxtaposition of these elements with population to assess the impact of snowfall. For example, areas which receive very little snowfall on average may be more adversely affected than other regions, resulting in a higher severity. An event of any extent may cause disruption in Peoria County.

Table 5.72 – Regional Snowfall Index (RSI) Values

Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18+	Extreme

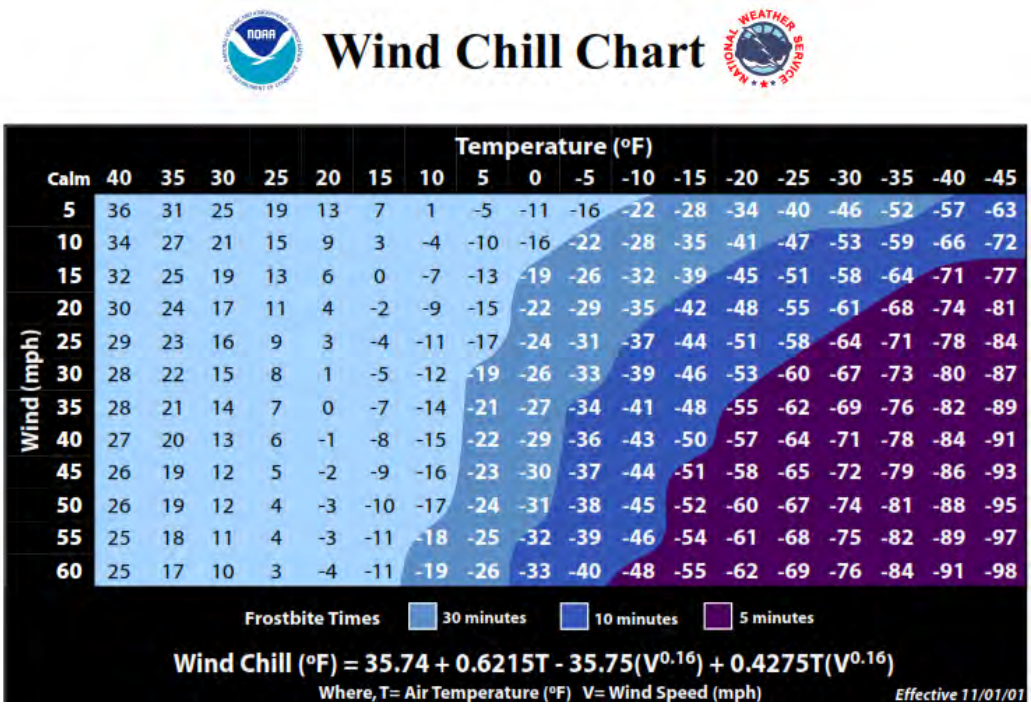
Source: NOAA

Three emergency declarations and one major disaster declaration have occurred in Peoria since 1957 related to winter storms:

- EM-3068, January 16, 1979, which had an RSI of 4
- EM-3134, January 8, 1999, which had an RSI of 4
- EM-3269, December 29, 2006, which had an RSI of 2
- DR-1960, March 17, 2011, which had an RSI of 5

The NWS Wind Chill Temperature Index, shown in Figure 5.50, provides a formula for calculating the dangers of winter winds and freezing temperatures.

Figure 5.50 – NWS Wind Chill Temperature Index



Source: https://www.weather.gov/safety/cold-wind-chill-chart

Table 5.73 shows the snowfall summary at the Peoria International Airport for the period of record from 2006 through 2022.

Table 5.73 – Snowfall Summary (in), Peoria Airport, 2006-2022

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Peoria International Airport	7.8	9.9	3.3	0.8	--	--	--	--	--	0.3	1.6	6.4	30.1

Source: v1 (noaa.gov)

Damages associated with winter storms in Peoria County are usually related to downed power lines and power infrastructure. These damages and the associated losses as a result of disruptions in normal daily operations can be costly.

One significant winter weather event can have multiple impacts including property damage and damages to power lines and infrastructure from falling trees and limbs, prolonged power outages, road damage, road hazards, and road closures, school, government and business closures.

Peoria County has adopted the International Code Council (ICC) Building Code Program with local design criteria specifying a residential design wind speed of 90 miles per hour (mph) and commercial risk categories as follows: #1 is 105 mph; #2 is 115 mph; and #3 and #4 are 120 mph.

- **Medium —** Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities

Historical Occurrences

Peoria County has received three emergency declarations and one major disaster declaration for winter weather.

The NCEI Storm Events Database was reviewed for winter weather related events including cold/wind chill, extreme cold/wind chill, frost/freeze, heavy snow, ice storm, sleet, winter storm, and winter weather. These events are defined by NCEI as follows:

- **Cold/Wind Chill** – Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory conditions of 0°F to -14°F with wind speeds 10 mph or greater.
- **Extreme Cold/Wind Chill** – A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria, defined as wind chill -15°F or lower with wind speeds 10 mph or greater.
- **Frost/Freeze** – A surface air temperature of 32°F or lower, or the formation of ice crystals on the ground or other surfaces, for a period of time long enough to cause human or economic impact, during the locally defined growing season.
- **Heavy Snow** – Snow accumulation meeting or exceeding 12 and/or 24-hour warning criteria of 3 and 4 inches, respectively.
- **Ice Storm** – Ice accretion meeting or exceeding locally/regionally defined warning criteria of ¼ inch or greater resulting in significant, widespread power outages, tree damage and dangerous travel. Issued only in those rare instances where just heavy freezing rain is expected and there will be no "mixed bag" precipitation meaning no snow, sleet or rain.
- **Sleet** – Sleet accumulations meeting or exceeding locally/regionally defined warning criteria of ½ inch or more.
- **Winter Storm** – A winter weather event that has more than one significant hazard and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements. Defined by NWS Lincoln, IL Forecast Office as snow accumulations 3 inches or greater in 12 hours (4 inches or more in 24 hours); Freezing rain accumulations ¼ inch or greater; Sleet accumulations ½ inch or more. Issued when there is at least a 60% forecast confidence of any one of the three criteria being met.
- **Winter Weather** – A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria.

For the period of record, from 1996 through 2022, NCEI records twenty winter storm events, nineteen heavy snow events, twelve wind chill events, twelve winter weather events, one frost event, and eight ice storm events. All events are reported for the entire county; NCEI does not report winter storm related events at the municipal level. As detailed in Table 5.74, these events caused ten reported direct injuries and nine deaths, along with $2,200,000 in property damage.

Table 5.74 – Summary of NCEI Recorded Winter Storm Related Events, 1996-2020

Event Type	Event Occurrences	Deaths/Injuries	Property Damage	Crop Damage
Cold/Wind Chill	6	5/0	$0	$0
Extreme Cold/Wind Chill	6	1/0	$0	$0
Frost/Freeze	1	0/0	$0	$0
Heavy Snow	19	1/5	$0	$0
Ice Storm	8	0/0	$2,200,000	$0
Winter Storm	20	2/5	$0	$0
Winter Weather	12	0/0	$0	$0
Total	**72**	**9/10**	**$2,200,000**	**$0**

Source: NCEI

The following event narratives reported in NCEI describe the types of impacts felt locally as a result of winter storms:

- **April 10, 1997** - An early spring snow storm dumped between 4 and 13.5 inches of heavy wet snow over northern portions of Central Illinois. A 30-mile-wide band centered along a line from just south of Galesburg to just north of Peoria received from 10 to 13.5 inches of snow. Numerous trees, tree branches, and powerlines collapsed due to the weight of the heavy wet snow. Some caused damage to vehicles and homes. In Normal (McLean County), the fieldhouse at Illinois State University had a 12-foot high by 150 foot section of the northwest wall collapse under the weight of the 4 inch snowfall, causing $500,000 in damage. Also, numerous accidents occurred throughout the area with a few minor injuries reported.
- **December 9, 1997** - A strong low pressure system moving northeast through Southern Illinois and into Central Indiana spread a band of heavy snow in about a 50 mile wide swath centered along the Illinois River. Most locations reported about 5 inches of snowfall with some locally heavier amounts around 6 inches. Numerous traffic accidents were reported but no serious injuries resulted. One exception resulted in a death in Peoria County. A tow truck driver was killed after a car skidded off a roadway and into a stranded car, pinning the victim.
- **March 8, 1998** - A storm over the Southern Plains moved northeast bringing rain to the area which switched over to snow in the evening on March 8th. The snowfall persisted overnight with a mixture of freezing rain and snow in our southeastern counties. By the time the snow tapered off, snowfall amounts ranged from 2 inches in Coles County to over 6 inches in Knox, Peoria, and Fulton counties. Numerous accidents were reported with dozens of minor injuries. Two men died in separate accidents in Peoria County as they lost control of their vehicles due to the treacherous road conditions. Even after the snowfall subsided, gusty winds to 50 mph created near white-out conditions in most locations, before subsiding during the evening hours on the 9th.
- **January 19, 2000** - During the day and early evening hours on the 19th, a winter storm with heavy snow affected Central Illinois with 4 to 6 inches of snow across a large area. There were some local 6 to 8 inch amounts of snow, mainly along and north of a Galesburg (Knox County) to Bloomington (McLean County) to Danville (Vermilion County) line. A cooperative observer in Minonk (Woodford County) reported 7.5 inches of snow. Blowing and drifting of snow was reported as well. The storm caused numerous road closures as well as accidents. Two injuries were reported with a couple of the accidents (one in Peoria County and one in Vermilion County).

- **December 1, 2006** - A major winter storm moved through the Midwest from November 29th into December 1st. Freezing rain moved into west central and central Illinois during the late hours of November 29th. The freezing rain mixed with and changed to heavy sleet, which persisted for 6 to 8 hours during the evening hours of November 30th. Ice accumulations ranged from 0.25 to 0.70 inches across much of central Illinois, with heavy sleet accumulations ranging from 0.50 to 2.20 inches. The precipitation changed over to snow across west central Illinois by the evening hours on November 30th and during the overnight hours across central Illinois. Snow accumulations along and west of the Illinois River valley ranged from 8 to 15 inches. Further east, 3 to 8 inches of snow was reported on top of the significant ice and sleet accumulations. The precipitation tapered off on December 1st. Considerable tree and power line damage was caused by the ice and heavy snow, especially across central Illinois. The power was not restored across some locales for several days. The snow and ice covered roads also resulted in numerous vehicular accidents. 22 counties in the Central Illinois National Weather Service Forecast Area were designated a state disaster area and 18 counties were designated a federal disaster area. Declared state and federal disaster area. Snow accumulation of 8 to 12 inches fell on top of significant sleet accumulation. Four people were injured at a nursing home in Peoria when a portion of the roof collapsed under the weight of the snow.
- **December 18, 2008** - A powerful storm system produced between one quarter and three quarters of an inch of ice across parts of central Illinois on December 18th. Areas along and north of I-72 were most severely impacted, with widespread tree damage and power outages reported. Increasing west to northwest winds in the wake of the departing storm system resulted in additional downed tree branches and power outages into December 20th. At the height of the storm, over 30,000 customers were reported to be without power across central Illinois. Preliminary damage estimates are approximately 2 million dollars. Weather observers across Peoria County reported between one quarter and three quarters of an inch of ice, including six tenths of an inch in Peoria and near Princeville.
- **February 1, 2011** - A powerful storm system tracking from the southern Plains into the Great Lakes brought a wide variety of wintry precipitation to central and southeast Illinois on February 1st into the 2nd. Freezing rain was the primary form of precipitation south of I-70, where ice accumulations of one quarter to three quarters of an inch were common. Further north, a mix of freezing rain, sleet, and snow was observed along and south of Shelbyville o Champaign-Urbana to Hoopeston line. One quarter to one half an inch of ice accumulated further south close to I-70, while 2 to 4 inches of sleet fell across the rest of the area. Further northwest, heavy snow and extremely strong winds resulted in blizzard conditions along and northwest of the I-55 corridor. Twelve to 18 inches of snow, with locally higher amounts, were common. New records for 24-hour snowfall were set at 11 cooperative observation locations in central and west central Illinois. The extreme winter precipitation created nearly impossible travel conditions at times and resulted in numerous accidents and injuries across central and southeast Illinois. Numerous county highways and several interstates were closed...including I-55, I-72, I-74 and I-155...from the afternoon of February 1st through much of the day February 2nd. The National Guard made nearly 200 rescues of stranded motorists in central Illinois, and local emergency managers made dozens of snowmobile rescues in rural locations. All schools in each of the 35 impacted counties were closed for at least three days. Power outages were widespread, impacting nearly one million people. Some locations in southeast Illinois, along and south of I-70 were without power for nearly a week after the storm. Damages done to power lines, power poles, trees and other property due to ice was around $10 Million, while snow removal costs for communities in central and southeast Illinois was more than

$4.4 Million. Weather observers across Peoria County measured 15 to 18 inches of snow, with the total for Peoria coming in at 15 inches. Thundersnow was reported from 1930 to 2030 CST on February 1, 2011. 45 to 55 mph winds accompanied the snow, reducing the visibility to near zero. As a result of the blizzard conditions, travel became nearly impossible across the area.

- **December 28, 2015.** A multi-faceted storm system brought heavy rainfall, significant ice accumulations, and strong winds. Temperatures fell into the upper 20s and lower 30s, rain changed to freezing rain along and north of a Canton to Bloomington line. Although warm ground temperatures prevented much freezing on paved surfaces, significant ice accumulations of one tenth to three tenths of an inch were reported on elevated surfaces, including trees. This amount of ice, combined with strong easterly winds gusting between 40 and 50 mph, brought down many trees and power lines. Due to the very wet soil conditions, numerous large trees were uprooted, damaging homes and taking down power lines and power poles. Widespread power outages were reported in Galesburg, Peoria, Bloomington-Normal, and many smaller communities. Around 240,000 people lost power across Knox, Stark, Marshall, Peoria, Tazewell, Woodford, and McLean counties. Weather observers across Peoria County reported ice accumulations of around 0.25. This amount of ice combined with winds gusting as high as 45 to 55 mph caused extensive damage to trees, power poles, and power lines. Several homes were damaged by falling trees and tree branches. About 75,000 people lost power for up to 3 days after the storm. Numerous businesses were closed in Peoria due to power outages. Property damage was estimated at $1.7 million.
- **November 25, 2018.** A deepening area of low pressure tracked from southeast Kansas during the early morning of November 25th to northwest Ohio by the morning of November 26th. Precipitation began as rain across central Illinois, but changed to snow west of the Illinois River by mid to late afternoon of the 25th. Moderate to heavy snow occurred through the evening, accompanied by thunder at times. Once the low passed to the northeast, the snow gradually diminished by the early morning of November 26th. Total snowfall ranged from 8 to 14 inches, with the maximum measured amount within the National Weather Service Lincoln County Warning Area (CWA) being 13.4 inches just east of Rio in northwest Knox County. Strong northwesterly winds gusting 25-55 mph on the back side of the departing storm system created whiteout conditions west of the Illinois River. Numerous roads were closed due to considerable blowing and drifting snow.
- **February 17, 2022.** Low pressure tracking from the Ozarks during the pre-dawn hours on February 17th to southern Ohio by the evening of the 17th brought heavy snow to parts of central Illinois. Snowfall amounts of greater than 6 inches were focused along and north of the I-72 corridor… with a swath of 8 to 10-inch totals along a Quincy to Bloomington-Normal line. As the low depend over the Ohio River Valley, northerly wind gusts increased to 35 to 45 mph, creating considerable blowing and drifting snow. As a result, travel quickly became hazardous and several area roadways were closed. Stretches of both I-55 and I-74 were closed near Bloomington. In addition, numerous accidents created a 100-vehicle pileup on southbound I-39 between Normal and Minonk, which closed the interstate for about 24 hours.

Probability of Future Occurrence

NCEI records 53 severe winter weather related events during the 20-year period from 2002 to 2022, which equates to a 265% percent probability in any given year.

Based on historic frequency, the probability of future occurrence rating for winter storms is **high**:

- **High** - More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)

Climate Change

According the 2014 Climate Change Fact Sheet from the White House, Office of the Press Secretary, for Illinois and the Midwest, the rate of warming in the Midwest has markedly accelerated over the past few decades. Between 1900 and 2010, the average Midwest air temperature increased by more than 1.5°F. If this trend continues, future occurrences of the extreme cold/wind chill aspects of winter storms should decrease. In addition, higher winter temperatures bring higher probability of rain, rather than snow. As a result, the amount of precipitation falling as snow should decrease.

Consequence Analysis

Category	Consequences
Public	Winter storms can create dangerous driving conditions by limited visibility or making roads slick. Loss of power can create very cold conditions increasing the risk of hypothermia or frostbite. Individuals seeking alternative means of heating their homes may run the risk of carbon monoxide poisoning or fire hazards.
Responders	Responders face heightened risk due to slick roads and limited visibility. Snow and ice accumulations may block roads, limited access for responders to reach areas in need.
Continuity of Operations (including Continued Delivery of Services)	Continuity of operations is generally expected to be maintained. However, localized disruption of roads and/or utilities caused by incident may postpone delivery of some services or make it difficult for emergency management personnel to arrive at work. Schools may be delayed or closed, which can lead to logistical problems for teachers and administrators.
Property, Facilities and Infrastructure	Disruption of major and local roads is possible, limiting mobility. Air travel delays are possible. Disruption of utilities is likely; utilities at risk include water, cable, internet, water, and power.
Environment	Environmental damage to trees and other vegetation may occurred. Downed trees and limbs may cause secondary damages to property and people or may down power lines. Environmental impacts may result when snow is cleared from roadways, picking up contaminants from chemicals, oil products, and salt mixture used to de-ice roads. These contaminants can be carried to local waterways and impact water quality.
Economic Condition of the Jurisdiction	Local economy and finances may be adversely affected, depending on damage and business interruption costs. During a winter storm event, there is a high potential for business and office closures, modified business and office hours, and cancellation or postponement of events, especially due to power outages and poor road conditions.
Public Confidence in the Jurisdiction's Governance	Public confidence is unlikely to be impacted unless road clearing, power restoration, and other response activities are particularly slow.

Vulnerability Assessment

People

Because winter storms are large scale events, all of Peoria County's population is exposed.

Winter storms are considered deceptive killers because most deaths are indirectly related to the storm event. The leading cause of death during winter storms is from automobile crashes due to poor visibility and/or slippery roads. Additionally, exhaustion and heart attacks caused by overexertion may result from winter storms.

Power outages during very cold winter storm conditions can also create potentially dangerous situations. Elderly people account for the largest percentage of hypothermia victims. In addition, if the power is out

for an extended period, residents are forced to find alternative means to heat their homes. The danger arises from carbon monoxide released from improperly ventilated heating sources such as space or kerosene heaters, furnaces, and blocked chimneys. House fires also occur more frequently in the winter due to lack of proper safety precautions when using an alternative heating source.

Loss of Use

Overhead power lines and infrastructure are also vulnerable to damages from winter storms, in particular ice accumulation during winter storm events can cause damages to power lines due to the ice weight on the lines and equipment as well as damage caused to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses would include cost of repair or replacement of damaged facilities and lost economic opportunities for businesses. Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard.

The electric power loss of use estimates provided in Table 5.75 below were calculated using FEMA's Standard Values for Loss of Service for Utilities published in the July 2020 BCA Reference Guide. These figures are used to provide estimated costs associated with the loss of power in relation to the population in Peoria County. The loss of use estimates for power failure associated with winter storms is provided as the loss of use cost per person, per day of loss. The estimated loss of use represents the loss of service of the indicated utility for one day for 10 percent of the population. It is understood that in rural areas, the typical loss of use may be for a larger percentage of the population for a longer time during weather extremes. These figures do not consider physical damages to utility equipment and infrastructure.

Table 5.75—Loss of Use Estimates for Power Failure (One Day)

Jurisdiction	2021 Population Estimate	Estimated Affected Population 10%	Electric Loss of Use Estimate ($174 per person per day)
Bartonville	6,005	601	$104,574.00
Chillicothe	6,272	628	$109,272.00
Hanna City	1,372	138	$24,012.00
Peoria	113,672	11,368	$1,978,032.00
Peoria County	182,439	18,244	$3,174,456.00
Peoria Heights	5,940	594	$103,356.00
West Peoria	4,300	430	$74,820.00
Total	**320,000**	**32,003**	**$5,568,522**

Source: FEMA's Standard Values for Loss of Service for Utilities, July 2020 BCA and 2021 5-Year ACS

Property

A winter storm may cause damage to homes and vehicles when severe. From 1996 to 2022, $2,200,000 in property damage was reported in association with any winter weather events recorded by NCEI. This equates to $84,615 in damage annually. However, all this damage comes from 2 ice storm events and may not accurately represent winter storm damage.

USDA claims information for winter events in Peoria County can be seen in Table 5.76 below.

Table 5.76—Claims Paid in Peoria County Due to Winter Weather

Year	Crop	Hazard	Claims Paid
2003	Soybeans	Frost	$1,617

Year	Crop	Hazard	Claims Paid
2004	Wheat	Cold Wet Weather	$775
2005	Corn	Frost	$10,072
2005	Corn	Frost	$10,266
2005	Corn	Freeze	$2,334
2005	Corn	Cold Wet Weather	$4,470
2005	Corn	Frost	$4,538
2006	Corn	Cold Wet Weather	$414
2006	Soybeans	Cold Wet Weather	$125
2007	Wheat	Freeze	n/a
2007	Wheat	Cold Wet Weather	n/a
2007	Wheat	Cold Wet Weather	$5,618
2008	Wheat	Cold Wet Weather	$7,110
2009	Wheat	Cold Wet Weather	$6,366
2009	Wheat	Cold Wet Weather	$294
2009	Corn	Cold Wet Weather	$97,754
2009	Corn	Cold Wet Weather	$2,943
2009	Soybeans	Frost	$7,451
2009	Soybeans	Frost	$13,111
2009	Soybeans	Freeze	$2,858
2009	Soybeans	Cold Wet Weather	$20,794
2009	Soybeans	Freeze	$28,454
2009	Pumpkins	Cold Wet Weather	$4,310
2010	Wheat	Frost	$2,931
2010	Wheat	Cold Wet Weather	$8,538
2010	Wheat	Cold Wet Weather	$804
2010	Soybeans	Cold Wet Weather	$1,136
2010	Pumpkins	Cold Wet Weather	$11,346
2011	Corn	Cold Wet Weather	$2,536
2011	Corn	Cold Wet Weather	$20,492
2012	Corn	Cold Wet Weather	$1,022
2013	Corn	Cold Wet Weather	$1,582
2013	Soybeans	Frost	$1,178
2014	Wheat	Freeze	$3,778
2014	Wheat	Freeze	$1,548
2014	Wheat	Freeze	$9,389
2014	Wheat	Cold Wet Weather	$1,414
2014	Soybeans	Cold Wet Weather	$5,405
2015	Soybeans	Cold Wet Weather	$876
2016	Corn	Cold Wet Weather	$1,066
2016	Soybeans	Cold Wet Weather	$876
2016	Soybeans	Cold Wet Weather	$1,022
2016	Soybeans	Cold Wet Weather	$56,276
2017	Corn	Cold Wet Weather	$2,120
2017	Corn	Cold Wet Weather	$5,228
2017	Soybeans	Cold Wet Weather	$1,222

Year	Crop	Hazard	Claims Paid
2017	Soybeans	Cold Wet Weather	$2,829
2017	Soybeans	Cold Wet Weather	$3,951
2017	Pumpkins	Freeze	$257,151
2017	Pumpkins	Freeze	-$16,880
2018	Soybeans	Cold Wet Weather	$5,964
2018	Pumpkins	Frost	-$18,372
2018	Pumpkins	Frost	$52,626
2019	Pumpkins	Frost	-$585
2019	Pumpkins	Freeze	$251,499
2019	Corn	Cold Wet Weather	$350
2019	Corn	Cold Wet Weather	$28,193
2019	Corn	Cold Wet Weather	$6,881
2019	Soybeans	Cold Wet Weather	$1,196
2019	Soybeans	Cold Wet Weather	$36,941
2019	Soybeans	Cold Wet Weather	$4,005
2020	Corn	Frost	$419
2020	Corn	Freeze	$225
2020	Corn	Cold Wet Weather	$17,857
2020	Corn	Cold Wet Weather	$2,312
2020	Corn	Cold Wet Weather	$7,516
2020	Corn	Cold Wet Weather	$1,788
2020	Soybeans	Cold Wet Weather	$798
2020	Soybeans	Cold Wet Weather	$3,300
2020	Soybeans	Cold Wet Weather	$9,100
2021	Corn	Cold Wet Weather	$17,598
2021	Corn	Cold Wet Weather	$3,591
2021	Soybeans	Cold Wet Weather	$356
2021	Soybeans	Cold Wet Weather	$10,576
2021	Pumpkins	Freeze	$6,747
2021	Pumpkins	Freeze	$315,293
2021	Pumpkins	Cold Wet Weather	$49,512
2022	Corn	Cold Wet Weather	$4,578
2022	Soybeans	Cold Wet Weather	$31,433
2022	Soybeans	Cold Wet Weather	$1,178
Total			**$1,473,385**

Source: USDA Risk Management

Environment

Winter storm events may include ice or snow accumulation on trees which can cause large limbs, or even whole trees, to snap and potentially fall. This potential for winter debris creates a dangerous environment to be outside in; significant injury or fatality may occur if a large limb snaps while a local resident is out driving or walking underneath it.

Late season frost or freeze may harm vegetation, which can reduce habitats and threaten wildlife.

Changes in Development

The winter weather hazard is not expected to be impacted by changes in development. Aside from increases in overall building and infrastructure exposure in the planning area that comes with growth, future development will not significantly increase risk of winter weather.

Key Issues

- Local capability to clear roads is limited. Expanding local capability could reduce hazard risk for travelers.
- Given the precedence of injury and death from winter storm events, residents may be unprepared. Education and outreach as well as adequate communication can help mitigate potential accidents, injuries, or fatalities.

Hazard Summary by Jurisdiction

The following table summarizes severe winter weather hazard risk by jurisdiction. Severe winter weather risk does not vary substantially by jurisdiction because these events are typically regional in nature.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	High	High	Medium	Severe
Chillicothe	High	High	Medium	Severe
Hanna City	High	High	Medium	Severe
Peoria	High	High	Medium	Severe
Peoria Heights	High	High	Medium	Severe
West Peoria	High	High	Medium	Severe
Peoria County Unincorporated Areas	High	High	Medium	Severe
Peoria Park District	High	High	Medium	Severe
Greater Peoria Sanitary District	High	High	Medium	Severe

5.13 Tornado

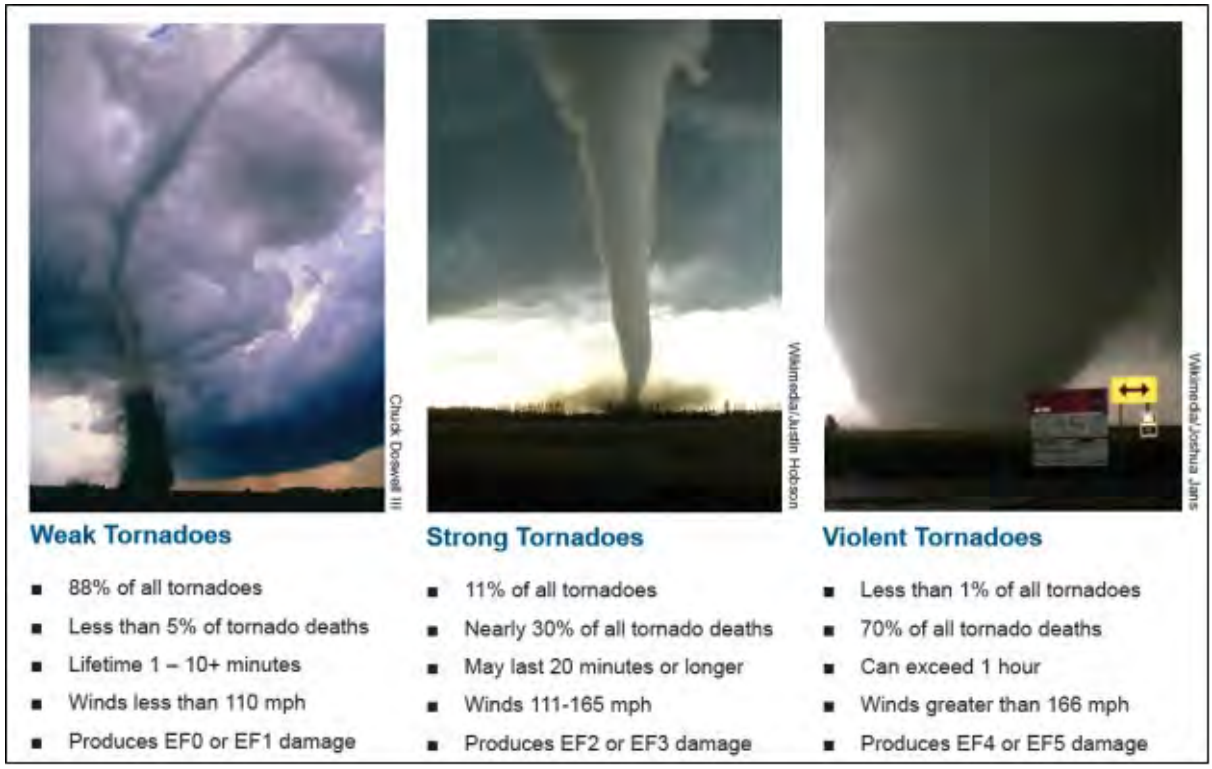
Hazard Background

According to the Glossary of Meteorology (AMS 2000), a tornado is "a violently rotating column of air, pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud." Tornadoes can appear from any direction. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, sometimes accompanied by lightning or large hail.

NOAA records estimate that an average of 1,253 tornadoes occur in the United States each year. Most tornadoes are related to thunderstorms, which gain most of their energy from solar heating and latent heat released by the condensation of water vapor; therefore, tornadoes most often occur in the afternoon and evening hours, when temperatures are higher. Similarly, the months in which tornadoes are most likely correspond to the times of year with increased solar heating and strong frontal systems. In the Southeast, tornadoes are more likely in the early spring. However, tornadoes can occur at any time of day or year, with little warning.

The severity of tornadoes can vary significantly. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles. A tornado's path might vary from only a few dozen yards wide to over a mile wide. Figure 5.51. summarizes the average breakdown of tornadoes and their impacts by their magnitude.

Figure 5.51 – Summary of Tornado Occurrences and Impacts by Magnitude

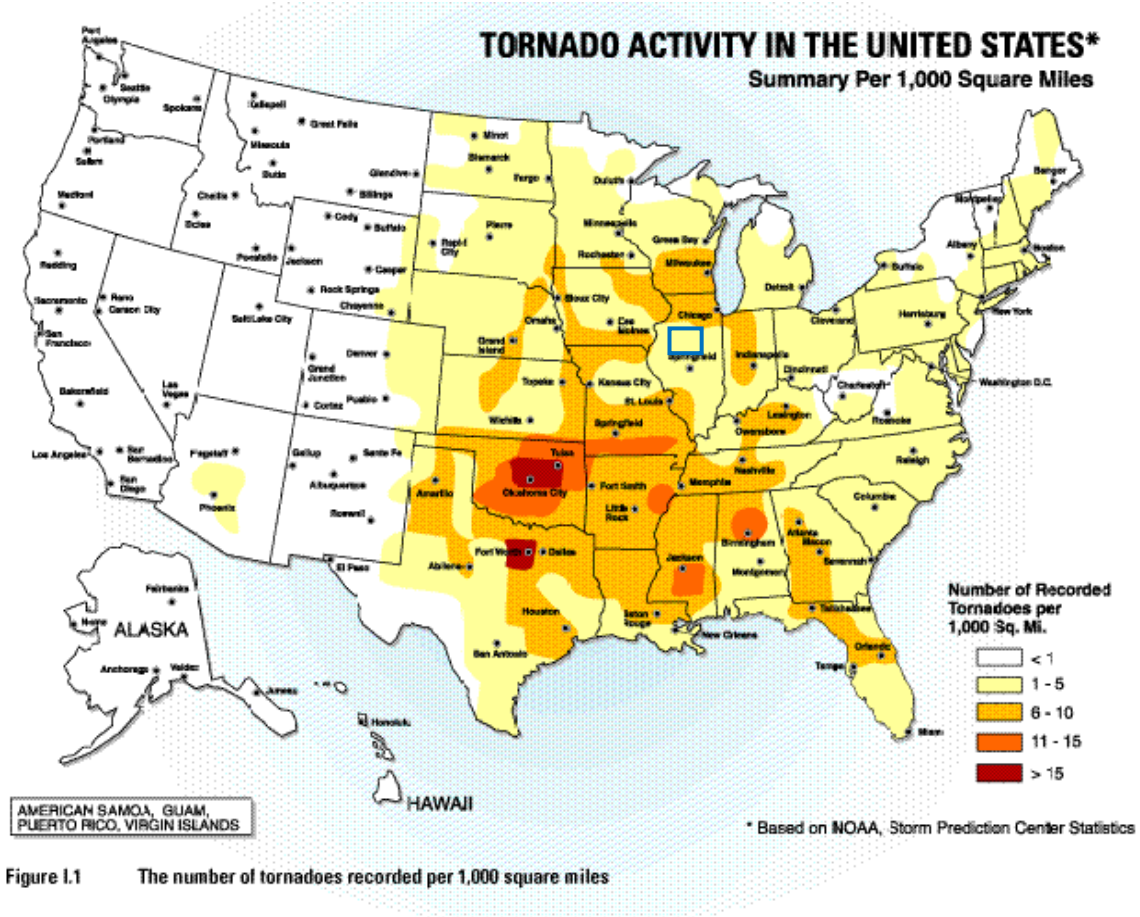


Source: NOAA National Weather Service

According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas and Florida respectively. Although the Great Plains region of the Central United States does favor the development of the largest and most dangerous tornadoes

(earning the designation of "tornado alley"), tornadoes can and do occur throughout the central and eastern U.S., as shown in Figure 5.52, which depicts tornado activity based on the number of recorded tornadoes per 1,000 square miles. Peoria County, shown in the blue square, is in an area that averages 1-5 tornadoes per 1,000 square miles.

Figure 5.52 – Tornado Activity in the U.S.



Source: American Society of Civil Engineers

Location

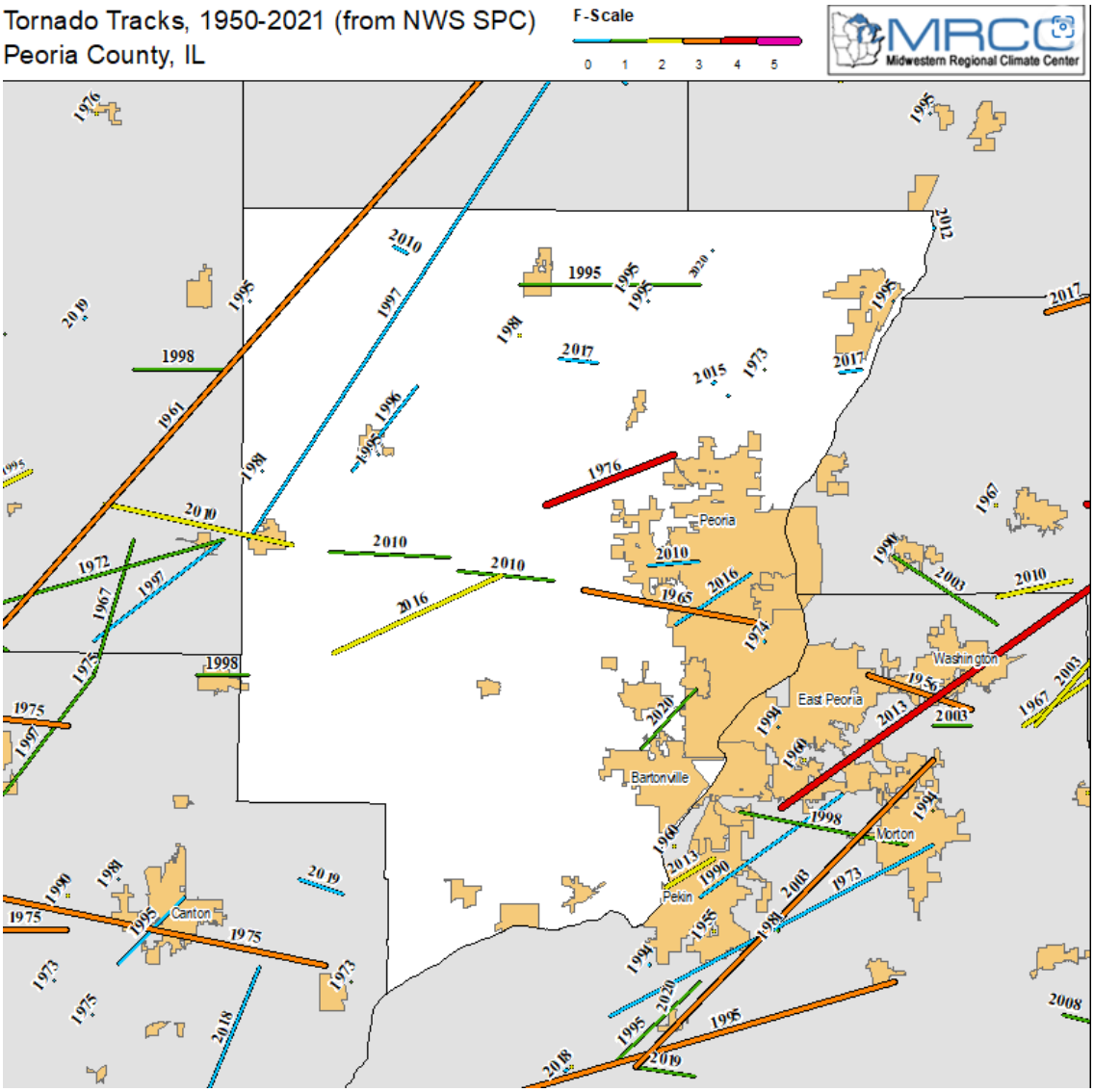
Figure 5.53 reflects the tracks of past tornados that passed within 10 miles of Peoria County from 1950 through December 2022 according to data from the NOAA/National Weather Service Storm Prediction Center.

Tornados can occur anywhere in the County. Tornadoes typically impact a small area, but damage may be extensive. Tornado locations are completely random, meaning risk to tornado isn't increased in one area of the county versus another. All of Peoria County is exposed to this hazard.

The geographic location was assigned a rank of **high**.

- **High -** More than 25% of the total population adversely affected should the hazard occur

Figure 5.53 – Tornado Paths within 10 Miles of Peoria County, 1950-2022



Source: [17143_Peoria.png (800×800) (purdue.edu)]

Extent

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita (EF) scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis and better correlation between damage and wind speed. It is also more precise because it accounts for the materials affected and the construction of structures damaged by a tornado. Table 5.77 shows the wind speeds associated with the Enhanced Fujita scale ratings and the damage that could result at different levels of intensity.

Table 5.77 – Enhanced Fujita Scale

EF Number	3 Second Gust (mph)	Damage
0	65-85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
1	96-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
2	111-135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
3	136-165	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
4	166-200	**Devastating damage.** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
5	Over 200	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m; high-rise buildings have significant structural deformation; incredible phenomena will occur.

The most intense tornado to pass through Peoria County since 1950 was an F3 in Peoria County on May 14, 1961, and September 14, 1965. These events caused 30 injuries and an estimated $5 million in property damage. The costliest tornado to pass through Peoria County since 1950 was an EF-2 on June 5, 2010. Much of the damage was in Elmwood with damage also reported near Oak Hill and Edwards. Photos from the 2010 event are provided in Figure 5.54.

If a strong tornado did impact the populated portions of Peoria County, the impacts would be high.

- **High —** Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.

Historical Occurrences

NCEI's Storm Events Database was reviewed for past tornado events. According to these databases, Peoria County has experienced 29 tornado incidents since 1950, as summarized in Table 5.78. These events caused 30 injuries and over $92 million in property damage. No fatalities or crop damages were reported.

Table 5.78 – Recorded Tornadoes in Peoria County, 1950-2022

Location	Date	Time	Magnitude	Injuries	Deaths	Property Damage	Crop Damage
Peoria County	5/14/1961	19:38	F3	0	0	$2,500,000	$0
Peoria County	5/28/1962	18:30	--	0	0	$0	$0

Location	Date	Time	Magnitude	Injuries	Deaths	Property Damage	Crop Damage
Peoria County	9/14/1965	14:40	F3	30	0	$2,500,000	$0
Peoria County	3/31/1973	17:50	F1	0	0	$2,500	$0
Peoria County	6/8/1974	17:15	F0	0	0	$0	$0
Peoria County	6/29/1976	13:45	F4	0	0	$250,000	$0
Peoria County	5/27/1981	13:00	F0	0	0	$0	$0
Peoria County	7/25/1981	20:40	F2	0	0	$250,000	$0
Peoria County	6/13/1990	19:13	F0	0	0	$2,500	$0
Peoria County	5/13/1995	17:15	F1	0	0	$0	$0
Peoria County	4/19/1996	17:10	F0	0	0	$0	$0
Peoria County	6/6/1996	18:45	F0	0	0	$0	$0
Peoria County	4/30/1997	14:12	F0	0	0	$25,000	$0
Hanna City	4/7/1998	15:01	F0	0	0	$0	$0
Peoria County	7/8/2009	15:55	EF0	0	0	$0	$0
Peoria County	5/25/2010	13:10	EF0	0	0	$0	$0
Peoria County	6/5/2010	19:04	EF2	0	0	$85,000,000	$0
Peoria County	6/5/2010	19:10	EF1	0	0	$85,000	$0
Peoria County	6/5/2010	19:18	EF1	0	0	$170,000	$0
Peoria County	6/5/2010	19:32	EF0	0	0	$100,000	$0
Peoria County	11/17/2013	10:52	EF0	0	0	$40,000	$0
Peoria County	4/9/2015	12:32	EF0	0	0	$0	$0
Peoria County	3/15/2016	18:42	EF2	0	0	$1,000,000	$0
Peoria County	3/15/2016	19:05	EF0	0	0	$260,000	$0
Peoria County	2/28/2017	17:10	EF0	0	0	$0	$0
Peoria County	2/28/2017	17:15	EF0	0	0	$75,000	$0
Peoria County	7/10/2017	16:45	EF0	0	0	$0	$0
Bartonville	3/28/2020	19:58	EF1	0	0	$300,000	$0
Peoria County	5/28/2020	15:10	EFU	0	0	$0	$0
Total				**30**	**0**	**$92,560,000**	**$0**

Source: NCEI

Figure 5.54—2010 Tornado, Elmwood, Illinois (Peoria County)

Source: Peoria Star Journal; http://www.pjstar.com/x1332185244/Tornado-warning-in-effect-after-tornado-touches-down; and Elmwood, IL website: http://www.elmwoodil.org/Storm2010/StormRot11.html

The following narratives from NCEI illustrate that damage occurred in many of these incidents even if a monetary value was not recorded:

May 13, 1995 – A tornado touched down 1 W of Princeville and traveled to the east northeast. Two homes were destroyed and two homes had major damage. Several outbuildings were either damaged or destroyed, as well as numerous trees. Also, a country club in Edelstein sustained major roof damage. Numerous power poles were blown down as well. No injuries were reported and no damage estimate was available.

July 8, 2009 – Scattered thunderstorms developed along a stationary frontal boundary extending from near Galesburg southeastward to Effingham during the afternoon of July 8th. Two brief tornado touchdowns were reported in Peoria and Mason counties. An isolated downburst caused minor wind damage in the town of Neoga in Cumberland County. In addition, a heavy downpour caused street flooding in Mattoon in Coles County.

In 1982, Peoria County received a Major Disaster Declaration for a severe storm event that included tornadoes.

Probability of Future Occurrence

Probability of future occurrence was calculated based on past occurrences and was assumed to be uniform across the county.

In the 20-year period from 2001 through 2020, Peoria County experienced fifteen tornados. This correlates to a 75 percent annual probability that the planning area will experience a tornado. Two of these past tornado events were a magnitude EF2 or greater; therefore, the annual probability of a significant tornado event is approximately 10 percent.

Based on NCDC records of 22 tornadoes in a 65-year period, there is a 75 percent probability of a tornado in Peoria County in any given year, resulting in a rank of **medium**.

- **Medium** - 12 to 60 occurrences in the last 60 years
  (20-100% chance of occurrence each year)

Climate Change

There presently is not enough data or research to quantify the magnitude of change that climate change may have related to tornado frequency and intensity. NASA's Earth Observatory has conducted studies which aim to understand the interaction between climate change and tornadoes. Based on these studies meteorologists are unsure why some thunderstorms generate tornadoes and others don't, beyond knowing that they require a certain type of wind shear. Tornadoes spawn from approximately one percent of thunderstorms, usually supercell thunderstorms that are in a wind shear environment that promotes rotation. Some studies show a potential for a decrease in wind shear in mid-latitude areas. Because of uncertainty with the influence of climate change on tornadoes, future updates to the mitigation plan should include the latest research on how the tornado hazard frequency and severity could change. The level of significance of this hazard should be revisited over time.

Consequence Analysis

Category	Consequences
Public	Injuries and fatalities are possible. Individuals who cannot take shelter are most vulnerable.

Category	Consequences
Responders	Responders may be hindered by storm impacts; damages may block access to affected areas or make it dangerous to enter affected buildings or areas.
Continuity of Operations (including Continued Delivery of Services)	Potential impacts to continuity of operations may result if personnel are harmed or if critical systems or resources are damaged. Delays in providing services may result.
Property, Facilities and Infrastructure	The weakest tornadoes, EF0, can cause minor roof damage, while strong tornadoes can destroy frame buildings and even badly damage steel reinforced concrete structures. Buildings are vulnerable to direct impact from tornado winds and wind-borne debris. Mobile homes are particularly susceptible to damage during tornadoes. Buildings, critical facilities, and infrastructure are all vulnerable to damage. Impacts to infrastructure may also include structural damage, impassable or blocked roadways or bridges, failed utility lines, or railway failure.
Environment	Downed trees and damages to vegetation are likely. Debris may be thrown great distances and end up in natural areas, with potential impacts on habitats. If hazardous materials facilities are impacted, chemical releases may occur and would require remediation.
Economic Condition of the Jurisdiction	Economic impacts are contingent on tornado's path, but a tornado can severely impact/destroy critical infrastructure and other economic drivers, halt economic activity, or cause direct losses to businesses.
Public Confidence in the Jurisdiction's Governance	Public confidence in the jurisdiction's governance may be influenced by severe tornado events if response and recovery are not timely and effective.

Vulnerability Assessment

People

People and populations exposed to the elements are most vulnerable to tornados. The availability of sheltered locations such as basements, buildings constructed using tornado-resistant materials and methods, and public storm shelters, all reduce the exposure of the population. Residents of mobile and manufactured housing may be particularly vulnerable due to the structure's vulnerability and the lack of sheltered locations in these units. According to 2021 American Community Survey (ACS) 5-Year Estimates, 1,124 housing units (1.3 percent) in Peoria County are classified as "mobile homes or other types of housing." Chillicothe and West Peoria are more vulnerable, with 2.4 percent and 4.2 percent of occupied units classified as mobile/manufactured homes, respectively. Individuals who work outdoors may also face increased risk. Table 5.79 below details the population in mobile homes for each jurisdiction.

Table 5.79 – Mobile Home Units by Jurisdiction, 2021

Jurisdiction	Total Housing Units	Mobile Home Units	Mobile Home Percentage of Total Housing
Bartonville	2,749	0	0%
Chillicothe	2,966	67	2.3%
Hanna City	768	5	0.7%
Peoria	53,890	341	0.6%
Peoria County	84,985	1,120	1.3%
Peoria Heights	3,302	0	0%
West Peoria	2,137	89	4.2%

Source: American Community Survey 2017-2021 5-Year Estimates

Since 1990, the NCEI Storm Events database records 0 injuries attributed to tornadoes in Peoria County.

Property

General damages to property are both direct (what the tornado physically destroys) and indirect (additional costs, damages, and losses attributed to secondary hazards spawned by the tornado or due to the damages caused by the tornado). Depending on its size and path, a tornado is capable of damaging and eventually destroying almost anything. Construction practices and building codes can help maximize the resistance of the structures to damage.

Secondary impacts of tornado damage often result from damage to infrastructure. Downed power and communications transmission lines, coupled with disruptions to transportation, create difficulties in reporting and responding to emergencies. These indirect impacts of a tornado put tremendous strain on a community. In the immediate aftermath, the focus is on emergency services.

Since 1950, damaging tornadoes in the County are directly responsible for $92,560,000 worth of damage to property according to NCEI data. This equates to an annualized loss of $1,267,945. However, $85,355,000 of this damage came from a singular event in June 2010. If that event is no longer included, the annualized loss is $98,699.

Environment

Tornadoes can cause massive damage to the natural environment, uprooting trees and other debris within the tornado's path. This is part of a natural process, however, and the environment will return to its original state in time.

Secondary impacts may occur if hazardous materials are released into the environment as a result of tornado damages. In this case, remediation would be needed.

Changes in Development

Development is not expected to impact the incidence of tornado events. As the county grows, overall asset exposure will increase, which may increase risk.

Key Issues

- Wind-borne debris can become a dangerous hazard during tornado events. Educating the public on tornado risk and severe storms preparedness, including the need to secure loose items outdoors, may reduce potential damages in the event that a tornado spawns.
- Mobile homes and their occupants are particularly vulnerable to tornadoes.
- Related Hazards: Hurricane, Severe Weather, Windstorm/Thunderstorm

Hazard Summary by Jurisdiction

The following table summarizes tornado hazard risk by jurisdiction. Tornado hazard risk does not vary substantially by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	High	Medium	High	Severe
Chillicothe	High	Medium	High	Severe
Hanna City	High	Medium	High	Severe
Peoria	High	Medium	High	Severe
Peoria Heights	High	Medium	High	Severe
West Peoria	High	Medium	High	Severe

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Peoria County Unincorporated Areas	High	Medium	High	Severe
Peoria Park District	High	Medium	High	Severe
Greater Peoria Sanitary District	High	Medium	High	Severe

5.14 Wildfire

Hazard Background

A wildfire is an uncontained fire that spreads through the environment. Wildfires are part of the natural management of forest ecosystems but may also be caused by human factors. Wildfires can consume large areas, including infrastructure, property, and resources. When massive fires, or conflagrations, develop near populated areas, evacuations possibly ensue. Not only do the flames impact the environment, but the massive volumes of smoke spread by certain atmospheric conditions also impact the health of nearby populations. There are three types of fire spread that are recognized:

- **Ground fires** – burn organic matter in the soil beneath surface litter and are sustained by glowing combustion.
- **Surface fires** – spread with a flaming front and burn leaf litter, fallen branches and other fuels located at ground level.
- **Crown fires** – burn through the top layer of foliage on a tree, known as the canopy or crown fires. Crown fires, the most intense type of fire and often the most difficult to contain, need strong winds, steep slopes and a heavy fuel load to continue burning.

Generally, wildfires are started by humans, either through arson or carelessness. Nearly 85 percent of wildland fires in the United States are caused by humans. Human-caused fires result from campfires left unattended, the burning of debris, equipment use and malfunctions, negligently discarded cigarettes, and intentional acts of arson. The second most common cause of wildfire is lightning.

Fire intensity is controlled by both short-term weather conditions and longer-term vegetation conditions. During intense fires, understory vegetation, such as leaves, small branches, and other organic materials that accumulate on the ground, can become additional fuel for the fire. The most explosive conditions occur when dry, gusty winds blow across dry vegetation.

Weather plays a major role in the birth, growth and death of a wildfire. In support of forecasting for fire weather, the National Weather Service Fire Weather Program emerged in response to a need for weather support to large and dangerous wildfires. This service is provided to federal and state land management agencies for the prevention, suppression, and management of forest and rangeland fires.

Weather conditions favorable to wildfire include drought, which increases flammability of surface fuels, and winds, which aid a wildfire's progress. The combination of wind, temperature, and humidity affects how fast wildland fires can spread. Rapid response can contain wildfires and limit their threat to property.

Peoria County experiences a variety of wildfire conditions found in the Keetch-Byram Drought Index, which is described in Table 580. The Keetch-Byram Drought Index (KBDI) for June 2021 is shown in Figure 5.55. The KBDI for Peoria County and the surrounding areas at this time was between 0-300.

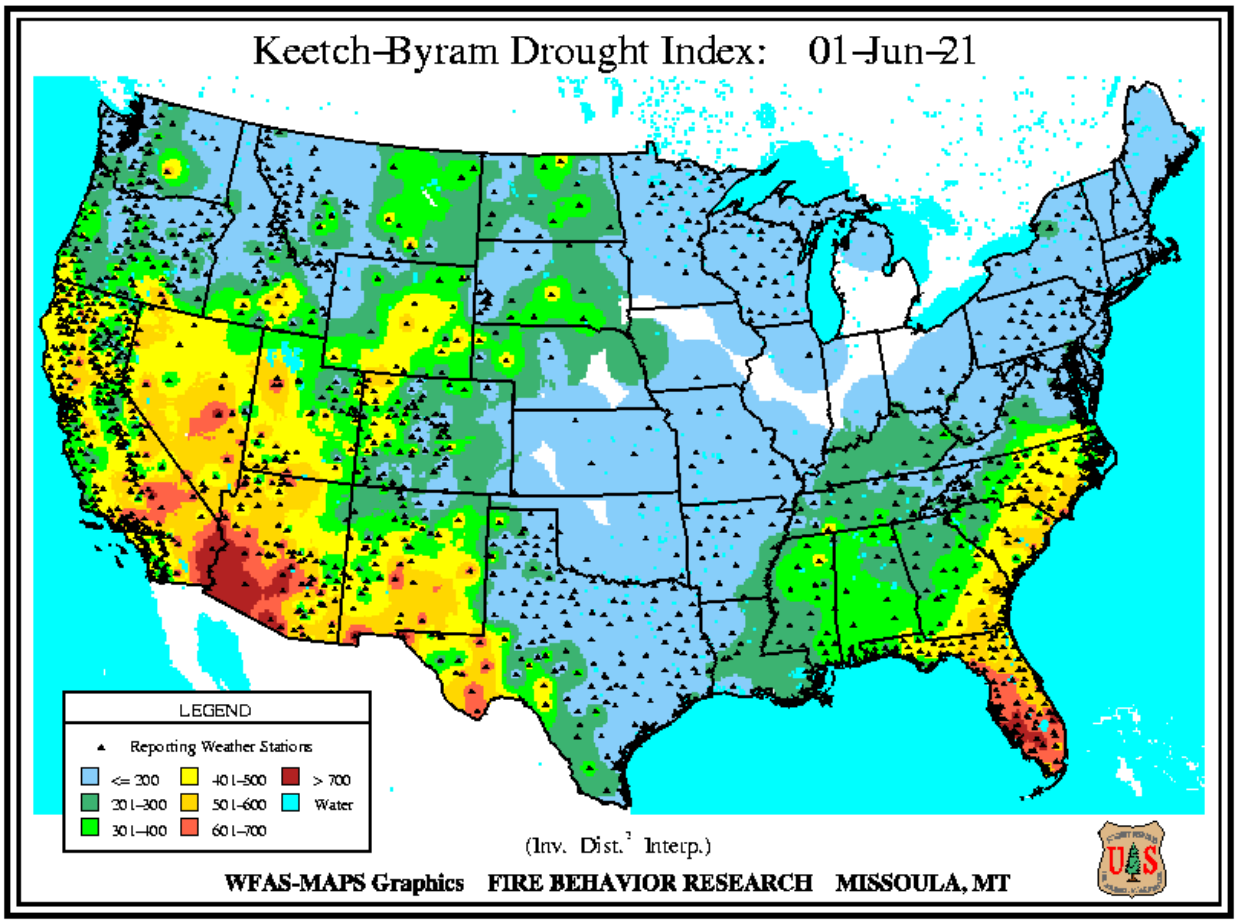
Table 5.80 – Keetch-Byram Drought Index Fire Danger Rating System

KBDI	Description
0-200	Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in sports and patches.
200-400	Fires more readily burn and will carry across an area with no gaps. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.
400-600	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.

KBDI	Description
600-800	Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

Source: USFS Wildland Fire Assessment System

Figure 5.55 – Keetch-Byram Drought Index, June 2021



Source: USFS Wildland Fire Assessment System

Location

The Wildland-Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. Using geographic information systems (GIS), U.S. Census and USGS National Land Cover Data was integrated to map the WUI. Figures 5.56 and 5.57 present the identified WUI for Illinois and Peoria County, respectively. These two components of WUI, intermix and interface, have some differences that are potentially significant in wildland fire management. In terms of fuels, vegetation dominates intermix, and structural fuels dominate interface. Vegetation and structures ignite and burn differently, and thus fire behavior changes with the mix of these two WUI fuel types.

The identified Wildland-Urban Interface (WUI) area encompasses approximately 15 square miles of interface and 64 square miles of intermix for a total of 79 square miles. This is 14% of the total area of Peoria County and this thus ranked as **medium:**

- **Medium –** Between 10% to 25% of the total population adversely affected should the hazard occur

Figure 5.56—Illinois Wildland Urban Interface, 2010

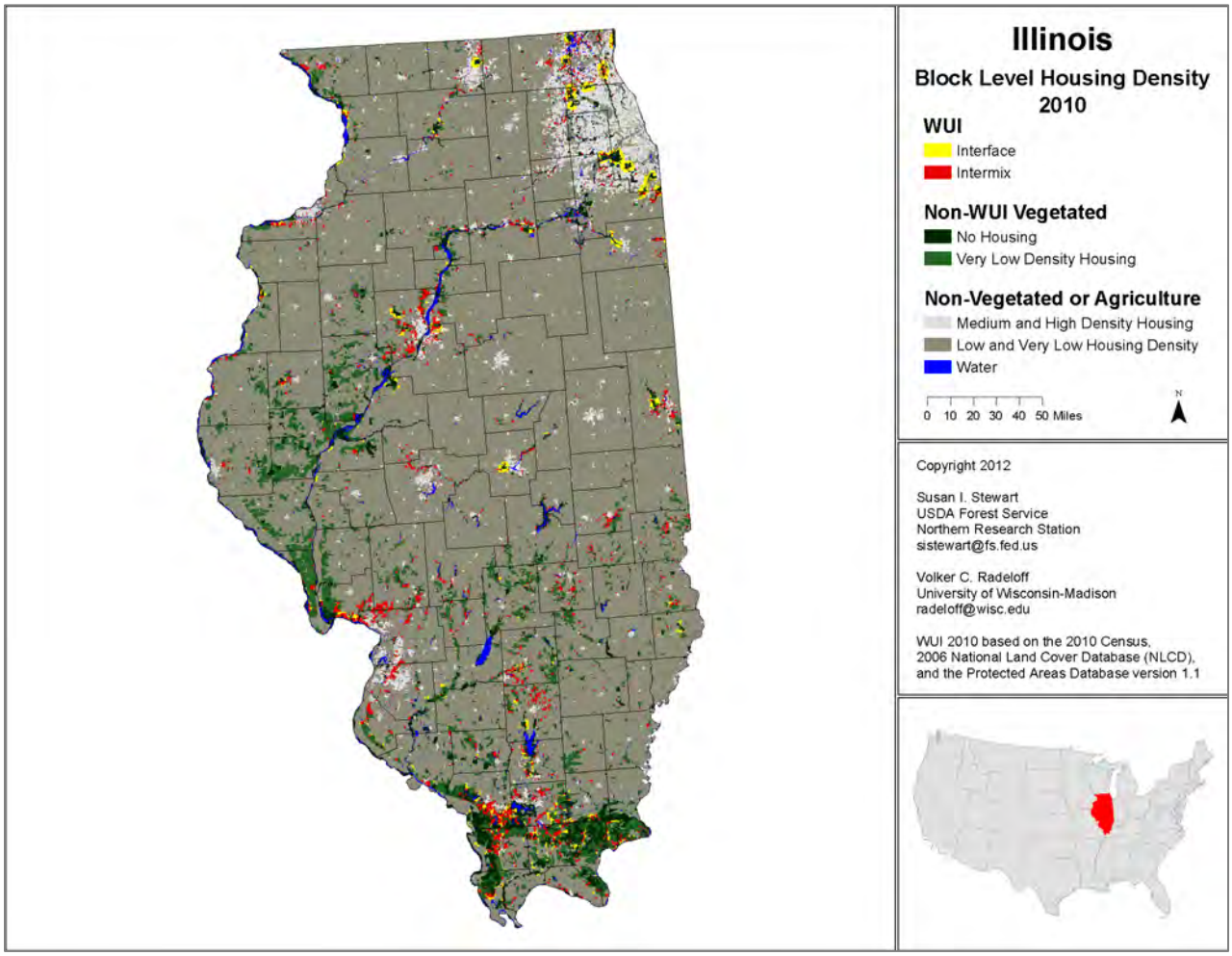
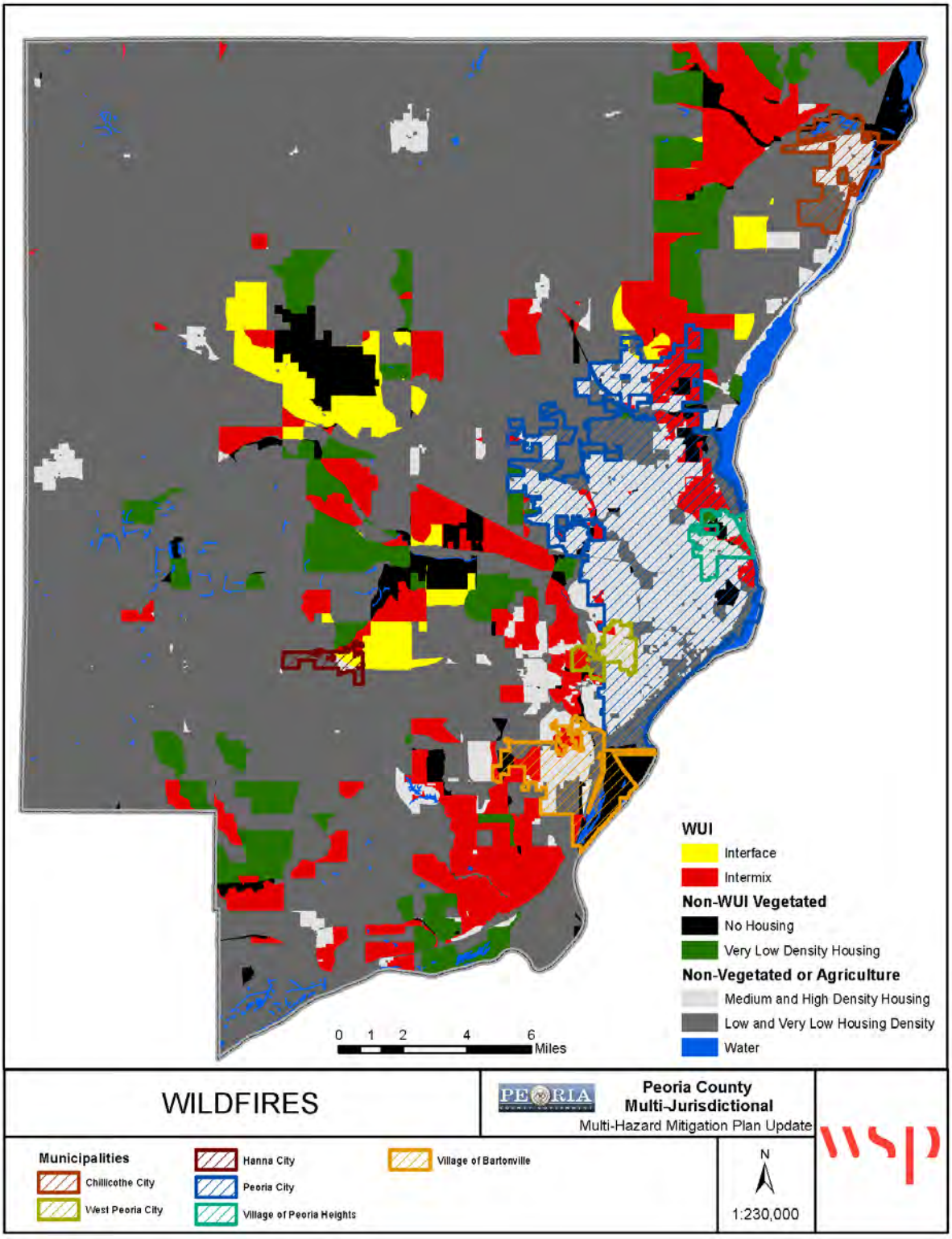


Figure 5.57 – Wildland Urban Interface, Peoria County



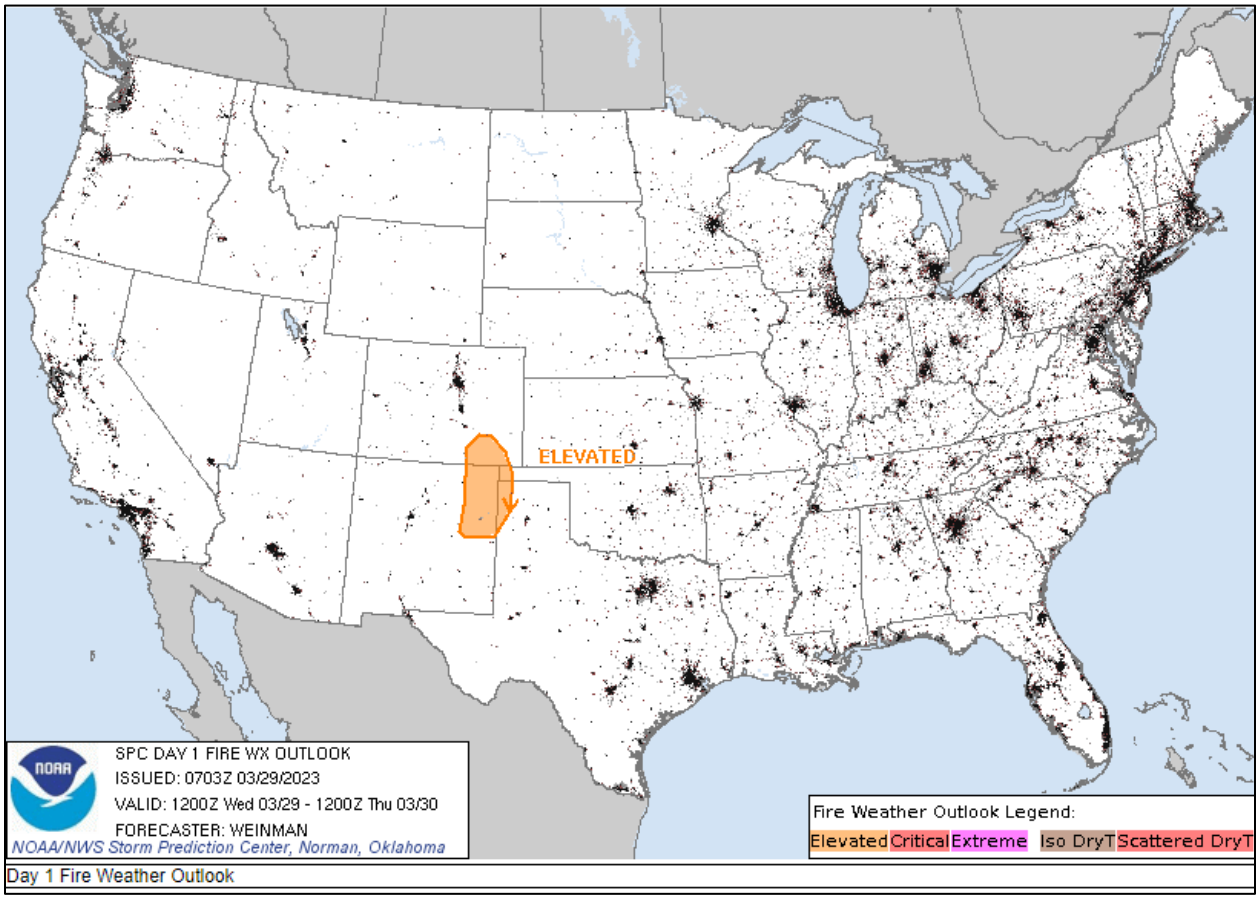
Extent

The National Weather Service Fire Weather Program emerged in response to a need for weather support to large and dangerous wildfires. This service is provided to federal and state land management agencies for the prevention, suppression, and management of forest and rangeland fires. The National Weather Service Forecast Office in Lincoln, IL provides year-round fire weather forecasts for most of northern Illinois. Routine fire weather forecasts are issued daily for nationwide (See Figure 5.58 for an example).

With no history of fatalities, injuries, or structural damage, the HMPC determined the magnitude/severity to be **low** due to the geographic extent of the identified WUI area and the population and buildings located within these areas.

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Figure 5.58—Example Day 1 Fire Weather Outlook, March 29 2023



Historical Occurrences

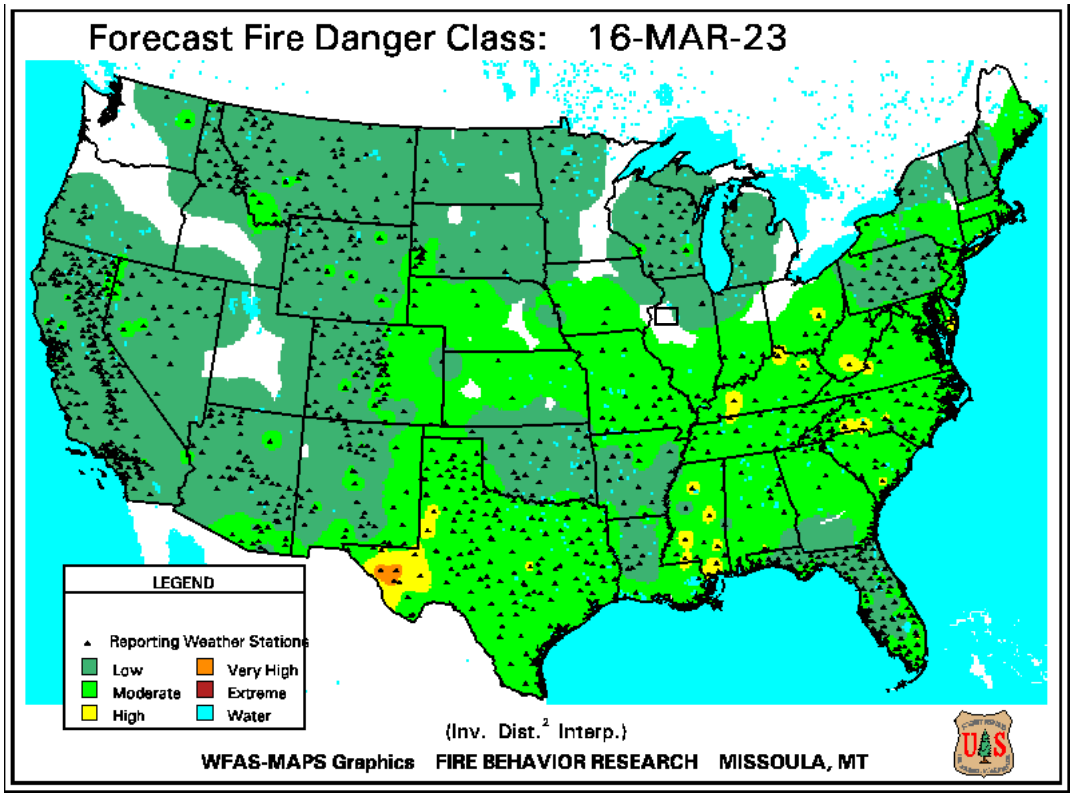
According to the National Climatic Data Center Storm Events database, there have been 0 recorded wildfire events in Peoria County since 1950.

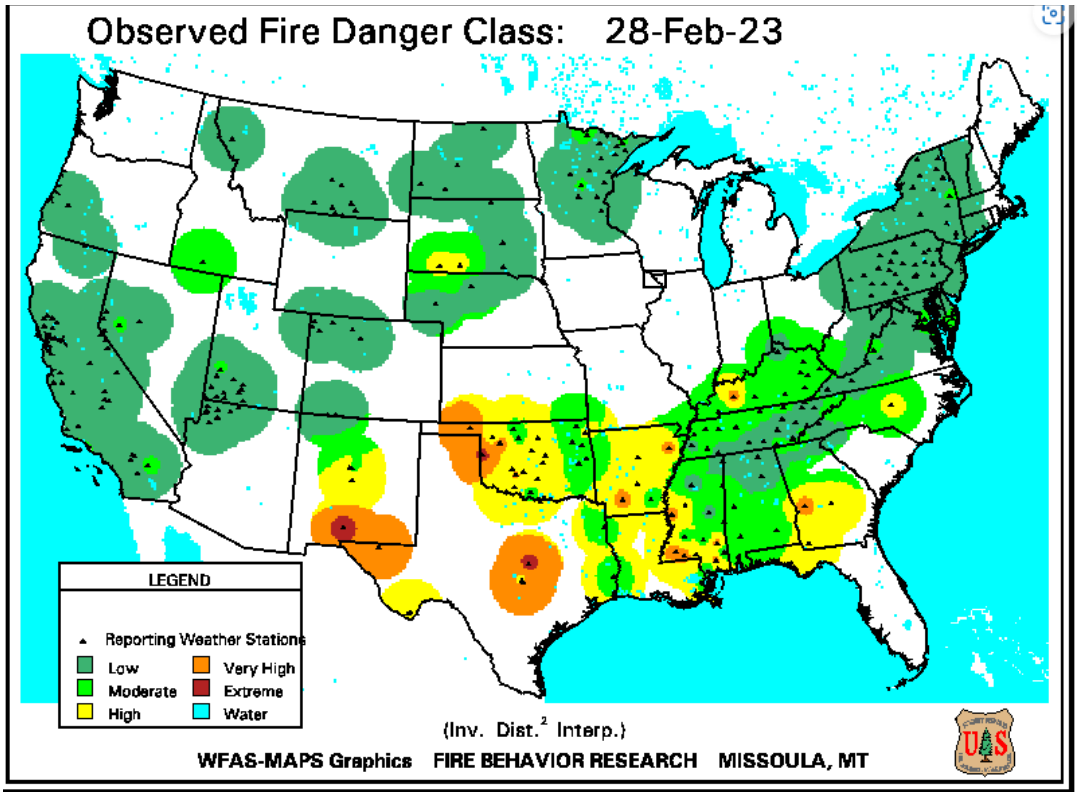
Probability of Future Occurrence

The US Forest Service both observes and forecasts no fire danger potential for Peoria County. Figure 5.59 below shows the current (as of March 2023) predicted and observed fire danger classification.

- **Low -** 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Figure 5.59 – Observed and Forecast Fire Danger Class, 2023





Source: Fire Danger Rating (wfas.net)

Climate Change

According the 2014 Climate Change Fact Sheet from the White House, Office of the Press Secretary, for Illinois and the Midwest, the composition of the region's forests is expected to change as rising temperatures drive habitats for many tree species northward. The role of the region's forests as a net absorber of carbon is at risk from disruptions to forest ecosystems, in part due to climate change.

Consequence Analysis

Category	Consequences
Public	In addition to the potential for fatalities, wildfire and the resulting diminished air quality pose health risks. Smoke and air pollution can cause serious health problems, including asthma attacks and pneumonia, and can worsen chronic heart and lung diseases. Vulnerable populations include children, the elderly, and people with respiratory and cardiovascular problems. Even healthy citizens may experience symptoms such as sore throats and itchy eyes.
Responders	Wildfires are a significant threat to the health and safety of the emergency services, both while fighting the fire and from after effects from smoke inhalation and heat stroke. More rural areas may require response personnel ready to act.
Continuity of Operations (including Continued Delivery of Services)	Wildfire events can result in a loss of power which may impact operations. Downed trees, power lines and damaged road conditions may prevent access to critical facilities and/or emergency equipment. Critical facilities run from urbanized areas are not likely to be significantly impacted.

Category	Consequences
Property, Facilities and Infrastructure	Damage to buildings and facilities, especially those in the wildland urban interface, is possible. Infrastructure, including roadways, communication networks and facilities, power lines, utilities, and water distribution systems, may also be damaged. New homes constructed without considering community wildland fire planning can create neighborhoods with limited accessibility and flammable buildings and landscaping.
Environment	Wildfires cause damage to the natural environment, killing vegetation and animals. The risk of floods and debris flows increases after wildfires due to the exposure of bare ground and the loss of vegetation. In addition, the secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, are often more disastrous than the fire itself. Water supplies can be degraded by post-fire erosion and stream sedimentation.
Economic Condition of the Jurisdiction	Wildfires can have significant short-term and long-term effects on the local economy. Wildfires, and extreme fire danger, may reduce recreation and tourism in and near the fires, and can destroy crops and other agricultural property. If aesthetics are impaired, local property values can decline. Extensive fire damage to trees can significantly alter the timber supply, both through a short-term surplus from timber salvage and a longer-term decline while the trees regrow. Post-fire cleanup costs include rehabilitation and repair, equipment and capital goods replacement, drinking water pollution remediation, smoke damage, and increase in fire insurance premiums.
Public Confidence in the Jurisdiction's Governance	Wildfire events may cause issues with public confidence because they have very visible impacts on the community.

Vulnerability Assessment

People

Wildfire can cause fatalities and human health hazards. Ensuring procedures are in place for rapid warning and evacuation are essential to reducing vulnerability.

Based on 2021 Census Data, 5.31% of Peoria County is vulnerable to wildfire damage. Table 5.81 below details the percentage of vulnerable people per jurisdiction.

5.81—Peoria County Wildfire Vulnerability

Jurisdiction	Household Factor	Residential Structures at Risk (Interface/Intermix)	Population at Risk	Total Population	Percentage of Population
Bartonville	2.45	180	441	6,005	7.34%
Chillicothe City	2.18	--	--	--	--
Hanna City	1.95	286	558	1,372	40.67%
Peoria	2.30	1,345	3,094	113,672	2.72%
Peoria County	2.35	5,256	12,352	182,439	6.77%
Peoria Heights	2.03	78	159	5,940	2.68%
West Peoria	2.22	31	69	4,300	1.60%
Total		**7,176**	**16,673**	**313,728**	**5.31%**

Source: American Community Survey 5-year estimate, 2017-2021

Property

Wildfires can be responsible for extensive damage to crops, the environment and occasionally residential or business facilities. Homes built in rural areas are vulnerable more since they are in closer proximity to land that is burned, and homeowners are more likely to burn trash and debris in rural locations. The

vulnerability of structures in rural areas is exacerbated due to the lack of hydrants in these areas for firefighting and the distance required for firefighting vehicles and personnel to travel to respond. Potential losses to crops and rangeland are additional concerns.

Vulnerability to wildfire is predominantly associated with wildland-urban interface areas. The wildland-urban interface is a general term that applies to development interspersed or adjacent to forests and wildlands. To analyze vulnerability to wildfire events and how this varies by jurisdiction, the population and critical facilities located within the wildland-urban interface and intermix areas was calculated. Table 5.82 presents this data.

In addition, the August 17, 2001, *Federal Register* included a list of "urban wildland interface communities within the vicinity of federal lands that are at high risk from wildfire." The communities were identified as required by the National Fire Plan, a cooperative, long-term effort between various government agency partners with the intent of actively responding to severe wildfires and their impacts to communities while ensuring sufficient firefighting capacity for the future. None of the communities within Peoria County were included on this list.

Table 5.82 – Structure Counts and Values within Peoria County

WUI Class	Structures	Structure Value	Estimated Content Value	Total Value
Low Density Interface	697	$269,231,342.59	$231,689,906.39	$500,921,248.98
Medium Density Interface	846	$161,302,288.60	$134,281,741.66	$295,584,030.26
High Density Interface	156	$32,384,569.44	$24,472,029.49	$56,856,598.93
Low Density Intermix	2,601	$710,860,943.49	$509,110,157.43	$1,219,971,100.92
Medium Density Intermix	3,211	$2,552,539,367.09	$2,468,319,526.98	$5,020,858,894.06
High Density Intermix	37	$17,941,962.65	$8,970,981.30	$26,912,943.95
Total	**7,548**	**$3,744,260,473.86**	**$3,376,844,343.25**	**$7,121,104,817.10**

Source: GIS Analysis

Table 5.83 – Critical Facility Exposure within WUI Area

Jurisdiction	Critical Facilities within Interface/Intermix Areas
Bartonville	1
Chillicothe	0
Hanna City	0
City of Peoria	0
Village of Peoria Heights	1
West Peoria City	0
Unincorporated Peoria County	3
Total	5

Environment

Wildfires have the potential to destroy forest and forage resources and damage natural habitats. Wildfire can also damage agricultural crops on private land. Wildfire is part of a natural process, however, and the environment will return to its original state in time.

Changes in Development

Increased development on the wildland fringe, areas immediately adjacent to the Wildland Urban Interface, will expand the WUI itself and further increase vulnerability. Conversely, as infill development occurs and urban areas become more densely developed, fuel sources may be removed such that these areas may fall out of the WUI.

Integrating wildfire management into land use and subdivision regulations can limit the risk of new development. State and local governments can impose fire safety regulations on home sites and developments to help curb wildfire. Land treatment measures such as fire access roads, water storage, helipads, safety zones, buffers, firebreaks, fuel breaks, and fuel management can be designed as part of an overall fire defense system to aid in fire control. Fuel management, prescribed burning, and cooperative land management planning can also be encouraged to reduce fire hazards.

Key Issues

- Small areas with moderate to high potential fire intensity exist in most of the participating jurisdictions; concentrations are higher in southern portions of the county. Fuels management can greatly reduce potential fire intensity and burn probability.
- Over 5% of residential structures in the County are in an interface or intermix are. Although a wildfire is not likely to impact the entirety of the area that falls within this classification at once, impacts of a potential wildfire could be severe. Comprehensive education for property owners, especially residential, could help mitigate losses in the event of a wildfire.
- Related Hazards: Drought, Severe Weather

Hazard Summary by Jurisdiction

The following table summarizes wildfire risk by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Medium	Low	Low	Low
Chillicothe	Medium	Low	Low	Low
Hanna City	Medium	Low	Low	Low
Peoria	Medium	Low	Low	Low
Peoria Heights	Medium	Low	Low	Low
West Peoria	Medium	Low	Low	Low
Peoria County Unincorporated Areas	Medium	Low	Low	Low
Peoria Park District	Medium	Low	Low	Low
Greater Peoria Sanitary District	Medium	Low	Low	Low

5.15 Hazardous Materials Incident

Hazard Background

Hazardous materials (HAZMAT) are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals are found throughout Peoria County, in areas of industry, agriculture, medicine, research, consumer goods and a multitude of others. HAZMAT can come in the form of explosives, flammable and combustible substances, poisons and radioactive materials. Many HAZMAT do not have a taste or an odor. Some materials can be detected because they cause physical reactions such as watering eyes or nausea. Some HAZMATs exist beneath the surface of the ground and can be recognized by an oil or foam-like appearance. Under normal conditions, these substances are controlled and pose no threat to human life and the environment. But when a release occurs, they can produce disastrous results. These materials, in their various forms, can cause death, serious injury, long-lasting health effects, and can damage buildings, homes, and other property. Such releases may come from both fixed sources, such as a manufacturing or storage facility, or from a transportation source, such as a truck or pipeline. Accidental releases may be due to equipment failure, human error, or a natural or manmade hazard event.

HAZMAT releases pose short- and long-term toxicological threats to humans and to terrestrial and aquatic plants and wildlife. Toxic materials affect people through one of three processes: inhalation, ingestion, or direct skin contact (Federal Emergency Management Agency, 1997). Inhalation exposures result from breathing gases that may have been vented from containers, liquid aerosols generated during venting of pressurized liquids, fumes from spilled acids, vapor created by evaporating liquids, and airborne dust. Ingestion exposures typically result from poor hygiene habits after handling contaminated material, eating contaminated food, or the inhalation of insoluble particles that may become trapped in the mucous membranes. Skin may be affected by direct contact with gas, liquid, or solid forms of HAZMAT.

Location

In Peoria County, HAZMAT incidents typically take one of two forms: fixed facility incidents and transportation incidents. The major difference between the two is that it is reasonably possible to identify and prepare for a fixed-site incident, because laws require those facilities to report chemicals and quantities to the Illinois Emergency Management Agency and the Peoria Emergency Management Agency. Transportation incidents are substantially harder to prepare for because the exact chemicals, quantities and locations cannot be identified until the accident has actually happened. The vulnerability and impacts of a HAZMAT event in Peoria County can differ drastically due to the location of release, surrounding populations, mode of release and other significant scenarios.

Fixed Facility Incidents

Generally, with a fixed facility, the hazards are pre-identified, and the facility is required by law to prepare a risk management plan and provide a copy to the local emergency planning committee (LEPC) and local fire departments.

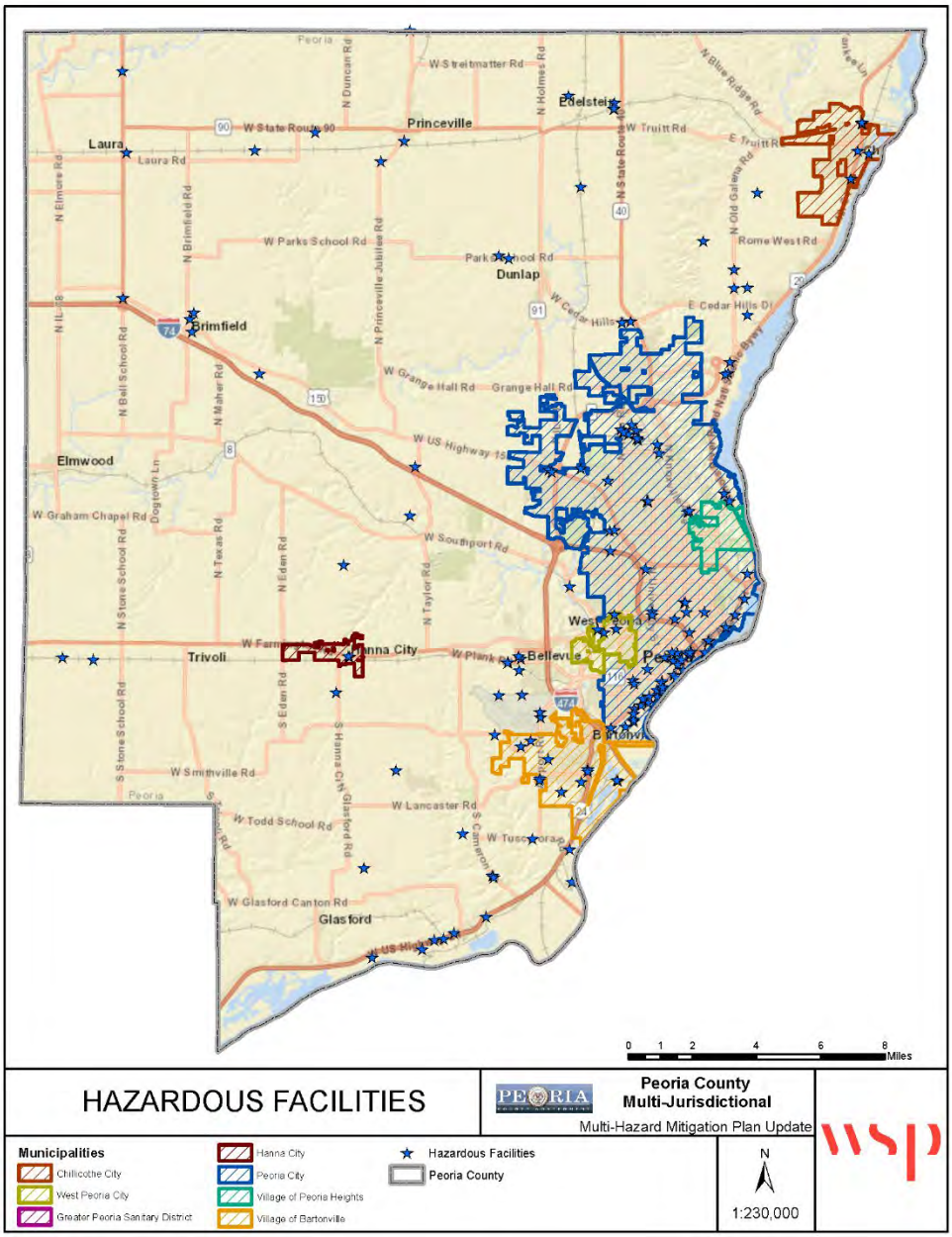
HAZMAT releases at fixed sites can cause a range of contamination from very minimal to catastrophic. The releases can go into the air, onto the surface, or into the ground and possibly into groundwater, or a combination of all. Although releases into the air or onto the ground surface can pose a great and immediate risk to human health, they are generally easier to remediate than those releases which enter into the ground or groundwater. Soil and groundwater contamination may take years to remediate causing possible long-term health problems for individuals and rendering land unusable for many years.

Federal law requires businesses and industry with a repository of certain chemicals to report names, types and quantities on hand to the IEMA/State Emergency Response Commission (SERC), the local emergency

planning committee and the district fire department that would respond to that location. The forms are known as Tier II reports and the facilities included are referred to as Tier II facilities.

In 2016, there were 47 Tier II Facilities housing hazardous chemicals in Peoria County (See Figure 5.60)

Figure 5.60—Tier II Reporting Facilities



Highway

Transportation of HAZMAT on highways, roads and city streets, involves tanker trucks, trailers and certain types of specialized bulk-cargo vehicles. Because of the distances traveled, it is not surprising that trucks are responsible for the greatest number of HAZMAT events in Peoria County and the rest of the country.

Transportation routes adjacent to the fixed facilities were identified as potential locations for a HAZMAT incident.

Railway

The volume of HAZMAT moving by rail in the US has more than doubled since 1980, with approximately two million carloads now moving each year. In 2014, 99.999 percent of rail HAZMAT shipments reach their final destinations without a release caused by a train accident. Rail hazmat accident rates in 2014 were down 95 percent since 1980, down 74 percent since 1990, and down 66 percent since 2000. Table 5.84 presents the hazardous materials incidents nationwide by highway and railway.

Table 5.84-- Hazardous Materials Incidents by Transportation Mode, Nationwide

Mode of Transportation	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL
Highway	13,888	15,317	15,130	16,527	15,744	17,882	20,649	19,725	22,787	22,535	**180,184**
Railway	667	718	581	545	573	507	422	382	382	288	**5,065**

Source: Oracle BI Interactive Dashboards - 10 Year Incident Summary Reports (dot.gov)

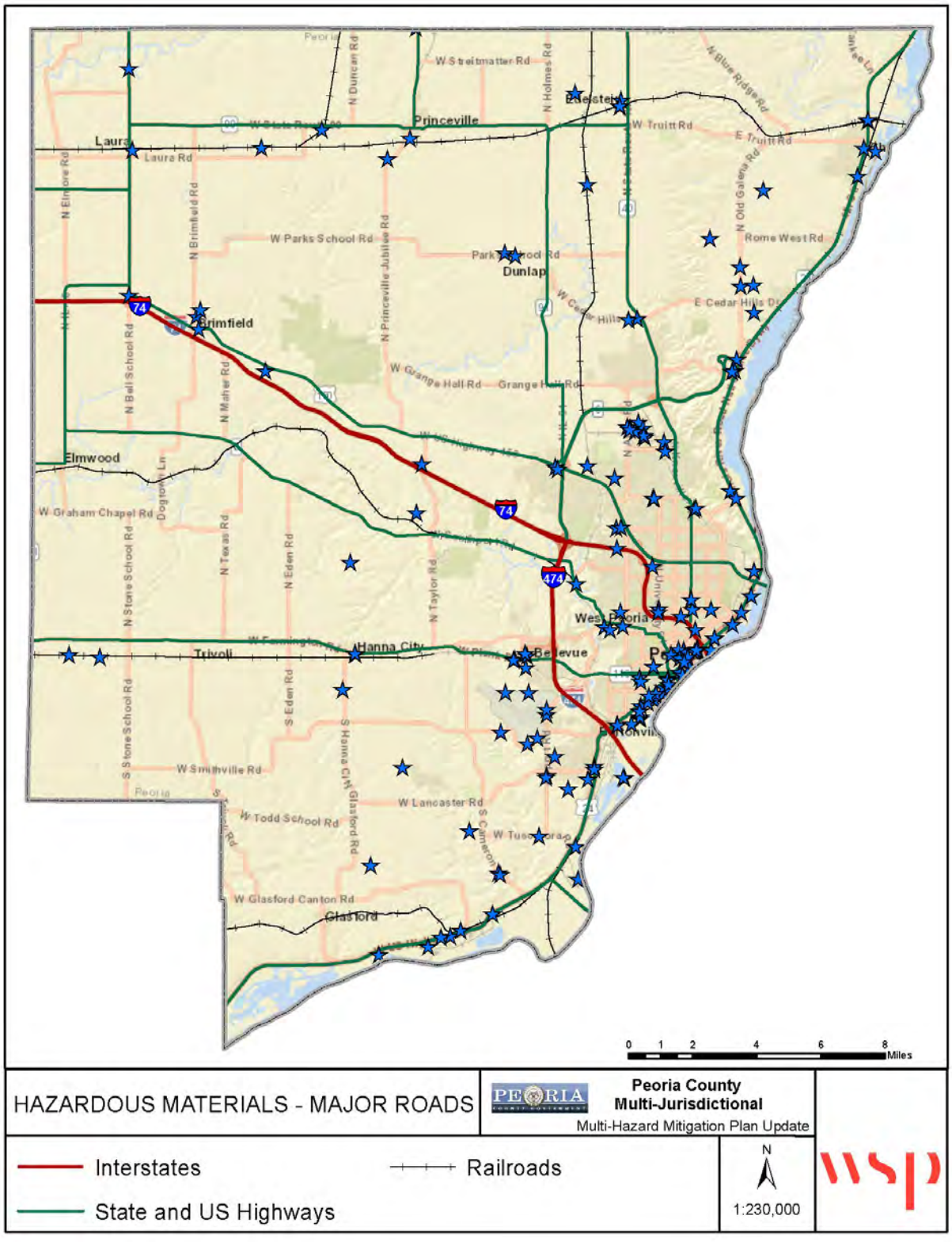
There are four railroads providing service with long-haul deliveries to national market areas and intermodal rail/truck service providers within Peoria County:

- Burlington Northern Santa Fe (BNSF) Railway Company;
- Union Pacific Railroad;
- Iowa Interstate Railroad, Ltd.; and
- Keokuk Junction Railway Company.

Based on the number of fixed facilities and the transportation routes within Peoria County, the HMPC determined the geographic extent of hazardous materials incidents to be **medium**:

- **Medium –** Between 10% to 25% of the total population adversely affected should the hazard occur

Figure 5.61—HAZMAT Transportation Routes



Extent

Hazardous substances may irritate the skin or eyes, make it difficult to breathe, cause headaches and nausea, or result in other types of illnesses. Some hazardous substances may cause far more severe health effects, including behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (e.g., reproductive impairment, kidney failure, etc.), physical deformations and birth defects (see Table 5.85).

Table 5.85—Effects of Hazardous Materials on Humans

Common Sources	Contaminants	Potential Health Effects
Household items, such as batteries, thermometers, and paints	Mercury	Toxic to renal system and immune system; Can cause eye and skin irritation; chest pain; tremor; fatigue; weakness.
Pesticides	Chlorinated ethanes; DDT; Lindane	Toxic to immune system Acute symptoms of apprehension, irritability, dizziness, disturbed equilibrium, tremor, and convulsions.
Various commercial and industrial manufacturing processes	Arsenic; beryllium; cadmium; chromium; lead; mercury	Toxic to renal system, nervous system, and skin; Decreased mental ability, weakness, headache, abdominal cramps, diarrhea, and anemia. Also affects blood-forming mechanisms and the peripheral nervous system. Long-term exposure to lead can cause permanent kidney and brain damage. Cadmium can cause kidney and lung disease. Chromium, beryllium, arsenic, and cadmium have been implicated as human carcinogens.
Chemical manufacturing	Benzene; ethyl benzene; toluene; xylene	Toxic to respiratory system; benzene also suppresses bone marrow function, causing blood changes; chronic exposure can cause leukemia. Central nervous system depression: decreased alertness, headaches, sleepiness, loss of consciousness.
Steel and glass manufacturing	Chromium; lead; mercury	Toxic to renal system and skin; Lead causes decreased mental ability, weakness, headache, abdominal cramps, diarrhea, and anemia. Also affects blood-forming mechanisms and the peripheral nervous system.

Source: Agency for Toxic Substances and Disease Registry, Division of Health Assessment and Consultation

Some hazardous substances produce toxic effects in humans or the environment after a single, episodic release. These toxic effects are referred to as the acute toxicity of a hazardous substance. Other hazardous substances produce toxic effects in humans or the environment after prolonged exposure to the substance, which is called chronic toxicity.

Children are at greater risk of exposure to hazardous substances emitted from waste sites and emergency events. They are more likely to be exposed for several reasons: children play outside more often increasing the likelihood of exposure to chemicals in the environment; since they are shorter than adults are, they breathe more dust and heavy vapors close to the ground; children are also smaller and thus receive higher doses of chemical exposure per body weight; finally, the developing body systems of children can sustain damage if toxic exposures occur during certain growth stages.

The HMPC has determined the magnitude and severity of a hazardous materials incident to be **low**.

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Historical Occurrences

There were 15 incidents from 2006-2020 (14 years), as reported by the US DOT.

Table 5.86 – HAZMAT Transportation Incident, 2006-2020

Date of Incident	Incident City	Incident Route	Carrier/Reporter Name	Shipper Name	Hazardous Class	Total Hazmat Fatalities/Hazmat Nonhospital Injuries	Total Amt of Damages
7/25/2006	Peoria	1625 Altorfer	Fedex Ground Package System Inc.	Amsan Llc	Corrosive Material	0/0	0
10/25/2006	Mapleton	Site Facility	Quality Carriers Inc.	Evonik Corporation	Combustible Liquid	0/0	0
11/28/2006	Chillicothe	Il Rt. 6 S/B Ent Ramp	Furrow Trucking Inc	Sun Ag Inc.	Nonflammable Compressed Gas	0/0	$90,853
3/19/2007	Peoria	8700 N Allen Road	Yrc Worldwide Inc.	Betco Corporation	Corrosive Material	0/0	0
4/18/2007	Mapleton	Site Facility	Quality Carriers Inc.	Evonik Corporation	Flammable - Combustible Liquid	0/0	0
6/6/2007	Mapleton	Lonza Inc Rte 24	Quality Carriers Inc.	Monto Research	Flammable - Combustible Liquid	0/0	0
10/9/2007	Mapleton	Degussa Goldschmidt - Shipper	Quality Carriers Inc.	Degussa Goldschmidt	Flammable - Combustible Liquid	0/0	0
10/20/2010	Mapleton	8300 West Route 24	Quality Carriers Inc.	Evonik Corporation	Flammable - Combustible Liquid	0/0	0
1/7/2011	Mapleton	8300 West Route 24	K & R Company	Evonik Corporation	Corrosive Material	0/0	0
8/25/2014	Peoria	8915 North Allen Rd	Ranger Landstar Inc	Tennant Company	Corrosive Material	0/0	$3,500
1/23/2015	Mapleton	8300 West Us Route 24	K & R Company	Evonik Corporation	Corrosive Material	0/0	$2,500

Date of Incident	Incident City	Incident Route	Carrier/Reporter Name	Shipper Name	Hazardous Class	Total Hazmat Fatalities/Hazmat Nonhospital Injuries	Total Amt of Damages
5/13/2015	Mapleton	8300 West Us Route 24	Quality Carriers Inc.	Evonik Corporation	Flammable - Combustible Liquid	0/0	0
5/13/2015	Mapleton	Site Facility	Quality Carriers Inc.	Evonik Degussa Corporation	Flammable - Combustible Liquid	0/0	0
9/19/2015	Mapleton	Site Facility	Air Liquide America L.P.	Air Liquide America L.P.	Nonflammable Compressed Gas	0/0	$200,604
3/30/2017	Mapleton	8300 W Rt 24	Quality Carriers Inc.	Kvvf Illinois Services	Corrosive Material	0/0	0
7/25/2006	Peoria	1625 Altorfer	Fedex Ground Package System Inc.	Amsan Llc	Corrosive Material	0/0	0

Source: U.S. Department of Transportation's Pipeline & Hazardous Materials Safety Administration's Hazmat Intelligence Portal

Probability of Future Occurrence

Sufficient data is not available at this time to make estimates of potential losses by jurisdiction for all types of HAZMAT Incidents. However, the following assumptions have been made that begin the process of estimating these actual losses:

- Most HAZMAT events are localized and affect only the immediate area.
- Most events are small in nature and are quickly contained and cleaned.
- Fixed sites can be identified through the federal reporting requirements and some historical event data is available by jurisdiction.
- Maps for highways and railroads are available thereby designating the jurisdictions at risk to these specific hazards.
- Most HAZMAT events involve an immediate response and an expedited cleanup with relatively fixed costs. Depending on the size and location of a release, the associated costs can range from a few thousand dollars to hundreds of thousands of dollars.
- Losses could include limited loss of life, injuries and sickness for the general population and for the first responders.
- Losses could include the financial costs for response and cleanup.
- There could be significant loss of reputation or confidence in associated organizations.
- There could be short-term impacts to the local economy due to a major event.

Of the 15 transportation incidents that occurred over the 14-year period from 2006 to 2020, estimates of dollar damages were provided for 4 of the incidents with a total of $297,457 in reported damages. This translates to an average of $21,246 per incident and $21,247 per year.

The probability of a future occurrence is **high**:

- **High** - More than 60 occurrences in the last 60 years (100% chance of occurrence each year)

Climate Change

If projections regarding milder winters come to fruition, climate change impacts may reduce the number of transportation incidents associated with some severe weather. However, if ice occurs, rather than snow, this could result in higher incidents of weather-related accidents.

Consequence Analysis

Category	Consequences
Public	Localized impact expected to be severe for plume area and moderate to light for other adversely affected areas.
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads and/or utilities may postpone delivery of some services.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the plume area of the incident, possibly for extended period.
Environment	Localized impact expected to be severe for plume area. Remediation required.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time, depending on damage, extent of cleanup, and length of investigation.
Public Confidence in the Jurisdiction's Governance	Localized impact expected to primarily adversely affect HazMat source owner and local entities.

Vulnerability Assessment

People

Hazardous materials incidents can cause injuries, hospitalizations, and even fatalities to people nearby. People living near hazardous facilities and along transportation routes may be at a higher risk of exposure, particularly those living or working downstream and downwind from such facilities. For example, a toxic spill or a release of an airborne chemical near a populated area can lead to significant evacuations and have a high potential for loss of life. Individuals working with or transporting hazardous materials are also at heightened risk.

In addition to the immediate health impacts of releases, a handful of studies have found long term health impacts such as increased incidence of certain cancers and birth defects among people living near certain chemical facilities. However there has not been sufficient research done on the subject to allow detailed analysis.

Property

Structures located near fixed facilities, highways and other high traffic roadways are most at risk to a HAZMAT event. Any development that takes place in these areas will place more people and structures in the risk area for HAZMAT events, however since most hazardous material spills are localized to an extremely small area this will not have an effect on the overall risk assessment for this hazard.

Due to the prevalence of hazardous materials fixed facilities and the variety of modes of transportation that carry HAZMAT within Peoria County, the entire county is viewed to be vulnerable to a HAZMAT Incidents of one form or another. However, some locations are more vulnerable to the impacts of a HAZMAT Incident due to various factors such as:

- Number of commercial fixed facilities with HAZMAT,
- Presence of major transportation routes,
- Population in proximity to facilities and various transportation routes, and

- Critical facilities in proximity to facilities and various transportation routes.

For transportation incidents, the non-radioactive hazardous material routing guidelines (NRHM 2007) were utilized to determine the potential area of impact of a hazardous material incident on a roadway, railway, and waterway (See Table 5.87).

Table 5.87 — NRHM Routing Guidelines, Hazard Distances

Hazard Category	Protective Action Distances (mile)
Explosives	1
Flammable Gas	0.5
Toxic Gases	5
Flammable/Combustible Liquid	0.5
Flammable Solid, Spontaneously Combustible Dangerous when wet	0.5
Oxidizer/Organic Peroxide	0.5
Poisonous (not gas)	5
Corrosive Material	0.5

To analyze vulnerability to HAZMAT events and how this varies by jurisdiction, these factors were taken into account. Table 5.88 provides the number of structures and their associated value within their specified buffer to Tier II Chemical Facilities, Major Highways/Interstates, and Railways.

Table 5.88— Structures in Proximity to Hazardous Materials Facilities and Transportation Routes

Structure Number	Tier II Buffer (mi)	Total Structure Value	Total Content Value	Total
Bartonville				
1,505	0.5	$1,181,102,978.54	$1,151,412,711.36	$2,332,515,689.91
1,394	1	$832,387,063.89	$826,260,164.20	$1,658,647,228.09
Chillicothe City				
1,699	0.5	$554,532,527.75	$277,266,263.26	$831,798,791.00
906	1	$710,482,833.93	$355,241,416.54	$1,065,724,250.47
Hanna City				
550	0.5	$3,529,433,212.50	$3,529,433,212.50	$7,058,866,425.00
15	1	$9,565,412.33	$9,565,412.33	$19,130,824.66
Peoria				
19,379	0.5	$60,170,892,775.01	$60,170,892,775.01	$120,341,785,550.02
17,052	1	$29,922,556,849.61	$31,137,207,941.57	$61,059,764,791.18
Peoria County				

3,815	0.5	$1,516,997,527.12	$1,448,056,892.45	$2,965,054,419.56
5,285	1	$838,644,447.83	$419,322,223.98	$1,257,966,671.80
Peoria Heights				
384	0.5	$3,739,574,280.01	$3,739,574,280.01	$7,479,148,560.02
624	1	$568,583,266.06	$568,583,266.06	$1,137,166,532.11
West Peoria				
927	0.5	$343,147,752.77	$243,541,114.11	$586,688,866.88
1,143	1	$800,312,501.21	$800,312,501.21	$1,600,625,002.41
Total				
54,678	--	**$104,718,213,428.54**	**$104,676,670,174.58**	**$209,394,883,603.12**

Figures 5.62 through 5.64 presents the Tier II reporting facilities, main roadways, and waterway selected for analysis overlain with the protective action distances as 0.5-, 1.0-, and 5.0-mile buffers.

Table 5.89— Critical Facilities in Proximity to Hazardous Materials Facilities and Transportation Routes

Jurisdiction	Critical Facility within 1mi of HazMat Facility	Critical Facility within 1 mi of Roadway	Critical Facility within 5mi of Waterway
Bartonville	7	4	7
Chillicothe	8	8	8
Hanna City	1	1	0
City of Peoria	59	68	70
Peoria Heights	3	8	8
West Peoria City	2	2	2
Unincorporated Peoria County	20	22	21
Total	**100**	**113**	**116**

Figure 5.62—Tier II Reporting Facilities

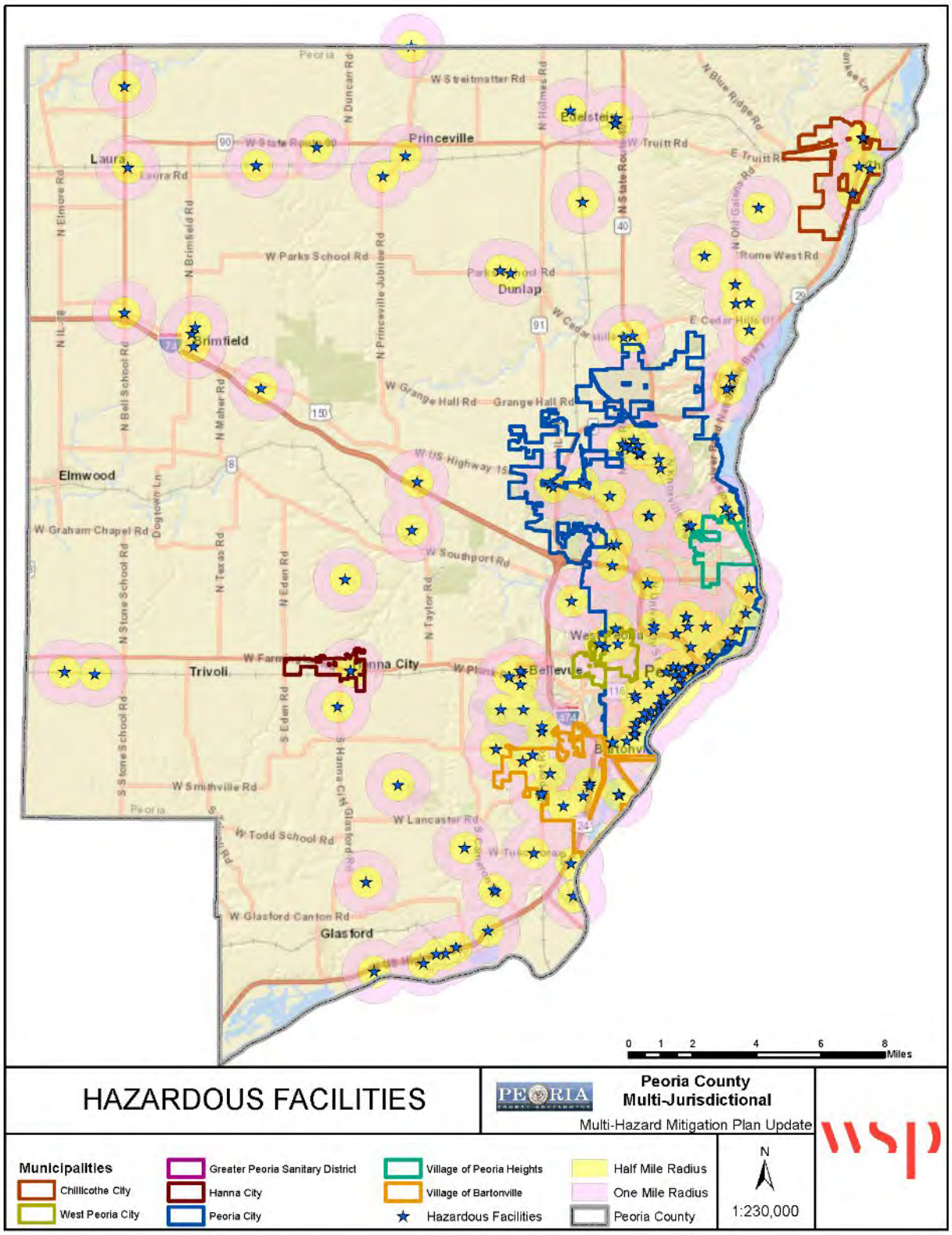


Figure 5.63—Hazardous Materials Incidents – Main Roadways

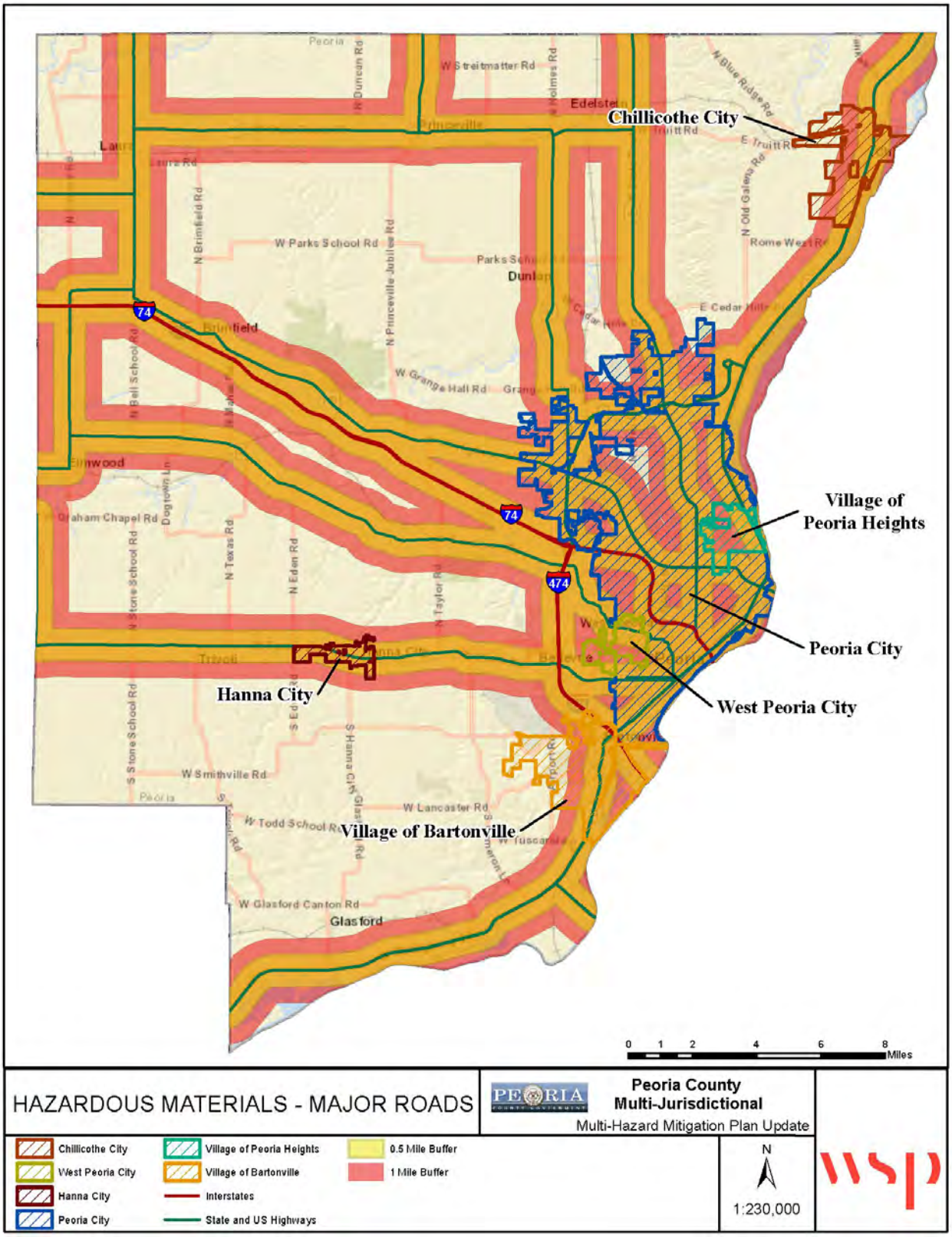
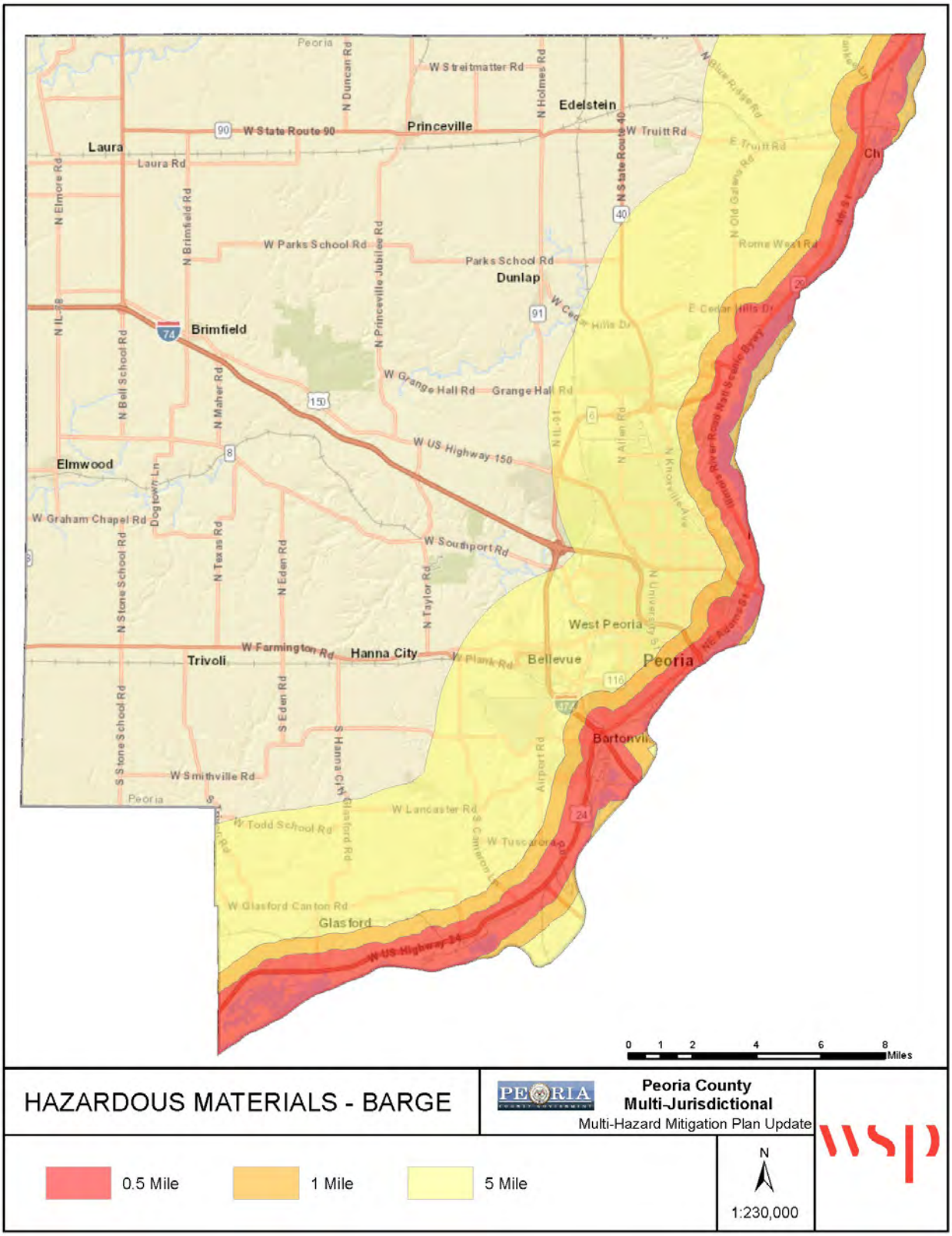


Figure 5.64—Hazardous Materials Incidents – Waterways/Barge Traffic



Environment

When hazardous substances are released into the environment, they can have devastating effects. These effects include killing local organisms, causing reproductive issues in humans and animals, and causing defects. Certain substances have the potential to explode or cause a fire, furthering endangering the environment. Clean up of hazardous materials is also very costly and time-consuming.

Changes in Development

Structures located near fixed facilities, highways and other high traffic roadways are most at risk to a HAZMAT event. Any development that takes place in these areas will place more people and structures in the risk area for HAZMAT events, however since most hazardous material spills are localized to an extremely small area this will not influence the overall risk assessment for this hazard.

The number and types of hazardous chemicals stored and transported through Peoria County is also likely to continue to increase. As populations grow, this also increases the number of people vulnerable to the impacts of hazardous materials spills. Population and business growth along major transportation corridors increases the vulnerability to transportation hazardous materials spills.

Key Issues

- Hazardous materials incidents are highly likely to occur. Serious impacts—including injury or fatality, bulk release, evacuations, or road closures—are likely.
- Major highways and rail lines pass through all participating jurisdictions. The presence of these major thoroughfares raises the likelihood of a transportation based hazardous materials incident, including spills or rollover accidents like those that have happened in the planning area in the past. Approximately 78% of past transportation related spills in the planning area have occurred on highways and 22% have occurred on rail.

Hazard Summary by Jurisdiction

The table below summarizes hazardous materials incident risk by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Medium	High	Low	High
Chillicothe	Medium	High	Low	High
Hanna City	Medium	High	Low	High
Peoria	Medium	High	Low	High
Peoria Heights	Medium	High	Low	High
West Peoria	Medium	High	Low	High
Peoria County Unincorporated Areas	Medium	High	Low	High
Peoria Park District	Medium	High	Low	High
Greater Peoria Sanitary District	Medium	High	Low	High

5.16 Terrorism Event

Hazard Background

Terrorism is defined in the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (28 C.F.R. Section 0.85). The threat of terrorism, both international and domestic, is ever present, and an attack is likely to occur when least expected.

Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.

International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries.

In the United States, most terrorist incidents have involved small extremist groups who use terrorism to achieve a designated objective. Local, state and federal law enforcement officials monitor suspected terrorist groups and try to prevent or protect against a suspected attack. Additionally, the US government works with other countries to limit the sources of support for terrorism.

Location

Before the September 11, 2001, attacks in New York and the Pentagon, most terrorist incidents in the United States have been bombing attacks, involving detonated and un-detonated explosive devices, tear gas, and pipe and firebombs. The effects of terrorism can vary significantly from loss of life and injuries to property damage and disruptions in services such as electricity, water supply, public transportation, and communications. The U.S. government has attempted to reduce vulnerability to terrorist incidents by developing infrastructure protection programs for critical infrastructure and key resource facilities and increased security at airports.

While we can never predict what target a terrorist will choose, we do know some of the factors they use when selecting a target. Terrorists want to achieve one or more of the following:

- Produce a large number of victims,
- Attack places that have a symbolic value,
- Get the greatest possible media attention, and
- Produce mass panic.

Terrorists also select targets best suited for the type of material being used. For example, some biological agents are not effective in sunlight. Most chemical agents are more effective indoors with limited airflow. A radioactive material will be most effective where large numbers of people will pass close by without detecting it. Terrorists are likely to target heavily populated, enclosed areas like stadiums, government buildings, sporting events, airport terminals, subways, shopping malls and industrial manufacturing facilities. For this reason, it is critical that employers and local government agencies have some type of anti-terrorism plan in place should a terrorist act occur.

A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, and the points of weakness of the terrorist's target. Bombings have been the most frequently used terrorist method in the United States. Other possibilities include an attack at transportation facilities, an attack against utilities or other public services or an incident involving chemical or biological agents.

A number of priority facilities and infrastructure could be potential terrorism targets. These facilities and hazard mitigation efforts taken to date are summarized below:

- Peoria International Airport
- Peoria County Courthouse
- U.S. Courthouse
- Illinois Air National Guard Base
- Energy Infrastructure (Gas and Power lines)
- Water treatment plants
- Wastewater treatment plants

Emergency response plans have been developed and are in place for the Peoria International Airport and Illinois Air National Guard. The City of Peoria has prepared, as a support annex to the City's Emergency Operations Plan and in coordination with the Peoria County Department of Emergency Management, an Energy Assurance Plan to provide guidance in responding to, coordinating and recovering from natural or human caused energy disruptions. Vulnerability assessments have been performed for water infrastructure as required by the Public Health Security and Bioterrorism and Response Act (H. R. 3448). For wastewater treatment plants, vulnerability assessments are not required, however, emergency operations plans are in place.

With the identification of specific locations, the geographic extent of a terrorism event is **low**:

- **Low -** Less than 10% of the total population adversely affected should the hazard occur

Extent

The Southern Poverty Law Center reports that in 2015, there were 23 active hate groups in Illinois, as seen in Table 5.90. Although no major terrorist acts have been attributed to any of these groups, their involvement in violent acts is meant to disrupt governmental functions and cannot be discounted.

The magnitude and severity of a terrorism event is considered **low**:

- **Low —** Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities

Table 5.90—Alphabetical List of Hate Groups in Illinois, 2022

Name	Type	City
Act for America	Anti-Muslim	Des Plaines
Ambassadors of Christ	General Hate	Chicago
America First Foundation	White Nationalist	Western Springs
American Defense Skinheads	Racist Skinhead	Statewide
Asatru Folk Assembly	Neo-Volkisch	Statewide
Euro Folk Radio	Christian Identity	Chicago
Great Millstone	General Hate	Chicago
Heterosexuals Organized for a Moral Environment (H.O.M.E.)	Anti-LGBTQ	Tinley Park
Israel United in Christ	General Hate	Chicago
Israelite School of Universal Practical Knowledge	General Hate	Chicago
Liberty Baptist Church	Anti-LGBTQ	Rock Falls
Lion of Judah-Jeshurun Lions	General Hate	Chicago

Name	Type	City
Nation of Islam	Antisemitism	Chicago
National Socialist Charitable Coalition/Global Minority Initiative	Neo-Nazi	Statewide
Patriot Front	White Nationalist	Statewide
Proud Boys	General Hate	Crystal Lake
Proud Boys	General Hate	Chicago
Sicarii 1715	General Hate	Chicago
The Creativity Alliance	Neo-Nazi	Statewide
The United Nuwaupians Worldwide/ All Eyes on Egipt	General Hate	Chicago
White Date	White Nationalist	Statewide
World Congress of Families/International Organization for the Family	Anti-LGBTW	Rockford

Source: Southern Poverty Law, www.splcenter.org

Historical Occurrences

There are no reported terrorism incidents for the planning area.

Cyberterrorism is another form of terrorism. The Privacy Rights Clearinghouse, a nonprofit organization based in San Diego, maintains a timeline of 20,030 data breaches resulting from computer hacking incidents in the United States from 2005-2022. The database lists 421 data breaches in Illinois, totaling over 13 million impacted records. Source: Privacy Rights Clearinghouse

Probability of Future Occurrence

There is no sure way to predict future terrorism events. The probability of a major terrorist event in the Peoria County is low, however planning must be done as part of the larger national Homeland Security initiatives.

The Illinois Terrorism Task Force (ITTF) was established as a working partner within IEMA covering all disciplines and regions of the State, to facilitate the coordination of resources and the communication of information essential to combat terrorism. IEMA also provides monitoring of nuclear power plants; inspection and escorts of spent nuclear fuel shipments and all Highway Route Controlled Quantities (HRCQ) of radioactive materials; regulation of radon contractors, x-ray machines and technicians; licensing and inspection of radioactive materials.

The ITTF Transportation Committee in conjunction with the Illinois Terrorism Task Force prepared and tested evacuation plans for Chicago, Rockford, Peoria, Springfield and East St. Louis. Approximately $8 million in traffic management equipment has been provided to install traffic management equipment along streets and highways to insure free traffic flow from danger zones.

The probability for this hazard based on past occurrences is considered **low:**

- **Low -** 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Climate Change

There are no known climate change impacts relevant to this hazard.

Consequence Analysis

Category	Consequences
Public	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for trained and protected personnel.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the area of the incident may require relocation of operations and lines of succession execution. Disruption of communications lines and facilities may extensively postpone services.
Property, Facilities and Infrastructure	Damage to facilities and infrastructure in the area of the incident may be extensive for explosion, moderate to light for radiological, chemical and biological.
Environment	May cause extensive damage, creating denial or delays in the use of some areas. Remediation needed.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Vulnerability Assessment

People

A terrorism event could occur in either limited area of Peoria County or over the entire jurisdiction at once. This hazard could directly cause substantial structural losses and potentially loss of life.

Property

Potential losses from terrorism include all infrastructure, critical facilities, crops, humans and animals. The degree of impact would be directly related to the type of incident and the target. Potential losses could include cost of repair or replacement of damaged facilities, lost economic opportunities for businesses, loss of human life, injuries to persons, loss of food supplies, disruption of the food supply chain, and immediate damage to the surrounding environment. Secondary effects of infrastructure failure could include public safety hazards, spread of disease, increased morbidity and mortality among the local and distant populations, public panic, and long-lasting damage to the environment.

Environment

Certain terrorist attacks can damage infrastructure, releasing debris and potentially damaging chemicals into the environment. A major terrorism attack could potentially impact the environment by triggering a release of a hazardous materials, or by causing an accident involving hazardous materials by disrupting traffic-control devices.

Changes in Development

As more and more large public events are held in Peoria County, more potential may exist for these venues to become targets of attack. With human-caused hazards such as this that can have multiple variables involved, increases in development are not always a factor in determining risk, although the physical cost of the event may increase with the increased or newly developed areas.

Key Issues

- While terrorist attacks can happen anywhere at any time they generally happen in the more populated regions. Using Population as the key indicator, the jurisdiction most at risk would be the City of Peoria. Mitigation strategies and resources would be most likely better allocated to the City.
- Training staff about terrorism and how respond can reduce vulnerability to a terrorism event.

Hazard Summary by Jurisdiction

The following table summarizes terrorism risk by jurisdiction. Terrorism risk does not vary significantly by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville	Low	Low	Low	Elevated
Chillicothe	Low	Low	Low	Elevated
Hanna City	Low	Low	Low	Elevated
Peoria	Low	Low	Low	Elevated
Peoria Heights	Low	Low	Low	Elevated
West Peoria	Low	Low	Low	Elevated
Peoria County Unincorporated Areas	Low	Low	Low	Elevated
Peoria Park District	Low	Low	Low	Elevated
Greater Peoria Sanitary District	Low	Low	Low	Elevated

5.17 Active Shooter

Hazard Description

The definition of an active shooter — as agreed upon by U.S. government agencies, including the White House, U.S. Department of Justice/FBI, U.S. Department of Education, and U.S. Department of Homeland Security/Federal Emergency Management Agency — is "an individual actively engaged in killing or attempting to kill people in a confined and populated area. Implicit in this definition is that the subject's criminal actions involve the use of firearms.

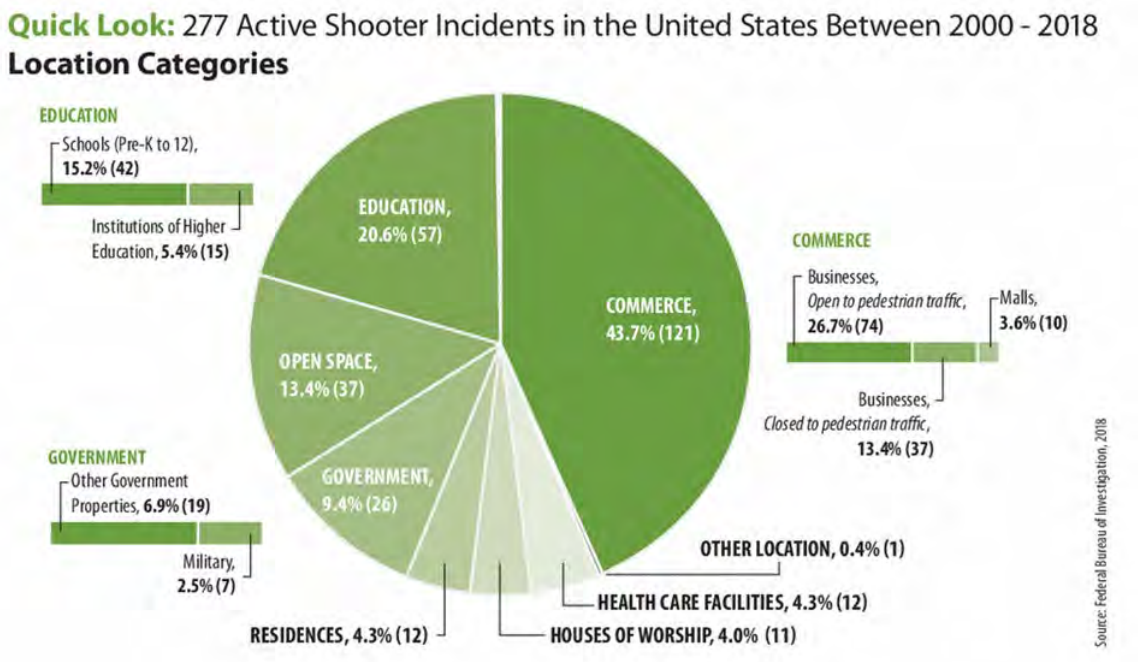
Location

A study conducted by the Federal Bureau of Investigation (FBI), A Study of Active Shooter Incidents in the United States Between 2000 and 2018, identified 277 active shooter incidents in the U.S. between 2000 and 2018. The incidents occurred in small and large towns, in urban and rural areas, and in 42 of 50 states and the District of Columbia. Of the 277 incidents, 64-percent occurred in retail/commerce and educational environments. The remaining 36-percent occurred on city streets, on military and other government properties, in private residences, health care facilities, and houses of worship. Figure 5.65 presents the location categories identified by the FBI.

Based on the median number of fatalities and injuries, the extent of an active shooter event is **low**:

- **Low -** Less than 10% of the total population adversely affected should the hazard occur

Figure 5.65—Active Shooter Location Summary



Source: 277 Active Shooter Incidents in the United States Between 2000-2018 (Pie Chart) — FBI

Extent

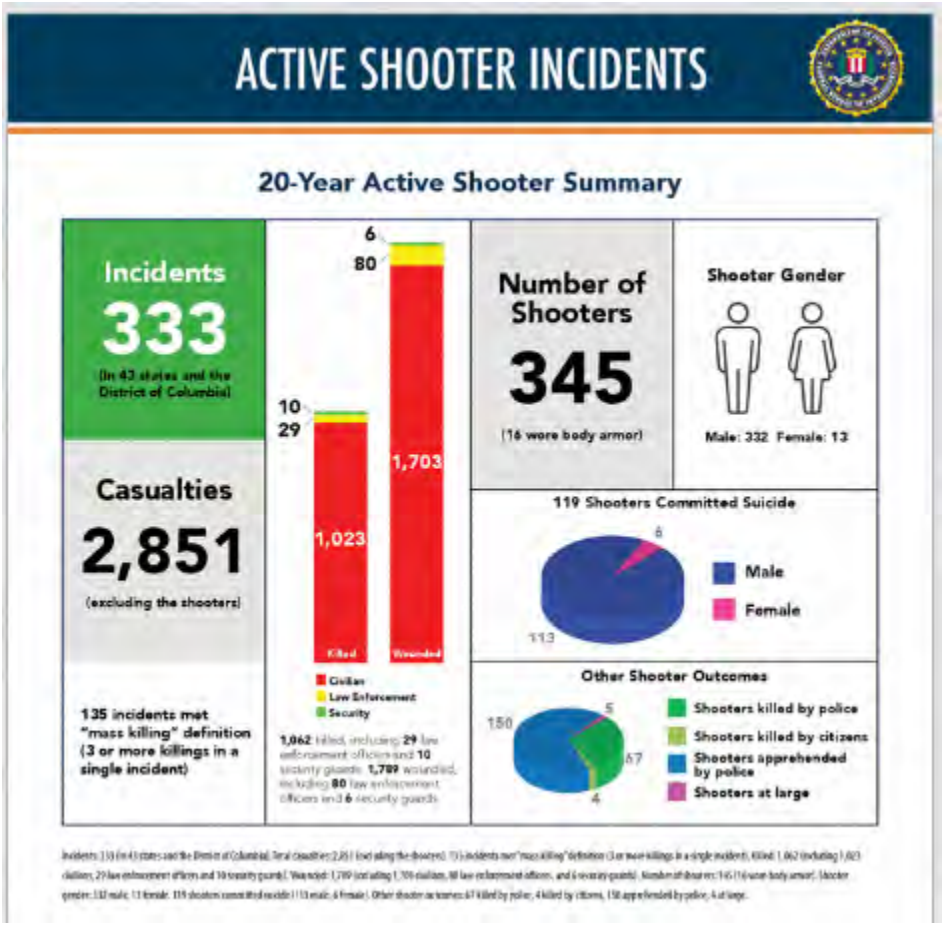
The median number of individuals killed in each incident was 2, and the median number of individuals wounded in each incident was 2. The FBI found that 64 incidents (40.0%) would have been categorized as

falling within the new federal definition of "mass killing," which is defined as "three or more killings in a single incident." Figure 5.66 displays the extent and details of active shooter information from 2000-2019.

Historically, the active shooter events have resulted in over 1,043 casualties with 486 fatalities and 557 wounded individuals. Due to the high number of casualties, the HMPC determined the potential magnitude/severity of an event to be **high:**

- **High —** Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.

Figure 5.66—FBI Active Shooter Information, 2000-2019



Source: [Active Shooter Incidents 20-Year Review, 2000-2019 — FBI]

Historical Occurrences

Between the years of 2000 and 2022, there have been nine active shooter incidents in the state of Illinois:

- **February 5, 2001**, at 9:40 a.m., an active shooter, armed with two rifles, a handgun, and a shotgun, began shooting co-workers in the Navistar International Corporation factory in Melrose Park, Illinois. He was to have reported to prison the next day for stealing from Navistar. Four people were killed; four were wounded. The shooter committed suicide before police arrived.
- **August 27, 2003**, at 8:30 a.m., an active shooter, 36, armed with a handgun, began shooting in Windy City Core Supply, Inc. in Chicago, Illinois, a business from which he had been fired six

months prior. Six people were killed; no one was wounded. After a two-hour standoff, the shooter was killed by police.

- **February 2, 2008**, at 10:45 a.m., an active shooter, identity unknown, armed with a Glock handgun, began shooting at a Lane Bryant clothing outlet in the Brookside Marketplace in Tinley Park, Illinois. Four customers, a part-time employee, and the store manager were taken to the back of the store and shot. Five of them were killed; the part-time employee was wounded but survived. The armed shooter was never found.
- **February 14, 2008**, at 3:00 p.m., an active shooter, 27, armed with a shotgun and three handguns, began shooting in the Cole Hall Auditorium at Northern Illinois University in DeKalb, Illinois. He had attended graduate school at the university. Five people were killed; 16 were wounded, including three who were injured as they fled. The shooter committed suicide before police arrived.
- **February 3, 2010**, at 12:45 p.m., an active shooter, 19, armed with a rifle, began shooting inside a Farm King Store in Macomb, Illinois. Eight people barricaded themselves in the office and remained hidden until police arrived. No one was killed or wounded. The shooter committed suicide after police arrived.
- **February 15, 2019**, at 1:24 p.m., an active shooter, 45, armed with a handgun, began shooting at Henry Pratt Company is Aurora, Illinois. Six people died, including the perpetrator who was shot and killed by responding police officers. Six others were injured, including five police officers.
- **December 26, 2020**, at 6:55p.m., an active shooter, 37, armed with two Glock pistols, began shooting at Don carter Lanes bowling alley in Rockford, Illinois. A sole suspect was arrested after killing three male victims. Three others were severely injured in the shooting.
- **May 19, 2022**, at 10:40 p.m., an active shooter, 21, armed with a Glock 19 handgun, began shooting in the Magnificent Mile shopping district in Chicago, Illinois. Two people were killed, and eight others were injured. The perpetrator was taken into custody by the Chicago police.
- **July 4, 2022**, at 10:14 a.m., an active shooter, 21, armed with a semi-automatic rifle, began shooting at the Independence Day parade in Highland Park, Illinois. Seven people were killed, and 48 others were wounded by bullets or shrapnel.

Probability of Future Occurrence

There is no sure way to predict an active shooter event. The study prepared by the FBI identified 277 incidents from 2000 to 2018 for an average of 14.6 incidents per year. Within Illinois, as previously noted, there were 9 incidents during the 23-year period.

- **Low -** 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)

Climate Change

There are no known climate change impacts relevant to this hazard.

Consequence Analysis

Category	Consequences
Public	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for trained and protected personnel.
Continuity of Operations (including Continued Delivery of Services)	Danger to personnel in the area of the incident may require relocation of operations and lines of succession execution; localized disruption of roads and/or utilities caused by incident may postpone delivery of some services.

Property, Facilities and Infrastructure	Facilities and infrastructure in the area of the incident may be denied until incident resolved.
Environment	Localized adverse impact depending on the nature of the incident.
Economic Condition of the Jurisdiction	Localized adverse impact depending on the nature of the incident.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Vulnerability Assessment

People

Areas with higher population density are more likely to be exposed to an active shooter event. In the past, these have included schools, college campuses, bars and nightclubs, and public gatherings, such as parades.

Property

For the most part, property itself would not be impacted by an active shooter. However, minor damage could occur during an active shooting event.

Environment

An active shooter event would not have an impact on the natural environment.

Changes in Development

No changes in development are expected that would significantly affect the incidence of pandemic.

Key Issues

- There is no one demographic profile of an active shooter.
- A thorough threat assessment typically necessitates a holistic review of an individual of concern, including historical, clinical, and contextual factors.
- Human bystanders generally represent the greatest opportunity for the detection and recognition of an active shooter prior to his or her attack.
- Successful threat management of a person of concern often involves long-term caretaking and coordination between law enforcement, mental health care, and social services.
- Agencies interested in active-shooter training, conferences, tabletop exercises, or threat-analysis assistance should contact the local FBI office. These important educational opportunities may help save civilian lives, as well as the first responders who come to their aid.

Hazard Summary by Jurisdiction

The following table summarizes active shooter risk by jurisdiction. Active shooter risk does not vary substantially by jurisdiction.

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Bartonville				Elevated
Chillicothe				Elevated
Hanna City				Elevated
Peoria				Elevated
Peoria Heights				Elevated
West Peoria				Elevated

Jurisdiction	Geographic Location	Probability of Future Events	Magnitude/ Severity	Hazard Rating
Peoria County Unincorporated Areas				Elevated
Peoria Park District				Elevated
Greater Peoria Sanitary District				Elevated

5.18 Conclusions on Hazard Risk

Planning Significance

As discussed in Section 5.2, the conclusions drawn from each individual hazard profile and vulnerability assessment were used to prioritize all potential hazards to Peoria County using a hazard rating, as developed by the State of Illinois. Table 5.91 summarizes the hazard rating assigned to each identified hazard.

Table 5.91 – Summary of Hazard Ratings

Hazard	Geographic Location	Probability of Future Events	Magnitude / Severity	Hazard Rating	Hazard Rating Variation for other jurisdictions
Natural Hazards					
Severe Winter Weather	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Thunderstorm	High	High	Medium	Severe	
Flood	Medium	High	High	Severe	Guarded *Chillicothe, Peoria Heights* Low *Hanna City*
Extreme Temperatures	High	Medium	Medium	High	
Drought	High	Low	Low	Elevated	
Dam/Levee Failure	Low	Low	High	Elevated	Low Chillicothe, Peoria Heights
Landslide	Low	Medium	Low	Guarded	Low Hanna City
Land Subsidence	Medium	Low	Low	Guarded	Low Chillicothe, Peoria Heights
Wildfire	Medium	Low	Low	Low	
Earthquake	Low	Low	Low	Low	
Man-made Hazards					
Hazardous Materials Incidents	Medium	High	Low	High	
Active Shooter				Elevated	
Terrorism Events	Low	Low	Low	Elevated	

Contents

6 Capability Assessment

This section discusses the capability of the Peoria County planning area to implement hazard mitigation activities. It consists of the following subsections:

6.1 Overview
6.2 Capability Assessment Findings
6.3 Conclusions on Local Capability

Table 6.1 – Section 6 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 6 – Capability Assessment
		6.1 Overview – This section provides an overview of the capability assessment and describes how the capability assessment was conducted. A qualitative evaluation methodology was used in place of the previous scoring system.
Section 2.2 Peoria County Description and Capabilities	2.4 Incorporating Existing Planning Documents	6.2 Capability Assessment Findings – This section was updated to catalogue current existing capabilities of the County and incorporated jurisdictions.
		6.3 Conclusions on Local Capability – This section was created to summarize key findings and identify gaps and areas for improvement across all jurisdictions.

6.1 Overview

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects. As in any planning process, it is important to try to establish which goals, objectives, and actions are feasible, based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical and likely to be implemented over time given a local government's planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate.

The capability assessment completed for the Peoria County planning area serves as a critical planning step toward developing an effective mitigation strategy. Coupled with the risk assessment, the capability assessment helps identify and target effective goals, objectives, and mitigation actions that are realistically achievable under given local conditions.

To facilitate the inventory and analysis of local government capabilities within the planning area, a detailed Data Collection Guide worksheet was distributed to members of the HMPC after the first planning committee meeting. The worksheet requested information on a variety of "capability indicators" such as existing local plans, policies, programs, or ordinances that contribute to and/or hinder the region's

ability to implement hazard mitigation actions. Other indicators included information related to the region's fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes, and existing education and outreach programs that can be used to promote mitigation. Communities were also asked to comment on the current political climate with respect to hazard mitigation, an important consideration for any local planning or decision-making process.

In addition to requesting HMPC input, the planning team reexamined data from the 2018/2019 plans and conducted a review of plans, policies, and ordinances in order to identify changes in capability over the past five years.

At a minimum, the capability assessment findings provide an extensive and consolidated inventory of existing local plans, ordinances, programs, and resources in place or under development. With this information, inferences can be made about the overall effect on hazard loss reduction in each community.

6.2 Capability Assessment Findings

The findings of the capability assessment are summarized in this plan to provide insight into the relevant capacity of Peoria County and its incorporated municipalities to implement hazard mitigation activities. Information is based upon input provided by community representatives on the HMPC as well as research conducted by the planning consultant.

6.2.1 Planning and Regulatory Capability

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction's commitment to guiding and managing growth, development, and redevelopment in a responsible manner, while maintaining the general welfare of the community. It includes emergency response and mitigation planning, comprehensive land use planning, and transportation planning. Regulatory capability also includes the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed and structures are built, as well as protecting environmental, historic, and cultural resources in the community. Although some conflicts can arise, these planning initiatives generally present significant opportunities to integrate hazard mitigation principles and practices into the local decision-making process.

This assessment provides a general overview of the key planning and regulatory tools or programs in place or under development for the Peoria County planning area. This information will help identify opportunities to address gaps, weaknesses, or conflicts with other initiatives and integrate the implementation of this plan with existing planning mechanisms where appropriate.

Table 6.2 summarizes the relevant local plans, ordinances, and programs already in place or under development for the Peoria County planning area. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (*) indicates that the given item is currently being developed for future implementation. A plus sign (+) indicates that a jurisdiction is covered for that item under a version implemented by Peoria County. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the Hazard Mitigation Plan.

Table 6.2 – Relevant Plans, Ordinances, and Programs

	Peoria County	Bartonville	Chillicothe	Hanna City	Peoria, City of	Peoria Heights	West Peoria	Peoria Park District	Greater Peoria Sanitary District
Hazard Mitigation Plan	✓	--	✓	--	✓	✓	--	--	--
Comprehensive Plan	✓	✓	✓	✓	✓	✓	✓	--	--
Land Use Plan	✓	✓	✓	✓	✓	--	--	--	--
Zoning Ordinance	✓	✓	✓	✓	✓	✓	✓	--	--
Subdivision Ordinance	✓	✓	✓	✓	✓		✓	--	--
Floodplain Ordinance	✓	✓	✓	--	✓	✓	✓	--	--
Erosion, Sedimentation, and Pollution Control ordinance	✓	--	--	--	✓	✓	✓	--	--
Other Special Purpose Ordinance (stormwater, growth management, wildfire)	✓	✓	--	--	✓	✓	--	--	--
Building Code	✓	✓	✓	✓	✓	✓	✓	--	✓
Fire department ISO Rating	✓	✓	✓	✓	✓	✓	--	--	--
Building Code Effectiveness Grading Schedule Rating	✓	✓	✓	✓	✓	✓	--	--	--
Stormwater Management Program	✓	--	--	--	✓	✓	--	--	✓
Site Plan Review Requirements	✓	✓	✓	✓	✓	✓	✓	--	✓
Capital Improvements Plan	✓	✓	✓	✓	✓	✓	--	✓	✓
Economic Development Plan	✓	✓	✓	✓	✓	✓	--	--	✓
Local Emergency Operations Plan	✓	✓	✓	--	✓	✓	✓	✓	✓
Flood Insurance Study or Other Engineering Study for Streams	✓	✓	✓	--	✓	--	--	✓	✓
Other Special Plans	✓	--	--	✓	--	--	--	✓	--
Elevation Certificates	✓	✓	✓	--	✓	--	--	--	--

Based upon the results summarized in the above table, jurisdictions in Peoria County have a range of planning and regulatory capability. While Peoria County and the City of Peoria have significant planning capability, the smaller communities of Bartonville, Chillicothe, Peoria Heights, and West Peoria have moderate planning capability. The smallest community of Hanna City has limited capacity. All jurisdictions could improve by creating economic development plans that incorporate pre- and post-disaster economic resilience and recovery strategies. Beyond the planning and regulatory tools listed above, communities in Peoria County could increase their resilience to hazards through developing local post-disaster recovery plans.

A more detailed discussion on planning and regulatory tools and capability follows.

6.2.1.1 Plans and Ordinances

Hazard mitigation is widely recognized as one of the four primary phases of emergency management. Mitigation is interconnected with all other phases and is an essential component of effective preparedness, response, and recovery. Opportunities to reduce potential losses through mitigation practices are most often implemented before a disaster event, such as through the elevation of flood-prone structures or by regular enforcement of policies that regulate development. However, mitigation opportunities can also be identified during immediate preparedness or response activities, such as installing storm shutters in advance of a hurricane. Furthermore, incorporating mitigation during the long-term recovery and redevelopment process following a disaster event is what enables a community to become more resilient.

The implementation of hazard mitigation activities also often involves agencies and individuals beyond the emergency management profession. Stakeholders may include local planners, public works officials, economic development specialists, and others. In many instances, concurrent local planning efforts will help to achieve or complement hazard mitigation goals, even though they may not be designed as such.

The following list defines some of the different plans and ordinances available to Peoria County and its incorporated jurisdictions to implement hazard mitigation.

Hazard Mitigation Plan

A hazard mitigation plan is a community's blueprint for how it intends to reduce the impact of natural, and in some cases human-caused, hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment, and mitigation strategy.

With the exception of West Peoria, Peoria Park District, and the Greater Peoria Sanitary District, all participating jurisdictions in this multi-jurisdictional planning effort have previously been covered by either the 2018 Peoria County Hazard Mitigation Plan or the 2019 Tri-County Regional Hazard Mitigation Plan and continue to be covered under this update – making each community eligible for the associated hazard mitigation funding mechanisms.

Comprehensive/Land Use Plan

A comprehensive land use plan, or general plan, establishes the overall vision for what a community wants to be and serves as a guide for future governmental decision making. Typically, a comprehensive plan contains sections on demographic conditions, land use, transportation elements, and community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can enhance the likelihood of achieving risk reduction goals, objectives, and actions. Chillicothe, City of Peoria, Peoria Heights, and Peoria County all have their own comprehensive plans and land use mapping in place. Regular updates of comprehensive plans are important for guiding the growth and development of a community.

Zoning Ordinance

Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety, and welfare of those in a given jurisdiction that maintains zoning authority. A zoning ordinance is the mechanism through which zoning is typically implemented. Since zoning regulations enable municipal governments to limit the type and density of development, a zoning ordinance can serve as a powerful tool when applied in identified hazard areas. All participating jurisdictions have a zoning ordinance in place, with the exception of Peoria Parks District and the Greater Peoria Sanitary District.

Subdivision Ordinance

A subdivision ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development. All participating jurisdictions have a subdivision ordinance in place.

Building Codes, Permitting, and Inspections

Building codes regulate construction standards. In many communities, permits and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of hazard risk faced by a community. All of the jurisdictions have a building code in place based on the International Building Code and International Residential Code (IRC), see Table 6.3 below.

The State of Illinois has not adopted statewide building codes. Instead, local governments such as cities and counties can adopt codes of their choice.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program, developed by the Insurance Services Office, Inc. (ISO). The results of BCEGS assessments are routinely provided to ISO's member private insurance companies, which in turn may offer ratings credits for new buildings constructed in communities with strong BCEGS classifications. The expectation is that communities with well-enforced, up-to-date codes should experience fewer disaster-related losses, and as a result should have lower insurance rates.

Table 6.3 – Building Codes

Jurisdiction	Residential Codes	Building Codes	Notes
Peoria County	2018	2018	International Codes
Bartonville	2000	2000	International Codes
Chillicothe	2000	2012	International Codes
Hanna City	2012	2003	International Codes County Ordinance
Peoria, City of	2018	2018	International Codes
Peoria Heights	2018	2018	International Codes
West Peoria			
Peoria Park District	N/A	N/A	N/A
Greater Peoria Sanitary District	N/A	N/A	N/A

Source: https://cdb.illinois.gov/business/codes/buildingcodesregulations.html

Capital Improvements Plan

A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism for guiding future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments. Capital improvement plans can also address problems within hazardous areas; for example, a jurisdiction might obligate money to address site-specific

drainage related problems. Peoria County maintains a capital improvement plan as do all other jurisdictions except West Peoria.

Emergency Operations Plan

An emergency operations plan outlines the responsibilities of different departments and how resources will be deployed during and following an emergency or disaster. Peoria County maintains an emergency operations plan through the County Emergency Management Agency. Bartonville, Chillicothe, Peoria, Peoria Heights, and West Peoria have also adopted a municipal-level emergency operations plan.

The Peoria County Emergency Operations Plan also establishes and emergency support function (ESF) for long-term recovery and mitigation which enacts post-disaster mitigation policies and procedures. The purpose of these procedures is to support municipal governments, nongovernmental organizations, and private sector entities in enabling post-disaster mitigation and recovery.

Stormwater Management Plan

A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of more frequently occurring minor urban flooding. All jurisdictions have adopted a stormwater management ordinance.

6.2.1.2 Floodplain Management

Flooding represents the greatest natural hazard facing the nation, yet the tools available to reduce the impacts associated with flooding are among the most developed when compared to other hazard-specific mitigation techniques. In addition to approaches that cut across hazards such as education, outreach, and the training of local officials, the National Flood Insurance Program (NFIP) contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments; however, program participation is strongly encouraged by FEMA as a first step for implementing and sustaining an effective hazard mitigation program. It is therefore used as part of this capability assessment as a key indicator for measuring local capability.

In order for a county or municipality to participate in the NFIP, they must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings be protected from damage by a 1-percent-annual-chance flood event, and that new development in the floodplain not exacerbate existing flood problems or increase damage to other properties.

A key service provided by the NFIP is the mapping of identified flood hazard areas. Once completed, the Flood Insurance Rate Maps (FIRMs) are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community.

Table 6.4 provides NFIP policy and claim information for each participating jurisdiction in the Peoria County planning area.

All jurisdictions, with the exception of Hanna City and West Peoria, participate in the NFIP and will continue to comply with all required provisions of the program. Hanna City does not have any mapped floodplain areas and West Peoria has never been mapped. Floodplain management is managed through zoning ordinances, building code restrictions, and the county and municipal building inspection

programs. The jurisdictions will coordinate with IEMA and FEMA to develop maps and regulations related to Special Flood Hazard Areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

Community Rating System

An additional indicator of floodplain management capability is active participation in the Community Rating System (CRS). The CRS is an incentive-based program that encourages communities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP. Each of the CRS mitigation activities is assigned a point value. As a community earns points and reaches identified thresholds, they can apply for an improved CRS class. Class ratings, which range from 9 to 1 and increase on 500-point increments, are tied to flood insurance premium reductions. Every class improvement earns an additional 5 percent discount for NFIP policyholders, with a starting discount of 5 percent for Class 9 communities and a maximum possible discount of 45 percent for Class 1 communities.

Community participation in the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10. The CRS application process has been greatly simplified over the past several years, based on community comments intended to make the CRS more user friendly, and extensive technical assistance available for communities who request it. Peoria County participates in the CRS. Table 6.4 also includes Peoria County's CRS entry date and current CRS class.

Table 6.4 – NFIP Policy and Claim Information

Jurisdiction	Initial FIRM Date	CRS Entry	CRS Class	Current Effective Map Date	NFIP Policies in Force	Insurance in Force	Closed Losses	Total Payments
Peoria County	02/15/1980	1992	5	06/01/1983	192	$28,210,000.00	1,812	$16,999,287.35
Bartonville	03/16/1981	-	-	11/02/1983	5	$1,106,000.00	24	$66,225.22
Chillicothe	02/02/1977	-	-	02/02/1977	13	$2,542,000.00	167	$1,419,236.06
Hanna City	-	-	-	-	-	-	-	-
Peoria, City of	02/01/1980			02/01/1980	114	$24,580,000.00	429	$3,174,887.30
Peoria Heights	11/01/1979			02/17/2017	25	$4,358,000.0	368	$3,665,670.83
West Peoria	-	-	-	-	-	-	-	-
Peoria Park District	-	-	-	-	-	-	-	-
Greater Peoria Sanitary District	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**349**	**$60,796,000**	**2,800**	**$25,325,306.76**

Source: FEMA NFIP Policy Statistics via FEMA CIS, March 2023

6.2.2 Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental

coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can generally be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using geographic information systems (GIS) to analyze and assess community hazard vulnerability. The Local Capability Self-Assessment was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

Table 6.5 provides a summary of the Local Capability Self-Assessment results for the region regarding relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill, a plus sign (+) indicates a Peoria County staff member or resource provides the specified knowledge, skill, or data for the jurisdiction.

Note that in multiple instances, one individual staff member fills multiple roles listed below. In these cases, these individuals may be overburdened during emergency events, disaster recovery, or planning process updates. Certain communities might contract out services where there is no in-house capacity. Specific areas for improvement might include employing additional planners with specific understanding of natural hazards and land use practices to mitigate the impacts of hazards as well as expanding individual communities' GIS capabilities and databases to identify hazard prone areas and build community-specific, detailed risk and vulnerability assessments.

Table 6.5 – Relevant Staff/Personnel/Data Resources

	Peoria County	Bartonville	Chillicothe	Hanna City	Peoria, City of	Peoria Heights	West Peoria	Peoria Park District	Greater Peoria Sanitary District
Planner/Engineer with knowledge of land development/land management practices	✓	✓	✓	✓	✓	✓		+	✓
Engineer/Professional trained in construction practices related to buildings and/or infrastructure	✓	✓	✓	✓	✓	✓		+	✓
Planner/Engineer with an understanding of natural hazards	✓	✓	✓		✓	✓		+	✓
Personnel skilled in GIS	✓	✓	✓	✓	✓	✓		+	✓
Building Official	✓	✓	✓	✓	✓	✓	✓	+	
Floodplain Manager	✓	✓	✓		✓	✓	+	+	
Emergency Manager	✓	✓	✓		✓	✓	✓	+	✓
Grant Writer	✓	✓	✓		✓	✓		✓	✓
Public Information Officer	✓	✓	✓		✓	✓		✓	✓
Warning Systems	✓	✓	✓	✓	✓	✓	+	+	
GIS data: flood zones/hazard areas	✓	+	+	+	+	+	+	+	+
GIS data: critical facilities	✓	+	+	+	+	+	+	+	✓
GIS data: current and/or future land use	✓	+	+	+	+	+	+	+	+
GIS data: building footprints	✓	+	+	+	+	+	+	+	+

6.2.3 Fiscal Capability

The ability of a local government to implement mitigation actions is often dependent on the amount of money available. This may take the form of outside grant funding awards or locally based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project such as the acquisition of flood-prone houses, which can require a substantial commitment from local, state, and federal funding sources.

The information collected from jurisdictions was used to capture information on fiscal capability through the identification of locally available financial resources.

Table 6.6 provides a summary of the results for the planning area with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has been previously used for hazard mitigation purposes. A plus sign (+) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds). Jurisdictions with limited fiscal capability should seek opportunities to hire grant writers or resource development staff, create local funding sources such as stormwater utility fees, or seek alternate funding sources.

Table 6.6 – Relevant Fiscal Resources

	Peoria County	Bartonville	Chillicothe	Hanna City	Peoria, City of	Peoria Heights	West Peoria	Peoria Park District	Greater Peoria Sanitary District
Community Development Block Grants	✓	✓	✓		✓	✓			
Capital Improvement Programming	✓	✓	✓	✓	✓	✓			✓
Authority to levy taxes for specific purposes	✓	✓	✓	✓	✓	✓	✓		✓
Fees for water, sewer, gas, or electric services	✓	✓	✓	✓	✓	✓	✓		✓
Development impact fees	✓				✓				✓
General obligation, revenue, and/or special tax bonds	✓	✓	✓	✓	✓	✓		✓	✓
Incur debt through private activities	✓	✓	✓	✓	✓				
Withhold spending in hazard prone areas									✓
Other general fund revenue	✓	✓	✓	✓	✓	✓	✓	✓	

6.2.4 Education and Outreach Capability

This type of local capability refers to education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Examples include natural disaster or safety related school programs; participation in community programs such as Firewise or StormReady; and activities conducted as part of hazard awareness campaigns such as a Severe Weather Awareness Month. The following is a brief list of education and information programs within each community:

- **Peoria County and City of Peoria:** Participates in StormReady Program; CodeRed emergency notification program; Information and links about flood insurance, flood safety, property protection, and more is posted on community websites and social media; Outreach efforts include CRS outreach events; annual Emergency Expo, and ongoing social media information and campaigns related to hazards.

- **Bartonville, Chillicothe, Hanna City, Peoria Heights, and West Peoria**: all have local municipal websites, that could include links to the Tri-County Regional Planning Commission and the Mitigation Plan, and include links to flood hazard information.
- **Peoria County Parks District**: has a district website with links to current projects and current events.
- **Greater Peoria Sanitary District (GPSD)**: has a district website with links to current ordinances and regulations, current projects, and GPSD Next, a planning initiative to prepare greater Peoria for the next 100 years.

Although this is not an exhaustive list, Peoria County, the incorporated jurisdictions, and districts have hazard and non-hazard related educational and outreach capacity. The jurisdictions and districts can further capitalize on their existing capabilities, like school partnerships and non-profit agency relationships, and build new capability to educate the larger community on hazard risk and mitigation options.

6.2.5 Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of future hazard events. Hazard mitigation may not be a local priority, or it may conflict with or be seen as an impediment to other goals of the community, such as growth and economic development. Therefore, the local political climate must be considered in designing mitigation strategies, as it could be the most difficult hurdle to overcome in accomplishing their adoption and implementation.

The current and future political climate for supporting and advancing future hazard mitigation strategies is moderate in Peoria County. There are several existing ordinances that address natural hazards or are related to hazard mitigation such as flood damage prevention, soil erosion and sediment control, stormwater management, zoning, and subdivision.

Table 6.7 below summarizes the different government structures in each jurisdiction.

Table 6.7 – Jurisdictional Government Structure

Jurisdiction	Government Structure
Peoria County	Administrator/County Board
Bartonville	Mayor/Board of Trustees
Chillicothe	Mayor/City Council
Hanna City	Mayor/Village Board of Directors
Peoria, City of	Mayor/City Council
Peoria Heights	Mayor/Village Board of Trustees
West Peoria	Mayor/City Council
Peoria Park District	Executive Director/Board of Trustees
Greater Peoria Sanitary District	Executive Director/Board of Trustees

6.3 Conclusions on Local Capability

As previously discussed, one of the reasons for conducting a capability assessment is to examine local capabilities to detect any existing gaps or weaknesses within ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. The participating jurisdictions can use this capability assessment as part of the basis for new mitigation actions to expand on and improve existing capabilities.

The overall capability to implement hazard mitigation actions varies among the participating jurisdictions. Hanna City, West Peoria, and the Peoria Parks District have limited fiscal capabilities, while Peoria County and the larger jurisdiction of the City of Peoria, Bartonville, Chillicothe, and Peoria Heights have more funding resources available. For planning and regulatory capability, the jurisdictions range from limited to moderate to high. A strength across all jurisdictions is the presence of recently updated comprehensive plans. Similarly, all jurisdictions maintain a zoning and subdivision ordinance. It is recommended that each jurisdiction consider how their existing plans and ordinances align with the goals and strategies outlined in this Hazard Mitigation Plan.

There is also some variation in the administrative and technical capability among the jurisdictions with Peoria County having greater staff and technical resources. Hanna City and West Peoria have limited administrative and technical capability. If possible, the smaller jurisdictions might contract out services where there is no in-house capacity. For example, the jurisdictions could outsource planners with specific understanding of natural hazards and land use practices to mitigate the impacts of hazards.

Education and outreach capability is moderate for each jurisdiction, with most resources accessible on Peoria County or the Tri-County Regional Planning Commission website. All of the incorporated jurisdictions and districts can further increase their existing capabilities by forming school partnerships and find opportunities to educate the larger community on hazard risk and mitigation options. Additional outreach strategies include sharing information via radio programs and TV ads and posting information in churches and community centers. Further, jurisdictions can curate education and outreach opportunities for the communities' most vulnerable residents (elderly, people living alone, non-English speakers, renters, etc.).

The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. All jurisdictions are capable of implementing hazard mitigation efforts to varying degrees, and while capability may vary, political capability exists for jurisdictions. Participating communities may refer to this assessment to identify gaps and opportunities to improve local capability to implement mitigation projects.

7 Mitigation Strategy

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.

This section describes the mitigation strategy process and mitigation action plan for the Peoria County Hazard Mitigation Plan. It describes how the participating jurisdictions met Step 6: Set Goals, Step 7: Review Possible Activities, and Step 8: Draft an Action Plan from the 10-step planning process. This section contains the following subsections:

7.1 Introduction
7.2 Goals and Objectives
7.3 Identification and Analysis of Mitigation Activities
7.4 Plan Update Requirement

Table 7.1 – Section 7 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 7 – Mitigation Strategy
		7.1 Introduction
Section 4.1 Goals and Objectives	4.1 Mitigation Goals Review	7.2 Mitigation Goals – This section was updated to reflect the update of the plan goals.
Section 4.2 Identification and Analysis of Mitigation Actions	4.2 Existing Mitigation Actions Review 4.3 New Mitigation Actions Identification	7.3 Identification and Analysis of Mitigation Activities – This section was revised to review mitigation alternatives and the prioritization process used to evaluate and compare alternatives. A more detailed review of mitigation alternatives is provided in Appendix D.
		7.4 Plan Update Requirement – This section was updated to include a summary of all completed and deleted actions since the previous plan update.

7.1 Introduction

Section 5 documents the hazards that threaten Peoria County and the associated vulnerability of structures, infrastructure, and critical facilities. Section 6 summarizes the capabilities of the participating jurisdictions to implement mitigation projects. Based on this understanding of risks, vulnerabilities, and capability, the HMPC must identify feasible mitigation actions to reduce exposure, vulnerability, and overall risk.

The intent of the Mitigation Strategy is to provide Peoria County with goals to serve as guiding principles for mitigation policy and project administration as well as an analysis of mitigation techniques available to meet those goals. It is designed to be comprehensive, in that it includes a thorough review of all possible mitigation alternatives and achieves multiple local objectives, strategic, such that proposed actions are

consistent with long-term planning goals, and functional, in order to facilitate implementation of the identified actions.

The first step in designing the mitigation strategy is the identification of mitigation goals, which represent board statements of intent that are achievable through the implementation of more specific mitigation actions.

The second step involves the identification and analysis of available mitigation measures that could achieve the identified goals. While an alternatives analysis was conducted by the HMPC in the development of this plan, continuous evaluation and consideration of alternatives is a process to be sustained through the implementation and maintenance of this plan. Alternative mitigation measures will continue to be considered as future capabilities change and opportunities arise.

The third and final step of the mitigation strategy is the selection and prioritization of mitigation actions for the participating jurisdictions. Selected actions are detailed in the Mitigation Action Plan provided in Section 8.

7.2 Mitigation Goals

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

The intent of goal setting is to guide the review of possible mitigation actions by defining broad statements of intended outcomes. Goals are general guidelines that explain what is to be achieved. They are usually broad-based, long-term policy type statements that represent global visions. Goals help define the benefits that the plan is trying to achieve.

7.2.1 Goal Setting

At the third planning meeting, the HMPC reviewed and discussed the goals from the 2018/2019 Plans. A key consideration in evaluating these goals was to ensure that the goals of the Hazard Mitigation Plan align with other community planning efforts such as comprehensive and land use plans. These documents are important guides for future growth within the community, so the HMPC should strive to achieve consistency in the plans' goals.
The existing goals from the 2018 Peoria County Plan are as follows:

Goal 1: Reduce the vulnerability of the people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.
Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

The existing goals from the 2019 Tri-County Plan are as follows:

Goal 1: Educate people about the natural hazards they face and the ways they can protect themselves, their homes, and their businesses from those hazards.
Goal 2: Protect the crops and lives, health, and safety of the people and animals in the County from the dangers of natural hazards.
Goal 3: Protect existing infrastructure and design new infrastructure (roads, bridges, utilities, water supplies, sanitary sewer systems, etc.) to be resilient to the impacts of natural hazards.
Goal 4: Incorporate natural hazard mitigation into community plans, regulations and activities.
Goal 5: Place a priority on protecting public services, including critical facilities, utilities, roads and schools.
Goal 6: Preserve and protect the rivers and floodplains in our County.
Goal 7: Ensure that new developments do not create new exposures to damage from natural hazards.
Goal 8: Protect historic, cultural, and natural resources from the effects of natural hazards.

The following changes were proposed during the HMPC's discussion:

- Add "current and future" to Goal #1
- Add Goal #4 addressing community plans, regulations and activities.

In addition to revising the plan goals, the committee developed objectives to support the achievement of each goal. The goals and objectives approved by the HMPC are presented below.

7.2.2 Resulting Goals & Objectives

The new goals and objectives are the following:

Goal 1: Reduce the vulnerability of current and future people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure, including high hazard potential dams, to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Goal 4: Incorporate natural and man-made hazard mitigation into community plans, regulations and activities.

7.3 Identification and Analysis of Mitigation Activities

Requirement §201.6(c)(3)(ii): [The mitigation strategy section 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. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

To identify and select mitigation projects, the HMPC targeted those hazards considered high and moderate priorities for the planning area, based on the analysis provided in Section 5 Hazard Risk & Vulnerability Assessment. All hazards profiled in Section 5 were determined based on the Priority Risk Index scores to be high and moderate priority hazards.

Once it was determined which hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of mitigation categories which are utilized as part of the CRS planning process but are also applicable to multi-hazard mitigation.

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

More detail on the range of mitigation alternatives considered by the HMPC are provided in Appendix C.

The HMPC was also provided with examples of potential mitigation actions for each of the above categories. The HMPC was instructed to consider both future and existing buildings in evaluating possible mitigation actions. The HMPC also considered which incomplete actions from the previous plan should be continued in this action plan.

7.3.1 Prioritization Process

In the process of identifying continuing and new mitigation actions, the HMPC was provided with a set of criteria to assist in deciding why one action might be more important, more effective, or more likely to be implemented than another. The considerations for action prioritization, modified from the FEMA STAPLEE criteria. were as follows:

- **Socially Acceptable:** Is the action acceptable to the community? Does it have a greater impact on a certain segment of the population? Are the benefits fair?
- **Technically Feasible:** Is the action technically feasibly? Is it a long-term solution to the problem? Does it capitalize on existing planning mechanisms for implementation?
- **Administrative Resources:** Are there adequate staffing, funding and other capabilities to implement the project? Is there adequate additional capability to ensure ongoing maintenance?
- **Politically Supported:** Will there be adequate political and public support for the project? Does the project have a local champion to support implementation?
- **Legally Allowable:** Does the community have the legal authority to implement the action?
- **Economically Sound:** Can the action be funded locally? Will the action need to be funded by an outside entity, and has that funding been secured? How much will the project cost? Can the benefits be quantified, and do they outweigh the costs?
- **Environmentally Sound:** Does the action comply with environmental regulations? Does the action meet the community's environmental goals? Does the action impact land, water, endangered species, or other natural assets?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority, as reflected in the prioritization criteria above. For each action, the HMPC considered the benefit-cost analysis in terms of:

- Ability of the action to address the problem
- Contribution of the action to save life or property
- Available technical and administrative resources for implementation
- Availability of funding and perceived cost-effectiveness

The consideration of these criteria helped to prioritize and refine mitigation actions but did not constitute a full benefit-cost analysis. The cost-effectiveness of any mitigation alternative will be considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this plan.
The point of contact for each jurisdiction helped to coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a subjective ranking of High, Medium, or Low priority based on the criteria above. The priority for each mitigation action is provided in the Mitigation Action Plans in Section 8.

7.4 Plan Update Requirement

In keeping with FEMA requirements for plan updates, the HMPC evaluated mitigation actions identified in the previous plan to determine their current implementation status, including if an action was completed or, if not, whether it should be carried forward for future implementation or deleted from the mitigation action plan. The results of this evaluation, including a summary of completed and deleted actions from the 2018/2019 plans, are provided in Section 2.7 Documentation of Plan Progress.

The mitigation action plan in Section 8 presents only those actions currently being pursued for implementation, including new actions and actions carried forward from the 2018/2019 plans. Note that action numbers have been updated for actions carried forward from the 2018/2019 plans.

8 Mitigation Action Plan

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.

Table 8.1 – Section 8 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 8 – Mitigation Action Plan
		8.1 Overview – Minor updates
Section 4.3 Implementation of Mitigation Actions	4.4 Mitigation Action Analysis	8.2 Mitigation Action Plans – Action plans were combined to better reflect multi-jurisdictional efforts. Actions were updated to reflect progress toward implementation, action revisions, and new mitigation actions.

8.1 Overview

This section provides the updated mitigation action plan, which was developed to present the HMPC's recommendations for how the participating communities can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development.

Each mitigation action recommended for implementation is listed in the tables below along with detail on the applicable jurisdictions, the hazards addressed, the goal and objective addressed, the priority rating, the lead agency responsible for implementation, potential funding sources for the action, a projected implementation timeline, and the 2023 implementation status for actions that were carried forward from the 2018/2019 plans.

8.2 Mitigation Action Plan

The mitigation actions proposed by each of the participating jurisdictions are listed in the mitigation action plan in Table 8.3 below. Table 8.2 summarizes the total number of mitigation actions identified by each jurisdiction. Individual mitigation action plans by jurisdiction are also provided in each jurisdiction's annex.

Table 8.2 – Mitigation Action Summary

Jurisdiction	Mitigation Action Count
Peoria County	38
Bartonville	23
Chillicothe	16
Hanna City	17
Peoria, City of	15
Peoria Heights	16
West Peoria	9
Peoria Park District	5
Greater Peoria Sanitary District	5

Table 8.3 – Mitigation Action Plan

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
Prevention										
1	Identifying specific at-risk populations that may be exceptionally vulnerable in the event of long-term power outages.	1,4	Multi-Hazard	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget/Manpower	Within 1 to 3 years	New	
2	Provide training and exercises for first responders for hazardous materials incidents.	1,4	Multi-Hazard	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	EMA	Existing Budget/Manpower/ Department of Homeland Security (DHS) grant funding	Within 1 to 3 years	New	
3	Provide training and exercises for first responders for active shooter/terrorism events.	1,4	Multi-Hazard	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	EMA	Existing Budget/Manpower/ Department of Homeland Security (DHS) grant funding	Within 1 to 3 years	New	
4	Review and present for adoption the updated Flood Insurance Rate Maps when they become available.	1,4	Flood, Dam/Levee Failure	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works/ Planning & Zoning	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
5	Present for adoption an updated floodplain ordinance as the new FIRMs become effective.	1,4	Flood, Dam/Levee Failure	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works/ Planning & Zoning	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
6	Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.	1,4	Flood, Dam/Levee Failure	Low	Bartonville Chillicothe City of Peoria Peoria Heights	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
7	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.	1,4	Flood, Dam/Levee Failure	Moderate	Bartonville Chillicothe City of Peoria Peoria Heights Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
8	Conduct a drainage/hydraulic study to determine the number of pump stations and associated piping/containment needed to alleviate recurring Kickapoo Creek flooding impacting homes and businesses along Illinois Route 24.	1,4	Flood	Moderate	Bartonville	Village Board	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
9	Evaluate structural integrity of critical facilities and shelters to confirm resistance to hazard events.	1,4	Multi-Hazard	Low	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
10	Improve coordination between the village, township and County in an effort to help implement hazard mitigation projects and cleanup activities aimed at reducing or eliminating the risk associated with natural hazard events.	3	Multi-Hazard	Moderate	Hanna City	Village Board / Dept of Public Works	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
11	Review codes/ordinances to streamline and simplify	1,4	Multi-Hazard	High	Hanna City	Village Board / Water& Sewer	Existing Budget/Manpower	Within 1 to 3 years	New	
12	Partner with classified dams owners to develop and/or obtain Emergency Action Plans (EAPs) that identify the extent (water depth, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.	1 (obj.1); 3,4	Dam/Levee Failure	Moderate	City of Peoria Peoria County	City Council / Dept of Public Works / Highway Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
13	Identify Park infrastructure located in areas vulnerable to landslides.	1	Landslides	Moderate	Peoria Parks District	Exec/Park District Staff	Existing Budget/Manpower	Within 1 to 3 years	New	
14	Identify Park infrastructure located in areas vulnerable to mine subsidence.	1	Land Subsidence	Moderate	Peoria Parks District	Exec/Park District Staff	Existing Budget/Manpower	Within 1 to 3 years	New	
15	Coordinate hazard risk assessments with other agencies	3,4	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
16	Create formal mutual aid agreements with neighboring communities to meet emergency response needs.	3,4	Multi-Hazard	Moderate	Peoria County	EMA	Existing Budget/Manpower	Within 12 months	Ongoing	
17	Coordinate with American Red Cross to maintain list of emergency shelters and shelter agreements.	3	Multi-Hazard	Moderate	Peoria County	EMA	Existing Budget/Manpower	Within 12 months	Ongoing	
19	Establish prioritized list for mitigation of flood prone structures	1,4	Flood	High	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 12 months	Ongoing	
20	Verify with IDNR that dam inspections are current.	1 (obj.1); 3,4	Dam/Levee Failure	Moderate	Peoria County	Highway Dept.	Existing Budget/Manpower	Within 12 months	Ongoing	
21	Coordinate with NRCS regarding technical and financial assistance for drought preparedness and response.	3	Drought	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
22	Update flood risk assessment utilizing depth grid information as Risk MAP products become available to Peoria County through the flood map update process. Depth grid information will allow for more accurate flood vulnerability calculations.	1,4	Flood	Moderate	Bartonville Chillicothe City of Peoria Peoria Heights Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
23	Continue participation in CRS Program and implementation of flood hazard outreach program – including website maintenance, general and targeted outreach projects; and educational documents in libraries.	1,2	Flood	High	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Annually	Ongoing	
24	Identify and train key County employees, outside of EMA, in disaster response and operations to ensure continuity of County government during disaster events.	3	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 12 months	Ongoing	
25	Create county-wide database for Elevation Certificates; Letters of Map Change; and First Floor Elevations.	1,4	Flood	High	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
26	Establish requirement for future development projects to determine impacts to existing development.	1	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
27	Identify bridge/road infrastructure that is vulnerable to earthquakes.	1	Earthquake	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
28	Post flood warning signage in flood-prone areas, e.g. high water marks.	1,2	Flood	Moderate	Peoria County	Highway Dept.	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
29	Provide NFIP Training for insurance agents; surveyors; and engineers.	1,2	Flood	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 12 months	Ongoing	
30	Prepare watershed master plans for flood prone areas of the County.	1	Flood, Severe Thunderstorm	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
31	Identify opportunities to encourage/provide credit for low-impact development and reduction of impervious areas.	1	Flood, Severe Thunderstorm	Low	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
32	Identify and pursue funding sources to mitigate/fill underground mines.	3	Land Subsidence	Low	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
Property Protection										
33	Remove existing residential and commercial structures from subsidence hazard areas.	1	Land Subsidence	Low	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
34	Install pump stations with automatic emergency backup generators at selected locations to alleviate recurring Kickapoo Creek flooding impacting homes and businesses along Illinois Route 24.	1	Flood	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
35	Remove structures from flood-prone areas to minimize future flood losses by acquiring and demolishing or relocating structures from voluntary property owners and preserving lands subject to repetitive flooding.	1	Flood	High	Bartonville Chillicothe City of Peoria Peoria Heights Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Annually	New	
36	Target FEMA's Repetitive Loss Properties for potential mitigation projects.	1	Flood	High	Chillicothe Peoria Heights Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Annually	Ongoing	
37	Install curb and gutter at various locations within the Village to help direct the flow of stormwater runoff to drainage structures in an effort to alleviate drainage/flooding problems.	1	Flood, Severe Thunderstorm	Moderate	Hanna City	Village Boards Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
Natural Resource Protection										
38	Complete Grandview Drive erosion project	1	Flood, Land Subsidence	High	Peoria Parks District	Exec/Park District Staff	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
39	Continue to organize and hold collections for household hazardous wastes, tires, etc.	1	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Annually	Ongoing	
40	Establish Partnerships for maintenance of public open space and acquired flood properties.	3	Flood	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 12 months	Ongoing	
41	Establish process for conversion of acquired flood properties to natural habitat	1	Flood	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
42	Post education signage in areas of acquired flood properties describing benefits of natural habitat.	2	Flood	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget/Manpower	Within 1 to 3 years	Ongoing	
Structural Projects										
43	Bury utility lines to critical facilities to limit service disruptions during natural hazard events.	1	Severe Winter Weather, Severe Thunderstorms, Tornadoes	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
44	Construct a new water tower to increase the amount of water available in reserve, improve resiliency to drought and to aid in fire suppression as necessary during natural hazard events.	1	Drought	Moderate	Hanna City	Village Board Emergency Services/ Dept of Public Works	USDA; Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
45	Design and construct a community safe room (tornado shelter) equipped with emergency backup generator and HVAC units that can also serve as an emergency shelter/warming and cooling center for Village residents.	1	Severe Thunderstorms, Tornadoes	High	Hanna City	Village Board Emergency Services/ Dept of Public Works	FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
46	Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.	1	Flood	Moderate	Hanna City	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
47	Install/upsize new water mains and fire hydrants at various locations within the Village to ensure a constant supply of water for residents and aid in fire suppression during natural hazard events.	1	Multi-Hazard	Moderate	Hanna City	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
48	Purchase and install sewer valves at wastewater treatment plant to isolate system operations and protect plant functions during heavy rain events.	1	Flood, Severe Thunderstorms	Moderate	Hanna City	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
49	Purchase and install automatic emergency backup generators at all Fire Stations not currently equipped with one to provide uninterrupted power and maintain operations and communication capabilities during a power outage. All fire stations in the City serve as warming/cooling centers for city residents.	1	Multi-Hazard	Moderate	City of Peoria	City Council/ Emergency Services/ Dept of Public Works	FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
50	Improve drainage under bike trail on Bishop Avenue	1	Flood, Severe Thunderstorms	High	Peoria Parks District	Exec/Park District Staff	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
51	Complete Detweiller inlet replacement erosion repair	1	Flood, Land Subsidence	High	Peoria Parks District	Exec/Park District Staff	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
52	Redundant systems and looping (water, sewer, electric, gas)	1	Multi-Hazard	Low	Peoria County	Planning & Zoning Dept.	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
53	Construct a large sluice gate along the Kickapoo Interceptor just outside the GPSD Levee that can be closed in the event the Interceptor is compromised by floodwater.	1	Flood	High	Greater Peoria Sanitary District	Engineering	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
54	Construct an effluent channel control structure (gate) to allow the District to control the water levels in the two tertiary lagoons during flood events.	1	Flood	High	Greater Peoria Sanitary District	Engineering	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
55	Levee Grading & Drainage Improvements	1	Flood	High	Greater Peoria Sanitary District	Engineering	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
56	Identify collection system infrastructure located in areas vulnerable to landslides.	1, 4	Landslide	Low	Greater Peoria Sanitary District	Engineering	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
57	Identify collection system infrastructure located in areas vulnerable to mine subsidence.	1, 4	Mine Subsidence	Low	Greater Peoria Sanitary District	Engineering	Existing Budget/Manpower	Within 3 to 5 years	Ongoing	
Emergency Services										
58	Purchase portable, trailer-mounted changeable emergency message boards to alert the public of hazardous conditions, detours, evacuations, etc. associated with natural hazard events.	1	Multi-Hazard	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; Department of Homeland Security (DHS) grant funding	Within 3 to 5 years	Ongoing	
59	Designate warming/cooling centers within the Village for use by residents and secure hosting agreements with each location.	1	Extreme Temperatures, Severe Winter Weather	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
60	Purchase a stand-alone server with software to backup the Village's computer files.	1	Multi-Hazard	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; Department of Homeland Security (DHS) grant funding	Within 3 to 5 years	Ongoing	
61	Purchase and distribute NOAA weather radios to vulnerable residents.	1	Multi-Hazard	Low	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	EMA	Existing Budget; Department of Homeland Security (DHS) grant funding; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
62	Maintain snow/ice fighting resources	1	Severe Winter Weather	Moderate	Peoria County	Planning & Zoning Dept.	Existing Budget; Department of Homeland Security (DHS) grant funding	Annually	Ongoing	
Public Education and Awareness										
63	Develop and implement winter weather risk awareness activities that educates residents about severe winter storms and extreme cold and the actions they can take to protect themselves.	2	Severe Winter Weather	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
64	Identify access and function needs residents and coordinate with local organizations to provide: 1) educational materials on emergency preparedness and the actions that can be taken to reduce or eliminate the risks to life and property associated with natural hazard events and 2) assistance/supportive services during and after natural hazard events.	2	Multi-Hazard	Moderate	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 3 to 5 years	Ongoing	
65	Develop and implement a community outreach program that educates residents about mine subsidence and the actions residents can take to protect themselves and their property.	2	Land Subsidence	Low	Bartonville	Village Board Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
66	Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.	2	Flood	High	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	

Action #	Description	Goal & Objective Addressed	Hazard(s) Addressed	Relative Priority	Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Status	Implementation Status Comments For Annual Plan Maintenance
67	Target FEMA's Repetitive Loss Properties for educational outreach.	2	Flood	High	Chillicothe Peoria Heights Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Annually	Ongoing	
68	Develop educational materials that can be used to inform residents about the benefits of the National Flood Insurance Program and how it is administered locally.	2	Flood	Moderate	Chillicothe Peoria Heights	City Councils/ Emergency Services/ Dept of Public Works	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
69	Develop "hazard information centers" in public libraries and on the City's website to inform residents of the risks to life and property associated with natural hazards and the proactive actions they can take to reduce or eliminate their risk	2	Multi-Hazard	Moderate	Bartonville Chillicothe Hanna City City of Peoria Peoria Heights West Peoria Peoria County	City Councils/ Village Boards Emergency Services/ Dept of Public Works / Communications	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
70	Prepare "take-home" brochure for school system to address hazard preparedness planning and coordination.	2	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept./ Communications	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
71	Re-evaluate community education programs to incorporate hazard mitigation.	2	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept./ Communications	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	
72	Organize public workshop to discuss flood mitigation and property protection.	2	Multi-Hazard	Moderate	Peoria County	Planning & Zoning Dept./ Communications	Existing Budget; FEMA Hazard Mitigation Assistance (HMA) grant funding	Within 1 to 3 years	Ongoing	

9 Plan Implementation and Maintenance

This section outlines the process for adoption, implementation, monitoring, and maintenance of the plan. This section contains the following subsections:

9.1 Adoption
9.2 Implementation and Integration
9.3 Monitoring, Evaluation, and Maintenance
9.4 Continued Public Involvement

Table 9.1 – Section 9 Summary of Updates

2018 Unincorporated Peoria County Hazard Mitigation Plan Section Number	2019 Tri-County Regional Hazard Mitigation Plan Section Number	2023 Plan Update Section and Description of Changes
		Section 9 – Plan Implementation and Maintenance
		9.1 Adoption – This section has been added to reference adoption of the plan.
5.2 Incorporation of Existing Planning Mechanisms	5.2 Incorporating the Mitigation Strategy into Existing Planning Mechanisms	9.2 Implementation and Integration
5.1.2 Plan Maintenance Schedule 5.1.3 Plan Maintenance Process	5.1 Monitoring, Evaluating, & Updating the Plan	9.3 Monitoring, Evaluation, and Maintenance – The previous annual review process has been updated to quarterly reviews for enhanced CRS Credits. Detail has also been included on HMPC responsibilities and maintenance criteria.
5.3 Continued Public Involvement	5.3 Continued Public Involvement	9.4 Continued Public Involvement

9.1 Adoption

Requirement §201.6(c)(5): [The plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

The purpose of formally adopting this plan is to secure buy-in from all participating jurisdictions, raise awareness of the plan, and formalize the plan's implementation. The adoption of this plan completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. Each participating jurisdiction will adopt the Hazard Mitigation Plan by passing a resolution. Copies of these adoption resolutions and FEMA's approval letter will be provided in Appendix A.

9.2 Implementation and Integration

Requirement §201.6(c)(4): [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.

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This is Planning Step 10 of the 10-step planning process. This section provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for

monitoring, updating, and evaluating the plan. The section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

Responsibility for Implementation of Goals and Activities

Once adopted, the plan must be implemented to be effective. Each jurisdiction participating in this plan is responsible for plan implementation within their jurisdiction. Every identified action in the mitigation action plan is assigned to a specific lead individual, agency, or department, including elected officials, officials appointed to head County or City departments, local staff, and partner or stakeholder organizations. While this plan contains many worthwhile actions, each participating jurisdiction will need to work with the assigned lead departments and agencies to decide which action(s) to undertake first. The priority assigned to the actions in the planning process and funding availability will affect that decision. Low or no-cost actions are often the easiest way to demonstrate progress toward successful plan implementation. The assigned implementation timeline provides a guide for plan participants to gage whether they are making adequate progress toward timely completion.

During the reviews as described later in this section, the HMPC will assess progress on each of the goals and activities in the plan. At that time, recommendations may be made to modify implementation timelines, funding resources, and responsible entities. On a regular basis, the priority standing of various activities may also be changed. Some activities that are found not to be feasible may be deleted from the plan entirely and activities addressing problems unforeseen during plan development may be added.

Mitigation is most successful when it is integrated into the day-to-day functions and priorities of government. Implementation will be accomplished by adhering to the schedules identified for each action and through regular, thorough, and energetic efforts to network and highlight the multi-objective, win-win benefits of mitigation. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the costlier recommended actions. This will include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the participating jurisdictions will be positioned to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

Incorporation into Existing Planning Mechanisms

The HMPC intends to support all participating municipalities in incorporating the findings and recommendations of this hazard mitigation plan into other plans, such as a comprehensive plan, capital improvements plan, or emergency operations plan. It will be the responsibility of the local HMPC representatives to determine and pursue opportunities for integrating the requirements of this plan with other local planning documents. HMPC representatives will provide a copy of this plan and ensure that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in the planning area. Incorporating the hazard mitigation plan into existing planning mechanisms will build regulatory mitigation capability and can support the implementation of mitigation action plans.

In cases where the municipalities are participants in a county-wide planning process, Peoria County EMA will act on behalf of the municipalities in advising for plan incorporation and integration. It should also be

noted that due to the small size of the municipalities, municipal representatives of the HMPC are often the same person who participates in the update of other local planning documents. Therefore, these officials will carry forward the knowledge gained from participating in the hazard mitigation planning process into these other planning processes.

Since the 2018/2019 plans were adopted, each jurisdiction has worked to integrate the hazard mitigation plan into other planning mechanisms where applicable and feasible. Specifically, the plan was integrated into reviews and updates of floodplain management ordinance, the emergency operations plan, and capital improvements planning. Additionally, the plan was amended to include an additional property protection measure in the mitigation action plan, reflecting the HMPC's recognition of changing priorities and new opportunities to achieve the plan goals.

Methods for future integration may include:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The HMPC will continue to integrate Hazard Mitigation Plan updates, including the information from this plan update, into changes to capital improvement plans, future land use plans, stormwater management plans, zoning ordinances, and other local planning and policy activities.

Other opportunities to integrate the requirements of this plan into other local planning mechanisms shall continue to be identified through quarterly meetings of the HMPC and through the five-year review process described herein. Although it is recognized that there are many possible benefits to integrating components of this plan into other local planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the HMPC to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

9.3 Monitoring, Evaluation, and Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized.

Role of HMPC in Implementation, Monitoring and Maintenance

With adoption of this plan, each jurisdiction will be responsible for the plan implementation and maintenance. As such, each jurisdiction agrees to continue its relationship with the HMPC and:

- Act as a forum for mitigation issues;
- Disseminate mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended revisions to the local governing body; and
- Inform and solicit input from the public.

The HMPC's primary duty moving forward is to see the plan successfully carried out and report to each local governing body, Peoria County EMA, IEMA, and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, considering

stakeholder concerns about mitigation, passing concerns on to appropriate entities, and posting relevant information on local websites (and others as appropriate).

Maintenance Schedule

Tri-County Regional Planning Commission (RPC), in coordination with Peoria County and Peoria EMA, will be responsible for initiating plan reviews. To monitor progress and evaluate the mitigation strategies identified in the action plan in between plan updates, the RPC will reconvene the HMPC to review this plan at least annually and following a hazard event.

In keeping with the requirements of DMA 2000, the RPC, in coordination with Peoria County and Peoria EMA, will submit a five-year written update to IEMA and FEMA Region V, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. Details on the annual reviews and five-year plan maintenance evaluation process are provided below. With this plan update anticipated to be fully approved and adopted in 2023, the next plan update for Peoria County will be completed in 2028.

Maintenance Evaluation Process

The criteria recommended in 44 CFR 201 and 206 will be utilized in reviewing and updating the plan. Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan, including:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions; and/or
- Increased vulnerability as a result of new development (and/or further annexation).

Updates to this plan will:

- Consider the appropriateness of the goals for addressing current and expected conditions;
- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to infrastructure inventories; and
- Incorporate new action recommendations or changes in action prioritization.

To best evaluate any changes in vulnerability as a result of plan implementation, the HMPC will follow the following process:

- The HMPC representatives from each jurisdiction will be responsible for tracking and reporting on their mitigation actions. Jurisdictional representatives should provide input on whether the action as implemented met the defined objectives and/or is likely to reduce vulnerabilities.
- If the action does not meet identified objectives, the jurisdictional representatives will determine what additional measures may be implemented and modify the plan accordingly.
- All monitoring and implementation information will be reported to the full HMPC, led by the RPC, in coordination with Peoria County and Peoria EMA, during annual meetings. An annual plan maintenance report may be drafted as deemed necessary.

During the five-year plan update process, changes will be made to the plan to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria,

time frame, community priorities, and/or funding resources. Actions for which implementation has not yet been pursued will also be reviewed during the monitoring and update of this plan to determine feasibility of future implementation. Risk and vulnerability will also be re-evaluated based on current and expected future conditions.

Updating of the plan will be by written changes and submission to IEMA and FEMA Region V, as is appropriate and necessary, and as approved by local governing bodies. In keeping with the five-year update process, the HMPC or similar committee will convene public meetings to solicit public input on the plan and its routine maintenance and the final product will be adopted by local governing bodies.

Criteria for Quarterly Reviews in Preparation for Five-Year Update

To ensure regular monitoring and provide adequate information to support the five-year update evaluation process discussed above, the HMPC will convene for quarterly reviews. More specifically, these quarterly reviews will monitor changes to the following information:

- Community growth or change in the past quarter.
- The number of substantially damaged or substantially improved structures by flood zone.
- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center (EOC) and whether the event resulted in a presidential disaster declaration.
- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events descriptions.
- Documented damages due to the event.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.

The above information will support the HMPC in evaluating mitigation action outcomes and identifying necessary changes for inclusion in the five-year update.

9.4 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.

Public participation is an integral component to the mitigation planning process and will continue to be essential to the overall success of the plan as it evolves and is implemented. The annual review process will provide an opportunity to solicit participation from new and existing stakeholders, publicize success stories from the plan implementation, and seek additional public comment.

In between annual reviews, other efforts to involve the public in the maintenance, evaluation, and revision process will also be made. HMPC meetings will be advertised on the RPC and Peoria County's website and in municipal office buildings. HMPC membership will continue to include willing local citizen and stakeholder volunteers. Continued public and stakeholder involvement and input will also be sought through invitation to designated committee meetings, website postings, and press releases to local media,

similar to the process used in the development of this plan. A copy of the plan will be kept in public libraries and on the RPC website to ensure public accessibility.

When the HMPC reconvenes for the five-year update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the plan. In reconvening, the HMPC will be responsible for coordinating the activities.

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Appendix A Plan Adoption

Local adoption completes Planning Step 9: Adopt the Plan of the 10-step planning process, in accordance with DMA 2000 requirements and signals each participating jurisdiction's official buy-in and commitment to implement the plan. This appendix includes the FEMA Approval letter acknowledging each jurisdiction's fulfillment of the planning requirements as well as the local adoption resolutions from each of the participating jurisdictions.

Appendix B Local Plan Review Tool

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Local Mitigation Plan Review Tool

Cover Page

The Local Mitigation Plan Review Tool (PRT) demonstrates how the local mitigation plan meets the regulation in 44 CFR § 201.6 and offers states and FEMA Mitigation Planners an opportunity to provide feedback to the local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.

Plan Information	
Jurisdiction(s)	Village of Bartonville City of Chillicothe Village of Hanna City City of Peoria Village of Peoria Heights City of West Peoria Peoria County Unincorporated Areas Peoria Park District Greater Peoria Sanitary District
Title of Plan	Peoria County, IL Multi-Jurisdictional Multi-Hazard Mitigation Plan
New Plan or Update	Update; but it is a new combination of Unincorporated Peoria County with the local jurisdictions. Each section of the plan includes a summary of updates.
Single- or Multi-Jurisdiction	Multi-jurisdiction
Date of Plan	6/9/2023

Local Point of Contact	
Title	Michael Bruner, Senior Planner
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Address	456 Fulton St, Suite 401, Peoria, IL 61602
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Additional Point of Contact	
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Phone Number	(309) 673-9330
Email	rabiakar@tricountyrpc.org

Review Information	
State Review	
State Reviewer(s) and Title	Click or tap here to enter text.
State Review Date	Click or tap to enter a date.
FEMA Review	
FEMA Reviewer(s) and Title	Click or tap here to enter text.
Date Received in FEMA Region	Click or tap to enter a date.
Plan Not Approved	Click or tap to enter a date.
Plan Approvable Pending Adoption	Click or tap to enter a date.
Plan Approved	Click or tap to enter a date.

Multi-Jurisdictional Summary Sheet

#	Jurisdiction Name	Requirements Met (Y/N)						
		A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. State Requirements
1	Village of Bartonville							
2	City of Chillicothe							
3	Village of Hanna City							
4	City of Peoria							
5	Village of Peoria Heights							
6	City of West Peoria							
7	Peoria County Unincorporated Areas							
8	Peoria Park District							
9	Greater Peoria Sanitary District							
10								

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been "met" or "not met." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved?	Section 2 pg.2.1-2.14	Choose an item.
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Section 1.3, pg. 1.2 Section 2.4, pg. 2.7-2.10	Choose an item.
A2. Does the plan document 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 and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Section 2.6 pg. 2.12; Appendix C.	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Section 2.5 pg. 2.10 – 2.12 Appendix C	Choose an item.
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Section 2.3, Table 2.4 pg. 2.5-2.6	Choose an item.
ELEMENT A REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Section 4.2, 4.3, and 4.4 pg.4.2-4.7	Choose an item.
B1-b. Does the plan include information on the location of each identified hazard?	Sections 5.4-5.18 "Location" pg.5.12-5.199	Choose an item.
B1-c. Does the plan describe the extent for each identified hazard?	Sections 5.4-5.18 "Extent" pg.5.12-5.199	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Sections 5.4-5.18 "Historical Occurrences" pg.5.12-5.199	Choose an item.
B1-e. Does the plan include the probability of future events for each identified hazard? Does the plan describe the effects of future conditions, including climate change (e.g., long-term weather patterns, average temperature and sea levels), on the type, location and range of anticipated intensities of identified hazards?	Sections 5.4-5.18 "Probability of Future Occurrence" and "Climate Change" pg.5.12-5.199	Choose an item.
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	Sections 5.4-5.18 "Hazard Summary by Jurisdiction" pg.5.12-5.199	Choose an item.
B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Sections 5.4-5.18 "Vulnerability Assessment" pg.5.12-5.199	Choose an item.
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Sections 5.4-5.18 "Vulnerability Assessment" pg.5.12-5.199	Choose an item.
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Sections 5.4-5.18 "NFIP Participation" pg.5.77-5.87	Choose an item.
ELEMENT B REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Section 6.0 pg. 6.1-6.13	Choose an item.
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Section 6.3 pg. 6.12-6.13	Choose an item.
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Section 5.8, pg.5.77-5.107 Section 6.2.1.2 pg.6.7-6.8	Choose an item.
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Section 7.2 pg.7.2-7.3	Choose an item.
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Appendix D D.1-D.16	Choose an item.
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Section 8.2 pg. 8.1-8.7	Choose an item.

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Section 7.3.1 pg.7.4-7.5	Choose an item.
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Section 8.2 pg.8.1-8.7	Choose an item.
ELEMENT C REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Section 9.4 pg.9.5-9.6	Choose an item.
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Section 9.3 pg.9.3-9.5	Choose an item.
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Section 9.3 pg.9.3-9.5	Choose an item.

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Section 9.3 pg.9.3-9.5	Choose an item.
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Section 9.2 pg. 9.1-9.3	Choose an item.
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Section 9.2 pg. 9.1-9.3	Choose an item.
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	Section 9.2 pg. 9.1-9.3	Choose an item.
ELEMENT D REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Sections 5.4-5.18 "Changes in Development" pg.5.12-5.199	Choose an item.

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Section 2.7.1 pg.2.13-2.14	Choose an item.
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Section 2.7.1 pg.2.13-2.14	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Section 2.3 pg.2.5-2.6	Choose an item.
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Section 9.1 (pg.9.1), Appendix A; Plan will be adopted following FEMA approval	Choose an item.
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	Section 9.1 (pg.9.1), Appendix A; Plan will be adopted following FEMA approval	Choose an item.

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Section 2.6 Involving Stakeholders pg.2.13	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Section 5.4 pg.5.12-5.24 pg.5.23, Table "High Hazard Potential Dam Inventory for Peoria County, IL"	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Section 5.4 "Vulnerability Assessment" pg.5.12-5.24	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Section 5.4 "Key Issues" pg.5.12-5.24	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Section 5.4 pg.5.12-5.24 Section 7.2.2 Goal #1, Objective 1 Section 8.2 Action #12 and #20 pg.8.3	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Section 5.4 pg.5.12-5.24 Section 7.2.2 Goal #1, Objective 1 Section 8.2 Action #12 and #20 pg.8.3	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Section 5.4 pg.5.12-5.24 Section 8.2 Action #12 and #20 pg.8.3	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Section 7.3.1 pg.7.4-7.5	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Section 8.2 Action #12 and #20 pg.8.3	Choose an item.
HHPD Required Revisions		
Required Revision: Click or tap here to enter text.		

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements		
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element B. Risk Assessment

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element C. Mitigation Strategy

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element D. Plan Maintenance

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element E. Plan Update

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element G. HHPD Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element H. Additional State Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Appendix C Planning Process Documentation

C.1 Planning Step 1: Organize to Prepare the Plan

Table C.1 – HMPC Meeting Topics, Dates, and Locations

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
HMPC Mtg. #1 – Project Kickoff	1) Introduction to DMA and CRS requirements and the planning process 2) Trends in disasters and justification for planning 3) Review of HMPC responsibilities and the project schedule 4) Public involvement discussion 5) Preliminary risk assessment discussion	December 14th, 2022 1:30 p.m.	In-Person
HMPC Mtg. #2	1) Review Draft Hazard Identification & Risk Assessment (HIRA) 2) Current planning process and progress 3) Discuss mitigation action plan requirements	February 15th, 2023 1:30 p.m.	Zoom Video Conference Call
HMPC Mtg. #3	1) Review plan goals and objectives 2) Discuss new mitigation action alternatives	March 15th. 2023 1:30 p.m.	In-Person and Conference Call
HMPC Mtg #4	1) Review Plan Document	May 23, 2023 1:30pm	Zoom Video Conference Call

C.1.1 HMPC Meeting Minutes and Attendance Records

Memorandum

To	Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee (HMPC)
From	Cindy Popplewell
Tel / Email	(303) 704-8939 / cindy.popplewell@wsp.com
Date	December 14, 2022

Subject Minutes from Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update - Kickoff Meeting

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This memorandum presents the meeting minutes from the December 14, 2022, kickoff meeting for the *Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan* Update. It provides an overview of hazard mitigation planning, identification of the planning committee, ideas for public involvement, identification of hazards affecting the communities, and next steps.

Attendees

Last Name	First Name	Organization
Abi-Akar	Reema	Tri-County Regional Planning Commission
Blumenshine	Joyce	Sierra Club
Braun	Andrew	Peoria County
Bruner	Michael	Tri-County Regional Planning Commission
Crider	Beth	Peoria Regional Office of Education
Haines	Cody	Peoria Park District
Krider	Kinga	City of West Peoria
Leach	Tim	Greater Peoria Sanitary District
Learned	Julie	Red Cross
Maroon	Sie	City of Peoria
McLaren	Amy	Peoria County
Mettille	Scott	City of Chillicothe
Nelson	Larry	Bartonville ESDA
Shake	Melody	Heartland Health Services
Urban	Kathi	Peoria County
Weindel	Jack	Peoria County

Introductions

The meeting began by welcoming and thanking the attendees and introductions all around.

Overview of Hazard Mitigation Planning

Cindy Popplewell of WSP presented information on hazard mitigation, the requirements of hazard mitigation planning, and a timeline for the planning process. She explained the benefits of participating in the mitigation plan, including eligibility for federal hazard mitigation assistance. The powerpoint slide show that was used for informational purposes during the meeting is included as Attachment B.

Requirements of Hazard Mitigation Planning

WSP's approach to the Floodplain Management Planning process is structured around FEMA's Local Mitigation Planning Handbook (March 2013); FEMA's Local Mitigation Planning Policy Guide (April 2022); and the Community Rating System's (CRS) Floodplain Management Planning requirements (2017 and 2021 Addendum). See the reference table below. This approach will position Peoria County and participating jurisdictions to seek maximum credit under the CRS Program.

10-Step Mitigation Planning Process

FEMA Planning Elements	FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201)	Community Rating System (CRS) Planning Steps (Activity 510)
Element A: Planning Process	**Task 1: Determine the Planning Area and Resources**	Step 1. Organize
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)	
	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)	Step 2. Involve the public
	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)	Step 3. Coordinate
Element B: Risk Assessment **Element G:** High Hazard Potential Dams	**Task 5: Conduct a Risk Assessment** 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)	Step 4. Assess the hazard(s)
		Step 5. Assess the problem(s)
Element C:	**Task 6: Develop a Mitigation Strategy** 44 CFR 201.6(c)(3)(i);	Step 6. Set goals
		Step 7. Review possible activities

FEMA Planning Elements	FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201)	Community Rating System (CRS) Planning Steps (Activity 510)
Mitigation Strategy	44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)	Step 8. Draft an action plan
Element F: Plan Adoption	**Task 8: Review and Adopt the Plan**	Step 9. Adopt the plan
Element D: Plan Maintenance **Element E:** Plan Update	**Task 7: Keep the Plan Current**	Step 10. Implement, evaluate, revise
	Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)	
Element H: Additional State Requirements		

Communication with the HMPC

Cindy described the role of the Hazard Mitigation Planning Committee (HMPC) during the planning process. Participation in the committee requires:

- Attending and participating in meetings,
- Providing available data requested,
- Reviewing and commenting on plan drafts,
- Advertising and assisting with the public input process, and
- Coordinating the formal adoption.

Attachment C provides an overview for HMPC members. It is anticipated that the HMPC will participate in three planning meetings. Communication between meetings will be handled primarily via email.

Planning for Public Involvement

Potential methods for involving the public in the planning process were discussed in a tiered format geared to inform, educate, and engage the public. Initial thoughts on disseminating public information about the hazard mitigation plan and planning process included posting informational flyers to the community websites and/or Tri-County Regional Planning Commission website, developing a questionnaire for public input, hosting public open house meetings and participating on the HMPC. A public outreach strategy is presented in Attachment D for review.

Risk Assessment and Capabilities Update

WSP will coordinate with Peoria County GIS staff to obtain GIS and mapping data for the risk assessment to include:

- Political boundaries
- Growth/land use maps
- Zoning data
- Parcel data
- Building footprints
- Critical facilities

Update to the Risk Assessment will include information on past occurrences, frequency/ likelihood of future occurrences, and changing future conditions. Attendees were provided a data collection guide presenting information on community technical, administrative, and fiscal resources. Attendees were asked to review the data collection guide. WSP staff will reach out directly to each jurisdiction to go collect pertinent information on capabilities. The data collection guide is included as Attachment E.

Mitigation Actions

Attendees were also provided a list of the current mitigation actions for each community. WSP staff will reach out directly to each jurisdiction to get an update on the status of all current mitigation actions (See Attachment F).

Next Steps

HMPC Members/Attendees

- Complete Data Collection Guides and/or participate in one-on-one call with WSP staff.
- Review current Mitigation Actions from previous mitigation plan and provide status update.
- Update websites with public outreach information

WSP

- Prepare Public Outreach Strategy for review – see Attachment D
- Prepare Public Information flyer and questionnaire online for public input
- Prepare outreach letters for Other Stakeholders
- Coordinate with GIS staffing for digital data/Risk Assessment
- Set meetings/calls with City/County Departments for Capability Assessment

Upcoming Meetings

Tentative meeting dates provided below. Meeting invitations will be sent via email to HMPC members.

- January – 18 or 25
    - Public Meeting – Virtual/In-Person Combination – 5:30pm
- February 15th, Wednesday
    - HMPC Meeting – Virtual – 1:30pm
- March 15th, Wednesday
    - HMPC Meeting – In Person – 1:30pm
    - Public Meeting – Virtual/In-Person Combination – 5:30pm

Attachment A – Sign-In Sheets

Last Name	First Name	Jurisdiction	Organization	Email	Signature
Abi-Akar	Reema	Stakeholder	Tri-County Regional Planning Commission	rabiakar@tricountyrpc.org	
Baylor	Brian	Hanna City	Village of Hanna City	administrator@hannacityil.com	
Blumenshine	Joyce	Stakeholder	Sierra Club	joblumen@yahoo.com	
Braun	Andrew	Peoria County	Peoria County	abraun@peoriacounty.org	
Bruner	Michael	Stakeholder	Tri-County Regional Planning Commission	mbruner@tricountyrpc.org	
Callear	John	Stakeholder	Home Builders Association	candlhomes@hotmail.com	
Corrie	Richard	Stakeholder	Lutheran Hillside Village	rick.gorrie@lssliving.org	
Crider	Beth	Stakeholder	Peoria Regional Office of Education	bcrider@peoriaroe.org	
DeWitt	Dorey	Stakeholder	Women's Council of Realtors		
Erbentrout	Troy	Stakeholder	OSF St. Francis	Troy.W.Erbentraut@osfhealthcare.org	
Hathaway	Guy	Stakeholder	American Red Cross	Hathaway_Guy@yahoo.com	
Heiden	Shelly	Stakeholder	Lutheran Hillside Village	shelly.heiden@lssliving.org	
Johnson	Brian	Greater Peoria Sani	Greater Peoria Sanitary District	bjohnson@gpsd.org	
Kirchhofer	Patrick	Stakeholder	Peoria County Farm Bureau	pcfbmanager@sbcglobal.net	
Krider	Kinga	West Peoria	City of West Peoria	administrator@cityofwestpeoria.com	
Krolicki	Ryan	Stakeholder	Illinois American Water	ryan.krolicki@amwater.com	
Krost	Mike	Stakeholder	Friends of River Beach Drive	mkrost@mchsi.com	
Leach	Tim	Greater Peoria Sani	Greater Peoria Sanitary District	tleach@gpsd.org	
Learned	Julie	Stakeholder	Red Cross	Julie.Learned@redcross.org	
Marks	Jason	Peoria County	Peoria County	jmarks@peoriacounty.org	
Maroon	Sie	Peoria	City of Peoria	smaroon@peoriagov.org	
McLaren	Amy	Stakeholder	Peoria County	amclaren@peoriacounty.org	

Mettille	Scott	Chillicothe	City of Chillicothe	scottmettille@aol.com	
Meyer	Patrick	Bartonville	Village of Bartonville	pmeyer@mtco.com	
Miller	Mike	Peoria Park District	Peoria Park District	mmiller@peoriaparks.org	
Naven	Joshua	Peoria	City of Peoria	jnaven@peoriagov.org	
Nelson	Larry	Bartonville	Bartonville ESDA	lcnelson@mtco.com	
O'Neal	Tony	Stakeholder	Ameren Illinois	e132606@ameren.com	
Orr	Nick	Stakeholder	OSF Healthcare Systems	Nicholas.V.Orr@osfhealthcare.org	
Rezba	Eric	Stakeholder	American Red Cross	eric.rezba@redcross.org	
Rogers	Lisa	Stakeholder	Friends of River Beach Drive	lsealine@yahoo.com	
Ruhland	Terry	Stakeholder	Local Homebuilders Association	terry@plumcreekbuilders.com	
Shake	Melody	Stakeholder	Heartland Health Services	m.shake@hhsil.com	
Stanley	Heather	Stakeholder	National Weather Service	heather.stanley@noaa.gov	
Sutton	Dustin	Peoria Heights	Village of Peoria Heights/Tri-County	dsutton@heightspd.com	
Tamm	Alan	Stakeholder	US Army Corps of Engineers	alan.tamm@usace.army.gov	
Traenkenschuff	Gerald	Stakeholder	Retired	GerryT1@comcast.net	
Urban	Kathi	Peoria County	Peoria County	kurban@peoriacounty.org	
Weick	Kerilyn	Peoria	City of Peoria	kweick@peoriagov.org	
Witbracht	Sarah	Peoria Heights	Village of Peoria Heights	sarah.witbracht@peoriaheights.org	
Haines	Coby	Peoria Parks	Peoria Park District	CHaines@peoriaparks.org	

Last Name	First Name	Jurisdiction	Organization	Email	Signature
Abi-Akar	Reema	Stakeholder	Tri-County Regional Planning Commission	rabiakar@tricountyrpc.org	
Baylor	Brian	Hanna City	Village of Hanna City	administrator@hannacityil.com	
Blumenshine	Joyce	Stakeholder	Sierra Club	joblumen@yahoo.com	
Braun	Andrew	Peoria County	Peoria County	abraun@peoriacounty.org	
Bruner	Michael	Stakeholder	Tri-County Regional Planning Commission	mbruner@tricountyrpc.org	
Callear	John	Stakeholder	Home Builders Association	candlhomes@hotmail.com	
Corrie	Richard	Stakeholder	Lutheran Hillside Village	rick.gorrie@lssliving.org	
Crider	Beth	Stakeholder	Peoria Regional Office of Education	bcrider@peoriaroe.org	
DeWitt	Dorey	Stakeholder	Women's Council of Realtors		
Erbentrout	Troy	Stakeholder	OSF St. Francis	Troy.W.Erbentraut@osfhealthcare.org	
Hathaway	Guy	Stakeholder	American Red Cross	Hathaway_Guy@yahoo.com	
Heiden	Shelly	Stakeholder	Lutheran Hillside Village	shelly.heiden@lssliving.org	
Johnson	Brian	Greater Peoria Sani	Greater Peoria Sanitary District	bjohnson@gpsd.org	
Kirchhofer	Patrick	Stakeholder	Peoria County Farm Bureau	pcfbmanager@sbcglobal.net	
Krider	Kinga	West Peoria	City of West Peoria	administrator@cityofwestpeoria.com	
Krolicki	Ryan	Stakeholder	Illinois American Water	ryan.krolicki@amwater.com	
Krost	Mike	Stakeholder	Friends of River Beach Drive	mkrost@mchsi.com	
Leach	Tim	Greater Peoria Sani	Greater Peoria Sanitary District	tleach@gpsd.org	
Learned	Julie	Stakeholder	Red Cross	Julie.Learned@redcross.org	
Marks	Jason	Peoria County	Peoria County	jmarks@peoriacounty.org	
Maroon	Sie	Peoria	City of Peoria	smaroon@peoriagov.org	
McLaren	Amy	Stakeholder	Peoria County	amclaren@peoriacounty.org	

Mettille	Scott	Chillicothe	City of Chillicothe	scottmettille@aol.com	
Meyer	Patrick	Bartonville	Village of Bartonville	pmeyer@mtco.com	
Miller	Mike	Peoria Park District	Peoria Park District	mmiller@peoriaparks.org	
Naven	Joshua	Peoria	City of Peoria	jnaven@peoriagov.org	
Nelson	Larry	Bartonville	Bartonville ESDA	lcnelson@mtco.com	Larry Nelson
O'Neal	Tony	Stakeholder	Ameren Illinois	e132606@ameren.com	
Orr	Nick	Stakeholder	OSF Healthcare Systems	Nicholas.V.Orr@osfhealthcare.org	
Rezba	Eric	Stakeholder	American Red Cross	eric.rezba@redcross.org	
Rogers	Lisa	Stakeholder	Friends of River Beach Drive	lsealine@yahoo.com	
Ruhland	Terry	Stakeholder	Local Homebuilders Association	terry@plumcreekbuilders.com	
Shake	Melody	Stakeholder	Heartland Health Services	m.shake@hhsil.com	
Stanley	Heather	Stakeholder	National Weather Service	heather.stanley@noaa.gov	
Sutton	Dustin	Peoria Heights	Village of Peoria Heights/Tri-County	dsutton@heightspd.com	
Tamm	Alan	Stakeholder	US Army Corps of Engineers	alan.tamm@usace.army.gov	
Traenkenschuff	Gerald	Stakeholder	Retired	GerryT1@comcast.net	
Urban	Kathi	Peoria County	Peoria County	kurban@peoriacounty.org	Kathi Urban
Weick	Kerilyn	Peoria	City of Peoria	kweick@peoriagov.org	
Witbracht	Sarah	Peoria Heights	Village of Peoria Heights	sarah.witbracht@peoriaheights.org	
Weindel	Jack	Peoria Co.		jweindel@peoriacountg.org	Jack Weindel

Attachment B – Powerpoint Presentation

1

Agenda & Introductions

2

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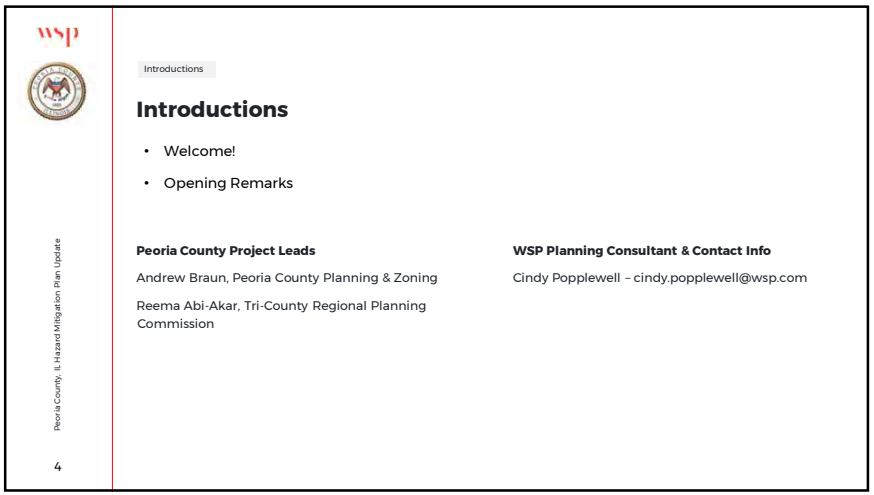

4

Introduction to Hazard Mitigation

5

What Is Mitigation?

Mitigation is any **sustained action** taken to reduce or eliminate long-term risk to human life and property from natural and manmade hazards.

FEMA defines six categories of hazard mitigation actions:

- Prevention
- Property Protection
- Public Information
- Natural Resource Protection
- Emergency Services
- Structural Projects

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What Is Mitigation Planning?

A **process** for Peoria County to:

- Identify the natural and human-caused hazards to which we are at risk
- Assess the potential impacts of those hazards
- Develop goals, objectives, and action to reduce hazard impacts
- Prioritize and implement mitigation actions

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Why Plan?

Trends are resulting in increased costs for disaster response and recovery:

- Population and community growth = greater exposure to risk
  - More people living in hazardous areas
  - More buildings and infrastructure
- Hazards events are occurring with more frequency and/or intensity

As of October 11, in 2022 there have been 15 weather/climate disaster events in the U.S. with losses exceeding $1 billion each

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Most Expensive Disaster Declarations

Costliest Disasters **across the entire U.S.** since 1980

Disaster	Total Estimated Cost*	Deaths
Hurricane Katrina (2005)	$178.8B	1,833
Hurricane Harvey (2017)	$148.8B	89
Hurricane Maria (2017)	$107.1B	2,981
Hurricane Sandy (2012)	$81.9B	159
Hurricane Ida (2021)	$78.7B	96
Hurricane Irma (2017)	$59.5B	97
Hurricane Andrew (1992)	$55.9B	61
U.S. Drought/Heatwave (1988)	$50.6B	454
Midwest Flooding (1993)	$43.0B	48
Hurricane Ike (2008)	$40.2B	112

Costliest Disasters **to impact Illinois** since 1980

Disaster	Total Estimated Cost*	Deaths
U.S. Drought/Heat Wave (1988)	$50.6B	454
Midwest Flooding (1993)	$43.0B	48
Hurricane Ike (2008)	$40.2	112
U.S. Drought/Heat Wave (2012)	$38.7B	123
Central/Eastern Drought/Heat Wave (1980)	$37.7B	1,260
Northwest, Central, Eastern Winter Storm / Cold Wave (2021)	$25.2B	262
Southern Plains/ Southwest Drought & Heatwave (2011)	$15.9B	95
U.S. Drought (2002)	$14.9B	0
Midwest Flooding (2008)	$13.7B	24
Southeast/Ohio Valley/Midwest Tornadoes (2011)	$13.3B	321

* CPI adjusted to 2022 dollars; reflects total cost across entire impacted area; Source: https://www.ncei.noaa.gov/access/billions/events

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Why Hazard Mitigation is a Priority

1. The **spiraling costs of response and recovery**; the cost of doing nothing is too much
2. Many **events are predictable and repetitive**; we know what to expect and can break the damage/rebuild cycle
3. Loss reduction activities can be **effective, cost-beneficial, and environmentally sound**
4. There are **legal and moral responsibilities** to prevent future disasters
5. There are **funds available** to help

National Benefit-Cost Ratio Per Peril	Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio	6:1	4:1
Riverine Flood	7:1	5:1
Hurricane Surge	Too few grants	7:1
Wind	5:1	5:1
Earthquake	3:1	4:1
Wildland-Urban Interface Fire	3:1	4:1

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Hazard Mitigation Plan Update Requirement

Disaster Mitigation Act of 2000: 44CFR 201.6 HMA Grant Eligibility

- Communities are required to update their hazard mitigation plans every 5 years to remain eligible for federal pre- and post-disaster funding
- Any federally declared disaster in the State of Illinois means that Peoria County is eligible to apply for funding
  - The disaster does not have to impact Peoria County to apply for funding
  - Having an updated plan ensures that Peoria County will be ready with mitigation project ideas whenever funding becomes available

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Project Overview & Planning Requirements

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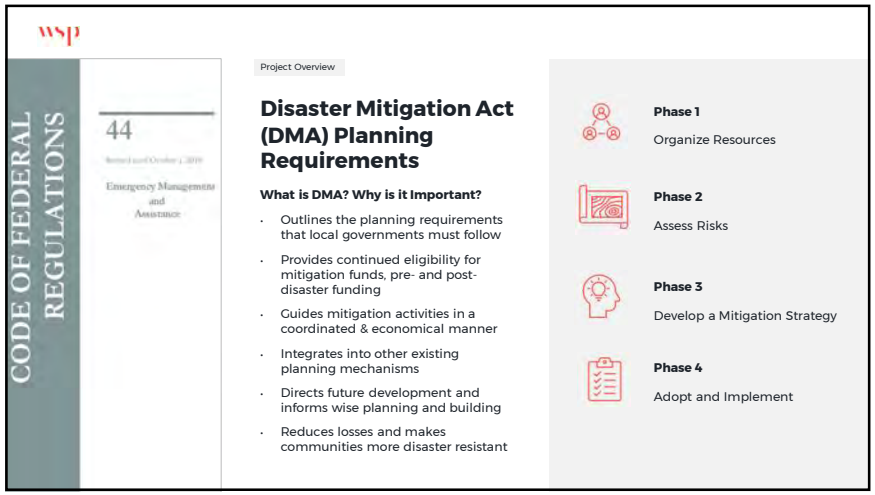
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CODE OF FEDERAL REGULATIONS
44
Emergency Management and Assistance
Project Overview
Disaster Mitigation Act (DMA) Planning Requirements
What is DMA? Why is it Important?
Outlines the planning requirements that local governments must follow
Provides continued eligibility for mitigation funds, pre- and post-disaster funding
Guides mitigation activities in a coordinated & economical manner
Integrates into other existing planning mechanisms
Directs future development and informs wise planning and building
Reduces losses and makes communities more disaster resistant
Phase 1
Organize Resources
Phase 2
Assess Risks
Phase 3
Develop a Mitigation Strategy
Phase 4
Adopt and Implement

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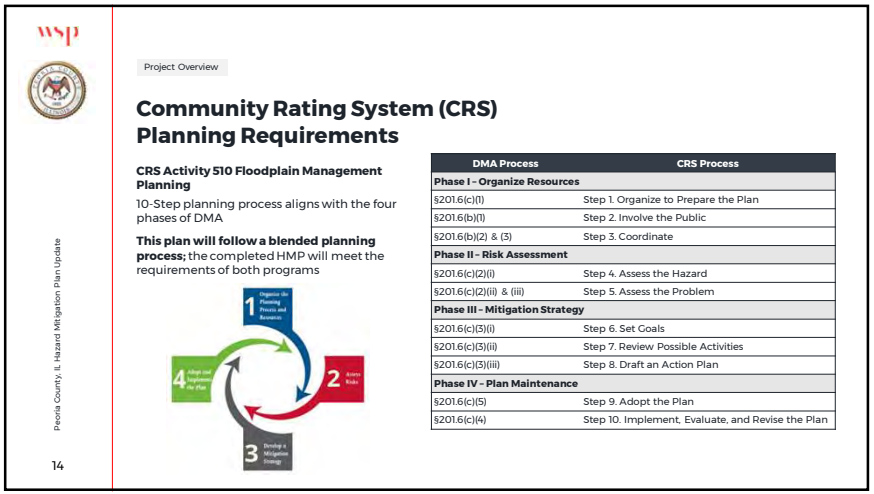
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Project Overview
Community Rating System (CRS) Planning Requirements
CRS Activity 510 Floodplain Management Planning
10-Step planning process aligns with the four phases of DMA
This plan will follow a blended planning process; the completed HMP will meet the requirements of both programs
DMA Process
CRS Process
Phase I - Organize Resources
§201.6(c)(1) Step 1. Organize to Prepare the Plan
§201.6(b)(1) Step 2. Involve the Public
§201.6(b)(2) & (3) Step 3. Coordinate
Phase II - Risk Assessment
§201.6(c)(2)(i) Step 4. Assess the Hazard
§201.6(c)(2)(ii) & (iii) Step 5. Assess the Problem
Phase III - Mitigation Strategy
§201.6(c)(3)(i) Step 6. Set Goals
§201.6(c)(3)(ii) Step 7. Review Possible Activities
§201.6(c)(3)(iii) Step 8. Draft an Action Plan
Phase IV - Plan Maintenance
§201.6(c)(5) Step 9. Adopt the Plan
§201.6(c)(4) Step 10. Implement, Evaluate, and Revise the Plan
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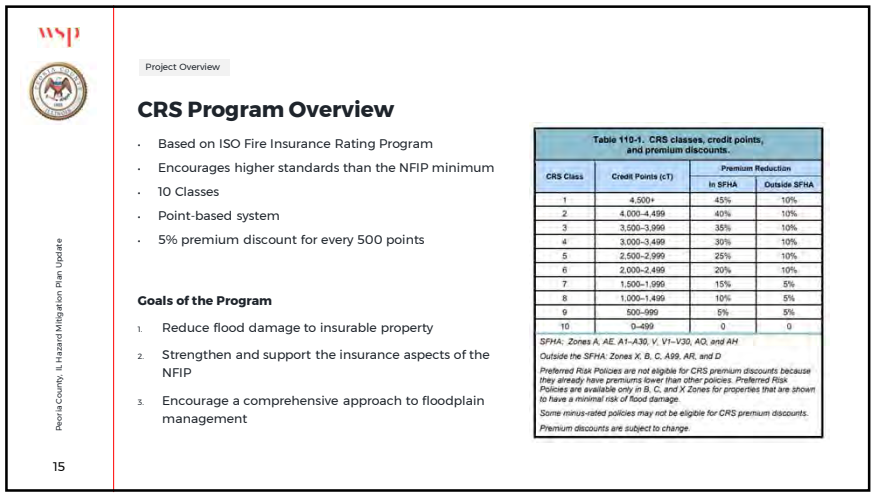
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Project Overview
CRS Program Overview
Based on ISO Fire Insurance Rating Program
Encourages higher standards than the NFIP minimum
10 Classes
Point-based system
5% premium discount for every 500 points
Goals of the Program
1. Reduce flood damage to insurable property
2. Strengthen and support the insurance aspects of the NFIP
3. Encourage a comprehensive approach to floodplain management
Table 110-1. CRS classes, credit points, and premium discounts.
CRS Class | Credit Points (cT) | Premium Reduction: In SFHA | Premium Reduction: Outside SFHA
1 | 4,500+ | 45% | 10%
2 | 4,000-4,499 | 40% | 10%
3 | 3,500-3,999 | 35% | 10%
4 | 3,000-3,499 | 30% | 10%
5 | 2,500-2,999 | 25% | 10%
6 | 2,000-2,499 | 20% | 10%
7 | 1,500-1,999 | 15% | 5%
8 | 1,000-1,499 | 10% | 5%
9 | 500-999 | 5% | 5%
10 | 0-499 | 0 | 0
SFHA: Zones A, AE, A1-A30, V, V1-V30, AO, and AH
Outside the SFHA: Zones X, B, C, A99, AR, and D
Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.
Some minus-rated policies may not be eligible for CRS premium discounts.
Premium discounts are subject to change.
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Planning Process

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Planning Process

Four-Phase Planning Process

Phase 1: Organize Resources | Phase 2: Risk Assessment | Phase 3: Mitigation Strategy | Phase 4: Adoption & Implementation

Get Organized

Convene a committee, involve the public, and coordinate

Assess Risks

Identify hazards and evaluate the problems

Develop a Mitigation Strategy

Set goals, review actions, and draft an action plan

Plan Maintenance

Implement, evaluate, and revise the plan

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Planning Process

Phase 1: Organize Resources

- Form the HMPC
- Plan for Public Involvement
- Coordinate with other stakeholders
  - FEMA Region 5
  - NOAA, NWS, other federal agencies
  - IEMA, other state agencies
  - Neighboring communities
  - Non-profits
  - Businesses
  - Colleges & universities
  - Others…

These other stakeholders will be invited to contribute data and input, review drafts, and attend public meetings

Responsibilities of the HMPC:

- Attend committee meetings
- Provide updated capability information
- Provide mitigation action progress updates
- Identify new mitigation actions
- Review and provide feedback on draft documents

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Jurisdiction	Last Name	First Name	Title
Bartonville	Nelson	Larry	Director
Bartonville	Meyer	Patrick	Village Engineer
Chillicothe	Mettille	Scott	Police Chief
Hanna City	Baylor	Brian	Administrator
Peoria	Maroon	Sie	Deputy Director of Operations
Peoria	Naven	Joshua	Senior Urban Planner
Peoria	Weick	Kerilyn	Senior Urban Planner
Peoria County	Braun	Andrew	Assistant Director
Peoria County	Marks	Jason	Emergency Preparedness Coordinator
Peoria County	Urban	Kathi	Director of Planning & Zoning
Peoria Heights	Wilbracht	Sarah	Administrative Secretary
Peoria Heights	Sutton	Dustin	Administrator
West Peoria	Krider	Kinga	City Administrator
Greater Peoria Sanitary District	Johnson	Brian	Executive Director
Greater Peoria Sanitary District	Leach	Tim	Director of Planning and Construction
Peoria Park District	Miller	Mike	Supervisor of Environmental and Interpretive Services
Stakeholder	Abi-Akar	Reema	Tri-County Regional Planning Commission
Stakeholder	Blumenshine	Joyce	Sierra Club
Stakeholder	Bruner	Michael	Tri-County Regional Planning Commission
Stakeholder	Callear	John	Home Builders Association
Stakeholder	Corrie	Richard	Lutheran Hillside Village
Stakeholder	Crider	Beth	Peoria Regional Office of Education
Stakeholder	DeWitt	Dorey	Women's Council of Realtors
Stakeholder	Erbentrout	Troy	OSF St. Francis
Stakeholder	Hathaway	Guy	American Red Cross
Stakeholder	Heiden	Shelly	Lutheran Hillside Village
Stakeholder	Kirchhofer	Patrick	Peoria County Farm Bureau
Stakeholder	Krolicki	Ryan	Illinois American Water
Stakeholder	Krost	Mike	Friends of River Beach Drive
Stakeholder	Learned	Julie	Red Cross
Stakeholder	McLaren	Amy	Peoria County
Stakeholder	O'Neal	Tony	Ameren Illinois
Stakeholder	Orr	Nick	OSF Healthcare Systems
Stakeholder	Rezba	Eric	American Red Cross
Stakeholder	Rogers	Lisa	Friends of River Beach Drive
Stakeholder	Ruhland	Terry	Local Homebuilders Association
Stakeholder	Shake	Melody	Heartland Health Services
Stakeholder	Stanley	Heather	National Weather Service
Stakeholder	Tamm	Alan	US Army Corps of Engineers
Stakeholder	Traenkenschuff	Gerald	Retired

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Next Steps

Phase 1: Organize Resources - Public Outreach Strategy

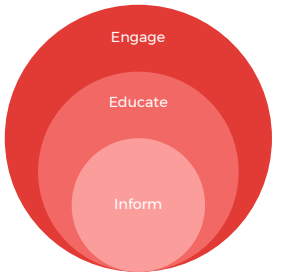
Public survey

Website updates:

- Meeting announcements
- Meeting agendas, minutes, and presentations
- Public survey link and comments submission
- Draft documents for review

Other opportunities:

- Informational flyer/handout
- Social media, news media
- Stakeholders and local partnerships



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Planning Process

Phase 2: Assess Risks

Hazard Identification

- *What can happen here?*
- Hazard list will coordinate with the 2018 State HMP and previous Peoria County plan
- FEMA only requires and reviews natural hazards

Vulnerability Assessment

- *What will be affected or impacted?*
- Property, critical facilities, people, economy, natural resources, cultural and historic resources
- GIS datasets will enable spatial analysis of vulnerability

Capability Assessment

- How can we implement mitigation?
- Planning & regulatory resources, administrative & technical resources, financial resources, past mitigation efforts, etc.

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Planning Process

Phase 2: Assess Risks – Hazard Identification

2018 Peoria County HMP	2018 Illinois HMP
Dam/Levee Failure	✓
Drought	✓
Earthquake	✓
Extreme Temperatures	✓
Flood	✓
Land Subsidence/Sinkhole	✓
Landslide	✓
Severe Thunderstorm (hail, lightning, and wind)	✓
Severe Winter Storms	✓
Tornado	✓
Wildfire	✓
Hazardous Materials Incidents	
Terrorism Event	
Active Shooter	

Profile the Hazards:

- Hazard Description
- Location
- Extent/Magnitude
- Past Occurrences
- Probability of Future Occurrence
- Future Conditions

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Planning Process

Phase 2: Assess Risks – Vulnerability Assessment

Provide updated data on local assets

- Building inventory
- Critical facilities inventory
- Critical infrastructure
- People
- Economic assets
- Natural, historic and cultural resources

GIS data enables spatial analysis

- Parcel data, building footprints
- Critical Facilities
- Repetitive loss structures/areas
- Current/Future land use data

FEMA Lifelines categorize critical and essential facilities

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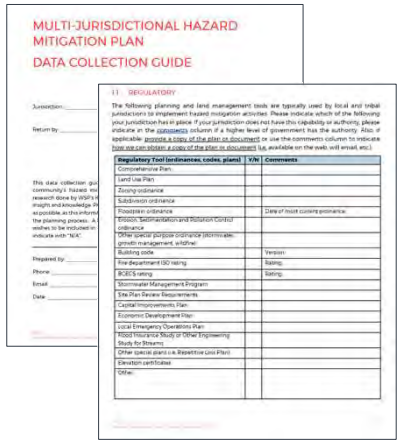
Planning Process

Phase 2: Assess Risks – Capability Assessment

Review each jurisdiction's capabilities; identify strengths and opportunities for improvement

- Regulatory
- Administrative/Technical
- Fiscal
- **Schedule Coordination Call with WSP**


MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
DATA COLLECTION GUIDE

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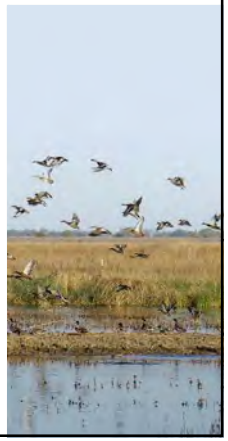
Planning Process

Phase 3: Develop a Mitigation Strategy

- Set Planning Goals
  - Review the goals from the previous plan to determine if they are still relevant and appropriate. Update the existing goals as needed
- Review Mitigation Alternatives
  - Consider new action ideas from each of the mitigation categories
  - Review all existing mitigation actions – were they completed? If not, should they be carried forward or deleted?
- Draft an Action Plan
  - Develop and prioritize mitigation actions for all identified and evaluated hazards
  - Decide who will be responsible, when projects will be completed, how projects will be funded, etc.



Peoria County, IL Hazard Mitigation Plan Update

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Please Complete a Status Update of Current Mitigation Actions

2021 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Bartonville:						
1	Remove existing residential and commercial structures from subsidence hazard areas.					
2	Develop and implement winter weather risk awareness activating that educates residents about severe winter storms and extreme cold and the actions they can take to protect themselves.					
3	Identify access and function needs residents and coordinate with local organizations to provide: 1) educational materials on emergency preparedness and the actions that can be taken to reduce or eliminate the risks to life and property associated with natural hazard events and 2) assistance/supportive services during and after natural hazard events.					
4	Develop and implement a community outreach program that educates residents about mine subsidence and the actions residents can take to protect themselves and their property.					

Peoria County, IL Hazard Mitigation Plan Update

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Planning Process

Phase 4: Adoption and Implementation

- Each participating jurisdiction must adopt the plan by resolution
- Ongoing plan maintenance includes at least annual meetings of the HMPC to review the plan
  - Quarterly meetings are recommended to encourage progress and maximize CRS credit for the plan
- Plan will continue to undergo a full update every five years

Peoria County, IL Hazard Mitigation Plan Update

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Project Schedule and Next Steps

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Project Schedule

Planning Process Timeline and Milestones

December
- HMPC – Provide digital data for Risk Assessment
- WSP - Coordinate with Stakeholders

January
- HMPC – Provide update on Current Mitigation Actions – See Handout
- HMPC - Schedule coordination call with WSP for January to discuss capability assessment
- HMPC – Advertise Public Meeting in January
- WSP - Hold Public Meeting #1 – VIRTUAL
- WSP - Perform Risk Assessment

February
- HMPC Meeting #2 – Risk Assessment Results and Mitigation Goals

March
- HMPC Meeting #3 – New Mitigation Actions; Document Review Process
- Hold Public Meeting #2 – VIRTUAL - Document Review Process and Comment Period
- Draft Plan Review and Submittal

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Thank you

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Attachment C – Overview for HMPC Members

Tri-County Multi-Jurisdictional Hazard Mitigation Plan Update - Peoria County and Incorporated Communities

Overview

The Tri-County Regional Planning Commission (TCRPC) is beginning the process to update the Tri-County Multi-Jurisdictional Hazard Mitigation Plan *to better protect the people and property of the Tri-County Region from the effects of natural and man-made hazard events*. The TCRPC has contracted with American Environmental Corporation (American) and WSP Environment & Infrastructure (WSP) to facilitate the planning process and prepare the plan document. WSP will be responsible for coordination with Peoria County and its incorporated jurisdictions.

The plan will be prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. These regulations establish the requirements that hazard mitigation plans must meet in order for *Peoria County and its incorporated jurisdictions to be eligible for certain federal disaster assistance and hazard mitigation funding* under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because Peoria County is subject to many kinds of hazards, access to these federal programs is vital.

Additionally, the plan for Peoria County will be prepared pursuant to the requirements of the Community Rating System. The Community Rating System (CRS) rewards communities for activities that go beyond the minimum requirements of the National Flood Insurance Program (NFIP) with *discounted flood insurance premiums*. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that (1) reduce flood losses, (2) facilitate accurate insurance ratings, and (3) promote the awareness of flood insurance.

What is a Hazard Mitigation Plan?

A hazard mitigation plan is the result of a planning process which identifies policies and actions that can be implemented over the long term to reduce the risk and future losses resulting from hazard events. The hazard mitigation plan will address a comprehensive list of both natural and man-made hazards likely to impact the County. The planning process is structured around four phases: Phase 1: Organize Resources; Phase 2: Assess Risks; Phase 3: Develop a Mitigation Plan; and Phase 4: Implement the Plan and Monitor Progress. These four phases are further broken down into 10 steps, shown in the figure.

What is My Role in the Planning Process?

WSP's first tasks are to assist in establishing the Hazard Mitigation Planning Committee (HMPC) and begin preparations for a project kick-off meeting. The HMPC will be composed of staff from those community departments which are involved in hazard mitigation activities, have the authority to regulate development, and are responsible for enforcing local ordinances.

For additional information, please contact:
Reema Abi-Akar, Planner III, HSTP Region 5 Coordinator rabiakar@tricountyrpc.org, (309) 673-9330

Tri-County Multi-Jurisdictional Hazard Mitigation Plan Update - Peoria County and Incorporated Communities

As a member of the HMPC, ***your participation in the planning process will include***:

- Attending and contributing in the HMPC meetings;
- Providing requested data (as available);
- Reviewing and providing comments on plan drafts;
- Advertising, coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan.

What can I expect for the HMPC Meetings?

In the coming months, WSP will facilitate three planning meetings with the HMPC, as briefly described below. Detailed agendas and information on the context of each meeting or activities performed within each meeting will be provided during the planning process.

- **DECEMBER - Project Kick-off Meeting.** This meeting will initialize work with the HMPC. WSP will present information on federal planning requirements, participation requirements of HMPC members, and the proposed project work plan and schedule. A plan for public involvement and coordination with other agencies and departments will also be discussed at this initial meeting, especially regarding external agencies, such as state and federal agencies that may have significant interests (property, critical assets and infrastructure) in the County or that have information to help support the planning process. WSP will also provide follow-up interviews and data collection for development the community profile. Once the nucleus of the HMPC first meets at the Kickoff Meeting, it may be determined that additional representatives should be invited to participate.
- **FEBRUARY - Risk Assessment Meeting.** This meeting will include presentation of the risk assessment results and review/development of mitigation goals.
- **MARCH - Mitigation Strategy Meeting.** This meeting will include updating of existing mitigation actions and identification and development of new mitigation strategies based upon the risk assessment.

Additional Resources

The following links provide additional information on hazard mitigation and the planning process:

- Peoria County Multi-Hazard Mitigation Plan, 2018
  https://www.peoriacounty.gov/422/Hazard-Mitigation-Plan
- Tri-County Multi-Jurisdictional Natural Hazards Mitigation Plan, Jan 2019/Nov 2020
  https://tricountyrpc.org/environment/hazard-mitigation/
- Regulations and guidance for state, tribal and local mitigation plans
  https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning/regulations-guidance
- Local Mitigation Planning Fact Sheet
  https://www.fema.gov/sites/default/files/documents/fema_planning-local_factsheet.pdf

For additional information, please contact:
Reema Abi-Akar, Planner III, HSTP Region 5 Coordinator rabiakar@tricountyrpc.org, (309) 673-9330

Attachment D – Public Outreach Strategy

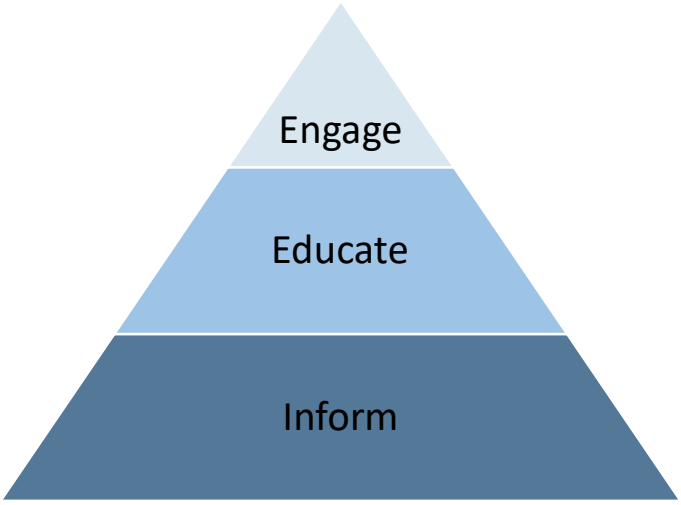
Tri-County Multi-Jurisdictional Hazard Mitigation Plan Update - Peoria County and Incorporated Communities

PUBLIC OUTREACH STRATEGY

The goal of this Public Outreach Strategy is to **engage, educate, and inform** the citizens of Peoria County of local multi-hazard mitigation planning efforts. The goal of this plan to better protect the people and property of Peoria County and participating jurisdictions from the effects of natural and man-made hazard events. Public involvement throughout the planning process is key to developing a plan that reflects the community's values and priorities, results in a greater success rate of mitigation action implementation, and ultimately creates a safer, more disaster-resilient community.

This Public Outreach Strategy identifies the outreach tools and activities for each of the major phases of the mitigation planning process which:

- **Engage** the public and other stakeholders through interactive dialogue including such forums as planning committee meetings, public meetings, workshops and open house events;
- **Educate** the public and other stakeholders through a listen and learn process such as neighborhood association presentations, information booths, and briefings to elected officials; and
- **Inform** the public and other stakeholders through one-way communication such as written outreach materials, websites, and news media.



ENGAGE

- **Participation on the Hazard Mitigation Planning Committee (HMPC) –** Half of HMPC will be representatives of the public and stakeholders of Peoria County. This may include representation from: American Red Cross, Sierra Club, State NFIP Coordinator, and others.

- **Public Meetings -** Two (2) public meetings will be scheduled at key points in the project timeline to obtain public input on natural and manmade hazards, problems, and possible solutions. Meetings will be held at the beginning of the planning process and following completion of the mitigation strategy. These meetings will be coordinated with the Tri-County Regional Planning Commission with facilitation support from WSP.

For additional information, please contact:
Reema Abi-Akar, Planner III, HSTP Region 5 Coordinator rabiakar@tricountyrpc.org, (309) 673-9330

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EDUCATE

- **Questionnaire -** A public participation questionnaire will be prepared by WSP and will be open to the public for two months. The purpose of this questionnaire is to solicit input from the public and stakeholders in Peoria County regarding hazards of concern, areas of mitigation interest, and related preparedness. The online survey will give individuals that are unable to attend the in-person meetings the opportunity to participate in the planning process. The questionnaire will be made available through web links posted on the project information website, circulated via email, and social media outlets. Additionally, hard copies of the questionnaire will be distributed at all public meetings and presentations to stakeholder groups. The feedback received will be evaluated and incorporated into the Hazard Mitigation Planning Committee's decision making process and the final Multi-Hazard Mitigation Plan.

INFORM

- **Website -** A project information website will be hosted by WSP and will be available to the public and to members of the Hazard Mitigation Planning Committee for the duration of the planning process with the primary purpose to share information relevant to the Plan Update. Specific resources to be included on this site include:
    - Meeting schedule, agendas, presentations, and minutes;
    - Project information flyers (3) for introduction, risk assessment, and notification of draft document;
    - Link to online questionnaire;
    - Draft Multi-Hazard Mitigation Plan for review/comment; and
    - Reference documents and links to planning resources.

  The website address is under construction at this time. Once completed, the website address will be shared.

- **Project Information Flyers –** Three (3) project information flyers will be developed and distributed throughout the planning process to provide information on the hazard mitigation planning and opportunities for public involvement. This resource will be available on the project information website as well as hard copies distributed to local libraries and public meetings identified in the 'educate' process. Specific information to be provided in the flyers includes:
    - What is a Hazard Mitigation Plan?
    - Why is it important to me?
    - What can I do to participate?
    - Planning Status
    - Mitigation Success Stories

For additional information, please contact:
Reema Abi-Akar, Planner III, HSTP Region 5 Coordinator rabiakar@tricountyrpc.org, (309) 673-9330

- **Social Media –**Social media outlets on Twitter and Facebook may be utilized to publish information regarding public meetings, the online questionnaire, and general hazard mitigation planning information.

For additional information, please contact:
Reema Abi-Akar, Planner III, HSTP Region 5 Coordinator rabiakar@tricountyrpc.org, (309) 673-9330

Attachment E – Data Collection Guide

Multi-Jurisdictional Hazard Mitigation Plan
Data Collection Guide

Jurisdiction: _____

Return by: _____

WSP USA Environment & Infrastructure, Inc.

This data collection guide is intended to assist in the research and preparation of your community's hazard mitigation plan. The information you provide here will supplement research done by WSP's Hazard Mitigation Planning Team and will improve the plan with local insight and knowledge. Please complete this data collection guide as completely and accurately as possible, as this information will be incorporated in the mitigation plan and will help to inform the planning process. A data collection guide should be completed for each jurisdiction that wishes to be included in the plan. For elements that do not pertain to your jurisdiction, please indicate with "N/A".

Prepared by: _____

Phone: _____

Email: _____

Date: _____

Please return worksheets by mail or email to:
Cindy Popplewell, PE, CFM
WSP USA Environment & Infrastructure, Inc.
216 Centerview Drive, Suite 300
Brentwood, TN 37027
Email: cindy.popplewell@wsp.com

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete this worksheet and provide supporting documentation if possible.

Regulatory

The following planning and land management tools are typically used by local and tribal jurisdictions to implement hazard mitigation activities. Please indicate which of the following your jurisdiction has in place. If your jurisdiction does not have this capability or authority, please indicate in the comments column if a higher level of government has the authority. Also, if applicable, provide a copy of the plan or document or use the comments column to indicate how we can obtain a copy of the plan or document (i.e. available on the web, will email, etc.).

Regulatory Tool (ordinances, codes, plans)	Y/N	Comments
Comprehensive Plan		
Land Use Plan		
Zoning ordinance		
Subdivision ordinance		
Floodplain ordinance		Date of most current ordinance:
Erosion, Sedimentation and Pollution Control ordinance		
Other special purpose ordinance (stormwater, growth management, wildfire)		
Building code		Version:
Fire department ISO rating		Rating:
BCEGS rating		Rating:
Stormwater Management Program		
Site Plan Review Requirements		
Capital Improvements Plan		
Economic Development Plan		
Local Emergency Operations Plan		
Flood Insurance Study or Other Engineering Study for Streams		
Other special plans (i.e. Repetitive Loss Plan)		
Elevation certificates		
Other:		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your jurisdiction. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level of government that can provide technical assistance, please indicate so in the comments column.

Personnel Resources	Y/N	Department/Position	Comments
Planner/Engineer with knowledge of land development/land management practices			
Engineer/Professional trained in construction practices related to buildings and/or infrastructure			
Planner/Engineer/Scientist with an understanding of natural hazards			
Personnel skilled in GIS			
Full time Building Official			
Floodplain Manager			
Emergency Manager			
Grant Writer			
Public Information Officer			
Warning Systems			
GIS data: flood zones / hazard areas			
GIS data: critical facilities			
GIS data: current and/or future land use			
GIS data: building footprints			
GIS data: links to Assessor's data			
Other personnel:			
Other data:			

Describe your government structure. (e.g. Commission, Mayor/City Council, how many members, etc.). Is your local political climate supportive of mitigation efforts?

Fiscal

Identify whether your jurisdiction has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible? (Y/N)	Comments
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Fees for water, sewer, gas, or electric services		
Impact fees for new development		
Incur debt through general obligation bonds		
Incur debt through special tax bonds		
Incur debt through private activities		
Withhold spending in hazard prone areas		
Other:		

Attachment F – Current Mitigation Actions

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Bartonville						
1	Remove existing residential and commercial structures from subsidence hazard areas.					
2	Develop and implement winter weather risk awareness activating that educates residents about severe winter storms and extreme cold and the actions they can take to protect themselves.					
3	Identify access and function needs residents and coordinate with local organizations to provide: 1) educational materials on emergency preparedness and the actions that can be taken to reduce or eliminate the risks to life and property associated with natural hazard events and 2) assistance/supportive services during and after natural hazard events.					
4	Develop and implement a community outreach program that educates residents about mine subsidence and the actions residents can take to protect themselves and their property.					
5	Conduct a drainage/hydraulic study to determine the number of pump stations and associated piping/containment needed to alleviate recurring Kickapoo Creek flooding impacting homes and businesses along Illinois Route 24.					
6	Install pump stations with automatic emergency backup generators at selected locations to alleviate recurring Kickapoo Creek flooding impacting homes and businesses along Illinois Route 24.					
7	Purchase portable, trailer-mounted changeable emergency message boards to alert the public of hazardous conditions, detours, evacuations, etc. associated with natural hazard events.					
8	Designate warming/cooling centers within the Village for use by residents and secure hosting agreements with each location.					
9	Bury utility lines to critical facilities to limit service disruptions during natural hazard events.					
10	Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.					
11	Review and present for adoption the updated Flood Insurance Rate Maps when they become available.					
12	Present for adoption an updated floodplain ordinance.					
13	Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Bartonville (continued)						
14	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.					
15	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the Village.					
16	Purchase a stand-alone server with software to backup the Village's computer files.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Chillicothe						
1	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.					
2	Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.					
3	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.					
4	Review and present for adoption the updated Flood Insurance Rate Maps when they become available.					
5	Present for adoption an updated floodplain ordinance.					
6	Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.					
7	Target FEMA's Repetitive Loss Properties for potential mitigation projects.					
8	Target FEMA's Repetitive Loss Properties for educational outreach.					
9	Develop educational materials that can be used to inform residents about the benefits of the National Flood Insurance Program and how it is administered locally.					
10	Locate and label all public hydrants in the City to assist in street identification in the event of widespread natural hazard damage.					
11	Develop "hazard information centers" in public libraries and on the City's website to inform residents of the risks to life and property associated with natural hazards and the proactive actions they can take to reduce or eliminate their risk					
12	Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.					
13	Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural hazard events.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Greater Peoria Sanitary District						
1	***Flood Hazard Mitigation & Levee Certification Study Recommendation – Kickapoo Interceptor Flow Control Structure:*** Construct a large sluice gate along the Kickapoo Interceptor just outside the GPSD Levee that can be closed in the event the Interceptor is compromised by floodwater. The Kickapoo Interceptor is one of two sewers that brings wastewater into the treatment plant, and at present, there is no means to throttle the flow of the sewer. Floodwaters have covered the Interceptor previously and if the sewer becomes compromised during a flood event, floodwaters will enter the wastewater treatment plant at an uncontrolled rate, incapacitating the wastewater treatment plant and leaving much of the County without treatment capability including key critical facilities such as hospitals.					
2	***Flood Hazard Mitigation & Levee Certification Study Recommendation – Effluent Channel Control Structure:*** Construct an effluent channel control structure (gate) to allow the District to control the water levels in the two tertiary lagoons during flood events. Control of the water surface levels in the tertiary lagoons was identified as a way to limit seepage and maintain the hydrostatic pressure in the soils of the GPSD Levee to preserve slope stability during flood events.					
3	***Flood Hazard Mitigation & Levee Certification Study Recommendation – Levee Grading & Drainage Improvements:*** Raise the crest of the GPSD Levee to meet or exceed minimum freeboard requirements, install sub-surface seepage layers and a collection system to limit the buildup of groundwater and maintain slope stability requirements, construct headwall and removeable flood barrier systems at the plant entrance drives and fill in low-lying areas that exhibit seepage and boils during major flood events to meet FEMA's levee certification requirements and prepare for major flood events. Protecting the wastewater treatment plant from flooding not only safeguards critical infrastructure, it also reduces the risk of major service interruptions to other critical infrastructure such as hospitals.					
4	Identify collection system infrastructure located in areas vulnerable to landslides.					
5	Identify collection system infrastructure located in areas vulnerable to mine subsidence.					

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Greater Peoria Sanitary District (continued)						
6	Distribute educational materials that inform staff and customers about the risks associated with natural hazard events impacting the District's service area, including those related to the sewer collection system, and the proactive actions they can take to reduce their risk.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Hanna City						
1	Construct a new water tower to increase the amount of water available in reserve, improve resiliency to drought and to aid in fire suppression as necessary during natural hazard events.					
2	Purchase a stand-alone server with software to back up the Village's computer files.					
3	Design and construct a community safe room (tornado shelter) equipped with emergency backup generator and HVAC units that can also serve as an emergency shelter/warming and cooling center for Village residents.					
4	Identify residents with access and functional needs and create a volunteer network to assist these residents during a natural hazard event.					
5	Install curb and gutter at various locations within the Village to help direct the flow of stormwater runoff to drainage structures in an effort to alleviate drainage/flooding problems.					
6	Conduct a sewer line reconnaissance study to identify locations where storm water infiltrates the lines.					
7	Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.					
8	Improve coordination between the village, township and County in an effort to help implement hazard mitigation projects and cleanup activities aimed at reducing or eliminating the risk associated with natural hazard events.					
9	Install/upsize new water mains and fire hydrants at various locations within the Village to ensure a constant supply of water for residents and aid in fire suppression during natural hazard events.					
10	Purchase and install sewer valves at wastewater treatment plant to isolate system operations and protect plant functions during heavy rain events.					
11	Locate and label all public hydrants in the Village to assist in street identification in the event of widespread natural hazard damage.					
12	Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural hazard events.					
13	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the Village.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
City of Peoria						
1	Purchase and install automatic emergency backup generators at all Fire Stations not currently equipped with one to provide uninterrupted power and maintain operations and communication capabilities during a power outage. All fire stations in the City serve as warming/cooling centers for city residents.					
2	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.					
3	Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.					
4	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.					
5	Partner with classified dams owners to develop Emergency Action Plans (EAPs) that identify the extent (water depth, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.					
6	Review and present for adoption the updated Flood Insurance Rate Maps when they become available.					
7	Present for adoption an updated floodplain ordinance.					
8	Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.					
9	Purchase and distribute NOAA weather radios to vulnerable residents.					
10	Locate and label all public hydrants in the City to assist in street identification in the event of widespread natural hazard damage.					
11	Develop "hazard information centers" in public libraries and on the City's website to inform residents of the risks to life and property associated with natural hazards and the proactive actions they can take to reduce or eliminate their risk					
12	Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.					
13	Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural hazard events.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Peoria Heights						
1	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.					
2	Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.					
3	Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.					
4	Review and present for adoption the updated Flood Insurance Rate Maps when they become available.					
5	Present for adoption an updated floodplain ordinance.					
6	Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.					
7	Target FEMA's Repetitive Loss Properties for potential mitigation projects.					
8	Target FEMA's Repetitive Loss Properties for educational outreach.					
9	Develop educational materials that can be used to inform residents about the benefits of the National Flood Insurance Program and how it is administered locally.					
10	Locate and label all public hydrants in the City to assist in street identification in the event of widespread natural hazard damage.					
11	Develop "hazard information centers" in public libraries and on the City's website to inform residents of the risks to life and property associated with natural hazards and the proactive actions they can take to reduce or eliminate their risk					
12	Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.					
13	Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural hazard events.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Peoria County						
1	Evaluate structural integrity of critical facilities and shelters to confirm resistance to hazard events.					
2	Coordinate hazard risk assessments with other agencies					
3	Create formal mutual aid agreements with neighboring communities to meet emergency response needs.					
4	Coordinate with American Red Cross to maintain list of emergency shelters and shelter agreements.					
5	Coordinate with IDNR to address the stalemate with FEMA and private owners of a provisionally accredited levee.					
6	Establish prioritized list for mitigation of flood prone structures					
7	Verify with IDNR that dam inspections are current.					
8	Coordinate with NRCS regarding technical and financial assistance for drought preparedness and response.					
9	Maintain snow/ice fighting resources					
10	Continue to organize and hold collections for household hazardous wastes, tires, etc.					
11	Special needs/oxygen-user registration program					
12	Update flood risk assessment utilizing depth grid information as Risk MAP products become available to Peoria County through the flood map update process. Depth grid information will allow for more accurate flood vulnerability calculations.					
13	Continue participation in CRS Program and implementation of flood hazard outreach program – including website maintenance, general and targeted outreach projects; and educational documents in libraries.					
14	Prepare “take-home” brochure for school system to address hazard preparedness planning and coordination.					
15	Re-evaluate community education programs to incorporate hazard mitigation.					
16	Identify and train key County employees, outside of EMA, in disaster response and operations to ensure continuity of County government during disaster events.					
17	Create county-wide database for Elevation Certificates; Letters of Map Change; and First Floor Elevations.					
18	Establish requirement for future development projects to determine impacts to existing development.					
19	Prepare Repetitive Loss Area (RLA) Analyses for each of the identified RLAs.					

2023 PEORIA COUNTY HAZARD MITIGATION PLAN UPDATE
STATUS OF CURRENT MITIGATION ACTIONS

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)	Comments
Peoria County (continued)						
20	Organize public workshop to discuss flood mitigation and property protection.					
21	Update landscape ordinance to provide homeowner credit for use of native plantings.					
22	Update Subdivision and Development regulations to require information from INDR on proximity of high hazard dams.					
23	Identify bridge/road infrastructure that is vulnerable to earthquakes.					
24	Continue program to distribute NOAA weather radios, as funding allows.					
25	Post flood warning signage in flood-prone areas, e.g. high water marks.					
26	Provide NFIP Training for insurance agents; surveyors; and engineers.					
27	Prepare watershed master plans for flood prone areas of the County.					
28	Establish Partnerships for maintenance of public open space and acquired flood properties.					
29	Establish process for conversion of acquired flood properties to natural habitat					
30	Post education signage in areas of acquired flood properties describing benefits of natural habitat.					
31	Continue acquisition program to mitigate repetitive flood properties					
32	Identify opportunities to encourage/provide credit for low-impact development and reduction of impervious areas.					
33	Identify and pursue funding sources to mitigate/fill underground mines.					
34	Provide training and exercises for first responders for hazardous materials incidents.					
35	Redundant systems and looping (water, sewer, electric, gas)					

Memorandum

To	Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee (HMPC)
From	Cindy Popplewell
Tel / Email	(303) 704-8939 / cindy.popplewell@wsp.com
Date	February 20, 2023

Subject Minutes from Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update – MEETING #2 HIRA

This memorandum presents the meeting minutes from the February 15, 2023, meeting for the *Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan* Update. It provides a review of the benefits of hazard mitigation planning, current planning process and progress, hazard identification and risk assessment (HIRA), mitigation goals, and next steps.

Attendees

Last Name	First Name	Organization
Abi-Akar	Reema	Tri-County Regional Planning Commission
Braun	Andrew	Peoria County
Bruner	Michael	Tri-County Regional Planning Commission
Crider	Beth	Peoria Regional Office of Education
Haines	Cody	Peoria Park District
Leach	Tim	Greater Peoria Sanitary District
Marks	Jason	Director of Emergency Management, Peoria County EMA
McLaren	Amy	Peoria County
O'Neal	Tony	Crisis Management Group, Ameren Illinois
Orr	Roger	Street Superintendent, Village of Hanna City
Urban	Kathi	Peoria County
Weindel	Jack	Peoria County

Benefits of Hazard Mitigation Planning

Cindy Popplewell of WSP presented information on the benefits of participating in the mitigation plan, including eligibility for federal hazard mitigation assistance. The powerpoint slide show that was used for informational purposes during the meeting is included as Attachment A.

Requirements of Hazard Mitigation Planning

WSP's approach to the Hazard Mitigation Planning process is structured around FEMA's Local Mitigation Planning Handbook (March 2013); FEMA's Local Mitigation Planning Policy Guide (April 2022); and the Community Rating System's (CRS) Floodplain Management Planning requirements (2017 and 2021 Addendum). See the reference table below. This approach will position Peoria County and participating jurisdictions to seek maximum credit under the CRS Program.

Steps highlighted in red have been completed and/or are in progress; steps highlighted in green were covered during the powerpoint presentation and are in progress. Steps not highlighted will be addressed at the next HMPC planning meeting.

10-Step Mitigation Planning Process

FEMA Planning Elements	FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201)	Community Rating System (CRS) Planning Steps (Activity 510)
Element A: Planning Process	**Task 1: Determine the Planning Area and Resources**	Step 1. Organize
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)	
	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)	Step 2. Involve the public
	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)	Step 3. Coordinate
Element B: Risk Assessment **Element G:** High Hazard Potential Dams	**Task 5: Conduct a Risk Assessment** 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)	Step 4. Assess the hazard(s)
		Step 5. Assess the problem(s)
Element C: Mitigation Strategy	**Task 6: Develop a Mitigation Strategy** 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)	Step 6. Set goals
		Step 7. Review possible activities
		Step 8. Draft an action plan

FEMA Planning Elements	FEMA Local Mitigation Planning Handbook Tasks (44 CFR Part 201)	Community Rating System (CRS) Planning Steps (Activity 510)
Element F: Plan Adoption	**Task 8: Review and Adopt the Plan**	Step 9. Adopt the plan
Element D: Plan Maintenance **Element E:** Plan Update	**Task 7: Keep the Plan Current**	Step 10. Implement, evaluate, revise
	Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)	
Element H: Additional State Requirements		

Planning for Public Involvement

A public meeting was held on February 1, 2023, to introduce the public to the planning process. A public survey has been prepared to obtain feedback from our public on priority hazards and mitigation actions. Link to the survey is provided below:

Risk Assessment and Capabilities Update

Review comments received during the HIRA discussion included:

- Levee failure would impact the Sanitary District and subsequently the communities of Peoria Heights, West Peoria, Bartonville, and the City of Peoria.
- Earthquake event in 2008 was noted for the County, all bridges were inspected following this event. This event will be added to previous occurrences for this hazard.
- Land Subsidence
  - Additional photos to be provided by Amy McLaren
  - Noted locations include near Airport; along I-29/Peoria Heights; and Kickapoo Road – natural springs along hillside
- Wildfire – HMPC agreed this is a low planning priority hazard
- Active Shooter
  - There was an event in 1973 at St. Cecilia School. This event will be added to previous occurrences for this hazard.
  - Additional event noted for Dixon, IL in 2021 – north of Peoria County in Lee County.
- Winter Storm events – noted that overhead powerlines are a concern, as well as power substations, but including distribution infrastructure on mapping is a security concern.
- Terrorism – in addition to a CBRNE attack, additional focus is on high-power rifle attack of power grid components.
- Critical Facilities – Sanitary District and EMA to assist with GIS files for additional critical facilities – including water and wastewater treatment plants and vulnerable areas/ populations (mobile home parks, etc.).

A summary of planning priorities for each hazard is presented in the table below:

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating Variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Wildfire	Medium	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	Low *Chillicothe, Peoria Heights*
Landslide	Low	Medium	Low	Guarded	Low *Hanna City*
Dam/Levee Failure	Low	Low	High	Elevated	Low *Chillicothe, Hanna City*
Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter					
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	Low – *Hanna City* Guarded – *Chillicothe, Peoria Heights*
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	

Goals

The goals of the 2018 State of Illinois Hazard Mitigation Plan, the 2018 Peoria County Hazard Mitigation Plan, and the 2019 Tri-County Hazard Mitigation Plan were reviewed. The following updated goals were agreed upon by the HMPC:

Goal 1: Reduce the vulnerability of current and future people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Goal 4 - Incorporate natural and man-made hazard mitigation into community plans, regulations and activities.

Next Steps

HMPC Members/Attendees

- Please take a moment to complete the Public Survey!
- Review draft documents once received from WSP.

WSP

- Finalize HIRA
- Submit Draft Chapters 1, 2, and 3 for HMPC review – week of February 27th
- Prepare for upcoming HMPC Meeting #3 – Mitigation Strategy

Upcoming Meetings

- March 15th, Wednesday
    - HMPC Meeting – In Person – 1:30pm
      Tri-County Regional Planning Commission Office/Conference Room
      456 Fulton St., Suite 420, Peoria, IL 61602

    - Public Meeting – Virtual/In-Person Combination – 5:30pm
      Tri-County Regional Planning Commission Office/Conference Room
      456 Fulton St., Suite 420, Peoria, IL 61602

Attachment A – Powerpoint Presentation

Peoria County Multi-Jurisdictional Hazard Mitigation Plan

Hazard Mitigation Planning Committee
Meeting #2 – Hazard Identification and Risk Assessment
February 15, 2022

1

Introductions

Introductions

- Welcome!
- Opening Remarks

Peoria County Project Leads

Reema Abi-Akar, Tri-County Regional Planning Commission

WSP Planning Consultant & Contact Info

Cindy Popplewell – cindy.popplewell@wsp.com

2

Introductions

Agenda

Review

- Benefits of the Hazard Mitigation Plan
- Planning process and our progress

Hazard Identification and Risk Assessment (HIRA)

- Review hazard profiles
- Discuss planning significance/relative risk
- Discuss data gaps and analysis needs

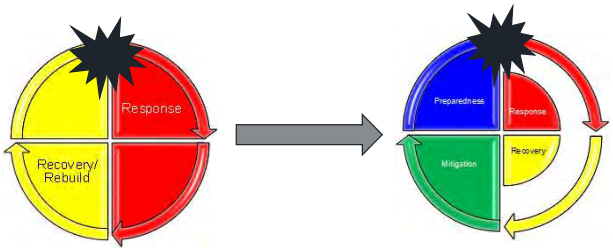
Review/Update Mitigation Goals

Project Schedule and Next Steps

3

Benefits of the Hazard Mitigation Plan

1. Eligibility for federal disaster assistance (mitigation funding)
   - ✓ March 2020 – COVID Pandemic
2. Reduced losses from hazard events
3. Reduced local, state, and federal expenditures



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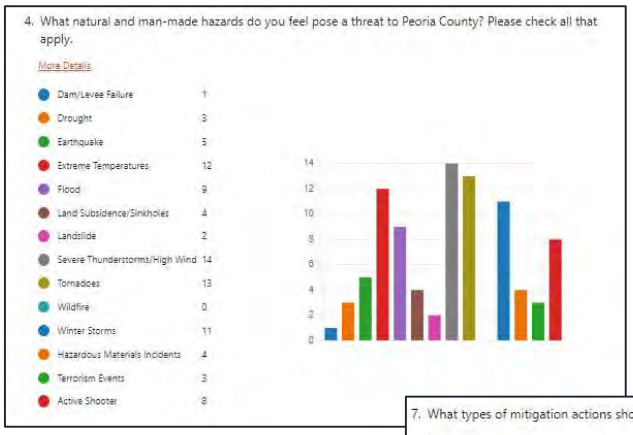
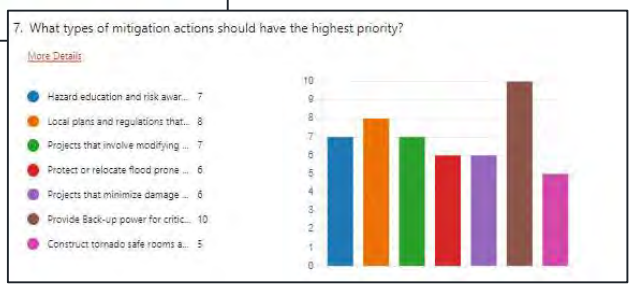
10 Step Planning Process

DMA Process	CRS Process
Phase I – Organize Resources	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	*Step 4. Assess the Hazard*
§201.6(c)(2)(ii) & (iii)	*Step 5. Assess the Problem*
Phase III – Mitigation Strategy	
§201.6(c)(3)(i)	*Step 6. Set Goals*
§201.6(c)(3)(ii)	Step 7. Review Possible Activities
§201.6(c)(3)(iii)	*Step 8. Draft an Action Plan*
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate, and Revise the Plan

Peoria County Hazard Mitigation Plan Public Survey

5





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Phase II: Risk Assessment

2018 Peoria County HMP	2018 Illinois HMP
Dam/Levee Failure	✓
Drought	✓
Earthquake	✓
Extreme Temperatures	✓
Flood	✓
Land Subsidence/Sinkhole	✓
Landslide	✓
Severe Thunderstorm (hail, lightning, and wind)	✓
Severe Winter Storms	✓
Tornado	✓
Wildfire	✓
Hazardous Materials Incidents	
Terrorism Event	
Active Shooter	

Profile the Hazards:

- Hazard Description
- Geographic Location
- Magnitude/Severity
- Past Occurrences
- Probability of Future Occurrence
- Future Conditions

7

- **Hazard Description**
- **Geographic Location**
  - High (18) – More than 25% of population
  - Medium (12) – 10 to 25% of population
  - Low (6) – less than 10% of population
- **Magnitude/Severity**
  - High (18) – 5+ fatalities, property destroyed/damaged ($15,000,000), or 3+ days of shutdown for essential facilities.
  - Medium (12) – Serious injuries (more than 50), property destroyed/damaged ($1M to $15M), or 24-72 hrs of shutdown for essential facilities.
  - Low (6) – Minor injuries (under 50), property destroyed/damaged (under $1M), or less than 24 hr shutdown for essential facilities.
- **Past Occurrences**
- **Probability of Future Occurrence**
  - High (18) – More than 60 occurrences
  - Medium (12) – 13 to 60 occurrences
  - Low (6) – 0 to 12 occurrences
- **Future Conditions**
- **Planning Significance**
  - Severe – 49 to 60 points
  - High - 37 to 48 points
  - Elevated – 25 to 36 points
  - Guarded – 13 to 24 points
  - Low – 0 to 12 points

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Hazard Summary

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	Low *Chillicothe, Peoria Heights*
Landslide	Low	Medium	Low	Guarded	Low *Hanna City*
Wildfire	Medium	Low	Low	Guarded	
Dam/Levee Failure	Low	Low	High	Elevated	Low *Chillicothe, Hanna City, Peoria Heights, West Peoria*
Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter	Low	Low	High	Elevated	
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	Low – *Hanna City* Guarded – *Chillicothe, Peoria Heights*
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	

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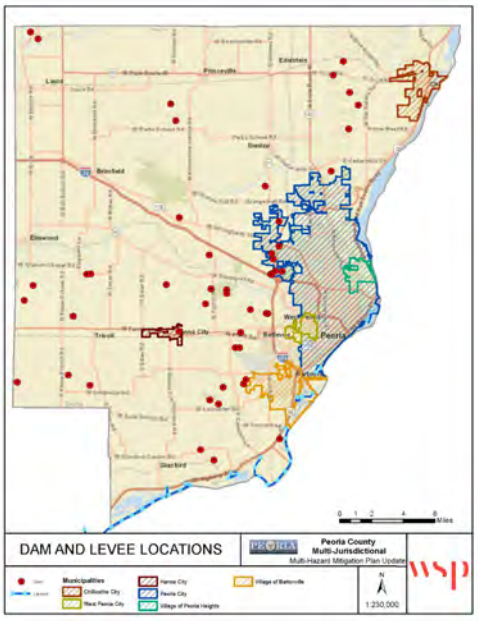
Dam/Levee Failure

- Dams
  - 49 State Regulated Dams
  - Average Age of 52 years
  - 7 High Hazard Potential
- Levees
  - 11 Levee systems
  - 24 Miles of Levees
  - Average Age of 82 years
    - Banner Marsh Levee
    - Banner Special Levee
    - Pekin and La Marsh Levee
    - Greater Peoria Sanitary District
    - Evonik Mapleton Plant Site
    - Lonza
    - Keystone Steel
    - Komatsu



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Dam/Levee Failure

- **Location:** Low - Less than 10% of the total population adversely affected should the hazard occur
- **Previous Occurrences:**
  - 2011 - Waltonville Lake Dam located in Jefferson County failed in June 2011 resulting in temporary flooding of the state highway.
  - 2013 - A private dam for farming purposes failed in May 2013 resulting in downstream damage at Bartholomew Road.
  - 2013 - Farm levee on Kickapoo breached
- **Probability**: Low - 0 to 12 occurrences in the last 60 years
- **Magnitude/Severity:** High – Multiple deaths (more than 5), property destroyed or damaged beyond repair (more than $15M), or more than 3 days of shutdown for essential facilities.
- **Elevated; Low – Chillicothe, Hanna City, Peoria Heights, West Peoria**

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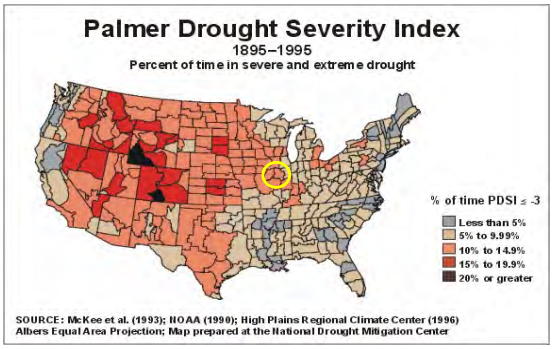
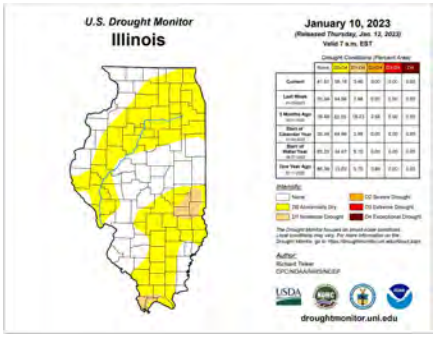
Drought

- A period of excessive dryness long or intense enough to result in water-related problems.
- Slow moving hazard which causes losses to agriculture; contributes to wildfire; and affects domestic water supply, energy production, public health, and wildlife.
- Agricultural Areas
  - 250,070 acres of land in farms; 92% insured

20-Year Drought Insurance Paid	Adjusted 20-Year Drought Losses (considering 92% insured)	Estimated Annualized Losses	2017 Value of Crops	Annualized Crop Loss ratio (Losses/Value)
$17,820,147	$19,369,725	$968,486	$145,196,000	0.67%

12

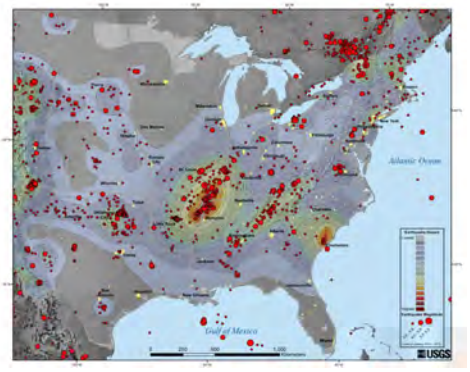


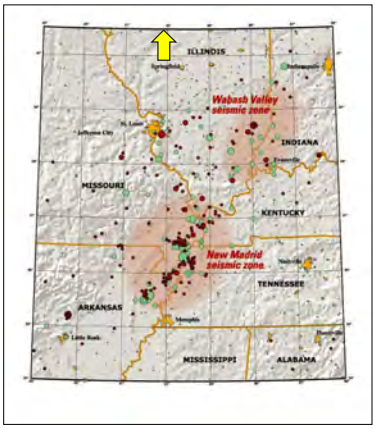


- **Location:** High - More than 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences:**
  - 1902, 1915, 1931, 1934, 1936, 1954, 1964, 1988, and 2005
  - 2012-2022 – Four USDA Disaster Declarations for Peoria County
- **Probability:** Medium - 13 to 60 occurrences in the last 60 years
  Magnitude/Severity: Low – Minor injuries (under 50) & property damage (under $1,000,000), or less than 24-hour shutdown of essential facilities
- **Elevated/High**

Earthquake

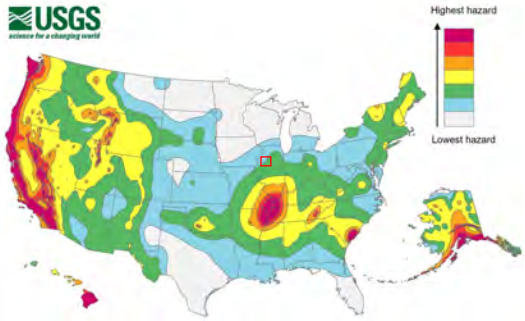
- New Madrid Seismic Zone and Wabash Valley Seismic Zone





Earthquake

- **Location:** Low - Less than 10% of the total population adversely affected should the hazard occur
- **Previous Occurrences:** No recorded earthquakes within a 50-mile radius of central Peoria County since 1973
- **Probability**: Low - 0 to 12 occurrences in the last 60 years (Less than 20% chance of occurrence each year)
- **Magnitude/Severity**: Low — Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
- **Low**



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Extreme Temperatures

- Summer Average High – 85.6˚
  - Temperatures consistently stay 10˚ above average high temperature
- Winter Average Low - 17˚
  - Wind Chill Advisory when temperatures are expected to reach –5˚F to –14˚F and winds of greater than 10 mph for at least 3 hours.
- Urban areas develop and buildings and roads replace open land and vegetation, urban regions become warmer than their rural surroundings, forming an “island” of heat.
- Persons over 65 and under 5 yrs are especially vulnerable.

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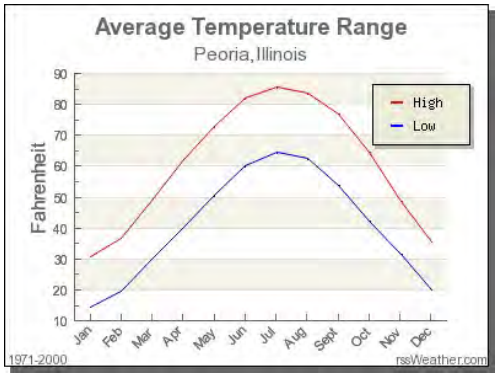
Extreme Temperatures

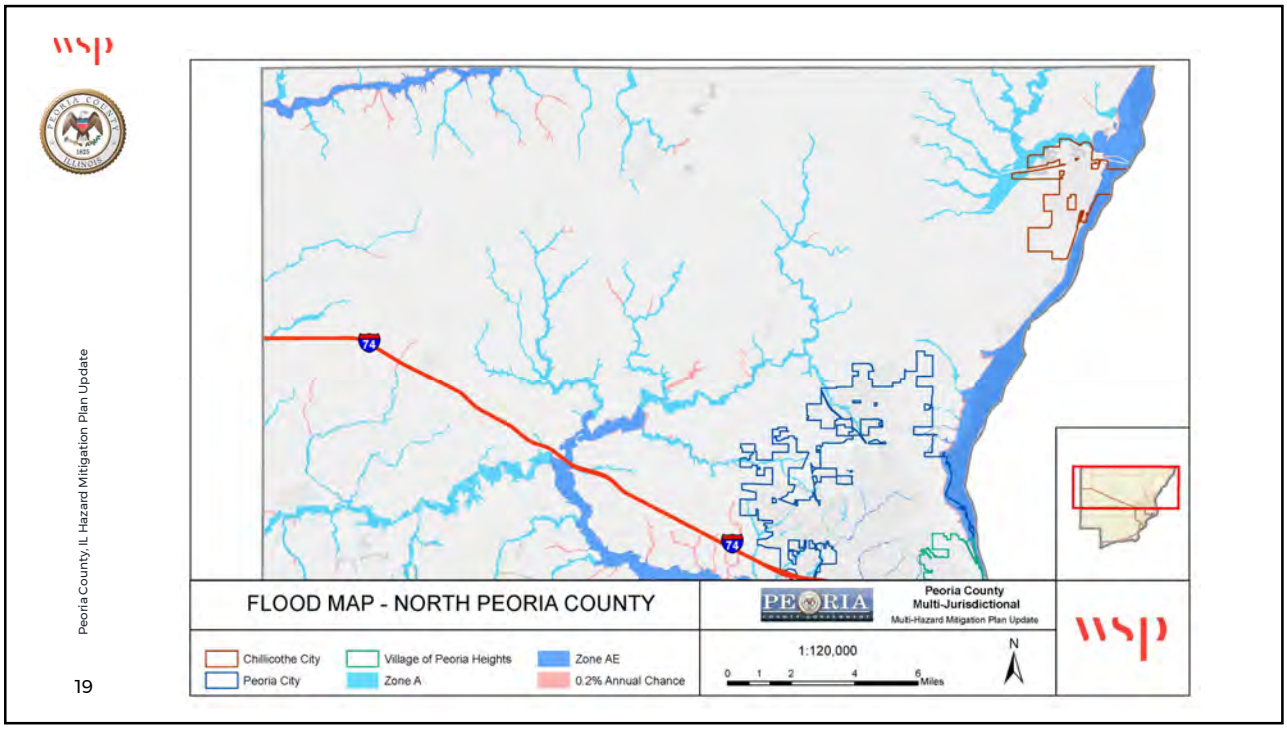
- **Location:** High - More than 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences:** NCEI Database - 24 extreme events in 26 years (1996-2022)
- **Probability:** Medium - 12 to 60 occurrences in the last 60 years (20-100% chance of occurrence each year)
- **Magnitude/Severity:** Medium — Serious injury (more than 50), major property damage ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
- **High**



Flood

Floods are among the most frequent and costly natural disaster in terms of human hardship and economic loss

- **Flash Flooding –** localized floods of great volume and short duration
- **Riverine –** an event when a watercourse exceeds its "bank-full" capacity and is the most common type of flood event. Riverine floods result from precipitation over large areas.
- **Urban Stormwater –** land loses its ability to absorb rainfall as it is converted from fields or woodlands to roads, buildings, and parking lots


Peoria County, IL Hazard Mitigation Plan Update
19
FLOOD MAP - NORTH PEORIA COUNTY
Chillicothe City
Peoria City
Village of Peoria Heights
Zone A
Zone AE
0.2% Annual Chance
1:120,000
0 1 2 4 6 Miles
N
Peoria County
Multi-Jurisdictional
Multi-Hazard Mitigation Plan Update

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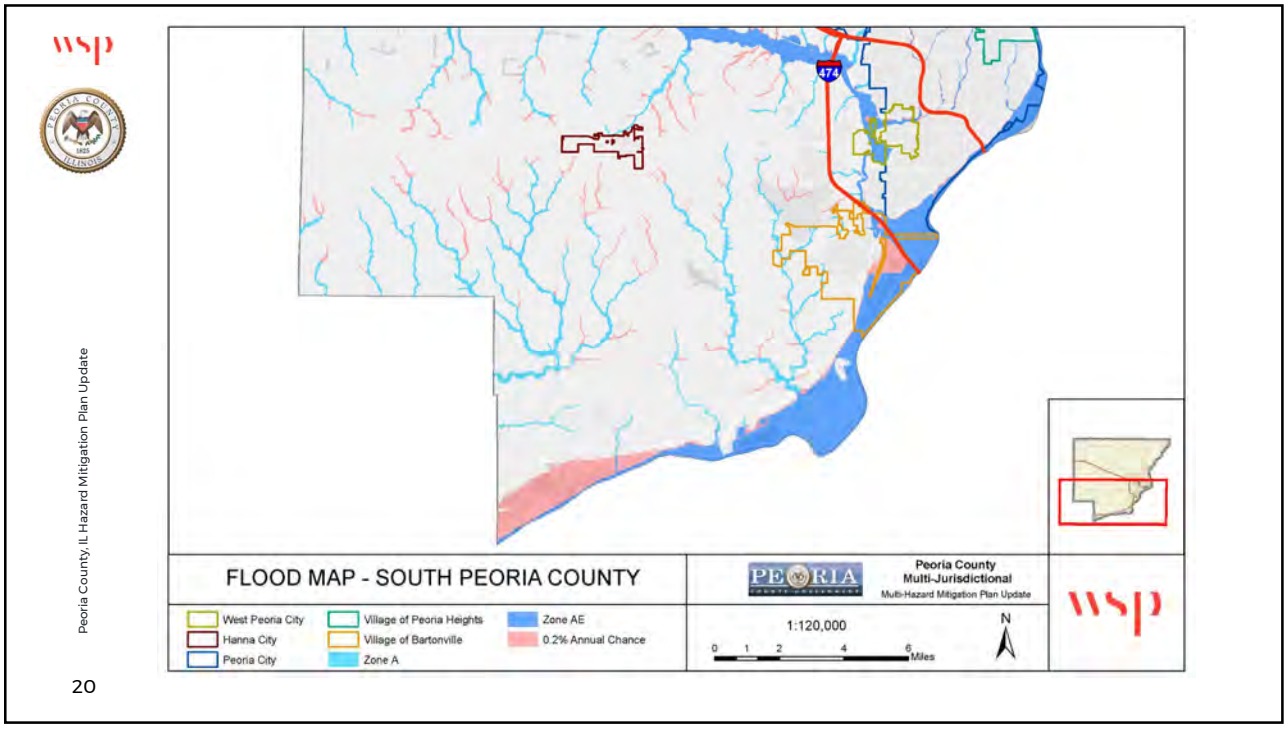
Peoria County, IL Hazard Mitigation Plan Update
20
FLOOD MAP - SOUTH PEORIA COUNTY
West Peoria City
Hanna City
Peoria City
Village of Peoria Heights
Village of Bartonville
Zone A
Zone AE
0.2% Annual Chance
1:120,000
0 1 2 4 6 Miles
N
Peoria County
Multi-Jurisdictional
Multi-Hazard Mitigation Plan Update

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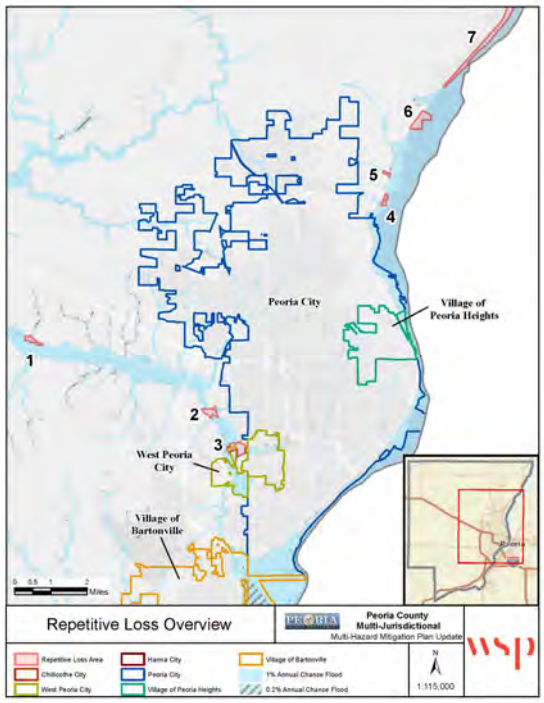
Repetitive Loss Areas

- Edwards
- Pottstown
- Farmington Road/Kickapoo and Dry Run Confluence
- South Mossville
- Mossville
- North Mossville
- Rome



Peoria County, IL Hazard Mitigation Plan Update

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Flood

- **Location:** Medium – Between 10% to 25% of the total population adversely affected should the hazard occur.
- **Previous Occurrences:** - 31 flash flooding and 10 riverine flood events since 1996
- **Probability:** High - More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)
- **Magnitude/Severity:** High — Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.
- **Severe; Low – Hanna City; Guarded - Chillicothe, and Peoria Heights**

Peoria County, IL Hazard Mitigation Plan Update

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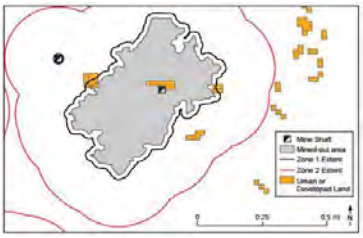
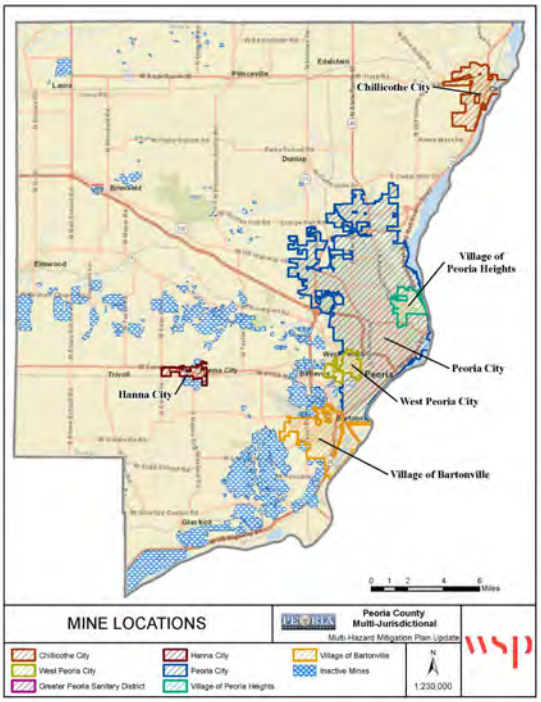
Land Subsidence

- Ground above a manmade or natural void collapses
- In Peoria County, attributed to mine subsidence due to coal mine industry





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Land Subsidence

- **Location:** Medium – Between 10% to 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences: –**
  - US Route 24, during installation of soldier piles for retaining wall, IDOT encountered underground cavities
  - Charter Oak Road, approximately 10 to 15 years ago a mine subsidence incident was noted impacting 2 houses, 2005-2010
  - South Airport Road, 2014
  - Bellevue area.
- **Probability:** Low - 0 to 12 occurrences in the last 60 years (Less than 20% chance of occurrence each year)
- **Magnitude/Severity:** Low — Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
- **Guarded; Low for Chillicothe and Peoria Heights**

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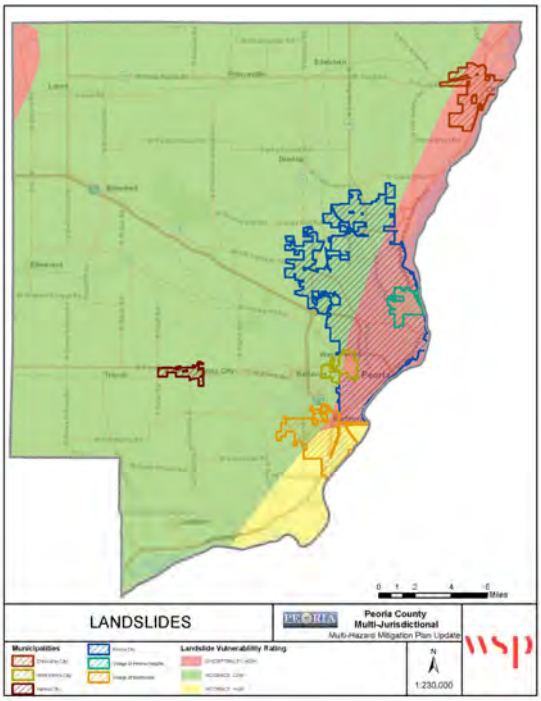
Landslides

- The downhill movement of masses of soil and rock by gravity
- Planning area is predominately area of low incidence
- Areas of high incidence along Illinois River
- Areas of high susceptibility also along Illinois River and northwest corner of County



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Landslides

- **Location:** Low - Less than 10% of the total population adversely affected should the hazard occur
- **Previous Occurrences:** 14 events since 1928;
  - ✓ June 2018, Kickapoo Creek Road Massive Rockslide
- **Probability:** Medium - 12 to 60 occurrences in the last 60 years (20-100% chance of occurrence each year)
- **Magnitude/Severity:** Low – Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
- **Elevated, Low for Hanna City**

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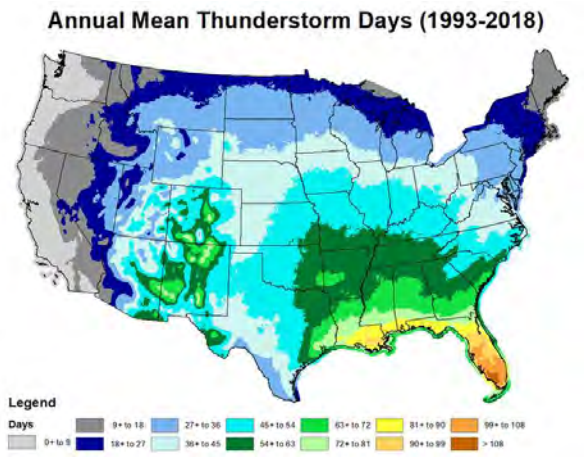
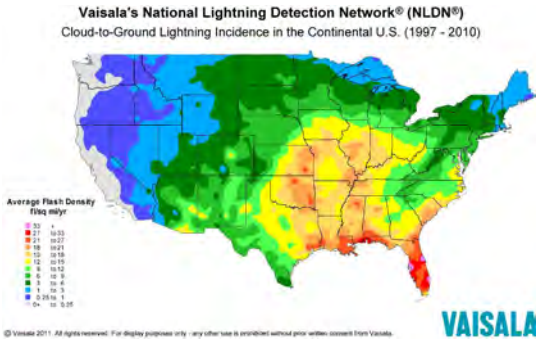
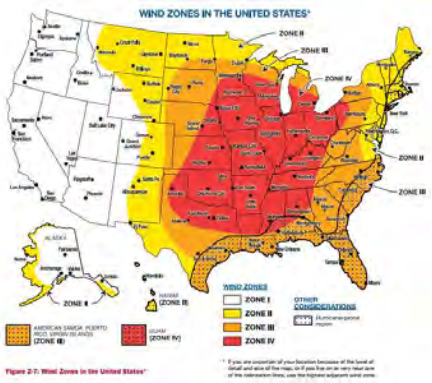
Severe Storms

- Localized storms accompanied by hail, high winds, lightning, heavy rain causing flash flooding and sometimes tornadoes.
- Power outages from downed power lines. Manufactured homes, campers and light buildings at increased risk of damages.





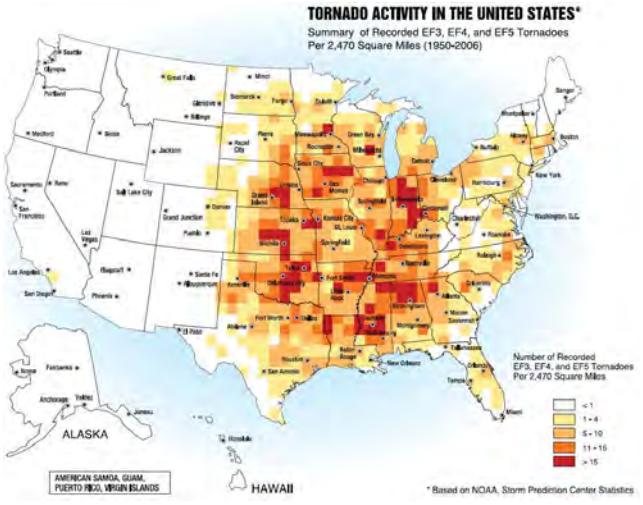


Severe Storms

- **Location:** High - More than 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences (Since 1996):**
  - **High Wind** – 138 Severe thunderstorms with high wind
  - **Hail** – 91 events
  - **Lightning** – 8 events
- **Probability:** High - 100% chance of occurrence each year
- **Magnitude/Severity:** Medium — Serious injury, major property damage ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
- **Severe**

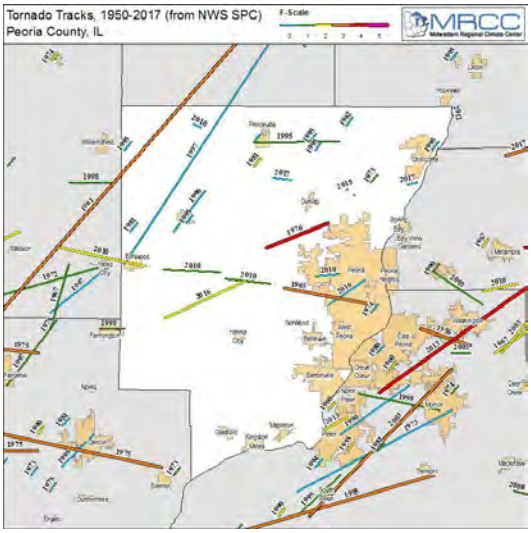
Tornado

- Tornado: violently rotating column of air pendant from a thunderstorm cloud that touches the ground
- Existing Capabilities: shelters, warning systems, NOAA radios, weather announcements, public education



Tornado

- **Location:** High - More than 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences (Since 1961):** 24 tornado events
- **Probability:** Medium - 12 to 60 occurrences in the last 60 years (20-100% chance of occurrence each year)
- **Magnitude/Severity:** High – Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.
- **Severe**



Peoria County, IL Hazard Mitigation Plan Update

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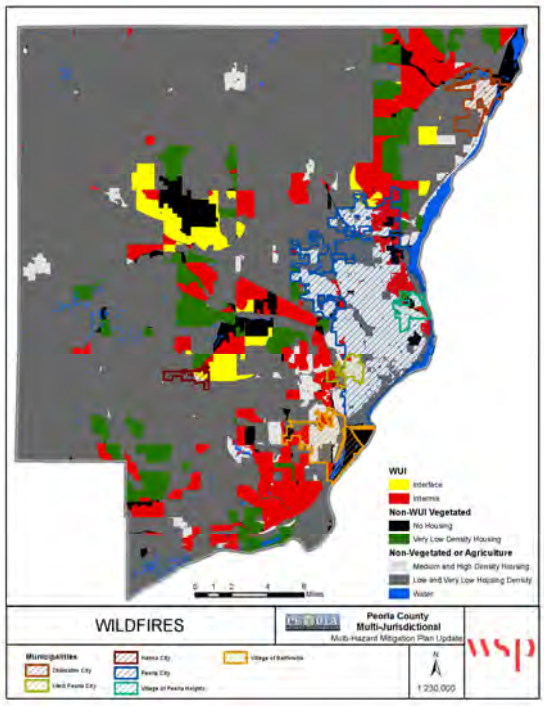
Wildfire

- Uncontrolled fire in combustible vegetation that occurs in the countryside or wilderness area
- WUI – Interface/Intermix Area
- Existing Capabilities: building codes; burn permits; TN Wildfire laws



Peoria County, IL Hazard Mitigation Plan Update

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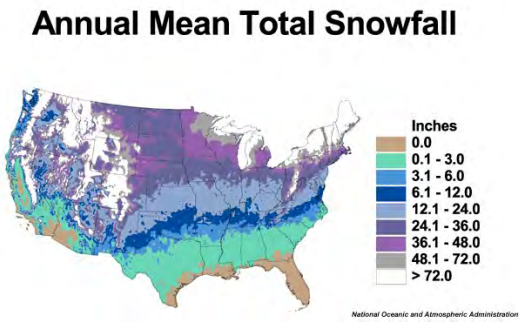
Wildfire

- **Location:** Medium – Between 10% to 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences:** 0 events noted in NCDC
- **Probability:** Low - 0 to 12 occurrences in the last 60 years
  (Less than 20% chance of occurrence each year)
- **Magnitude/Severity:** Low — Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
- **Guarded – Low?**

Severe Winter Storms

- Winter precipitation includes freezing rain, sleet, and snow (flurries, showers, blowing, blizzard)
- Property damage, power, phone outages, and closures of streets, highways, schools, businesses, and nonessential government operations



Severe Winter Storms

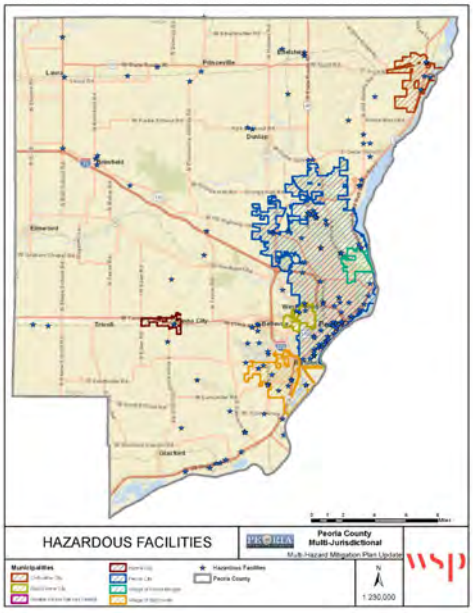
- **Location:** High - More than 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences (since 1996):** 63 winter storm events
- **Probability:** High - 100% chance of occurrence each year
- **Magnitude/Severity:** Medium — Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
- **Severe**

Hazardous Materials Incidents
- Fixed Facility
- Transportation Routes

- Hazard distances specified in the Non-Radioactive Hazardous Materials (NRHM) Routing guidelines
- Identify major transportation routes and apply distances

Hazmat Category	Hazard Distances (miles)
Explosives	1
Flammable Gas	0.5
Toxic Gases	5
Flammable/Combustible Liquid	0.5
Flammable Solid, Spontaneously Combustible, Dangerous when Wet	0.5
Oxidizer/Organic Peroxide	0.5
Poisonous (not gas)	5
Corrosive Material	0.5

Hazardous Materials Incidents



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Hazardous Materials Incidents - Transportation Routes

- Hazard distances specified in the Non-Radioactive Hazardous Materials (NRHM) Routing guidelines
- Identify major transportation routes and apply distances
- Add pipelines

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Hazardous Materials Incidents

- **Location:** Medium – Between 10% to 25% of the total population adversely affected should the hazard occur
- **Previous Occurrences (since 2006):** 14 highway incidents
- **Probability:** High - More than 60 occurrences in the last 60 years
  (100% chance of occurrence each year)
- **Magnitude/Severity:** Low — Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
- **High**

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Terrorism

- "The unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (28 C.F.R. Section 0.85).
- The threat of terrorism, both international and domestic, is ever present, and an attack is likely to occur when least expected.
  - **Location:** Low - Less than 10% of the total population adversely affected should the hazard occur
  - **Previous Occurrences: None reported**
  - **Probability:** Low - 0 to 12 occurrences in the last 60 years (Less than 20% chance of occurrence each year)
  - **Magnitude/Severity:** High — Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.
  - **Elevated**

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Active Shooter

- "An individual actively engaged in killing or attempting to kill people in a confined and populated area."
- Implicit in this definition is that the subject's criminal actions involve the use of firearms.
  - **Location:** Low - Less than 10% of the total population adversely affected should the hazard occur
  - **Previous Occurrences:** 4 active shooter events within Illinois

Highland Park July 4 parade shooting	Highland Park, Illinois	7/4/2022
Harry Pratt Co. warehouse shooting	Aurora, Illinois	2/15/2019
Mercy Hospital shooting	Chicago, Illinois	11/19/2018
Northern Illinois University shooting	DeKalb, Illinois	2/14/2008
Navistar shooting	Melrose Park, Illinois	2/5/2001

  - **Probability:** Low - 0 to 12 occurrences in the last 60 years (Less than 20% chance of occurrence each year)
  - **Magnitude/Severity:** High — Multiple deaths (more than 5), property destroyed or damaged beyond repair (More than $15,000,000), or more than 3 days of shutdown for essential facilities.
  - **Elevated**

Hazard Summary

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	Low *Chillicothe, Peoria Heights*
Landslide	Low	Medium	Low	Guarded	Low *Hanna City*
Wildfire	Medium	Low	Low	Guarded	
Dam/Levee Failure	Low	Low	High	Elevated	Low *Chillicothe, Hanna City, Peoria Heights, West Peoria*
Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter	Low	Low	High	Elevated	
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	Low – *Hanna City* Guarded – *Chillicothe, Peoria Heights*
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	

Hazard Summary

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	
Landslide	Low	Medium	Low	Guarded	
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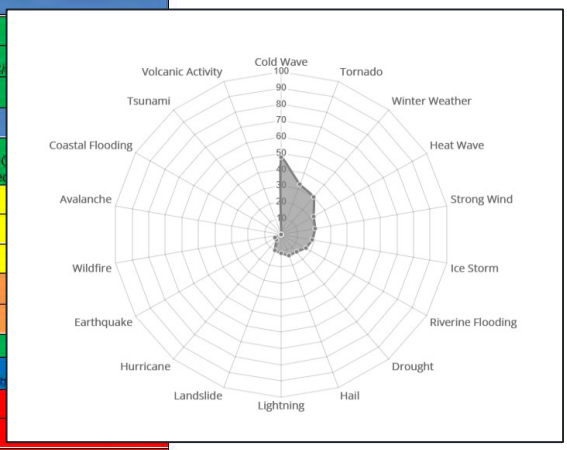
Dam/Levee Failure	Low	Low	High	Elevated	
Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter	Low	Low	High	Elevated	
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	



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Risk Assessment

- Inventory structures/parcels
- Inventory critical facilities
- Determine # of people in area
  - ✓ Census Block
- Identify development trends/constraints
- Identify historic, cultural, and natural resource areas
- Estimate the losses

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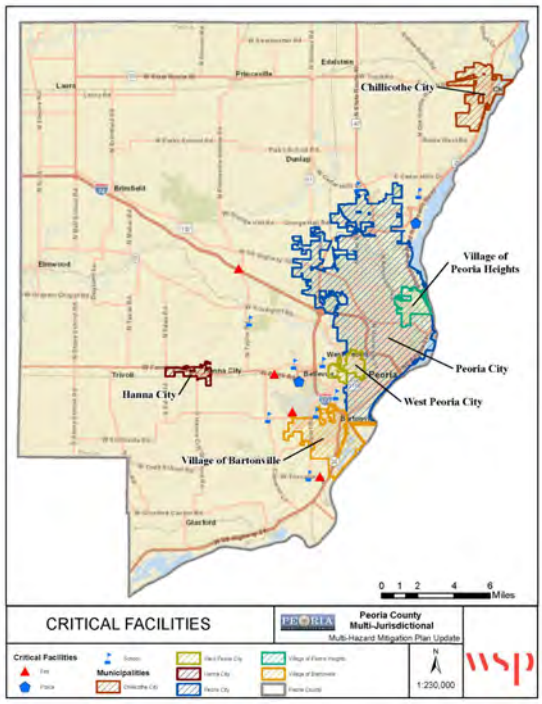
Critical Facilities

- EOC
- Fire Stations
- Police Stations
- Schools
- Nursing Homes
- Hospitals



Risk Assessment Methodology

	Vulnerability and Loss Estimation Method
Dam/Levee Failure	• Need inundation mapping for full loss estimation • Utilize FIRM for areas behind levee
Earthquake	• HAZUS-MH Loss Estimation • Newer version of HAZUS since 2010 plan, identified critical facilities
Flood	• HAZUS-MH Loss Estimation • Newer version of HAZUS since 2010 plan, FIRM Mapping, identified critical facilities
Land Subsidence	• GIS-based risk modeling • Identified Mine locations
Landslide	• GIS-based risk modeling • Areas of high susceptibility and high incidence
Wildfire	• GIS-based risk modeling • Wildfire Urban Interface and Intermix areas
Hazardous Materials Incidents	• GIS-based risk modeling • Tier-II facilities; Interstates and Railways – boundary area • Population and buildings within identified area
Terrorism Events	• Hypothetical Scenario Based Estimates • Analysis of vulnerable populations is aided by a program developed by Johns Hopkins University in 2006 called Electronic Mass Casualty Assessment and Planning Scenarios (EMCAPS) which utilizes scenarios developed by the Department of Homeland Security.

Mitigation Strategy

- Goals
  - 2018 Peoria County Plan
  - Tri-County Regional Mitigation Plan
  - 2018 Illinois State Mitigation Plan
- Action Items – Next HMPC Meeting
  - Status Update of Existing Action Items – homework!
  - Additional Action Items
  - Prioritization of all Action Items

2018 State Mitigation Goals

- Maintain and enhance the State of Illinois's capacity to continuously protect the lives, health, and safety of the public in Illinois from the impact and effects of natural hazards.
- Build and support local capacity and commitment to continuously become less vulnerable to natural hazards with a focus on Repetitive and Severe Repetitive Loss Properties.
- Improve coordination and communication with other relevant entities.
- Increase public understanding, support, education and demand for hazard mitigation planning and projects; to protect public services, utilities and critical facilities from potential damage from natural hazard events.

2018 Peoria County Mitigation Goals

Goal 1: Reduce the vulnerability of the people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Tri-County Regional Mitigation Goals

- Goal 1 - **Educate people** about the natural hazards they face and the ways they can protect themselves, their homes, and their businesses from those hazards.
- Goal 2 - **Protect the crops and lives, health, and safety of the people and animals** in the County from the dangers of natural hazards.
  - Goal 3 - Protect existing **infrastructure** and design new infrastructure (roads, bridges, utilities, water supplies, sanitary sewer systems, etc.) to be resilient to the impacts of natural hazards.
  - Goal 5 - Place a priority on protecting public services, **including critical facilities**, utilities, roads and schools.
  - Goal 6 - Preserve and protect the rivers and **floodplains** in our County.
  - Goal 8 - Protect historic, cultural, and natural resources from the effects of natural hazards.
- Goal 4 - Incorporate natural hazard mitigation into community plans, regulations and activities.
- Goal 7 - Ensure that new developments do not create new exposures to damage from natural hazards.

Project Schedule and Next Steps

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Project Schedule

Planning Process Timeline and Milestones

February

Meetings

- HMPC Meeting #2 – Risk Assessment Results and Mitigation Goals

Tasks

- February 27 – WSP to provide Draft Chapters 1, 2, and 3 for review/comment

March

Meetings

- HMPC Meeting #3 – New Mitigation Actions; Document Review Process
- Hold Public Meeting #2 – VIRTUAL - Document Review Process and Comment Period
- Tasks
- March 20 – WSP to provide Draft Chapters 4 and 5 for review/comment

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Thank you

WSP Planning Consultant & Contact Info

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Memorandum

To	Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee (HMPC)
From	Cindy Popplewell
Tel / Email	(303) 704-8939 / cindy.popplewell@wsp.com
Date	March 15, 2023

Subject Minutes from Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update – MEETING #3 Mitigation Strategy

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This memorandum presents the meeting minutes from the March 15, 2023, meeting for the *Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan* Update. It provides a review of the planning process and progress, recap of the hazard identification and risk assessment, review of mitigation goals, and mitigation plan update and mitigation ideas.

Attendees

Last Name	First Name	Organization
Abi-Akar	Reema	Tri-County Regional Planning Commission
Braun	Andrew	Peoria County
Bruner	Michael	Tri-County Regional Planning Commission
Leach	Tim	Greater Peoria Sanitary District
Marks	Jason	Director of Emergency Management, Peoria County EMA
McLaren	Amy	Peoria County
O'Neal	Tony (virtual)	Crisis Management Group, Ameren Illinois
Orr	Roger (virtual)	Street Superintendent, Village of Hanna City
Blumenshine	Joyce	Sierra Club
Nelson	Larry	City of Bartonville
Smith	Kyle	American Water
Marfell	David	American Water
Krider	Kinga	West Peoria

Goals

The goals of the 2018 State of Illinois Hazard Mitigation Plan, the 2018 Peoria County Hazard Mitigation Plan, and the 2019 Tri-County Hazard Mitigation Plan were reviewed. The following updated goals were agreed upon by the HMPC:

Goal 1: Reduce the vulnerability of current and future people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Goal 4 - Incorporate natural and man-made hazard mitigation into community plans, regulations and activities.

Mitigation Actions

The HMPC Committee discussed the development of new mitigation actions utilizing the following criteria:

- Must have two actions for every high and moderate priority hazard
  - "All hazards" actions count as one project for each hazard
  - Emergency Services actions do not count toward this requirement
- Must have at least one Structural or Property Protection action
- CRS communities should have actions in 5 of the 6 FEMA mitigation categories to maximize credit

FEMA's Mitigation ideas guidance document was provided as a reference with example mitigation projects. A variety of mitigation ideas was then presented to the HMPC for each of the hazard types.

Next Steps

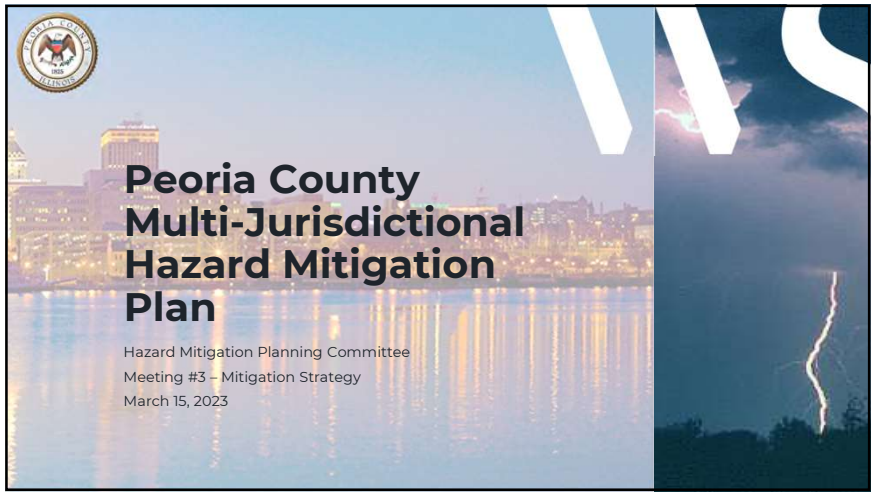
<u>HMPC Members/Attendees</u>

- Review draft documents once received from WSP.
- Finalize and prioritize Mitigation Actions

<u>WSP</u>

- Finalize Draft Document

Attachment A – Powerpoint Presentation



Peoria County Multi-Jurisdictional Hazard Mitigation Plan

Hazard Mitigation Planning Committee
Meeting #3 – Mitigation Strategy
March 15, 2023

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Introductions

- Welcome!
- Opening Remarks

Peoria County Project Leads

Reema Abi-Akar, Tri-County Regional Planning Commission

WSP Planning Consultant & Contact Info

Cindy Popplewell – cindy.popplewell@wsp.com

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Agenda

Review
- Planning process and our progress

Hazard Identification and Risk Assessment (HIRA)
- Recap

Review our Update to Mitigation Goals

Mitigation Action Plan Update & Mitigation Ideas

Project Schedule and Next Steps

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10 Step Planning Process

DMA Process	CRS Process
Phase I – Organize Resources	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4. Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5. Assess the Problem
Phase III – Mitigation Strategy	
§201.6(c)(3)(i)	Step 6. Set Goals
§201.6(c)(3)(ii)	Step 7. Review Possible Activities
§201.6(c)(3)(iii)	Step 8. Draft an Action Plan
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate, and Revise the Plan

Peoria County Hazard Mitigation Plan Public Survey

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Phase II: Risk Assessment

Hazards Profiled
Dam/Levee Failure
Drought
Earthquake
Extreme Temperatures
Flood
Land Subsidence/Sinkhole
Landslide
Severe Thunderstorm (hail, lightning, and wind)
Severe Winter Storms
Tornado
Wildfire
Hazardous Materials Incidents
Terrorism Event
Active Shooter

Profile the Hazards:

- Hazard Description
- Geographic Location
- Magnitude/Severity
- Past Occurrences
- Probability of Future Occurrence
- Future Conditions

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- **Hazard Description**
- **Geographic Location**
  - High (18) – More than 25% of population
  - Medium (12) – 10 to 25% of population
  - Low (6) – less than 10% of population
- **Magnitude/Severity**
  - High (18) – 5+ fatalities, property destroyed/damaged ($15,000,000), or 3+ days of shutdown for essential facilities.
  - Medium (12) – Serious injuries (more than 50), property destroyed/damaged ($1M to $15M), or 24-72 hrs of shutdown for essential facilities.
  - Low (6) – Minor injuries (under 50), property destroyed/damaged (under $1M), or less than 24 hr shutdown for essential facilities.
- **Past Occurrences**
- **Probability of Future Occurrence**
  - High (18) – More than 60 occurrences
  - Medium (12) – 13 to 60 occurrences
  - Low (6) – 0 to 12 occurrences
- **Future Conditions**

- **Planning Significance**
  - Severe – 49 to 60 points
  - High - 37 to 48 points
  - Elevated – 25 to 36 points
  - Guarded – 13 to 24 points
  - Low – 0 to 12 points

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Hazard Summary

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating Variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Wildfire	Medium	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	Low *Chillicothe, Peoria Heights*
Landslide	Low	Medium	Low	Guarded	Low *Hanna City*
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Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter				Elevated	
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	Low – *Hanna City*; Guarded – *Chillicothe, Peoria Heights*
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	

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2023 Peoria County Mitigation Goals

Goal 1: Reduce the vulnerability current and future people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
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Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Goal 4 - Incorporate natural and man-made hazard mitigation into community plans, regulations and activities.

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Mitigation Action Plan Requirements

- Must have two actions for every high and moderate priority hazard
  - "All hazards" actions count as one project for each hazard
  - Emergency Services actions do not count toward this requirement
- Must have at least one Structural or Property Protection action
- CRS communities should have actions in 5 of the 6 FEMA mitigation categories to maximize credit

FEMA Mitigation Categories:

- Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Public Education & Awareness

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Mitigation Action Plan Requirements

Scoring Example

	Severe Winter Storms	Tornado	Severe Thunderstorms	Flood	Extreme Temperatrues	Drought	Dam/Levee Failure	Landslide	Land Subsidence	Wildfire	Earthquake	Hazardous Materials Incidents	Active Shooter	Terrorism	All Hazard
Bartonville	1	1		7	1				2						4
Chillicothe				8											5
Greater Peoria Sanitary District				3			3	1	1						1
Hanna City		1		4		1									7
City of Peoria				5			1								7
Peoria Heights				8											5
Peoria County	1			14		1	3		1		1	1			14

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Mitigation Ideas

- FEMA resource
- Provides example mitigation actions for 16 natural hazards
- Actions are categorized into four types:
  - Local Planning & Regulations
  - Structure & Infrastructure Projects
  - Natural Systems Protection
  - Education & Awareness Programs

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Mitigation Ideas – Multi-Hazard Actions

- Limit or regulate development in high-hazard areas:
  - Encourage cluster development to position lots outside hazard areas
  - Prohibit capital improvements or critical facilities development in hazard areas
  - Protect hazard areas with conservation easements
  - Designate hazard areas and development restrictions in the zoning ordinance
  - Develop a post-disaster redevelopment plan and/or post-disaster recovery ordinance
- Create local funding mechanisms for mitigation
- Install backup generators for critical facilities
- Create a public education campaign

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Mitigation Ideas – Severe Winter Weather

- Installing redundancies and loopfeeds.
- Ensuring the development and enforcement of building codes for roof snow loads.
- Retrofitting public buildings to withstand snow loads and prevent roof collapse.
- Identifying specific at-risk populations that may be exceptionally vulnerable in the event of long-term power outages.
- Including safety strategies for severe weather in driver education classes and materials.

Peoria County, IL Hazard Mitigation Plan Update

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Mitigation Ideas - Tornado

- Require wind-resistant building techniques such as structural bracing, straps and clips, anchor bolts, etc.
- Encourage construction of safe rooms at manufactured home parks, fairgrounds, shopping malls, and other vulnerable public structures

Peoria County, IL Hazard Mitigation Plan Update

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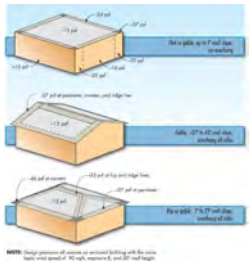
Mitigation Ideas – Severe Thunderstorms

- Encourage structural bracing, shutters, laminated glass, hail resistant roof coverings and sheathing
- Install lightning rods and grounding on communication infrastructure and critical facilities
- Install surge protection on critical electronic equipment
- Encourage wind-resistant roof shapes and architectural designs that limit potential for wind-borne debris
- Establish standards for tree pruning around power lines



Peoria County, IL Hazard Mitigation Plan Update

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Mitigation Ideas - Flood

- Acquisition or relocation of high-risk or repetitive loss structures
- Use land use planning to guide development away from flood prone areas
- Establish watershed-based planning initiatives to address flood hazards with neighboring jurisdictions
- Install, re-route, or increase storm drainage system capacity
- Conduct regular drainage system maintenance
- Limit allowable impervious surface
- Protect and preserve wetlands
- Adopt higher regulatory standards

Peoria County, IL Hazard Mitigation Plan Update

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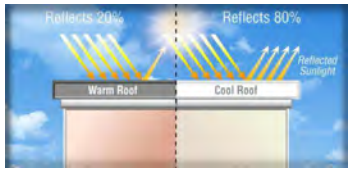
Mitigation Ideas – Extreme Temperatures

- Increase tree plantings around buildings and public rights-of-way to increase shade
- Assist vulnerable populations by providing and publicizing the availability of cooling centers
- Encourage the installation of green roofs and/or cool roofs

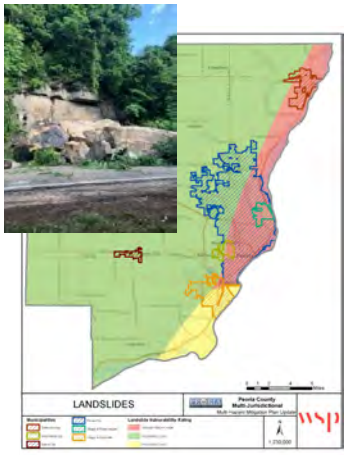


Mitigation Ideas - Drought

- Develop a drought emergency plan with criteria for drought-related actions
- Establish mandatory water conservation measures during drought emergencies
- Encourage drought-tolerant landscaping such as xeriscaping
- Promote permeable paving to reduce runoff and promote groundwater recharge
- Educate residents on water saving measures
- Encourage the installation of graywater systems

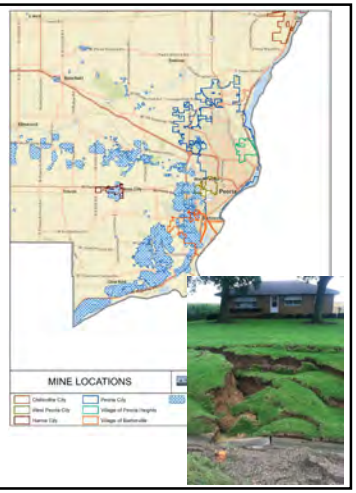
Mitigation Ideas - Landslide

- Creating a plan to implement reinforcement measures in high-risk areas.
- Incorporating economic development activity restrictions in high-risk areas.
- Applying soil stabilization measures, such as planting soil-stabilizing vegetation on steep, publicly-owned slopes.
- Installing catch-fall nets for rocks at steep slopes near roadways.



Mitigation Ideas - Subsidence

- Restricting development in areas with soil that is considered poor or unsuitable for development.
- Educating design professionals about where to locate information on subsidence rates and maps.
- Monitoring areas where natural resources are removed from underground.
- Promoting community awareness of subsidence risks and impacts.
- Offering GIS hazard mapping online for residents and design professionals.



Mitigation Ideas - Wildfire

- Address mitigation during permitting of new development through access, signage, fire hydrants, water availability, vegetation management, and special building construction standards
- Implement a fuels management program
- Join the Firewise Program
- Create defensible zones around power lines, oil and gas lines, and other infrastructure systems

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Project Schedule and Next Steps

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Project Schedule

Planning Process Timeline and Milestones

March

Meetings

- HMPC Meeting #3 – New Mitigation Actions; Document Review Process
- Hold Public Meeting #2 – VIRTUAL - Document Review Process and Comment Period

Tasks

- March 20 – WSP to provide Draft Plan Document

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Thank you

WSP Planning Consultant & Contact Info

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Last Name	First Name	Jurisdiction	Organization	Email	Signature
Abi-Akar	Reema	Stakeholder	Tri-County Regional Planning Commission	rabiakar@tricountyrpc.org	
Baylor	Brian	Hanna City	Village of Hanna City	administrator@hannacityil.com	
Blumenshine	Joyce	Stakeholder	Sierra Club	joblumen@yahoo.com	
Braun	Andrew	Peoria County	Peoria County	abraun@peoriacounty.org	
Bruner	Michael	Stakeholder	Tri-County Regional Planning Commission	mbruner@tricountyrpc.org	
Callear	John	Stakeholder	Home Builders Association	candlhomes@hotmail.com	
Cooper	Jeremy	Chillicothe	City of Chillicothe - Police Departme	jcooper@chillicothepd.org	
Corrie	Richard	Stakeholder	Lutheran Hillside Village	rick.gorrie@lssliving.org	
Crider	Beth	Stakeholder	Peoria Regional Office of Education	bcrider@peoriaroe.org	
DeWitte	Dori	Stakeholder	Women's Council of Realtors	doridewitte@gmail.com	
Erbentrout	Troy	Stakeholder	OSF St. Francis	Troy.W.Erbentraut@osfhealthcare.org	
Haines	Cody	Peoria Park District	Peoria Park District	chaines@peoriaparks.org	
Hathaway	Guy	Stakeholder	American Red Cross	Hathaway_Guy@yahoo.com	
Heiden	Shelly	Stakeholder	Lutheran Hillside Village	shelly.heiden@lssliving.org	
Johnson	Brian	Greater Peoria Sanitary Dist	Greater Peoria Sanitary District	bjohnson@gpsd.org	
Kirchhofer	Patrick	Stakeholder	Peoria County Farm Bureau	pcfbmanager@sbcglobal.net	
Krider	Kinga	Peoria - West Peoria	City of West Peoria	administrator@cityofwestpeoria.com	
Krolicki	Ryan	Stakeholder	Illinois American Water	ryan.krolicki@amwater.com	
Krost	Mike	Stakeholder	Friends of River Beach Drive	mkrost@mchsi.com	

Leach	Tim	Greater Peoria Sanitary Dist	Greater Peoria Sanitary District	tleach@gpsd.org	
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Maroon	Sie	Peoria	City of Peoria	smaroon@peoriagov.org	
McLaren	Amy	Stakeholder	Peoria County	amclaren@peoriacounty.org	
Meyer	Patrick	Bartonville	Village of Bartonville	pmeyer@mtco.com	
Miller	Mike	Peoria Park District	Peoria Park District	mmiller@peoriaparks.org	
Naven	Joshua	Peoria	City of Peoria	jnaven@peoriagov.org	
Nelson	Larry	Bartonville	Bartonville ESDA	lcnelson@mtco.com	
O'Neal	Tony	Stakeholder	Ameren Illinois	e132606@ameren.com	
Orr	Nick	Stakeholder	OSF Healthcare Systems	Nicholas.V.Orr@osfhealthcare.org	
Rezba	Eric	Stakeholder	American Red Cross	eric.rezba@redcross.org	
Rogers	Lisa	Stakeholder	Friends of River Beach Drive	lsealine@yahoo.com	
Ruhland	Terry	Stakeholder	Local Homebuilders Association	terry@plumcreekbuilders.com	
Shake	Melody	Stakeholder	Heartland Health Services	m.shake@hhsil.com	
Stanley	Heather	Stakeholder	National Weather Service	heather.stanley@noaa.gov	
Sutton	Dustin	Peoria Heights	Village of Peoria Heights	dsutton@heightspd.com	
Tamm	Alan	Stakeholder	US Army Corps of Engineers	alan.tamm@usace.army.gov	
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Witbracht	Sarah	Peoria Heights	Village of Peoria Heights	sarah.witbracht@peoriaheights.org	
Smith	Kyle	IL AW		Kyle.Smith2@Amwater.com	

Last Name	First Name	Jurisdiction	Organization	Email	Signature
Abi-Akar	Reema	Stakeholder	Tri-County Regional Planning Commission	rabiakar@tricountyrpc.org	
Baylor	Brian	Hanna City	Village of Hanna City	administrator@hannacityil.com	
Blumenshine	Joyce	Stakeholder	Sierra Club	joblumen@yahoo.com	
Braun	Andrew	Peoria County	Peoria County	abraun@peoriacounty.org	
Bruner	Michael	Stakeholder	Tri-County Regional Planning Commission	mbruner@tricountyrpc.org	
Callear	John	Stakeholder	Home Builders Association	candlhomes@hotmail.com	
Cooper	Jeremy	Chillicothe	City of Chillicothe - Police Departme	jcooper@chillicothepd.org	
Corrie	Richard	Stakeholder	Lutheran Hillside Village	rick.gorrie@lssliving.org	
Crider	Beth	Stakeholder	Peoria Regional Office of Education	bcrider@peoriaroe.org	
DeWitte	Dori	Stakeholder	Women's Council of Realtors	doridewitte@gmail.com	
Erbentrout	Troy	Stakeholder	OSF St. Francis	Troy.W.Erbentraut@osfhealthcare.org	
Haines	Cody	Peoria Park District	Peoria Park District	chaines@peoriaparks.org	
Hathaway	Guy	Stakeholder	American Red Cross	Hathaway_Guy@yahoo.com	
Heiden	Shelly	Stakeholder	Lutheran Hillside Village	shelly.heiden@lssliving.org	
Johnson	Brian	Greater Peoria Sanitary Dist	Greater Peoria Sanitary District	bjohnson@gpsd.org	
Kirchhofer	Patrick	Stakeholder	Peoria County Farm Bureau	pcfbmanager@sbcglobal.net	
Krider	Kinga	Peoria - West Peoria	City of West Peoria	administrator@cityofwestpeoria.com	
Krolicki	Ryan	Stakeholder	Illinois American Water	ryan.krolicki@amwater.com	
Krost	Mike	Stakeholder	Friends of River Beach Drive	mkrost@mchsi.com	

Leach	Tim	Greater Peoria Sanitary Dist	Greater Peoria Sanitary District	tleach@gpsd.org	
Learned	Julie	Stakeholder	Red Cross	Julie.Learned@redcross.org	
Marks	Jason	Peoria County	Peoria County	jmarks@peoriacounty.org	
Maroon	Sie	Peoria	City of Peoria	smaroon@peoriagov.org	
McLaren	Amy	Stakeholder	Peoria County	amclaren@peoriacounty.org	
Meyer	Patrick	Bartonville	Village of Bartonville	pmeyer@mtco.com	
Miller	Mike	Peoria Park District	Peoria Park District	mmiller@peoriaparks.org	
Naven	Joshua	Peoria	City of Peoria	jnaven@peoriagov.org	
Nelson	Larry	Bartonville	Bartonville ESDA	lcnelson@mtco.com	
O'Neal	Tony	Stakeholder	Ameren Illinois	e132606@ameren.com	
Orr	Nick	Stakeholder	OSF Healthcare Systems	Nicholas.V.Orr@osfhealthcare.org	
Rezba	Eric	Stakeholder	American Red Cross	eric.rezba@redcross.org	
Rogers	Lisa	Stakeholder	Friends of River Beach Drive	lsealine@yahoo.com	
Ruhland	Terry	Stakeholder	Local Homebuilders Association	terry@plumcreekbuilders.com	
Shake	Melody	Stakeholder	Heartland Health Services	m.shake@hhsil.com	
Stanley	Heather	Stakeholder	National Weather Service	heather.stanley@noaa.gov	
Sutton	Dustin	Peoria Heights	Village of Peoria Heights	dsutton@heightspd.com	
Tamm	Alan	Stakeholder	US Army Corps of Engineers	alan.tamm@usace.army.gov	
Traenkenschuff	Gerald	Stakeholder	Retired	GerryT1@comcast.net	
Urban	Kathi	Peoria County	Peoria County	kurban@peoriacounty.org	

Weick	Kerilyn	Peoria	City of Peoria	kweick@peoriagov.org	
Weindel	Jack	Peoria County	Peoria County	jweindel@peoriacounty.org	
Witbracht	Sarah	Peoria Heights	Village of Peoria Heights	sarah.witbracht@peoriaheights.org	
Marfell	David	~~IL American Water~~ Stakeholder	IL American Water	david.marfell@amwater.com	

1. Summary

Meeting title	Peoria County Hazard Mitigation Plan - MITIGATION STRATEGY MEETING
Attended participants	3
Start time	3/15/23, 1:06:35 PM
End time	3/15/23, 2:40:06 PM
Meeting duration	1h 33m 31s
Average attendance time	1h 1m 35s

2. Participants

Name	First Join	Last Leave	In-Meeting Duration	Email	Participant ID (UPN)	Role
Popplewell, Cindy	3/15/23, 1:27:32 PM	3/15/23, 2:40:06 PM	1h 12m 34s	cindy.popplewell@woodplc.com	cindy.popplewell@woodplc.com	Organizer
ONeal, Tony S	3/15/23, 1:28:51 PM	3/15/23, 2:29:25 PM	1h 33s	AONeal@ameren.com	E132606@ameren.com	Presenter
Roger Orr	3/15/23, 1:34:39 PM	3/15/23, 2:26:18 PM	51m 38s	streets@hannacityil.com	streets@hannacityil.com	Presenter

3. In-Meeting Activities

Name	Join Time	Leave Time	Duration	Email	Role
Popplewell, Cindy	3/15/23, 1:27:32 PM	3/15/23, 2:40:06 PM	1h 12m 34s	cindy.popplewell@woodplc.com	Organizer
ONeal, Tony S	3/15/23, 1:28:51 PM	3/15/23, 2:29:25 PM	1h 33s	AONeal@ameren.com	Presenter
Roger Orr	3/15/23, 1:34:39 PM	3/15/23, 2:26:18 PM	51m 38s	streets@hannacityil.com	Presenter

Memorandum

To	Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee (HMPC)
From	Cindy Popplewell
Tel / Email	(303) 704-8939 / cindy.popplewell@wsp.com
Date	May 23, 2023

Subject Minutes from Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update – MEETING #4 Plan Document Overview

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For the May 23, 2023 meeting of the *Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan*, the plan document was presented to the HMPC walking through each Section, preparing the HMPC for the document review process.

The HMPC members were asked to return all comments to Cindy Popplewell within 2 weeks for incorporation into the final document. The final document will be submitted to the State on June 9, 2023.

Attendees

Last Name	First Name	Organization
Abi-Akar	Reema	Tri-County Regional Planning Commission
Braun	Andrew	Peoria County
Bruner	Michael	Tri-County Regional Planning Commission
Leach	Tim	Greater Peoria Sanitary District
Marks	Jason	Director of Emergency Management, Peoria County EMA
McLaren	Amy	Peoria County
Urban	Kathy	Peoria County
Weindel	Jack	Peoria County
Crider	Beth	Peoria Regional Office of Education
Baylor	Brian	Hanna City
Maroon	Sie	City of Peoria
O'Neal	Tony	Crisis Management Group, Ameren Illinois
Krider	Kinga	West Peoria

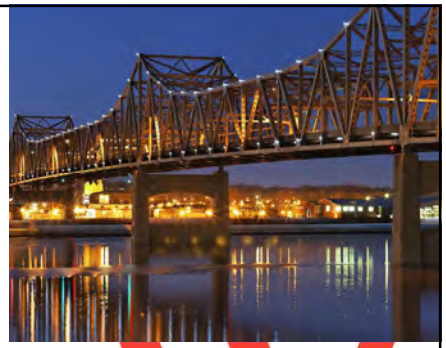
C.2 Planning Step 2: Involve the Public

Table C.2 – Public Meeting Topics, Dates, and Locations

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
Public Meeting #1	1) Introduction to DMA and CRS planning process and justification for planning 2) Review of preliminary risk assessment information 3) Plan website and public survey overview	Feb 1st, 2023 5:30 p.m.	Zoom Video Conference Call
Public Meeting #2	1) Review Draft Hazard Mitigation Plan 2) Solicit comments and feedback	March 15, 2023 5:30 p.m.	In person

C.2.1 Public Meeting Presentation and Publicity

Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan



Public Meeting 1 – February 1, 2022

1

Agenda

- Introductions
- Trends in Disasters
  - Why plan?
- Community Rating System (CRS) Program
  - Basics of the CRS Program
  - Benefits of the CRS Program
- Disaster Mitigation Act (DMA) Planning Requirements
- Activity 510: Floodplain Management Planning (FMP) Process
  - 10 Step Planning Process
- How to Stay Involved

2

Introductions

3

Trends in Disasters

4

Trends in Disaster

Trends resulting in increased costs for disaster response and recovery:

- Population and community growth
  - More people living in hazardous areas
  - Greater exposure to risk
    - People, infrastructure, buildings
- More hazards (technological, civil, human caused, climate change)
- More disaster declarations

5

Costliest Disasters Across the U.S. (since 1980)

Disaster	Primary Location	Total Estimated Cost*
Hurricane Katrina (2005)	LA, MS, AL	$180.0B
Hurricane Harvey (2017)	TX	$143.8B
Hurricane Maria (2017)	Puerto Rico, St. Croix	$103.5B
Hurricane Sandy (2012)	NY, NJ + 5 others	$80.0B
Hurricane Ida (2021)	LA	$76.5B
Hurricane Irma (2017)	FL, SC, U.S. BVI	$57.5B
Hurricane Andrew (1992)	FL, LA	$54.3B
U.S. Drought/Heatwave (1988)	Across U.S.	$49.0B
Midwest Flooding (1993)	Central U.S.	$41.7B
Hurricane Ike (2008)	TX, LA + 9 others	$39.0B
U.S. Drought/Heatwave (2012)	Across U.S.	$37.5B

*CPI adjusted to 2022 dollars

Majority are Flood Related Hazards:
9 Hurricanes
1 Flood
2 Droughts

6

Costliest Disasters Across Kentucky (since 1980)

Disaster	Location	Estimated Cost
Hurricane Katrina (2004)	KY, AL, MS + five more	$186.3B
Hurricane Ida (2021)	KY, LA, PA, NY, NJ	$78.7B
U.S. Drought/Heat Wave (1988)	Across the U.S.	$50.6B
Hurricane Ike (2008)	KY, TX, LA + seven more	$40.2B
U.S. Drought/Heat Wave (2012)	KY, CA, AR + 20 more	38.7B
Hurricane Ivan (2004)	KY, IA, MI + 12 more	$31.6B
Northwest, Central, Eastern Winter Storm/Cold Wave (2021)	KY, TX, OK + 11 more	$25.2B
Southern Plains/Southwest Drought/Heat Wave (2011)	KY, TX, OK, NM, AZ, LA	$15.9B
U.S. Drought (2002)	Across U.S.	$14.9B
Southeast/Ohio Valley/Midwest Tornadoes (2011)	KY, AL, GA + ten more	$13.3B
Midwest/Southeast Tornadoes (2011)	KY, AL, IL + ten more	$11.7B

*CPI adjusted to 2022 dollars

10 of the 11 costliest disasters occurred in the last 20 years:
- 4 Hurricanes
- 3 Droughts
- 2 Tornadoes
- 1 Winter Storm/Cold Wave

7

Why addressing these trends is a priority

- The spiraling costs of response and recovery
  - The cost of "doing nothing" is too much
- Many events are predictable and repetitive
- Loss reduction activities can be undertaken
  - They work
  - They're cost effective and environmentally sound
  - There are funds available to help
- There are legal and moral responsibilities

National Benefit-Cost Ratio Per Peril	Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio	6:1	4:1
Riverine Flood	7:1	5:1
Hurricane Surge	Too few grants	7:1
Wind	5:1	5:1
Earthquake	3:1	4:1
Wildland-Urban Interface Fire	3:1	4:1

The average benefit-cost ratio of federally funded mitigation projects is 6:1

8

Why Plan? Break the Cycle

Damage ➡ Rebuild ➡ Damage ➡ Rebuild

Mitigation: Any **sustained** action taken to **reduce or eliminate long-term risk** to human life and property from hazards

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Community Rating System Program

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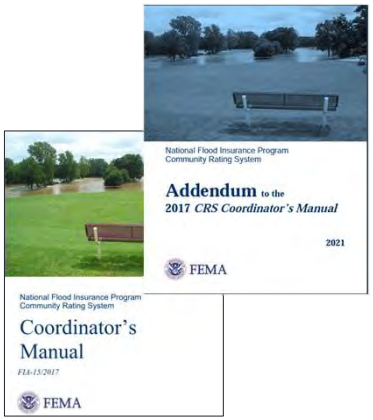
Community Rating System

FEMA NFIP Voluntary Program

- Based on ISO Fire Insurance Rating Program
- 10 Classes
- Point based
- Higher standards
- 5% premium discount for every 500 points



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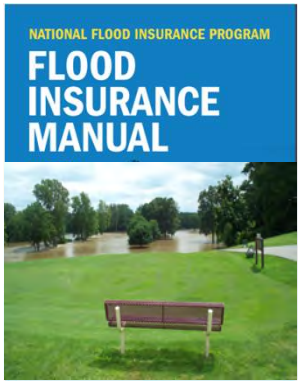
Community Rating System

Goals of the Program

1. Reduce flood damage to insurable property
2. Strengthen and support the insurance aspects of the NFIP
3. Encourage a comprehensive approach to floodplain management



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Community Rating System

Table 110-1. CRS classes, credit points, and premium discounts.

CRS Class	Credit Points (cT)	Premium Reduction	
		In SFHA	Outside SFHA
1	4,500+	45%	10%
2	4,000–4,499	40%	10%
3	3,500–3,999	35%	10%
4	3,000–3,499	30%	10%
5	2,500–2,999	25%	10%
6	2,000–2,499	20%	10%
7	1,500–1,999	15%	5%
8	1,000–1,499	10%	5%
9	500–999	5%	5%
10	0–499	0	0

SFHA: Zones A, AE, A1–A30, V, V1–V30, AO, and AH

Outside the SFHA: Zones X, B, C, A99, AR, and D

Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.

Some minus-rated policies may not be eligible for CRS premium discounts.

Premium discounts are subject to change.

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Disaster Mitigation Act (DMA) Planning Requirements

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Disaster Mitigation Act Planning Process

Planning Requirements

- DMA Planning – What it is, and Why it's important
  - Provides continued eligibility for mitigation funds, pre- and post-disaster funding
  - Guides mitigation activities in a coordinated & economical manner
  - Integrates into other existing planning mechanisms
  - Directs future development and informs wise planning and building decisions
  - Reduces losses
  - Makes communities more disaster resistant

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Disaster Mitigation Act 2000

Planning Requirements

Hazard Mitigation Plans

- 44CFR 201.6
  - Outlines the planning requirements that local governments must follow
  - Four phases in the planning process
    - 1: Organize Resources
    - 2: Risk Assessment
    - 3: Develop a Mitigation Plan
    - 4: Adoption and Implementation

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Disaster Mitigation Act of 2000

Planning Requirements

Blended Planning Process

1. Disaster Mitigation Act (DMA)
2. Community Rating System (CRS)

Hazard Mitigation Planning

- Completed plan will meet the requirements of both FEMA Programs

DMA Process	CRS Process
Phase I – Organize Resources	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4. Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5. Assess the Problem
Phase III – Mitigation Strategy	
§201.6(c)(3)(i)	Step 6. Set Goals
§201.6(c)(3)(ii)	Step 7. Review Possible Activities
§201.6(c)(3)(iii)	Step 8. Draft an Action Plan
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate, and Revise the Plan

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Floodplain Management Planning Process

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Floodplain Management Plan

10-Step Planning Process

Phase I: Organize Resources

1. Get organized
2. Plan for public involvement
3. Coordinate with other departments and agencies

Phase II: Risk Assessment

4. Identify the hazard(s)
5. Assess the risks

Phase III: Develop a Mitigation Plan

6. Set planning goals
7. Review mitigation alternatives
8. Draft and action plan

Phase IV: Adoption and Implementation

9. Adopt
10. Implement the plan, evaluate its worth, and revise as needed

The purpose of a floodplain management plan is to reduce potential losses from future disasters

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Floodplain Management Planning Process

Phase I: Organize Resources

1. **Get organized**
   - Convene the FMPC of local staff, citizens & stakeholders
2. **Plan for public involvement**
   - Two public meetings
   - Include citizen/stakeholder representation on the FMPC
   - Other opportunities
     - Post info on County/City website
     - Conduct a questionnaire/survey
     - Information booth at local event
     - Local news article
3. **Coordinate with other departments and agencies**
   - Identify stakeholders and request data/input

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Public Survey

Floodplain Management Plan Survey

Access the survey here:
https://forms.office.com/r/GjapUn2eZT

Scan code with cell phone to access survey

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Floodplain Management Planning Process

Phase II: Risk Assessment

4. **Identify the hazards**
   - Review hazards from the state HMP, disaster declarations, etc.
5. **Assess the risks**
   - **What assets will be affected?** Quantify exposure of people, property, critical facilities and infrastructure.
   - **How significant are the risks?** Profile the hazards and define the location, magnitude, past occurrences, and future probability of each hazard.
   - **How will future changes affect risk?** Evaluate the potential impacts of future growth and development, climate change, and other future conditions.
   - **What mitigation is feasible?** Evaluate existing local capability to implement mitigation projects.

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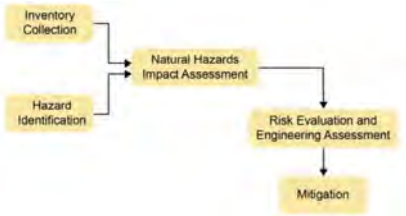
Floodplain Management Planning Process

Phase II: Risk Assessment / CRS Steps 4 & 5

Conceptual Steps in Assessing & Mitigating Losses

- **Inventory Collection**
  - County parcel data
  - Critical facilities, other assets
- **Hazard Identification**
  - Dam Failure
  - Flood: 1%/0.2% year
  - Localized Flooding
  - Repetitive Flooding
  - Stream Bank Erosion
- **Vulnerability Assessment**
  - Damage/impacts to buildings
  - Damage/impact to critical facilities



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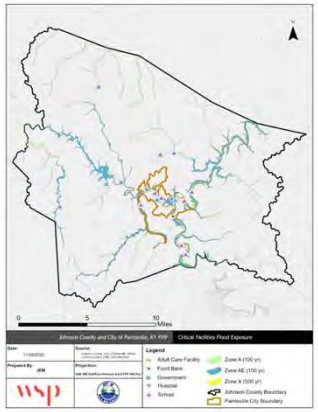
Identified Hazards

- Dam Failure
- Flood: 1%/0.2% year
- Localized Flooding
- Repetitive Flooding
- Stream Bank Erosion

Critical Facilities and Flood Exposure



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Floodplain Management Planning Process

Phase III: Develop a Mitigation Plan/ CRS Steps 6, 7, & 8

6. Set planning goals

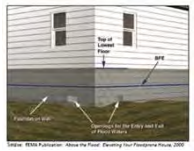
- Develop goals to guide the identification of mitigation projects

7. Review Mitigation Alternatives

- What mitigation strategies could be pursued? What projects have already been implemented?

8. Draft an Action Plan

- Identify and prioritize actions for implementation. Determine what department is responsible, how will each action will be funded, when will each action be completed, etc.



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Floodplain Management Planning Process

Mitigation Action Plan

- Actions across all six FEMA mitigation categories
  - Prevention
  - Property Protection
  - Structural Projects
  - Emergency Services
  - Natural Resource Protection
  - Public Education
- Actions for all identified hazards

Comprehensive List of Actions

- Use of CRS higher regulatory standards to improve floodplain regulations
- Improve stormwater drainage
- Provide public info on flood protection for homeowners
- Regular stream cleanup projects
- Review and update post-flood mitigation strategies
- Prepare flood stage forecast maps for the watersheds

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Floodplain Management Planning Process

Phase IV: Develop a Mitigation Plan/ CRS Steps 6, 7, & 8

9. Adopt the Plan

- Develop goals to guide the identification of mitigation projects

10. Implement the Plan

- Assign an overall project manager
- Integrate actions into staff work plans
- Monitor changes in vulnerability
- Report on progress and publicize successes
- Revise the plan as necessary every 5 years

Quarterly meetings of the FMPC to review the plan are recommended to encourage implementation and maximize credit under CRS Step 10

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How to Stay Involved

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How to Stay Involved

Public Survey

- Share your input on hazards risks & vulnerabilities
- Suggest mitigation activities

Final Public Meeting

- Another meeting will be held at the end of the planning process to present the draft plan

Draft Plan

- Review the draft plan and provide feedback to the planning committee

Scan the QR code above or visit
https://forms.office.com/r/GjapUn2eZT
for the public survey!

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Thank you

wsp.com

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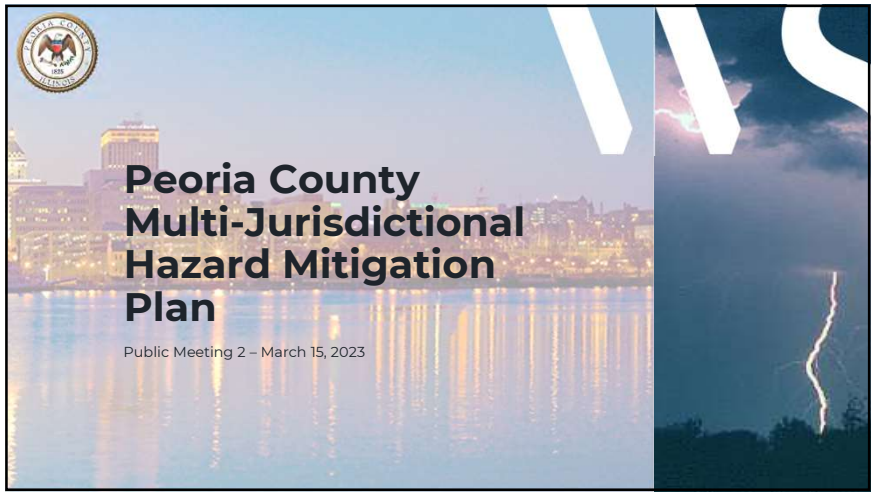

Peoria County Multi-Jurisdictional Hazard Mitigation Plan

Public Meeting 2 – March 15, 2023

1

Agenda

- Where we are in the Planning Process
- Structure of the Mitigation Plan Document
- Participation in the Planning Process
- Review of Key Plan Components
  - Planning Process
  - Hazards & Priority Risk Index
  - Goals & Objectives
  - Mitigation Actions
- Plan Implementation and Maintenance
- Next Steps and Questions/Comments

2

2

Planning Process

DMA Process	CRS Process
Phase I – Organize Resources	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4. Assess the Hazard
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§201.6(c)(3)(i)	Step 6. Set Goals
§201.6(c)(3)(ii)	***Step 7. Review Possible Activities***
§201.6(c)(3)(iii)	***Step 8. Draft an Action Plan***
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate, and Revise the Plan

3

3

Structure of the Plan - Overview

Main Document

1. Introduction
2. Planning Process
3. Community Profile
4. Hazard Identification
5. Hazard Risk & Vulnerability Assessment
6. Capability Assessment
7. Mitigation Strategy
8. Mitigation Action Plan
9. Plan Implementation & Maintenance

Annexes

A. Bartonville
B. Chillicothe
C. Greater Peoria Sanitation District
D. Hanna City
E. Peoria Parks District
F. Peoria
G. Peoria Heights
H. West Peoria
I. Unincorporated Peoria County

Appendices

A. Plan Adoption
B. Local Mitigation Plan Review Tool
C. Planning Process Documentation
D. Mitigation Alternatives
E. References

4

4

Structure of the Plan

2. Planning Process

2.1 Overview of Hazard Mitigation Planning

2.2 History of Hazard Mitigation Planning in Peoria County

2.3 Preparing the Plan

2.4 Hazard Mitigation Planning Committee

2.5 Involving the Public

2.6 Involving Stakeholders

2.7 Documentation of Plan Progress

Provides context and justification for the plan, and explains the steps followed to prepare the plan and documents the process

Identifies completed and deleted mitigation actions from the previous plan

Structure of the Plan

3. Community Profile

3.1 Overview of the Community

3.2 Geography and Climate

3.3 Transportation

3.4 Cultural, Historic and Natural Resources

3.5 Population

3.6 Economy

3.7 Housing

3.8 Social Vulnerability

3.9 Land Use

3.10 Growth and Development Trends

Provides an overview of the current conditions in the planning area

Structure of the Plan

4. Hazard Identification

4.1 Overview

4.2 Full Range of Hazards Considered

4.3 Past Occurrences and Disaster Declarations

4.4 Hazard Evaluation

4.5 Hazard Identification Results

Lists the full range of hazards considered in plan; discusses past occurrences; and determines whether each hazard warrants further assessment

5. Hazard Risk & Vulnerability Assessment

5.1 Overview

5.2 Methodology

5.3 Asset Inventory

5.4 – 5.19: Profiles of Evaluated Hazards

Identifies hazards, exposure, and vulnerability and prioritizes hazards for mitigation

Structure of the Plan

6. Capability Assessment

6.1 Overview

6.2 Capability Assessment Findings

6.3 Conclusions on Local Capability

Details capability indicators by jurisdiction and reviews key capabilities in place

7. Mitigation Strategy

7.1 Introduction

7.2 Mitigation Goals

7.3 Identification and Analysis of Mitigation Activities

7.4 Plan Update Requirement

Reviews the goals and objectives and the process used to develop them; details the mitigation action identification and prioritization process; presents the action plan

Structure of the Plan

8. Mitigation Action Plan

8.1 Overview

8.2 Mitigation Action Plans

Presents the mitigation action plan for all participating jurisdictions

9. Plan Implementation and Maintenance

9.1 Adoption

9.2 Implementation and Integration

9.3 Monitoring, Evaluation, and Maintenance

9.4 Continued Public Involvement

Describes the adoption step; summarizes the HMPC and participating jurisdictions' responsibilities once the plan is adopted

Participation in the Planning Process

Planning Process

HMPC Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
HMPC Mtg. #1 – Project Kickoff	1) Introduction to DMA and CRS requirements and the planning process 2) Trends in disasters and justification for planning 3) Review of HMPC responsibilities and the project schedule 4) Public involvement discussion 5) Preliminary risk assessment discussion	December 14th, 2022 1:30 p.m.	In-Person
HMPC Mtg. #2	1) Review Draft Hazard Identification & Risk Assessment (HIRA) 2) Current planning process and progress 3) Discuss mitigation action plan requirements	February 15th, 2023 1:30 p.m.	Zoom Video Conference Call
HMPC Mtg. #3	1) Review plan goals and objectives 2) Discuss new mitigation action alternatives	March 15th, 2023 1:30 p.m.	In-Person

Planning Process

Public Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
Public Meeting #1	1) Introduction to DMA and CRS planning process and justification for planning 2) Review of preliminary risk assessment information 3) Plan website and public survey overview	Feb 1st, 2023 5:30 p.m.	Zoom Video Conference Call
Public Meeting #2	1) Review Draft Hazard Mitigation Plan 2) Solicit comments and feedback	March 15, 2023 5:30 p.m.	In person

Planning Process

Public Outreach Efforts

Location	Date	Event/Message
Plan Website	Ongoing	Meeting announcements, meeting materials, and description of hazards; contact information provided to request additional information and/or provide comments
Two Public Meetings	February 2023 & March 2023	Obtain public input on natural and manmade hazards, problems, and possible solutions. Meetings will be held at the beginning of the planning process and following completion of the mitigation strategy.
Peoria Social Media	Ongoing	Social media utilized to publish information regarding public meetings, the online questionnaire, and general hazard mitigation planning information
Public Survey	February 2023 & March 2023	Survey hosted online on plan website and made available via shareable link. Additionally, hard copies of the questionnaire will be distributed at all public meetings and presentations to stakeholder groups.
Plan website - Draft Plan	March 2023	Full draft plan made available for review and comment online

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Planning Process

Public Outreach Efforts

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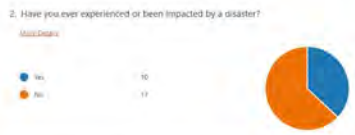
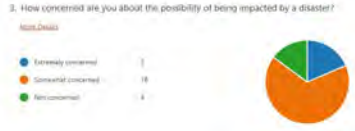
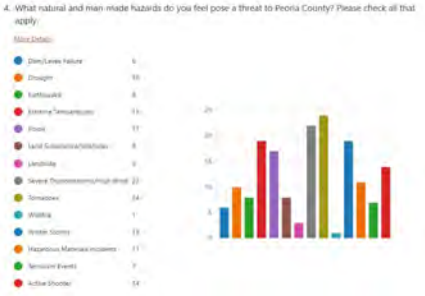
Planning Process

Public Survey Results







15

Planning Process

Public Survey Results

Perhaps programs that give away safety items such as fire blankets, first aid kits to keep on hand, and education materials. Maybe partner with the schools

Increase police force and change state policies to better protect police officers.

Hope the County and City will look very seriously at High-Pressure Carbon Dioxide pipeline concerns. This could also impact Bartonville, but route into Peoria is not clear.

Full survey results included in Appendix C

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Key Plan Components

17

Hazards Profiled

Dam/Levee Failure
Drought
Earthquake
Extreme Temperatures
Flood
Land Subsidence/Sinkhole
Landslide
Severe Thunderstorm (hail, lightning, and wind)
Severe Winter Storms
Tornado
Wildfire
Hazardous Materials Incidents
Terrorism Event
Active Shooter

18

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Hazard Summary

Hazard	Geographic Location (Percentage of People)	Probability of Future (Frequency)	Magnitude/ Severity	Hazard Rating	Hazard Rating Variation for other jurisdictions
Earthquake	Low	Low	Low	Low	
Wildfire	Medium	Low	Low	Low	
Land Subsidence	Medium	Low	Low	Guarded	Low *Chillicothe, Peoria Heights*
Landslide	Low	Medium	Low	Guarded	Low *Harris City*
Dam/Levee Failure	Low	Low	High	Elevated	Low *Chillicothe, Harris City*
Drought	High	Low	Low	Elevated	
Terrorism Events	Low	Low	High	Elevated	
Active Shooter				Elevated	
Hazardous Materials Incidents	Medium	High	Low	High	
Extreme Temperatures	High	Medium	Medium	High	
Flood	Medium	High	High	Severe	Low – *Harris City*; Guarded – *Chillicothe, Peoria Heights*
Severe Thunderstorms	High	High	Medium	Severe	
Tornado	High	Medium	High	Severe	
Severe Winter Storm	High	High	Medium	Severe	

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Goals

Goal 1: Reduce the vulnerability current and future people, property, and environment of Peoria County from the effects of natural and man-made hazards.

- Strengthen protection of critical facilities and infrastructure to create a safer, more sustainable community.
- Build and support local capabilities to respond and recovery from natural and man-made hazard events.
- Increase the local floodplain management activities and participation in the NFIP.
- Protect community historic/cultural/environmental resources from identified natural and man-made hazards

Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.

Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.

Goal 4 - Incorporate natural and man-made hazard mitigation into community plans, regulations and activities.

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Mitigation Action Plan

	Mitigation Action	No Progress (✓)	In Progress (✓)	Completed (✓)	Year Completed (✓)
Peoria County					
1	Evaluate structural integrity of critical facilities and shelters to confirm resistance to hazard events.		X		
2	Coordinate hazard risk assessments with other agencies		X		
3	Create formal mutual aid agreements with neighboring communities to meet emergency response needs.		X		
4	Coordinate with American Red Cross to maintain list of emergency shelters and shelter agreements.		X		
5	Coordinate with IDNR to address the stalemate with FEMA and private owners of a provisionally accredited levee.		X		
6	Establish prioritized list for mitigation of flood prone structures		X		

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Mitigation Action Plan

- Public Tree Maintenance
- Soil Erosion and Sediment Control
- Flood Hazard Map Revisions and Updates
- Economic Analysis related to Flood Hazard and Critical Facilities
- Policies and Procedures for Flood Mitigation Projects
- NFIP CRS
- Dam Safety
- Pre-suppression planning for city-owned lands
- Outreach and seismic inspection
- Conduct safe communities' audit
- Assess Vulnerability to Drought Risk
- Promote enhanced anchoring of manufactured homes
- Flood Buyout Program
- Levee improvements
- Fixed Generators; Mobile Generators
- Sewer Line Infiltration and Inflow
- Tornado Shelters
- Flood Warning
- Plan for Drought
- Emergency Response Planning
- StormReady
- Warning Siren
- Emergency Operations Center
- Public Awareness Initiative
- Savannah River Flood Protection and Awareness
- Water Conservation Awareness
- Increase Awareness of Extreme Temp Risk & Safety
- Conduct Lightning Awareness Programs
- Community Notification System Awareness
- All Hazards Preparedness Awareness

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Plan Implementation and Maintenance

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Plan Implementation & Maintenance

HMPC will meet **annually** to report on the status of action implementation and discuss any recommended revisions

- Pursue implementation of mitigation actions
- Monitor funding opportunities
- Ensure continued public involvement
- Integrate the HMP with other planning efforts

Full plan updates will continue every five years

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Next Steps

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How to Stay Involved

Public Survey

- Share your input on hazards risks & vulnerabilities
- Suggest mitigation activities

Draft Plan

- Review the draft plan and provide feedback to the planning committee
- https://tricountyrpc.org/environment/hazard-mitigation/

Scan the QR code above or visit https://forms.office.com/r/GjapUn2eZT for the public survey!

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Tri-County Regional Planning Commission
March 13 ·

We are updating the Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan, and we need your input!

A public input meeting will be held Wednesday, March 15th at 5:30pm at the Tri-County Regional Planning Commission Office/Conference Room (456 Fulton St., Suite 420, Peoria, IL 61602) to provide an overview of the mitigation plan document and mitigation actions. Public input will help Peoria select appropriate and achievable mitigation strategies.

Please join us for this informative evening event. You may also attend the meeting virtually using this link: https://us06web.zoom.us/j/85833671299. Individuals who cannot attend the public meeting but would like to provide feedback to the planning committee can complete the public survey: https://forms.office.com/r/WLDBKQgfQk.

1

Like Comment Share

Write a comment...

← Tweet

Tri-CountyRPC
@TriCountyRPC

We are updating the Peoria County Hazard Mitigation Plan, and we need your input! 🌪️🔥💧🌫️
We will hold a public input meeting Wednesday, Mar. 15@ 5:30pm at 456 Fulton St., Suite 420, Peoria, IL. Virtual link: us06web.zoom.us/j/85833671299. Survey link: forms.office.com/r/WLDBKQgfQk

10:02 AM · Mar 13, 2023 · **30** Views

Tri-County Regional Planning Commission + Follow •••

223 followers

2mo • Edited •

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https://lnkd.in/gW3A3jdx

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https://lnkd.in/g4sZtUcJ.

Peoria County Hazard Mitigation

tricountyrpc.org/environment/hazard-mitigation/peoria-county-hmp/

TRI-COUNTY REGIONAL PLANNING COMMISSION

About | Documents | Meetings & Events | RFPs & RFQs | Our Work

Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan

2023 Update

Hazard Mitigation Overview *Tri-County 2019 Plan* *Peoria County Plan Update* *Tazewell & Woodford Counties Plan Update*

Tri-County Regional Planning Commission (TCRPC) is beginning the process to update the Tri-County Multi-Jurisdictional Hazard Mitigation Plan (HMP) to better protect the people and property of the Tri-County Region from the effects of natural and man-made hazard events. TCRPC has contracted with American Environmental Corporation (American) and WSP Environment & Infrastructure (WSP) to facilitate the planning process and prepare the plan document. WSP will be responsible for coordination with Peoria County and its incorporated jurisdictions.

Additionally, the plan for Peoria County will be prepared pursuant to the requirements of the Community Rating System. The Community Rating System (CRS) rewards communities for activities that go beyond the minimum requirements of the National Flood Insurance Program (NFIP) with discounted flood insurance premiums. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that (1) reduce flood losses, (2) facilitate accurate insurance ratings, and (3) promote awareness of flood insurance.

The Peoria County HMP will be prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, 144 CFR §201.6) and finalized on October 31, 2007. These regulations establish the requirements that hazard mitigation plans must meet in order for Peoria County and its incorporated jurisdictions to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because Peoria County is subject to many kinds of hazards, access to these federal programs is vital.

See the first draft of the document in these three links: Sections 1-3, Sections 4-5, and Sections 6-9.

Participating Jurisdictions

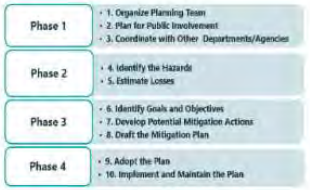
Nine jurisdictions throughout Peoria County are participating in the planning process:

- Village of Bartonville
- City of Chillicothe
- Greater Peoria Sanitary District
- Village of Hanna City
- City of Peoria
- Peoria County
- Village of Peoria Heights
- Peoria Park District
- City of West Peoria

Citizen Questionnaire

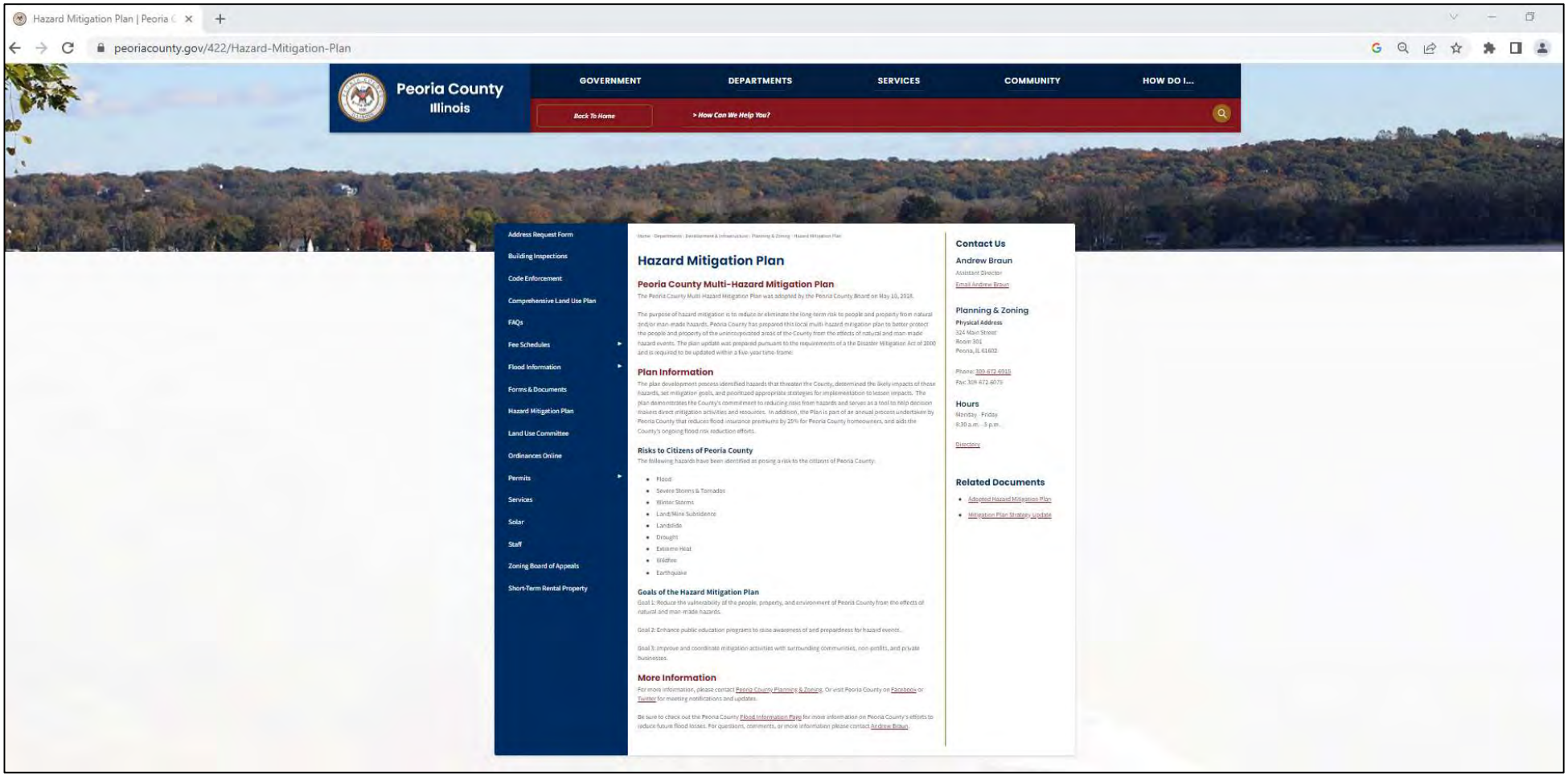
Have you experienced or been impacted by a disaster, such as flooding, severe thunderstorms, or hazardous materials incidents? Do you have suggestions for how to reduce hazard risk? We developed a citizen questionnaire to gauge public perception about hazards that impact Peoria County. The information provided in the survey will help us as we begin the planning process.

https://forms.office.com/r/WLDBKQgfQX



Hazard Mitigation Planning Committee

- December 14, 2022 - Project Kick-off Meeting - In-Person
- February 1, 2023 - Virtual & In-Person Public Meeting
- February 15, 2023 - Risk Assessment Meeting - Virtual
- March 15, 2023 - Mitigation Strategy Meeting - In-Person
- March 15, 2023 - Virtual & In-Person Public Meeting
- May 24, 2023 - Plan Document Review Meeting - Virtual


Hazard Mitigation Plan | Peoria C
peoriacounty.gov/422/Hazard-Mitigation-Plan
Peoria County
Illinois
GOVERNMENT
DEPARTMENTS
SERVICES
COMMUNITY
HOW DO I...
Back To Home
> How Can We Help You?
Address Request Form
Building Inspections
Code Enforcement
Comprehensive Land Use Plan
FAQs
Fee Schedules
Flood Information
Forms & Documents
Hazard Mitigation Plan
Land Use Committee
Ordinances Online
Permits
Services
Solar
Staff
Zoning Board of Appeals
Short-Term Rental Property
Hazard Mitigation Plan
Peoria County Multi-Hazard Mitigation Plan
The Peoria County Multi-Hazard Mitigation Plan was adopted by the Peoria County Board on May 10, 2018.
The purpose of hazard mitigation is to reduce or eliminate the long-term risk to people and property from natural and/or man-made hazards. Peoria County has prepared this local multi-hazard mitigation plan to better protect the people and property of the unincorporated areas of the County from the effects of natural and man-made hazard events. The plan update was prepared pursuant to the requirements of a the Disaster Mitigation Act of 2000 and is required to be updated within a five-year time-frame.
Plan Information
The plan development process identified hazards that threaten the County, determined the likely impacts of those hazards, set mitigation goals, and prioritized appropriate strategies for implementation to lessen impacts. The plan demonstrates the County's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. In addition, the Plan is part of an annual process undertaken by Peoria County that reduces flood insurance premiums by 25% for Peoria County homeowners, and aids the County's ongoing flood risk reduction efforts.
Risks to Citizens of Peoria County
The following hazards have been identified as posing a risk to the citizens of Peoria County:
Flood
Severe Storms & Tornados
Winter Storms
Land/Mine Subsidence
Landslide
Drought
Extreme Heat
Wildfire
Earthquake
Goals of the Hazard Mitigation Plan
Goal 1: Reduce the vulnerability of the people, property, and environment of Peoria County from the effects of natural and man-made hazards.
Goal 2: Enhance public education programs to raise awareness of and preparedness for hazard events.
Goal 3: Improve and coordinate mitigation activities with surrounding communities, non-profits, and private businesses.
More Information
For more information, please contact Peoria County Planning & Zoning. Or visit Peoria County on Facebook or Twitter for meeting notifications and updates.
Be sure to check out the Peoria County Flood Information Page for more information on Peoria County's efforts to reduce future flood losses. For questions, comments, or more information please contact Andrew Braun.
Contact Us
Andrew Braun
Assistant Director
Email Andrew Braun
Planning & Zoning
Physical Address
324 Main Street
Room 301
Peoria, IL 61602
Phone: 309-672-6015
Fax: 309-672-6075
Hours
Monday - Friday
8:30 a.m. - 5 p.m.
Directory
Related Documents
Adopted Hazard Mitigation Plan
Mitigation Plan Strategy Update

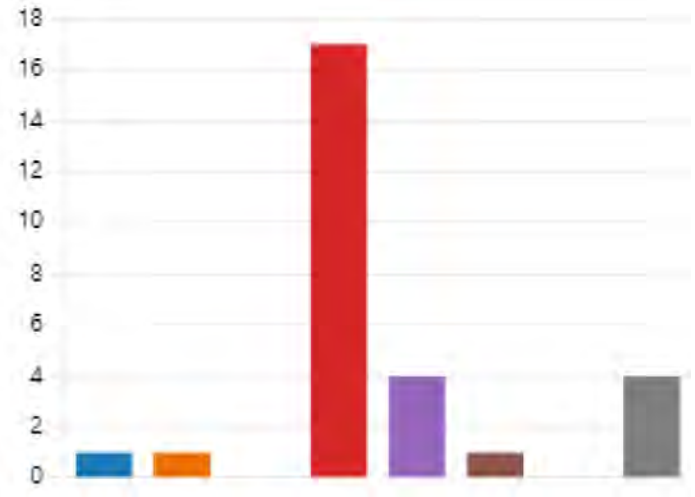
C.2.2 Public Survey Questions and Results

Peoria County Hazard Mitigation Plan Public Survey

28	04:04	Closed
Responses	Average time to complete	Status

1. Where do you live?

Bartonville, Village of	1
Chillicothe, City of	1
Hanna City, Village of	0
Peoria, City of	17
Peoria County, Unincorporated ...	4
Peoria Heights, Village of	1
West Peoria, City of	0
Other	4



2. Have you ever experienced or been impacted by a disaster?

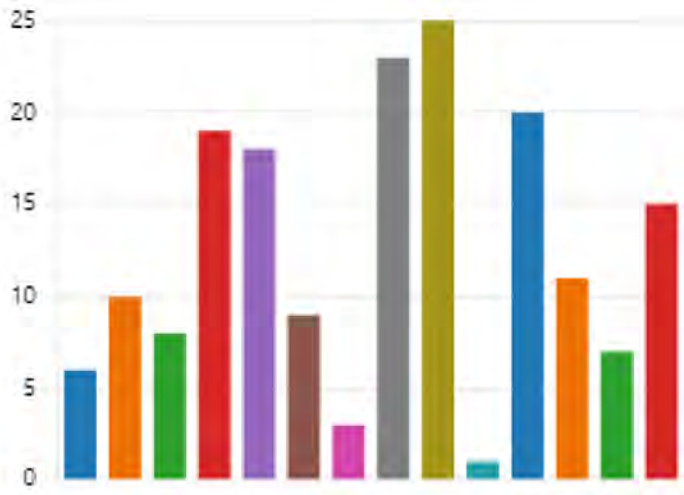
Yes	11
No	17

3. How concerned are you about the possibility of being impacted by a disaster?

Extremely concerned	6
Somewhat concerned	18
Not concerned	4

4. What natural and man-made hazards do you feel pose a threat to Peoria County? Please check all that apply.

Dam/Levee Failure	6
Drought	10
Earthquake	8
Extreme Temperatures	19
Flood	18
Land Subsidence/Sinkholes	9
Landslide	3
Severe Thunderstorms/High Wind	23
Tornadoes	25
Wildfire	1
Winter Storms	20
Hazardous Materials Incidents	11
Terrorism Events	7
Active Shooter	15



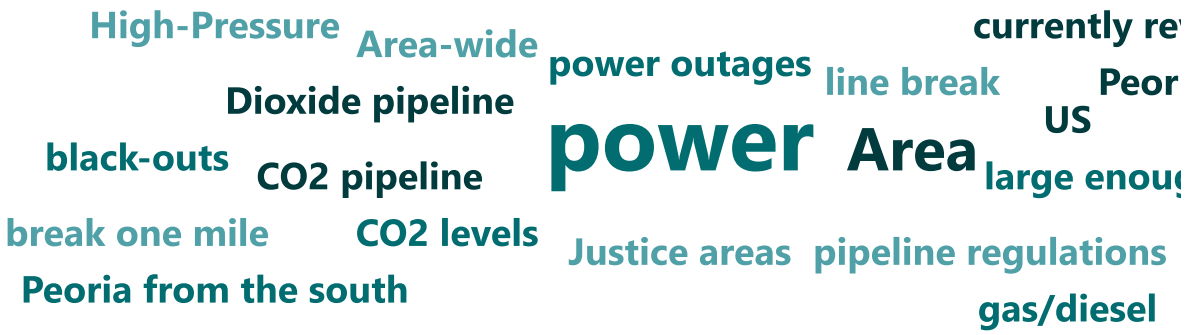
5. Is there another hazard, not listed above, that you think is a wide-scale threat to Peoria County? Please explain:

8
Responses

Latest Responses

"I am very concerned about plans for a High-Pressure Carbon ...

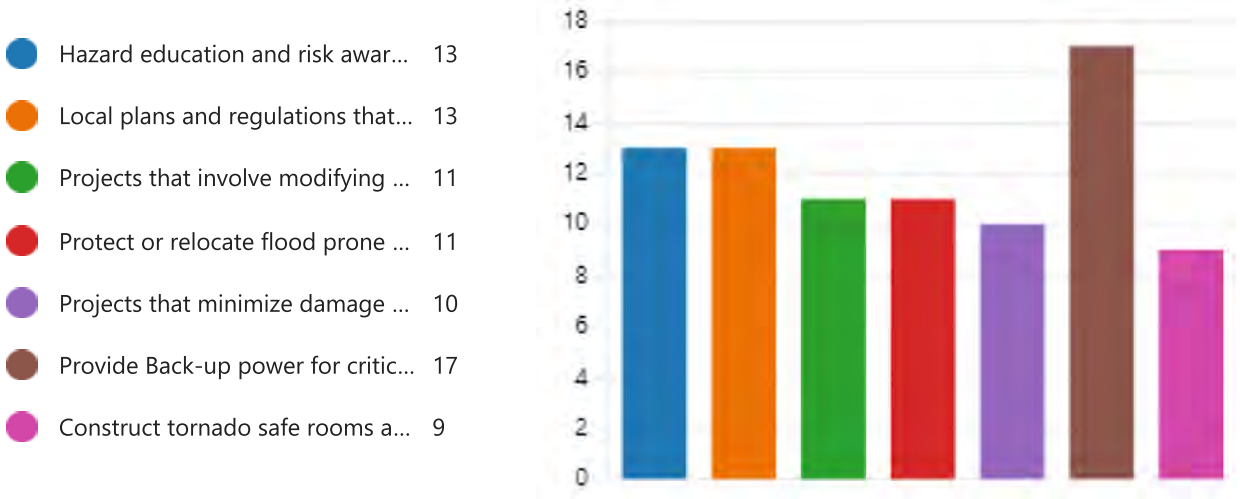
3 respondents (**38**%) answered **power** for this question.



6. How prepared do you feel for a hazard event?

Not at all prepared	4
Somewhat prepared	15
Prepared	9
Very prepared	0

7. What types of mitigation actions should have the highest priority?



8. Are there other mitigation actions Peoria County should consider for reducing future losses caused by natural or man-made hazards? Please explain:

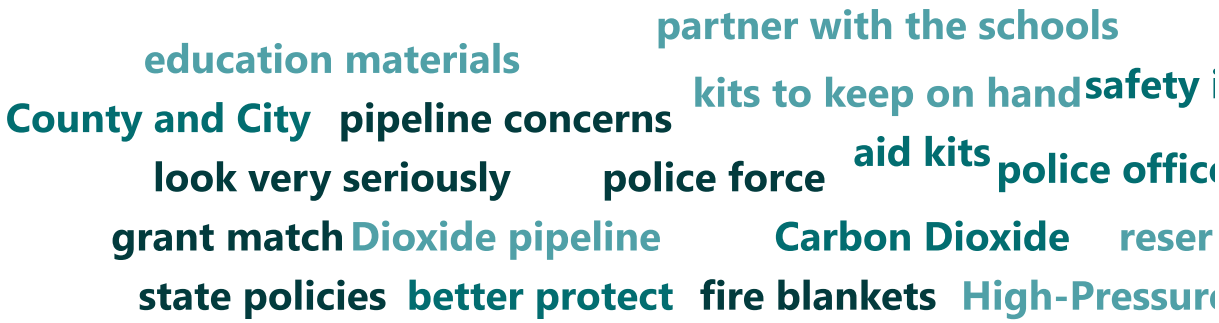
5
Responses

Latest Responses

"Building up reserve funding for grant match"

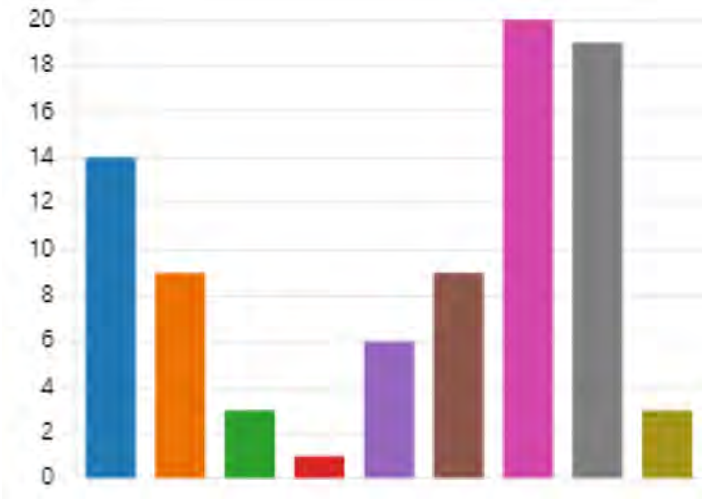
"Hope the County and City will look very seriously at High-Pres...

1 respondents (**20**%) answered **police force** for this question.



9. What is the best way for you to receive information about hazard events and/or how to make your family, home, and neighborhood more resilient to hazards? Please check all that apply.

Television News/Advertisements	14
Radio News/Advertisements	9
Print Media - newspaper, inform...	3
Public Library	1
County/City government website	6
County/City government social ...	9
Email	20
Text message	19
Other	3



10. Provide your email address below if you would like to be informed of future public meetings related to the planning process.

10
Responses

Latest Responses
"*joblumen@yahoo.com*"

C.3 Planning Step 3: Coordinate

This planning step credits the incorporation of other plans and other agencies' efforts into the development of the Hazard Mitigation Plan. Other agencies and organizations must be contacted to determine if they have studies, plans and information pertinent to the Hazard Mitigation Plan, to determine if their programs or initiatives may affect the community's program, and to see if they could support the community's efforts. Stakeholders were involved participation on the HMPC and through specific requests for data to support the development of the plan.

To incorporate additional stakeholder input in the plan, various stakeholders were identified by the HMPC and sent an invitation to attend the first public meeting and introduced to the plan website where they could follow the planning process, review the draft Hazard Identification and Risk Assessment and the full draft plan, and provide feedback and comments. The coordination letter, sent via email, is provided below. A list of the stakeholders who were contacted is provided in

RE: Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Dear

Peoria County, Illinois, is updating the Multi-Hazard Mitigation Plan to better protect the people and property of Peoria County from the effects of natural and man-made hazard events. The plan will be updated pursuant to the requirements of the Disaster Mitigation Act of 2000 and the implementing regulations set forth in the Federal Register (44 CFR §201.6). These regulations establish the standards for hazard mitigation plans to allow plan owners eligibility to access funds for federal disaster assistance and hazard mitigation, under the Robert T. Stafford Disaster Relief and Emergency Act. In addition, the mitigation planning process will incorporate the 10-steps of Activity 510-Floodplain Management Planning in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) Program.

The Tri-County Regional Planning Commission has contracted with WSP to facilitate the planning process and prepare the plan document. On December 14, 2022, a kick-off meeting was held with the Hazard Mitigation Planning Committee to organize the planning effort, prepare for public involvement in the planning process, and initiate coordination with other agencies and stakeholders.

We are reaching out to other agencies and stakeholders, such as you, to coordinate with those who may bring additional information to the planning process and associated flood/hazard issues within Peoria County. Any information, studies, etc. which may supplement the work of the established Hazard Mitigation Planning Committee would be welcomed. In addition, we invite you to participate in our committee and public meetings throughout the planning process. Future meeting dates will be posted on the Tri-County Regional Planning Commission website: www.tricountyrpc.org.

Please send information directly to my attention at:

Cindy Popplewell, PE, CFM
WSP USA Environment & Infrastructure Inc.
216 Centerview Drive, Suite 300
Brentwood, TN 37027
Cindy.Popplewell@wsp.com
(303) 704-8939

We look forward to hearing from you and/or your participation at future committee and public meetings.

Thank you,

Cindy Popplewell, PE, CFM
WSP USA Environment & Infrastructure Inc.

Table C.3.

RE: Peoria County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Dear

Peoria County, Illinois, is updating the Multi-Hazard Mitigation Plan to better protect the people and property of Peoria County from the effects of natural and man-made hazard events. The plan will be updated pursuant to the requirements of the Disaster Mitigation Act of 2000 and the implementing regulations set forth in the Federal Register (44 CFR §201.6). These regulations establish the standards for hazard mitigation plans to allow plan owners eligibility to access funds for federal disaster assistance and hazard mitigation, under the Robert T. Stafford Disaster Relief and Emergency Act. In addition, the mitigation planning process will incorporate the 10-steps of Activity 510-Floodplain Management Planning in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) Program.

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WSP USA Environment & Infrastructure Inc.
216 Centerview Drive, Suite 300
Brentwood, TN 37027
Cindy.Popplewell@wsp.com
(303) 704-8939

We look forward to hearing from you and/or your participation at future committee and public meetings.

Thank you,

Cindy Popplewell, PE, CFM
WSP USA Environment & Infrastructure Inc.

Table C.3 – Stakeholder List

Agency	First Name	Last Name	Title
FEDERAL 7			
National Weather Service - Lincoln, IL Office	Ryan	Knutsvig	Meteoroligst in Charge
National Weather Service - Lincoln, IL Office	Darrin	Hansing	Service Hydrologist
U.S. Army Corps of Engineers	Anthony	Heddlesten	Flood Engineer
National Resource Conservation Service (NRCS)	Xavier	Montoya	Regional Conservationist
National Resource Conservation Service (NRCS) - Peoria County SWCD	Josh	Joseph	Resource Conservationist
FEMA Region V - Mitigation Planning	Robert	Vehe	Deputy Regional Manager
US Fish and Wildlife - Rock Island Field Office	Kraig	McPeek	Field Office Supervisor
STATE 15			
State NFIP Coordinator	Erin	Conley	State Floodplain Manager
IL - Emergency Management Agency	Sam	Al-Basha	State Hazard Mitigation Officer
IL - Department of Agriculture	Jerry	Costello	Director
IL - EPA - air	Brad	Frost	Manager
IL - EPA - land	Debra	Shore	Regional Administrator
IL - EPA - water	Barb	Lieberoff	Community Relations Coordinator
IL - Historic Preservation	Matt	Burns	Director of Administration
IL - Housing and Development Authority	Kristin	Faust	Executive Director
IL - Department of Natural Resources - Endangered Species Protection Board (DNR)	Joyce	Hofmann	Chair
IL - Department of Natural Resources - Mines & Minerals	Ronnie	Huff	Director
IL - Department of Natural Resources - Greenways and Trails Program	George	Bellovics	Trail Coordinator
IL - Department of Natural Resources - Water Resources	Loren	Wobig	Director
IL - Pollution Control Board	Barbara Flynn	Currie	Chairman
IL - Dept of Public Health	Dr. Sameer	Vohra	Director
IL - DOT	Kensil	Garnett	Region 3 Engineer
LOCAL 16			
Tazewell County EMA	Barry	Brooks	coordinator
Woodford County EMA	Kent	McCanless	Director
Marshall County EMA	Rich	Koch	
Stark County EMA	Mat	Schnepple	
Knox County EMA	Randy	Hovind	Coordinator
Fulton County EMA	Cindy	Simpson	Board Administrative Assistant
Bradley University	Stephen	Standifird	President
Illinois Central College	Sheila	Quirk-Bailey	President
Midstate College	R. Dale	Bunch	President
University of Illinois College of Medicine	Mark	Rosenblatt	Regional Dean
Caterpillar	Jim	Umpleby	Chairman
OSF Saint Francis Medical Center	Mike	Cruz	President

Agency	First Name	Last Name	Title
UnityPoint Health Methodist	Clay	Holderman	President
USPS	Jenna	Workman	Postmaster

Appendix D Mitigation Alternatives

44 CFR Subsection D §201.6(c)(3)(ii): [The mitigation strategy section 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 buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

As part of the process of developing the mitigation action plans found in Section 8, the HMPC reviewed and considered a comprehensive range of mitigation options before selecting the actions identified for implementation. This section summarizes the full range of mitigation measures evaluated and considered by the HMPC, including a review of the categories of mitigation measures outlined in the 2017 CRS Coordinator's Manual, a discussion of current local implementation and CRS credits earned for those measures, and a list of the specific mitigation projects considered and recommended for implementation.

Mitigation alternatives identified for implementation by the HMPC were evaluated and prioritized using the criteria discussed in Section 7 of this plan.

D.1 Categories of Mitigation Measures Considered

Once it was determined which hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified planning goals. The HMPC was provided with the following list of mitigation categories which are utilized as part of the CRS planning process.

- Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Public Information and Outreach

D.2 Alternative Mitigation Measures per Category

Note: the CRS Credit Sections are based on the 2017 CRS Coordinator's Manual.

D.2.1 Preventative and Regulatory Measures

Preventative measures are designed to keep a problem - such as flooding - from occurring or from getting worse. The objective of preventative measures is to ensure that future development is not exposed to damage and does not cause an increase in damages to other properties. Building, zoning, planning and code enforcement offices usually administer preventative measures. Some examples of types of preventative measures include:

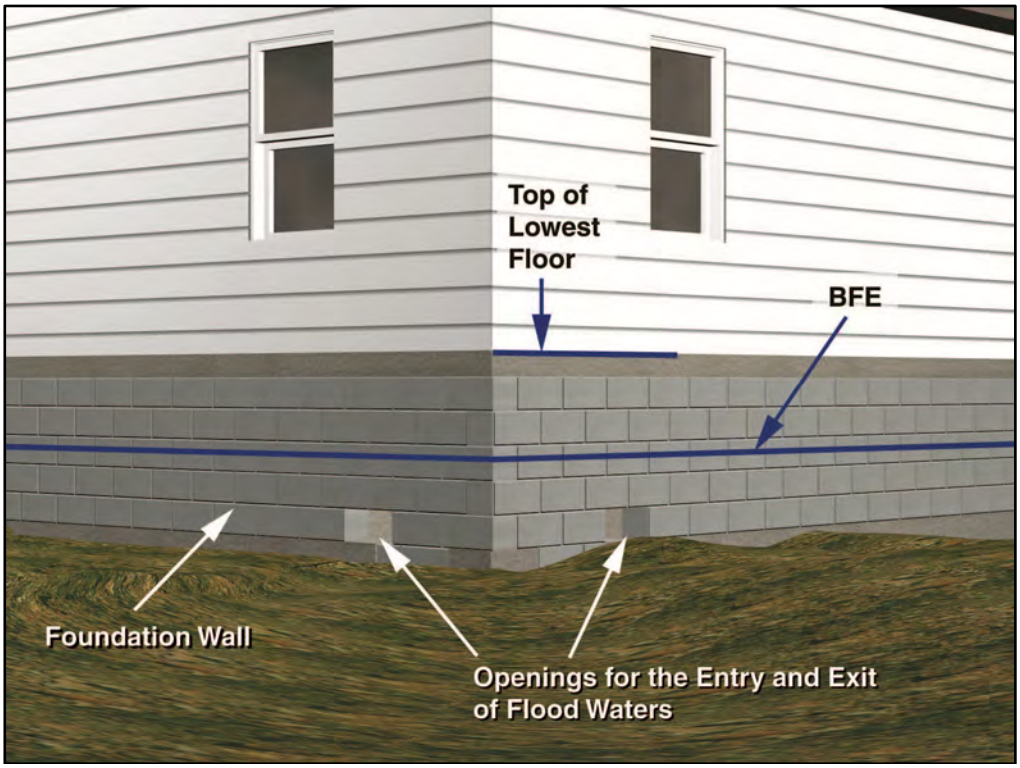
- Building codes
- Zoning ordinance
- Comprehensive or land use plan
- Open space preservation
- Floodplain regulations
- Subdivision regulations
- Stormwater management regulations

Building Codes

Building codes provide one of the best methods for addressing natural hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). This is shown in Figure D.1.

Just as important as having code standards is the enforcement of the code. Adequate inspections are needed throughout construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly elevated and anchored requires site inspections at each step.

Figure D.1 – Building Codes and Flood Elevations



Source: FEMA Publication: Above the Flood: Elevating Your Flood prone House, 2000

ASCE 24 is a referenced standard in the International Building Code. Any building or structure that falls within the scope of the IBC that is proposed in a flood hazard area is to be designed in accordance with ASCE 24. Freeboard is required as a function of the nature of occupancy and the flood zone.

Comprehensive or Land Use Plan

Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation.

Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors, golf courses, and other recreation areas.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is free to develop and use private property, but property taxes are reduced, or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement.

Although there are some federal programs that can help acquire or reserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes.

Zoning Ordinance

Zoning enables a community to designate what uses are acceptable on a given parcel. Zoning can ensure compatibility of land use with the land's level of suitability for development. Planning and zoning activities can also provide benefits by allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach. Zoning regulations describe what type of land use and specific activities are permitted in each district, and how to regulate how buildings, signs, parking, and other construction may be placed on a lot. Zoning regulations also provide procedures for rezoning and other planning applications. The zoning map and zoning regulations provide properties with certain rights to development.

Floodplain Regulations

A Flood Damage Prevention Ordinance sets development standards for Special Flood Hazard Areas (SFHAs). Communities participating in the National Flood Insurance Program (NFIP) are required to adopt a flood damage prevention ordinance that meets at least the minimum standards of the NFIP; however, a community can incorporate higher standards for increased protection. For example, communities can adopt higher regulatory freeboard requirements, cumulative substantial damage definitions, fill restrictions, and other standards.

Another important consideration in floodplain regulations is the protection of natural and beneficial functions and the preservation of natural barriers such as vegetation. Vegetation along a stream bank is extremely beneficial for the health of the stream. Trees and other plants have an extensive root system that strengthen stream banks and help prevent erosion. Vegetation that has sprouted up near streams should remain undisturbed unless removing it will significantly reduce a threat of flooding or further destruction of the stream channel.

Stormwater Management Regulations

Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality. There are three ways to prevent flooding problems caused by stormwater runoff:

1) Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties;
2) Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions; and
3) Set construction standards so buildings are protected from shallow water.

Reducing Future Flood Losses

Zoning and comprehensive planning can work together to reduce future flood losses by directing development away from hazard prone areas. Creating or maintaining open space is the primary way to reduce future flood losses.

Planning for open space must also be supplemented with development regulations to ensure that stormwater runoff is managed, and that development is protected from flooding. Enforcement of the flood damage prevention ordinance and the flood protection elevation requirement provides an extra level of protection for buildings constructed in the planning area.

Stormwater management and the requirement that post-development runoff cannot exceed pre-development conditions is one way to prevent future flood losses. Retention and detention requirements also help to reduce future flood losses.

CRS Credit

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's Building Code Effectiveness Grading Schedule (BCEGS) classification and points are awarded for adopting the International Code series.

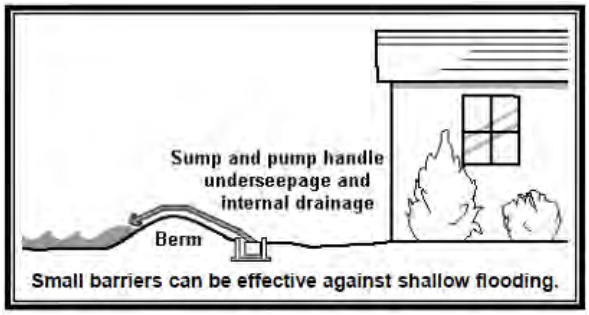
CRS credits are available for regulations that encourage developers to preserve floodplains or other hazardous areas away from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan.

D.2.2 Property Protection Measures

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building;
- Modify the building (retrofit) so it can withstand the impacts of the hazard; and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency.



Small barriers can be effective against shallow flooding.

Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. As noted earlier, the major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. For example, a berm can be built to prevent floodwaters from reaching a house.

Flooding

There are five common methods to keep a flood from reaching and damaging a building:

- Erect a barrier between the building and the source of the flooding.
- Move the building out of the flood-prone area.
- Elevate the building above the flood level.
- Demolish the building.
- Replace the building with a new one that is elevated above the flood level.

The latter three approaches are the most effective types to consider for the planning area.

Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier. Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained.

This low floodwall has landscaping to minimize the adverse impact on the property's appearance.

Small, wood frame buildings are the easiest to relocate

Source: Kennedy House Movers, Huntsville, AL

Relocation

Moving a building out of a flood prone area to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.

Building Elevation

Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation.

Demolition

Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damages. It is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Demolition is also appropriate for buildings that are difficult to move – such as larger, slab foundation or masonry structures – and for dilapidated structures that are not cost-beneficial to protect.

Demolishing a repetitively flooded home

Pilot Reconstruction

If a building is not in good shape, elevating it may not be worthwhile or it may even be dangerous. An alternative is to demolish the structure and build a new one on the site that meets or exceeds all flood protection codes. FEMA funding programs refer to this approach as "pilot reconstruction." It is still a pilot program, and not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

Retrofitting

An alternative to keeping the hazard away from a building is to modify or retrofit the site or building to minimize or prevent damage. There are a variety of techniques to do this, as described below.

- ***Dry Floodproofing***
  Dry floodproofing means making all areas below the flood protection level watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.

  Dry floodproofing is only effective for shallow flooding, such as repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms.

- ***Wet Floodproofing***
  The alternative to dry floodproofing is wet floodproofing: water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Insurance
Technically, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild, and hopefully afford to incorporate some of the other property protection measures in the process. Insurance offers the advantage of protecting the property, so long as the policy is in force, without requiring human intervention for the measure to work.

- ***Private Property***
  Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the NFIP. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area. Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Contents coverage can be purchased separately. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. Most people don't realize that there is a 30-day waiting period to purchase a flood insurance policy and there are limits on coverage.

- ***Public Property***
  Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

Local Implementation/CRS Credit
The CRS provides the most credit points for acquisition and relocation under Activity 520, because this measure permanently removes insurable buildings from the floodplain. Peoria County could receive credit for Activity 520 – Acquisition and Relocation, for acquiring and relocating buildings from the SFHA.

The CRS also credits barriers and elevating existing buildings under Activity 530. The credit for Activity 530 is based on the combination of flood protection techniques used and the level of flood protection provided.

Points are calculated for each protected building. Bonus points are provided for the protection of repetitive loss buildings and critical facilities. Peoria County could receive credit for Activity 360 – Flood Protection Assistance by providing advice and assistance to homeowners who may want to flood proof their home or business. Advice is provided both on property protection techniques and on financial assistance programs to help fund mitigation.

Flood insurance information for each community is provided in Section 6. There is no credit for purchasing flood insurance, but the CRS does provide credit for local public information programs that, among other topics, explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage. Peoria County could receive credit for Activity 330 – Outreach Projects.

D.2.3 Natural Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. These activities enable the naturally beneficial functions of fields, floodplains, wetlands, and other natural lands to operate more effectively. Natural and beneficial functions of watersheds, floodplains and wetlands include:

- Reduction in runoff from rainwater and stormwater in pervious areas
- Infiltration that absorbs overland flood flow
- Removal and filtering of excess nutrients, pollutants and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved through regulatory steps for protecting natural areas or natural functions. This section covers the resource protection programs and standards that can help mitigate the impact of natural hazards, while they improve the overall environment. Six areas were reviewed:

- Wetland protection
- Erosion and sedimentation control
- Stream/River restoration
- Best management practices
- Dumping regulations
- Farmland protection

In general, a comprehensive natural resource protection plan can establish a complete set of standards, including the approaches, to protect, conserve and enhance natural resources. A comprehensive approach can integrate local planning and policy tools to achieve this aim, enable preservation of interconnected expanses of natural resource areas, and provide municipal officials, local developers and landowners a clearer understanding of the natural resources that need to be protected during the development review process. It also permits a municipality to more easily adapt its ordinances in order to address emerging environmental issues.

Comprehensive resource protection standards inherently conserve energy because they improve environmental conditions without the need for mechanical infrastructure that requires energy to operate. Vegetated floodplains reduce flooding and flood damage which requires reconstruction, and thus energy to reverse. Similarly, vegetated wetlands improve water quality and reduce runoff lowering energy consumption used in water treatment plants. Riparian buffers and vegetated steep slopes reduce runoff

and erosion thus improving water quality. Healthy forests and wooded areas also serve this function, and also create wind breaks, thus reducing wind chill on houses and lowered heating costs in winter. In summer, tall trees near buildings reduce the need for air condition through shading the structures and also release water from their leaves which cools the structure's surfaces.

However, comprehensive natural resource protection programs take time, resources, and technical expertise to complete, and they require a long-term commitment to educate municipal officials for successful implementation, administration, and ongoing public education.

Wetland Protection

Wetlands are often found in floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and they provide habitat for many species of fish, wildlife and plants.

Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along stream banks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil. Sediment suspended in the water tends to settle out where flowing water slows down. This can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices.

Stream/River Restoration

There is a growing movement that has several names, such as "stream conservation," "bioengineering," or "riparian corridor restoration." The objective of these approaches is to return streams, stream banks and adjacent land to a more natural condition, including the natural meanders. Another term is "ecological restoration," which restores native indigenous plants and animals to an area.

A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

- Reduces the amount of sediment and pollutants entering the water
- Enhances aquatic habitat by cooling water temperature
- Provides food and shelter for both aquatic and terrestrial wildlife
- Can reduce flood damage by slowing the velocity of water
- Increases the beauty of the land and its property value
- Prevents property loss due to erosion
- Provides recreational opportunities, such as hunting, fishing and bird watching
- Reduces long-term maintenance costs

Communities are required by state and federal regulations to monitor storm water drainage outfalls and control storm water runoff.

Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA. Nonpoint source pollutants come from non-specific locations and harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other chemicals, animal wastes, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple usages of drainage and storage facilities.

Dumping Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "non-objectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

Many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not understand how re-grading their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Farmland Protection

Farmland protection is an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to nonagricultural uses.

Frequently, farm owners sell their land to residential or commercial developers and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can lead to additional stormwater runoff and emergency management difficulties.

Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, and local governments as well

as nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land.

Local Implementation/CRS Credit

There is credit available for preserving open space in its natural condition or restored to a state approximating its natural condition. The credit is based on the percentage of the floodplain that can be documented as wetlands protected from development by ownership or local regulations. Peoria County could receive credit for Activity 420 – Open Space Preservation for preserving a portion of the SFHA as open space.

Additionally, credit is available for Activity 540 – Drainage System Maintenance. Having a portion of the drainage system inspected regularly throughout the year and maintenance performed as needed would earn a community credit. Communities could also get credit under this activity for providing a listing of problem sites that are inspected more frequently, and for implementing an ongoing Capital Improvements Program.

D.2.4 Emergency Services Measures

Emergency services measures protect people during and after a disaster. A good emergency management program addresses all hazards, and it involves all local government departments. This section reviews emergency services measures following a chronological order of responding to an emergency. It starts with identifying an impending problem (threat recognition) and continues through post-disaster activities.

Threat Recognition

The first step in responding to a flood is to know when weather conditions are such that an event could occur. With a proper and timely threat recognition system, adequate warnings can be disseminated.

The National Weather Service (NWS) is the prime agency for detecting meteorological threats. Severe weather warnings are transmitted through NOAA's Weather Radio System. Local emergency managers can then provide more site-specific and timely recognition after the Weather Service issues a watch or a warning. A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On smaller rivers and streams, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

Warning

The next step in emergency response following threat recognition is to notify the public and staff of other agencies and critical facilities. More people can implement protection measures if warnings are early and include specific detail.

The NWS issues notices to the public using two levels of notification:

- Watch: conditions are right for flooding, thunderstorms, tornadoes or winter storms.
- Warning: a flood, tornado, etc., has started or been observed.

A more specific warning may be disseminated by the community in a variety of ways. The following are the more common methods:

- CodeRED countywide mass telephone emergency communication system
- Commercial or public radio or TV stations
- The Weather Channel
- Cable TV emergency news inserts
- Telephone trees/mass telephone notification
- NOAA Weather Radio
- Tone activated receivers in key facilities
- Outdoor warning sirens
- Sirens on public safety vehicles
- Door-to-door contact
- Mobile public address systems
- Email notifications

Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should include a public information component.

StormReady

The National Weather Service (NWS) established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally
- Promote the importance of public readiness through community seminars
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

Being designated as an NWS StormReady community is a good measure of a community's emergency warning program for weather hazards. Peoria County and the City of Peoria are designated as StormReady.

Response

The protection of life and property is the most important task of emergency responders. Concurrent with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- Activating the emergency operations center (emergency preparedness)
- Closing streets or bridges (police or public works)
- Shutting off power to threatened areas (utility company)
- Passing out sand and sandbags (public works)
- Holding children at school or releasing children from school (school superintendent)
- Opening evacuation shelters (the American Red Cross)
- Monitoring water levels (public works)
- Establishing security and other protection measures (police)

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given various responsibilities.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

Evacuation and Shelter

There are six key components to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control
- Knowledgeable travelers
- Care for special populations (e.g., disabled persons, prisoners, hospital patients, schoolchildren)

Those who cannot get out of harm's way need shelter. Typically, the American Red Cross will staff a shelter and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a specialized skill. Managers must deal with problems like scared children, families that want to bring in their pets, and the potential for an overcrowded facility.

Post-Disaster Recovery and Mitigation

After a disaster, communities should undertake activities to protect public health and safety and facilitate recovery. Appropriate measures include providing safe drinking water, monitoring for diseases, vaccinating residents for tetanus and other diseases, clearing streets, and cleaning up debris and garbage. Additionally, there should be an effort to help prepare people and property for the next disaster. Such an effort would include:

- Public information activities to advise residents about mitigation measures they can incorporate into their reconstruction work
- Evaluating damaged public facilities to identify mitigation that can be included during repairs
- Identifying other mitigation measures that can lessen the impact of the next disaster
- Acquiring substantially or repeatedly damaged properties from willing sellers
- Planning for long-term mitigation activities
- Applying for post-disaster mitigation funds

To formalize the incorporation of mitigation into post-disaster redevelopment, communities may adopt post-disaster redevelopment plans and ordinances. Requiring permits for building repairs and conducting inspections are vital activities to ensure that damaged structures are safe for people to reenter and repair. There is a special requirement to do this in floodplains, regardless of the type of disaster or the cause of damage. The NFIP requires that local officials enforce the substantial damage regulations. These rules require that if the cost to repair a building in the mapped floodplain equals or exceeds 50% of the building's market value, the building must be retrofitted to meet the standards of a new building in the floodplain. In most cases, this means that a substantially damaged building must be elevated above the base flood elevation.

Local Implementation/CRS Credit

Flash flood warnings are issued by National Weather Service Offices, which have the local and county warning responsibility. Flood warnings are forecasts of coming floods, are distributed to the public by the NOAA Weather Radio, commercial radio and television, and through local emergency agencies. The warning message tells the expected degree of flooding, the affected river, when and where flooding will begin, and the expected maximum river level at specific forecast points during flood crest.

Peoria County could receive credit for Activity 610 – Flood Warning Program for maintaining a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. CRS credits are based on the number and types of warning media that can reach the community's flood prone population. Depending on the location, communities can receive credit for the telephone calling system and more credits for additional measures, like telephone trees. Being designated as a StormReady community also provides additional credits. Additionally, CRS credit is available for post-disaster mitigation policies and procedures if they are incorporated into a flood mitigation plan or multi-hazard mitigation plan.

D.2.5 Structural Projects

Four general types of flood control projects are reviewed here: levees, reservoirs, diversions, and dredging. These projects have three advantages not provided by other mitigation measures:

- They can stop most flooding, protecting streets and landscaping in addition to buildings.
- Many projects can be built without disrupting citizens' homes and businesses.
- They are constructed and maintained by a government agency, a more dependable long-term management arrangement than depending on many individual private property owners.

However, as shown below, structural measures also have shortcomings. The appropriateness of using flood control depends on individual project area circumstances.

- Advantages
    - They may provide the greatest amount of protection for land area used
    - Because of land limitations, they may be the only practical solution in some circumstances
    - They can incorporate other benefits into structural project design, such as water supply and recreational uses
    - Regional detention may be more cost-efficient and effective than requiring numerous small detention basins
- Disadvantages
    - They can disturb the land and disrupt natural water flows, destroying wildlife habitat
    - They require regular maintenance
    - They are built to a certain flood protection level that can be exceeded by larger floods
    - They can create a false sense of security
    - They promote more intensive land use and development in the floodplain

Levees and Floodwalls

Probably the best-known flood control measure is a barrier of earth (levee) or concrete (floodwall) erected between the watercourse and the property to be protected. Levees and floodwalls confine water to the stream channel by raising its banks. They must be well designed to account for large floods, underground seepage, pumping of internal drainage, and erosion and scour.

Reservoirs and Detention

Reservoirs reduce flooding by temporarily storing flood waters behind dams or in storage or detention basins. Reservoirs lower flood heights by holding back, or detaining, runoff before it can flow downstream. Flood waters are detained until the flood has subsided, and then the water in the reservoir or detention basin is released or pumped out slowly at a rate that the river can accommodate downstream.

Reservoirs can be dry and remain idle until a large rain event occurs. Or they may be designed so that a lake or pond is created. The lake may provide recreational benefits or water supply (which could also help mitigate a drought).

Retention pond

Flood control reservoirs are most commonly built for one of two purposes. Large reservoirs are constructed to protect property from existing flood problems. Smaller reservoirs, or detention basins, are built to protect property from the stormwater runoff impacts of new development.

Diversion

A diversion is a new channel that sends floodwaters to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During floods, the floodwaters spill over to the diversion channel or tunnel, which carries the excess water to a receiving lake or river.

Local Implementation /CRS Credit

Structural flood control projects that provide flood protection to at least the level of the 1% annual chance flood and that result in revisions to the Flood Insurance Rate Map are not credited by the CRS so as not to duplicate the larger premium reduction provided by removing properties from the mapped floodplain. Other flood control projects can be accepted by offering a 25-year flood protection.

D.2.6 Public Information

Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and to the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties.

Awareness of the hazard is not enough; people need to be told what they can do about the hazard. Thus, projects should include information on safety, health and property protection measures. Research has shown that a properly run local information program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

Community newsletters/direct mailings: The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

News media: Local newspapers can be strong allies in efforts to inform the public. Local radio stations and cable TV channels can also help. These media offer interview formats and cable TV may be willing to broadcast videos on the hazards.

Libraries and Websites

The two previous activities tell people that they are exposed to a hazard. The next step is to provide information to those who want to know more. The community library and local websites are obvious places for residents to seek information on hazards, hazard protection, and protecting natural resources.

Books and pamphlets on hazard mitigation can be given to libraries, and many of these can be obtained for free from state and federal agencies. Libraries also have their own public information campaigns with displays, lectures and other projects, which can augment the activities of the local government. Today, websites are commonly used as research tools. They provide fast access to a wealth of public and private sites for information. Through links to other websites, there is almost no limit to the amount of up to date information that can be accessed on the Internet.

In addition to online floodplain maps, websites can link to information for homeowners on how to retrofit for floods or a website about floods for children.

Technical Assistance

Hazard Information

Residents and business owners that are aware of the potential hazards can take steps to avoid problems or reduce their exposure to flooding. Communities can easily provide map information from FEMA's FIRMs and Flood Insurance Studies. They may also assist residents in submitting requests for map amendments and revisions when they are needed to show that a building is located outside the mapped floodplain.

Some communities supplement what is shown on the FIRM with information on additional hazards, flooding outside mapped areas and zoning. When the map information is provided, community staff can explain insurance, property protection measures and mitigation options that are available to property owners. They should also remind inquirers that being outside the mapped floodplain is no guarantee that a property will never flood.

Property Protection Assistance

While general information provided by outreach projects or the library is beneficial, most property owners do not feel ready to retrofit their buildings without more specific guidance. Local building department staffs are experts in construction. They can provide free advice, not necessarily to design a protection measure, but to steer the owner onto the right track. Building or public works department staffs can provide the following types of assistance:

- Visit properties and offer protection suggestions
- Recommend or identify qualified or licensed contractors
- Inspect homes for anchoring of roofing and the home to the foundation
- Explain when building permits are needed for home improvements.

Public Information Program

A Program for Public Information (PPI) is a document that receives CRS credit. It is a review of local conditions, local public information needs, and a recommended plan of activities. A PPI consists of the following parts:

- The local flood hazard
- The property protection measures appropriate for the flood hazard
- Flood safety measures appropriate for the local situation
- The public information activities currently being implemented within the community, including those being carried out by non-government agencies
- Goals for the community's public information program
- The outreach projects that will be done each year to reach the goals
- The process that will be followed to monitor and evaluate the projects

Local Implementation /CRS Credit

Communities in Peoria County could receive credit under Activity 330 – Outreach Projects as well as Activity 350 – Flood Protection Information. Credit is available for targeted and general outreach projects. Credit is also provided for making publications relating to floodplain management available in the reference section of the local library.

Appendix E References

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