Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan 2023 Update

Woodford County, Illinois

Participants:

Woodford County
El Paso, City of
Eureka, City of
Germantown Hills , Village of
Minonk, City of
Roanoke, Village of

January 2024

The five year update of this Plan must be completed on or before March 4, 2029.

Cover photographs from left to right:

April 17 & 18, 2013 flooding damaged homes in Roanoke – Photograph courtesy of the Village of Roanoke

February 28, 2017 EF3 tornado damaged homes near Washburn – Photograph provided courtesy of the Woodford County Emergency Management Agency

WOODFORD COUNTY MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN

WOODFORD COUNTY, ILLINOIS

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1.0 INTRODUCTION

Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of the residents of Woodford County. Since 1974, Woodford County has been included in eleven major federally-declared disasters. **Figure I-1** identifies each declaration including the year the disaster was declared and the type of natural hazard that triggered the declaration. Since 2010, the County has been included in eleven state disaster proclamations. **Figure I-2** identifies the year the proclamation was issued and the type of natural hazard that triggered the declaration. The natural hazard(s) recognized as contributing to the declaration for Woodford County is identified in bold.

Figure I-1
Major Federal Disaster Declarations: Woodford County

Declaration #	Year	Natural Hazard(s) Covered by Declaration
438	1974	severe storms; **flooding**
583	1979	severe storms; **flooding**
674	1982	severe storms; **flooding**
735	1985	severe storms; **flooding**
1469	2003	severe storms; **tornadoes**
1681	2006	**severe winter storm**
1800	2008	severe storms; **flooding**
1960	2011	**severe winter storm**
4116	2013	severe storms; straight-line winds; **flooding**
4157	2013	severe storms; straight-line winds; **tornadoes**
4489	2020	**COVID-19 pandemic**

Figure I-2
State Disaster Proclamations: Woodford County

Year	Hazard(s) Covered by Declaration
2011	**winter weather**
2011	**high wind**; tornadoes; torrential rain
2013	severe storms, straight-line winds, heavy rainfall, **flooding**
2013	severe storms, straight-line winds, **tornadoes**
2014	**heavy snowfall; frigid temperatures**
2019	**winter storm** (frigid temperatures)
2019	**flooding**
2020	**COVID-19**
2021	**winter storms**
2022	**winter storms**
2022	**Monkeypox**

In the last 10 years alone (2013 – 2022), there have been 54 thunderstorms with damaging winds, 42 excessive heat events, 28 extreme cold event, 27 riverine flood events, 24 severe winter storms, 19 flash flood events, 15 severe storms with hail one inch in diameter or greater, 8 tornadoes, and one drought verified in the County.

While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning. This prevention-related concept of emergency management often receives the least amount of attention, yet it is one of the most important steps in creating a hazard-resistant community.

What is hazard mitigation planning?

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and man-made hazards. This process helps the County and participating jurisdictions reduce their risk from these hazards by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in a multi-hazard mitigation plan.

Why update a multi-hazard mitigation plan?

By updating and adopting a multi-hazard mitigation plan, participating jurisdictions become eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions identified in the plan. These funds can help provide local government entities with the opportunity to complete mitigation projects and activities that would not otherwise be financially possible.

The federal hazard mitigation funds are made available through the Disaster Mitigation Act of 2000, an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provides federal aid for mitigation projects, but only if the local government entity has a Federal Emergency Management Agency (FEMA) approved hazard mitigation plan.

How is this plan different from other emergency plans?

A multi-hazard mitigation plan is aimed at identifying projects and activities that can be conducted prior to a natural or man-made disaster, unlike other emergency plans which provide direction on how to respond to a disaster after it occurs. This is the third update of the Woodford County multi-hazard mitigation plan which was last updated in 2019. This update describes in detail the actions that can be taken to help reduce or eliminate damages caused by specific types of natural and man-made hazards.

1.1 Participating Jurisdictions

Recognizing the benefits of having an updated multi-hazard mitigation plan, the Tri-County Regional Planning Commission invited Tazewell and Woodford Counties and all the local government entities within these two counties to participate. **Figure I-3** identifies the participating jurisdictions represented in the Woodford County Plan update who sought Plan approval.

Figure I-3 **Participating Jurisdictions Represented in the Plan**	
❖ El Paso, City of	❖ Minonk, City of
❖ Eureka, City of	❖ Roanoke, Village of
❖ Germantown Hills, Village of	❖ Woodford County

While all of the municipalities within the County were invited and encouraged to participate in the Plan update, none chose to engage in the process and therefore are not included as participating jurisdictions in the Plan update.

1.2 COUNTY PROFILE

Woodford County is located in central Illinois and is part of the Peoria-Pekin Metropolitan Statistical Area (MSA), which also includes Tazewell and Peoria Counties. The County covers approximately 542 square miles. Located at the end of this section, **Figure I-4** provides a location map of the County and the participating municipalities while **Figure I-5** identifies the boundaries of the census tracts located in the County.

The County is located between the metropolitan areas of Peoria and Bloomington-Normal and is bounded to the north by Marshall and LaSalle Counties, to the east by Livingston County, to the south by McLean and Tazewell Counties, and to the west by the Illinois River. The City of Eureka is the county seat. The topography is generally flat to moderate sloping with the areas adjacent to streams and drainage ways gently sloping to very steep.

The County is situated in the Till Plains Section of the Central Lowland Province of the Interior Plains. Land near the Illinois River is part of the Wooded Slopes of the Central Mississippi Valley. East of the river the land is part of the Springfield Plain. This area was glaciated and has deposits of loess of various thickness. It is a moderately dissected to strongly dissected rolling plain. The nearly level to very steep uplands are dissected by both large and small tributaries of the Illinois River. Well defined valleys with broad flood plains and numerous stream terraces are along the major streams and the Illinois River. Most areas are well-drained for crops grown in this area. With the exception of the western and northern edges, the Mackinaw watershed encompasses most of the County. The Illinois and Vermilion watersheds drain the remaining portions of the County.

According to the Multi-Resolution Land Characteristics (MRLC) Consortium, in 2021 approximately 90% of the County's land cover was vegetation, including developed open spaces, cultivated crop land, pasture/hay, grassland, and deciduous/evergreen/mixed forest while 5.9% of the County's land cover was considered developed with 2.4% impervious surfaces. Between 2016 and 2021 approximately 1.5 square miles or 0.3% of the land cover in the County changed with 0.10 square miles of development and 0.18 square miles of impervious surfaces gained. **Figure I-6** illustrates the changes by land cover type.

Woodford County has traditionally been known for its prime agricultural land and family farms. According to the 2017 Census of Agriculture, there were 920 farms in Woodford County occupying almost 84% (283,140 acres) of the total land area in the County. The major crops include corn and soybeans while the major livestock includes hogs and pigs, poultry and eggs, cattle and calves, and dairy. The County ranks 32nd in the State for grains (corn and soybeans). In terms of livestock, the County ranks 11th for poultry and eggs, 12th for hogs and pigs, and 27th for cattle and calves. Woodford County ranks 32nd in crop cash receipts and 19th in livestock cash receipts.

The largest employment sectors in Woodford County are manufacturing and health care/social assistance, followed by retail trade and educational services according to the Illinois Department of Commerce and Economic Opportunity. According to the Greater Peoria Economic Development Council, major employers in Woodford County include Parsons Company, Snyder Village Retirement Community, and Apostolic Christian Home. According to U.S. Cluster Mapping the top traded economic cluster in Woodford County is distribution and electronic commerce. Woodford County is home to Eureka College, the college home of President Ronald Reagan.

Figure I-6
Woodford County Land Cover Data: 2016 to 2021

Land Cover Categories	Area 2016	Area Lost	Area Gained	Area 2021	Net Change	Percent Change
Developed, High Intensity	1.36	0.00	0.09	1.45	0.09	6.37%
Developed, Medium Intensity	6.32	0.00	0.23	6.55	0.23	3.61%
Developed, Low Intensity	23.83	-0.12	0.08	23.79	-0.04	-0.17%
Developed, Open Space	12.07	-0.21	0.03	11.90	-0.18	-1.45%
Cultivated Crops	393.39	-0.22	0.00	393.17	-0.21	-0.05%
Pasture/Hay	25.44	-0.04	0.01	25.40	-0.03	-0.12%
Grassland	0.92	-0.07	0.09	0.94	0.01	1.62%
Deciduous Forest	47.16	-0.05	0.08	47.19	0.03	0.06%
Evergreen Forest	0.08	0.00	0.00	0.08	0.00	0.00%
Mixed Forest	8.63	-0.03	0.01	8.61	-0.02	-0.27%
Scrub/Shrub	0.24	-0.08	0.07	0.23	0.00	-1.89%
Woody Wetland	4.23	-0.02	0.01	4.22	-0.01	-0.27%
Emergent Herbaceous Wetland	2.04	-0.09	0.53	2.48	0.44	21.56%
Barren Land	0.25	-0.04	0.17	0.38	0.13	51.38%
Open Water	16.63	-0.57	0.13	16.20	-0.43	-2.59%
Perennial Snow/Ice	0.00	0.00	0.00	0.00	0.00	0.00%

*All numbers expressed in square miles

Source: Multi-Resolution Land Characteristics Consortium's National Landcover Database.

Figure I-7, located at the end of this section, provides demographic and socio-economic data for the County and municipalities. El Paso is the only participating municipality that meets the definition of an Economically Disadvantaged Rural Community (EDRC). FEMA defines an EDRC as a community of 3,000 or fewer individuals whose residents have an average per capita annual income not exceeding 80 percent of the U.S. per capita income based on best available data.

Figure I-8, also located at the end of this section, provides additional demographic information by census tract along with the CDC/ATSDR Social Vulnerability Index (SVI) and overall level of vulnerability. The SVI is a database that uses U.S. Census Bureau American Community Survey data to rank census tracts and counties on 16 social factors within four themes: Socioeconomic Status, Household Characteristics, Racial & Ethnic Minority Status, and Housing Type & Transportation. The goal of the SVI is to help emergency response planners and public health officials identify, map, and plan support for communities that will most likely need support before, during, and after a public health emergency.

The rankings generated by the SVI describe a county's or census tract's relative vulnerability among all other U.S. counties and census tracts. The SVI data used in this document is based on 2020 census tract information. Rankings are based on percentiles ranging from 0 to 1, with higher values indicating greater vulnerability. Each ranking is assigned to one of four levels of vulnerability: Low (0 – 0.2499), Low to Medium (0.2500 – 0.4999), Medium to High (0.5000 – 0.7499), and High (0.7500 – 1). A community with an SVI of 0.6000 or greater is considered an underserved and/or disadvantaged community. In Woodford County the only participating jurisdiction that meets this definition is Eureka.

1.3 Land Use and Development Trends

Population growth and economic development are two major factors that trigger changes in land use. Between 2010 and 2020 the population of Woodford County decreased by 0.5% from 38,664 to 38,467. This is a slight reversal of a larger trend. U.S. Census Bureau records indicates that between 1900 and 2010, the population of Woodford County increased by 77% from 21,822 to 38,664. From 2010 to 2020, the population of Woodford County decreased from 38,664 to 38,467. During that same, all of the participating municipalities experienced population decreases: Roanoke 5.1%, Minonk 3.5%, El Paso 1.9%, Eureka 1.3%, and Germantown Hills 0.8% .

Land use in Woodford County is primarily agricultural. As discussed in the previous section, approximately 84% of the land within the County is used for farming practices. Agriculture is and will continue to be an important industry within the County.

No substantial changes in development within hazard prone areas have occurred within Woodford County that have impacted its overall vulnerability since the previous Plan update was approved according to the Woodford County Emergency Management Agency Director. In terms of the participating jurisdictions, none have experienced substantial changes in development that have impacted their overall vulnerability since the first Plan update was approved according to the Tri-County Regional Planning Commission.

There are no other large-scale economic development initiatives underway in the County. Substantial changes in land use (from forested and agricultural land to residential, commercial, and industrial) are not anticipated within the County in the immediate future. No sizeable increases in commercial or industrial developments are expected within the next five years.

Figure I-4
Location Map

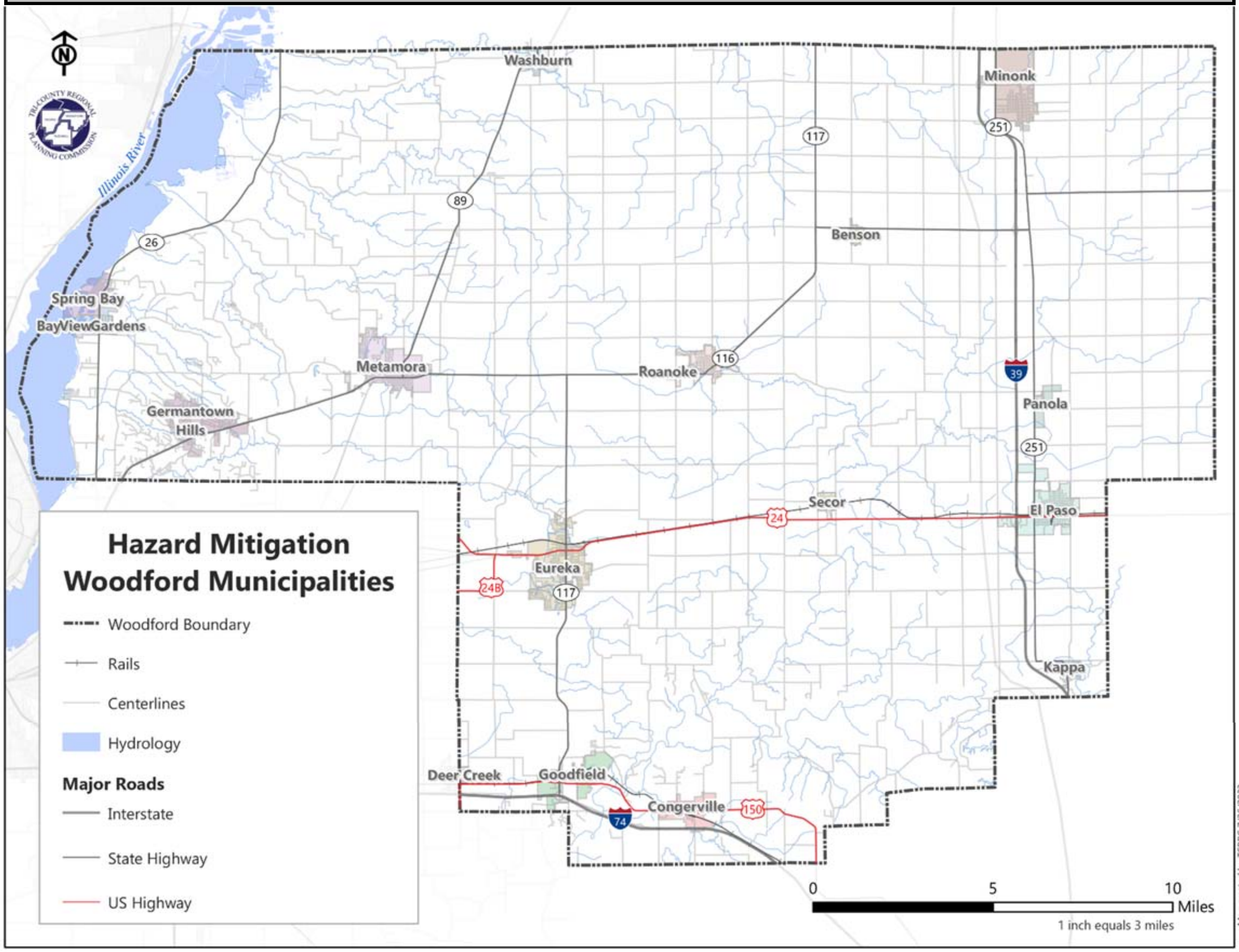


Figure I-5
Woodford County 2020 Census Tract Map

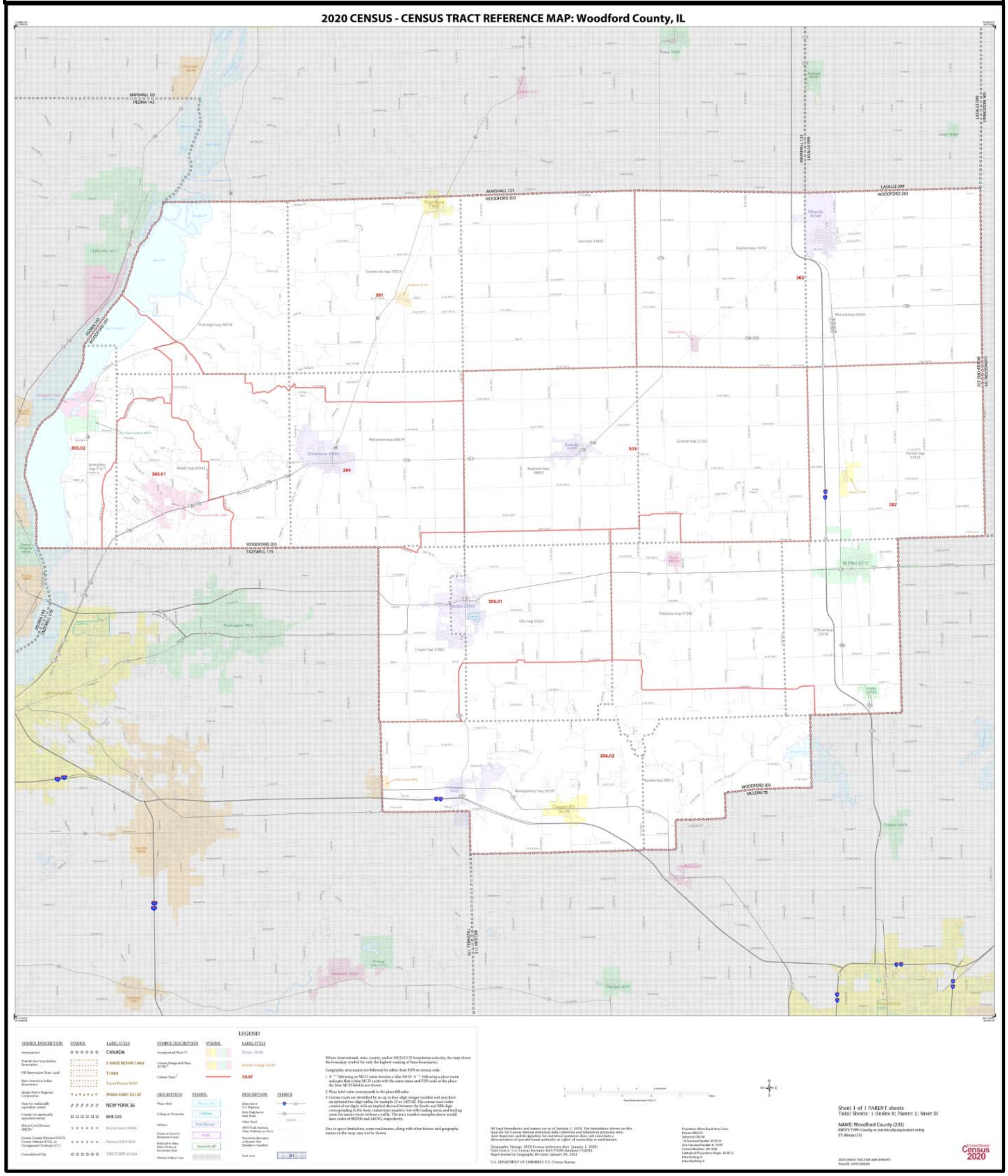


Figure I-7
2017-2021 Demographic Data by Participating Jurisdiction

Participating Jurisdiction	Population (2017-2021)	Projected Population (2030)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2017-2021)	Percent Race								Income			Total Assessed Value of Housing Units (2021)
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races	% of People whose Income is below the Poverty Line	Per Capita Income	EDRC*	
Woodford County (Total)	38,571	39,450	527.546	15,667	96.4%	0.7%	0.4%	1.9%	0.0%	0.0%	0.7%	1.8%	6.20%	$38,480	---	$640,578,335
Woodford County (Unincorp.)	14,514	14,845	517.802	9,404	97.0%	0.7%	0.5%	0.9%	0.1%	0.0%	0.0%	1.8%	2.80%	---	---	$296,644,817
El Paso	2,896	2,962	2.085	1,063	96.4%	2.3%	0.0%	0.5%	0.0%	0.0%	0.0%	1.2%	10.5%	$26,751	Y	$34,436,555
Eureka	5,569	5,696	2.684	2,267	91.7%	1.5%	0.3%	5.0%	0.0%	0.0%	4.1%	2.5%	10.3%	$31,918	N	$64,709,906
Germantown Hills	3,406	3,484	1.636	1,238	99.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	1.0%	1.4%	$49,565	N	$85,361,453
Minonk	2,012	2,058	2.400	933	98.6%	0.2%	0.3%	1.2%	0.2%	0.0%	0.0%	0.7%	12.4%	$30,379	N	$22,541,737
Roanoke	1,831	1,873	0.939	762	98.3%	0.2%	0.0%	5.7%	0.0%	0.0%	0.0%	1.5%	1.5%	$31,611	N	$23,600,278
Illinois	12,821,813	12,841,250	55,513.18	5,412,995	67.8%	14.1%	5.7%	17.5%	0.3%	0.04%	6.2%	6.2%	11.8%	$39,571	---	---
US	329,725,481	---	3,533,038	139,647,020	68.2%	12.6%	5.7%	18.4%	0.8%	0.2%	5.6%	5.6%	12.6%	$37,638	---	---

* For the purposes of FEMA's Hazard Mitigation Assistance grant programs administered by the Illinois Emergency Management Agency, an Economically Disadvantaged Rural Community (EDRC) is defined in Illinois as a community of 3,000 or fewer individuals whose residents have an average per capita annual income not exceeding 80 percent of the U.S. per capita income based on best available data.

Sources: Woodford County Clerk.
Illinois Department Public Health, Population Projections – Illinois, Chicago and Illinois Counties by Age and Sex: July 1, 2015 to July 1, 2030 (2019 Edition).
U. S. Census Bureau, American Community Survey, 5-Year Data Profile.

Figure I-8
2017-2021 Demographic Data by Census Tract

Census Tract (2020)	Incorporated Municipalities that Fall Within Census Tract	Population (2017-2021)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2017-2021)	Percent Race								Income	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races	% of People whose Income is below the Poverty Line	Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
301	Washburn	2,476	107.017	1,087	99.1%	0.0%	0.0%	1.8%	0.1%	0.1%	0.5%	0.3%	14.1%	0.3666	Low to Medium
302	Benson, Minonk	2,874	72.531	1,291	98.6%	0.5%	0.2%	0.9%	0.2%	0.2%	0.0%	0.5%	9.6%	0.1890	Low
303	Roanoke	2,565	68.116	1,038	98.8%	0.2%	0.0%	6.7%	0.0%	0.0%	0.0%	1.1%	2.6%	0.1465	Low
304	Metamora	5,810	48.817	2,439	96.1%	0.4%	1.8%	0.7%	0.0%	0.0%	0.0%	1.7%	4.2%	0.1974	Low
305.01	Germantown Hills	7,899	17.231	2,996	97.2%	0.8%	0.3%	1.5%	0.0%	0.0%	0.0%	1.7%	2.0%	0.0557	Low
305.02	Bay View Gardens, Spring Bay	2,357	22.302	1,098	99.3%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.4%	11.8%	0.2468	Low
306.01	Eureka	6,428	41.397	2,607	91.9%	1.8%	0.2%	4.4%	0.0%	0.0%	3.5%	2.5%	8.8%	0.6148	Medium to High
306.02	Congerville, Deer Creek, Goodfield	3,835	74.342	1,361	95.5%	0.0%	0.2%	0.1%	0.2%	0.2%	0.2%	4.0%	2.5%	0.0460	Low
307	El Paso, Kappa, Panola, Secor	4,327	90.836	1,760	96.5%	1.5%	0.1%	1.0%	0.0%	0.0%	0.2%	1.7%	8.6%	0.4455	Low to Medium
Woodford County		38,571	542.589	15,677	96.4%	0.7%	0.4%	1.9%	0.04%	0.0%	0.7%	1.8%	6.2%	0.0226	Low

Sources: CDC/ATSDR Social Vulnerability Index.
U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

2.0 PLANNING PROCESS

The Woodford Multi-Jurisdictional Multi-Hazard Mitigation Plan (the Plan) was updated through the Tri-County Regional Planning Commission (TCRPC) and the Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee (MAC or Committee). The Plan was prepared to comply with the Disaster Mitigation Act of 2000 and incorporates the nine recommended tasks for developing or updating a local hazard mitigation plan as outlined in Federal Emergency Management Agency's (FEMA) *Local Mitigation Planning Handbook*. **Figure PP-1** provides a brief description of the process utilized to prepare this Plan.

Figure PP-1
Description of Planning Process

Tasks	Description
Task One: Building the Planning Team	The MAC was reformed with broad representation and specific expertise to assist the TCRPC, the County, and the Consultant in updating the Plan.
Task Two: Outreach Strategy	Early and ongoing public involvement activities were conducted throughout the Plan's development to ensure the stakeholders and public was given every opportunity to participate and provide input.
Task Three: Risk Assessment	The Consultant identified and profiled the natural and man-made hazards that have impacted the County and conducted vulnerability analyses to evaluate the risk to each participating jurisdiction.
Task Four: Capability Assessment	Participating jurisdictions have a unique set of capabilities and resources available to accomplish hazard mitigation. Capabilities that include planning and regulatory, administrative and technical, financial, and education and outreach were identified and cataloged to determine the existing capabilities of each participant related to hazard and loss reduction/prevention.
Task Five: Mitigation Strategy	After reviewing existing plans and completing the risk assessment, the Consultant assisted the MAC in updating the goals and objectives for the Plan. The participating jurisdictions were then asked to identify mitigation actions that had been started and/or completed since the previous Plan was adopted. In addition, they were asked to identify any new mitigation actions based on the results of the risk assessment. The new mitigation actions were then analyzed, categorized, and prioritized.
Task Six: Plan Maintenance and Update	The method and schedule for monitoring, evaluating, and updating the Plan was reviewed and discussed with the participating jurisdictions. The Plan update will be monitored and evaluated by a Plan Maintenance Subcommittee on an annual basis and updated again in five years.
Task Seven: Review and Adopt the Plan	The draft Plan update summarized the results of Tasks Two through Seven. The Plan was reviewed by the participants and a public forum was held to give the public an additional opportunity to provide input. Comments received were incorporated into the draft Plan update and submitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and FEMA for review and approval. Comments received from IEMA-OHS and FEMA were incorporated into the final Plan update. The final Plan update was then submitted to the County and participating jurisdictions for adoption.

The Plan update and development was led at the staff level by Reema Abi-Akar, Senior Planner, and Michael Bruner, Senior Planner, of the TCRPC. American Environmental Corp. (AEC) an environmental consulting firm, with experience in hazard mitigation, risk assessment and public involvement, was employed to guide the TCRPC, the County, and participating jurisdictions through the planning process.

Participation in the planning process, especially by the County and local government representatives, was crucial to the update and development of the Plan. To ensure that all participating jurisdictions took part in the planning process, participation requirements were established. Each participating jurisdiction agreed to satisfy the following requirements in order to be included in the Plan update. All of the participating jurisdictions met the participation requirements.

- Attend at least one Committee meeting.
- Complete a capability assessment identifying existing capabilities and resources (i.e., plans, policies, ordinances studies, reports, maps, etc.) available to accomplish hazard mitigation.
- Identify/submit a list of critical infrastructure and facilities.
- Review the risk assessment and provide additional information on events and damages when available.
- Participate in the update of the mitigation goals and project prioritization methodology.
- Provide information on any mitigation actions started and/or completed since the adoption of the original Plan.
- Identify and submit a list of new mitigation actions.
- Review and comment on the draft Plan update.
- Formally adopt the Plan update.
- Where applicable, incorporate the Plan update into existing planning efforts.
- Participate in the Plan update maintenance.

2.1 MITIGATION ADVISORY COMMITTEE

As previously mentioned, at the start of the planning process, the Tazewell & Woodford Counties MAC was formed to update the hazard mitigation plan. The Committee included representatives from each participating jurisdiction, as well as agriculture, business, education, emergency services, planning, social services, and utilities.

Figure PP-2 details the entities represented on the Committee and the individuals who attended on their behalf. The MAC was chaired by the TCRPC. Additional technical expertise was provided by the staff at the Illinois Emergency Management Agency and the Illinois Department of Natural Resources Office of Water Resources.

Figure PP-2
Tazewell & Tazewell Counties Mitigation Advisory Committee
Member Attendance Record

Representing	Name	Title	1/31/2023	4/25/2023	7/25/2023	10/19/2023
American Environmental Corporation	Bostwick-Campbell, Andrea	EMS Manager		X	X	
American Environmental Corporation	Runkle, Ken	Risk Assessor	X	X		X
American Environmental Corporation	Smith, Callie	Environmental Analyst	X		X	X
American Red Cross	Crutcher, Julie	Disaster Specialist	X			
American Red Cross	Hathaway, Guy	Disaster Services Volunteer	X			
Creve Coeur, Village of	Egan, Justin	Chief of Police	X	X	X	
Creve Coeur, Village of	Keogel, Terry	Public Works Director		X	X	
Creve Coeur, Village of	Ristow, Roger	Assistant Fire Chief		X		
Creve Coeur, Village of	Wallace, Shanita	Trustee	X	X	X	X
East Peoria Community High School District #309	Greuter, Marjorie	Superintendent	X	X	X	
East Peoria Drainage & Levee District	Atchison, Thomas	District Engineer				X
East Peoria Drainage & Levee District	Koch, Kevin	District Engineer				X
East Peoria Drainage & Levee District	Ridgley, Patrick	Commissioner		X		
East Peoria Drainage & Levee District	Whetstone, Monica	Commissioner		X	X	
East Peoria, City of	Livingston, Ty	Director of Planning & Community Development	X	X	X	X
East Peoria, City of	Zimmerman, Bobby	Fire Chief	X			
El Paso, City of	Kauther, Barry	Director of Public Service	X	X	X	X
EP!C	Harper, Dawn	Transportation Coordinator	X	X	X	
Eureka, City of	Brown, Melissa	City Services Coordinator	X	X	X	
Germantown Hills, Village of	Brecklin, Rich	Director of Public Works		X	X	X
Germantown Hills, Village of	Doubet, Ann	Administrator			X	
Germantown Hills, Village of	Sasso, Ann	Administrator	X			
Minonk, City of	McNamara, Julie	Alderwoman	X	X		
Minonk, City of	Minz, Tonya	Director of Emergency Management / EMT	X	X	X	X
Minonk, City of	Moline, Bill	Administrator	X		X	X
Morton, Village of	Bullard, Jamey	Engineering Tech	X	X	X	X
National Weather Service	Shimon, Ed	Warning Coordination Meteorologist	X	X	X	
Pekin Park District	Bettin, Cameron	Executive Director	X	X	X	X
Pekin, City of	Rendleman, Tony	Deputy Fire Chief			X	
Peoria County - EMA	Marks, Jason	Director of Emergency Management & Preparedness	X			
Roanoke, Village of	Scarbeary, Joshua	Trustee				X
Roanoke, Village of	Smith, Michael	Mayor		X	X	
Tazewell County - Community Development	Workman, Jaclynn	Administrator		X	X	
Tazewell County - EMA	Cook, Dawn	Director	X	X		X
Tazewell County Farm Bureau	Rogier, Emily	Manager	X			
Tremont, Village of	Hansen, Eric	Engineer			X	X
Tri-County Regional Planning Commission	Abi-Akar, Reema	Planner III / Senior Planner	X	X	X	X
Tri-County Regional Planning Commission	Bruner, Michael	Planner III / Senior Planner	X	X		
Tri-County Regional Planning Commission	Guevara, Gabriel	Planner I			X	
Tri-County Regional Planning Commission	Hunt, Gavin	Planner I			X	
Washington, City of	Carr, Dennis	Engineer			X	
Washington, City of	Oliphant, Jon	Planning & Development Director	X	X	X	X
WMBD	Danesh, Shabnam	Reporter	X			
Women's Council of Realtors	DeWitte, Dori	Realtor	X			
Woodford County - EMA	McCanless, Kent	Director	X	X	X	X
Woodford County - Highway Department	Moore, Conrad	Engineer		X		
Woodford County - Sheriff's Office	Smith, Matt	Sheriff				X
Woodford County Farm Bureau	Cook, Malena	Manager	X			

Mission Statement

Over the course of the first two meetings the MAC reviewed and discussed the mission statement for the Committee which describes their objectives for the Plan update. This mission statement was updated based on the mission statement approved for the previous Plan update.

"The mission of the Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee is to prepare mitigation plans that document the risks associated with the natural and man-made hazards that impact the two-county area and identify projects and activities that mitigate the negative impacts of natural hazards on citizens, infrastructure, private property and critical facilities."

Mitigation Advisory Committee Meetings

The MAC met four times between January 2023 and October 2023. **Figure PP-2** identifies the representatives by jurisdiction present at each meeting. **Appendices A** and **B** contain copies of the attendance sheets and meeting minutes for each meeting. The purpose of each meeting, including the topics discussed, is provided below.

First MAC Meeting – January 31, 2023

The purpose of this meeting was to explain the planning process to the Committee members and give them a brief overview of the planning process including what mitigation is, what a hazard mitigation plan is and why the Plans need to be updated.

Information needed from each participant was discussed and representatives for each county and the participating jurisdictions were asked to complete the forms entitled "Capability Assessment Worksheet," "Critical Facilities & Infrastructure," "Identification of Severe Weather Shelters" and "Drinking Water Supply Worksheet" and return them at the next meeting.

Committee members were then asked to identify any recent or historic natural hazard events that have impacted the counties and participants. A "Hazard Events Questionnaire" was distributed to solicit information on hazard events. Community participation was also discussed. Each county and participating jurisdiction was asked to make information available on the planning process at their offices and in their communities. A "Citizen Questionnaire," was also distributed electronically to Committee members prior to the meeting for distribution to their constituents to gauge the public's perception about the hazards that impact each county.

The Committee members then discussed vulnerable community assets and completed the form entitled "Critical Facilities Vulnerability Survey" which will be used in the vulnerability analyses. Next, mitigation actions were defined, and examples were discussed. As part of the Plan update, individual mitigation action lists will be created for each participating jurisdiction. Committee members were asked to identify any mitigation projects and activities their jurisdictions had started and/or completed since the previous Plan was completed in 2019. Ideas for new potential mitigation projects and activities were presented. Representatives for each county and the participating jurisdictions were asked to complete the forms entitled "Existing Mitigation Project/Activity Status" and "New Hazard Mitigation Projects" and return them at the next meeting. Finally, drafts of the updated mission statement and mitigation goals were presented for review.

Second MAC Meeting – April 25, 2023

At the second Committee meeting portions of the updated natural and man-made hazard risk assessment sections were presented for review. Following the review of the risk assessment, the Committee members participated in an exercise to calculate the Risk Priority Index (RPI) for each participant. The RPI can assist jurisdictions in determining which hazards present the highest risks and therefore which ones to focus on when formulating mitigation projects and activities. The Committee then discussed the draft mission statement and updated mitigation goals. The mission statement and mitigation goals were then reviewed, discussed, and finalized with no changes. Next, an explanation of what a mitigation action prioritization methodology is and how it fits into the Mitigation Strategy was provided. The Committee reviewed the updated mitigation project prioritization methodology and approved it with no changes.

The concept of community lifelines was also discussed. Community lifelines enable the continuous operation of critical government and business functions essential to human health and safety or economic security. While the concept was developed to support emergency response and planning, FEMA has begun applying it to all phases of emergency management, including mitigation. Community lifelines will be included in most project descriptions to create a clear connection to the concept.

Finally, a discussion on how the mitigation projects and activities identified by the participating jurisdictions will be presented in the updated Plans was provided. Participants were encouraged to provide their mitigation project lists prior to the 3rd meeting when draft lists will be distributed for review.

Third MAC Meeting – July 25, 2023

The purpose of the third Committee meeting was to discuss the vulnerability analysis for select natural hazards and the preliminary results of the RPI exercise. Members then reviewed the draft jurisdiction-specific mitigation action tables which identified and prioritized the new and existing mitigation projects and activities provided by the participants. Members were given the opportunity to add additional projects and activities to their tables.

The public forum and adoption process were then discussed, and a date for the public forum was set. Finally, the plan maintenance and update requirements were discussed. The Plan update will be monitored and evaluated on an annual basis by a Plan Maintenance Subcommittee which will be made up of the Regional Planning Commission, participating jurisdictions, and key members of the Committee. The Plan must be reviewed, revised, and resubmitted to IEMA-OHS and FEMA at least once every five years.

Fourth MAC Meeting – October 19, 2023

At this Committee meeting the public was provided an opportunity to ask questions and provide comments on the draft Plan update.

2.2 Outreach Strategy

To engage the public in the planning process, a comprehensive outreach strategy was developed. The strategy was structured to engage the public, including underserved communities and vulnerable populations, in a two-way dialogue, encouraging the exchange of information throughout the planning process. A mix of public involvement techniques and practices were utilized to:

- disseminate information;
- identify additional useful information about natural hazard occurrences and impacts;
- assure that interested residents would be involved throughout the Plan update's development; and
- cultivate ownership of the Plan update, thus increasing the likelihood of adoption by the participating jurisdictions.

The dialogue with the public followed proven risk communication principles to help assure clarity and avoid overstating or understating the impacts posed by the natural hazards identified in the Plan update. The following public involvement techniques and practices were applied to give the public an opportunity to access information and participate in the dialogue at their level of interest and availability.

Citizen Questionnaire

A citizen questionnaire was developed to gather facts and gauge public perceptions about natural hazards that affect Woodford County. The questionnaire was distributed electronically to the Committee members who were encouraged to make it available to their residents and the general public. A copy of the questionnaire as well as any web and social media posts related to the questionnaire are contained in **Appendix C**.

A total of 91 questionnaires were completed and returned to the Committee. Questionnaires were completed by residents in each participating jurisdiction. These responses provide useful information to decision makers as they determine how best to disseminate information on natural hazards and safeguard the public. Additionally, these responses identify the types of projects and activities the public is most likely to support. The following provides a summary of the results.

- Respondents felt that severe summer storms were the most frequently encountered natural hazard in Tazewell and Woodford Counties, followed by severe winter storms and floods. However, compiled weather records indicate that flood events, in fact, occur more frequently than severe winter storms.
- The most effective means of communication identified by respondents to disseminate information about natural hazards were social media and the Internet, followed by mailings and television. Information made available over the radio, as well as fact sheets/brochures disseminated via fire departments/law enforcement and materials from municipal/county offices also received some support among respondents.
- In terms of the most needed mitigation projects and activities, the following categories received the strongest support:
  - maintain power during storms by burying power lines, trimming trees and/or purchasing backup generators (79%);
  - maintain roadway passages during snowstorms and heavy rains (58%);
  - retrofit critical infrastructure (49%);

- flood or drainage protection (48%); and
- identify residents with special needs in order to provide assistance during a natural hazard event (48%);

FAQ Fact Sheet
A "Frequently Asked Questions" fact sheet was disseminated to help explain what a natural hazards mitigation plan is and briefly describe the planning process. The fact sheet was made available to the Regional Planning Commission, Committee members, and each participating jurisdiction to provide to their constituents. A copy of the fact sheet is contained in **Appendix D**.

News Releases/Articles and Web/Social Media Posts
News releases were prepared and submitted to local media outlets and posted to the TCRPC Facebook, Twitter, and web pages prior to each Committee meeting. The releases announced the purpose of the meetings and how the public could become involved in the Plan update's development. TCRPC also published articles in its monthly newsletter. **Appendix E** contains a list of the media outlets that received the news releases while copies of the releases, Facebook, Twitter, and web posts, and any news articles published can be found in **Appendix F**.

Mitigation Advisory Committee Meetings
All of the meetings conducted by the Committee were open to the public and publicized in advance to encourage public participation. At the end of each meeting, time was set aside for public comment. In addition, Committee members were available throughout the planning process to talk with residents and local government officials and were responsible for relaying any concerns and questions voiced by the public to the Committee. Interested individuals from the public who attended the Planning Committee meetings were provided handout materials and encouraged though not required to provide their names and/or sign the attendance sheets. Copies of the attendance sheets are included in **Appendix A**.

Public Forum
The final meeting of the Committee, held on October 19, 2023 was conducted as an open-house public forum. The open-house format was chosen for this forum instead of a hearing to provide greater flexibility for residents who wished to participate. Residents were able to come and go at any time during the forum, reducing conflicts with business, family, and social obligations.

In conjunction with the public forum, the updated draft Plans were made available for review and comment on the Tri-County Regional Planning Commission's website. A two-page handout summarizing the planning process and a link to a comment survey that could be used to provide feedback on the updated draft Plans were also posted on the website.

At the forum, residents could review a draft of each Plan; meet with representatives from the counties, the participating jurisdictions, and the Consultant; ask any questions; and provide verbal and/or written comments on the updated draft Plans. Individuals attending the public forum were provided with a three-page handout summarizing the planning process and a comment sheet that could be used to provide feedback on the updated draft Plans. **Appendices G** and **H** contain copies of these materials.

Public Comment Period

After the public forum, the updated draft Plans were made available for public review and comment through November 2, 2023 at the Tri-County Regional Planning Commission's Office and on the Commission's website. A three-page handout summarizing the planning process and a link to a comment survey that could be used to provide feedback on the updated draft Plans were also posted on the website. **Appendix H** contains a copy of the online comment survey. Residents were encouraged to submit their comments electronically, by mail or through representatives of the Committee.

Results of Outreach Strategy

The public involvement strategy implemented during the planning process created a dialogue among participants and interested residents, which resulted in many benefits, a few of which are highlighted below.

- *Acquired additional information about natural hazards.* Verifiable hazard event and damage information was obtained from participants that presents a clearer assessment of the extent and magnitude of natural hazards that have impacted each County. This information included details about thunderstorms with damaging winds, severe winter storms, tornadoes, and floods not available from state and federal databases.
- *Obtained critical facilities damage information.* Data collection surveys soliciting information about critical facilities damaged by natural hazards were used to supplement information obtained from government databases. This information was vital to the preparation of the vulnerability analysis.
- *Increased awareness of the impacts associated with natural hazard events within the County.* Understanding how mitigation actions can reduce risk to life and property helped generate ***over 30 new mitigation projects and activities*** at the local level that had not been previously identified in any other planning process.

2.3 Participation Opportunities for Interested Parties

Businesses, schools, not-for-profit organizations, neighboring counties, and other interested parties were provided multiple opportunities to participate in the planning process. Wide-reaching applications were combined with direct, person-to-person contacts to identify anyone who might have an interest or possess information which could be helpful in updating the Plan.

Agricultural Community

Representatives from the agricultural community were invited to serve on the Committee through the Tazewell County and Woodford County Farm Bureaus and the Tazewell County Soil and Water Conservation District. The Farm Bureaus both served as technical partners on the Planning Committee, receiving all electronic communications including surveys, meeting announcements, and meeting handouts to provide their members and providing input into the planning process.

Education

The Mason, Tazewell, Woodford Regional Office of Education and the Tazwell-Mason Counties Special Education Association were contacted about serving on the Committee as technical partners representing the school districts in the area and providing input into the planning process and coordinating with the districts. While invited to participate directly, only the East Peoria

Community High School District #309 chose to be included as a participating jurisdiction in the Plan update. While Illinois Central College was invited to participate in the planning process, they chose not to be a participating jurisdiction.

Healthcare
Input was sought from the healthcare community. Representatives from the Tazewell County and Woodford County Health Departments, Snyder Village, and Fondulac Rehabilitation & Health Care Center were contacted about serving on the Committee and received all electronic communications including surveys, meeting announcements, and meeting handouts.

Regional Planning
The Tri-County Regional Planning Commission assisted in the Plan update and served on the Committee, providing input into the planning process and chose to be included as a participating jurisdiction in the Plan update.

Social Service Agencies
American Red Cross, Empowering People. Inspiring Capabilities (EP!C), the Association for the Developmentally Disabled of Woodford County (ADDWC), Pekin Housing Authority, Tazewell County Resources Center, Bridgeway, and the Woodford County Housing Authority were invited to provide input into the planning process and received all electronic communications including surveys, meeting announcements, and meeting handouts. The American Red Cross, EP!C, and ADDWC served as technical partners on the Committee.

Utilities
Utility companies serving the area were also invited to participate in the Plan update. Representative from the Greater Peoria Sanitary District, East Peoria Sanitary District, and Ameren Illinois were invited to serve served as technical partners on the Committee and provided input into the planning process. The Senior Emergency Response Specialist for Ameren Illinois again provided infrastructure damage information not available in state or federal databases that provides a glimpse into the scope of the damages that have be sustained to infrastructure from natural hazard events in the region.

Other Government Entities
The Pekin Park District, East Peoria Drainage & Levee District, and National Weather Service (NWS) Weather Forecast Office in Lincoln were contacted and invited to participate on the Committee. The Park District and the Levee District both chose to be included as a participating jurisdiction in the Plan update and the NWS served as a technical partner on the Committee.

Neighboring Counties
A memo was sent to EMA/ESDA coordinators in the neighboring counties inviting them to participate in the mitigation planning process. The counties contacted included Fulton, LaSalle, Livingston, Logan, Marshall, Mason, McLean, and Peoria. **Appendix I** contains a copy of the invitation memo.

2.4 IDENTIFICATION OF EXISTING CAPABILITIES

Each participating jurisdiction has a unique set of capabilities and resources available to accomplish hazard mitigation and reduce long-term vulnerabilities to hazard events. In order to identify these existing capabilities and resources, a Capability Assessment was conducted. The Capability Assessment helps determine the ability of the participating jurisdictions to implement the Mitigation Strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, program, or projects. It is important to try and establish which goals and actions are feasible based on an understanding of the organizational capacity of those entities tasked with their implementation. This assessment is designed to provide a general overview of the key capabilities in place for each participating jurisdiction along with their potential effect of loss reduction.

In order to catalog the existing capabilities of each participant, Capability Assessment Worksheets were distributed to each of the participating jurisdictions at the first Committee meeting on January 31, 2023. The worksheets requested information on four primary types of capabilities: planning and regulatory; administrative and technical; financial; and education and outreach. The following provides a brief description of each capability type.

Planning & Regulatory Capabilities: Planning and regulatory capabilities are based on the implementation of existing plans, policies, codes, ordinances, resolutions, local laws, and programs that prevent or reduce the impacts of hazards and guide and manage growth and development.

Administrative & Technical Capabilities: Administrative and technical capabilities are based on the available staff and personnel resources as well as their related skills and tools that can be used to develop and implement mitigation actions, policies, and programs.

Financial Capabilities: Financial capabilities include those resources a jurisdiction has access to or is eligible to use to implement mitigation actions, polices, and programs.

Education & Outreach Capabilities: Education and outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information.

Figures PP-3 through **PP-5** summarize the results of the Capability Assessment by participating jurisdiction type (i.e., county/municipalities, schools, fire protection districts, townships, healthcare facilities, etc.) A capability level of "Limited", "Moderate" or "High" was assigned by capability type to each participating jurisdiction based on the number of available capabilities and resources as well as the jurisdiction's size/area served. **Figure PP-6** summarizes the individual capability levels by capability type and provides an overall capability ranking for each participant.

This assessment provides a consolidated inventory of existing plans, ordinances, programs, and resources in place. Whenever applicable, these existing capabilities were reviewed and incorporated into the Plan.

Highlights from the Capability Assessment include:

- ❖ The County and all of the municipalities, with the exception of Minonk, have comprehensive/master land use plans in place.
- ❖ Only El Paso and Eureka have building codes in place.
- ❖ The County and all of the municipalities have and a zoning ordinance in place.
- ❖ Only the County and Germantown Hills have continuity of operations plans in place.

The County, El Paso, Eureka, Germantown Hills, and Roanoke are fortunate to have the resources and abilities to potentially expand on and improve the existing policies and programs identified. Minonk has more limited resources and abilities to expand on and improve the existing policies and programs identified. The lack of legal authority and policies/programs currently in place, may hamper its ability to expand and strengthen existing policies and programs. Their fiscal and staffing situations are also limited.

Overcoming these limitations will require time and a range of actions including, but not limited to improved general awareness of natural hazards and the potential benefits that may come from the development of new standards in terms of hazard loss prevention and the identification of resources available to expand and improve existing policies and programs should the opportunity arise.

Many of the participating jurisdictions have actively sought and received assistance from the Tri-County Regional Planning Commission and Greater Peoria Economic Development Council as well as technical assistance from the Woodford Building and Zoning Department to develop and maintain a wide array of plans, programs and ordinances. While there is still resistance from unincorporated Woodford County residents towards building codes, the County's Building and Zoning Department has worked diligently to implement community and economic development initiatives.

Based on conversations with Committee members, none of the jurisdictions that participated in the 2019 Plan update have incorporated it into other planning mechanisms within their jurisdictions. However, several of the participating jurisdictions, including the County and Germantown Hills, have identified the need to adopt, review, and/or strengthen current policies or programs in the near future that will allow for the opportunity to integrate the Plan into these mechanisms.

2.5 REVIEW & INCORPORATION OF EXISTING PLANS

The existing plans, studies, reports, technical information, and maps that were reviewed and incorporated into the Plan update, where appropriate, can be found in Section 7.0 References and are cited in each appropriate section.

A review of local plans revealed that while the County, El Paso, Eureka, Germantown Hills and Roanoke have comprehensive/land use plans, they have not been updated since the 2019 Plan update was completed. Minonk has not yet developed a comprehensive/land use plan.

Figure PP-3
County / Municipalities – Planning & Regulatory Capabilities

Capability Type	**County/Municipality**					
	Woodford County	El Paso	Eureka	Germantown Hills	Minonk	Roanoke
Plans, Policies, Codes & Ordinances						
Comprehensive/Master Land Use Plan	X	X	X	X		X
Continuity of Operations Plan	X			X		
Stormwater Management Plan	X		X	X		
Transportation Plan		X				
Economic Development Plan		X	X			
Emergency Operations Plan	X	X	X	X		X
Disaster Recovery Plan	X					
Threat & Hazard Identification Risk Assessment (THIRA) - County Only	X					
Infrastructure Maps		X	X	X	X	X
Building Codes		X	X			
Floodplain Ordinance	X		X			X
Stormwater Ordinance	X	X	X	X		
Zoning Ordinance	X	X	X	X	X	X
Subdivision Ordinance	X	X	X	X		X
Historic Preservation Ordinance						
Private Sewage Disposal System Ordinance - County Only						
Manufactured/Mobile Home Tie Down Ordinance		X			X	
Steep Slope Ordinance						
Mined Areas/Developed Over Mined Areas Ordinance						
National Incident Management System (NIMS) Adoption	X				X	
National Flood Insurance Program (NFIP) Participation	X					X
Community Rating System (CRS) Participation						
Level of Capability	**M**	**M**	**M**	**L/M**	**L**	**L/M**

An "X" indicates that the item is currently in place and being implemented.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure PP-4
County / Municipalities – Administrative & Technical Capabilities

Capability Type	Woodford County	El Paso	Eureka	Germantown Hills	Minonk	Roanoke
Adminstrative & Technical						
Zoning Board	X	X		X	X	X
Public Utility Board						
Planning Commission	X		X	X		X
Mutual Aid Agreements	X	X	X	X	X	
Administrator/Manager		X	X	X	X	
Building Inspector/Officer			X			
Community/Economic Development Planner				X		
Emergency Manager	X	X	X		X	X
Engineer/Construction Project Manager						
GIS Coordinator	X					
Grant Administrator/Writer						
Fire Chief - Municipalities Only						
Floodplain Administrator	X					
Police Chief - Municipalities Only		X	X			
Public Works/Streets Director - Municipalities Only		X	X	X	X	X
Water Superintendent - Municipalities Only		X	X		X	X
Zoning Officer/Administrator	X	X		X	X	X
Solid Waste Director - County Only						
Level of Capability	**M**	**L/M**	**M**	**L/M**	**L/M**	**L/M**

County/Municipality columns: Woodford County, El Paso, Eureka, Germantown Hills, Minonk, Roanoke.

An "X" indicates the presence of staff with specified knowledge or skills.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure PP-5
County / Municipalities – Financial / Education & Outreach Capabilities

Capability Type	Woodford County	El Paso	Eureka	Germantown Hills	Minonk	Roanoke
Financial						
Roadway/Bridge Improvement Plan - County Only						
Capital Improvements Program	X	X	X		X	
Tax Levies for Special Purposes	X	X	X	X	X	X
Motor Fuel Tax	X	X	X	X	X	X
General Obligation Bonds and/or Special Tax Bonds	X	X	X	X	X	X
Utility Fees (Stormwater, Sewer, Water, Gas, or Electric Service)		X	X	X	X	X
Impact Fees - New Development		X		X		
Federal Funding Programs (Non-FEMA)	X		X	X		
Level of Capability	**M**	**H**	**H**	**H**	**M**	**M**
Education & Outreach						
StormReady Certification						
Natural Disaster/Safety-Related School Programs						
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	X					
Seasonal Outreach	X					
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs Populations)	X	X				X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues						
Level of Capability	**M**	**L**	**L**	**L**	**L**	**L**

An "X" indicates a given resource is locally available for mitigation purposes.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure PP-6
Capability Rankings by Participating Jurisdiction

Capability Type	County/Municipality					
	Woodford County	El Paso	Eureka	Germantown Hills	Minonk	Roanoke
Planning & Regulatory	M	M	M	L/M	L	L/M
Administrative & Technical	M	L/M	M	L/M	L/M	L/M
Financial	M	H	H	H	M	M
Education & Outreach	M	L	L	L	L	L
Overall Capability	**M**	**M**	**M**	**L/M**	**L/M**	**L/M**

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

3.0 RISK ASSESSMENT

Risk assessment is the process of evaluating the vulnerability of assets in order to estimate the potential loss of life, personal injury, economic loss, and property damage resulting from natural and man-made hazards. Assets are determined by each participant and can include people; structures (i.e., critical facilities, lifelines, and infrastructure); systems (i.e., networks such as electrical and communications, etc.); and natural, historic, and cultural resources). This section summarizes the results of the risk assessment conducted on the natural and man-made hazards in Woodford County. The information contained in this section was gathered by evaluating local, state, and federal records from the last 20 to 70 years.

This risk assessment identifies the natural and man-made hazards deemed most important to the Planning Committee and includes a profile of each hazard that identifies past occurrences, the severity or extent of the events, and the likelihood of future occurrences. It also provides a vulnerability analysis that identifies the impacts to public health and property, evaluates the assets of the participating jurisdictions and estimates the potential impacts each natural hazard would have on the evaluated assets. Where applicable, the differences in vulnerability between participating jurisdictions are described.

The subsequent sections provide detailed information on each of the selected natural hazards. The sections are color coded and ordered by the frequency with which the natural hazard has previously occurred within the County. Each natural hazard section contains three subsections: hazard identification, hazard profile, and hazard vulnerability.

Hazard Selection

One of the responsibilities of the Committee was to review the natural hazards detailed in the previous Plan and decide if additional hazards should be included in the Plan update. Over the course of the first two meetings, the Committee members discussed their experiences with natural and man-made hazard events and reviewed information on various hazards. After discussing the information provided, the Committee chose not to add any additional hazards to this Plan update.

The following identifies the hazards included in the Plan update:

- severe storms (thunderstorms, hail, lightning & heavy rain)
- severe winter storms (snow & ice)
- floods (riverine & flash)
- tornadoes
- excessive heat
- extreme cold
- drought
- landslides
- earthquakes
- mine subsidence
- dam failures
- man-made hazards including:
  - hazardous substances (generation, transportation & storage/handling)
  - waste disposal
  - hazardous materials incidents
  - waste remediation
  - terrorism

As with the previous Plan update, the Committee chose not to include levee failures. Information obtained from the U.S. Army Corps of Engineers' National Levee Database indicates there are three small, locally constructed, locally operated and maintained levees located in Woodford

County. No records were located to indicate any of these levees have ever experienced a levee failure. None of the levees protect a sizeable amount of land or a considerable number of structures or individuals. The largest of the three levees, Hermann Drainage District Levee, is 1.63 miles long and protects an area of 0.41 square miles with one individual and one structure. Due to the limited impacts on the population, land use and infrastructure, the Committee did not feel levees warranted inclusion in the Plan update.

Risk Priority Index

After reviewing the preliminary results of the risk assessment at the second meeting, Committee members and the participating jurisdictions were asked to complete a Risk Priority Index (RPI) exercise for the hazards that have the potential to impact the County and participating jurisdictions. The RPI provides quantitative guidance for ranking the hazards and offers participants with another tool to determine which hazards present the highest risk and therefore which ones to focus on when formulating mitigation actions.

Each hazard was scored on three categories: 1) frequency, 2) impacts on life and health, and 3) impacts on property and infrastructure. A scoring system was developed that assigned specific factors to point values ranging from 1 to 4 for each category. For those hazards that were not applicable to a particular jurisdiction, a value of "NA" was assigned to each category. The higher the point value, the greater the risk associated with that hazard. **Figure R-1**, located at the end of this section, identifies the factors and values/point values associated with each category. Participants were asked to score the selected hazards based on the perspective of the entity they represented on the Committee.

The Consultant took the point values assigned to each category and averaged the remaining results and came up with an overall value for each category. The values for each category were then added together to calculate an RPI score for each hazard. A ranking was then assigned to each hazard based on the RPI score. **Figure R-2**, located at the end of this section, provides the hazard rankings for the participating jurisdictions.

FEMA's National Risk Index

The National Risk Index (NRI) is an online mapping and data-based interface that helps illustrate a community's risk to 18 identified natural hazards. The natural hazards identified by the NRI and included in this Plan are cold wave, drought, earthquake, hail, heat wave, ice storm, landslides, lightning, riverine flooding, strong wind, tornado, and winter weather. The NRI leverages available source data for natural hazard and community risk factors, such as social vulnerability and community resilience, to develop a baseline relative risk measurement for each county and census tract in the U.S. The goal is to help individuals better understand the natural hazard risk of their communities.

In the NRI, risk is defined as the potential for negative impacts as a result of a natural hazard. The risk equation behind the NRI includes three components: a natural hazards risk component (expected annual loss), a consequence enhancing component (social vulnerability), and a consequence reduction component (community resilience). Social vulnerability represents the susceptibility of social groups to the adverse impacts of natural hazards. Community resilience represents the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

The scores and ratings generated by the NRI describe a county's or census tract's relative position among all other U.S. counties and census tracts for a given component. Dataset Update Version 1.19.0 released March 2023 was used in this analysis. Scores can range from 0 (the lowest possible value) to 100 (the highest possible value). For every score there is assigned one of five qualitative ratings: "Very Low", "Relatively Low", "Relatively Moderate", "Relatively High", and "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating.

In order to provide the participating jurisdictions and public with additional information on the natural hazards included in the Plan, **Figure R-3** located at the end of this section, presents the overall NRI scores and ratings for each census tract as well as for the County. 2020 census tract information was used in this version of the NRI. In 2020, there were nine census tracts in Woodford County. Only two of the census tracts has a Risk Index rating of "Relatively Moderate". The rest of the census tracts have a Risk Index rating of "Relatively Low". One of the census tracts has a Social Vulnerability rating of " Relatively High" and one has a Social Vulnerability rating of "Relatively Moderate". The remaining census tracts have a Social Vulnerability rating of "Relatively Low" or "Very Low".

Figure R-4, located at the end of this section, provides the NRI scores and ratings by hazard type for each census tract as well as the County. Hazard ratings of "Relatively High" and "Very High" are highlighted in yellow by census tract. The hazards with the highest relative ratings include strong winds, ice storms, extreme cold, and excessive heat.

Critical Facilities & Infrastructure

Critical facilities and infrastructure include structures, lifelines, systems, networks, and institutions that are critical for life, safety, and economic viability and necessary for a community's response to and recovery from emergencies. The loss of function of any of these assets can intensify the severity of the impacts and speed of recovery associated a hazard event. Critical facilities and infrastructure may include, but are not limited to, the following:

- **Essential Facilities**: Facilities essential to the health and welfare of the whole population including hospitals and other medical facilities, police and fire stations, emergency operations centers, evacuation shelters, and schools.
- **Government Facilities**: Facilities associated with the continued operations of government services such as courthouses, city/village halls, township buildings, and highway/maintenance centers.
- **Infrastructure Systems**: Infrastructure associated with drinking water, wastewater, transportation (roads, railways, waterways), communication systems, electric power, natural gas and oil.
- **Housing Facilities**: Facilities that serve populations that have access and function needs such as nursing homes, skilled and memory care facilities, residential group homes, and day care centers.

- **High Potential Loss Facilities**: Facilities that would have an impact or high loss associated with them if their functionality is compromised such as nuclear power plants, dams, levees, military installations and facilities housing industrial or hazardous materials.
- **Gathering Places**: Facilities such as parks, libraries, community centers, and churches.

As part of the planning process each participating jurisdiction reviewed and/or completed a questionnaire identifying the critical facilities and infrastructure located within their jurisdiction, both publicly and privately-owned. **Figure R-5**, located at the end of this section, identifies the number of critical facilities and infrastructure located in each participating jurisdiction for select categories. Identifying these assets makes local leaders more aware of the critical facilities and infrastructure located within their jurisdictions and helps them make informed choices on how to better protect these key resources.

Critical Facilities Vulnerability Survey

The participating jurisdictions were also asked to complete a Critical Facilities Vulnerability Survey at the third meeting to assist them in creating problem statements summarizing the consequences and/or effects the studied hazards have on their assets. The Survey asked participants to describe their jurisdiction's greatest vulnerabilities to natural hazards and which assets they felt have the greatest vulnerabilities and the hazards they are most vulnerable to. This information is summarized under the appropriate hazard's vulnerability subsection.

Future Conditions

While we cannot predict with certainty what the weather of the future will look like, we can use models to help us make sense of the patterns we have seen in the past and to use that information to predict what events will be more likely to occur going forward.

By looking at data from previous weather conditions and taking into account trends in that data that have emerged over time, we can with some degree of accuracy project what weather may look like in the future. It is important to consider that nearer term predictions have the greatest likelihood of accuracy since they require the least extrapolation and guesswork; however, this does not mean that longer term predictions are not plausible or not useful. Often, having a prediction that is even partly right is preferable to having no guide at all. By coming up with best case and worst case scenarios, even if neither is terribly likely, we can gain a better understanding of the range of potential outcomes and a good idea of what the most probable outcomes might look like.

Earth's weather and climate have always been variable. Over time, sea levels have risen and fallen, glaciers have advanced and retreated, and droughts, floods, wildfires, and storms have periodically upended the notion of "normal". In recent years in the U.S., there have been several trends observed in weather patterns that offer us some insight as to what the near future may hold. Broadly, these likely changes can be referred to as "future conditions". They include more general seasonal trends as well as more specific weather pattern trends.

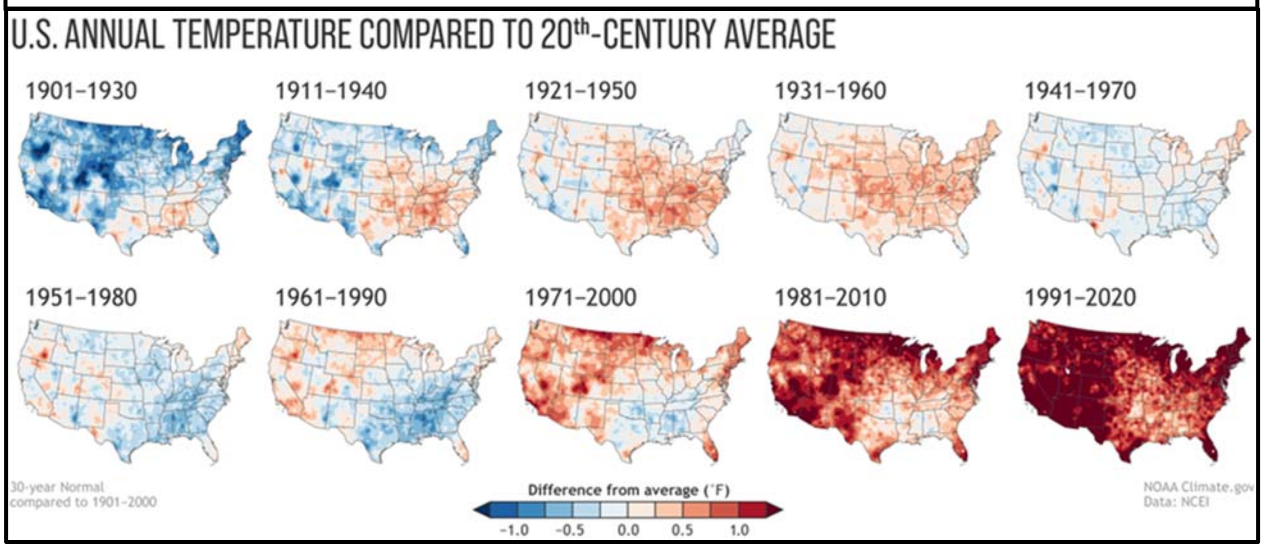
In recent decades we have seen both earlier springs (earlier last frost dates) and later winters (later first frost dates) in the U.S. Taken together, these two changes mean that winters are likely to be shorter and milder, and summers are likely to be longer and hotter across much of the continental

U.S. than they were historically. In combination, shorter, milder winters and longer, more intense summers have resulted in an observed increase in average annual temperature.

As with any change that occurs gradually, the difference can be difficult to perceive if the time frame you are looking at is small. Additionally, smaller windows of time are more likely to be skewed by rare occurrences or anomalies. Looking at longer time frames allows us to see the big picture, putting highly unusual years into context by averaging them out with other more typical years. Looking at consecutive 30-year period averages called "Normals" allows us to detect how what is average (or 'normal') has shifted over time.

Figure R-6 shows U.S. annual temperature compared to 20th-century averages. By looking at 30 Year Normals for average annual temperature compared to overall 20th century averages, a trend of increasing annual temperature is particularly apparent in the final three 30 year periods. (1971-2000, 1981-2010, 1991-2020). Since these are average annual temperatures, even a small difference corresponds to larger temperature changes recorded within a year.

Figure R-6
U.S. Annual Temperature Compared to 20th Central Average



Also observed have been changes in when, where, and how much precipitation occurs across the U.S. **Figure R-7** shows U.S. annual precipitation compared to 20th-century averages. For some areas of the Country, this has resulted in increases in overall precipitation. The Midwestern U.S. has been on average getting progressively wetter in 30 year rolling averages from the period of 1951-1980 onwards; elsewhere, it has resulted in decreases, such as in much of the Western and Southwestern US, which has been getting drier since the period of 1971-2000 onwards.

Trends also reveal an uptick in the frequency and severity of hazardous weather events. While this is in part due to better record-keeping and a higher number of people and monitoring devices to witness hazardous events in order to report them, this trend is at least in part due to warmer bodies of air that tend to "supercharge" summer storm systems, making them more likely to produce severe weather events.

Specific information on future conditions is summarized under the appropriate hazard's probability subsection.

Figure R-7
U.S. Annual Precipitation Compared to 20th Central Average

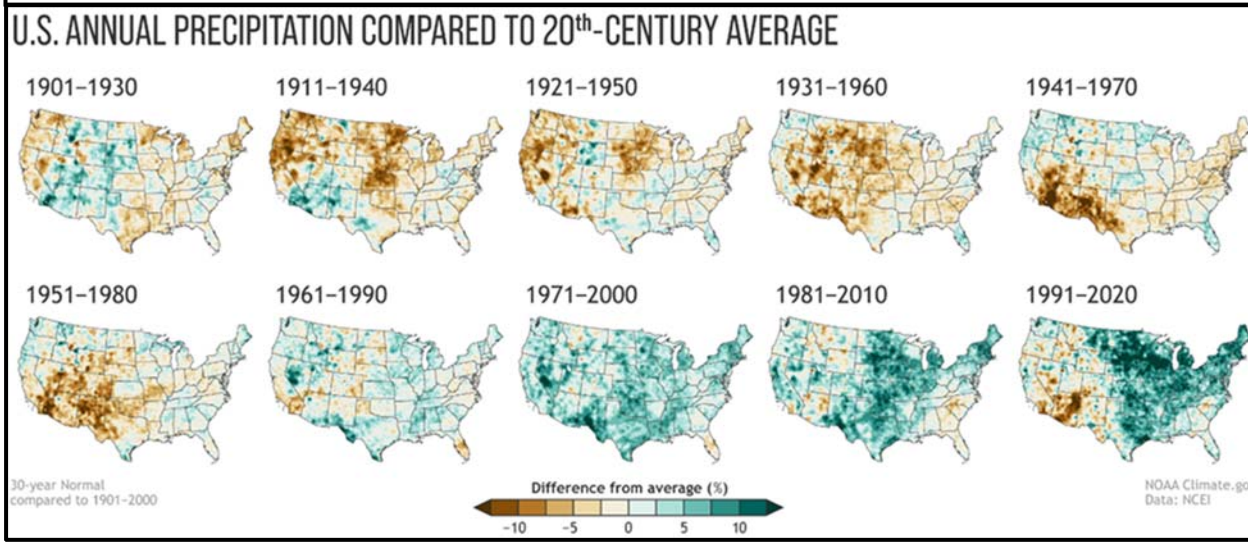


Figure R-1
Risk Priority Index Scoring System

Category	Factors	Value	Point Value
Hazard Frequency	An event is likely to occur in the next 1 to 3 years.	High	3
	An event is possible in the next 3 to 10 years.	Moderate	2
	An event is unlikely to occur within the next 10 years.	Low	1
Impacts on Life & Health	While fatalities are unlikely, injuries, some requiring hospitalization, may occur during the event.	High	3
	Minor injuries not requiring hospitalization may occur during the event.	Moderate	2
	Injuries or fatalities are unlikely to occur during the event.	Low	1
Impacts on Property & Infrastructure	- Substantial property damage is likely to occur including damage to infrastructure and critical facilities. AND/OR - Loss of access/operations at infrastructure and critical facilities (i.e., road & school closures, loss of power to drinking water/wastewater treatment facilities, municipal buildings, etc.) is anticipated for a period of time (i.e., a day or more).	High	3
	- Some minor property damage is anticipated (i.e., shingles & siding torn off homes, windows broken, etc.) but no significant damage to infrastructure or critical facilities is anticipated. AND/OR - Loss of access/operations to infrastructure and critical facilities is anticipated but only for a short period of time (i.e., up to a couple hours).	Moderate	2
	- Property damage is likely to be negligible and no loss of access/operations is anticipated at any infrastructure/critical facilities during the event.	Low	1

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction

Hazard	**Hazard Ranking by Participating Jurisdiction**					
	Woodford County	El Paso	Eureka	Germantown Hills	Minonk	Roanoke
Dam Failures	8/9	n/a	10/11/12/13/14/15	n/a	n/a	n/a
Drought	14/15	6/7/8	10/11/12/13/14/15	10/11/12/13/14	9	10/11
Earthquakes	14/15	13/14	10/11/12/13/14/15	10/11/12/13/14	15	8/9
Excessive Heat	12	9/10/11/12	2/3/4/5/6/7	6	12	10/11
Extreme Cold	10	9/10/11/12	2/3/4/5/6/7	10/11/12/13/14	5/6/7/8	2/3/4/5
Floods	2/3	6/7/8	**1**	10/11/12/13/14	**1/2/3/4**	**1**
Hail	11	**1/2/3**	8/9	7/8/9	5/6/7/8	2/3/4/5
HazMat Incidents: Fixed Facility	6/7	9/10/11/12	10/11/12/13/14/15	10/11/12/13/14	10	12/13
HazMat Incidents: Transportation	6/7	9/10/11/12	10/11/12/13/14/15	3	11	12/13
Heavy Rain	4/5	4/5	2/3/4/5/6/7	4/5	5/6/7/8	6/7
Landslides	16/17	n/a	n/a	n/a	n/a	n/a
Lightning	4/5	4/5	2/3/4/5/6/7	7/8/9	**1/2/3/4**	2/3/4/5
Mine Subsidence	16/17	n/a	n/a	n/a	13	6/7
Terrorism	13	13/14	10/11/12/13/14/15	7/8/9	14	14/15
Thunderstorms with Damaging Winds	2/3	**1/2/3**	8/9	2	**1/2/3/4**	2/3/4/5
Tornadoes	**1**	**1/2/3**	2/3/4/5/6/7	**1**	**1/2/3/4**	14/15
Winter Storms	8/9	6/7/8	2/3/4/5/6/7	4/5	5/6/7/8	8/9

Figure R-3
National Risk Index Overall Scores/Ratings by Census Tract

Census Tract No.	Incorporated Municipality Located in Census Tract	Risk Index Score	Risk Index Rating	Social Vulnerability Score	Social Vulnerability Rating	Community Resilience Score	Community Resilience Rating
301	Washburn	61.38	Relatively Low	33.69	Relatively Low	*	*
302	Benson, Minonk	37.22	Relatively Low	18.05	Very Low	*	*
303	Roanoke	45.64	Relatively Low	13.20	Very Low	*	*
304	Metamora	60.07	Relatively Low	23.21	Relatively Low	*	*
305.01	Germantown Hills	57.95	Relatively Low	7.49	Very Low	*	*
305.02	Bay View Gardens, Spring Bay	70.18	Relatively Moderate	22.47	Relatively Low	*	*
306.01	Eureka	72.52	Relatively Moderate	66.19	Relatively High	*	*
306.02	Congerville, Deer Creek, Goodfield	45.34	Relatively Low	4.79	Very Low	*	*
307	El Paso, Kappa, Panola, Secor	61.52	Relatively Low	45.58	Relatively Moderate	*	*
Woodford County		49.54	Relatively Low	2.30	Very Low	96.03	Very High

* Community Resilience scores are only available at the county level.

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 1 of 2)

Census Tract No.	Incorporated Municiplity Located in Census Tract	Severe Storms						Severe Winter Storms				Riverine Floods	
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Strong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating	Score	Rating
301	Washburn	74.15	RM	39.31	RL	77.57	RM	79.53	RM	77.82	RM	94.00	RH
302	Benson, Minonk	72.45	RL	37.59	RL	76.00	RM	77.58	RM	76.77	RM	40.83	RL
303	Roanoke	72.35	RL	39.00	RL	76.60	RM	81.63	RM	77.10	RM	85.16	RM
304	Metamora	79.53	RM	62.49	RM	89.70	RH	90.57	RH	88.75	RH	30.95	VL
305.01	Germantown Hills	78.86	RM	64.68	RM	89.34	RH	90.94	RH	88.92	RH	25.83	VL
305.02	Bay View Gardens, Spring Bay	66.99	RL	35.48	RL	69.19	RM	79.15	RM	72.72	RM	97.69	RH
306.01	Eureka	81.79	RM	74.65	RM	92.07	RH	93.28	RH	91.67	RH	81.92	RM
306.02	Congerville, Deer Creek, Goodfield	74.11	RM	44.24	RL	79.81	RM	83.15	RM	79.39	RM	84.15	RM
307	El Paso, Kappa, Panola, Secor	78.74	RM	53.58	RM	86.34	RH	89.20	RH	86.52	RH	75.57	RM
Woodford County		54.30	RL	31.60	RL	55.70	RL	72.90	RM	58.70	RL	73.50	RL

Rating Abbreviations: NR = No Rating; VL = Very Low; RL = Relatively Low; RM = Relatively Moderate; RH = Relatively High; VH = Very High

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 2 of 2)

Census Tract No.	Incorporated Municiplity Located in Census Tract	Extreme Cold		Excessive Heat		Tornadoes		Drought		Landslides		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
301	Washburn	94.59	RH	81.06	RH	66.31	RM	97.95	RM	70.14	RL	60.57	RL
302	Benson, Minonk	93.86	RH	80.20	RH	65.21	RM	96.77	RM	0.00	NR	65.66	RL
303	Roanoke	93.51	RH	79.41	RH	65.49	RM	96.50	RM	40.23	VL	66.72	RL
304	Metamora	97.59	RH	91.03	RH	85.12	RH	95.94	RM	78.68	RM	71.46	RL
305.01	Germantown Hills	97.76	RH	91.82	RH	85.82	RH	86.70	RL	90.03	RM	61.78	RL
305.02	Bay View Gardens, Spring Bay	91.75	RH	77.33	RM	61.59	RM	90.37	RL	70.87	RL	43.25	VL
306.01	Eureka	98.78	RH	94.58	RH	91.56	RH	96.09	RM	93.75	RH	76.66	RL
306.02	Congerville, Deer Creek, Goodfield	94.23	RH	81.02	RH	68.23	RM	94.71	RM	77.41	RM	62.15	RL
307	El Paso, Kappa, Panola, Secor	97.73	RH	90.62	RH	81.11	RH	97.43	RM	51.18	RL	73.97	RL
Woodford County		87.80	RH	82.20	RM	63.60	RL	85.00	RM	19.90	RL	63.70	VL

Rating Abbreviations: NR = No Rating; VL = Very Low; RL = Relatively Low; RM = Relatively Moderate; RH = Relatively High; VH = Very High

Figure R-5
Critical Facilities & Infrastructure by Jurisdiction

Participating Jurisdiction	Critical Facilities				Critical Infrastructure						
	Government[1]	Emergency Protection[2]	Medical & Healthcare[3]	Schools	Drinking Water[4]	Wastewater Treatment[5]	Rail Lines	Bridges	Interstates US/State Routes & Key Roads	Power Plants	Comm. Systems
Woodford County	2	4	1	---	3	---	2	6	10	---	1
El Paso	4	4	2	5	3	7	1	---	3	---	---
Eureka	2	3	2	5	3	2	1	4	4	---	---
Germantown Hills	2	2	---	2	---	12	---	---	2	---	---
Minonk	3	3	1	2	2	2	---	---	---	---	---
Roanoke	3	3	3	2	2	2	---	---	2	---	---

1 Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, libraries, etc.
2 Emergency Protection includes: sheriff's department, police, fire, ambulance, emergency operations centers, jail/correctional facilities and evacuation shelters.
3 Medical & Healthcare includes: public health departments, hospitals, urgent/prompt care and medical clinics, nursing homes, skilled nursing facilities, memory care facilities, residential group homes, etc.
4 Drinking Water includes: drinking water treatment plants, drinking water wells, and water storage towers/tanks.
5 Wastewater Treatment includes: wastewater treatment plants and lift stations.
--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

3.1 SEVERE STORMS (THUNDERSTORMS, HAIL, LIGHTNING & HEAVY RAIN)

HAZARD IDENTIFICATION

What is the definition of a severe storm?

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) defines a "severe storm" as any thunderstorm that produces one or more of the following:

- winds with gust of 50 knots (58 mph) or greater;
- hail that is at least one inch in diameter (quarter size) or larger; and/or
- a tornado.

While severe storms are capable of producing deadly lightning and heavy rain that may lead to flash flooding, the NWS does not use lightning/either to define a severe storm. However, a discussion of both lightning and heavy rain is included in this section because both are capable of causing extensive damage. For the purposes of this report, tornadoes and flooding are categorized as separate hazards and are not discussed under severe storms.

What is a thunderstorm?

A thunderstorm is a rain shower accompanied by lightning and thunder. An average thunderstorm is approximately 15 miles in diameter, affecting a relatively small area when compared to winter storms or hurricanes, and lasts an average of 30 minutes. Thunderstorms can bring heavy rain, damaging winds, hail, lightning and tornadoes.

There are four basic types of thunderstorms: single-cell, multi-cell, squall line, and supercell. The following provides a brief description of each.

<u>Single-cell Thunderstorm</u>

Single cell storms are small, weak storms that only last about ½ hour to an hour and are not usually considered severe. They are typically driven by heating on a summer afternoon. Occasionally a single cell storm will become severe, but only briefly. When this happens, it is called a pulse severe storm.

<u>Multi-cell Thunderstorm</u>

Multi-cell storms are the most common type of thunderstorms. A multi-cell storm is organized in clusters of at least two to four short-lived cells. Each cell usually lasts 30 to 60 minutes while the system as whole may persist for many hours. Multi-cell storms may produce hail, strong winds, brief tornadoes, and/or flooding.

<u>Squall Line</u>

A Squall line is a group of storms arranged in a line, often accompanied by "squalls" of high wind and heavy rain. The line of storms can be continuous or there can be gaps and breaks in the line. Squall lines tend to pass quickly and can be hundreds of miles long but are typically only 10 to 20 miles wide. A "bow echo" is a radar signature of a squall line that "bows out" as winds fall behind the line and circulation develops on either end.

Supercell Thunderstorm

Supercell storms are long-lived (greater than one hour) and highly organized storms that feed off a rising current of air (an updraft). The main characteristic that sets a supercell storm apart from other thunderstorm types is the presence of rotation in the updraft. The rotating updraft of a supercell (called a mesocyclone when visible on radar) helps a supercell storm produce extreme weather events. Supercell storms are potentially the most dangerous storm type and have been observed to generate the vast majority of large and violet tornadoes, as well as downburst winds and large hail.

Despite their size, all thunderstorms are dangerous and capable of threatening life and property. Of the estimated 100,000 thunderstorms that occur each year in the U.S., roughly 10% are classified as severe.

What kinds of damaging winds are produced by a thunderstorm?

Aside from tornadoes, thunderstorms can produce straight-line winds. A straight-line wind is defined as any wind produced by a thunderstorm that is not associated with rotation. There are several types of straight-line winds including downdrafts, downbursts, microbursts, gust fronts and derechos.

Damage from straight-line winds is more common than damage from tornadoes and accounts for most thunderstorm wind damage. Straight-line wind speeds can exceed 87 knots (100 mph), produce a damage pathway extending for hundreds of miles and can cause damage equivalent to a strong tornado.

The NWS measures a storm's wind speed in knots or nautical miles. A wind speed of one knot is equal to approximately 1.15 miles per hour. **Figure SS-1** shows conversions from knots to miles per hour for various wind speeds.

Figure SS-1
Wind Speed Conversions

Knots (kts)	Miles Per Hour (mph)	Knots (kts)	Miles Per Hour (mph)
50 kts	58 mph	60 kts	69 mph
52 kts	60 mph	65 kts	75 mph
55 kts	63 mph	70 kts	81 mph
58 kts	67 mph	80 kts	92 mph

What is hail?

Hail is precipitation in the form of spherical or irregular-shaped pellets of ice that occur within a thunderstorm when strong rising currents of air (updrafts) carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice.

Hailstones grow by colliding with supercooled water drops. The supercooled water drops freeze on contact with ice crystals, frozen rain drops, dust, etc. Thunderstorms with strong updrafts continue lifting the hailstones to the top of the cloud where they encounter more supercooled water and continue to grow. Eventually the updraft can no longer support the weight of the hail, or the updraft weakens, and the hail falls to the ground.

In the U.S., hail causes more than $1 billion in damages to property and crops annually. Hail has been known to cause injuries, although it rarely causes fatalities or serious injury.

How is the severity of a hail event measured?

The severity or magnitude of a hail event is measured in terms of the size (diameter) of the hailstones. The hail size is estimated by comparing it to known objects. **Figure SS-2** provides descriptions for various hail sizes.

Figure SS-2
Hail Size Descriptions

Hail Diameter (inches)	Description	Hail Diameter (inches)	Description
0.25 in.	pea	1.75 in.	golf ball
0.50 in.	marble/mothball	2.50 in.	tennis ball
0.75 in.	penny	2.75 in.	baseball
0.88 in.	nickel	3.00 in.	teacup
1.00 in.	quarter	4.00 in.	grapefruit
1.50 in.	ping pong ball	4.50 in.	softball

Source: NOAA, National Severe Storm Laboratory.

Hail size can vary widely. Hailstones may be as small as 0.25 inches in diameter (pea-sized) or, under extreme circumstances, as large as 4.50 inches in diameter (softball-sized). Typically hail that is one (1) inch in diameter (quarter-sized) or larger is considered severe.

The severity of a hail event can also be measured or rated using the TORRO Hailstorm Intensity Scale. This scale was developed in 1986 by the Tornado and Storm Research Organisation of the United Kingdom. It measures the intensity or damage potential of a hail event based on several factors including: maximum hailstone size, distribution, shape and texture, numbers, fall speed and strength of the accompanying winds.

The Hailstorm Intensity Scale identifies ten different categories of hail intensity, H0 through H10. **Figure SS-3** gives a brief description of each category. This scale is unique because it recognizes that, while the maximum hailstone size is the most important parameter relating to structural damage, size alone is insufficient to accurately categorize the intensity and damage potential of a hail event.

It should be noted that the typical damage impacts associated with each intensity category reflect the building materials predominately used in the United Kingdom. These descriptions may need to be modified for use in other countries to take into account the differences in building materials typically used (i.e., whether roofing materials are predominately shingle, slate or concrete, etc.).

What is lightning?

Lightning, a component of all thunderstorms, is a visible electrical discharge that results from the buildup of charged particles within storm clouds. It can occur from cloud-to-ground, cloud-to-cloud, within a cloud or cloud-to-air. The air near a lightning strike is heated to approximately

50,000°F (hotter than the surface of the sun). The rapid heating and cooling of the air near the lightning strike causes a shock wave that produces thunder.

Figure SS-3
TORRO Hailstorm Intensity Scale

Intensity Category		Typical Hail Diameter millimeters (approx.)*	Typical Hail Diameter inches (approx.)*	Description	Typical Damage Impacts
H0	Hard Hail	5 mm	0.2”	pea	no damage
H1	Potentially Damaging	5-15 mm	0.2” – 0.6”	pea / mothball	slight general damage to plants, crops
H2	Significant	10-20 mm	0.4” – 0.8”	dime / penny	significant damage to fruit, crops, vegetation
H3	Severe	20-30 mm	0.8” – 1.2”	nickel / quarter	severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40 mm	1.0” – 1.6”	half dollar / ping pong ball	widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50 mm	1.2” – 2.0”	golf ball	wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60 mm	1.6” – 2.4”	golf ball / egg	bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	50-75 mm	2.0” – 3.0”	egg / tennis ball	severe roof damage, risk of serious injuries
H8	Destructive	60-90 mm	2.4” – 3.5”	tennis ball / teacup	severe damage to aircraft bodywork
H9	Super Hailstorms	75-100 mm	3.0” – 4.0”	teacup / grapefruit	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	> 100 mm	> 4.0”	softball	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open

* Approximate range since other factors (i.e., number and density of hailstones, hail fall speed and surface wind speed) affect severity.

Source: Tornado and Storm Research Organisation, TORRO Hailstorm Intensity Scale Table.

Lightning on average causes 60 fatalities and 400 injuries annually in the U.S. Most fatalities and injuries occur when people are caught outdoors in the summer months during the afternoons and evenings. In addition, lightning can cause structure and forest fires. Many of the wildfires in the western U.S. and Alaska are started by lightning. According to the NWS lightning strikes cost more than $1 billion in insured losses each year.

Are alerts issued for severe storms?

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing **severe thunderstorm watches** and **warning**s for Woodford County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A severe thunderstorm watch is issued when severe thunderstorms are possible in or near the watch area. Individuals should stay alert for the latest weather information and be prepared to take shelter.
- **Warning.** A severe thunderstorm warning is issued when severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property for those who are in the path of the storm and individuals should seek safe shelter.

HAZARD PROFILE

The following identifies past occurrences of severe storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe storms occurred previously? What is the extent of these previous severe storms?

Tables 1, 2, and 3 located in **Appendix J,** summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Woodford County. Severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning, and heavy rain. In Woodford County, severe storms are the most frequently occurring natural hazard.

<u>*Thunderstorms with Damaging Winds*</u>

NOAA's Storm Events Database was used to document 186 reported occurrences of thunderstorms with damaging winds in Woodford County between 1966 and 2022. Of the 186 occurrences, 139 had reported wind speeds of 50 knots or greater. There were 47 occurrences, however, where the wind speed was not recorded.

<u>Severe Storms Fast Facts – Occurrences</u>

Number of recorded Thunderstorms with Damaging Winds (1966 – 2022): ***186***

Number of recorded Severe Hail Events (1974 – 2022): ***55***

Number recorded of Lightning Strike Events (2008 – 2022): ***4***

Highest Recorded Wind Speed: ***70 knots (six occasions)***

Largest Hail Recorded: ***4 inches (May 30, 2004)***

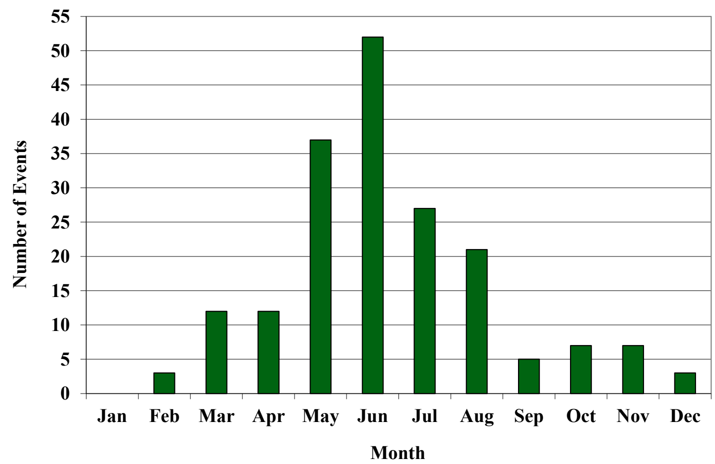
Most Likely Month for Thunderstorms with Damaging Winds to Occur: ***June***

Most Likely Month for Severe Hail to Occur: ***May***

The highest wind speed recorded during a thunderstorm event in Woodford County is 70 knots (81 mph) and has occurred on six separate occasions between 2000 and 2017. The most recent occurrence was in El Paso, Roanoke, and Secor on June 17, 2017. Thunderstorms with damaging winds have been recorded in every participating jurisdiction within the County on multiple occasions.

Of the 186 events, 116 (62%) took place in May, June, and July making this the peak period for thunderstorms with damaging winds in Woodford County. Of those 116 events, 52 (45%) occurred during June, making this the peak month for thunderstorms with damaging winds. Of the 186 occurrences, 75% of all thunderstorms with damaging winds occurred during the p.m. hours.

Figure SS-4
Thunderstorms with Damaging Winds by Month
1966 – 2022



Hail

NOAA's Storm Events Database was used to document 55 reported occurrences of severe storms with hail one (1) inch in diameter or greater in Woodford County between 1974 and 2022. Of the 55 occurrences, 28 produced hailstones 1.50 inches or larger in diameter.

The largest hail stones documented in Woodford County measured 4.0 inches in diameter (grapefruit-sized) and fell on May 30, 2004 in and near Eureka, Metamora, Roanoke, and Secor. Hail one (1) inch in diameter or greater has been recorded in every participating jurisdiction on at least one occasion.

Figure SS-5 charts the reported occurrences of hail by month. Of the 55 occurrences, 35 (64%) took place in May, June, and July making this the peak period for hail in Woodford County. Of these 35 events, 14 (40%) occurred during May, making this the peak month for hail events. Forty-nine (89%) of the 55 severe storms with hail occurred during the p.m. hours.

Lightning

While lightning strike events occur regularly across central Illinois, NOAA's Storm Events Database records were only able to identify four occurrences of lightning strikes with verified damages in Woodford County from 2008 to 2022. The data limitations are almost certainly due to the rural nature of most of the County.

According to data from Vaisala's National Lightning Detection Network, Woodford County averaged from to 6 to 20 cloud-to-ground lightning flashes per square mile annually between 2009 and 2018. **Figure SS-6** illustrates the cloud-to-ground lightning flash density (number of cloud-to-ground flashes per square mile per year) by county for the continental U.S. In comparison, Illinois averaged 12.7 cloud-to-ground lightning flashes per square mile from 2009 to 2018, ranking it eighth in the Country for lightning flash density.

Figure SS-5
Hail Events by Month
1974 – 2022

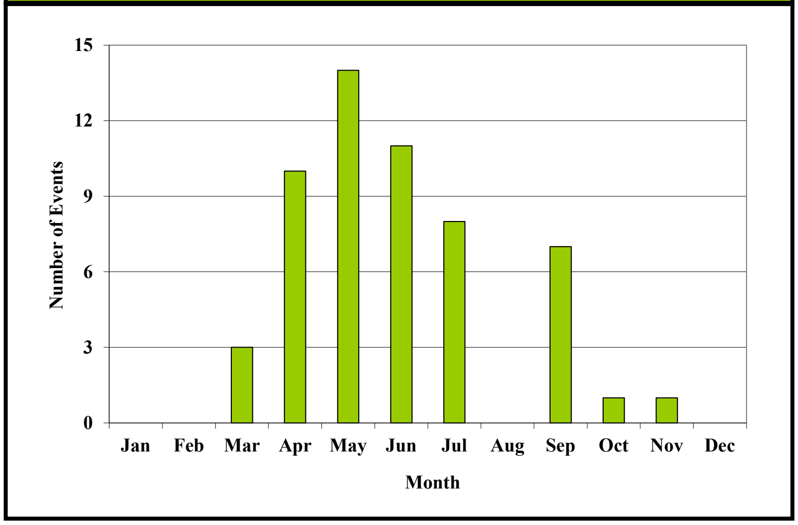
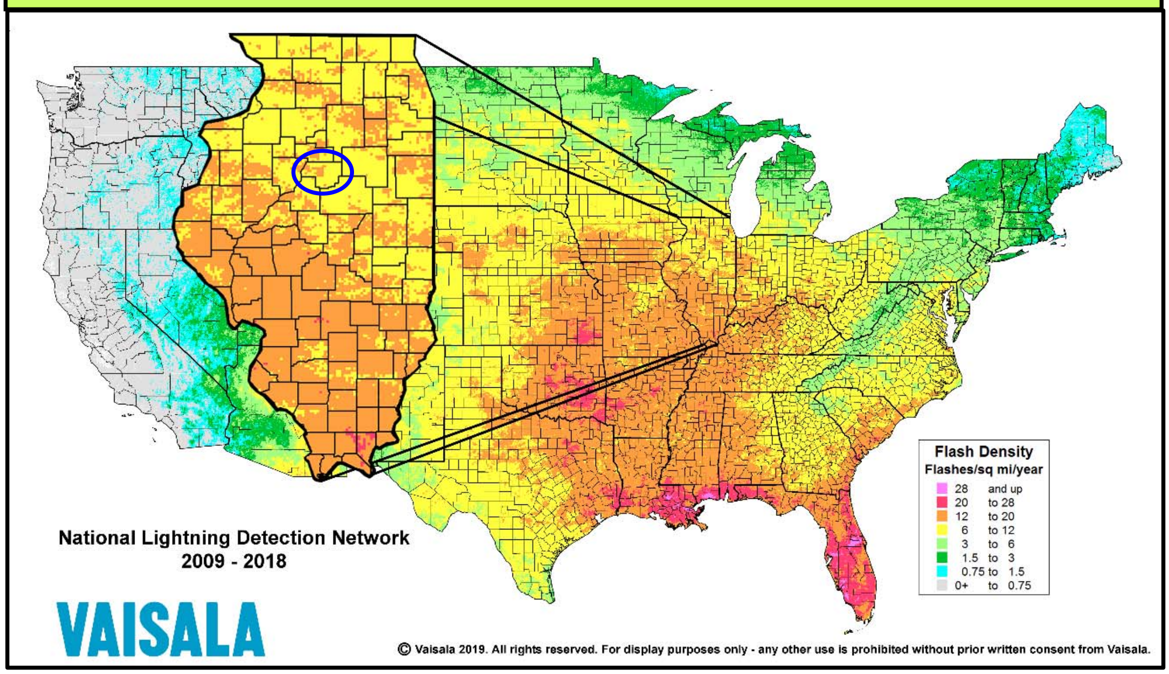


Figure SS-6
Cloud-to-Ground Lightning Flash Density: Continental U.S.



Heavy Rain

While heavy rain events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database does not include any *recorded* heavy rain events for Woodford County. This may be due in part to a lack of uniform reporting guidelines for heavy rain events.

What locations are affected by severe storms?

Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. The 2018 Illinois Natural Hazard Mitigation Plan prepared by the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) classifies Woodford County's hazard rating for severe storms as "severe." (IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and severe.)

What is the probability of future severe storm events occurring based on historical data?

Thunderstorms with Damaging Winds

Woodford County has had 186 verified occurrences of thunderstorms with damaging winds between 1966 and 2022. With 186 occurrences over the past 57 years, Woodford County would expect to experience at least three thunderstorms with damaging winds in any given year. There were 26 years over the last 57 years where multiple (three or more) thunderstorms with damaging winds occurred. This indicates that the probability that multiple thunderstorms with damaging winds may occur during any given year within the County is 46%.

Hail

There have been 55 verified occurrences of hail one (1) inch in diameter or greater between 1974 and 2022. With 55 occurrences over the past 49 years, the County should expect to experience at least one severe storm with hail event each year. There were 17 years over the last 49 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the County is 35%.

What is the probability of future heavy rain events occurring based on modeled future conditions?

Severe storms are very difficult to forecast in the near-term future, let alone in the long-term future. This owes to the fact that these events arise due to a combination of multiple factors (including pressure fronts, wind speeds, temperatures, and humidity) working together.

What can be predicted with more certainty looking into the future is the likelihood of supercell formation, which occurs with fewer conditions needing to be met, mainly a temperature differential in fronts and a relatively low moisture content. Supercells are strong, longer-lived storm systems characterized by rotation and updrafts that make them capable of producing hazards such as damaging winds, hail, and even tornadoes. While the formation of a supercell does not ensure that severe storm events will follow, supercells increase the probability of these events significantly, making supercell formation a good predictor for the likelihood of these other weather events.

In addition, in the last 120 years, total annual precipitation in Illinois has increased by between 12% to 15% across the State. This trend is likely to continue, and as a result, precipitation in Illinois is forecasted to increase in coming decades. In addition to changes in the overall amount of precipitation, changes in precipitation patterns indicate that future events will likely be less frequent, but larger and more severe. The Illinois State Climatologist indicates that since the beginning of the 20th Century, Illinois has seen a 40% increase in the number of days with extreme precipitation events (rainfall of 2 inches or greater) per year.

Based on existing trends of increasing supercell formation and future projections of precipitation and temperature, supercells are likely to continue to become more common in the future. For a discussion on future projections of temperature, see Section 3.4. Supercell formation today is mostly confined to the Great Plains and the Midwest, but future projections indicate that the geographic range over which supercells may develop is likely to increase as parts of the Country that were previously unfavorable to supercell formation become warmer and dryer. Additionally, if current trends of milder winters persist, supercell season is also likely to lengthen, starting earlier in the year and ending later.

Figure SS-7 contains a series of maps that show how the number of supercell tracks is likely to change in the future. The map at the top labeled a) depicts late 20th Century historical data showing the average number of supercells per year occurring within each grid square on the map. Below, projections for two different late 21st Century future scenarios for supercell frequency are given on the left, a low emission scenario depicted the top left map labeled b) and a high emission scenario depicted in the lower left map labeled d). On the right, the difference between each late 21st Century scenario and the late 20th Century historic baseline is shown, with redder areas showing an increase in supercell tracks per year, and blue areas showing a reduction.

Thunderstorms with Damaging Winds

Damaging winds in severe storms are most often associated with powerful downdrafts, so looking at the changing prevalence of conditions favorable to generating these downdrafts can give us an indicator of how likely damaging thunderstorm winds may be in the future. The formation of powerful storms is typically energized by an influx of warm moist air. As the climate in the Midwest continues to become wetter and warmer, this makes strong thunderstorms with damaging winds a more probable occurrence in the future.

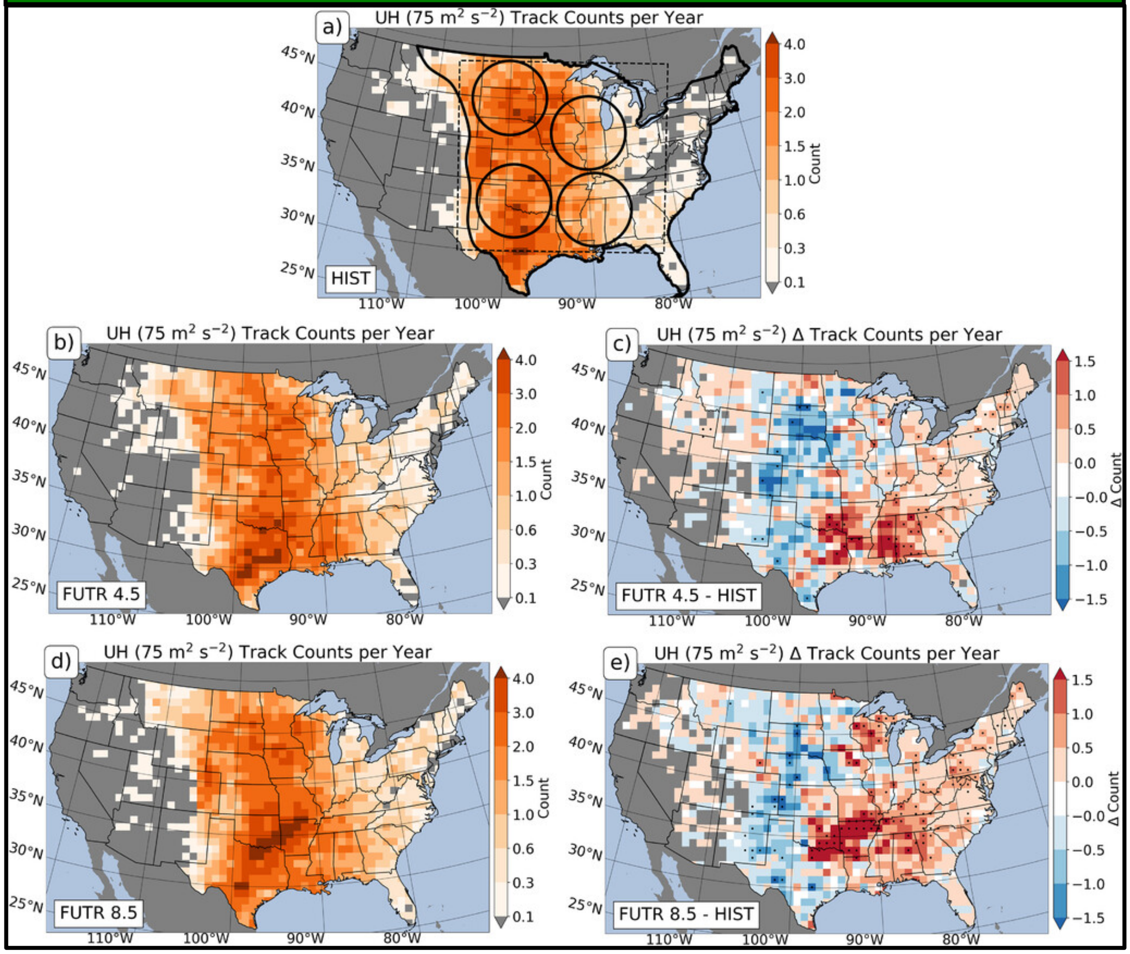
On the other hand, stronger warming occurring at more northerly latitudes is likely to decrease wind shear (a measurement of wind's change in speed and direction along a column of air), which is another important predictor of damaging winds. It is difficult to know which of these trends may be stronger than the other, or whether these two trends may wind up roughly cancelling each other out. The analysis of these trends should be revisited in subsequent planning efforts as more data becomes available.

Hail

Hail forms in storm systems with strong updrafts, so the formation of strong supercell storms is a good predictor of the occurrence of hail. The influx of moist, warm air rising over dryer, cooler air tends to create these updrafts, but for hail to occur, the air above the warm air must be cold enough for hail to form. Hail formation also depends on seasonality since the air above is cooler in spring and warmer in fall.

While a wetter and warmer climate will likely lead to more severe storms with stronger updrafts, it is more difficult to predict whether more hailstorms will result. Less gradual warming in spring may mean there will not be sufficiently cool air aloft for hail to form. When cool enough air is present for hailstones to form, stronger updrafts and more massive storms could be able to generate larger hailstones on average than those seen today. As these trends play out and more data becomes available regarding any shifts in hail frequency or intensity, it will be important to continually reassess the risk posed by hail in future planning efforts.

Figure SS-7
Mean Annual Supercell Track Counts



Citation: Bulletin of the American Meteorological Society 104, 1; 10.1175/BAMS-D-22-0027.1

Heavy Rain

Figures SS-8, SS-9, and **SS-10** provide tabular and graphical projections for Woodford County, showing estimations for average annual precipitation and number of days with total precipitation greater than 2 inches in the early, mid, and late 21st century with both low and high estimates for each time period. Most likely, the true value will fall between these two estimates. By midcentury, the average annual precipitation in Woodford County is projected to increase by 1.5 to 2 inches per year, while the average number of days with precipitation per year is projected to decrease by 3 to 4 days according to the Climate Mapping for Resilience and Adaptation's Assessment Tool.

The annual number of days with total precipitation greater than 2 inches is not projected to increase significantly. This is confirmed by the Climate Explorer which indicates that in Woodford County the annual counts of intense rainstorms (rainfall of 2 inches or greater in one day) are not projected to increase. This is based on the findings of the 2018 National Climate Assessment and compares projections for the middle third of the century (2035-2064) with average conditions observed from 1961-1990.

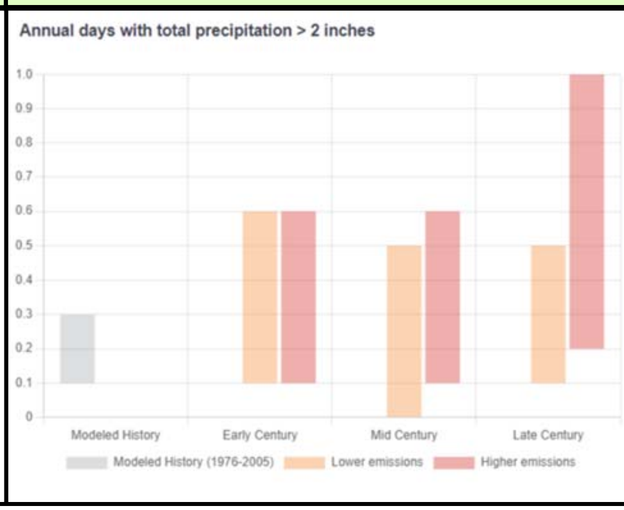
Figure SS-8
Average Annual Precipitation Projections Table – Woodford County

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	**36"** 34 - 37	**37"** 34 - 40	**37"** 32 - 40	**37"** 33 - 41	**38"** 32 - 41	**38"** 33 - 42	**39"** 32 - 43
Days per year with precipitation (wet days)	**175 days** 169 - 179	**173 days** 160 - 181	**172 days** 157 - 185	**172 days** 157 - 186	**171 days** 149 - 188	**171 days** 158 - 184	**168 days** 130 - 192
Maximum period of consecutive wet days	**11 days** 10 - 13	**11 days** 10 - 12	**11 days** 10 - 13	**11 days** 10 - 14	**11 days** 10 - 14	**11 days** 10 - 13	**11 days** 9 - 13
Annual days with:							
Annual days with total precipitation > 1inch	**3 days** 3 - 4	**4 days** 3 - 5	**4 days** 3 - 5	**4 days** 3 - 6	**5 days** 3 - 6	**5 days** 3 - 7	**5 days** 4 - 8
Annual days with total precipitation > 2 inches	**0 days** 0 - 0	**0 days** 0 - 1	**0 days** 0 - 1	**0 days** 0 - 1	**0 days** 0 - 1	**0 days** 0 - 1	**0 days** 0 - 1
Annual days with total precipitation > 3 inches	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0
Annual days that exceed 99th percentile precipitation	**5 days** 5 - 5	**6 days** 6 - 6	**6 days** 5 - 6	**6 days** 6 - 6	**6 days** 6 - 7	**6 days** 6 - 7	**8 days** 7 - 8
Days with maximum temperature below 32 °F	**37 days** 33 - 41	**27 days** 15 - 36	**26 days** 19 - 34	**23 days** 13 - 33	**21 days** 11 - 31	**20 days** 10 - 30	**12 days** 3 - 24

N/A = Data Not Available for the selected area

Figure SS-9
Average Annual Precipitation Projections Graph – Woodford County

Figure SS-10
Number of Days with Total Precipitation > 2 Inches Graph – Woodford County



HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from severe storms.

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of Woodford County is vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across north-central Illinois. Since 2013, Woodford County has recorded 54 thunderstorms with damaging winds, and 15 severe storms with hail one (1) inch in diameter or greater.

Figure SS-11 details the number of thunderstorms with damaging winds and hail events that were recorded in or near each participating municipality while **Figure SS-12** details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Woodford County.

Figure SS-11
Verified Severe Storm Events by Participating Municipality

Participating Municipality	Number of Events	
	Thunderstorm & High Wind	Severe Hail
El Paso	13	6
Eureka	31	9
Germantown Hills	35	4
Minonk	15	4
Roanoke	2	9

Figure SS-12
Verified Severe Storm Events in Unincorporated Woodford County

Unincorporated Area	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Cazenovia	4	1
Cruger	3	1
Low Point	10	0
Oak Ridge	2	0
Woodford	4	1

Of the participating municipalities, Germantown Hills has had more recorded occurrences of thunderstorms with damaging winds while Eureka and Roanoke have had the greatest number of recorded severe storms with hail events than any of the other municipalities. The differences in the number of recorded events between participating municipalities is likely due in part to the relative size of the municipalities as well as the fact that there are NWS COOP Observation Stations located in Germantown Hills and Eureka.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of severe storms?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following jurisdictions considered specific assets within their jurisdiction vulnerable to severe storms.

Woodford County:
None of the designated emergency shelters in Woodford County have backup generators that would allow them to remain operational if power was lost during a severe storm event.

El Paso:
Heavy rains have caused the sewer system to become overwhelmed, impacting service to residents.

Eureka:
Heavy rain events have overwhelmed portions of the City's stormwater system which has led to flooding in certain areas, primarily due to undersized-sized pipes for the amount and duration of precipitation being received.

Germantown Hills:
The Village's lift stations/grinder pumps do not have emergency backup generators and therefore are vulnerable to power outages caused by severe storms.

Minonk:
- ❖ Heavy rains cause flooding of streets within the City, impacting travel.
- ❖ Severe storms with damaging winds have the potential to impede travel, especially that of emergency services.
- ❖ Heavy rains can overwhelm the stormwater infrastructure causing backups.

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated $2.9 million in recorded property damages and $2.5 million in recorded crop damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds
Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1966 and 2022, 70 of the 186 thunderstorms with damaging winds caused $2,165,000 in property damages and $30,000 in crop damages. Damage information was either unavailable or none was recorded for the remaining 116 reported occurrences.

NOAA's Storm Events Database documented two injuries as the result of two separate thunderstorm with damaging wind events. Detailed information on the injuries sustained was only available for one of the events. On July 5, 1980, high winds blew over a mobile home in the Goodfield area injuring a resident.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts:
- ❖ Total Property Damage (70 events): ***$2,165,000***
- ❖ Total Crop Damage (1 event): ***$30,000***
- ❖ Injuries (2 events): ***2***
- ❖ Fatalities: ***n/a***

Severe Hail Impacts:
- ❖ Total Property Damage (2 events): ***$400,000***
- ❖ Total Crop Damage (1 event) : ***$2,500,000***
- ❖ Injuries: ***3***
- ❖ Fatalities: ***n/a***

Lightning Strike Impacts:
- ❖ Total Property Damage (3 events): ***$346,000***
- ❖ Total Crop Damage: ***n/a***
- ❖ Injuries (1 event): ***1***
- ❖ Fatalities: ***n/a***

Severe Storms Risk/Vulnerability:
- ❖ Public Health & Safety: ***Low***
- ❖ Buildings/Infrastructure/Critical Facilities: ***Medium***

Hail

Data obtained from NOAA's Storm Events Database indicates that between 1974 and 2022, three of the 55 hail events caused $400,000 in property damages and $2.5 million in crop damages. Damage information was either unavailable or none was recorded for the remaining 52 events.

NOAA's Storm Events Database documented three injuries as the result of a hail event on June 13, 1991 in Eureka. Detailed information on the injuries sustained was not available.

Lightning

Data obtained from NOAA's Storm Events Database and Committee member records indicate that three of the four lightning strike events caused $346,000 in property damages. Damage information was unavailable for the remaining event. One injury was reported as the result of a July 6, 2010 lightning strike event. A road construction flagger on Illinois Route 89 between Washburn and Cazenovia was struck by lightning. The victim was struck in the left shoulder with the bolt exiting his left foot, where part of his boot was blown off the individual was treated for burns but was otherwise unharmed.

What other impacts can result from severe storms?

In Woodford County, the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2016 through 2020 indicates that wet road surface conditions were present for 9.1% to 14.4% of all crashes recorded annually in the County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure SS-13** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

Figure SS-13
Severe Weather Crash Data for Woodford County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2017	427	52	13	0
2018	510	58	22	1
2019	519	60	21	0
2020	470	43	26	0
2021	431	62	19	0
Total:	**2,357**	**275**	**101**	**1**

Source: Illinois Department of Transportation.

What is the level of risk/vulnerability to public health and safety from severe storms?

For Woodford County the level of risk or vulnerability posed by severe storms to public health and safety is considered to be ***low***. This assessment is based on the fact that despite their relative frequency, the number of injuries and fatalities is low. In addition, Carle Eureka Hospital in Eureka as well as nearby hospitals in Ottawa (LaSalle County), Pontiac (Livingston County), Bloomington/Normal (McLean County), and the Peoria Metropolitan Area (Peoria and Tazewell Counties) are equipped to provide care to persons injured during a severe storm.

Are existing buildings, infrastructure, and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in Woodford County and the participating jurisdictions are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings, and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and can cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines; power substations; transformers and poles; and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Tony O'Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of severe storms from 2010 through 2022. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Woodford County and is summarized in **SS-14**.

Figure SS-14
Ameren Illinois – Regional Power Outages Experienced in Woodford County as a Result of Severe Storm Events: 2010 – 2022

Event Date	Customers without Power	Duration of Outage (days)	Wires Downed	Poles Replaced	Tree Orders*	Responding Personnel
6/23/2010	8,000	3	259	17	63	250
5/20/2013	16,000	2	559	66	211	629
5/30/2013	17,500	1	346	170	140	1,285
6/7/2015	25,173	2	169	52	104	n/a
11/11/2015	20,000	1	68	45	20	n/a
6/14/2017	19,203	1	253	57	180	494
6/17/2017	11,882	1	45	127	31	954
6/30/2019	12,050	0.6	52	85	37	n/a
7/11/2020	35,425	1.75	210	57	48	310
8/10/2020	60,240	3.6	148	120	84	1,434

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Three of the six participating jurisdictions acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as county/municipal buildings, wastewater treatment plants, lift stations, schools, warming/cooling centers, and emergency shelters.

According to the Critical Facilities Surveys completed by the participants, all of the participating municipalities have emergency backup generators at their municipal-owned drinking water and wastewater treatment facilities. Three of the five municipalities have generators at their police departments/administrative buildings while four of the five municipalities have generators at their fire stations/ambulance buildings. The County was recently awarded a grant to purchase and install a generator at the County Courthouse which houses the County's Emergency Operations Center/Joint Information Center.

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered, and government services can be affected.

Based on the frequency with which severe storms occur in Woodford County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is ***medium***.

Are future buildings, infrastructure, and critical facilities vulnerable to severe storms?

Yes and No. While El Paso and Eureka have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms, the County and the three remaining municipalities do not. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 75 of the 245 recorded events listing property damage numbers for all categories of severe storms, there is no way to accurately estimate future potential dollar losses. However, according to the Woodford County Clerk the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $769,193,696. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to severe storm events.

3.2 FLOODS

HAZARD IDENTIFICATION

What is the definition of a flood?

The Federal Emergency Management Agency (FEMA) defines a "flood" as a general or temporary condition where two or more acres of normally dry land or two or more properties are inundated by:

- overflow of inland or tidal waters;
- unusual and rapid accumulation or runoff of surface waters from any source;
- mudflows; or
- a sudden collapse or subsidence of shoreline land.

The severity of a flooding event is determined by a combination of topography and physiography, ground cover, precipitation and weather patterns and recent soil moisture conditions. On average, flooding causes more than $5 billion in damages each year in the U.S. Floods cause utility damage and outages, infrastructure damage (both to transportation and communication systems), structural damage to buildings, crop loss, decreased land values and impede travel.

What types of flooding occur in the County?

There are two main types of flooding that affect Woodford County: general flooding and flash flooding. General flooding can be broken down into two categories: riverine flooding and shallow flooding. The following provides a brief description of each type.

General Flooding – Riverine Flooding

Riverine flooding occurs when the water in a river or stream gradually rises and overflows its banks. This type of flooding affects low lying areas near rivers, streams, lakes, and reservoirs and generally occurs when:

- persistent storm systems enter the area and remain for extended periods of time,
- winter and spring rains combine with melting snow to fill river basins with more water than the river or stream can handle,
- ice jams create natural dams which block normal water flow, and
- torrential rains from tropical systems make landfall.

General Flooding – Shallow Flooding

Shallow flooding occurs in flat areas where there are no clearly defined channels (i.e., rivers and streams) and water cannot easily drain away. There two main types of shallow flooding: sheet flow and ponding. If the surface runoff cannot find a channel, it may flow out over a large area at a somewhat uniform depth in what's called sheet flow. In other cases, the runoff may collect in depressions and low-lying areas where it cannot drain out, creating a ponding effect. Ponding floodwaters do not move or flow away, they remain in the temporary ponds until the water can infiltrate the soil, evaporate, or are pumped out.

Flash Floods

Flash flooding occurs when there is a rapid rise of water along a stream or low-lying area. This type of flooding generally occurs within six hours of a significant rain event and is usually produced when heavy localized precipitation falls over an area in a short amount of time. Considered the most dangerous type of flood event, flash floods happen quickly with little or no warning. Typically, there is no time for the excess water to soak into the ground nor are the storm sewers able to handle the sheer volume of water. As a result, streams overflow their banks and low-lying (such as underpasses, basements etc.) areas can rapidly fill with water.

Flash floods are very strong and can tear out trees, destroy buildings and bridges and roll boulders the size of cars. Flash flood-producing rains can also weaken soil and trigger debris flows that damage homes, roads, and property. A vehicle caught in swiftly moving water can be swept away in a matter of seconds. Twelve inches of water can float a car or small SUV and 18 inches of water can carry away large vehicles.

What is a base flood?

A base flood refers to any flood having a 1% chance of occurring in any given year. It is also known as the 100-year flood or the one percent annual chance flood. The base flood is the national standard used by the National Flood Insurance Program (NFIP) and the State of Illinois for the purposes of requiring the purchase of flood insurance and regulating new development.

Many individuals misinterpret the term "100-year flood". This term is used to describe the risk of future flooding; it does not mean that it will occur once every 100 years. Statistically speaking, a 100-year flood has a 1/100 (1%) chance of occurring in any given year. In reality, a 100-year flood could occur two times in the same year or two years in a row, especially if there are other contributing factors such as unusual changes in weather conditions, stream channelization or changes in land use (i.e., open space land developed for housing or paved parking lots). It is also possible not to have a 100-year flood event over the course of 100 years.

While the base flood is the standard most commonly used for floodplain management and regulatory purposes in the U.S., the 500-year flood is the national standard for protecting critical facilities, such as hospitals and power plants. A 500-year flood has a 1/500 (0.2%) chance of occurring in any given year.

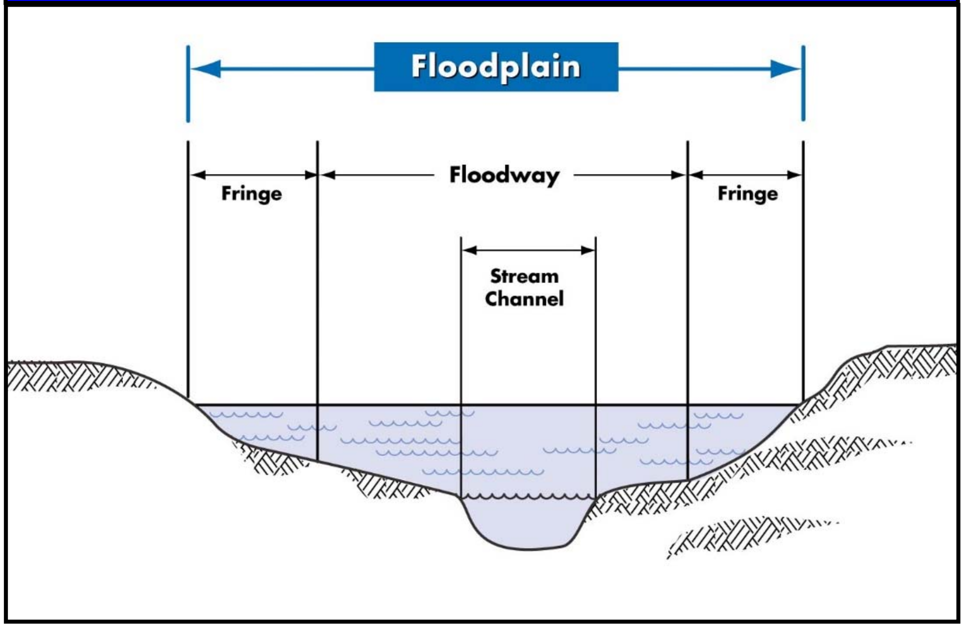
What is a floodplain?

The general definition of a floodplain is any land area susceptible to being inundated or flooded by water from any source (i.e., river, stream, lake, estuary, etc.). This general definition differs slightly from the regulatory definition of a floodplain.

A regulatory or base floodplain is defined as the land area that is covered by the floodwaters of the base flood. This land area is subject to a 1% chance of flooding in any given year. The base floodplain is also known as the 100-year floodplain or a Special Flood Hazard Area (SFHA). It is this second definition that is generally most familiar to people and the one that is used by the NFIP and the State of Illinois.

A base floodplain is divided into two parts: the floodway and the flood fringe. **Figure F-1** illustrates the various components of a base floodplain.

Figure F-1
Floodplain Illustration



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

The floodway is the channel of a river or stream and the adjacent floodplain that is required to store and convey the base flood without increasing the water surface elevation. Typically, the floodway is the most hazardous portion of the floodplain because it carries the bulk of the base flood downstream and is usually the area where water is deepest and is moving the fastest. Floodplain regulations prohibit construction within the floodway that results in an increase in the floodwater's depth and velocity.

The flood fringe is the remaining area of the base floodplain, outside of the floodway, that is subject to shallow inundation and low velocity flows. In general, the flood fringe plays a relatively insignificant role in storing and discharging floodwaters. The flood fringe can be quite wide on large streams and quite small or nonexistent on small streams. Development within the flood fringe is typically allowed via permit if it will not significantly increase the floodwater's depth or velocity and the development is elevated above or otherwise protected to the base flood elevation.

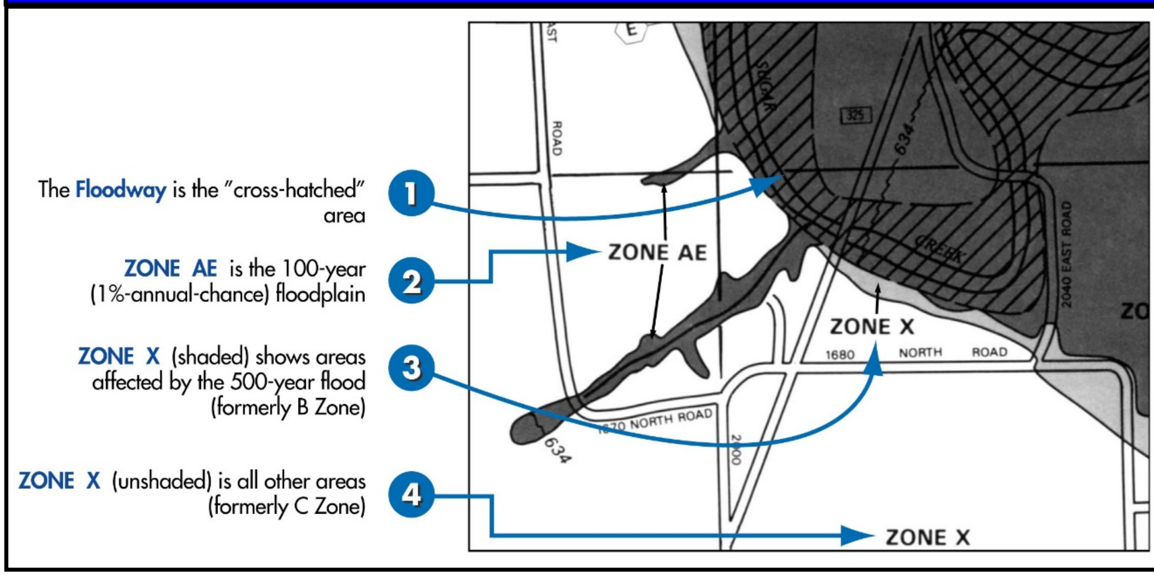
What is a Special Flood Hazard Area?

A Special Flood Hazard Area (SFHA) is the base floodplain. As discussed previously, this is the land area that is covered by the floodwaters of the base flood and has a 1% chance of flooding in any given year. The term SFHA is most commonly used when referring to the based floodplain on the Flood Insurance Rate Maps (FIRM) produced by FEMA. The SFHA is the area where floodplain regulations must be enforced by a community as a condition of participation in the NFIP and the area where mandatory flood insurance purchase requirements apply. SFHA are delineated on the FIRMs and may be designated as Zones A, AE, A1-30, AO, AH, AR, and A99 depending on the amount of flood data available, the severity of the flood hazard or the age of the flood map.

What are Flood Insurance Rate Maps?

Flood Insurance Rate Maps (FIRMs) are maps that identify both the SFHA and the risk premium zones applicable to a community. These maps are produced by FEMA in association with the NFIP for floodplain management and insurance purposes. Digital versions of these maps are referred to as DFIRMs. **Figure F-2** shows an example of a FIRM.

Figure F-2
Example of a Flood Insurance Rate Map (FIRM)



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

A FIRM will generally show a community's base flood elevations, flood zones and floodplain boundaries. The information presented on a FIRM is based on historic, meteorological, hydrologic, and hydraulic data as well as open-space conditions, flood-control projects, and development. ***These maps only define flooding that occurs when a creek or river becomes overwhelmed. They do not define overland flooding that occurs when an area receives extraordinarily intense rainfall and storm sewers, and roadside ditches are unable to handle the surface runoff.***

What are flood zones?

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk and type of flooding. These zones are depicted on a community's FIRM. The following provides a brief description of each flood zone.

- **Zone A.** Zone A, also known as the Special Flood Hazard Area (SFHA) or base floodplain, is defined as the floodplain area that has a 1% chance of flooding in any given year. There are multiple Zone A designations, including Zones A, AO, AH, A1-30, AE, AR or A99. Land areas located within Zone A are considered high-risk flood areas.

During a 30-year period, the length of many mortgages, there is at least a 1 in 4 chance that flooding will occur in a SFHA. The purchase of flood insurance is mandatory for all buildings in SFHAs receiving federal or federally-related financial assistance.

- **Zone X (shaded).** Zone X (shaded), formerly known as Zone B, is defined as the floodplain area between the limits of the base flood (Zone A) and the 0.2% chance or 500-year flood. Land areas located within Zone X (shaded) are affected by the 500-year flood and are considered at a moderate risk for flooding.

  Zone X (shaded) is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile. While flood insurance is not federally required in Zone X (shaded), it is recommended for all property owners and renters.
- **Zone X (unshaded).** Zone X (unshaded), formerly known as Zone C, is defined as all other land areas outside of Zone A and Zone X (shaded). Land areas located in Zone X (unshaded) are considered to have a low or minimal risk of flooding. While flood insurance is not federally required in Zone X (unshaded), it is recommended for all property owners and renters.

What is a Repetitive Loss Structure or Property?

FEMA defines a "repetitive loss structure" as a National Flood Insurance Program-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. These structures/properties account for approximately one-fourth of all National Flood Insurance Program (NFIP) insurance claim payments since 1978.

Currently, repetitive loss properties make up about 2% of all NFIP policies, and account for approximately $9 billion in claims or approximately 16% of the total claims paid over the history of the Program. These structures not only increase the NFIP's annual losses, but they also drain funds needed to prepare for catastrophic events. As a result, FEMA and the NFIP are working with states and local governments to mitigate these properties.

What is floodplain management?

Floodplain management is the administration of an overall community program of corrective and preventative measures to reduce flood damage. These measures take a variety of forms and generally include zoning, subdivision or building requirements, special-purpose floodplain ordinances, flood control projects, education, and planning. Where floodplain development is permitted, floodplain management provides a framework that minimizes the risk to life and property from floods by maintaining a floodplain's natural function. Floodplain management is a key component of the National Flood Insurance Program.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) is a federal program, administered by FEMA, that:

- mitigates future flood losses nationwide through community-enforced building and zoning ordinances; and

- provides access to affordable, federally-backed insurance protection against losses from flooding to property owners in participating communities.

It is designed to provide an insurance alternative to disaster assistance to meet escalating costs of repairing damage to buildings and their contents due to flooding. The U.S. Congress established the NFIP on August 1, 1968 with the passage of the National Flood Insurance Act of 1968. This Program has been broadened and modified several times over the years, most recently with the passage of the Flood Insurance Reform Act of 2004.

Prior to the creation of the NFIP, the national response to flood disasters was generally limited to constructing flood-control projects such as dams, levees, sea-walls, etc. and providing disaster relief to flood victims. While flood-control projects were able to initially reduce losses, their gains were offset by unwise and uncontrolled development practices within floodplains. In light of the continued increase in flood losses and the escalating costs of disaster relief to taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for protection.

Participation in the NFIP is voluntary and based on an agreement between local communities and the federal government. If a community agrees to adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in a SFHA (base floodplain), then the government will make flood insurance available within the community as a financial protection against flood losses.

If a community chooses not to participate in the NFIP or a participating community decides not to adopt new floodplain management regulations or amend its existing regulations to reference new flood hazard data provided by FEMA, then the following sanctions will apply.

- Property owners will not be able to purchase NFIP flood insurance policies and existing policies will not be renewed.
- Federal disaster assistance will not be provided to repair or reconstruct insurable buildings located in identified flood hazard areas for presidentially-declared disasters that occur as a result of flooding.
- Federal mortgage insurance and loan guarantees, such as those written by the Federal Housing Administration and the Department of Veteran Affairs, will not be provided for acquisition or construction purposes within an identified flood hazard area. Federally-insured or regulated lending institutions, such as banks and credit unions, are allowed to make conventional loans for insurable buildings in identified flood hazard areas of non-participating communities. However, the lender must notify applicants that the property is in an identified flood hazard area and that it is not eligible for federal disaster assistance.
- Federal grants or loans for development will not be available in identified flood hazard areas under programs administered by federal agencies such as the Environmental Protection Agency, Small Business Administration and the Department of Housing and Urban Development.

What is the NFIP's Community Rating System?

The NFIP's Community Rating System (CRS) is a voluntary program developed by FEMA to provide incentives (in the form of flood insurance premium discounts) for NFIP participating communities that have gone beyond the minimum NFIP floodplain management requirements to develop extra measures to provide protection from flooding. CRS discounts on flood insurance premiums range from 5% up to 45%. The discounts provide an incentive for communities to implement new flood protection activities that can help save lives and property when a flood occurs.

Are alerts issued for flooding?

Yes. The National Weather Service Weather Forecast Office in Lincoln, Illinois is responsible for issuing **flood watches** and **warnings** for Woodford County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Flood Watches.** A flood watch is issued when flooding or flash flooding is possible. It does not mean that flooding will occur, just that conditions are favorable. Individuals need to be prepared.
- **Flood Advisories.** A flood advisory is issued when flooding may cause significant inconvenience but is not expected to be to pose an immediate threat to life and/or property. Individuals need to be aware.
- **Warnings.** Warnings indicate a serious threat to life and/or property.
    - **Flood Warning**. A flood warning is issued when flooding is occurring or will occur soon and is expected to last for several days or weeks.
    - **Flash Flood Warning.** A flash flood warning is issued when flash flooding is occurring or is imminent. Flash flooding occurs very quickly so individuals are advised to take action immediately.

HAZARD PROFILE

The following identifies past occurrences of floods; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When has flooding occurred previously? What is the extent of these previous floods?

Tables 4 and **5**, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in Woodford County. The flood events are separated into two categories: general floods (riverine and shallow/overland) and flash floods.

General Floods

NOAA's Storm Events Database, NWS's Advanced Hydrologic Prediction Service, and the U.S. Army Corps of Engineers' river gauge data were used to document 131 occurrences of general flooding in Woodford County between 1950 and 2022. Included in the 131 general flood events are seven events that contributed to six federally-declared disasters in Woodford County.

Flood Fast Facts – Occurrences

Number of General Floods Reported (1950 – 2022): ***131***

Number of Flash Floods Reported (1990 – 2022): ***36***

Most Likely Month for General Floods to Occur: ***April***

Most Likely Month for Flash Floods to Occur: ***June***

Number of Federal Disaster Declarations Related to General and Flash Flooding: ***6***

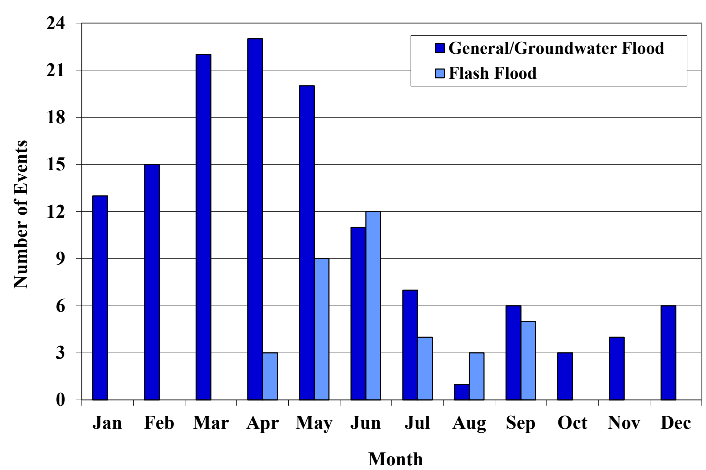
Based on historical gauge data, the record setting Illinois River flood at Peoria occurred on April 23, 2013 when the River crested at 29.35 feet. The second and third highest crests at this location occurred in 1943 and 1979 respectively.

Flash Floods

NOAA's Storm Events Database and Iowa State University's National Weather Service Watch, Warning, and Advisories database were used to document 36 reported occurrences of flash flooding in Woodford County between 1990 and 2022. Included in the 36 flash flood events are four events that contributed to two federally-declared disasters in Woodford County. Both declarations also included general flood events.

Figure F-3 charts the reported occurrences of flooding by month. Of the 131 general flood events, 65 (50%) began in March, April, and May making this the peak period for general flooding. Of those 65 events, 23 (35%) began during April making this the peak month for general flooding. There were 62 events that spanned two or more months; however, for illustration purposes only the month the event started in is graphed.

Figure F-3
Flood Events by Month



In comparison, 21 of the 36 flash flood events (60%) took place between May and June making this the peak period for flash floods. Of these 21 events, 12 (57%) occurred in June making this the peak month for flash flooding. Of the flash flood events with recorded times, 72% began during the p.m. hours.

What locations are affected by floods?

While specific locations are affected by general flooding, most areas of the County can be impacted by overland and flash flooding because of the topography and seasonally high water table of the area. In Woodford County, approximately 6.8% of the area in the County is designated as being within the base floodplain and susceptible to riverine floods. The 2018 Illinois Natural Hazard Mitigation Plan classifies Woodford County's hazard rating for floods as "high."

Figure F-4 identifies the floodplains in Woodford County as well as the participating jurisdictions. This map is based on the most current Woodford County DFRIMs that became effective September 17, 2010. While a large portion of the area prone to riverine flooding is in unincorporated portions of the County, Bay View Gardens, Congerville, Eureka, Kappa, Roanoke, Spring Bay, and Washburn are also susceptible to riverine flooding because of their proximity to floodplains. **Appendix K** contains maps identifying the floodplains located in each of the participating municipalities.

Figure F-5 identifies the bodies of water within or immediately adjacent to participating jurisdictions that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas located within a participating jurisdiction (as identified on the DFIRMs) are identified in bold.

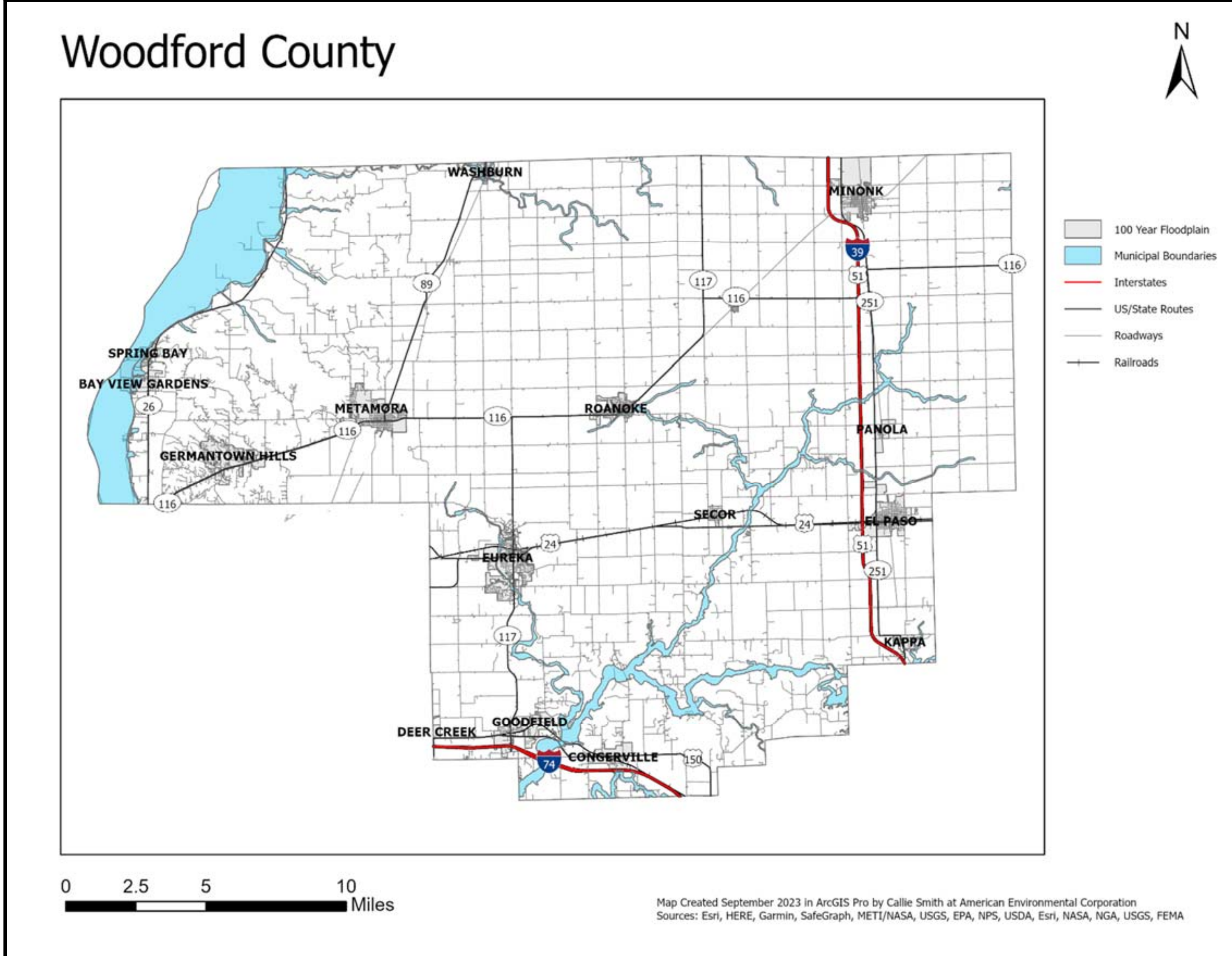
Figure F-5
Bodies of Water Subject to Flooding

Participating Jurisdiction	Water Bodies
El Paso	---
Eureka	Eureka Lake, **Tributary Walnut Creek, Walnut Creek**
Germantown Hills	Unnamed Tributary, White Oaks Lake
Minonk	---
Roanoke	**Tributary West Branch Panther Creek, West Branch Panther Creek**
Unincorporated Woodford County	**Alloway Creek**, Barwell Lake, **Blalock Creek, Blue Creek, Burkett Hollow**, Coon Creek, Crow Creek, **Derman Creek**, Diamond Creek, **Douglas Lake, Dry Creek, East Branch Panther Creek, Evergreen Lake,** Funks Run, **Goose Lake, Hallenback Creek, Illinois River**, Izaak Walton Lake, Lake Sante Fe, **Little Panther Creek, Mackinaw River, Mill Creek, Mole Creek, Mud Creek**, Mundinger Creek, **Olive Branch, Panther Creek, Partridge Creek**, Red River, Rich Lake, **Richland Creek, Rock Creek**, Short Point Creek, **Six Mile Creek, Snag Creek, Snake Creek, South Branch Crow Creek, Ten Mile Creek**, Tributary Diamond Creek, Tributary East Branch Panther Creek, Tributary Long Point Creek, Tributary Mole Creek, **Tributary Panther Creek, Tributary Rock Creek, Tributary Walnut Creek**, Tributary West Branch Panther Creek, Tributary Wolf Creek, **Vincent Run, Walnut Creek, West Branch Panther Creek,** Wolf Creek, **Wolf Creek**

Source: FEMA's DFIRMs.

Municipal, Township, and County officials have reported overland flood issues outside of the base floodplain in most of the participating municipalities and many unincorporated portions of the County. This overland flooding is known to impair travel.

Figure F-4
Floodplain Areas in Woodford County



What jurisdictions within the County take part in the NFIP?

Participating Jurisdictions

Woodford County, Eureka, and Roanoke participate in the NFIP. **Figure F-6 *provides information on each NFIP-participating jurisdiction,*** including the date each participant joined, the date of their current effective FIRM and the year of their most recently adopted floodplain zoning ordinance. El Paso, Germantown Hill, and Minonk have no identified flood hazard boundaries within their corporate limits and do not wish to participate in the NFIP at this time.

Figure F-6
NFIP Participating Jurisdictions

Participating Jurisdictions	Participation (Date)	Current Effective FIRM (Date)	Floodplain Zoning/FIRM Adoption Ordinance (Year)	Adoption of Minimum NFIP Criteria (Yes/No)*	Local Floodplain Management Regulations Implemented & Enforced (Yes/No)	Position Responsible for Implementation of NFIP Commitments/ Requirements	CRS Participation
Woodford County	02/01/1984	09/17/2010	2010	Yes	Yes	Zoning Administrator	No
Eureka	07/18/1985	09/17/2010	2010	Yes	Yes	Planning & Zoning Commission	No
Roanoke	09/04/1987	09/17/2010	2010	Yes	Yes	Zoning Director	No

* In Woodford County, all the NFIP-participating jurisdictions have adopted the State of Illinois model floodplain ordinance. This ordinance goes above and beyond NFIP minimum standards and has much more restrictive floodway regulations. As a result, all of the NFIP-participating jurisdictions are in compliance with NFIP requirements.

Discussions with the individuals responsible for implementation of the NFIP commitments and requirements within their jurisdiction and a review of the participating jurisdictions floodplain ordinances indicates that each monitor flood events and, when applicable, conduct substantial damage determinations for structures within the floodplain using FEMA's Substantial Damage Estimator Tool. For structures that meet the definition of substantial damage (total cost of repairs is 50% or more of the structure's market value before the disaster occurred, regardless of the cause of damage), the owners are notified, and the structure must be brought back into compliance with local floodplain management regulations.

Participating jurisdictions will continue to comply with the NFIP by implementing mitigation projects and activities that enforce this ordinance to reduce future flood risks to new construction within the SFHA. At this time no new construction is planned within the base floodplain. Continued compliance with NFIP requirements is addressed in the Mitigation Action Tables of the participating jurisdictions found in Section 4.7.

Non-Participating Jurisdictions

Figure F-7 provides information on those incorporated municipalities within the County that chose not to participate in the planning process but take part in the NFIP. Benson, Goodfield, Metamora, Panola and Secor have no identified flood hazard boundaries within their corporate limits and have chosen not to participate in the Program. Thile the current effective DFIRM for Bay View Gardens (dated September 17, 2010) does identify a small SFHA within its limits, the Village chose not to adopt floodplain regulations and participate in the NFIP. As a result, the

Village is listed as a community not in the NFIP with a sanction date of September 17, 2011 in FEMA's Community Status Book Report for Illinois. The current Village administration does not see the need to participate since the area within the SFHA, which is along the Illinois River and includes multiple ponds, does not include many structures.

Figure F-7
Non-Participating Jurisdiction NFIP Status

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Congerville	01/07/2011	09/17/2010	No	2010
Kappa	04/30/2014	09/17/2010	No	2010
Spring Bay	06/04/1980	09/17/2010	No	2010
Washburn	07/02/1987	11/04/2010	No	2010

Sources: FEMA, Community Status Book Report: Illinois.

What is the probability of future flood events occurring based on historical data?

General Floods

Woodford County has had 131 verified occurrences of general flooding between 1950 and 2022. With 131 occurrences over the past 73 years, the County should expect at least one general flood events in any given year. There were 40 years over the past 73 years where two or more general flood events occurred. This indicates that the probability or likelihood that more than one general flood event may occur during any given year within the County is 55%.

Flash Floods

There have been 36 verified flash flood events between 1990 and 2022. With 36 occurrences over the past 33 years, the County should expect at least one flash flood events in any given year. There were 12 years over the past 33 years where two or more flash flood events occurred. This indicates that the probability that more than one flash flood event may occur during any given year within the County is approximately 36%.

What is the probability of future flood events occurring based on modeled future conditions?

In the last 120 years, total annual precipitation in Illinois has increased by between 12% to 15% across the State. This means, according to the Illinois State Climatologist, that we get about an additional 5 inches of yearly rainfall compared to what was expected historically.

This trend is likely to continue, and as a result, precipitation in Illinois is forecasted to increase in coming decades. In addition to changes in the overall amount of precipitation, changes in precipitation patterns indicate that future events will likely be less frequent, but larger and more severe. The Illinois State Climatologist indicates that since the beginning of the 20th Century, Illinois has seen a 40% increase in the number of days with extreme precipitation events (rainfall of 2 inches or greater) per year.

One result of more precipitation overall and an increase in heavy rain events is an increased risk of flooding. In particular, extreme precipitation events are likely to lead to flash floods along rivers and in urban areas, where impermeable surfaces such as buildings, roads, and sidewalks will make drainage systems more likely to be overwhelmed. Rural areas will face different challenges, most notably those close to rivers and in low-lying areas with little or no drainage capability.

Figures SS-8 and **SS-9**, located in Section 3.1, provide tabular and graphical projections for Woodford County, showing estimations for average annual precipitation in the early, mid, and late 21st century with both low and high estimates for each time period. Most likely, the true value will fall between these two estimates. By midcentury, the average annual precipitation in Woodford County is projected to increase by 1.5 to 2 inches per year, while the average number of days with precipitation per year is projected to decrease by 3 to 4 days according to the Climate Mapping for Resilience and Adaptation's Assessment Tool.

By midcentury, the annual number of days with total precipitation greater than 1 inch is projected to increase by one day. The annual number of days with total precipitation greater than 2 inches is not projected to increase significantly. This is confirmed by the Climate Explorer, which indicates that in Woodford County the annual counts of intense rainstorms (rainfall of 2 inches or greater in once day) are not projected to increase. This is based on the findings of the 2018 National Climate Assessment and compares projections for the middle third of the century (2035-2064) with average conditions observed from 1961-1990.

Taken together, the projected increase in annual rainfall, the decrease in frequency of rain events, and the negligible threat of intense rain events in Woodford County means that the likelihood of flooding may be slightly higher than it is today.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from floods.

Several factors including topography, precipitation, and an abundance of rivers and streams make Illinois especially vulnerable to flooding. According to the Illinois State Water Survey's Climate Atlas of Illinois, since the 1940s Illinois climate records have shown an increase in heavy precipitation, which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?

Yes. Woodford County and the participating jurisdictions are vulnerable to the dangers presented by flooding. Precipitation levels and topography are factors that cumulatively make virtually the entire County susceptible to some form of flooding. Flooding occurs along the floodplains of all the rivers, streams, and creeks within the County as well as outside of the floodplains in low-lying areas where drainage problems occur. Since 2013, Woodford County has experienced 27 general flood events and 19 flash flood events.

Figure F-8 details the number of *recorded* flash flood events by participating jurisdiction. Of the 131 general flood events, 129 impacted either a large portion or the entire County and were not location specific. The remaining two events took place in Roanoke.

Figure F-8 Verified Flash Flood Events by Participating Jurisdiction		
Participating Jurisdiction	**Number**	**Year**
El Paso	7	1990, 1990, 1993, 1993, 2002, 2003, 2020
Eureka	8	1990, 1990, 1993, 1993, 2002, 2003, 2020, 2022
Germantown Hills	9	1990, 1990, 1993, 1993, 2002, 2003, 2008, 2020, 2020
Minonk	8	1990, 1990, 1993, 1993, 2002, 2002, 2003, 2020
Roanoke	11	1990, 1990, 1993, 1993, 2002, 2003, 2008, 2008, 2019, 2020, 2020
countywide	7	1990, 1990, 1993, 1993, 2002, 2003, 2020
western portion of the County	7	2010, 2013, 2013, 2015, 2017, 2018, 2018
northern portion of the County	3	2013, 2015, 2019
northeastern portion of the County	4	2010, 2011, 2013, 2013
eastern portion of the County	2	2009, 2015
southern portion of the County	2	2013, 2017
southeastern portion of the County	1	2014
central portion of the County	4	2010, 2011, 2013, 2015

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

According to the Multi-Resolution Land Characteristics (MRLC) Consortium, approximately 5.9% of the County's land cover is considered developed with 2.4% impervious surfaces. Areas with impervious surface rates approaching or exceeding 12 to 15 percent will likely experience negative impacts to water quality. Between 2016 and 2021 approximately 0.10 square miles of development and 0.18 square miles of impervious surfaces were gained.

As described in Section 1.3 Land Use and Development Trends, substantial changes in land use (from forested, open, and agricultural land to residential, commercial, and industrial) are not anticipated within the County in the immediate future. No substantial increases in residential or commercial/industrial developments are expected within the next five years.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of flooding?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following jurisdictions considered specific assets within their jurisdiction vulnerable to flooding.

Woodford County:

Flooding in Roanoke has impacted travel and access to the County's County Emergency Operations Center and other government buildings.

<u>*El Paso:*</u>
Portions of the City are more susceptible to flooding, including area roads.

<u>*Eureka:*</u>
- ❖ The City's only wastewater treatment plant is located in the based floodplain of Walnut Creek and has been damaged by previous flood events.
- ❖ A portion of Lake Eureka Lower Park is located in base floodplain of Walnut Creek and prone to flooding.

<u>*Roanoke:*</u>
- ❖ Flooding is the Village's major threat. The last major flood impacted approximately 160 of the 850 residential structures in the Village.
- ❖ The wastewater lagoon has been flooded in the past impacting service to residence. The lagoon is still recovering from the last flood in 2020.

What impacts resulted from the recorded floods?

Floods as a whole have caused a <u>minimum</u> of $49.6 million in property damages and $250,000 in crop damages. The following provides a breakdown by category. In comparison, the State of Illinois has averaged an estimated $257 million annually in property damage losses, making flooding the single most financially damaging natural hazard in Illinois.

<u>Flood Fast Facts – Impacts/Risk</u>

<u>General Flood Impacts:</u>
- ❖ Total Property Damage (6 events): ***$28,453,330***^
- ❖ Total Crop Damage (1 event): ***$250,000***^
- ❖ Injuries: ***n/a***
- ❖ Fatalities: ***n/a***

<u>Flash Flood Impacts:</u>
- ❖ Total Property Damage (6 events): ***$21,155,000***
- ❖ Total Crop Damage: ***n/a***
- ❖ Injuries: ***n/a***
- ❖ Fatalities: ***n/a***

<u>Flood Risk/Vulnerability to:</u>
- ❖ Public Health & Safety – General Flooding: ***Low***
- ❖ Public Health & Safety – Flash Flooding: ***Medium***
- ❖ Buildings/Infrastructure/Critical Facilities: ***Medium to High***

^ Includes $2.5 million in property damages and $250,000 in crop damages sustained as a result of the 1974 flood event and represents losses incurred by Tazewell, Woodford, and Peoria counties. A breakdown by county as not available.

<u>*General Floods*</u>
Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1950 and 2022, six of the 130 general flood events caused $28,453,330 in property damages and $250,000 in crop damages. Included in the damage totals is $2.5 million in property damage and $250,000 in crop damage sustained as a result of the 1974 flood event and represent losses incurred by Tazewell, Woodford, and Peoria Counties. A breakdown by county was not available. Damage information was either unavailable or none was recorded for the remaining 125 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

<u>*Flash Floods*</u>
Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1990 and 2022, six of the 36 flash flood events caused $21,155,000 in property damages. Damage information was either unavailable or none was recorded for the remaining 30 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly, and those with specific allergies.

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in a foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall, and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Infrastructure and critical facilities are also vulnerable to flooding. Roadways, culverts, and bridges can be weakened by floodwaters and have been known to collapse under the weight of a vehicle. Buried power and communication lines are also vulnerable to flooding. Water can infiltrate lines and cause disruptions in power and communication.

What is the level of vulnerability to public health and safety from floods?

While both general and flash floods occur on a regular basis within the County, the number of injuries and fatalities is low. In terms of the risk or vulnerability to public health and safety from general floods, the risk is seen as ***low***. However, one-fifth of the recorded flood events were the result of flash flooding. Since there is very little warning associated with flash flooding the risk to public health and safety from flash floods is elevated to ***medium***.

Are there any repetitive loss structures/properties within Woodford County?

Yes. According to information obtained from IEMA-OHS, there are three repetitive loss structures located in Roanoke, thirteen in Spring Bay, one in Washburn, and 57 in unincorporated Woodford County. As described previously, FEMA defines a "repetitive loss structure" as an NFIP-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978.

Figure F-9 identifies the repetitive flood loss structures by jurisdiction and provides the total flood insurance claim payments. The exact location and/or address of the insured structures are not included in this Plan to protect the owners' privacy. According to FEMA, there have been 267 flood insurance claim payments totaling $3,665,863.60 for the 74 repetitive flood loss structures.

Figure F-9
Repetitive Flood Loss Structures

Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Contents	
Roanoke	Single Family	3	7	$245,493.14	$0.00	$245,493.14
Spring Bay	Single Family	13	44	458,234.54	18,165.32	$476,399.86
Washburn	Single Family	1	3	3,971.10	1,734.91	$5,706.01
Unincorp. County	Single Family	57	213	$2,713,238.46	$225,026.13	$2,938,264.59
Total:		**74**	**267**	**$3,420,937.24**	**$244,926.36**	**$3,665,863.60**

Source: Illinois Emergency Management Agency and Office of Homeland Security

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?

Yes. **Figure F-10** identifies the estimated number of existing structures by participating jurisdiction located within a base floodplain. These counts were prepared by the Consultant using FEMA's National Flood Hazard Layer and building footprints prepared by the Illinois State Water Survey.

Figure F-10
Existing Buildings, Infrastructure and Critical Facilities Located in a Base Floodplain by Participating Jurisdiction

Participating Jurisdiction	Residential			Residential Garages	Businesses (Commercial/ Industrial)	Miscellaneous (Barns, Sheds, Silos)	Infrastructure/ Critical Facilities
	Houses	Duplexes	Apartment Complexes				
El Paso	---	---	---	---	---	---	---
Eureka	4	3	2	---	4	4	5
Germantown Hills	---	---	---	---	---	---	---
Minonk	---	---	---	---	---	---	---
Roanoke	11	---	---	---	10	10	3
Unincorp. Woodford County	230	1	---	21	6	177	---

Aside from key roads, bridges, electrical substations, and buried power and communication lines, the following provides a description of those jurisdictions that have specific infrastructure/critical facilities located within a floodplain.

Eureka: A majority of the City's wastewater treatment plant and part of the City's drinking water facility are located in the Walnut Creek base floodplain while Eureka Middle School is located adjacent to the Walnut Creek base floodplain.

Roanoke's Village Hall was previously located in the based floodplain of West Branch Panther Creek. However, in 2022 the Village purchase the former Commerce Bank Building and moved Village Hall out of the floodplain.

While 6.8% of the land area in Woodford County lies within the base floodplain and is susceptible to riverine flooding, ***almost the entire County is vulnerable to flash flooding***. As a result, ***a majority of the buildings, infrastructure and critical facilities that may be impacted by flooding are located outside of the base floodplain and are not easily identifiable.***

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be ***medium to high*** based on: (a) the frequency and severity of recorded flood events within the County; (b) the County's proximity to the Illinois River; (c) the fact that most of the County is vulnerable to flash flooding; and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of the base floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?

The answer to this question depends on the type of flooding being discussed.

Riverine Flooding

In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions is low as long as the existing floodplain ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

Flash Flooding

In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable *residential structures* located within the *participating municipalities* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Woodford County.

The purpose of providing an estimate is to help residents and local officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a ***general idea*** of the magnitude of the potential damage that could occur from a flood event in each of the participating municipalities.

Assumptions

To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Assumption #1

A riverine flood event will impact vulnerable residential structures.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. While the County has experienced all forms of flooding, riverine floods have occurred with greater regularity in the County. In addition, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the base floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the base floodplain or Special Flood Hazard Areas of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Assumption #2

All base floodplains will flood and experience the same degree of flooding.

Scope of the Flood Event. To establish the number of vulnerable residential structures (potentially-damaged housing units), the scope of the riverine flood event must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along base floodplains for each river, stream and creek.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river, stream or creek. However, for this scenario, it was decided that:

❖ all rivers, streams and creeks with base floodplains would overflow their banks, and

❖ the base floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

This assumption results in the following conditions for each municipality:

➢ *El Paso, Germantown Hills, and Minonk*: No rivers, streams or creeks are located within or adjacent to the village boundaries and therefore no residential flooding would occur. As a result, these municipalities will not be included in this analysis.

➢ *Eureka*: Walnut Creek and its tributaries would overflow their banks and flood portions of the City.

➢ *Roanoke*: West Branch Panther Creek and its tributaries would overflow their banks and flood portions of the Village.

Assumption #3

The number of existing residential structures located within the base floodplain(s) will be used to determine the number of potentially-damaged housing units.

Number of Potentially-Damaged Housing Units. Since this scenario assumes that all the base floodplains will experience the same degree of flooding, the number of existing residential structures located within the base floodplain(s) can be used to determine the number of potentially-damaged housing units. **Figure F-10** identifies the total number of existing residential structures located within the base floodplains(s) of each participating jurisdiction. These counts were prepared by the Consultant.

Assumption #4

The average market value for a residential structure will be used to determine the value of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units. Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically, when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the averaged assessed value and multiplying that number by three (the assessed value of a structure in Pike County is approximately one-third of the market value). **Figure F-11** provides a sample calculation. The total assessed value is based on 2022 tax assessment information provided by the Woodford County Clerk's Office. **Figures F-12** provides the average assessed value and average market value for each participating municipality.

Figure F-11
Sample Calculation of Average Assessed Value & Average Market Value – Eureka

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction÷ Total Housing Units in the Jurisdiction = Average Assessed Value

Eureka: $34,436,555 ÷ 1,063 housing units = $32,396

Average Market Value

Average Assessed Value x 3 = Average Market Value (Rounded to the Nearest Dollar)

Eureka: $32,396 x 3 = $97,188

Figure F-12 Average Market Value of Housing Units by Participating Municipality				
Participating Jurisdiction*	**Total Assessed Value of Residential Buildings (2022)**	**Total Housing Units (2017-2021)**	**Average Assessed Values**	**Average Market Value (2020)**
Eureka	$34,436,555	1,063	$32,396	$97,188
Roanoke	$23,600,278	762	$30,971	$92,913

* El Paso, Germantown Hills, and Minonk do not experience riverine flooding and as a result are not included in this analysis.

Source: Woodford County Clerk's Office.

Assumption #5

The potentially-damaged housing units are one or two-story homes with basements and the flood depth is two feet.
Structural Damage = 20%
Content Damage = 30%

Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one story home without a basement, one- or two-story home with a basement, etc.) and (b) the flood depth. **Figure F-13.** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

Figure F-13
FEMA Flood Loss Estimation Tables

Flood Building Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Building Damage)	Two Story No Basement (% Building damage)	One or Two Story With Basement (% Building damage)	Manufactured Home (% Building damage)
-2	0	0	4	0
-1	0	0	8	0
0	9	5	11	8
1	14	9	15	44
2	22	13	20	63
3	27	18	23	73
4	29	20	28	78
5	30	22	33	80
6	40	24	38	81
7	43	26	44	82
8	44	29	49	82
>8	45	33	51	82

Flood Content Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Contents Damage)	Two Story No Basement (% Contents damage)	One or Two Story With Basement (% Contents damage)	Manufactured Home (% Contents damage)
-2	0	0	6	0
-1	0	0	12	0
0	13.5	7.5	16.5	12
1	21	13.5	22.5	66
2	33	19.5	30	90
3	40.5	27	34.5	90
4	43.5	30	42	90
5	45	33	49.5	90
6	60	36	57	90
7	64.5	39	66	90
8	66	43.5	73.5	90
>8	67.5	49.5	76.5	90

Source: FEMA, Understanding Your Risks: Identifying Hazards and Estimating Losses

For this scenario it is assumed that the potentially-damaged housing units are one or two-story homes with basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the ***structure*** is estimated to be 20% and the expected percent damage sustained by the structure's ***contents*** is estimated to be 30%.

<u>*Potential Dollar Losses*</u>
Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage 20% to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure F-14** provides a sample calculation.

Figure F-14 ***Structure:*** **Potential Dollar Loss Sample Calculation – Eureka**
Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit
Eureka: $97,188 x 20% = $19,437.60 per housing unit
Average Structural Damage x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Structure* Potential Dollar Losses (Rounded to the Nearest Dollar)
Eureka: $19,437.60 per housing unit x 10 housing units = $194,376

Next the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage 30% to get the average content damage per unit. Then take the average content damage per unit and multiply that by the number of potentially-damaged housing units. **Figure F-15** provides a sample calculation.

Figure F-15 ***Content:*** **Potential Dollar Loss Sample Calculation – Eureka**
½ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage = Average Content Damage per Housing Unit
Eureka: ½ ($97,188) x 30% = $14,578.20 per housing unit
Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses (Rounded to the Nearest Dollar)
Eureka: $14,578.20 per housing unit x 10 housing unit = $145,782

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure F-16** provide a breakdown of the total potential dollar losses by participating municipality.

Figure F-16
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Participating Municipality

Participating Jurisdiction*	Average Market Value (2022)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Eureka	$97,188	10	$194,376	$145,782	$340,158
Roanoke	$92,913	11	$204,409	$153,306	$357,715

* El Paso, Germantown Hills, and Minonk do not experience riverine flooding and as a result are not included in this analysis.

This assessment illustrates the *potential residential dollar losses* that should be considered when municipalities are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences would be expected to be ***$340,158 in Eureka*** and ***$357,715 in Roanoke***.

Vulnerability of Infrastructure/Critical Facilities
The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, ***the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences.*** While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

In terms of specific infrastructure vulnerability, Eureka's wastewater treatment plant and drinking water facility are in the base floodplain of Walnut Creek. No above-ground infrastructure within the participating jurisdictions, other than key roads, bridges and electrical substations, were identified as being vulnerable to riverine flooding.

Considerations
While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions have been made aware through the planning process of the impacts that can result from flash flood events. Woodford County has experienced multiple events over the last 20 to 30 years as have adjoining and nearby counties. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

3.3 SEVERE WINTER STORMS

HAZARD IDENTIFICATION

What is the definition of a severe winter storm?

A severe winter storm can range from moderate snow over a few hours to significant accumulations of sleet and/or ice to blizzard conditions with blinding, wind-driven snow that last several days. The amount of snow or ice, air temperature, wind speed and event duration all influence the severity and type of severe winter storm that results. In general, there are three types of severe winter storms: blizzards, heavy snowstorms and ice storms. The following provides a brief description of each type as defined by the National Weather Service (NWS).

- **Blizzards.** Blizzards are characterized by strong winds of at least 35 miles per hour and are accompanied by considerable falling and/or blowing snow that reduces visibility to ¼ mile or less. Blizzards are the most dangerous of all winter storms.
- **Heavy Snowstorms.** Heavy snowstorms are generally defined as producing snowfall accumulations of four inches or more in 12 hours or less or six inches or more in 24 hours or less.
- **Ice Storms.** An ice storm occurs when substantial accumulations of ice, generally ¼ inch or more, build up on the ground, trees and utility lines as a result of freezing rain.

What is snow?

Snow is precipitation in the form of ice crystals. These ice crystals are formed directly from the freezing of water vapor in wintertime clouds. As the ice crystals fall toward the ground, they cling to each other creating snowflakes. Snow will only fall if the temperature remains at or below 32°F from the cloud base to the ground.

What is sleet?

Sleet is precipitation in the form of ice pellets. These ice pellets are composed of frozen or partially frozen rain drops or refrozen partially melted snowflakes. Sleet typically forms in winter storms when snowflakes partially melt while falling through a thin layer of warm air. The partially melted snowflakes then refreeze and form ice pellets as they fall through the colder air mass closer to the ground. Sleet usually bounces after hitting the ground or other hard surfaces and does not stick to objects.

What is freezing rain?

Freezing rain is precipitation that falls in the form of a liquid (i.e., rain drops), but freezes into a glaze of ice upon contact with the ground or other hard surfaces. This occurs when snowflakes descend into a warmer layer of air and melt completely. When the rain drops that result from this melting fall through another thin layer of freezing air just above the surface they become “supercooled”, but they do not have time to refreeze before reaching the ground. However, because the raindrops are “supercooled”, they instantly refreeze upon contact with anything that is at or below 32°F (i.e., the ground, trees, utility lines, etc.).

Are alerts issued for severe winter storms?

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***winter storm watches*** and ***warnings*** for Woodford County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** The following watches are issued in advance of a storm and indicate the potential for significant winter weather within the next day or two.
  - **Winter Storm Watch**. A winter storm watch is issued when conditions are favorable for the development of a hazardous winter weather event which has the potential to threaten life or property.
  - **Blizzard Watch**. A blizzard watch is issued when conditions are favorable for the development of blizzard conditions:
    - sustained winds or at least 35 mph and
    - reduced visibility of ¼ mile or less.
- **Advisories.** Winter advisories are issued for winter weather events that pose a significant inconvenience, especially to motorist, but should not be life-threatening if caution is exercised. The following advisories are generally issued 12 to 36 hours prior to an event.
  - **Freezing Rain Advisory.** A freezing rain advisory is issued when ice accumulations of up to ¼ inch are expected.
  - **Winter Weather Advisory.** A winter weather advisory is issued for one or more of the following:
    - snow accumulations of 3 to 5 inches in 12 hours or less;
    - sleet accumulations up to ¼ inch;
    - freezing rain in combination with sleet and/or snow; or
    - blowing and/or drifting snow.
- **Warnings.** The following winter weather warnings are issued when severe winter weather conditions are expected to cause a significant impact to life or property and make travel difficult to impossible. Individuals are advised to avoid travel and stay indoors.
  - **Blizzard Warning.** A blizzard warning is issued when reduced visibility of less than ¼ mile due to falling and/or blowing snow and strong winds of at least 35 mph or greater are expected for at least three hours.
  - **Ice Storm Warning.** An ice storm warning is issued when ice accumulations of ¼ inch or greater are expected, resulting in hazardous travel conditions, tree damage and extended power outages.
  - **Winter Storm Warning.** A winter storm warning is issued when there is one or more of the following expected:
    - heavy snow accumulations of at least 6 inches in 12 hours or at least 8 inches in 24 hours; or
    - sleet accumulations of at least ½ inch.

HAZARD PROFILE

The following identifies past occurrences of severe winter storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe winter storms occurred previously? What is the extent of these previous severe winter storm?

Table 6, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) recorded in Woodford County.

<u>Severe Winter Storm Fast Facts – Occurrences</u>

Number of Severe Winter Storm Events Reported (1950 -2022): ***152***

Maximum 24-Hour Snow Accumulation: ***14.5 inches (February 1 & 2, 2011)***

Most Likely Month for Severe Winter Storms to Occur: ***December***

NOAA's Storm Events Database, Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP data records were used to document 152 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Woodford County between 1950 and 2022. Of the 152 recorded occurrences there were 100 heavy snowstorms or blizzards; 41 combination events (freezing rain, sleet, ice and/or snow); and 11 ice or sleet storms. Included in the 152 severe winter storms are events that contributed to two separate federal emergency declarations in Woodford County.

Figure SWS-1 charts the reported occurrences of severe winter storms by month. Of the 152 events, 121 (80%) took place in in December, January, and February making this the peak period for severe winter storms. Of these 121 events, 44 (36%) occurred during December, making this the peak month for severe winter storms. There were two events that spanned two months; however, for illustration purposes only the month when the event started is graphed. Of the winter storm events with recorded times, 55% began during the a.m. hours.

According to the NWS's COOP data records, the maximum 24-hour snow accumulation in Woodford County is 14.5 inches, which occurred on February 1 and 2, 2011 at Germantown Hills.

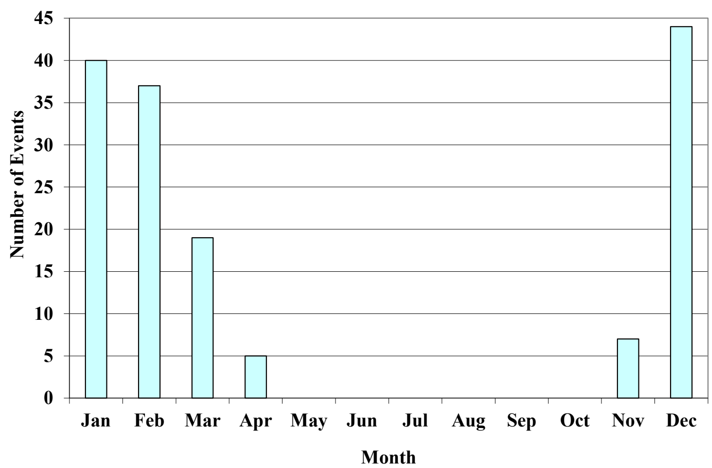
What locations are affected by severe winter storms?

Severe winter storms affect the entire County. All communities in Woodford County have been affected by severe winter storms. Severe winter storms generally extend across the entire County and affect multiple locations. The 2018 Illinois Natural Hazard Mitigation Plan prepared by IEMA-OHS classifies Woodford County's hazard rating for severe winter storms as "high."

What is the probability of future severe winter storms occurring based on historical data?

Woodford County has had 152 verified occurrences of severe winter storms between 1950 and 2022. With 152 occurrences over the past 73 years, Woodford County should expect at least two severe winter storms in any given year. There were 44 years over the past 73 years where two or more severe winter storms occurred. This indicates the probability that more than one severe winter storm may occur during any given year within the County is 60%.

Figure SWS-1
Severe Winter Storms by Month
1950 – 2022



What is the probability of future severe winter storms occurring based on modeled future conditions?

The number of days in a year where the temperature falls below 32°F are gradually decreasing in number, meaning that though there will still be winter weather events, there will be fewer days in a given year that could produce them. **Figure SWS-2 and SWS-3** provide tabular and graphical projections for Woodford County showing estimations for the number of days per year with minimum temperatures below 32°F by decade in the early, mid, and late 21st century with both low and high estimates for each time period.

Figure SWS-2
Number of Days Per Year with Minimum Temperature < 32°F Table – Woodford County

Indicator	Modeled Time Frame						
	2030s Min - Max	**2040s** Min - Max	**2050s** Min - Max	**2060s** Min - Max	**2070s** Min - Max	**2080s** Min - Max	**2090s** Min - Max
Days with minimum temperature below 32°F							
Lower Emissions	**114 days** 80 - 140	**110 days** 76 - 135	**107 days** 72 - 130	**104 days** 70 - 135	**104 days** 70 - 131	**101 days** 61 - 129	**99 days** 67 - 129
Higher Emissions	**113 days** 80 - 139	**107 days** 77 - 136	**101 days** 70 - 129	**95 days** 56 - 126	**87 days** 44 - 119	**83 days** 41 - 117	**76 days** 35 - 109

However, while overall trends of rising temperatures will lead to milder winters on average, this does not mean that severe winter storms will become a thing of the past. Heavy snow events could actually become more common due to rising temperatures. Warmer air is more favorable to the formation of high precipitation clouds, which in winter will increase the likelihood of severe winter storm events when it gets cold enough to snow instead of rain. Snow from these events tends to be warm, wet, and heavy, but will melt relatively quickly in comparison to the finer, dustier snow that falls when temperatures are colder.

Figure SWS-3
Number of Days Per Year with Minimum Temperature < 32°F Graph – Woodford County

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from severe winter storms.

Are the participating jurisdictions vulnerable to severe winter storms?

Yes. All of Woodford County, including the participating jurisdictions, is vulnerable to the dangers presented by severe winter storms. Severe winter storms are among the more frequently occurring natural hazards in Illinois. Since 2013, Woodford County has experienced 24 severe winter storms.

Severe winter storms have immobilized portions of the County, blocking roads; downing power lines, trees, and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the County, township, and municipalities must budget for snow removal and de-icing of roads and bridges as well as for roadway repairs.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of severe winter storms?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following jurisdictions considered specific assets within their jurisdiction vulnerable to severe winter storms.

Woodford County:

None of the designated emergency shelters in Woodford County have backup generators that would allow them to remain operational if power was lost during a severe winter storm event.

Germantown Hills:

The Village's lift stations/grinder pumps do not have emergency backup generators and therefore are vulnerable to power outages caused by severe winter storms.

Minonk:

Severe winter storms have the potential to impede travel, especially that of emergency services.

What impacts resulted from the recorded severe winter storms?

Data obtained from NOAA's Storm Events Database indicates that between 1950 and 2022, seven of the 152 severe winter storms caused $1,762,000 in property damages. Property damage information was either unavailable or none was recorded for the remaining 145 reported occurrences.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts:

- ❖ Total Property Damage (7 events): ***$1,762,000***
- ❖ Injuries (3 events): ***5***
- ❖ Fatalities (2 events): ***2***

Severe Winter Storm Risk/Vulnerability:

- ❖ Public Health & Safety: ***Low to Medium***
- ❖ Buildings/Infrastructure/Critical Facilities: ***Medium***

In comparison, the State of Illinois has averaged $102 million annually in winter storm losses according to the Illinois State Water Survey's Climate Atlas of Illinois, ranking winter storms second only to flooding in terms of economic loss in the State. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas, with rural areas being particularly vulnerable.

NOAA's Storm Events Database documented five injuries and two fatalities as the result of five separate severe winter storm events. The following provides a brief description of each.

- ❖ Three individuals were injured in two separate vehicle accidents in the County as a result of an ice storm on February 11, 1993.
- ❖ One person was injured in a vehicular accident as the result of a heavy snow event on January 8 and 9, 1997.
- ❖ On February 17, 2000 a vehicle accident, attributed to an icy road, resulted in one serious injury.
- ❖ On November 24, 2004, a winter storm with considerable blowing and drifting snow caused dangerous driving conditions resulting in a fatal traffic accident.
- ❖ A woman was killed near Low Point on April 6, 2009 when she lost control of her car on a slushy road caused by a late winter storm.

What other impacts can result from severe winter storms?

In Woodford County, vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icy road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Traffic accident data assembled by the Illinois Department of Transportation from 2017 through 2021 indicates that treacherous road conditions caused by snow/slush and ice were present for 5.6% to 17.2% of all crashes recorded annually in the County. **Figure SWS-4** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Figure SWS-4 Severe Winter Weather Crash Data for Woodford County				
Year	**Total # of Crashes**	**Presence of Treacherous Road Conditions caused by Snow/slush and Ice**		
		# of Crashes	**# of Injuries**	**# of Fatalities**
2017	427	24	7	0
2018	510	88	18	0
2019	519	88	18	1
2020	470	50	7	0
2021	431	46	11	0
Total:	**2,357**	**296**	**61**	**1**

Source: Illinois Department of Transportation.

Persons who are outdoors during and immediately following severe winter storms can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Over exertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

What is the level of risk/vulnerability to public health and safety from severe winter storms?

While severe winter storms occur regularly in Woodford County, the number of injuries and fatalities is relatively low. Taking into consideration the potential for hazardous driving conditions, snow-removal related injuries, and power outages that could leave individuals vulnerable to hypothermia, the risk to public health and safety of the *general population* from severe winter storms safety is seen as ***low*** to ***medium***.

The level of risk or vulnerability posed by severe winter storms to the public health and safety of *socially vulnerable populations* is considered to be ***medium***. Socially vulnerable populations such as older adults (those 75 years of age and older) are more susceptible to slips and falls caused by treacherous walking conditions and therefore their risk is elevated. **Figure SWS-5** identifies the percent of socially vulnerable populations by participating municipality and the County based on the U.S. Census Bureau's 2017-2021 American Community Survey data.

Are existing buildings, infrastructure, and critical facilities vulnerable to severe winter storms?

Yes. All existing buildings, infrastructure, and critical facilities located in Woodford County and the participating jurisdictions are vulnerable to damage from severe winter storms.

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare but can occur particularly to flat rooftops. Information gathered from Woodford County residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the County. Snow and ice accumulations on lines often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

Figure SWS-5
Socially Vulnerable Populations by Participating Jurisdictions

Participating Jurisdiction	% of Population 75 year of age & Older
El Paso	10.5%
Eureka	10.3%
Germantown Hills	1.4%
Minonk	12.4%
Roanoke	1.5%
Unincorp. Woodford County	7.2%
Woodford County	7.6%
State of Illinois	6.4%

Source: U.S. Census Bureau.

Tony O'Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of severe winter storms from 2010 through 2022. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Woodford County and is summarized in **SWS-6**.

Figure SWS-6
Ameren Illinois – Regional Power Outages Experienced in Woodford County as a Result of Severe Winter Storm Events: 2010 – 2022

Event Date	Event Type	Customers without Power	Duration of Outage	Wires Downed	Poles Replaced	Individual Service Lines Damaged	Tree Orders*	Responding Personnel
1/20/2010 thru 1/21/2010	Ice Storm	50,000	3 days	170	70	13	25	488
2/1/2011 thru 2/2/2011	Blizzard	14,000	3 days	1,964	104	470	718	1,144
12/20/2012	Blizzard	78,000	2 days	1,017	183	191	499	1,803
12/28/2015	Ice Storm	192,000	3.5 day	1,969	475	882	939	1,526
1/1/2021	Ice Strom	14,966	6 days	240	63	n/a	123	1,296

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

When transportation is disrupted, schools close, emergency, and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the County, township, and municipalities for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms.

Based on the frequency with which severe winter storms have occurred in Woodford County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is ***medium***.

Are future buildings, infrastructure, and critical facilities vulnerable to severe winter storms?

Yes and No. While El Paso and Eureka have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms, the County, and the three remaining participating municipalities do not.

However, infrastructure such as new communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Rural areas of the County have experienced extended periods without power due to severe winter storms. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms. Since only two of the 130 recorded events listing property damage numbers for severe winter storms, it is difficult to accurately estimate future potential dollar losses. However, according to the Woodford County Clerk the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $$769,193,696. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to severe winter storms.

3.4 EXCESSIVE HEAT

HAZARD IDENTIFICATION

What is the definition of excessive heat?

Excessive heat is generally characterized by a prolonged period of summertime weather that is substantially hotter and more humid than the average for a location at that time of year. Excessive heat criteria typically shift by location and time of year. As a result, reliable fixed absolute criteria are not generally specified (i.e., a summer day with a maximum temperature of at least 90°F).

Excessive heat events are usually a result of both high temperatures and high relative humidity. (Relative humidity refers to the amount of moisture in the air.) The higher the relative humidity or the more moisture in the air, the less likely that evaporation will take place. This becomes significant when high relative humidity is coupled with soaring temperatures.

On hot days the human body relies on the evaporation of perspiration or sweat to cool and regulate the body's internal temperature. Sweating does nothing to cool the body unless the water is removed by evaporation. When the relative humidity is high, then the evaporation process is hindered, robbing the body of its ability to cool itself.

Excessive heat is a leading cause of weather-related fatalities in the U.S. According to the Centers for Disease Control and Prevention, a total of 7,415 people died from heat-related illnesses between 1999 and 2010, an average of 618 fatalities a year.

What is the Heat Index?

In an effort to raise the public's awareness of the hazards of excessive heat, the National Weather Service (NWS) devised the "Heat Index". The Heat Index, sometimes referred to as the "apparent temperature", is a measure of how hot it feels when relative humidity is added to the actual air temperature. **Figure EH-1** shows the Heat Index as it corresponds to various air temperatures and relative humidity.

As an example, if the air temperature is 96°F and the relative humidity is 65%, then the Heat Index would be 121°F. It should be noted that the Heat Index values were devised for shady, light wind conditions. Exposure to full sunshine can increase Heat Index values by up to 15°F. Also, strong winds, particularly with very hot, very dry air, can be extremely hazardous. When the Heat Index reaches 105°F or greater, there is an increased likelihood that continued exposure and/or physical activity will lead to individuals developing severe heat disorders.

What are heat disorders?

Heat disorders are a group of illnesses caused by prolonged exposure to hot temperatures and are characterized by the body's inability to shed excess heat. These disorders develop when the heat gain exceeds the level the body can remove or if the body cannot compensate for fluids and salt lost through perspiration. In either case the body loses its ability to regulate its internal temperature. All heat disorders share one common feature: the individual has been overexposed to heat, or over exercised for their age and physical condition on a hot day. The following describes the symptoms associated with the different heat disorders.

Figure EH-1
Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	130					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution   Extreme Caution   Danger   Extreme Danger

Source: NOAA, National Weather Service.

- **Heat Rash.** Heat rash is a skin irritation caused by excessive sweating during hot, humid weather and is characterized by red clusters of small blisters on the skin. It usually occurs on the neck, chest, groin or in elbow creases.
- **Sunburn.** Sunburn is characterized by redness and pain of skin exposed too long to the sun without proper protection. In severe cases it can cause swelling, blisters, fever and headaches and can significantly retard the skin's ability to shed excess heat.
- **Heat Cramps.** Heat cramps are characterized by heavy sweating and muscle pains or spasms, usually in the abdomen, arms or legs that during intense exercise. The loss of fluid through perspiration leaves the body dehydrated resulting in muscle cramps. This is usually the first sign that the body is experiencing trouble dealing with heat.
- **Heat Exhaustion.** Heat exhaustion is characterized by heavy sweating, muscle cramps, tiredness, weakness, dizziness, headache, nausea or vomiting and faintness. Breathing may become rapid and shallow and the pulse thready (weak). The skin may appear cool, moist and pale. If not treated, heat exhaustion may progress to heat stroke.
- **Heat Stroke (Sunstroke).** Heat stroke is a life-threatening condition characterized by a high body temperature (106°F or higher). The skin appears to be red, hot and dry with very little perspiration present. Other symptoms include a rapid and strong pulse, throbbing headache, dizziness, nausea and confusion. There is a possibility that the individual will become unconsciousness. If the body is not cooled quickly, then brain damage and death may result.

Studies indicate that, all things being equal, the severity of heat disorders tend to increase with age. Heat cramps in a 17-year-old may be heat exhaustion in someone 40 and heat stroke in a person over 60. Elderly persons, small children, chronic invalids, those on certain medications and persons with weight or alcohol problems are particularly susceptible to heat reactions.

Figure EH-2 below indicates the heat index at which individuals, particularly those in higher risk groups, might experience heat-related disorders. Generally, when the heat index is expected to exceed 105°F, the NWS will initiate excessive heat alert procedures.

Figure EH-2
Relationship between Heat Index and Heat Disorders

Heat Index (°F)	Heat Disorders
80°F – 90°F	Fatigue is possible with prolonged exposure and/or physical activity
90°F – 105°F	Heat cramps, heat exhaustion and heat stroke possible with prolonged exposure and/or physical activity
105°F – 130°F	Heat cramps, heat exhaustion and heat stroke likely; heat stroke possible with prolonged exposure and/or physical activity
130°F or Higher	Heat stroke highly likely with continued exposure

Source: NOAA, Heat Wave: A Major Summer Killer.

What is an excessive heat alert?

An excessive heat alert is an advisory or warning issued by the NWS when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines the type of alert issued. There are four types of alerts that can be issued for an excessive heat event. The following provides a brief description of each type of alert based on the ***excessive heat advisory/warning criteria*** established by NWS Weather Forecast Office in Lincoln, Illinois. The Lincoln Office is responsible for issuing alerts for Woodford County.

- **Outlook.** An excessive heat outlook is issued when the potential exists for an excessive heat event to develop over the next three (3) to seven (7) days.
- **Watch.** An excessive heat watch is issued when conditions are favorable for an excessive heat event to occur within the next 24 to 72 hours.
- **Advisory.** An excessive heat advisory is issued within 12 hours of the onset of extremely dangerous heat conditions when the maximum heat index temperature is expected to be 100°F or higher for at least two (2) days and the nighttime air temperatures will not drop below 75°F.
- **Warning.** An excessive heat warning is issued within 12 hours of the onset of extremely dangerous heat conditions when the maximum heat index temperature is expected to be 105°F or higher for at least two (2) days and the nighttime air temperatures will not drop below 75°F.

HAZARD PROFILE

The following identifies past occurrences of excessive heat, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

When have excessive heat events occurred previously? What is the extent of these events?

Excessive Heat Fast Facts – Occurrences

Number of Excessive Heat Events Reported (1995 – 2022): ***109***

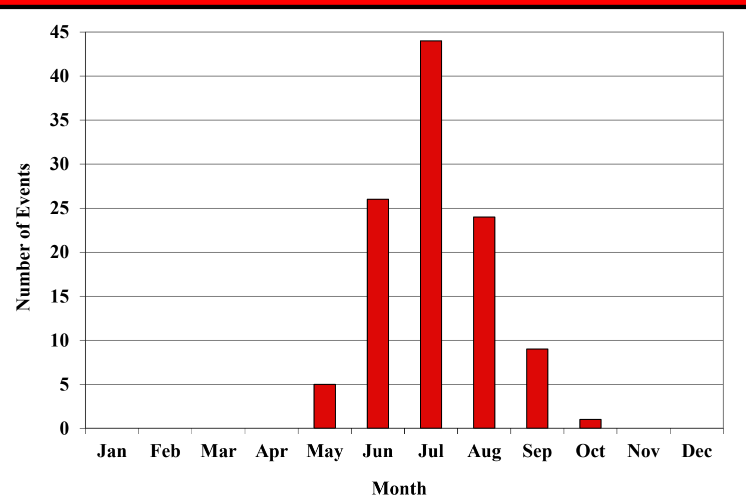
Hottest Temperature Recorded in the County: ***111°F (July 14, 1936)***

Most Likely Month for Excessive Heat Events to Occur: ***July***

Table 7, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of excessive heat events recorded in Woodford County. NOAA's Storm Events Database, Iowa State University's National Weather Service Watch, Warning, and Advisories database, Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP Data records were used to document 109 occurrences of excessive heat in Woodford County between 1995 and 2022.

Figure EH-3 charts the reported occurrences of excessive heat by month. Forty-four of the 109 events (40%) began in July making this the peak month for excessive heat events in Woodford County. There were five events that spanned two months; however, for illustration purposes only the month the event started is graphed.

Figure EH-3
Excessive Heat by Month
1995 – 2022



According to the Midwestern Regional Climate Center, almost continuous temperature records for Woodford County were kept from 1896 to present by the Minonk NWS COOP Observation Station and from 1996 to present by the Congerville 2NW COOP Observer Station. **Figure EH-4** list the hottest days recorded at the Minonk Station. Based on the available records, the hottest temperature recorded in the County was 111°F at the Minonk COOP Observation Station on July 14, 1936.

Figure EH-4
Hottest Days Recorded at the Minonk NWS COOP Observation Station

	Date	Temperature		Date	Temperature
1	7/14/1936	111°F	4	7/12/1936	110°F
2	7/15/1936	111°F	5	7/7/1936	108°F
3	7/11/1936	110°F	6	7/28/1916	107°F

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by excessive heat?

Excessive heat affects the entire County. Excessive heat events, like drought and severe winter storms, generally extend across an entire region and affecting multiple counties. The *2018 Illinois Natural Hazard Mitigation Plan* classifies Woodford County's hazard rating for excessive heat as "medium."

Do any of the participating jurisdictions have designated cooling centers?

Yes. Four of the five participating municipalities have designated cooling centers. A "designated" cooling center is identified as any facility that has been *formally* identified by the jurisdiction (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents of the jurisdiction during excessive heat events.

Figure EH-5 identifies the location of each cooling center by jurisdiction. At this time Germantown Hills does not have any cooling centers designated. In addition, there are no State of Illinois-designated cooling centers in Woodford County.

Figure EH-5
Designated Cooling Centers by Participating Jurisdiction

Name/Address	Name/Address
El Paso	*Minonk*
El Paso City Hall, 125 W Front Street	City Hall, 670 N Chestnut St.
El Paso Police Department, 195 S Orange Street	Minonk Ambulance Building, 636 Jefferson St.
El Paso District Library, 149 W 1st Street	*Roanoke*
Eureka	Roanoke Methodist Church, 401 N Church, Roanoke
Eureka Methodist, 208 N Callender St, Eureka	
Woodford County House Lobby, 115 N Main, Eureka	

What is the probability of future excessive heat events occurring based on historical data?

Woodford County has experienced 109 verified occurrences of excessive heat between 1995 and 2022. With 109 occurrences over the past 28 years, Woodford County should expect to experience at least three excessive heat events per year. It is important to keep in mind that there are almost certainly gaps in the excessive heat data. More events have almost certainly occurred than are documented in this section, which means that the probability is almost certainly higher than reported.

There were 21 years over the last 28 years where multiple (three or more) excessive heat events occurred. This indicates that the probability that multiple excessive heat events may occur during any given year within the County is 75%.

What is the probability of future excessive heat events occurring based on modeled future conditions?

Temperature in Illinois has trended upwards over the last century, with average temperatures in Illinois having increased by 1°F to 2°F in the past 120 years according to the Illinois State Climatologist. This trend is likely to continue, with conservative long-term estimates placing average temperatures by the end of the 21st century between 4° and 9° F warmer than they are today.

With increasing temperatures comes the increasing risk of extreme heat events, which are projected to continue to become more frequent and more severe than they have been historically. This is due to increases in temperatures observed during summer months, where just a few degrees difference can turn a hot day into a dangerously hot day. The number of days greater than 95° F in Illinois are forecasted to increase in the coming decades, with conservative projections predicting that even northern Illinois will see a minimum of 10 extreme heat days per year by the end of the 21st century, compared with one or two extreme heat days per year today. Even just a few additional extreme heat days a year could prove very damaging, both in terms of human health and economic costs.

Figures EH-6, EH-7, and **EH-8** provide tabular and graphical projections for Woodford County, showing estimations for annual high temperature extremes in the early, mid, and late 21st century with both low and high estimates for each time period. Most likely, the true value will fall between these two estimates. By midcentury, the average number of days per year exceeding 90° F in Woodford County is forecasted to increase from around 20 today to between 58 and 67, and the single hottest temperature recorded in a year is predicted to increase by 6°F to 7° F according to the Climate Mapping for Resilience and Adaptation's Assessment Tool.

The Climate Explorer indicates that in Woodford County, extreme temperatures on the hottest days of the year are projected to increase by 7°F. This is based on the findings of the 2018 National Climate Assessment and compares projections for the middle third of the century (2035-2064) with average conditions observed from 1961-1990.

Taken together, an increase in the number of days per year with temperatures greater than 90° F and an increase in extreme temperatures on the hottest days for Woodford County indicates increased risk for extreme heat events.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from excessive heat.

Figure EH-6
Annual High Temperature Extreme Projections Table – Woodford County

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	**20 days** 20 - 28	**46 days** 30 - 79	**49 days** 34 - 71	**58 days** 32 - 104	**67 days** 45 - 96	**69 days** 37 - 114	**100 days** 64 - 130
Annual days with maximum temperature > 95°F	**5 days** 3 - 6	**16 days** 7 - 47	**18 days** 8 - 40	**24 days** 8 - 77	**32 days** 15 - 68	**33 days** 12 - 91	**65 days** 26 - 109
Annual days with maximum temperature > 100°F	**0 days** 0 - 1	**3 days** 0 - 23	**4 days** 0 - 13	**7 days** 0 - 47	**10 days** 2 - 37	**11 days** 1 - 47	**32 days** 5 - 84
Annual days with maximum temperature > 105°F	**0 days** 0 - 0	**1 days** 0 - 8	**0 days** 0 - 3	**1 days** 0 - 23	**2 days** 0 - 8	**2 days** 0 - 33	**11 days** 0 - 53
Annual temperature:							
Annual single highest maximum temperature °F	**97 °F** 96 - 98	**101 °F** 98 - 113	**101 °F** 98 - 105	**103 °F** 98 - 125	**104 °F** 101 - 110	**104 °F** 100 - 126	**109 °F** 102 - 116
Annual highest maximum temperature averaged over a 5-day period °F	**93 °F** 92 - 94	**97 °F** 94 - 104	**97 °F** 94 - 100	**98 °F** 95 - 111	**100 °F** 96 - 105	**100 °F** 96 - 112	**104 °F** 99 - 110
Cooling degree days (CDD)	**1028 degree-days** 972 - 1108	**1,412 degree-days** 1,183 - 1,855	**1,459 degree-days** 1,228 - 1,724	**1,613 degree-days** 1,249 - 2,421	**1,783 degree-days** 1,450 - 2,281	**1,814 degree-days** 1,336 - 2,738	**2,492 degree-days** 1,811 - 3,349

N/A = Data Not Available for the selected area

Figure EH-7
Number of Days with Maximum Temperature > 90°F Graph – Woodford County

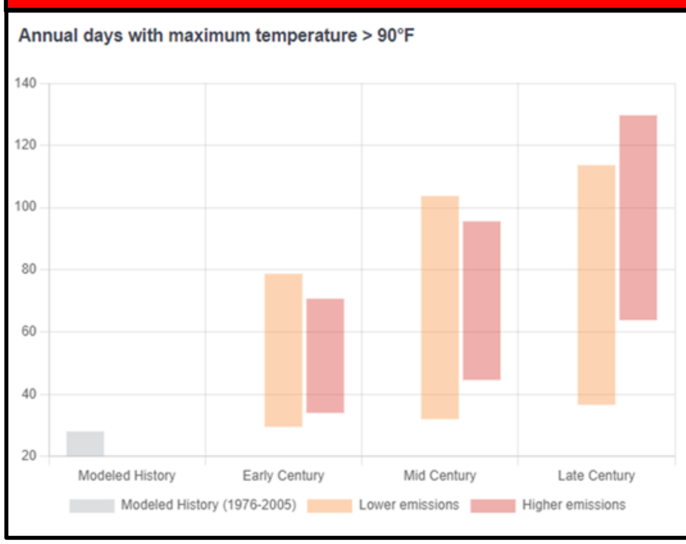
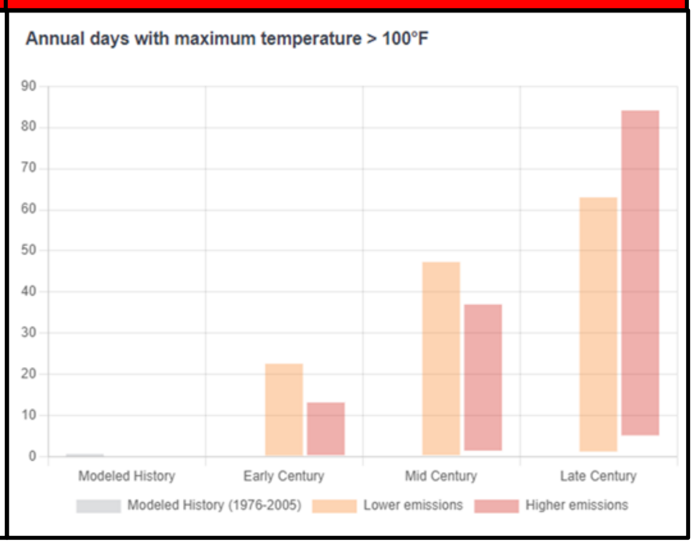


Figure EH-8
Number of Days with Maximum Temperature > 100°F Graph – Woodford County



Are the participating jurisdictions vulnerable to excessive heat?

Yes. All of Woodford County, including the participating jurisdictions, is vulnerable to the dangers presented by excessive heat. Since 2013, the County has experienced 42 excessive heat events.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of excessive heat?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, Woodford County considers specific assets within its jurisdiction vulnerable to excessive heat. None of the designated cooling centers in Woodford County have backup generators that would allow them to remain operational if power was lost during an extreme heat event.

What impacts resulted from the recorded excessive heat events?

Damage information was either unavailable or none was recorded for any of the excessive heat events. No injuries or fatalities were reported as a result of an excessive heat event. This does not mean that injuries or fatalities didn't occur; it simply means that excessive heat was not identified as the primary cause. This is especially true for fatalities. Usually, heat is not listed as the primary cause of death, but rather an underlying cause. The heat indices were sufficiently high for all the excessive heat events to produce heat cramps or heat exhaustion with the possibility of heat stroke in cases of prolonged exposure or physical activity.

Excessive Heat Fast Facts – Impacts/Risk

Excessive Heat Impacts:
- Total Property Damage: ***n/a***
- Total Crop Damage: ***n/a***
- Fatalities : ***n/a***
- Injuries: ***n/a***

Excessive Heat Risk/Vulnerability:
- Public Health & Safety – General Population: ***Low***
- Public Health & Safety – Socially Vulnerable Populations: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Low***

In comparison, Illinois averages 74 heat-related fatalities annually according to the Illinois State Water Survey's Climate Atlas of Illinois.

What other impacts can result from excessive heat events?

Other impacts of excessive heat include road buckling, power outages, stress on livestock, early school dismissals and school closings. In addition, excessive heat events can also lead to an increase in water usage and may result in municipalities imposing water use restrictions. In Woodford County, excessive heat should not impact municipal water supplies since none obtain their water from surface water bodies. Excessive heat may impact residents in unincorporated Woodford County however who rely on shallow private wells for their drinking water.

What is the level of vulnerability to public health and safety from excessive heat?

Even if injuries and fatalities due to excessive heat were under reported in Woodford County, the level of risk or vulnerability posed by excessive heat to the public health and safety of the *general population* is considered to be ***low***. This assessment is based on the frequency with which excessive heat occurs within the County; the impacts associated with these events; the types of living conditions (such as older, poorly-ventilated high rise buildings and low-income neighborhoods) that tend to contribute to heat-related injuries and fatalities; as well as the fact that injuries and fatalities due to excessive heat may be under reported. For the purposes of this analysis, *general population* includes healthy, able-bodied individuals who should have the ability to physiologically acclimatize to hot conditions over a period of days to weeks. Should that prove difficult, cooling centers are available in each participating municipality, with the exception of Germantown Hills, to provide relief during peak heat hours.

The level of risk or vulnerability posed by excessive heat to the public health and safety of *socially vulnerable populations* is considered to be ***medium***. Socially vulnerable populations such as older adults (those 75 years of age and older) and small children (those younger than 5 years of age) are more susceptible to heat-related reactions and therefore their risk is elevated. **Figure EH-9** identifies the percent of socially vulnerable populations by participating municipality and the County based on the U.S. Census Bureau's 2017-2021 American Community Survey data. In addition, individuals with chronic conditions, those on certain medications, and persons with weight or alcohol problems are also considered sensitive populations. However, demographic information is not available for these segments of the population.

Figure EH-9
Sensitive Populations by Participating Jurisdictions

Participating Jurisdiction	% of Population 75 year of age & Older	% of Population Younger than 5 years of age	Total % of Sensitive Population
El Paso	6.4%	3.6%	10.0%
Eureka	12.9%	6.2%	19.1%
Germantown Hills	2.1%	6.9%	9.0%
Minonk	6.4%	6.2%	12.6%
Roanoke	10.5%	7.2%	17.7%
Unincorp. Woodford County	7.7%	3.5%	11.2%
Woodford County	7.6%	5.9%	13.5%
State of Illinois	6.4%	5.8%	12.2%

Source: U.S. Census Bureau.

Are existing buildings, infrastructure, and critical facilities vulnerable to excessive heat?

No. In general, existing buildings, infrastructure and critical facilities located in the County and the participating jurisdictions are not vulnerable to excessive heat. The primary concern is for the health and safety of those living in the County (including all of the municipalities).

While buildings do not typically sustain damage from excessive heat, in rare cases infrastructure and critical facilities may be directly or indirectly damaged. While uncommon, excessive heat has been known to contribute to damage caused to roadways within Woodford County. The combination of excessive heat and vehicle loads has caused pavement cracking and buckling.

Excessive heat has also been known to indirectly contribute to disruptions in the electrical grid. When the temperatures rise, the demand for energy also rises in order to operate air conditioners, fans, and other devices. This increase in demand places stress on the electrical grid components, increasing the likelihood of power outages. While not common in Woodford County, there is the potential for this to occur. The potential may increase over the next two decades if new power sources are not built to replace the state's aging nuclear power facilities that are expected to be decommissioned.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from excessive heat is considered ***low***, even taking into consideration the potential for damage to roadways and disruptions to the electrical grid.

Are future buildings, infrastructure, and critical facilities vulnerable to excessive heat?

No. Future buildings, infrastructure and critical facilities within the County and participating jurisdictions are no more vulnerable to excessive heat events than the existing building, infrastructure, and critical facilities. As discussed above, buildings do not typically sustain damage from excessive heat. Infrastructure and critical facilities may, in rare cases, be damaged by excessive heat, but very little can be done to prevent this.

What are the potential dollar losses to vulnerable structures from excessive heat?

Unlike other natural hazards there are no standard loss estimation models or methodologies for excessive heat. With none of the recorded events listing property damage figures, there is no way to accurately estimate future potential dollar losses from excessive heat. Since excessive heat typically does not cause structure damage, it is unlikely that future dollar losses will be extreme. The primary concern associated with excessive heat is the health and safety of those living in the County and municipalities, especially socially vulnerable populations such as the elderly, infants, young children, and those with medical conditions.

3.5 EXTREME COLD

HAZARD IDENTIFICATION

What is the definition of extreme cold?

Extreme cold is generally characterized by temperatures well below what is considered normal for an area during the winter months and is often accompanied or is left in the wake of a severe winter storm. Extreme cold criteria vary from region to region. As a result, reliable fixed absolute criteria are not generally specified (i.e., a winter day with a maximum temperature of 0°F).

Whenever the temperature drops below normal and the wind speeds increase, heat can leave the body more rapidly. This can lead to dangerous situations for susceptible individuals, such as those without shelter or who are stranded, or those who live in a home that is poorly insulated or without heat.

Extreme cold is a leading cause of weather-related fatalities in Illinois. According to a 2020 study published by the University of Illinois Chicago, 1,935 individuals died from cold-related illnesses between 2011 and 2018. This is 94% of all temperature-related fatalities recorded in the State during that time period.

Extreme cold can also cause infrastructure damage, especially to residential water pipes and water distribution lines and mains. According to State Farm, in 2020 Illinois was once again the national leader in losses related to frozen pipes.

What is wind chill?

Wind chill, or wind chill factor, is a measure of the rate of heat loss from exposed skin resulting from the combined effects of wind and temperature. As the wind increases, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The unit of measurement used to describe the wind chill factor is known as the wind chill temperature. The wind chill temperature is calculated using a formula. **Figure EC-1** identifies the formula and calculates the wind chill temperatures for certain air temperatures and wind speeds.

As an example, if the air temperature is 5°F and the wind speed is 20 miles per hour, then the wind chill temperature would be -15°F. The wind chill temperature is only defined for air temperatures at or below 50°F and wind speeds above three miles per hour. In addition, the wind chill temperature does not take into consideration the effects of bright sunlight which may increase the wind chill temperature by 10°F to 18°F.

Use of the current Wind Chill Temperature (WCT) index was implemented by the NWS on November 1, 2001. The new WCT index was designed to more accurately calculate how cold air feels on human skin. The new index uses advances in science, technology and computer modeling to provide an accurate, understandable and useful formula for calculating the dangers from winter winds and freezing temperatures. The former index was based on research done in 1945 by Antarctic researchers Siple and Passel.

Exposure to extreme wind chills can be life threatening. As wind chills edge toward -19°F and below, there is an increased likelihood that exposure will lead to individuals developing cold-related illnesses.

Figure EC-1
Wind Chill Chart

Temperature (°F)

Wind (mph) / 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: NOAA, National Weather Service.

What cold-related illnesses are associated with extreme cold?

Frostbite and hypothermia are both cold-related illnesses that can result when individuals are exposed to dangerously low temperatures and wind chills. The following provides a brief description of the symptoms associated with each.

- **Frostbite.** During exposure to extremely cold weather the body reduces circulation to the extremities (i.e., feet, hands, nose, cheeks, ears, etc.) in order to maintain its core temperature. If the extremities are exposed, then this reduction in circulation coupled with the cold temperatures can cause the tissue to freeze.

  Frostbite is characterized by a loss of feeling and a white or pale appearance. At a wind chill of -19°F, exposed skin can freeze in as little as 30 minutes. Seek medical attention immediately if frostbite is suspected. It can permanently damage tissue and in severe cases can lead to amputation.

- **Hypothermia.** Hypothermia occurs when the body's temperature begins to fall because it is losing heat faster than it can produce it. If an individual's body temperature falls below 95°F, then hypothermia has set in, and immediate medical attention should be sought.

  Hypothermia is characterized by uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion. Left untreated, hypothermia will lead to death. Hypothermia occurs most commonly at very cold temperatures but can occur at cool temperatures (above 40°F) if an individual isn't properly clothed or becomes chilled.

What is a wind chill alert?

A wind chill alert is an advisory or warning issued by the NWS when the wind chill is expected to have a significant impact on public safety. The expected severity of cold temperatures and wind speed determines the type of alert issued. There are three types of alerts that can be issued for an extreme cold event. The following provides a brief description of each type of alert based on the ***wind chill criteria*** established by the NWS Weather Forecast Office in Lincoln, Illinois. The Lincoln Office is responsible for issuing alerts for Woodford County.

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing **wind chill advisories** and **warnings** for Woodford County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Wind Chill Watch.** A wind chill watch may be issued if conditions are favorable for wind chill temperatures to meet or exceed warning criteria but are not occurring or imminent.
- **Wind Chill Advisory.** A wind chill advisory is issued when wind chill values are expected to be between -15°F and -24°F.
- **Wind Chill Warning.** A wind chill warning is issued when wind chill values are expected to be -25°F or below.

HAZARD PROFILE

The following identifies past occurrences of extreme cold events; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have extreme cold events occurred previously? What is the extent of these events?

Table 8, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of extreme cold events recorded in Woodford County. NOAA's Storm Events Database, Iowa State University's National Weather Service Watch, Warning, and Advisories database, Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP Data records were used to document 63 occurrences of extreme cold in Woodford County between 1995 and 2022.

Extreme Cold Fast Facts – Occurrences

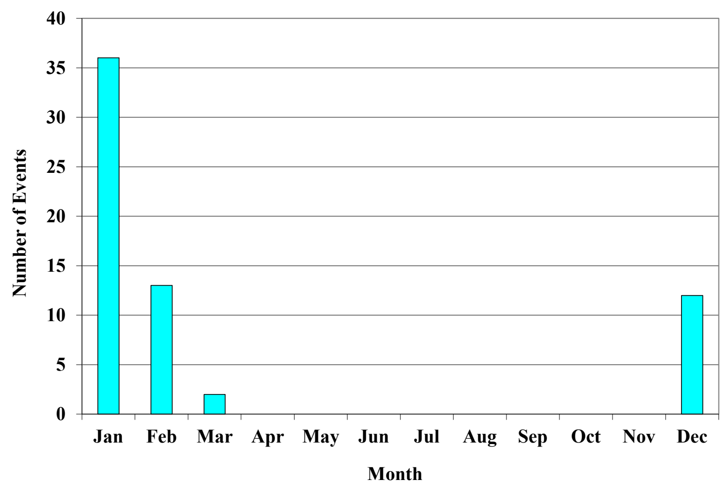
Number of Extreme Cold Events Reported (1995 - 2022): ***63***

Coldest Temperature Recorded in the County: ***-36°F (January 5, 1999)***

Most Likely Months for Extreme Cold Events to Occur: ***January***

Figure EC-2 charts the reported occurrences of extreme cold by month. Thirty-six of the 63 events (57%) took place in January, making this the peak month for extreme cold events. There were two events that spanned two months; however, for illustration purposes only the month the event started in is graphed.

Figure EC-2
Extreme Cold by Month
1995 - 2022



According to the Midwestern Regional Climate Center, almost continuous temperature records for Woodford County have been kept from 1896 to present by the Minonk NWS COOP Observation Station at Minonk and from 1996 to present by the Congerville 2NW COOP Observer Station. **Figure EC-3** lists the coldest days recorded at the Minonk Station. Based on the available records, the coldest temperature recorded in Woodford County was -36°F at the Congerville 2NW COOP Observation Station on January 5, 1999. This reading set a new official State record minimum temperature surpassing the previous minimum record of -35°F set in Mt. Carroll on January 22, 1930. This record stood for 20 years until January 31, 2019 when Mt. Carroll once again set a new official State record minimum temperature of -38°F.

Figure EC-3
Coldest Days Recorded at the Minonk
NWS COOP Observation Station

	Date	Temperature			Date	Temperature
1	02/13/1905	-28°F		6	01/17/1977	-24°F
2	01/11/1982	-25°F		7	02/09/1899	-23°F
3	01/21/1984	-25°F		8	01/15/1927	-23°F
4	01/20/1985	-25°F		9	01/26/2019	-23°F
5	12/28/1924	-24°F		10	01/30/2019	-23°F

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by extreme cold?

Extreme cold affects the entire County. Extreme cold, like excessive heat and severe winter storms, generally extends across the entire County and affects multiple locations.

Do any of the participating jurisdictions have designated warming centers?

Yes. Four of the five participating municipalities have designated warming centers. A "designated" warming center is identified as any facility that has been *formally* identified by the jurisdiction (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents during severe winter storms and extreme cold events.

Figure EC-4 identifies the location of each warming center by jurisdiction. At this time Germantown Hills does not have any warming centers designated. In addition, there are no State of Illinois-designated warming centers in Woodford County.

Figure EC-4
Designated Warming Centers by Participating Jurisdiction

Name/Address	Name/Address
El Paso	*Minonk*
El Paso City Hall, 125 W Front Street	City Hall, 670 N Chestnut St.
El Paso Police Department, 195 S Orange Street	Minonk Ambulance Building, 636 Jefferson St.
El Paso District Library, 149 W 1st Street	*Roanoke*
Eureka	Roanoke Methodist Church, 401 N Church, Roanoke
Eureka Methodist, 208 N Callender St, Eureka	
Woodford County House Lobby, 115 N Main, Eureka	

What is the probability of future extreme cold events occurring based on historical data?

Woodford County has experienced 63 verified occurrences of extreme cold between 1995 and 2022. With 63 occurrences over the past 28 years, Woodford County should expect to experience at least two extreme cold events in any given year. It is important to keep in mind that there are almost certainly gaps in the early extreme cold data. More events have almost certainly occurred than are documented in this section, which means that the probability is almost certainly higher than reported.

There were 18 years over the last 28 years where multiple (two or more) extreme cold events occurred. This indicates that the probability that multiple extreme cold events may occur during any given year within the County is 64%.

What is the probability of future extreme cold events occurring based on modeled future conditions?

The warming trend observed in Illinois over the past century hasn't just meant increasingly hotter summers; it has meant milder winters. Over the past 120 years, average temperatures in Illinois have increased by 1°F to 2°F according to the Illinois State Climatologist, with the most prominent changes occurring in overnight temperatures and in increased winter and spring temperatures. As a result, extreme cold events are likely to continue to become less common and less intense than they were in the past. The number of days less than 32°F in Illinois are forecasted to decrease in the coming decades. Reductions in extreme cold events could prevent some of the damages associated with them, both in terms of human health costs and economic costs.

Figures EC-5, EC-6, and **EC-7** provide tabular and graphical projections for Woodford County, showing estimations for number of days where high temperatures will not exceed 32°F in the early, mid, and late 21st century with both low and high estimates for each time period. Most likely, the true value will fall between these two estimates. By midcentury, the average number of days per year not exceeding 32°F in Woodford County is forecasted to decrease from around 37 today to between 21 and 23 according to the Climate Mapping for Resilience and Adaptation's Assessment Tool.

By contrast, projections from Great Lakes Integrated Sciences + Assessments indicate that there is likely to be a change of 2 to 5 days in the number of days per year where temperatures will fall below 20° F by midcentury in Woodford County.

Figure EC-5
Days with Maximum Temperature < 32°F Projection Table – Woodford County

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Annual days with:							
Days with maximum temperature below 32 °F	37 days 33 - 41	27 days 15 - 36	26 days 19 - 34	23 days 13 - 33	21 days 11 - 31	20 days 10 - 30	12 days 3 - 24

N/A = Data Not Available for the selected area

Figure EC-6
Number of Days with Maximum Temperature < 32°F Graph – Woodford County

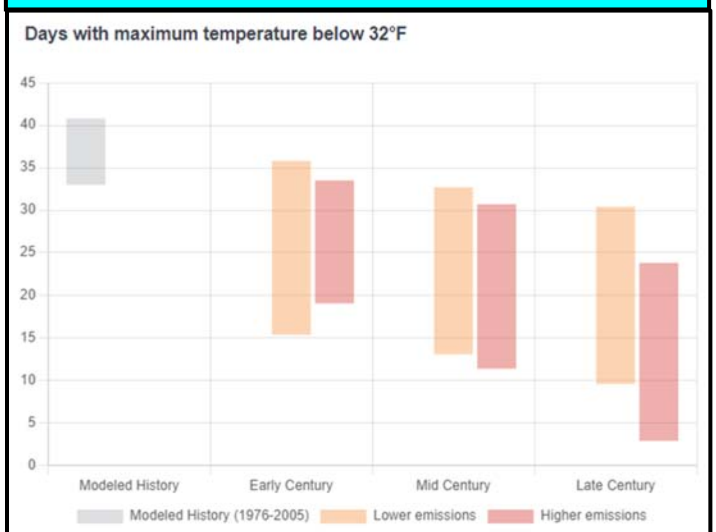
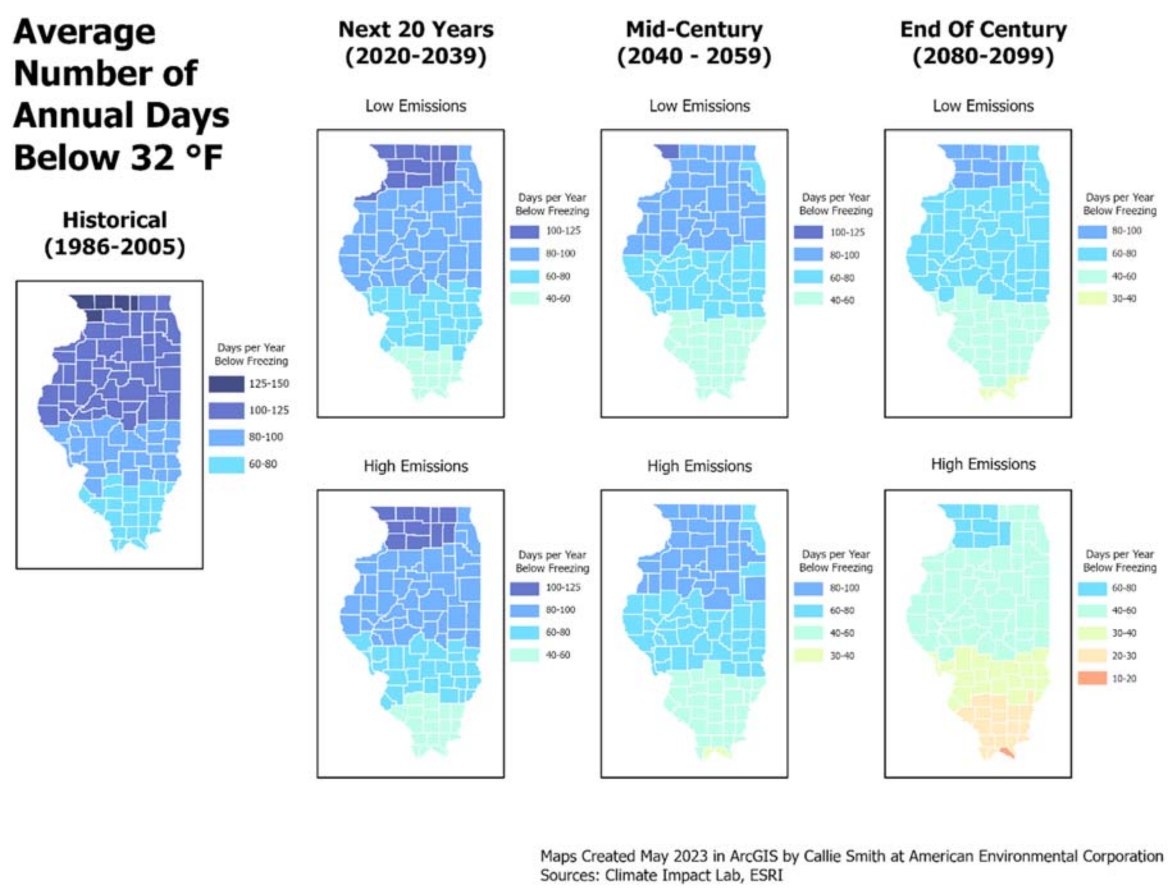


Figure EC-7
Average Number of Annual Days Below 32°F



HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from extreme cold.

Are the participating jurisdictions vulnerable to extreme cold?

Yes. All of Woodford County, including the participating jurisdictions, is vulnerable to the dangers presented by extreme cold. Since 2013, Woodford County has experienced 28 extreme cold events.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of extreme cold?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, Woodford County considers specific assets within its jurisdiction vulnerable to extreme cold. None of the designated warming centers in Woodford County have backup generators that would allow them to remain operational if power was lost during an extreme cold event.

What impacts resulted from the recorded extreme cold events?

Damage information was either unavailable or none was recorded, and no injuries or fatalities were reported as a result of any of the extreme cold events. This does not mean that injuries or fatalities didn't occur; it simply means that extreme cold was not identified as the primary cause.

In comparison, the State of Illinois averages 18 cold-related fatalities annually according to the Illinois State Water Survey's Climate Atlas of Illinois.

Extreme Cold Fast Facts – Impacts/Risk

Extreme Cold Impacts:

- Total Property Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Extreme Cold Risk/Vulnerability:

- Public Health & Safety – General Population: ***Low to Medium***
- Public Health & Safety – Socially Vulnerable Populations: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Low***

What other impacts can result from extreme cold events?

Other impacts of extreme cold include early school dismissals and school closing, power outages and frozen and ruptured water pipes and water mains. Individuals who are outdoors during and immediately following extreme cold events can experience health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries.

What is the level of risk/vulnerability to public health and safety from severe winter storms and extreme cold?

For Woodford County the level of risk or vulnerability posed by extreme cold to public health and safety of the *general population* is considered to be ***low to medium.*** This assessment is based on the fact that while extreme cold events occur regularly, the number of injuries and fatalities reported is low and all but one of the participating municipalities have designated warming centers.

The level of risk or vulnerability posed by extreme cold to the public health and safety of *socially vulnerable populations* is considered to be ***medium***. Socially vulnerable populations such as individuals with dementia and access and functional needs populations may be more susceptible to cold-related exposures if they become disoriented outdoors during an event and therefore their risk is elevated. However, demographic information is not available for these segments of the population.

Are existing buildings, infrastructure, and critical facilities vulnerable to extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in Woodford County and the participating jurisdictions are vulnerable to damage from extreme cold. Individual water pipes and distribution lines and mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated, and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Tony O'Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of extreme cold events between 2010 and 2022. During the January 29, 2019 extreme cold event, 10,033 customers were without power for up to three days. While this information is regional in nature, it helps quantify the damages sustained by critical infrastructure in Woodford County.

Based on the frequency with which extreme cold events have occurred in Woodford County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from extreme cold events is ***low***.

Are future buildings, infrastructure, and critical facilities vulnerable to extreme cold?

Yes and No. While El Paso and Eureka have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from extreme cold, the County, and the three remaining participating municipalities do not. Infrastructure such as residential water pipes will continue to be vulnerable as long as they are located in areas such as outside walls, attics and crawl spaces that do not contain proper insulation.

What are the potential dollar losses to vulnerable structures from extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for extreme cold events. With none of the recorded events listing property damage figures, there is no way to accurately estimate future potential dollar losses from extreme cold. However, according to the Woodford County Clerk the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $769,193,696. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to extreme cold.

3.6 TORNADOES

HAZARD IDENTIFICATION

What is the definition of a tornado?

A tornado is a narrow violently rotating column of air, often visible as a funnel-shaped cloud that extends from the base of a thunderstorm cloud formation to the ground. The most violent tornadoes can have wind speeds of more than 300 miles per hour and can create damage paths in excess of one mile wide and 50 miles long.

Not all tornadoes have a visible funnel cloud. Some may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. Generally, tornadoes move from southwest to northeast, but they have been known to travel in any direction, even backtracking. A typical tornado travels at around 10 to 20 mile per hour, but this may vary from almost stationary to 60 miles per hour. Tornadoes can occur at any time of the year and happen at any time of the day or night, although most occur between 4 p.m. and 9 p.m.

About 1,200 tornadoes hit the U.S. yearly, with an average 52 tornadoes occurring annually in Illinois. The destruction caused by a tornado may range from light to catastrophic depending on the intensity, size and duration of the storm. Tornadoes cause crop and property damage, power outages, environmental degradation, injuries and fatalities. Tornadoes are known to blow roofs off buildings, flip vehicles and demolish homes. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes. On average, tornadoes cause 60 to 65 facilities and 1,500 injuries in the U.S. annually.

How are tornadoes rated?

Originally tornadoes were rated using the Fujita Scale (F-Scale), which related the degree of damage caused by a tornado to the intensity of the tornado's wind speed. The Scale identified six categories of damage, F0 through F5. **Figure T-1** gives a brief description of each category.

Use of the original Fujita Scale was discontinued on February 1, 2007 in favor of the Enhanced Fujita Scale. The original scale had several flaws including basing a tornado's intensity and damages on wind speeds that were never scientifically tested and proven. It also did not take into consideration that a multitude of factors (i.e., structure construction, wind direction and duration, flying debris, etc.) affect the damage caused by a tornado. In addition, the process of rating the damage itself was based on the judgment of the damage assessor. In many cases, meteorologists and engineers highly experienced in damage survey techniques often came up with different F-scale ratings for the same damage.

The Enhanced Fujita Scale (EF-Scale) was created to remedy the flaws in the original scale. It continues to use the F0 through F5 categories, but it incorporates 28 different damage indicators (mainly various building types, towers/poles and trees) as calibrated by engineers and meteorologists. For each damage indicator there are eight degrees of damage ranging from barely visible damage to complete destruction of the damage indicator. The wind speeds assigned to each category are estimates, not measurements, based on the damage assessment. **Figure T-1** identifies the Enhanced Fujita Scale.

Figure T-1 Fujita & Enhanced Fujita Tornado Measurement Scales				
F-Scale		**EF-Scale**		**Description**
Category	**Wind Speed (mph)**	**Category**	**Wind Speed (mph)**	
F0	40 – 72	EF0	65 – 85	Light damage – some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; damage to sign boards
F1	73 – 112	EF1	86 – 110	Moderate damage – peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads
F2	113 – 157	EF2	111 – 135	Considerable damage – roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	158 – 207	EF3	136 – 165	Severe damage – roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown
F4	208 – 260	EF4	166 – 200	Devastating damage – well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated
F5	261 – 318	EF5	Over 200	Incredible damage – strong frame houses lifted off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur

Source: NOAA, Storm Prediction Center.

The idea behind the EF-Scale is that a tornado scale needs to take into account the typical strengths and weaknesses of different types of construction, instead of applying a "one size fits all" approach. This is due to the fact that the same wind speed can cause different degrees of damage to different kinds of structures. In a real-life application, the degree of damage to each of the 28 indicators can be mapped together to create a comprehensive damage analysis. As with the original scale, the EF-Scale rates the tornado as a whole based on the most intense damage within the tornado's path.

While the EF-Scale is currently in use, **the historical data presented in this report is based on the original F-Scale**. None of the tornadoes rated before February 1, 2007 will be re-evaluated using the EF-Scale.

Are alerts issued for tornadoes?

Yes. The National Weather Service Weather Forecast Office in Lincoln is responsible for issuing ***tornado watches*** and ***warnings*** for Woodford County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A tornado watch is issued when tornadoes are possible in the area. Individuals need to be alert and prepared. Watches are typically large, covering numerous counties or even states.

- **Warning.** A tornado warning is issued when a tornado has been sighted or indicated by weather radar. Warnings indicate imminent danger to life and property for those who are in the path of the tornado. Individuals should see shelter immediately. Typically, warnings encompass a much smaller area, such as a city or small county.

HAZARD PROFILE

The following identifies past occurrences of tornadoes; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have tornadoes occurred previously? What is the extent of these previous tornadoes?

Tornado Fast Facts – Occurrences

Number of Tornadoes Reported (1954 – 2022): ***48***

Highest F-Scale Rating Recorded: ***F4 (July 7, 2004)***

Most Likely Month for Tornadoes to Occur: ***May***

Average Length of a Tornado: ***2.6 miles***

Average Width of a Tornado: ***100 yards***

Average Damage Pathway of a Tornado: ***0.15 sq. mi.***

Longest Tornado Path in the County: ***20.7 miles (November 17, 2013)***

Widest Tornado Path in the County: ***880 yards (November 17, 2013)***

Table 9, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of tornado events recorded in Woodford County. NOAA's Storm Events Database, Storm Data Publication and Storm Prediction Center have documented 48 occurrences of tornadoes in Woodford County between 1950 and 2022. In comparison, there have been 2,745 tornadoes statewide between 1950 and 2021 according to NOAA's Storm Prediction Center. **Figure T-2** charts the reported occurrences of tornadoes by magnitude. Of the 48 reported occurrences there were: 1 – F4, 0 – F3s, 8 – F2s, 8 – F1s, 18 – F0s, 2 – EF3s, 1 – EF2, 0 – EF1s, 8 – EF0s, and 2 – EFUs.

Figure T-2
Tornadoes by Magnitude
1950 – 2022

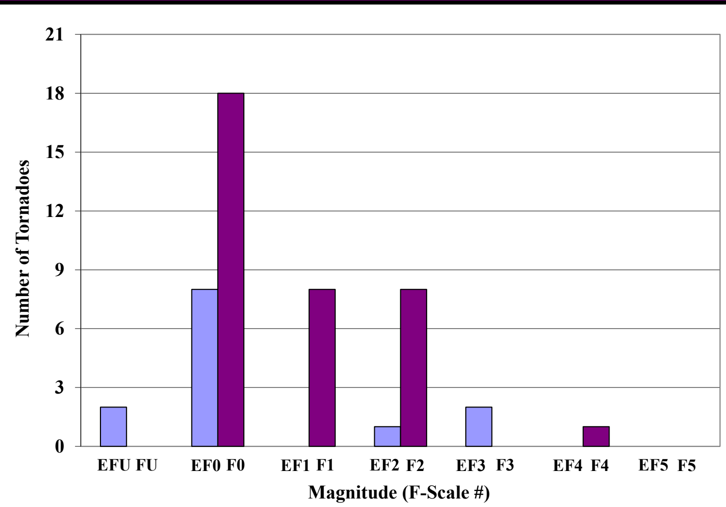
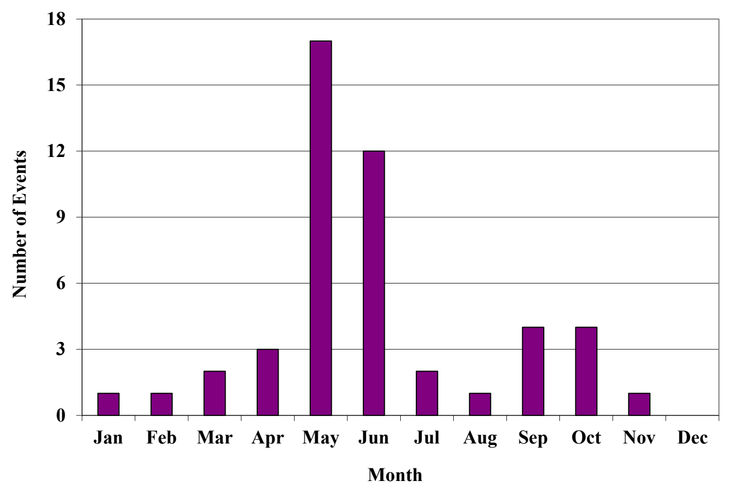


Figure T-3 charts the reported tornadoes by month. Of the 48 events, 32 (67%) took place in April, May, and June making this the peak period for tornadoes in Woodford County. Of those 32 events, 17 (53%) occurred during June, making this the peak month for tornadoes. In comparison, 1,720 of the 2,745 tornadoes (63%) recorded in Illinois from 1950 through 2021 took place in April, May, and June.

Figure T-3
Tornadoes by Month
1950 – 2022



Approximately 92% of all tornadoes in the County occurred during the p.m. hours, with 30 of the tornado events (63%) taking place between 2 p.m. and 8 p.m. In comparison, more than half of all Illinois tornadoes occur between 2 p.m. and 8 p.m.

The tornadoes that have impacted Woodford County have varied from 0.1 miles (176 yards) to 20.7 miles in length and from 10 yards to 880 yards in width. The average length of a tornado in Woodford County is 2.6 miles and the average width is 100 yards (0.057 miles).

Figures T-4, T-5, and T-6 show the pathway of each reported tornado. The numbers next to each tornado correspond with the tornado description in **Table 9** located in **Appendix J.** Records indicate that most of these tornadoes generally moved from southwest to northeast across the County. Unlike other natural hazards (i.e., severe winter storms, drought, and excessive heat), tornadoes impact a relatively small area. Typically, the area impacted by a tornado is less than four square miles. In Woodford County, the average damage pathway or area impacted by a tornado is 0.15 square miles.

The longest and widest tornado recorded in Woodford County occurred on November 17, 2013. This EF3 tornado, measuring 46.4 miles in length and 880 yards in width, touched down in Tazewell County southeast of East Peoria and traveled northeast through Woodford and LaSalle Counties before lifting off east of Long Point in Livingston County. The tornado was on the ground in Woodford County for approximately 20.7 miles. The damage pathway of this tornado covered 23.3 square miles, with approximately 10.4 square miles occurring in Woodford County.

Figure T-4
F0/EF0 & EFU Tornado Pathways in Woodford County

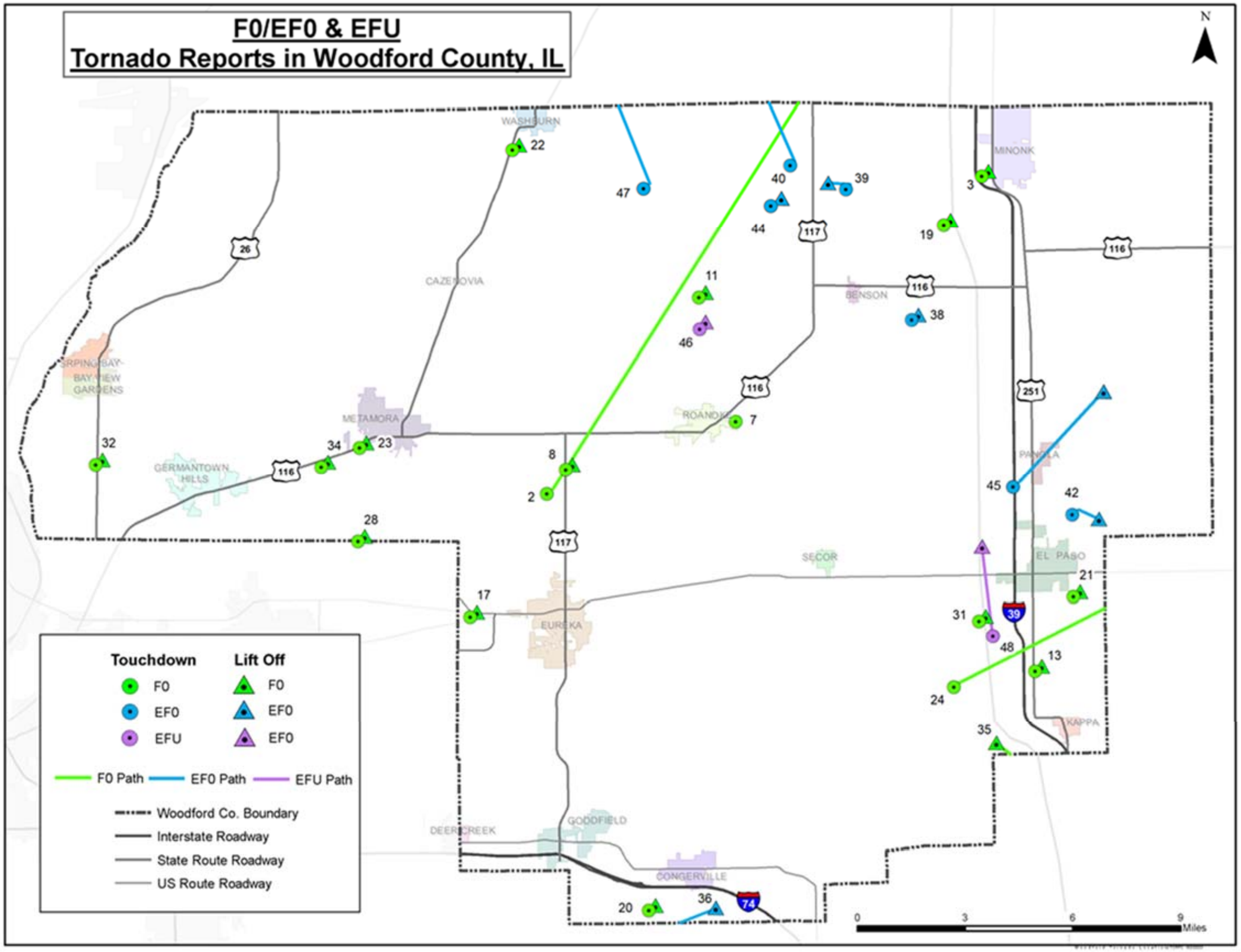


Figure T-5
F1/EF1 Tornado Pathways in Woodford County

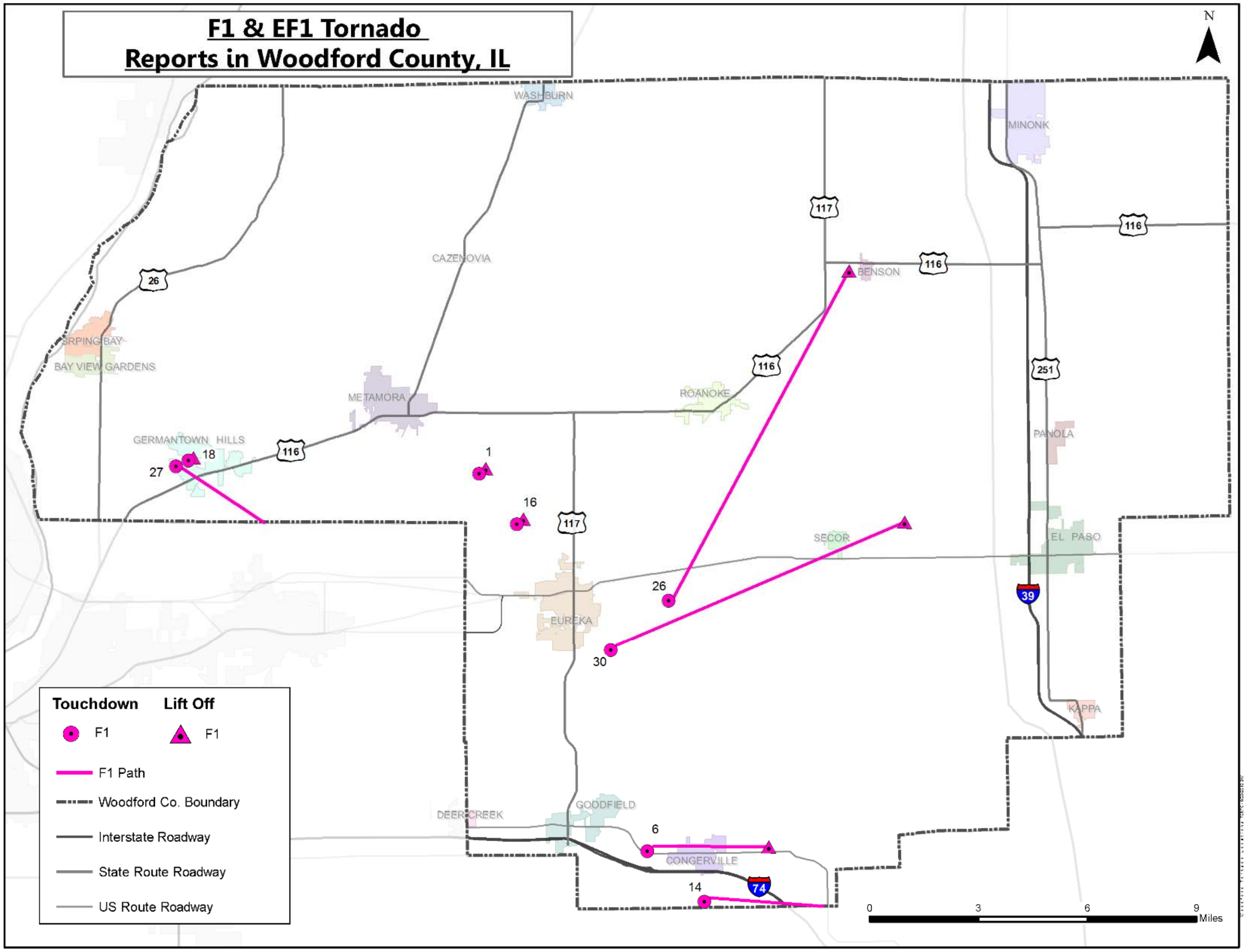
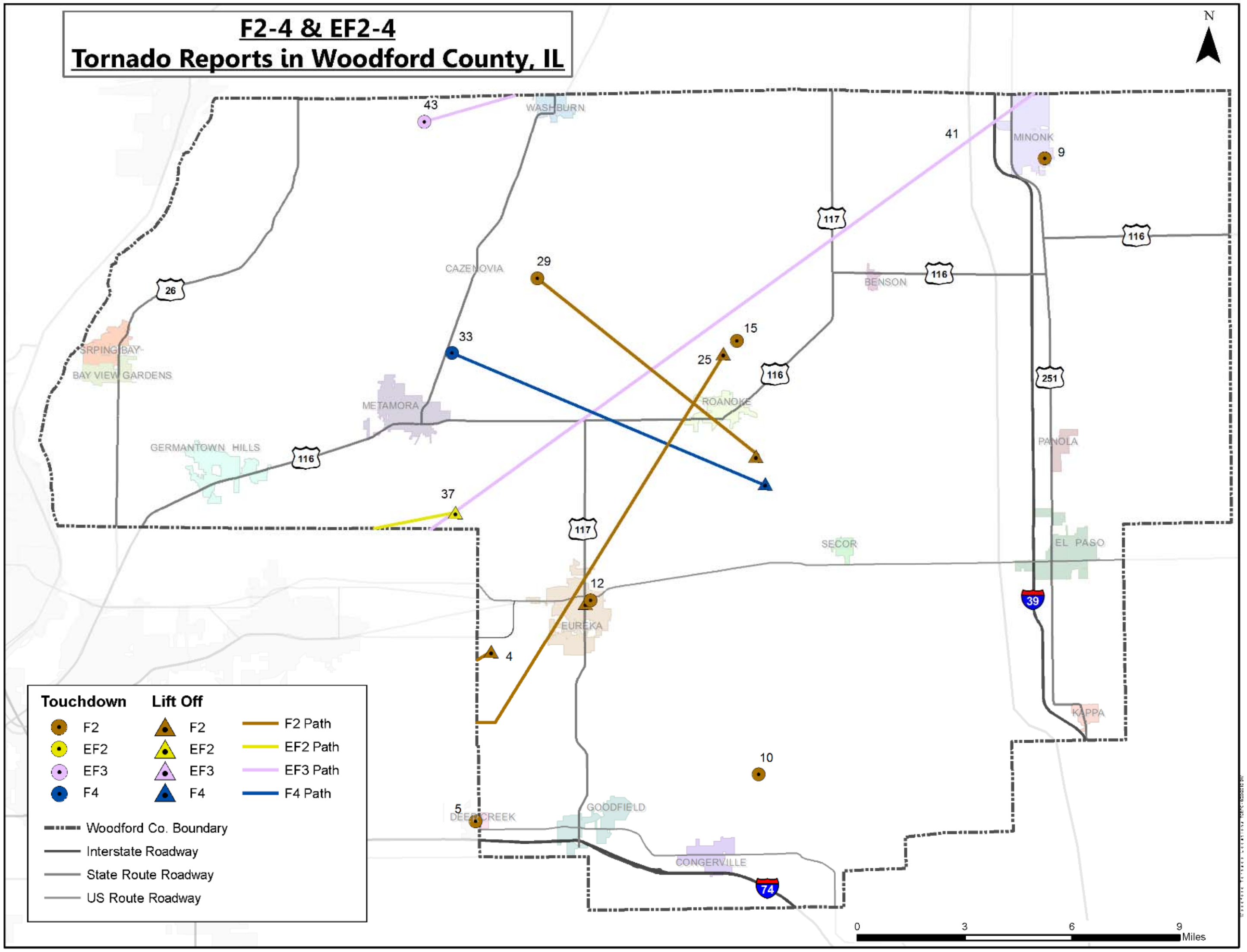


Figure T-6
F2 – F4 & EF2 – EF4 Tornado Pathways in Woodford County



What locations are affected by tornadoes?

Tornadoes have the potential to affect the entire County. Four of the five participating municipalities have had reported occurrences of tornadoes within their corporate limits. The 2018 Illinois Natural Hazard Mitigation Plan prepared by IEMA-OHS classifies Woodford County's hazard rating for tornadoes as "medium."

What is the probability of future tornadoes occurring based on historical data?

Woodford County has had 48 verified occurrences of tornadoes between 1950 and 2022. With 48 tornadoes over the past 73 years, the probability or likelihood that a tornado will touchdown somewhere in the County in any given year is 66%. There were nine years over the last 73 years where more than one tornado occurred. This indicates that the probability that more than one tornado may occur during any given year within the County is 12%.

What is the probability of future tornadoes occurring based on modeled future conditions?

Since tornadoes only occur when several conditions are met, predicting them is extremely difficult, even in the short-term future. Somewhat easier to predict are supercell formations, which are large and longer-lived storm systems that create conditions favorable to producing tornadoes, such as strong rotational winds and updrafts. These systems are fed by warm humid air, which means that a wetter and warmer climate could make them a more likely occurrence. Since future condition forecasts suggest a wetter and warmer Illinois as discussed in Section 3.1, it is likely that the conditions that create tornadoes will become more frequent as well, increasing their likelihood. **Figure SS-7,** located in Section 3.1, contains a series of maps that show how the number of supercell tracks is likely to change in the future. The analysis of this trend should be revisited in subsequent planning efforts as more data becomes available.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from tornadoes.

Are the participating jurisdictions vulnerable to tornadoes?

Yes. All of Woodford County, including the participating jurisdictions, is vulnerable to the dangers presented by tornadoes. Since 2013, eight tornadoes have been recorded in Woodford County.

Four of the five participating municipalities have had a tornado touch down or pass through their municipal boundaries. **Figure T-7** lists the verified tornadoes that have touched down in or near or passed through each participating municipality. In terms of unincorporated areas vulnerable to tornadoes, Cazenovia has had one tornado touch down in its vicinity in 2003.

Figure T-7 Verified Tornadoes In or Near Participating Municipalities			
Participating Municipality	**Number of Verified Tornadoes**	**Year**	
		Touched Down/Passed Through Municipality	**Touched Down/Passed Near Municipality**
El Paso	6	---	1976, 1995, 2002, 2004, 2014, 2021
Eureka	8	1976, 2003	1961, 1967, 1987, 1990, 2003, 2004
Germantown Hills	2	1990, 2003	---
Minonk	4	1974	1961, 1991, 2013
Roanoke	11	2003, 2003	1961, 1971, 1973, 1975, 1986, 2003, 2004, 2013, 2021

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of tornadoes?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following jurisdictions considered specific assets within their jurisdiction vulnerable to tornadoes.

Woodford County:

- ❖ Parts of unincorporated Woodford County are not covered by storm warning sirens.
- ❖ None of the designated emergency shelters in Woodford County have backup generators that would allow them to remain operational if power was lost during a tornado.

El Paso:

None of the City's critical facilities or infrastructure systems have been hardened to withstand tornadoes.

Germantown Hills:

The Village's lift stations/grinder pumps do not have emergency backup generators and therefore are vulnerable to power outages caused by tornadoes.

What impacts resulted from the recorded tornadoes?

Data obtained from NOAA's Storm Events Database, Storm Data Publications and Storm Prediction Center indicates that between 1950 and 2022, 20 of the 48 tornadoes caused $30,679,250 in property damages and $14,250 in crop damages. There was $2.5 million in property damages that were incurred as the result of the April 13, 1981 tornado event that represents losses sustained in two counties. A detailed breakdown by county was not available. A majority of the property damage total, $25 million, was sustained as a result of the EF3 tornado on November 17. Property damage

Tornado Fast Facts – Impacts/Risk

Tornado Impacts:

- ❖ Total Property Damage (18 events): ***$30,679,250***^
- ❖ Total Crop Damage (6 events): ***$14,250***
- ❖ Injuries (4 events): ***12***
- ❖ Fatalities: ***n/a***

Tornado Risk/Vulnerability:

- ❖ Public Health & Safety – Rural Areas: ***Low to Medium***
- ❖ Public Health & Safety – Municipalities: ***High***
- ❖ Buildings/Infrastructure/Critical Facilities – Rural Areas: ***Low to Medium***
- ❖ Buildings/Infrastructure/Critical Facilities – Municipalities/Populated Unincorp. Areas: ***High***

^ There is $2.5 million in property damages that was incurred as the result of an April 13, 1981 tornado that represents losses sustained in two counties (including Woodford County). A detailed breakdown by county was not available.

information was either unavailable or none was recorded for the remaining 28 reported occurrences.

NOAA's Storm Events Database documented 12 injuries as a result of four separate tornado events in Woodford County. Detailed information was only available for two of the events.

- ❖ A teenage boy suffered cuts and bruises when an F0 tornado flipped the car he was driving into a field on May 18, 2000.
- ❖ During the November 17, 2013 EF3 tornado, three individuals were injured in overturned semis. Another injury was reported as a result of this tornado, but detailed information was not available.

What other impacts can result from tornadoes?

In addition to causing damage to buildings and properties, tornadoes can damage infrastructure and critical facilities such as roads, bridges, railroad tracks, drinking water treatment facilities, water towers, communication towers, antennae, power substations, transformers, and poles. Depending on the damage done to the infrastructure and critical facilities, indirect impacts on individuals could range from inconvenient (i.e., adverse travel) to life-altering (i.e., loss of utilities for extended periods of time).

What is the level of risk/vulnerability to public health and safety from tornadoes?

According to the 2018 Illinois Natural Hazard Mitigation Plan, Woodford County ***ranks 16th out of 102 counties in Illinois in terms of tornado frequency***. This fact alone suggests that the overall risk posed by tornadoes to public health and safety is medium. While frequency is important, other factors must be examined when assessing vulnerability including population distribution and density, the ratings and pathways of previously recorded tornadoes, the presence of high-risk living accommodations (such as high-rise buildings, mobile homes, etc.) and adequate access to health care for those injured following a tornado.

In terms of adequate access to health care, Carle Eureka Hospital in Eureka as well as nearby hospitals in Ottawa (LaSalle County), Pontiac (Livingston County), Bloomington/Normal (McLean County), and the Peoria Metropolitan Area (Peoria and Tazewell Counties) are equipped to provide care and have sufficient capacity for the influx of additional patients from one or more counties.

Woodford County

For Woodford County, the level of risk or vulnerability posed by tornadoes to public health and safety is considered to be ***low*** to ***medium***. This assessment is based on the fact that tornadoes do not occur frequently in the County and a large majority of the tornadoes that have impacted the County have touched down in rural areas away from concentrated populations. This has contributed to a relatively low number of injuries and fatalities. In addition, the County is not densely populated and there is not a large number of high-risk living accommodations present.

Participating Municipalities

In general, if a tornado were to touch down or pass through any of the participating municipalities the risk to the public health and safety would be considered ***high***. This is based on the fact that all of the participating jurisdictions have relatively dense and evenly distributed populations within their municipal boundaries. As a result, if a tornado were to touch down anywhere within the corporate limits of these municipalities it will have a greater likelihood of causing injuries or even fatalities.

Do any participating jurisdictions have community safe rooms?

No. As a result, if a tornado were to touch down or pass through any of the population centers in the County, then there would be a greater likelihood of injuries and fatalities due to the lack of structures specifically designed and constructed to provide life-safety protection. Each jurisdiction should consider whether the potential impacts to public health and safety from a tornado are considered great enough to warrant the consideration of community safe rooms as a mitigation action.

Are existing buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes. All existing buildings, infrastructure, and critical facilities located within the County and participating municipalities are vulnerable to tornado damage. Buildings, infrastructure, and critical facilities located in the path of a tornado usually suffer extensive damage, if not complete destruction.

While some buildings adjacent to a tornado's path may remain standing with little or no damage, all are vulnerable to damage from flying debris. It is common for flying debris to cause damage to roofs, siding, and windows. In addition, mobile homes, homes on crawlspaces, and buildings with large spans (i.e., schools, barns, airport hangers, factories, etc.) are more likely to suffer damage. Most workplaces and many residential units do not provide sufficient protection from tornadoes.

The damages sustained by infrastructure and critical facilities during a tornado are similar to those experienced during a severe storm. There is a high probability that power, communication, and transportation will be disrupted in and around the affected area.

Assessing the Vulnerability of Existing Residential Structures

One way to assess the vulnerability of existing residential structures is to estimate the number of housing units that may be potentially damaged if a tornado were to touch down or pass through any of the participating municipalities, townships or the County. In order to accomplish this, a set of decisions/assumptions must be made regarding:

- the size (area impacted) by the tornado;
- the method used to estimate the area impacted by the tornado within each jurisdiction; and
- the method used to estimate the number of potentially-damaged housing units.

The following provides a brief discussion of each decision/assumption.

Assumption #1

Size of Tornado = 0.15 sq. miles

Assumption #1: Size of Tornado. To calculate the number of existing residential structures vulnerable to a tornado, the size (area impacted) of the tornado must first be determined. There are several scenarios that can be used to calculate the size, including the worst case and the average. For this analysis, the area impacted by an average-sized tornado in Woodford County will be used since it has a higher probability of recurring. In

Woodford County, the area impacted by an average-sized tornado has changed from 0.17 square miles in the 2019 Plan Update to 0.15 square miles, for this update. This average is based on more than 70 years of data.

Assumption #2

The entire area impacted by the average-sized tornado falls within the limits of each participating jurisdiction.

Assumption #2: Method for Estimating the Area Impacted. Next, a method for determining the area within each jurisdiction impacted by the average-sized tornado needs to be chosen. There are several methods that can be used including creating an outline of the area impacted by the average-sized tornado and overlaying it on a map of each jurisdiction (most notably the municipalities) to see if any portion of the area falls outside of the corporate limits (which would require additional calculations) or just assume that the entire area of the average-sized tornado falls within the limits of each jurisdiction. For this discussion, it is assumed that the entire area of the average-sized tornado will fall within the limits of the participating jurisdictions.

This method is quicker, easier, and more likely to produce consistent results when the Plan is updated again. There is, however, a greater likelihood that the number of potentially-damaged housing units will be overestimated for those municipalities that have irregular shaped boundaries or occupy less than one square mile.

Assumption #3

The average housing unit density for each jurisdiction will be used to determine the number of potentially-damaged housing units.

Assumption #3: Method for Estimating Potentially-Damaged Housing Units. With the size of the tornado selected and a method for estimating the area impacted chosen, a decision must be made on an approach for estimating the number of potentially-damaged housing units. There are several methods that can be used including overlaying the average-sized tornado on a map of each jurisdiction and counting the impacted housing units or calculating the average housing unit density to estimate the number of potentially-damaged housing units.

For this analysis, the average housing unit density will be used since it provides a realistic perspective on potential residential damages without conducting extensive counts. Using the average housing unit density also allows future updates to the Plan to be easily recalculated and provides an exact comparison to previous estimates.

Calculating Average Housing Unit Density

The average housing unit density can be calculated by taking the number of housing units in a jurisdiction and dividing that by the land area within the jurisdiction. **Figure T-8** provides a sample calculation. **Figure T-9** provides a breakdown of housing unit densities by participating municipality as well as for the unincorporated areas of the County and the County as a whole.

Figure T-8
Calculation of Average Housing Unit Density – Woodford County

Total Housing Units in the Jurisdiction ÷ Land Area within the Jurisdiction =
Average Housing Unit Density
(Rounded Up to the Nearest Whole Number)

Woodford County: 15,667 housing units ÷ 527.546 sq. miles = 29.698 housing units/sq. mile
(30 housing units)

Figure T-9
Average Housing Unit Density by Participating Jurisdiction

Participating Jurisdiction	Township Location	Total Housing Units (2017-2021)	Mobile Homes (2017-2021)	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
El Paso	El Paso, Panola	1,063	68	2.085	509.832
Eureka	Cruger, Olio	2,267	75	2.684	844.635
Germantown Hills	Worth	1,238	57	1.636	756.724
Minonk	Clayton, Minonk	933	54	2.400	388.750
Roanoke	Roanoke	762	0	0.939	---
Unincorp. County		5,856	140	509.943	11.484
County		15,667	438	527.546	29.698

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

While the average housing unit density provides an adequate assessment of the number of housing units in areas where the housing density is fairly constant, such as municipalities, it does not provide a realistic assessment for those counties with large, sparsely populated rural areas such as Woodford County.

In Woodford County, as well as many other central Illinois counties, there are pronounced differences in housing unit densities. A majority of all housing units (69%) are still located in six of the County's 17 townships (El Paso, Metamora, Minonk, Olio, Spring Bay, and Worth), while approximately 73% of all mobile homes still are located in four townships (El Paso, Olio, Spring Bay, and Worth). **Figure T-10** identifies the township boundaries. Tornado damage to buildings (especially mobile homes), infrastructure and critical facilities in these more densely populated townships is likely to be greater than in the rest of the County. While El Paso and Minonk have ordinances that require anchoring systems for mobile homes that would help limit the damage from lower rated tornadoes, the County and the remaining three participating municipalities do not.

This substantial difference in density skews the average *county* housing unit density in Woodford County and is readily apparent when compared to the average housing unit densities for each of the townships within the County. **Figure T-11** provides a breakdown of housing unit densities by township and illustrates the differences between the various townships and the County as a whole.

Figure T-10
Townships in Woodford County

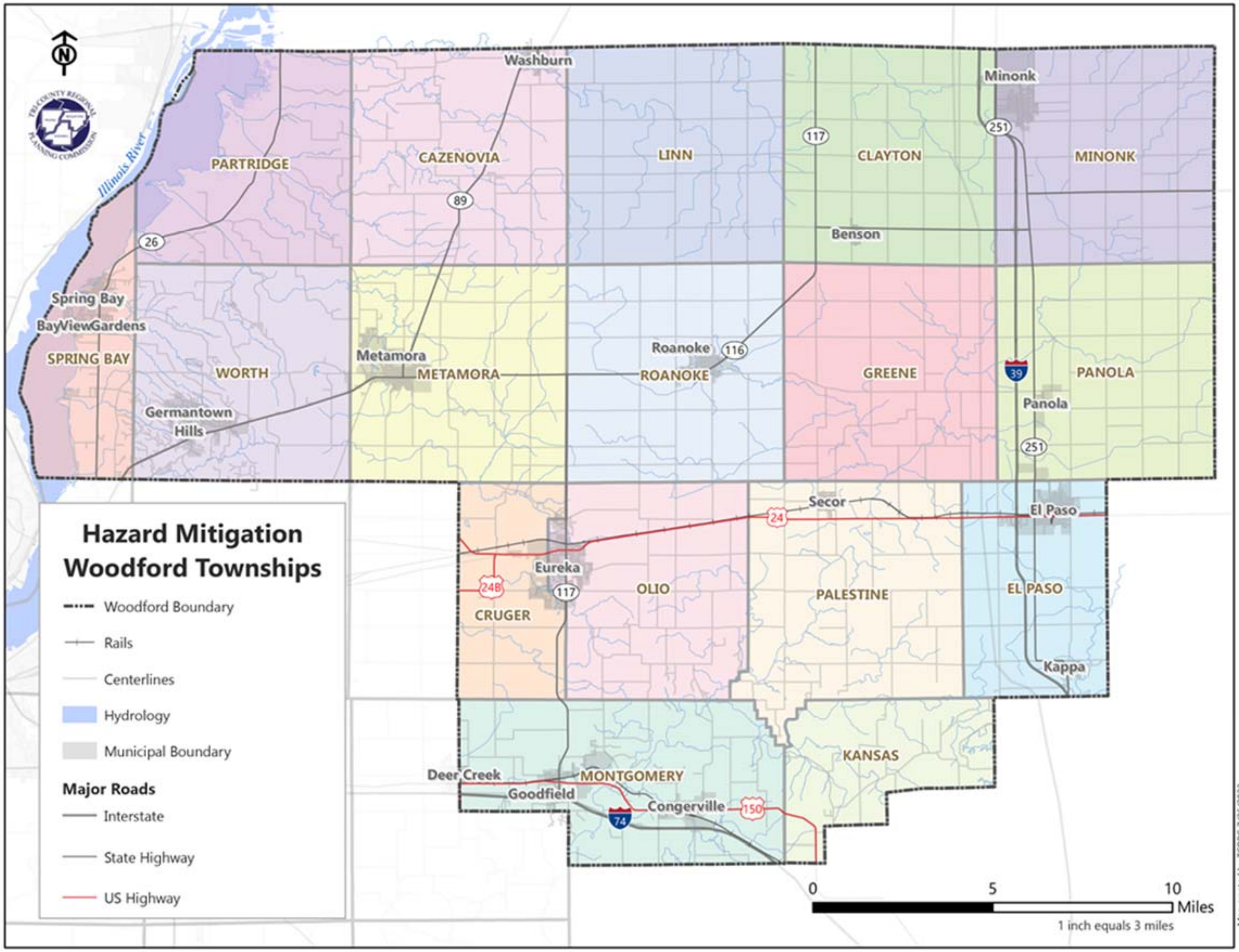


Figure T-11
Average Housing Unit Density by Township

Township	Incorporated Municipalities Located in Township	Total Housing Units (2017-2021)	Mobile Homes (2017-2021)	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Cazenovia	Washburn	805	0	36.144	22.272
Clayton	Benson, Minonk	270	0	35.848	7.532
Cruger	Eureka	737	0	17.110	43.074
El Paso	El Paso, Kappa	1,370	80	24.217	56.572
Greene		170	0	35.777	4.752
Kansas		211	0	18.030	11.703
Linn		86	0	36.633	2.348
Metamora	Metamora	1,956	0	36.436	53.683
Minonk	Minonk	1,021	54	36.632	27.872
Montgomery	Congerville, Deer Creek, Goodfield	899	47	36.189	24.842
Olio	Eureka	1,971	75	31.433	62.705
Palestine	Secor	403	12	37.457	10.759
Panola	El Paso, Panola	137	0	36.444	3.759
Partridge		230	7	26.153	8.794
Roanoke	Roanoke	868	0	36.757	23.615
Spring Bay	Bay View Gardens, Peoria Heights, Spring Bay	1,181	65	10.099	116.942
Worth	Germantown Hills, Metamora	3,362	98	36.186	92.909
Townships - 6 most populated		10,861	419	175	62.062
Townships - 11 least populated		4,816	19	352.542	13.661

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

For 11 of the 17 townships, the *average county* housing unit density is greater (in most cases considerably greater) than the *average township* housing unit densities. However, the *average county* housing unit density is considerably less than the housing unit densities for the six most populated townships.

Estimating the Number of Potentially-Damaged Housing Units

Before an estimate of the number of potentially-damaged housing units can be calculated for the participating municipalities, an additional factor needs to be taken into consideration: the presence of commercial/industrial developments and/or large tracts of undeveloped land. Occasionally villages and cities will annex large tracts of undeveloped land or have commercial/industrial parks/developments located within their corporate limits. In many cases these large tracts of land include very few residential structures. Consequently, including these tracts of land in the calculations to determine the number of potentially-damaged housing units skews the results, especially for very small municipalities. Therefore, to provide a more realistic assessment of the number of potentially-damaged housing units, these areas were subtracted from the land area figures obtained from the U.S. Census Bureau for the analysis for this update.

In Woodford County, all of the participating municipalities have large commercial/industrial and/or undeveloped land areas within their municipal boundaries. These areas account for approximately one-fourth to one-half of the land area in these municipalities. If these areas are subtracted from the U.S. Census Bureau land area figures, then the remaining land areas have fairly consistent housing unit densities and contain a majority of the housing units. **Figure T-12** provides a breakdown of the refined land area figures for the municipalities. These refined land area figures will be used to update the average housing unit density calculations for these municipalities.

Figure T-12
Refined Land Area Figures for Participating Municipalities with Large Tracts of Commercial/Industrial and Undeveloped Land Areas

Participating Jurisdiction	Land Area (Sq. Miles) (2020)	Estimated Open Land Area & Commercial/ Industrial Tracts (Sq. Miles)	Refined Land Area (Sq. Miles)
El Paso	2.085	1.070	1.015
Eureka	2.684	0.670	2.014
Germantown Hills	1.636	0.500	1.136
Minonk	2.400	0.680	1.720
Roanoke	0.939	0.320	0.619

With updated average housing unit densities calculated it is relatively simple to provide an estimate of the number of existing potentially-damaged housing units. This can be done by multiplying the average housing unit density by the area impacted by the average-sized Woodford County tornado. **Figure T-13** provides a sample calculation.

Figure T-13
Sample Calculation of Potentially-Damaged Housing Units – Woodford County

Average Housing Unit Density x Area Impacted by the Average-Sized Woodford County Tornado = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number)

Woodford County: 29.698 housing units/sq. mile x 0.15 sq. miles = 4.45 housing units
(5 housing units)

For those municipalities that cover less than one square mile, the average housing unit density cannot be used to calculate the number of potentially-damaged housing units. The average housing unit density assumes that the land area within the municipality is at least one square mile and as a result distorts the number of potentially-damaged housing units for very small municipalities.

To calculate the number of potentially-damaged housing units for these municipalities, the area impacted by the averaged-sized Woodford County tornado is divided by the land area within the municipality to get the impacted land area. The impacted land area is then multiplied by the total number of housing units within the municipality to get the number of potentially-damaged housing units. **Figure T-14** provides a sample calculation.

Figure T-14 **Sample Calculation of Potentially-Damaged Housing Units** **for Municipalities Covering Less Than One Square Mile – Roanoke**
Area Impacted by the Average-Sized Woodford County Tornado ÷ Land Area within the Jurisdiction x Total Housing Units in the Jurisdiction = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) Roanoke: 0.15 sq. mile ÷ 0.619 sq. miles x 762 housing units = 184.65 **(185 housing units)**

Figures T-15 and **T-16** provide a breakdown of the number of potentially-damaged housing units by participating municipality, as well as by township and for the unincorporated areas of the County and the County as a whole. It is important to note that for the most densely populated townships, the estimated number of potentially-damaged housing units would only be reached if a tornado's pathway included the major municipality within the township. If the tornado remained in the rural portion of the township, then the number of potentially-damaged housing units would be considerably lower.

Figure T-15
Estimated Number of Housing Units by Participating Jurisdiction Potentially Damaged by a Tornado

Participating Jurisdiction	Total Housing Units (2017-2021)	Land Area/Refined Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Rounded Up)
El Paso	1,063	1.015	1047.291	329.00	329
Eureka	2,267	2.014	1125.621	168.84	169
Germantown Hills	1,238	1.136	1089.789	163.47	164
Minonk	933	1.720	542.442	81.37	82
Roanoke	762	0.619	---	184.65	185
Unincorp. County	5,856	509.943	11.484	1.72	2
County	15,667	527.546	29.698	4.45	5

What is the level of risk/vulnerability to existing buildings, infrastructure, and critical facilities vulnerable from tornadoes?

There are several factors that must be examined when assessing the vulnerability of existing buildings, infrastructure, and critical facilities to tornadoes. These factors include tornado frequency, population distribution and density, the ratings and pathways of previously recorded tornadoes, and the presence of high-risk living accommodations (such as high-rise buildings, mobile homes, etc.).

Figure T-16
Estimated Number of Housing Units by Township Potentially Damaged by a Tornado

Township	Total Housing Units (2017-2021)	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Rounded Up)
Cazenovia	805	36.144	22.272	3.34	4
Clayton	270	35.848	7.532	1.13	2
Cruger	737	17.110	43.074	6.46	7
El Paso	1,370	24.217	56.572	8.49	9
Greene	170	35.777	4.752	0.71	1
Kansas	211	18.030	11.703	1.76	2
Linn	86	36.633	2.348	0.35	1
Metamora	1,956	36.436	53.683	8.05	9
Minonk	1,021	36.632	27.872	4.18	5
Montgomery	899	36.189	24.842	3.73	4
Olio	1,971	31.433	62.705	9.41	10
Palestine	403	37.457	10.759	1.61	2
Panola	137	36.444	3.759	0.56	1
Partridge	230	26.153	8.794	1.32	2
Roanoke	868	36.757	23.615	3.54	4
Spring Bay	1,181	10.099	116.942	17.54	18
Worth	3,362	36.186	92.909	13.94	14
Townships - 6 most populated	10,861	175.003	62.062	9.31	10
Townships - 11 least populated	4,816	352.542	13.661	2.05	3

Unincorporated Woodford County

For unincorporated Woodford County, the level of risk or vulnerability posed by tornadoes to existing buildings, infrastructure and critical facilities is considered to be ***low***. This assessment is based on the frequency with which tornadoes have occurred in the County, as well as the amount of damage that has been sustained tempered by the low population density throughout most the County and the relative absence of high risk living accommodations. While previously recorded tornadoes have followed largely rural pathways, they have caused significant damage on several occasions.

Participating Municipalities

In general, if a tornado were to touch down or pass through any of the participating municipalities the risk to existing buildings, infrastructure, and critical facilities would be considered ***high***. This assessment is based on the population and housing unit distribution within the municipalities where wide expanses of open spaces do not generally exist. As a result, if a tornado were to touch down within any of the municipalities it would have a greater likelihood of causing substantial property damage.

Are future buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes and No. While El Paso and Eureka have building codes in place that will likely lessen the vulnerability of new buildings and critical facilities to damage from tornadoes, the County and the three remaining municipalities do not. However, even new buildings and critical facilities built to code are vulnerable to the risks posed by a higher rated tornado.

Infrastructure such as new communication and power lines will continue to be vulnerable to tornadoes as long as they are located above ground. Flying debris can disrupt power and communication lines even if they are not directly in the path of the tornado. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from tornadoes?

Unlike other hazards, such as flooding, there are no standard loss estimation models or methodologies for tornadoes. However, a rough estimate of potential dollar losses to the *potentially-damaged housing units* determined previously can be calculated if several additional decisions/assumptions are made regarding:

- the value of the potentially-damaged housing units; and
- the percent damage sustained by the potentially-damaged housing units (i.e., damage scenario).

These assumptions represent a ***probable scenario*** based on the reported historical occurrences of tornadoes in Woodford County. The purpose of providing a rough estimate is to help residents and government officials make informed decisions to better protect themselves and their communities. These estimates are meant to provide a ***general idea*** of the magnitude of the potential damage that could occur. The following provides a brief discussion of each decision/assumption.

Assumption #4

The average market value for residential structures in each participating jurisdiction will be used to determine the value of potentially-damaged housing units.

Assumption #4: Value of Potentially-Damaged Housing Units. In order to determine the potential dollar losses to the potentially-damaged housing units, the monetary value of the units must first be calculated. Typically, when damage estimates are prepared after a natural disaster such as a tornado, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value of residential structures in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is calculated by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the average assessed value and multiplying that number by three (the assessed value of a structure in Woodford County is approximately one-third of the market value). **Figure T-17** provides a sample calculation. The total assessed value is based on 2022 tax assessment information obtained from the Woodford County Clerk.

Figure T-17
Sample Calculation of Average Assessed Value & Average Market Value – Roanoke

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction÷ Total Housing Units in the Jurisdiction = Average Assessed Value (Rounded to the Nearest Dollar)

Roanoke: $23,600,278 ÷ 762 housing units = $30,971

Average Market Value

Average Assessed Value x 3 = Average Market Value

Roanoke: $30,971 x 3 = $92,913

($92,913)

Figures T-18 and **T-19** provide the average assessed value and average market value for each participating municipality as well as by township and for the unincorporated areas of the County and the County as a whole.

Figure T-18
Average Market Value of Housing Units by Participating Jurisdiction

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2022)	Total Housing Units (2017-2021)	Average Assessed Values	Average Market Value (2022)
El Paso	$34,436,555	1,063	$32,396	$97,188
Eureka	$64,709,906	2,267	$28,544	$85,632
Germantown Hills	$85,361,453	1,238	$68,951	$206,853
Minonk	$22,541,737	933	$24,160	$72,480
Roanoke	$23,600,278	762	$30,971	$92,913
Unincorp. County	$296,644,817	5,856	$50,657	$151,971
County	$640,578,335	15,667	$40,887	$122,661

Source: Woodford County Clerk.

Assumption #5: Damage Scenario. Finally, a decision must be made regarding the percent damage sustained by the potentially-damaged housing units and their contents. For this scenario, the expected percent damage sustained by the structure and its contents is 100%; in other words, all of the potentially-damaged housing units would be completely destroyed. While it is highly unlikely that each and every housing unit would sustain the maximum percent damage, identifying and calculating different degrees of damage within the average area impacted is complex and provides an additional complication when updating the Plan.

Assumption #5

The tornado would completely destroy the potentially-damaged housing units.

Structural Damage = 100%
Content Damage = 100%

Figure T-19
Average Market Value of Housing Units by Township

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2022)	Total Housing Units (2017-2021)	Average Assessed Values	Average Market Value (2022)
Cazenovia	$13,737,813	805	$17,066	$51,197
Clayton	$8,196,242	270	$30,356	$91,069
Cruger	$34,945,654	737	$47,416	$142,248
El Paso	$50,580,909	1,370	$36,920	$110,761
Greene	$6,166,642	170	$36,274	$108,823
Kansas	$10,124,767	211	$47,985	$143,954
Linn	$2,216,603	86	$25,774	$77,323
Metamora	$70,531,455	1,956	$36,059	$108,177
Minonk	$24,923,610	1,021	$24,411	$73,233
Montgomery	$47,636,729	899	$52,989	$158,966
Olio	$52,367,685	1,971	$26,569	$79,707
Palestine	$15,044,013	403	$37,330	$111,990
Panola	$4,388,559	137	$32,033	$96,100
Partridge	$11,162,087	230	$48,531	$145,592
Roanoke	$28,613,789	868	$32,965	$98,896
Spring Bay	$44,058,160	1,181	$37,306	$111,917
Worth	$215,883,618	3,362	$64,213	$192,639
Townships - 6 most populated	$458,345,437	10,861	$42,201	$126,603
Townships - 11 least populated	$182,232,898	4,816	$37,839	$113,517

Source: Woodford County Clerk.

Calculating Potential Dollar Losses

With all the decisions and assumptions made, the potential dollar losses can now be calculated. First, the potential dollar losses to the ***structure*** of a potentially-damaged housing unit must be determined. This is done by taking the average market value for a residential structure and multiplying it by the percent damage (100%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-20** provides a sample calculation.

Figure T-20
Structure: **Potential Dollar Loss Sample Calculation – Roanoke**

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit

Roanoke: $92,913 x 100% = $92,913 per housing unit

Average Structural Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Structure* Potential Dollar Losses

Roanoke: $92,913 per housing unit x 185 housing units = $17,188,905

($17,188,905)

Next, the potential dollar losses to the ***content*** of a potentially-damaged housing unit must be determined. Based on FEMA guidance, the average value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply by the percent damage (100%) to get the average content damage per unit. Next the average content damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-21** provides a sample calculation.

Figure T-21
Content: **Potential Dollar Loss Sample Calculation – Roanoke**

½ (Average Market Value of a Housing Unit) with the Jurisdiction x Percent Damage = Average Content Damage per Housing Unit
Roanoke: ½ ($92,913) x 100% =$46,456.50 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses
Roanoke: $46,456.50 per housing unit x 185 housing units = $8,594,452.50
($8,594,453)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and content. **Figures T-22** and **T-23** give a breakdown of the total potential dollar losses by municipality and township. For comparison, an estimate of potential dollar losses was calculated for the entire County, the unincorporated portions of the County, the six most populated townships and the 11 least populated townships.

Figure T-22
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado by Participating Jurisdiction

Participating Jurisdiction	Average Market Value (2022)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
El Paso	$97,188	329	$31,974,852	$15,987,426	$47,962,278
Eureka	$85,632	169	$14,471,808	$7,235,904	$21,707,712
Germantown Hills	$206,853	164	$33,923,892	$16,961,946	$50,885,838
Minonk	$72,480	82	$5,943,360	$2,971,680	$8,915,040
Roanoke	$92,913	185	$17,188,905	$8,594,453	$25,783,358
Unincorp. County	$151,971	2	$303,942	$151,971	$455,913
County	$122,661	5	$613,305	$306,653	$919,958

This assessment illustrates why potential residential dollar losses should be considered when jurisdictions are deciding which mitigation projects to pursue. ***Potential dollar losses caused by an average tornado in Woodford County would be expected to exceed at least $8.9 million in any of the participating municipalities.***

Potential dollar losses caused by an average tornado in Woodford County townships would be expected to range from $115,985 in Linn Township to $4.0 million in Worth Township. As discussed previously, the estimate for the entire County is skewed because it does not take into consideration the differences in the housing density.

Figure T-23
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado by Township

Participating Jurisdiction	Average Market Value (2022)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Cazenovia	$51,197	4	$204,788	$102,394	$307,182
Clayton	$91,069	2	$182,138	$91,069	$273,207
Cruger	$142,248	7	$995,736	$497,868	$1,493,604
El Paso	$110,761	9	$996,849	$498,425	$1,495,274
Greene	$108,823	1	$108,823	$54,412	$163,235
Kansas	$143,954	2	$287,908	$143,954	$431,862
Linn	$77,323	1	$77,323	$38,662	$115,985
Metamora	$108,177	9	$973,593	$486,797	$1,460,390
Minonk	$73,233	5	$366,165	$183,083	$549,248
Montgomery	$158,966	4	$635,864	$317,932	$953,796
Olio	$79,707	10	$797,070	$398,535	$1,195,605
Palestine	$111,990	2	$223,980	$111,990	$335,970
Panola	$96,100	1	$96,100	$48,050	$144,150
Partridge	$145,592	2	$291,184	$145,592	$436,776
Roanoke	$98,896	4	$395,584	$197,792	$593,376
Spring Bay	$111,917	18	$2,014,506	$1,007,253	$3,021,759
Worth	$192,639	14	$2,696,946	$1,348,473	$4,045,419
Townships - 6 most populated	$126,603	10	$1,266,030	$633,015	$1,899,045
Townships - 11 least populated	$113,517	3	$340,551	$170,276	$510,827

<u>Vulnerability of Commercial/Industrial Businesses and Infrastructure/Critical Facilities</u>

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of an average-sized tornado in term of residential dollar losses. These calculations do not include damages sustained by businesses or other infrastructure and critical facilities within the participating jurisdictions.

In terms of businesses, the impacts from an average-sized tornado event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water, and sewer). Depending on the magnitude of the event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences. ***While average dollar amounts cannot be supplied for these items at this time, they should be taken into account*** when discussing the impacts that an average-sized tornado could have on the participating jurisdictions.

3.7 DROUGHTS

HAZARD IDENTIFICATION

What is the definition of a drought?

While difficult to define, the National Drought Mitigation Center (NDMC) considers "drought" in its most general sense to be a deficiency of precipitation over an extended period of time, usually a season or more, resulting in a water shortage.

Drought is a normal and recurrent feature of climate and can occur in all climate zones, though its characteristics and impacts vary significantly from one region to another. Unlike other natural hazards, drought does not have a clearly defined beginning or end. Droughts can be short, lasting just a few months, or they can persist for several years. There have been 28 drought events with losses exceeding $1 billion each (CPI-Adjusted) across the U.S. between 1980 and 2022. This is due in part to the sheer size of the areas affected.

What types of drought occur?

There are four main types of drought that occur: meteorological, agricultural, hydrological, and socioeconomic. They are differentiated based on the use and need for water. The following provides a brief description of each type.

- **Meteorological Drought.** Meteorological drought is defined by the degree of dryness or rainfall deficit and the duration of the dry period. Due to climate differences, what might be considered a drought in one location of the country may not be in another location.
- **Agricultural Drought.** An agricultural drought refers to a period when rainfall deficits, soil moisture deficits, reduced ground water or reservoir levels needed for irrigation impact crop development and yields.
- **Hydrological Drought.** Hydrological drought refers to a period when precipitation deficits (including snowfall) impact surface (stream flow, reservoir and lake levels) and subsurface (aquifers) water supply levels.
- **Socioeconomic Drought.** Socioeconomic drought refers to a period when the demand for an economic good (fruit, vegetables, grains, etc.) exceeds the supply as a result of weather-related shortfall in the water supply.

How are droughts measured?

There are numerous quantitative measures (indicators and indices) that have been developed to measure drought. How these indicators and indices measure drought depends on the discipline affected (i.e., agriculture, hydrology, meteorology, etc.) and the region being considered. There is no single index or indicator that can account for and be applied to all types of drought.

Although none of the major indices are inherently superior to the rest, some are better suited than others for certain uses. The first comprehensive drought index developed in the U.S. was the Palmer Drought Severity Index (PDSI). The PDSI is calculated based on precipitation and temperature data, as well as the local Available Water Content of the soil. It is most effective measuring drought impacts on agriculture. For many years it was the only operational drought index, and it is still very popular around the world.

The Standardized Precipitation Index (SPI), developed in 1993, uses precipitation records for any location to develop a probability of precipitation for any time scale in order to reflect the impact of drought on the availability of different water resources (groundwater, reservoir storage, streamflow, snowpack, etc.) In 2009, the World Meteorological Organization recommended SPI as the main meteorological drought index that countries should use to monitor and follow drought conditions.

The first operational 'composite' approach applied in the U.S. was the U.S. Drought Monitor (USDM). The USDM utilizes five key indicators, numerous supplementary indicators, and local reports from expert observers around the country to produce a drought intensity rating that is ideal for monitoring droughts that have many impacts, especially on agriculture and water resources during all seasons over all climate types. NOAA's Storm Events Database records include USDM ratings and utilized them along with additional weather information to describe the severity of the drought conditions impacting affected counties. Therefore, this Plan will utilize USDM ratings to identify and describe previous drought events recorded within the County. The following provides a more detailed discussion of the USDM to aid the Plan's developers and the general public in understanding how droughts are identified and categorized.

U.S. Drought Monitor (USDM)

Established in 1999, the USDM is a relatively new index that combines quantitative measures with input from experts in the field. It is designed to provide the general public, media, government officials and others with an easily understandable "big picture" overview of drought conditions across the U.S. It is unique in that it combines a variety of numeric-based drought indices and indicators with local expert input to create a single composite drought indicator, the results of which are illustrated via a weekly map that depicts the current drought conditions across the U.S. The USDM is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the U.S. Department of Agriculture (USDA), and the National Oceanic and Atmospheric Administration (NOAA).

The USDM has a scale of five intensity categories, D0 through D4, that are utilized to identify areas of drought. **Figure DR-1** provides a brief description of each category.

Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what a majority of the indictors show and on local observations. The authors also weight the indices according to how well they perform in various parts of the country and at different times of the year. It is the combination of the best available data, location observations and experts' best judgment that make the U.S. Drought Monitor more versatile than other drought indices.

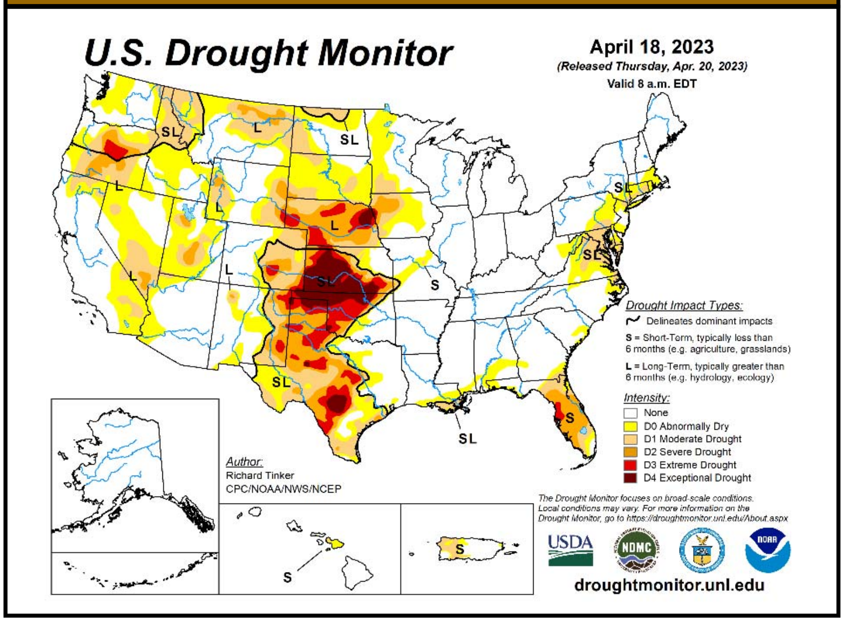
In addition to identifying and categorizing general areas of drought, the USDM also identifies whether a drought's impacts are short-term (typically less than 6 months – agriculture, grasslands) or long-term (typically more than 6 months – hydrology, ecology). **Figure DR-2** shows an example of the USDM weekly map. The USDM is designed to provide a consistent big-picture look at drought conditions in the U.S. It is not designed to infer specifics about local conditions.

Figure DR-1
U.S. Drought Monitor – Drought Intensity Categories

Category	Possible Impacts
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
D1 (Moderate Drought)	• Some damage to crops, pastures • Streams, reservoirs, or wells low; some water shortages developing or imminent • Voluntary water-use restrictions requested
D2 (Severe Drought)	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed
D3 (Extreme Drought)	• Major crop/pasture losses • Widespread water shortages or restrictions
D4 (Exceptional Drought)	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies

Source: U.S. Drought Monitor.

Figure DR-2
U. S. Drought Monitor



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the U.S. Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map Courtesy of NDMC.

HAZARD PROFILE

The following identifies past occurrences of drought, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

When have droughts occurred previously? What is the extent of these previous droughts?

Drought Fast Facts – Occurrences

Number of Drought Events Reported (1980 – 2022): ***6***

Table 10, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of the drought events recorded in Woodford County. NOAA's Storm Events Database, the Illinois State Water Survey, the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS), the NDMC at the University of Nebraska-Lincoln, and the USDA have documented six official droughts for Woodford County between 1980 and 2022.

The recorded drought events ranged in length from 3.5 to 12 months. Of the four drought events with a recorded starting month, one each began in March, May, June, and August. Four of the drought events were assigned drought intensity category ratings by the USDM, with the 2005 and 2012 droughts reaching D3, extreme drought.

The State of Illinois Drought Preparedness and Response Plan identified seven additional outstanding statewide droughts since 1900 based on statewide summer values of the PDSI provided by NOAA's National Center for Environmental Information. Those seven droughts occurred in 1902, 1915, 1931, 1934, 1936, 1954 and 1964; however, the extent to which Woodford County was impacted was unavailable.

What locations are affected by drought?

Drought events affect the entire County. Droughts, like excessive heat and severe winter storms, tend to impact large areas, extending across an entire region and affecting multiple counties. The 2018 Illinois Natural Hazard Mitigation Plan classifies Woodford County's hazard rating for drought as "medium."

What is the probability of future drought events occurring based on historical data?

Woodford County, including the participating jurisdictions, has experienced six droughts between 1980 and 2022. With six occurrences over 43 years, the probability or likelihood that the County may experience a drought in any given year is 14.0%. However, if earlier recorded droughts are factored in, then the probability that Woodford County may experience a drought in any given year decreases to 12.9%.

What is the probability of future drought events occurring based on modeled future conditions?

Despite precipitation trending upwards in Illinois in recent decades, drought conditions are likely to be more problematic in the future than they have been in the recent past, due to a combination of changes in precipitation patterns and an increase in summer temperatures.

In terms of predicting the likelihood of drought conditions, the amount of precipitation received is important, but even more critical is the timing of precipitation events. More frequent precipitation events maintain soil in a spongy, porous state that readily absorbs moisture; alternatively, more infrequent precipitation events tend to lead to dry, hardened earth, which is more effective at repelling water than absorbing it. When a precipitation event does occur over this drought-stricken soil, most of the water runs off and pools in bottomlands, leaving most land ‘high and dry’ while simultaneously flooding the lowest-lying areas.

Another factor making this outcome more likely is the trend of increasing temperatures in Illinois, particularly during the summer when rain events are already more sporadic. Over the past 120 years, average temperatures in Illinois have increased by 1°F and 2°F according to the Illinois State Climatologist, a trend that is likely to continue. In the future, hotter summer temperatures are likely to lead to more evaporation that will exacerbate dry conditions, causing droughts to intensify more rapidly and become more intense.

Figures SS-8 and **SS-9,** located in Section 3.1, and **Figures EH-6, EH-7,** and **EH-8,** located in Section 3.4, provide tabular and graphical projections for Woodford County showing average annual estimates for temperature and precipitation in the early, mid, and late century, with both low and high estimates for each time period. Most likely, the true values will fall between these two estimates. According to the Climate Mapping for Resilience and Adaptation’s Assessment Tool, the number of days exceeding 90°F in Woodford County is projected to go from 20 days to 58 to 67 days, while days exceeding 100°F are likely to increase from an average of zero per year today to 7 to 10 days by midcentury. It also forecasts that the average annual precipitation in Woodford County is likely to increase by 1.5 to 2 inches per year, while the average number of days per year without precipitation is projected to increase by 3 to 4 days.

The Climate Explorer indicates that in Woodford County, the average number of dry spells (a period of consecutive days without precipitation) is projected to increase by one. Extreme temperatures on the hottest days of the year are projected to increase by 7°F. This is based on the findings of the 2018 National Climate Assessment and compares projections for the middle third of the century (2035-2064) with average conditions observed from 1961-1990.

In combination, a decrease in the frequency of precipitation and a significant increase in the number of days with extreme heat in Woodford County would create conditions that will be more likely to produce droughts than today.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from drought.

Are the participating jurisdictions vulnerable to drought?

Yes. All of Woodford County, including the participating jurisdictions, is vulnerable to drought. Neither the amount nor the distribution of precipitation; soil types; topography; or water table conditions provides protection for any area within the County.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of drought?

No. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, none of the participating jurisdictions consider specific assets within their jurisdictions vulnerable to drought.

What impacts resulted from the recorded drought events?

Damage information was only available for one of the six drought events experienced between 1983 and 2017. According to NOAA's Storm Events Database, the 2012 drought caused an estimated $29.2 million in damages to the corn crop in Woodford County. Damage information was either unavailable or none was recorded for the remaining five reported occurrences.

Of the six drought events, disaster relief payment information was only available for one of the events. In 1988, landowners and farmers in Illinois were paid in excess of $382 million in relief payments; however, a breakdown by county was unavailable.

Drought Fast Facts – Impacts/Risk

Drought Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilites Damage*: ***n/a***
- Total Crop Damage: ***$29.2 million (corn crop damage only – 2012 drought)***

Drought Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Low***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

What other impacts can result from drought events?

Based on statewide drought records available from the Illinois State Water Survey, the most common impacts that result from drought events in Illinois include reductions in crop yields and drinking water shortages.

Crop Yield Reductions

Agriculture is an important enterprise in Woodford County. Farmland accounts for approximately 83.8% of all the land in the County. According to the 2017 Census of Agriculture, there were 920 farms in Woodford County occupying 283,140 acres. Less than 1% of the land in crop production is irrigated. In comparison, there were 958 farms occupying 95.6% (322,983 acres) of the total land area in the County in 2012. Of the land in farms in 2017, 91% or approximately 257,658 acres are in crop production.

According to the 2017 Census of Agriculture, total crop and livestock sales accounted for $216.1 million in revenue. This is a 10% decrease in revenue from the 2012 Census of Agriculture when total crop and livestock sales accounted for $240.6 million. Woodford County ranks 32nd in Illinois in crop cash receipts and 19th in Illinois for livestock cash receipts. A severe drought would have a major financial impact on the large agricultural community, particularly if it occurred during the growing season. Dry weather conditions, particularly when accompanied by excessive heat, can result in diminished crop yields and place stress on livestock.

A reduction in crop yields was seen as a result of the 1983, 1988, 2005, and 2012 droughts. **Figure DR-3** illustrates the reduction yields seen for corn and soybeans during the recorded drought events. The USDA's National Agricultural Statistics Service records show that yield reductions for corn and soybeans were most severe for the 1988 drought when there was a 58.9% reduction in corn yields and a 44.9% reduction in soybean yields.

Figure DR-3
Crop Yield Reductions Due to Drought – Woodford County

Year	Corn		Soybeans	
	Yield (bushel)	% Reduction Previous Year	Yield (bushel)	% Reduction Previous Year
1982	142.0	--	43.5	--
1983	**86.0**	**39.4%**	**39.0**	**10.3%**
1984	110.0	--	37.0	5.1%
1987	129.0	--	44.5	--
1988	**53.0**	**58.9%**	**24.5**	**44.9%**
1989	118.0	--	48.0	--
2004	182.0	--	54.0	--
2005	**144.0**	**20.9%**	**51.0**	**5.6%**
2006	177.0	--	55.0	--
2010	171.5	--	56.1	--
2011	186.5	--	60.5	--
2012	**102.5**	**45.0%**	**46.5**	**23.1%**
2013	192.3	--	56.9	--

Source: USDA, National Agricultural Statistics Service.

<u>*Drinking Water Shortages*</u>

Municipalities that rely on surface water sources for their drinking water supplies are more vulnerable to shortages as a result of drought. In Woodford County, ***none of the participating municipalities rely exclusively on surface water sources*** for their drinking water supply. According to the Illinois Environmental Protection Agency's Source Water Assessment Program, all of the participating municipalities obtain their water from deep bedrock or sand and gravel aquifers, with the exception of two of Roanoke's four wells and one of El Paso's five wells. These three wells are drilled into shallow unconfined aquifers. The high recharge rate found in these unconfined aquifers and the presence of other deep wells have generally helped prevent water shortages during drought.

While some of the participating municipalities are less vulnerable to drinking water shortages, a prolonged drought or a series of droughts in close succession do have the potential to impact water levels in aquifers used for individual drinking water wells in rural areas. This is because individual (private) water wells tend to be shallower than municipal (public) water wells.

What is the level of vulnerability to public health and safety from drought?

Unlike other natural hazards that affect the County, drought events do not typically cause injuries or fatalities. The primary concern centers on the financial impacts that result from loss of crop yields and livestock and potential drinking water shortages. Even taking into consideration the potential impacts that a water shortage may have on the general public, the risk or vulnerability to public health and safety from drought is ***low***.

Are existing buildings, infrastructure, and critical facilities vulnerable to drought?

No. In general, existing buildings, infrastructure and critical facilities located in Woodford County and the participating jurisdictions are not vulnerable to drought. The primary concern centers on the financial impacts that result from loss of crop yields and livestock.

While buildings do not typically sustain damage from drought events, in rare cases infrastructure and critical facilities may be directly or indirectly impacted. While uncommon, droughts can contribute to roadway damage. Severe soil shrinkage can compromise the foundation of a roadway and lead to cracking and buckling.

Prolonged heat associated with drought can also increase the demand for energy to operate air conditioners, fans, and other devices. This increase in demand places stress on the electrical grid, which increases the likelihood of power outages.

Additionally, droughts have impacted drinking water supplies. Reductions in aquifer water levels can cause water shortages that jeopardize the supply of water needed to provide drinking water and fight fires. While water use restrictions can be enacted in an effort to maintain a sufficient supply of water, they are only temporary and do not address long-term viability issues. Drinking water supplies vulnerable to drought, such as those that rely solely on surface water or shallow wells, need to consider mitigation measures that will provide long-term stability before a severe drought, or a series of droughts occur. Effective mitigation measures include drilling additional wells, preferably deep wells, securing agreements with alternative water sources and constructing water lines to provide a backup water supply.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from drought is ***low***, even taking into consideration the potential impact a drought may have on drinking water supplies and the stress that prolonged heat may place on the electrical grid.

Are future buildings, infrastructure, and critical facilities vulnerable to drought?

No. Future buildings, infrastructure and critical facilities within the County are no more vulnerable to drought than the existing building, infrastructure, and critical facilities. As discussed above, buildings do not typically sustain damage from drought. Infrastructure and critical facilities may, in rare cases, be damaged by drought, but very little can be done to prevent this damage.

What are the potential dollar losses to vulnerable structures from drought?

Unlike other natural hazards there are no standard loss estimation models or methodologies for drought. Since drought typically does not cause structure damage, it is unlikely that future dollar losses will be excessive. The primary concern associated with drought is the financial impacts that result from loss of crop yields and the potential impacts to drinking water supplies. Since a large part of the County is involved in farming activities, it is likely that there will be future dollar losses to drought. In addition, reduced water levels and the water conservation measures that typically accompany a drought will most likely impact consumers as well as businesses and industries that are water-dependent (i.e., car washes, landscapers, etc.).

3.8 LANDSLIDES

HAZARD IDENTIFICATION

What is the definition of a slope?

A slope generally refers to any natural or artificial incline of the earth's surface.

What is the definition of a landslide?

A landslide or slope failure is the mass downward and outward movement of slope-forming materials such as rock, soil, artificial fill, organic matter, debris or a combination of these that occurs under the force of gravity. Depending on the type of landslide, it can move rapidly damaging roads and homes or develop slowly causing gradual damage that may occur over months and even years.

How are landslides classified?

Landslides are classified by 1) the type of slope movement and 2) the slope material involved and include rock falls, rockslides, debris flows, mudflows, debris avalanches, earth flows and debris slides.

Slope Movement

Slope movements include falls, topples, slides, spreads and flows. A combination of two or more of the main types of slope movement is referred to as a "complex movement". The following provides a brief description of each.

- ***Falls*** occur when masses of rock or other material become detached from steep slopes or cliffs and descend by free-falling, bouncing or rolling.
- ***Topples*** consist of forward rotation of rocks or other material about a pivot point on a slope. Toppling can be driven by gravity or by fluids (water or ice) in cracks.
- ***Slides*** involve the downslope movement of rock or other material along one or more distinct zones of weakness that separate the slide material from more stable underlying material. The two major types of slides are rotational and transitional.
- ***Spreads*** usually occur on very gentle slopes or essentially flat terrain where a stronger upper layer of rock or soil moves above an underlying softer, weaker layer. In some cases, the stronger upper layer will subside into the weaker underlying layer. The failure is caused by liquefaction and usually triggered by rapid ground motion, such as that experienced during an earthquake.
- ***Flows*** are distinguished from slides by high water content and have a velocity resembles that of a viscous liquid. There are five basic categories of flows: debris flow, debris avalanche, earthflow, mudflow and creep.

Slope Material

The slope material in a landslide is either rock, soil or both. Soil is further classified as "debris" if it is composed of predominantly course fragments or "earth" if it is composed of sand-sized or finer particles.

What causes a landslide?

Landslides can have multiple causes, both natural and man-made. In terms of natural factors, topography, geology and precipitation play an important role in the formation of landslides. Frequently landslides occur when soil is saturated from heavy rain or snowmelt. Landslides can also be initiated in slopes already on the verge of movement by changes in water levels, stream erosion, bedrock fracturing, freeze-thaw cycles, tree root growth, changes in ground water, earthquakes and volcanic activity.

Man-made factors that can contribute to landslides include mining operations, excavation of a slope or its toe for building purposes, loading of a slope or its crest related to construction activities, deforestation, artificial vibrations, irrigation and water leakage from utilities. Individuals seeking unique views of rivers, valleys and lakes can also contribute to landslides by building on land that might have been better left to agriculture, open-space or other uses than for dwellings. The construction of homes on slopes that overwhelm the underlying support material have resulted in landslides. This activity is also referred to as overloading the top of the slope. This type of problem involving residential construction has occurred in Lake County along Lake Michigan and in LaSalle County along the Illinois River.

Where do landslides occur?

Landslides typically start on steep hillsides (slopes) and are primarily associated with mountainous regions, although they can also occur in areas of generally low relief. In low-relief areas, landslides occur in cut-and-fill area associated with roadways and building excavations, along river bluffs, and at quarries and open-pit mines.

Landslides occur in all 50 states, including Illinois. In Illinois, landslides primarily occur in areas adjacent to major rivers and lakes where there are bluffs, hills and valleys. Areas most vulnerable to landslides include the upper Mississippi River, the lower Mississippi River, the middle portion of the Illinois River (roughly covering the area from LaSalle County to Mason County), and the bluff areas along Lake Michigan.

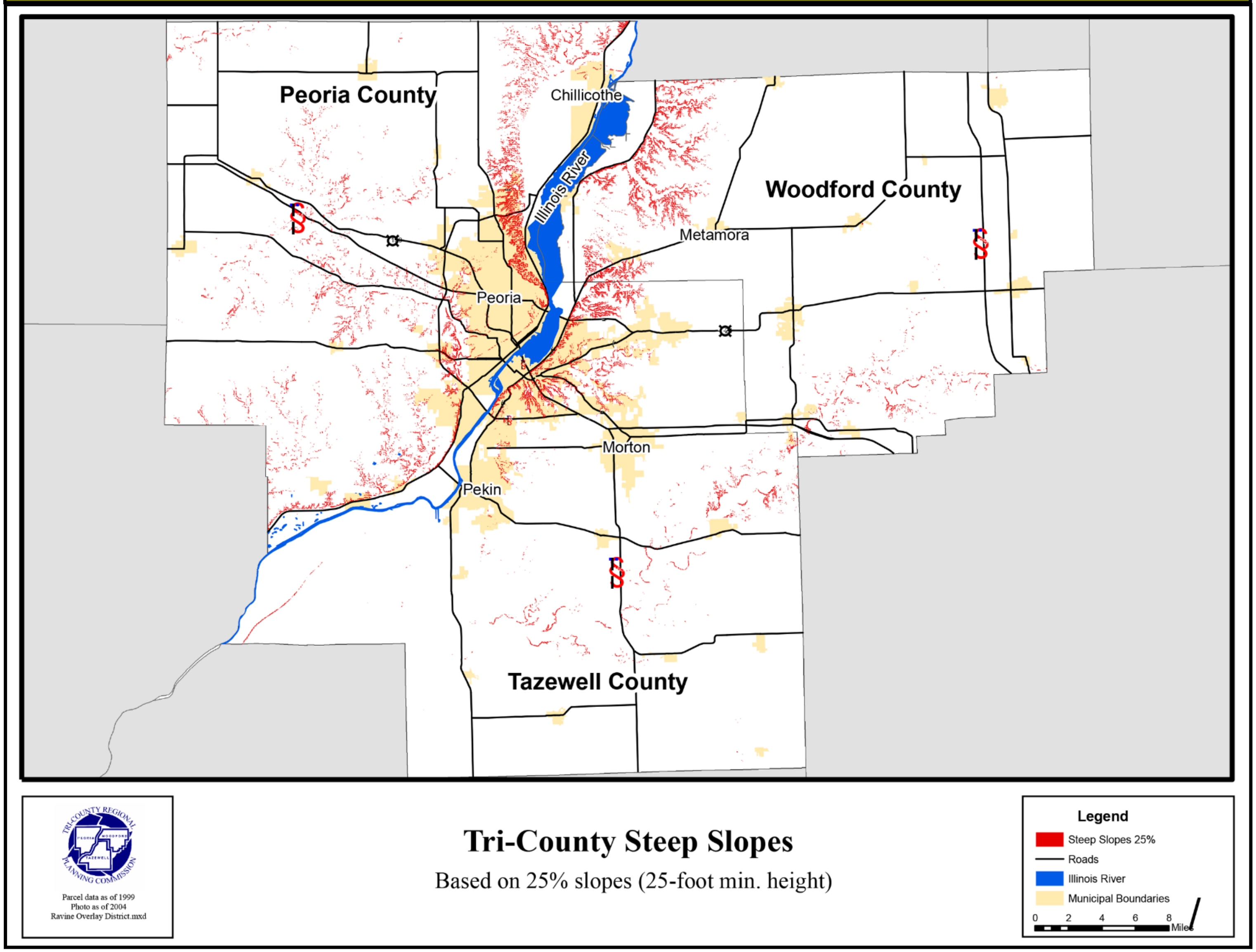
HAZARD PROFILE

The following details the location of steep slope areas (slopes 25% and steeper), identifies past occurrences of landslides, details the severity or extent of future potential failures (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Are there any areas in the County susceptible to landslides?

Yes. According to the *Ravine Overlay District Ordinance Report Summary* prepared by the Tri-County Regional Planning Commission in 2005, there are steep slope areas (slopes of 25% or greater) located in Woodford County. These areas are primarily associated with the Illinois and Mackinaw Rivers and their tributaries. **Figure L-1** illustrates the location of these steep slope areas.

Figure L-1
Areas Susceptible to Landslides in Woodford County



When have landslides occurred previously? What is the extent of these previous landslides?

Landslide Fast Facts – Occurrences

Number of Landslide Events Reported: ***1***

Probability of Future Landslide Events: ***Low***

No comprehensive, publicly-accessible database detailing landslide occurrences currently exists in Illinois. A review of the Illinois State Geologic Survey's 1985 *Landslide Inventory of Illinois*, NASA's Global Landslide Catalog, local newspaper articles and discussions with Committee members documented one landslide event in Woodford County. According to the ISGS *Landslide Inventory of Illinois,* there was one natural earth slump that occurred north of Congerville prior to 1985. There have almost certainly been additional landslides that were either not reported or were not identified as part of the data review.

What locations are affected by landslides? What is the extent of future potential landslides?

The topography and geologic materials within the State greatly limit the locations where landslides can occur. In Woodford County, the bluffs of the Illinois River floodplain located along the western edge of the County from the Woodford/Tazewell County line to the Woodford/Marshall County line and areas surrounding the Mackinaw River floodplain in the southern part of the County are the most likely locations affected by landslides.

Figure L-1 illustrates the steep slope areas in Woodford County based on the *Ravine Overlay District Ordinance Report Summary* prepared by the Tri-County Regional Planning Commission. The western and southeastern portions of the County have areas of steep slope.

What is the probability of future landslide events occurring based on historical data?

Given the limited amount of data available, it is difficult to specifically establish the probability of a future landslide. However, if factors such as topography, development within steep slope areas, soil stability, and weather events are taken into consideration then the probability is estimated to be ***medium*** for the western and southeastern portions of the County and ***low*** for the participating jurisdictions and remainder of unincorporated Woodford County. For the purposes of this analysis "medium" is defined as have at least a 50% chance of occurring in any given year while "low" is defined as having less than a 10% chance of occurring in any given year.

What is the probability of future landslide events occurring based on modeled future conditions?

Landslides are caused by a combination of several factors, but perhaps the most significant trigger of landslides is heavy rain events. In the last 120 years, total annual precipitation in Illinois has increased by between 12% to 15% across the State. This means, according to the Illinois State Climatologist, that we get about an additional 5 inches of yearly rainfall compared to what was expected historically.

This trend is likely to continue, and as a result, precipitation in Illinois is forecasted to increase in coming decades. In addition to changes in the overall amount of precipitation, changes in precipitation patterns indicate that future events will likely be less frequent, but larger and more severe. The Illinois State Climatologist indicates that since the beginning of the 20th Century, Illinois has seen a 40% increase in the number of days with extreme precipitation events (rainfall of 2 inches or greater) per year.

Figures SS-8 and **SS-9**, located in Section 3.1, provide tabular and graphical projections for Woodford County, showing estimations for average annual precipitation in the early, mid, and late 21st century with both low and high estimates for each time period. Most likely, the true value will fall between these two estimates. By midcentury, the average annual precipitation in Woodford County is projected to increase by 1.5 to 2 inches per year, while the average number of days with precipitation per year is projected to decrease by 3 to 4 days according to the Climate Mapping for Resilience and Adaptation's Assessment Tool.

The Climate Explorer indicates that in Woodford County the annual counts of intense rainstorms (rainfall of 2 inches or greater in one day) are not projected to increase. This is based on the findings of the 2018 National Climate Assessment and compares projections for the middle third of the century (2035-2064) with average conditions observed from 1961-1990.

Taken together, the projected increase in annual rainfall, the decrease in frequency of rain events, and the negligible threat of intense rain events in Woodford County means that the likelihood of landslides may be slightly higher than it is today, though there are no studies in the U.S. yet to prove this connection. Even so, preparing for the future with an awareness that the probability of landslides could potentially increase is valuable in planning ahead. The analysis of this trend should be revisited in subsequent planning efforts as more data becomes available.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from landslides.

Are the participating jurisdictions vulnerable to landslides?

Yes. Portions of unincorporated Woodford County are vulnerable to the dangers presented by landslides. None of the other participating jurisdictions or the remainder of the County are considered vulnerable.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of landslides?

No. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, none of the participating jurisdictions considered specific assets within their jurisdictions vulnerable to landslides.

What impacts resulted from the recorded landslide events?

Damage information was either unavailable or none was reported for the one recorded event. No injuries or fatalities were reported as a result this event either. In comparison, the U.S. averages an estimated $3.5 billion in property damage losses and between 25 and 50 fatalities annually due to landslides according to the U.S. Geological Survey.

What other impacts can result from landslides?

Landslides have the potential to impact not only human life and public safety, but they also have the potential to damage or destroy buildings and infrastructure. Depending on the type of landslide, there may be little if any warning an event is about to occur. Individuals caught in a landslide, especially motorists, face potential injury or loss of life.

Property owners seeking views of valleys, rivers and lakes have built in vulnerable locations and experienced damage as the slope they built on slumps, impacting their foundation and potentially carrying away their home. Buildings downslope from a landslide face the threat of structural damage, if not complete destruction. In addition to structural damage, a landslide can also cause serious damage to a building's content.

Landslides Fast Facts – Impacts/Risk

Landslides Impacts:
- Total Property Damage: ***n/a***
- Fatalities: ***n/a***
- Injuries: ***n/a***

Landslide Risk/Vulnerability:
- Public Health & Safety –Steep Slope Areas: ***Low to Medium***
- Public Health & Safety – Non-Steep Slope Areas: ***Low***
- Buildings/Infrastructure/Critical Facilities –Steep Slope Areas: ***Medium***
- Buildings/Infrastructure/Critical Facilities – Non-Steep Slope Areas: ***Low***

Infrastructure is also vulnerable to landslides. Electrical, water, gas and sewer lines can be weakened or broken during an event resulting in disruptions to vital services. A major concern associated with landslides is damage sustained to transportation systems, both highway and rail. At the very least, landslides can disrupt the flow of traffic, resulting in delays and adverse travel until the material is removed. These disruptions have the potential to impact emergency services (ambulance, fire and police) along with school bus routes and business traffic. Road and rail beds can be weakened or completely undermined by landslides which can lead to the indefinite closure of those facilities while repairs are made.

In addition to impacting the human environment, landslides can affect the natural environment. The material carried along by landslides can fill drainage ditches, streams and creeks causing drainage and flooding problems. The force of a landslide can cave in stream banks, uproot trees and shrubs and negatively impact wildlife.

What is the level of vulnerability to public health and safety from landslides?

For Pike County, the risk or vulnerability posed by landslides to public health and safety is considered to be ***low*** to ***medium*** for steep slope areas as described previously and ***low*** for all other areas of the County. This assessment is based on the fact that most landslides that occur in Illinois are not life-threatening nor are they considered to be severe in comparison to landslides that occur in other parts of the country. In addition, the number of injuries and fatalities recorded is low.

Are existing buildings, infrastructure and critical facilities vulnerable to landslides?

Yes. Buildings, infrastructure and critical facilities located within steep slope areas are vulnerable to landslides. Currently there are no specific regulations for building practices within steep slope areas in place within the County that will likely lessen the vulnerability of existing buildings, infrastructure, and critical facilities. This means existing buildings as well as buildings in steep slope areas may be more vulnerable to landslides.

In addition to impacting structures, landslides primarily damage roads, bridges and utilities. Roadways, culverts and bridges can be damaged by landslides and even destroyed if the landslide occurs directly next of them. Water, sewer, gas, power and communication lines, both above and below ground, are also vulnerable to landslides. Depending on the location of the landslide, water, sewer, gas and power lines can experience ruptures causing major disruptions to vital services.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the extent of the development and infrastructure in the vicinity of the steep slopes, soil stability and weather conditions. When these factors are taken into consideration, the overall risk posed by landslides to vulnerability to buildings, infrastructure and critical facilities in Woodford County is considered to be ***low*** to ***medium*** for steep slope areas and ***low*** for all other areas in the County.

Are future buildings, infrastructure and critical facilities vulnerable to landslides?

Yes. None of the participating jurisdictions, including the County, have specific regulations for building practices within steep slope areas in place that would likely lessen the vulnerability of new buildings, critical facilities, and infrastructure to damage from landslides. As a result, any future buildings and critical facilities built on steep slope areas in these jurisdictions will face the same vulnerabilities as those of existing buildings, infrastructure, and critical facilities described previously. In addition, infrastructure such as roadway and communication, power and sewer lines built in steep slope areas will also continue to be vulnerable as long as specific building regulations are not enacted.

What are the potential dollar losses to vulnerable structures from landslides?

Unlike other hazards, there are no standard loss estimation models or methodologies for landslides. Given the lack of recorded events and unpredictability of landslides, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structures. However, those buildings, infrastructure and critical facilities located near steep slope areas have the potential to experience future dollar losses from landslides.

3.9 EARTHQUAKES

HAZARD IDENTIFICATION

What is the definition of an earthquake?

An earthquake is a sudden shaking of the ground caused when rocks forming the earth's crust slip or move past each other along a fault (a fracture in the rocks). Most earthquakes occur along the boundaries of the earth's tectonic plates. These slow-moving plates are being pulled and dragged in different directions, sliding over, under and past each other. Occasionally, as the plates move past each other, their jagged edges will catch or stick causing a gradual buildup of pressure (energy).

Eventually, the force exerted by the moving plates overcomes the resistance at the edges and the plates snap into a new position. This abrupt shift releases the pent-up energy, producing vibrations or seismic waves that travel outward from the earthquake's point of origin. The location below the earth's surface where the earthquake starts is known as the hypocenter or focus. The point on the earth's surface directly above the focus is the epicenter.

The destruction caused by an earthquake may range from light to catastrophic depending on a number of factors including the magnitude of the earthquake, the distance from the epicenter, the local geologic conditions as well as construction standards and time of day (i.e., rush hour). Earthquake damage may include power outages, general property damage, road, and bridge failure, collapsed buildings and utility damage (ruptured gas lines, broken water mains, etc.).

Most of the damage done by an earthquake is caused by its secondary or indirect effects. These secondary effects result from the seismic waves released by the earthquake and include ground shaking, surface faulting, liquefaction, landslides and, in rare cases, tsunamis.

According to the U.S. Geological Survey, more than 143 million Americans in the contiguous U.S. are exposed to potentially damaging ground shaking from earthquakes. More than 44 million of those Americans, located in 18 states, are exposed to very strong ground shaking from earthquakes. Illinois ranks 10th in terms of the number of individuals exposed to very strong ground shaking. The Federal Emergency Management Agency's Hazus analysis indicates that the annualized earthquake losses to the national building stock is $6.1 billion per year. A majority of the average annual loss is concentrated in California ($3.7 million). The central U.S. (including Illinois) ranks third in annualized earthquake losses at $480 billion, behind the pacific northwest (Washington and Oregon) with annualized earthquake losses at $710 billion.

What is a fault?

A fault is a fracture or zone of fractures in the earth's crust between two blocks of rock. They may range in length from a few millimeters to thousands of kilometers. Many faults form along tectonic plate boundaries. Faults are classified based on the angle of the fault with respect to the surface (known as the dip) and the direction of slip or movement along the fault. There are three main groups of faults: normal, reverse (thrust) and strike-slip (lateral).

Normal faults occur in response to pulling or tension along the two blocks of rock causing the overlying block to move down the dip of the fault plane. Most of the faults in Illinois are normal faults. Reverse or thrust faults occur in response to squeezing or compression of the two blocks of rock causing the overlying block to move up the dip of the fault plane. Strike-slip or lateral faults can occur in response to either pulling/tension or squeezing/compression causing the blocks to move horizontally past each other.

Geologists have found that earthquakes tend to recur along faults, which reflect zones of weakness in the earth's crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could still occur.

What are tectonic plates?

Tectonic plates are large, irregularly-shaped, relatively rigid sections of the earth's crust that float on the top, fluid layer of the earth's mantle. There are about a dozen tectonic plates that make up the surface of the planet. These plates are approximately 50 to 60 miles thick and the largest are millions of square miles in size.

How are earthquakes measured?

The severity of an earthquake is measured in terms of its magnitude and intensity. A brief description of both terms and the scales used to measure each are provided below.

<u>Magnitude</u>

Magnitude refers to the amount of seismic energy released at the hypocenter of an earthquake. The magnitude of an earthquake is determined from measurements of ground vibrations recorded by seismographs. As a result, magnitude is represented as a single, instrumentally determined value. A loose network of seismographs has been installed all over the world to help record and verify earthquake events.

There are several scales that measure the magnitude of an earthquake. The most well-known is the Richter Scale. This logarithmic scale provides a numeric representation of the magnitude of an earthquake through the use of whole numbers and decimal fractions. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in ground vibrations measured. In addition, each whole number increase corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number. It is important to note that the Richter Scale is used only to determine the magnitude of an earthquake, it does not assess the damage that results.

Once an earthquake's magnitude has been confirmed, it can be classified. **Figure EQ-1** categorizes earthquakes by class based on their magnitude (i.e., Richter Scale value). Any earthquake with a magnitude less than 3.0 on the Richter Scale is classified as a micro earthquake while any earthquake with a magnitude of 8.0 or greater on the Richter Scale is considered a "great" earthquake. Earthquakes with a magnitude of 2.0 or less are not commonly felt by individuals. The largest earthquake to occur in the U.S. since 1900 took place off the coast of Alaska in Prince William Sound on March 28, 1964 and registered a 9.2 on the Richter Scale.

<u>Intensity</u>

Intensity refers to the effect an earthquake has on a particular location. The intensity of an earthquake is determined from observations made of the damage inflicted on individuals, structures, and the environment. As a result, intensity does not have a mathematical basis; instead, it is an arbitrary ranking of observed effects. In addition, intensity generally diminishes with distance. There may be multiple intensity recordings for a region depending on a location's distance from the epicenter.

Figure EQ-1
Earthquake Magnitude Classes

Class	Magnitude (Richter Scale)
micro	smaller than 3.0
minor	3.0 – 3.9
light	4.0 – 4.9
moderate	5.0 – 5.9
strong	6.0 – 6.9
major	7.0 – 7.9
great	8.0 or larger

Source: Michigan Technological University, UPSeis

Although numerous intensity scales have been developed over the years, the one currently used in the U.S. is the Modified Mercalli Intensity Scale. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. The lower numbers of the intensity scale are based on human observations (i.e., felt only by a few people at rest, felt quite noticeably by persons indoors, etc.).

The higher numbers of the scale are based on observed structural damage (i.e., broken windows, general damage to foundations etc.). Structural engineers usually contribute information when assigning intensity values of VIII or greater. **Figure EQ-2** provides a description of the damages associated with each level of intensity as well as comparing Richter Scales values to Modified Mercalli Intensity Scale values.

Generally, the Modified Mercalli Intensity value assigned to a specific site after an earthquake is a more meaningful measure of severity to the general public than magnitude because intensity refers to the effects actually experienced at that location.

When and where do earthquakes occur?

Earthquakes can strike any location at any time. However, history has shown that most earthquakes occur in the same general areas year after year, principally in three large zones around the globe. The world's greatest earthquake belt, the circum-Pacific seismic belt (nicknamed the "Ring of Fire"), is found along the rim of the Pacific Ocean, where about 81 percent of the world's largest earthquakes occur.

The second prominent belt is the Alpide, which extends from Java to Sumatra and through the Himalayan Mountains, the Mediterranean Sea and out into the Atlantic Ocean. It accounts for about 17 percent of the world's largest earthquakes, including those in Iran, Turkey, and Pakistan. The third belt follows the submerged mid-Atlantic Ridge, the longest mountain range in the world, nearly splitting the entire Atlantic Ocean north to south.

While most earthquakes occur along plate boundaries some are known to occur within the interior of a plate. (As the plates continue to move and plate boundaries change over time, weakened boundary regions become part of the interiors of the plates.) Earthquakes can occur along zones of weakness within a plate in response to stresses that originate at the edges of the plate or from deep within the earth's crust. The New Madrid earthquakes of 1811 and 1812 occurred within the North American plate.

Figure EQ-2
Comparison of Richter Scale and Modified Mercalli Intensity Scale

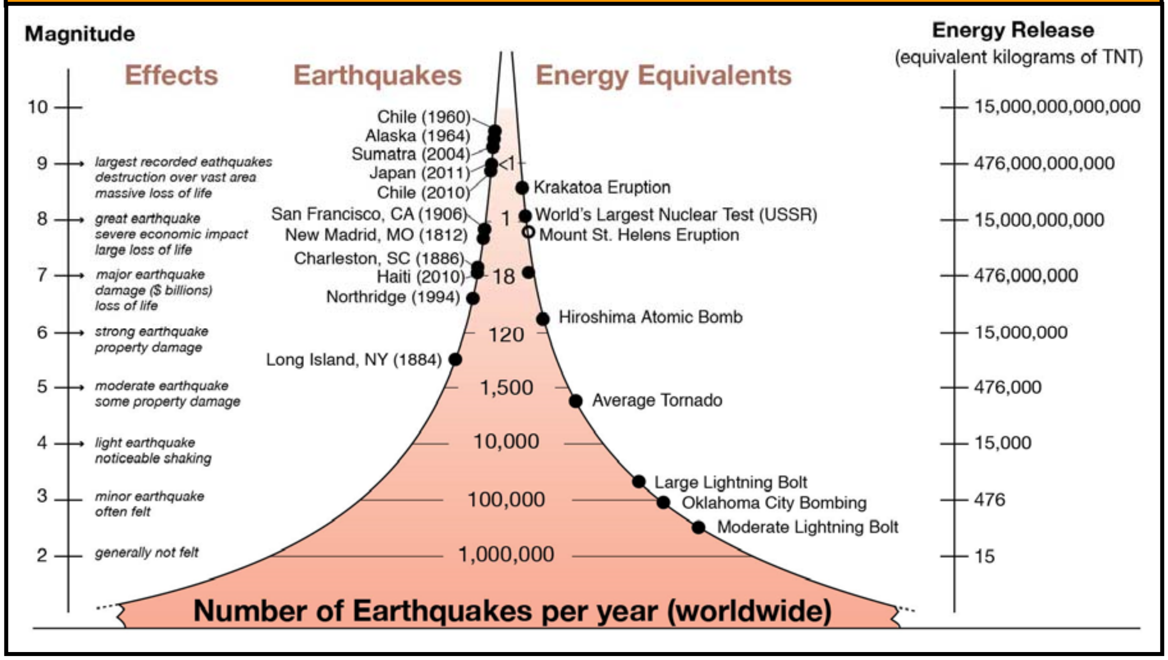
Richter Scale	Modified Mercalli Scale	Observations
1.0 – 1.9	I	Felt by very few people; barely noticeable. No damage.
2.0 – 2.9	II	Felt by a few people, especially on the upper floors of buildings. No damage.
3.0 – 3.9	III	Noticeable indoors, especially on the upper floors of buildings, but may not be recognized as an earthquake. Standing cars may rock slightly; vibrations similar to the passing of a truck. No damage.
4.0	IV	Felt by many indoors and a few outdoors. Dishes, windows, and doors disturbed. Standing cars rocked noticeably. No damage.
4.1 – 4.9	V	Felt by nearly everyone. Small, unstable objects displaced or upset; some dishes and glassware broken. Negligible damage.
5.0 – 5.9	VI	Felt by everyone. Difficult to stand. Some heavy furniture moved. Weak plaster may fall and some masonry, such as chimneys, may be slightly damaged. Slight damage.
6.0	VII	Slight to moderate damage to well-built ordinary structures. Considerable damage to poorly-built structures. Some chimneys may break. Some walls may fall.
6.1 – 6.9	VIII	Considerable damage to ordinary buildings. Severe damage to poorly built buildings. Some walls collapse. Chimneys, monuments, factory stacks, columns fall.
7.0	IX	Severe structural damage in substantial buildings, with partial collapses. Buildings shifted off foundations. Ground cracks noticeable.
7.1 – 7.9	X	Most masonry and frame structures and their foundations destroyed. Some well-built wooden structures destroyed. Train tracks bent. Ground badly cracked. Landslides.
8.0	XI	Few, if any structures remain standing. Bridges destroyed. Wide cracks in ground. Train tracks bent greatly. Wholesale destruction.
> 8.0	XII	Total damage. Lines of sight and level are distorted. Waves seen on the ground. Objects thrown up into the air.

Sources: Michigan Technological University, Department of Geological and Mining Engineering and Sciences, UPSeis.
U.S. Geological Survey.

How often do earthquakes occur?

Earthquakes occur every day. Magnitude 2 and smaller earthquakes occur several hundred times a day worldwide. These earthquakes are known as micro earthquakes and are generally not felt by humans. Major earthquakes, greater than magnitude 7, generally occur at least once a month. **Figure EQ-3** illustrates the approximate number of earthquakes that occur worldwide per year based on magnitude. This figure also identifies manmade and natural events that release approximately the same amount of energy for comparison.

Figure EQ-3
Approximate Number of Earthquakes Recorded Annually



Source: Incorporated Research Institutions for Seismology, Education and Outreach Series, "How Often Do Earthquakes Occur?"

HAZARD PROFILE

The following details the location of known fault zones and geologic structures, identifies past occurrences of earthquakes, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

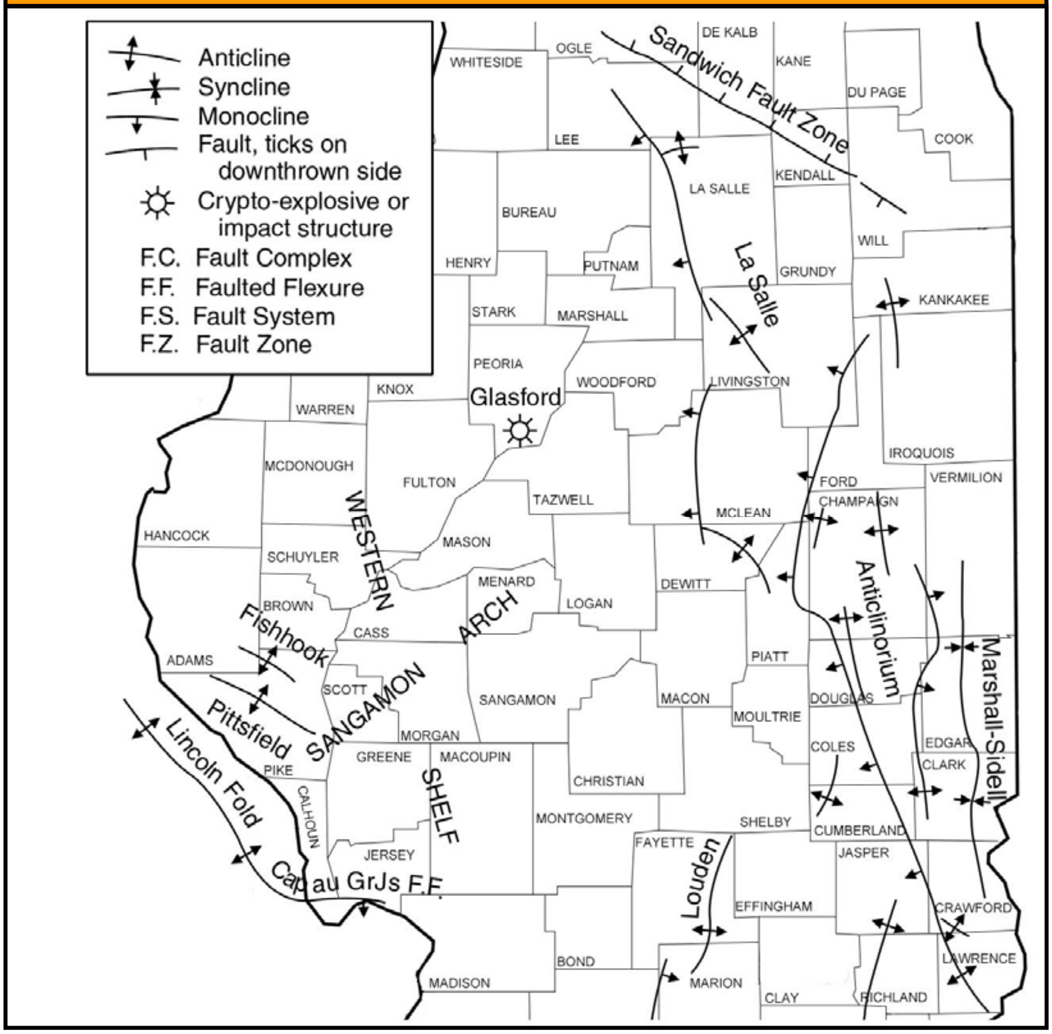
Are there any faults located within the County?

Earthquake Fast Facts – Occurrences

Earthquakes Originating in the County (1795 – 2022): ***None***
Fault Zones Located within the County: ***None***
Geological Structures Located within the County: ***None***
Earthquakes Originating in Adjacent Counties (1795-2022): ***5***
Fault Zones Located in Nearby Counties: ***None***
Geologic Structures Located in Adjacent Counties: ***1***

No, there are no known faults or geologic structures located in Woodford County. However, there is one geological structure, the La Salle Anticlinorium, located in the immediate region. The La Salle Anticlinorium is more than 200 miles long and stretches from Lee County in northern Illinois to Lawrence County in southeastern Illinois. It is composed of a group or zone of closely related anticlines, domes, monoclines and synclines, several of which are individually named. **Figure EQ-4** illustrates the location of this geologic structure.

Figure EQ-4
Geological Structures in Central Illinois



Source: Illinois State Geological Survey.

When have earthquakes occurred previously? What is the extent of these previous quakes?

According to the Illinois State Geological Survey, the U.S. Geological Survey, and Center for Earthquake Research and Information (CERI) at the University of Memphis, no earthquakes have originated in Woodford County during the last 200 years. While no earthquakes have originated in the County, residents have felt ground shaking caused by earthquakes that have originated outside of the County. The following provides a brief description, by region, of these events while **Figure EQ-5** illustrates the epicenters of nearby earthquakes.

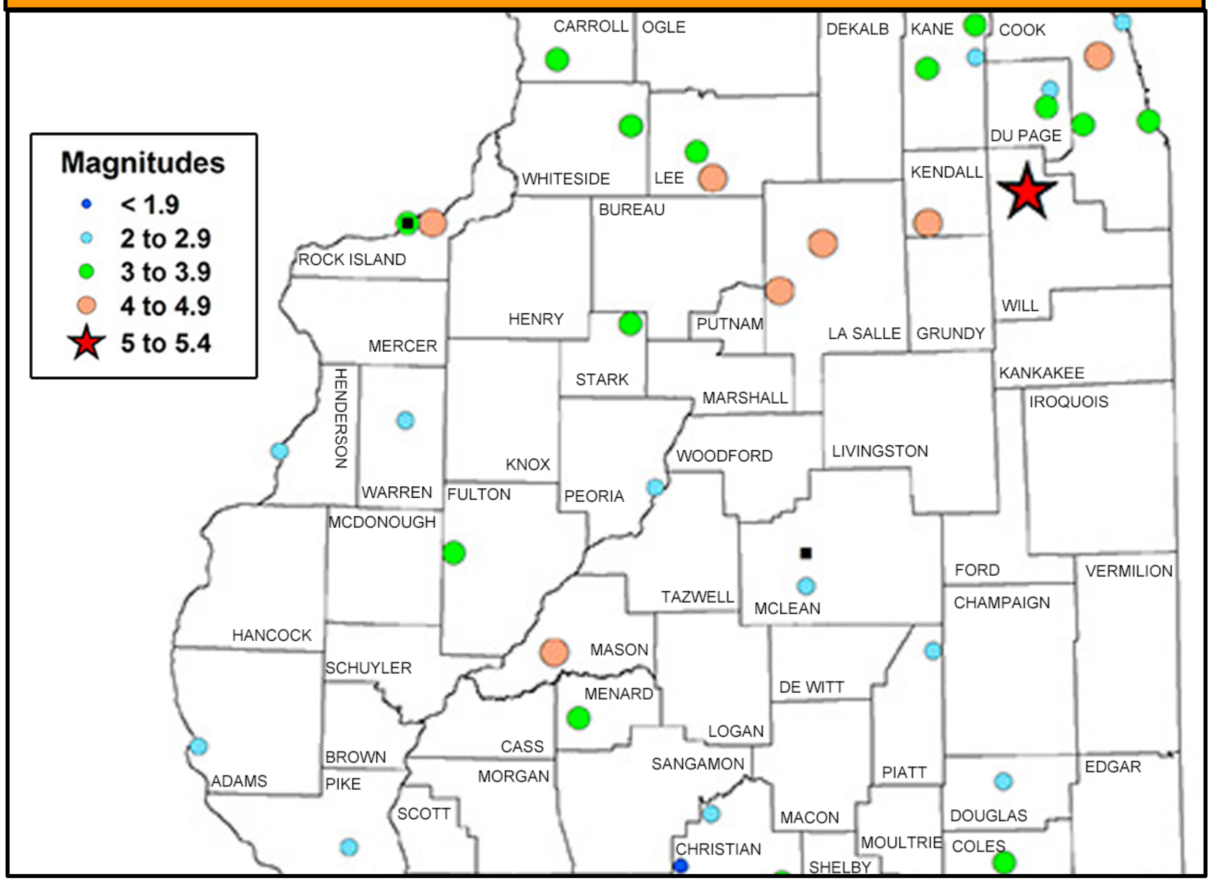
Central Illinois

Five earthquakes have originated in nearby LaSalle, Peoria and McLean Counties. The following provides a brief description of each.

- On June 28, 2004 a magnitude 4.2 earthquake originated approximately eight miles northwest of Ottawa in LaSalle County. Ground shaking was felt across six states.

- An earthquake originated in downtown Peoria in Peoria County on June 29, 1937 with an estimated magnitude between 2.0 and 2.9. This earthquake had an estimated intensity of II on the Modified Mercalli Scale.
- An estimated magnitude 3.4 earthquake originated approximately four miles south of Bloomington in unincorporated McLean County on December 27, 1885. This earthquake had an estimated intensity of III on the Modified Mercalli Scale.
- On February 4, 1883 an earthquake of undetermined magnitude originated at Normal in McLean County. This earthquake had an estimated intensity of III on the Modified Mercalli Scale.
- An estimated magnitude 4.6 earthquake originated approximately two miles west of Oglesby in LaSalle County on May 27, 1881. This earthquake had an estimated intensity of IV on the Modified Mercalli Scale.

Figure EQ-5
Earthquakes Originating in Woodford Illinois



Source: Illinois State Geological Survey.

Northern Illinois

In addition to the above referenced event, there have been approximately two dozen other earthquakes that have occurred in northern Illinois in the last century, though none of them were greater than a magnitude 5.1. These earthquakes generally caused minor damage within 10 to 20 miles of the epicenter and were felt over several counties. Earthquakes greater than a magnitude 5 are generally not expected in this region. The following highlights a few of the recent earthquakes that have taken place in northern Illinois.

- ❖ On March 25, 2015 a magnitude 2.9 earthquake took place at Lake in the Hills in McHenry County. This earthquake was felt over several counties. Damage information was unavailable for this event.
- ❖ A magnitude 3.2 earthquake took place on November 4, 2013 on the east side of McCook in Cook County. This earthquake was felt mainly in the Chicago metro area. Damage information was unavailable for this event.
- ❖ On February 10, 2010 a magnitude 3.8 earthquake took place approximately two miles northeast of Virgil in Kane County. This earthquake was felt over much of Illinois, Indiana and central and southern Wisconsin. Some minor structural damage was reported.

<u>Southern Illinois</u>
In addition to the above referenced events, Woodford County residents also felt ground shaking caused by several earthquakes that have originated in southern Illinois. The following provides a brief description of a few of the larger events that have occurred.

- ❖ On April 18, 2008, a magnitude 5.2 earthquake was reported in southeastern Illinois near Bellmont in Wabash County. The earthquake was located along the Wabash Valley seismic zone. Minor structural damage was reported in several towns in Illinois and Kentucky. Ground shaking was felt over all or parts of 18 states in the central U.S. and southern Ontario, Canada.
- ❖ A magnitude 5.2 earthquake took place on June 10, 1987, in southeastern Illinois near Olney in Richland County. This earthquake was also located along the Wabash Valley seismic zone. Only minor structural damage was reported in several towns in Illinois and Indiana. Ground shaking was felt over all or parts of 17 states in the central and eastern U.S. and southern Ontario, Canada.
- ❖ The strongest earthquake in the central U.S. during the 20th century occurred along the Wabash Valley seismic zone in southeastern Illinois near Dale in Hamilton County. This magnitude 5.4 earthquake occurred on November 9, 1968, with an intensity estimated at VII for the area surrounding the epicenter. Moderate structural damage was reported in several towns in south-central Illinois, southwest Indiana, and northwest Kentucky. Ground shaking was felt over all or parts of 23 states in the central and eastern U.S. and southern Ontario, Canada.

Three of the ten largest earthquakes ever recorded within the continental U.S. took place in 1811 and 1812 along the New Madrid seismic zone. This zone lies within the central Mississippi Valley and extends from northeast Arkansas through southeast Missouri, western Tennessee, western Kentucky, and southern Illinois. These magnitude 7.5 and 7.3 major earthquakes were centered near the town of New Madrid, Missouri and caused widespread devastation to the surrounding region and were felt by people in cities as far away as Pittsburgh, Pennsylvania and Norfolk, Virginia.

The quakes locally changed the course of the Mississippi River creating Reelfoot Lake in northwestern Tennessee. These earthquakes were not an isolated incident. The New Madrid seismic zone is one of the most seismically active areas of the U.S. east of the Rockies. Since

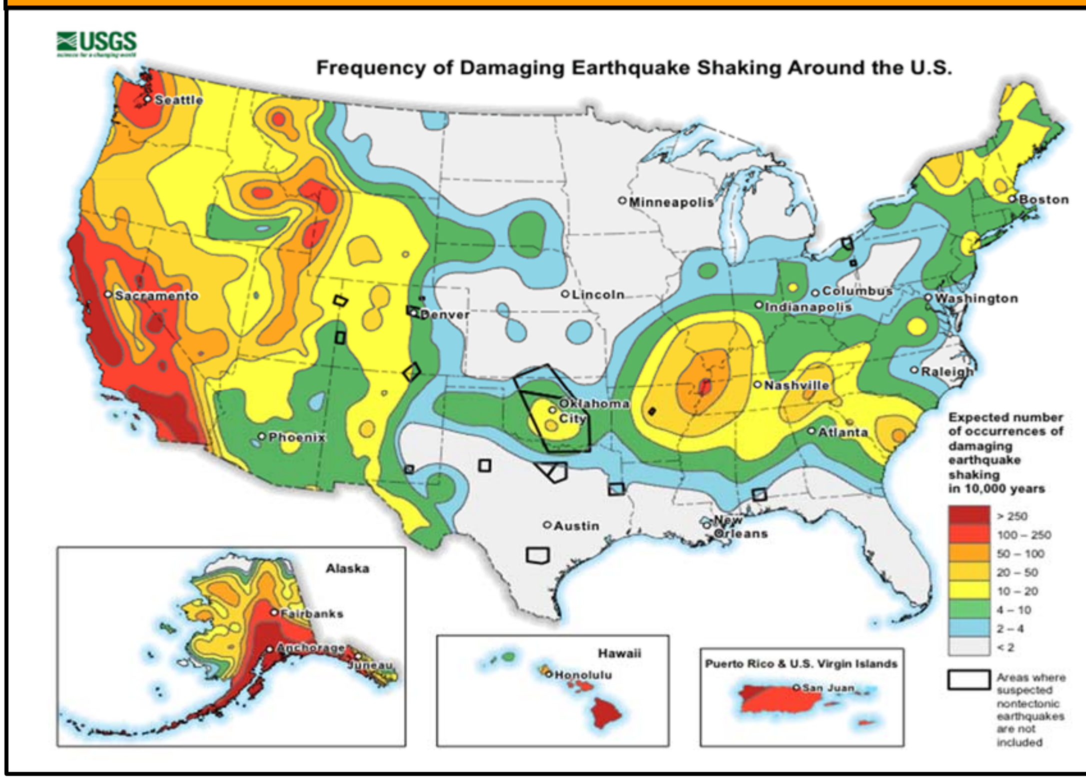
1974 more than 4,000 earthquakes have been recorded within this seismic zone, most of which were too small to be felt.

What locations are affected by earthquakes? What is the extent of future potential earthquakes?

Earthquake events generally affect the entire County. Earthquakes, like drought, impact large areas extending across an entire region and affecting multiple counties. Woodford County's proximity to multiple fault zones, both large and small, makes the entire area likely to be affected by an earthquake if these faults become seismically active. The 2018 Illinois Natural Hazard Mitigation Plan classifies Woodford County's hazard rating for earthquakes as "low."

According to the USGS, Woodford County can expect 2 to 10 occurrences of damaging earthquake shaking over a 10,000-year period. **Figure EQ-6** illustrates the frequency of damaging earthquake shaking around the U.S.

Figure EQ-6
Frequency of Damaging Earthquake Shaking Around the U.S.



Source: U.S. Geological Survey.

What is the probability of future earthquake events occurring based on historical data?

As with flooding, calculating the probability of future earthquakes changes depending on the magnitude of the event. According to the ISGS, Illinois is expected to experience a magnitude 3.0 earthquake every year, a magnitude 4.0 earthquake every four years and a magnitude

5.0 earthquake every 20 years. The likelihood of an earthquake with a magnitude of 6.3 or greater occurring somewhere in the central U.S. within the next 50 years is between 86% and 97%.

While the major earthquakes of 1811 and 1812 do not occur often along the New Madrid fault, they are not isolated events. In recent decades, scientists have collected evidence that earthquakes similar in size and location to those felt in 1811 and 1812 have occurred several times before within the central Mississippi Valley around 1450 A.D., 900 A.D. and 2350 B.C.

The general consensus among scientists is that earthquakes similar to the 1811-1812 earthquakes are expected to recur on average every 500 years. The U.S. Geological Survey and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimates that for a 50-year period the probability of a repeat of the 1811-1812 earthquakes is between 7% and 10% and the probability of an earthquake with a magnitude of 6.0 or larger is between 25% and 40%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from earthquakes.

Are the participating jurisdictions vulnerable to earthquakes?

Yes. All of Woodford County is vulnerable to earthquakes. The unique geological formations topped with glacial drift soils found in the central U.S. conduct an earthquake's energy farther than in other parts of the Nation. Consequently, earthquakes that originate in the Midwest tend to be felt at greater distances than earthquakes with similar magnitudes that originate on the West Coast.

Earthquake Fast Facts – Risk

Earthquake Risk/Vulnerability:

- Public Health & Safety – Light/Moderate Quake within the County or immediate region: ***Low***
- Public Health & Safety – Strong Quake in the region: ***Low to Medium***
- Buildings/Infrastructure/Critical Facilities – Light/ Moderate Quake within the County or immediate region: ***Low***
- Buildings/Infrastructure/Critical Facilities – Strong Quake in the region: ***Low to Medium***

This vulnerability, found throughout most of Illinois and all of Woodford County, is compounded by relatively high water tables within the region. When earthquake shaking mixes the groundwater and soil, ground support is further weakened thus adding to the potential structural damages experienced by buildings, roads, bridges, electrical lines, and natural gas pipelines.

The *Projected Earthquake Intensities Map* prepared by the Missouri State Emergency Management Agency predicts that if a magnitude 6.7 earthquake were to take place anywhere along the New Madrid seismic zone, then the highest projected intensity felt in Woodford County would be a V on the Modified Mercalli Intensity Scale. If a magnitude 8.6 earthquake were to occur, then the highest projected intensity felt would be a VII.

The infrequency of major earthquakes, coupled with relatively low magnitude/intensity of past events, has led the public to perceive that Woodford County is not vulnerable to damaging earthquakes. This perception has allowed the County and participating municipalities to develop largely without regard to earthquake safety.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of earthquakes?

No. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, none of the participating jurisdictions consider specific assets within their jurisdictions vulnerable to earthquakes.

What impacts resulted from the recorded earthquake events?

While Woodford County residents felt the earthquakes that have occurred in Illinois, no damages were reported as a result of these events. Given the magnitude of the great earthquakes of 1811 and 1812, it is almost certain that individuals in what is now Woodford County felt those quakes; however, historical records do not indicate the intensity or impacts that these quakes had on the County.

What other impacts can result from earthquakes?

Earthquakes can impact human life, health, and public safety. **Figure EQ-7** details the potential impacts that may be experienced by the County should a magnitude 6.0 or greater earthquake occur in the region.

What is the level of vulnerability to public health and safety from earthquakes?

The risk or vulnerability to public health and safety from an earthquake is dependent on the intensity and location of the event. Since there are no known faults in Woodford County, the likelihood that an earthquake will originate in the County is very small, decreasing the changes for catastrophic damages. However, if a light earthquake originates within the County or from the structures in the immediate region, the risk or vulnerability to public health and safety is considered ***low***. This risk is elevated to ***low/medium*** for a strong earthquake originating along seismic zones in the region (i.e., Sandwich Fault Zone or Wabash Valley).

Are existing buildings, infrastructure, and critical facilities vulnerable to earthquakes?

Yes. All existing buildings, infrastructure and critical facilities located in Woodford County and the participating jurisdictions are vulnerable to damage from earthquakes. However, given the County's size (about 38,000 individuals), its population density, the fact that there are few buildings higher than two stories (with the exception of grain elevators and several three to four story buildings in Eureka) tempered by the low potential for magnitude 5.0 and above earthquakes to occur in the immediate region, the damage is anticipated to be slight with only superficial structure damage such as broken windows and cracks in weak plaster and masonry.

If a strong earthquake (6.0 – 6.9) were to occur in the region, then unreinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward. Steel and wood buildings have more ability to absorb the energy from an earthquake while wood buildings with proper foundation ties have rarely collapsed in earthquakes. In this scenario building damage in Woodford County would range from moderate to considerable for well-built ordinary structures and considerable to severe for poorly-built structures. **Figure EQ-8**, located at the end of this section, identifies the number of unreinforced masonry buildings that serve as critical facilities within the participating jurisdictions.

Figure EQ-7
Potential Earthquake Impacts

Direct	Indirect
Buildings • Temporary displacement of businesses, households, schools, and other critical services where heat, water and power are disrupted • Long-term displacement of businesses, households, schools, and other critical services due to structural damage or fires *Transportation* • Damages to bridges (i.e., cracking of abutments, subsidence of piers/supports, etc.) • Cracks in the pavement of critical roadways • Increased traffic on Interstate, U.S., and State Routes (especially if the quake originates along the Sandwich Fault Zone) as residents move out of the area to seek shelter and medical care and as emergency response, support services and supplies move south to aid in recovery • Misalignment of rail lines due to landslides (most likely near stream crossings), fissures and/or heaving *Utilities* • Downed power and communication lines • Breaks in drinking water and sanitary sewer lines resulting in the temporary loss of service • Disruptions in the supply of natural gas due to cracking and breaking of pipelines *Health* • Injuries/deaths due to falling debris and fires *Other* • Cracks in the earthen dams of the lakes and reservoirs within the County which could lead to dam failures	*Health* • Use of County health facilities (especially if the quake originates along the New Madrid Fault) to treat individuals injured closer to the epicenter • Emergency services (ambulance, fire, law enforcement) may be needed to provide aid in areas where damage was greater *Other* • Disruptions in land line telephone service throughout an entire region (i.e., central and southern Illinois) • Depending on the seasonal conditions present, more displacements may be expected as those who may not have enough water and food supplies seek alternate shelter due to temperature extremes that make their current housing uninhabitable

If the epicenter of a magnitude 7.6 earthquake were to originate anywhere along the New Madrid seismic zone, the highest projected Modified Mercalli intensity felt in Woodford County would be a VI based on the *Projected Earthquake Intensities Map* prepared by the Missouri State Emergency Management Agency.

An earthquake also has the ability to damage infrastructure and critical facilities such as roads and utilities. In the event of a major earthquake, bridges are expected to experience moderate damage such as cracking in the abutments and subsidence of piers and supports. The structural integrity may be compromised to the degree where safe passage is not possible, resulting in adverse travel times as alternate routes are taken. Some rural families may become isolated where alternate paved routes do not exist. In addition, cracks may form in the pavement of key roadways. **Figure R-5** lists the number of each type of critical infrastructure by jurisdiction.

An earthquake may also down overhead power and communication lines causing power outages and disruptions in communications. Cracks or breaks may form in natural gas pipelines and drinking water and sewage lines resulting in temporary loss of service. In addition, an earthquake could cause cracks to form in the earthen dams located within the County, increasing the likelihood of a dam failure.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on the intensity and location of the event. The risk to buildings, infrastructure and critical facilities is considered to be ***low*** for a light to moderate earthquake that originates within the County or immediate region. This risk is elevated to ***low/medium*** for a strong earthquake originating along seismic zones in the region (i.e., Sandwich Fault Zone or Wabash Valley.)

Are future buildings, infrastructure, and critical facilities vulnerable to earthquakes?

Yes. All future buildings, infrastructure and critical facilities located in Woodford County and the participating jurisdictions are vulnerable to damage from earthquakes. While two of the participating municipalities have building codes in place, these codes do not contain seismic provisions that address structural vulnerability for earthquakes. As a result, there is the potential for future buildings, infrastructure, and critical facilities to face the same vulnerabilities as those of existing buildings, infrastructure, and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from earthquakes?

Since property damage information was either unavailable or none was recorded for the documented earthquakes that impacted Woodford County, there is no way to accurately estimate future potential dollar losses to vulnerable structures. However, according to the Woodford County Clerk the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $769,193,696. Since all of the structures in the planning area are susceptible to earthquake impacts to varying degrees, this total represents the countywide property exposure to earthquake events.

Given Woodford County's proximity to geologic structures and fault zones, both large and small, and the fact that all structures within the County are vulnerable to damage, it is likely that there will be future dollar losses from any earthquake ranging from strong to great. As a result, participating jurisdictions were asked to consider mitigation projects that could provide wide ranging benefits for reducing the impacts or damages associated with earthquakes.

Figure EQ-8
Number of Unreinforced Masonry Buildings Serving as Critical Facilities by Jurisdiction

Participating Jurisdiction	Government[1]	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical[2]	Healthcare Facilities[3]
Woodford County	---	---	---	---	---	---	---	---	---
El Paso	---	---	---	---	2	1	---	---	---
Eureka	---	---	---	---	---	---	1	---	---
Germantown Hills	---	---	---	---	---	---	---	---	---
Minonk	---	---	---	---	---	---	---	---	---
Roanoke	1	---	---	---	2	---	---	2	---

[1] Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.
[2] Medical includes: public health departments, hospitals, urgent/prompt care, and medical clinics.
[3] Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.
--- Indicates jurisdiction does not own/maintain any critical facilities within that category.

3.10 MINE SUBSIDENCE

HAZARD IDENTIFICATION

What is a mine?

A mine is a pit or excavation made in the earth for the purpose of extracting minerals or ore. Mines were developed in Illinois to extract coal, clay, shale, limestone, dolomite, silica sand, tripoli, peat, ganister, lead, zinc, and fluorite.

What is mining?

Mining is the process of extracting minerals or ore from a mine. There are two common mining methods: surface mining and sub-surface (underground) mining. This section focuses on underground mining practices conducted in Woodford County.

Mining has long figured prominently into Illinois' history. According to the National Mining Association, Illinois has the second largest recoverable reserves of coal in the country, behind only Montana. Coal deposits can be found under 86 of the 102 counties in Illinois and underground mining operations have been conducted in at least 72 counties. **Figure MS-1** shows the extent of coal deposits (Pennsylvanian rocks) present in Illinois and the mined-out areas from surface and underground coal mining. In 2018, Illinois ranked fourth in the U.S. in coal production according to the National Mining Association.

The first commercial coal mine in Illinois is thought have started in Jackson County about 1810. Since that time, there have been more than 3,800 underground coal mines and 363 underground metal and industrial mineral mines operated in Illinois. Almost all of these mines have been abandoned over the years. According to ISGS, there were nine active underground coal mines in Illinois in 2021. The U.S. Geological Survey identified nine active metal and industrial mineral underground mines in Illinois in their most recent Mineral Industry Survey.

What methods are used in underground mining?

Much of Illinois coal lies too deep for surface mining and requires extraction using underground mining methods. There are three main methods of underground mining that have been used in Illinois over the years: room-and-pillar, high-extraction retreat and longwall. The following provides a brief description of each.

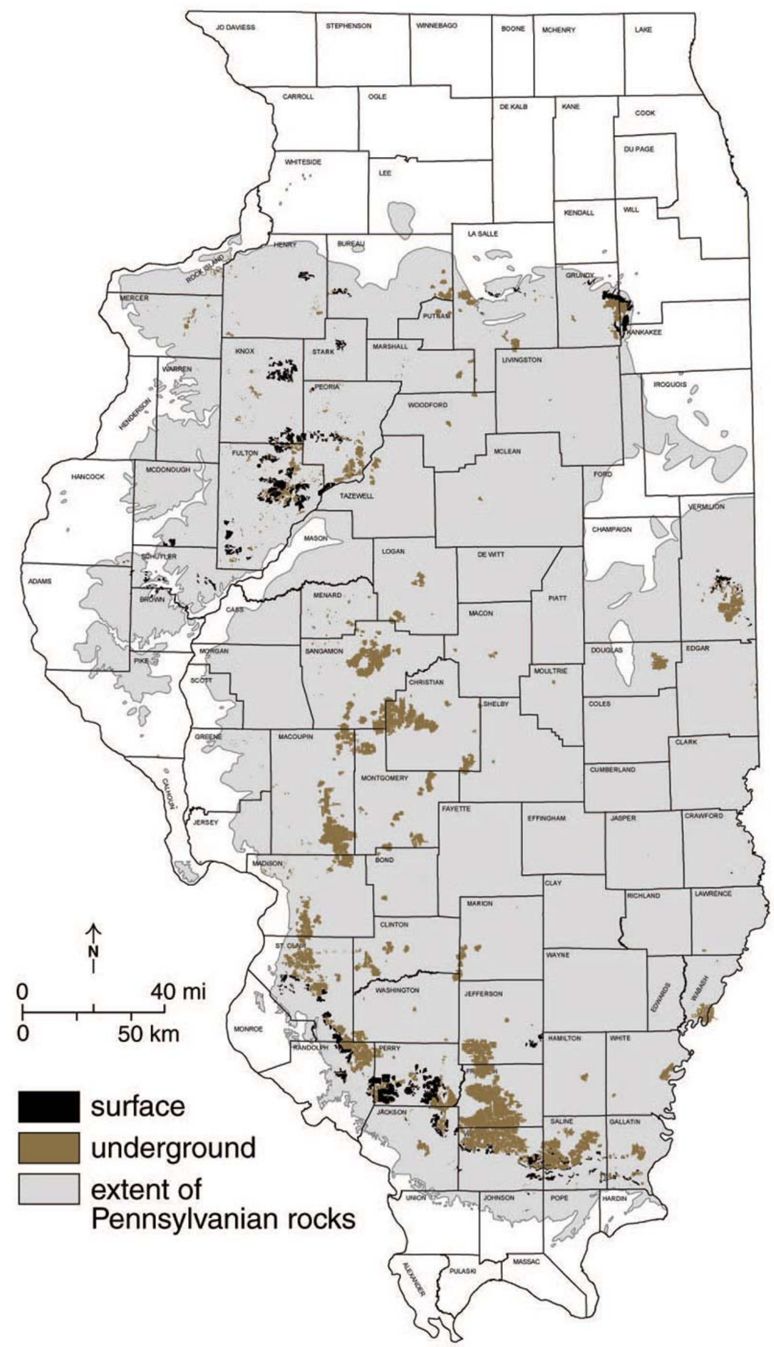
Room-and-Pillar

In the room-and-pillar system, the areas where coal is removed are referred to as "rooms" and the blocks of coal left in place to support the mine's roof and surface are referred to as "pillars". A "panel" refers to a group of rooms isolated from other room groups by surrounding pillars and generally accessed from only one entryway. The room-and-pillar method that was generally used before the early 1900s was characterized by rooms that varied considerably in length, width and sometimes direction, forming irregular mining patterns.

Modern room-and-pillar mines have a regular configuration of production areas (panels) and entryways, and the rooms and entries range from 18 to 24 feet, which is considerably narrower than in older mines. Generally, modern room-and-pillar mining methods recover less than 50% to

60% of the coal in a panel. Most underground mines in Illinois have used a type of room-and-pillar pattern.

Figure MS-1
Coal Mine Deposits & Mined Areas in Illinois



Source: Illinois Department of Natural Resources & Illinois State Geological Survey.

High-Extraction Retreat

High-extraction retreat mining operations first develop a room-and-pillar production area (panel). The miners then systematically begin taking additional coal from the pillars that are left behind. The secondary extraction occurs in a retreating fashion, working from the outer edges of the panel to the main entries. Most of the coal pillars which support the roof are removed shortly after a few rows of rooms and pillars have been formed, leaving only small pillars.

The size and number of pillars left to maintain worker safety varies depending on underground geologic conditions. Roof collapses are controlled by the use of temporary roof supports and planned subsidence of the surface is initiated immediately. Since planned subsidence is part of this operation, this method requires the legal rights to the ground surface. High-extraction retreat methods recover up to 80% to 90% of the coal in a panel. No Illinois mines currently use high-extraction retreat mining, but from the 1940s to 2002, this method was used in the State.

Longwall

Modern longwall mining methods remove coal along a straight working face within defined panels (in this case a solid block of coal), up to 1 to 2 miles long and about 1,000 feet wide. Room-and-pillar methods must be used in conjunction with longwall mining. Like high-extraction retreat, longwall mining begins at the outer edges and works toward the main entries. This fully-mechanized method uses a rotating cutting drum or shearer that works back and forth across the coal face. The coal falls onto a conveyer below the cutting machine and is transported out of the mine.

All of this is performed under a canopy of steel supports that sustains the weight of the roof along the mining surface. As the coal is mined the steel supports advance. The mine roof immediately collapses behind the moving supports, causing 4 to 6 feet of maximum settling of the ground surface over the panel. Since planned subsidence is part of this operation, this method requires the legal rights to the ground surface. Longwall mining methods recover 100% of the coal in a panel.

What is mine subsidence?

Mine subsidence is the sinking or shifting of the ground surface resulting from the collapse of an underground mine. Subsidence is possible in any area where minerals or ore have been undermined. Most of the mine subsidence in Illinois is related to coal mining, which represents the largest volume extracted and area undermined of any solid commodity in the State.

Mine subsidence can be planned, as with modern high-extraction retreat and longwall mining techniques, or it can occur as the result of age and instability. For many years, underground mining was not tightly regulated and not much thought was given to the long-term stability of the mines since most of the land over the mine was sparsely populated. Once mining operations were complete, the mine was abandoned. As cities and towns grew up around the mines, many urban and residential areas were built over or near undermined areas.

ISGS estimates that approximately 333,000 housing units are located in close proximity to underground mines and may potentially be exposed to mine subsidence while approximately 201,000 acres of urban and developed land overlie or are immediately adjacent to underground mines. Most experts agree that room-and-pillar mines will eventually experience some degree of subsidence, but currently there is no way to know when or exactly where it will occur.

What types of mine subsidence can occur in Illinois?

In Illinois mine subsidence typically takes one of two forms: pit subsidence or sag (trough) subsidence. The following provides a brief description of each.

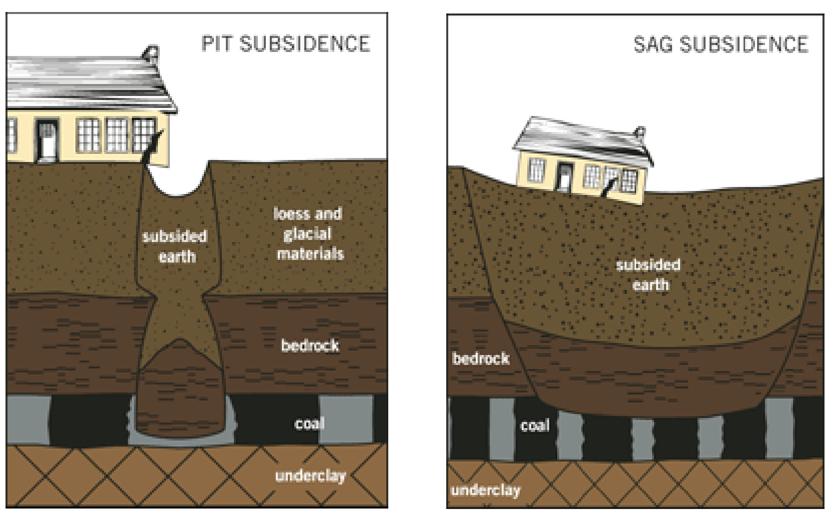
Pit Subsidence

Pit subsidence generally occurs when the roof of a shallow mine (less than 100 feet deep) collapses and forms a bell-shaped hole at the ground's surface, 6 to 8 feet deep and 2 to 40 feet across. **Figure MS-2** provides an illustration of pit subsidence. This type of subsidence forms very quickly causing sudden and swift ground movement. While the probability of a structure being damaged by pit subsidence is generally low since most pits are relatively small, structural damage can occur if pit subsidence develops under the corner of a building, the support posts of a foundation or another critical spot.

Sag (Trough) Subsidence

Sag or trough subsidence generally forms a gentle depression in the ground's surface that can spread over an entire mine panel and affect several acres of land. A major sag can develop suddenly within a few hours or days, or gradually over years. This type of subsidence may originate over places in the mine where pillars have disintegrated and collapsed or where pillars are being pushed into the relatively soft underclay that forms the floor of most mines. **Figure MS-2** illustrates sag subsidence. This is the most common type of mine subsidence and can develop over mines of any depth. Given the relatively large area covered by sag subsidence, buildings, roads, driveways, sidewalks, sewer and water pipes and other utilities may experience damage.

Figure MS-2
Types of Mine Subsidence



Source: Illinois Mine Subsidence Insurance Fund.

What is the Illinois Mine Subsidence Insurance Fund?

Prior to 1979, traditional property owner's insurance did not cover mine subsidence nor was mine subsidence coverage available for purchase in Illinois. Since many mining companies in Illinois ceased operations long before mine subsidence occurred and insurance did not cover such damage, property owner who experienced subsidence damage had no recourse. Several high-profile incidents in the Metro East St. Louis area ultimately led to the passage of the Mine Subsidence Insurance Act in 1979. The Statute required insurers to make mine subsidence insurance available to Illinois homeowners and established the Illinois Mine Subsidence Insurance Fund (IMSIF). Later amendments to the Act gave the Fund the authority, with approval from the Director of Insurance, to set the maximum limits for mine subsidence coverage.

The IMSIF is a taxable enterprise created by Statute to operate as a private solution to a public problem. The purpose of the Fund is to assure financial resources are available to owners of property damaged by mine subsidence. The Fund fills a gap in the insurance market for the benefit of Illinois property owners at risk of experiencing mine subsidence damage.

All insurance companies authorized to write basic property insurance in Illinois are required to enter into a Reinsurance Agreement with the Fund and offer mine subsidence insurance coverage. Mine subsidence insurance covers damage caused by underground mining of any solid mineral resource. In the 34 counties where underground mining has been most prevalent, the Statute requires mine subsidence coverage be automatically included in both residential and commercial property policies. Coverage may be rejected in writing by the insured. **Figure MS-3** identifies the 34 counties where mine subsidence insurance is automatically included in property insurance policies.

In addition to providing reinsurance to insurers, the Fund also is responsible for conducting geotechnical investigations to determine if mine subsidence caused the damage, establishing rates and rating schedules, providing underwriting guidance to insurers, supporting and sponsoring mine subsidence related research and initiatives consistent with the public interest and educating the public about mine subsidence issues.

HAZARD PROFILE

The following details the location of underground mines, identifies past occurrences of mine subsidence, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

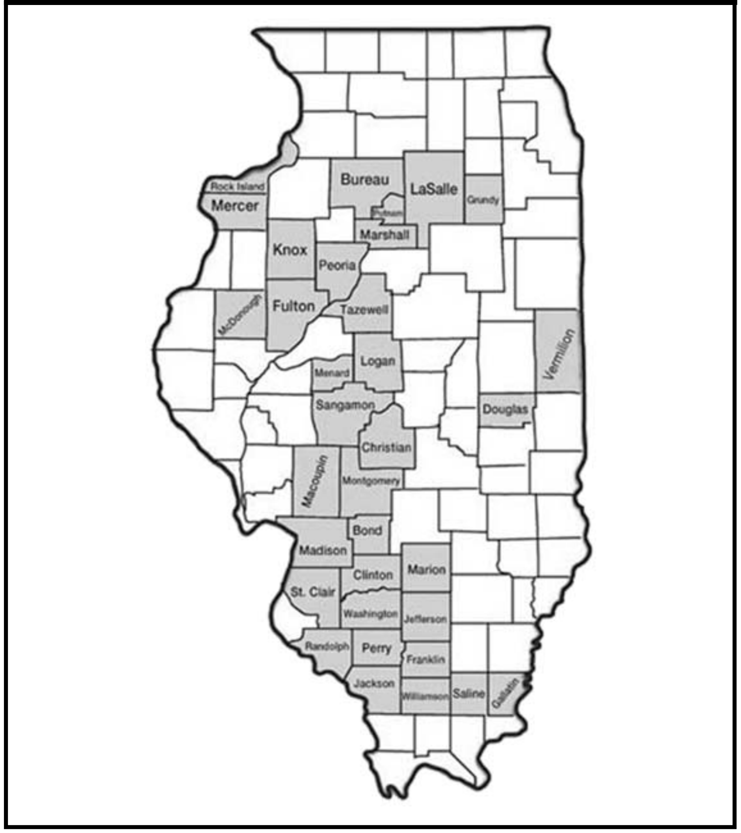
Are there any underground mines located in the County?

Yes. According to the Illinois State Geological Survey's Directory of Coal Mines for Woodford County, there are four documented underground mines located in the County. A copy of the Directory for Woodford County is included in **Appendix L.** **Figure MS-4** illustrates the locations of these mines.

Mine Subsidence Fast Facts – Occurrences

Number of Underground Mines Located within the County: ***4***
Number of Mine Subsidence Events Reported ***None***
IMSIF Confirmed Claims Reported (1980 – 2022): ***None***
Probability of Future Mine Subsidence Events: ***Low to Medium***

Figure MS-3
Counties Required to include Mine Subsidence Coverage in Property Insurance



Source: Illinois Mine Subsidence Insurance Fund.

When has mine subsidence occurred previously? What is the extent of these previous occurrences?

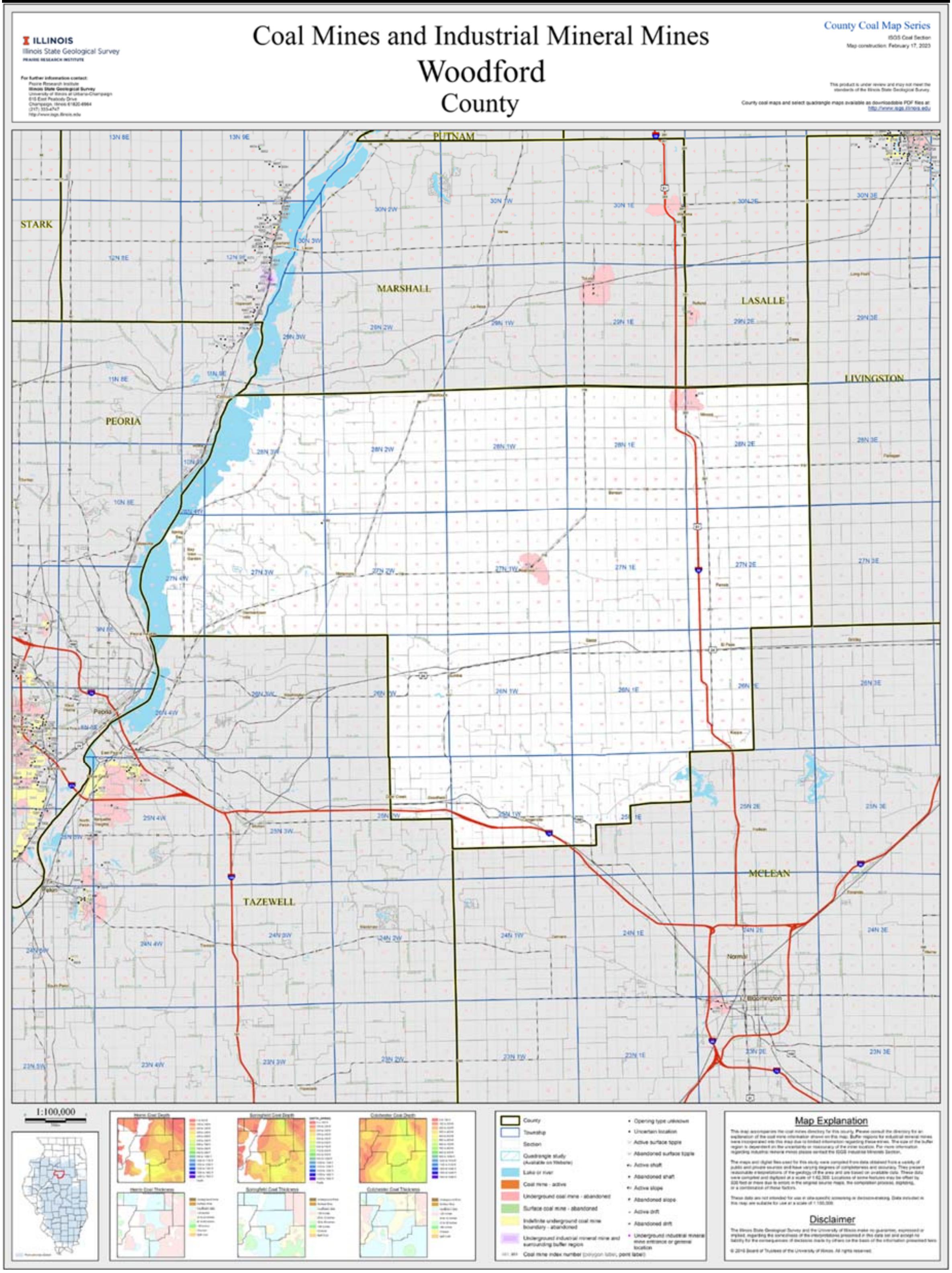
No comprehensive, publicly-accessible database detailing mine subsidence occurrences currently exists in Illinois. A review of local news articles and discussions with Committee members did not identify any known recorded mine subsidence events in Woodford County. According to the Illinois Mine Subsidence Insurance Fund (IMSIF), there were no confirmed mine subsidence claims submitted to the IMSIF for Woodford County between 1980 and 2022

What locations are affected by mine subsidence?

According to the Illinois State Geological Survey's (ISGS) *Proximity of Underground Mines to Urban and Developed Lands in Illinois* study published in 2009, there are:

- ❖ Approximately 2,255 acres (0.7% of the land area) and 618 housing units (4.6% of the total housing units) in Woodford County are located in Zone 1, land over or adjacent to mapped mines.
- ❖ An additional 1,395 acres (0.4% of the land area) and 288 housing units (2.2% of the total housing units) in the County are located in Zone 2, land surrounding Zone 1 that could be affected if the mine boundaries are inaccurate or uncertain.

Figure MS-4
Underground Mines Located Woodford County



Source: Illinois State Geological Survey.

Figure MS-5 identifies the location of the Zone 1 and 2 areas in Woodford County. Based on this mapping, mine subsidence has the potential to impact parts of unincorporated Woodford County as well as Minonk and Roanoke.

The extent of future potential mine subsidence events is a function of where current development is located relative to areas of past and present underground mining. According to the IMSIF, most experts agree that room and pillar mines will eventually experience some degree of collapse, but currently there is no way to know when or exactly where mine subsidence will occur.

What is the probability of future mine subsidence events occurring based on historical data?

There are many variables that must be considered when calculating the probability of future mine subsidence events including whether subsidence has occurred previously in an area, the size, depth and age of the mine, the magnitude or extent of the failure as well as soil and weather conditions. Given the unpredictability of mine subsidence events, the variables involved and the lack of data available for Woodford County, it is difficult to specifically establish the probability of future mine subsidence events without extensive research.

However, given the mining methods used, the age and location of the mines and the number of housing units located over or adjacent to undermined areas in the County, the probability that unincorporated Woodford County, Minonk and Roanoke will experience future mine subsidence events is estimated to be ***low*** to ***medium*** and ***unlikely*** for the remaining participating jurisdictions and most of unincorporated Woodford County. For the purposes of this analysis "unlikely" is defined as having a less than 2% chance of occurring in any given year, "low" is defined as having a less than a 10% chance of occurring in any given year and "medium" is defined as having up to a 50% chance of occurring in any given year.

What is the probability of future mine subsidence events occurring based on modeled future conditions?

No data was available to accurately predict the impacts of future conditions on the frequency and severity of mine subsidence events in this region of the U.S.

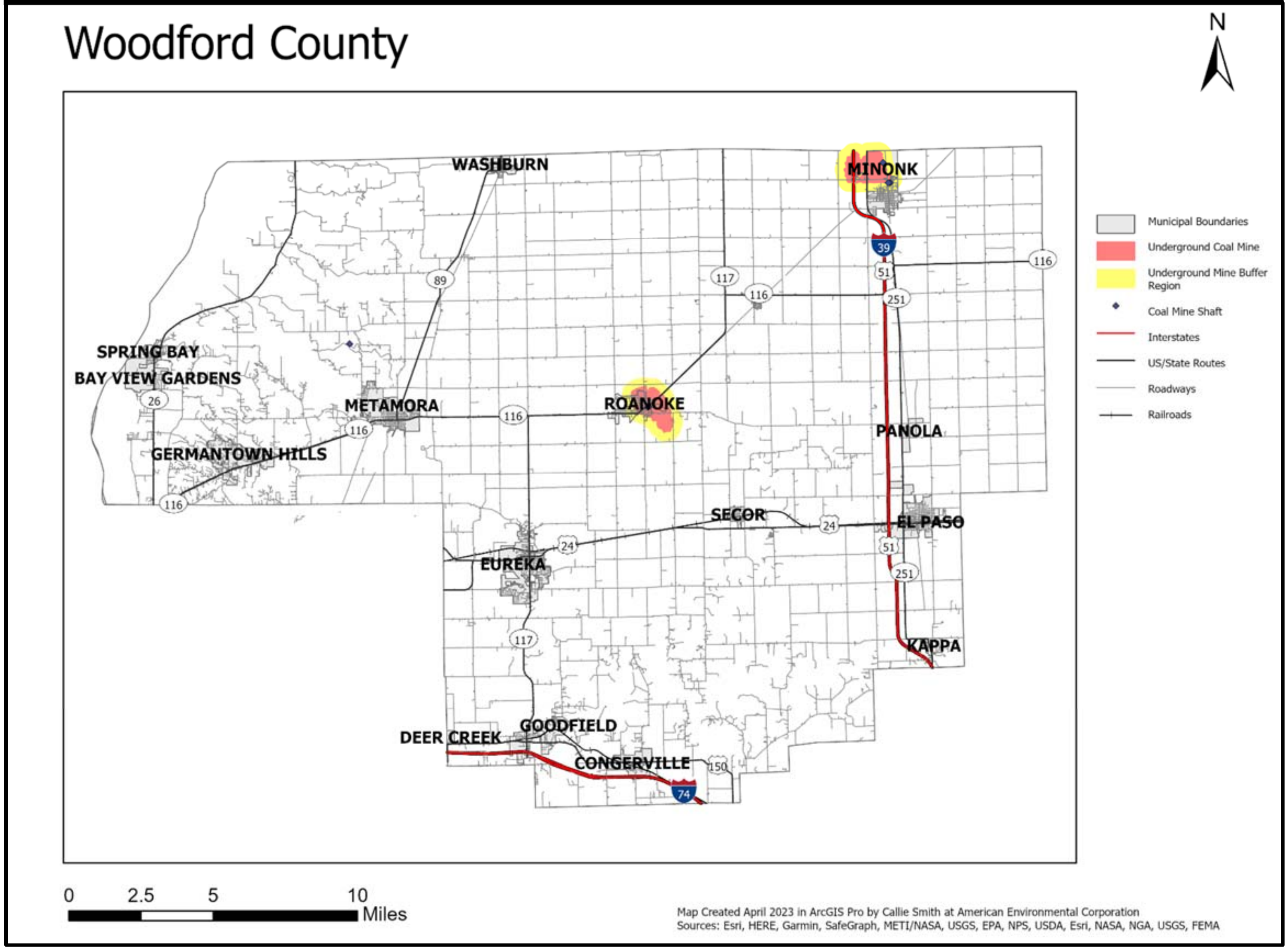
HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from mine subsidence.

Are the participating jurisdictions vulnerable to mine subsidence?

Yes. Minonk, Roanoke and parts of unincorporated Woodford County are vulnerable to mine subsidence. None of the other participating jurisdictions or the remainder of the County are considered vulnerable. According to ISGS, approximately 2,255 acres (0.7% of the land area) of Woodford County are over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 1,395 acres (0.4% of the land area) could be affected by mine subsidence if the mine boundaries are inaccurate or uncertain.

Figure MS-5
Areas Potentially Impacted by Mine Subsidence in Woodford County



Do any of the participating jurisdictions consider mine subsidence to be among their community's greatest vulnerabilities?

No. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, none of the participating jurisdictions considered mine subsidence to be among their community's greatest vulnerability.

What impacts resulted from the recorded mine subsidence events?

Since there have been no *recorded* mine subsidence events in Woodford County, there are no recorded impacts, including injuries or fatalities, to report. According to the IMSIF no confirmed mine subsidence claims submitted for Woodford County between 1980 and 2022, thus no claims were reimbursed. No additional information was available regarding the mine subsidence events that led to the claim.

Mine Subsidence Fast Facts – Impacts/Risk

Mine Subsidence Impacts:

- ❖ IMSIF Claims Reimbursed (1980 – 2022): ***n/a***
- ❖ Total Property Damage: ***n/a***
- ❖ Total Crop Damage: ***n/a***
- ❖ Injuries: ***n/a***
- ❖ Fatalities: ***n/a***

Mine Subsidence Risk/Vulnerability:

- ❖ Public Health & Safety – Zones 1 & 2: ***Low***
- ❖ Public Health & Safety – Areas Outside Zones 1 & 2: ***Low***
- ❖ Buildings/Infrastructure/Critical Facilities – Zones 1 & 2: ***Medium to Low***
- ❖ Buildings/Infrastructure/Critical Facilities – Areas Outside

What other impacts can result from mine subsidence events?

The initial damage to a property from mine subsidence may appear suddenly or occur gradually over many years. Damage to structures can include:

- ❖ cracked, broken or damaged foundations
- ❖ cracks in the basement walls, ceilings, garage floors, driveways, sidewalks, or roadways
- ❖ jammed or broken doors and windows
- ❖ unlevel or tilted walls or floors
- ❖ doors that swing open or closed
- ❖ chimney, porch, or steps that separate from the rest of the structure
- ❖ in extreme cases, ruptured water, sewer, or gas lines

A structure need not lie directly over a mine to be affected by mine subsidence. It is extremely difficult to accurately gauge how far a property must be from a mine to ensure that it will be unaffected by mine subsidence. Each subsidence is unique and influenced by multiple factors.

What is the level of vulnerability to public health and safety from mine subsidence?

In terms of the risk or vulnerability to public health and safety from a mine subsidence event, there are several factors that must be taken into consideration including the age, size, and depth of the mine; the mining method employed; the extent of the development and infrastructure in the vicinity of the mine; and soil and weather conditions. When all of the factors are taken into consideration, the overall risk to public health and safety posed by a mine subsidence event in Woodford County is considered to be ***low*** for both Zones 1 and 2 and all other portions of the County.

Are existing buildings, infrastructure, and critical facilities vulnerable to mine subsidence?

Yes. Buildings, infrastructure, and critical facilities located within Zones 1 and 2 are vulnerable to mine subsidence. According to ISGS, approximately 618 housing units (4.6% of the total housing units in the County) are located over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 288 housing units (0.4% of the total housing units) could be affected by mine subsidence if the mine boundaries are inaccurate or uncertain. **Figure MS-6** identifies the number of critical facilities located within Zones 1 and 2 for the County, Minonk, and Roanoke for select categories.

In addition to impacting structures, mine subsidence can damage roads, bridges, and utilities. Roadways, culverts, and bridges can be weakened by mine subsidence and even destroyed if the subsidence occurs directly underneath of them. Water, sewer, power, and communication lines, both above and below ground, are also vulnerable to mine subsidence. Depending on the location of the subsidence, water, sewer, and power lines can experience ruptures causing major disruptions to vital services.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the age, size, and depth of the mine; the mining method employed; the extent of the development and infrastructure in the vicinity of the mine; and soil and weather conditions. When these factors are taken into consideration, the overall risk posed by mine subsidence to vulnerability to buildings, infrastructure and critical facilities in Woodford County is considered to be ***medium to low*** for Zone 1 and ***low*** for Zone 2 and all other portions of the County.

Are future buildings, infrastructure, and critical facilities vulnerable to mine subsidence?

Yes. None of the participating jurisdictions over undermined areas, including the County, have specific regulations for building practices over undermined areas that would likely lessen the vulnerability of new buildings, critical facilities, and infrastructure to damage from mine subsidence. As a result, future buildings, infrastructure, and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from mine subsidence?

Unlike other hazards, there are no standard loss estimation models or methodologies for mine subsidence. Given the lack of recorded events and unpredictability of mine subsidence, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structure from mine subsidence. Still, those housing units that reside in Zone 1 have the potential to experience future dollar losses from mine subsidence.

Figure MS-6
Critical Facilities Located in Zones 1 and 2 by Jurisdiction

Participating Jurisdiction	Government[1]	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical[2]	Healthcare Facilities[3]
Woodford County	---	---	---	---	---	---	---	---	---
Minonk	---	---	---	---	---	---	---	---	---
Roanoke	---	1	1	---	2	---	---	---	---

[1] Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.
[2] Medical includes: public health departments, hospitals, urgent/prompt care and medical clinics.
[3] Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.
--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

3.11 Dam Failures

Hazard Identification

What is the definition of a dam?

A dam is an artificial barrier constructed across a stream channel or a man-made basin for the purpose of storing, controlling or diverting water. Dams typically are constructed of earth, rock, concrete or mine tailings. The area directly behind the dam where water is impounded or stored is referred to as a reservoir.

According to the U.S. Army Corps of Engineers' National Inventory of Dams (NID), there are approximately 91,785 dams in the U.S. and Puerto Rico, with 1,639 dams located in Illinois. (The NID is maintained by the U.S. Army Corps of Engineers and is updated approximately every two years.) Of the 1,639 dams in Illinois, approximately 93.5% are constructed of earth.

What is the definition of a dam failure?

A dam failure is the partial or total collapse, breach or other failure of a dam that causes flooding downstream. In the event of a dam failure, the people, property and infrastructure downstream could be subject to devastating damages. The potential severity of a full or partial dam failure is influenced by two factors:

- the capacity of the reservoir and
- the density, type and value of development/infrastructure located downstream.

There are two categories of dam failures, "flood" or "rainy day" failures and "sunny day" failures. A "flood" or "rainy day" failure usually results when excess precipitation and runoff cause overtopping or a buildup of pressure behind a dam which leads to a breach. Even normal storm events can lead to "flood" failures if debris plugs the water outlets. Given the conditions that lead to a "flood" failure (i.e., rainfall over a period of hours or days), there is usually a sufficient amount of time to warn and evacuate residents downstream.

Unlike a "flood" failure, there is generally no warning associated with a "sunny day" failure. A "sunny day" failure is usually the result of improper or poor dam maintenance, internal erosion, vandalism or an earthquake. This unexpected failure can be catastrophic because it may not allow enough time to warn and evacuate residents downstream.

No one knows precisely how many dam failures have occurred in the U.S.; however, it's estimated that hundreds have taken place over the last century. Some of the worst failures have caused catastrophic property and environmental damage and have taken hundreds of lives. The worst dam failure in the last 50 years occurred on February 26, 1972 in Buffalo Creek, West Virginia. A tailings dam owned by the Buffalo Mining Company failed, taking 125 lives, injuring 1,100 individuals, destroying approximately 550 homes and causing property damage in excess of $50 million (approximately $298.6 million in 2017 based on the Bureau of Labor Statistics Consumer Price Index Inflation Calculator.)

Dam failures have been documented in every state, including Illinois. According to the Dam Incident Database compiled by the National Performance of Dams Program, there have been 10 reported dam failures with uncontrolled releases of the reservoir in Illinois since 1950.

What causes a dam failure?

Dam failures can result from one or more of the following:

- ***prolonged periods of rainfall and flooding*** (the cause of most failures);
- ***inadequate spillway capacity*** resulting in excess flow overtopping the dam;
- ***internal erosion*** caused by embankment or foundation leakage;
- ***improper maintenance*** (including failure to remove trees, repair internal seepage problems, maintain gates, valves and other operational components, etc.);
- ***improper design*** (including use of improper construction materials and practices);
- ***negligent operation*** (including failure to remove or open gates or valves during high flow periods);
- ***failure of an upstream dam on the same waterway***;
- ***landslides into reservoirs*** which cause surges that result in overtopping of the dam;
- ***high winds*** which can cause significant wave action and result in substantial erosion; and
- ***earthquakes*** which can cause longitudinal cracks at the tops of embankments that can weaken entire structures.

How are dams classified?

Each dam listed on the National Inventory of Dams is assigned a hazard potential classification rating per the "Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams." The classification system is based on the potential for loss of life and damage to property in the event of a dam failure. There are three classifications: High, Significant and Low. **Figure DF-1** provides a brief description of each hazard potential classification. It is important to note that the hazard potential classification assigned is not an indicator of the adequacy of the dam or its physical integrity and in no way reflects the current condition of the dam.

Figure DF-1
Dam Hazard Classification System

Hazard Potential Classification	Description
High	Those dams where failure or mis-operation result in probable loss of human life, regardless of the magnitude of other losses. The probable loss of human life is defined to signify one or more lives lost.
Significant	Those dams where failure or mis-operation result in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities or can impact other concerns. Significant hazard potential classification dams are often located in predominately rural or agricultural areas but could be located in areas with population and significant infrastructure.
Low	Those dams where failure or mis-operation results in no probable loss of human life and low economic and/or or environmental losses. Losses are principally limited to the dam owner's property.

Sources: Federal Emergency Management Agency
U.S. Army Corps of Engineers

HAZARD PROFILE

According to the USACE National Inventory of Dams, there are eight classified dams located in Woodford County. Of those eight dams, one has a hazard potential classification of "High", one has a hazard potential classification of "Significant" and the remaining six dams have a hazard potential classification of "Low". These do not have reservoirs with immense storage capacities and are not located in densely populated areas. Due to the limited impacts on the population, land use and infrastructure associated with a majority of the classified dams, only those dams that have "High" or "Significant" hazard potential classification will be analyzed as part of this Plan update.

The following details the location of "High" and "Significant" hazard classified dams, identifies past occurrences of dam failures, details the severity or extent of future potential failures (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Dam Failure Fast Facts – Occurrences

Number of "High" and "Significant" Hazard Classified Dams Located in the County: ***2***

Number of "High" and "Significant" Hazard Dams owned by Participating Jurisdictions: ***1***

Number of Dam Failures Reported: ***None***

Probability of Future Dam Failure Events: ***Low***

Do any of the participating jurisdictions own "High" or "Significant" hazard classified dams?

Yes. The City of Eureka owns the Eureka Lake Dam. **Figure DF-2** provides a brief description of this dam.

Are there any other publicly or privately-owned "High" or "Significant" hazard dams within the County?

Yes. The City of Bloomington owns the Evergreen Lake Dam on Six Mile Creek. **Figure DF-2** provides a brief description of this dam. There are no other "High" or "Significant" hazard publicly or privately-owned dams within the County.

When have dam failures occurred previously? What is the extent of these previous dam failures?

According to data from Stanford University's National Performance of Dams Incident Database and discussions with Committee members, there are no known recorded dam failures associated with the classified dam in Woodford County.

What is the extent of future potential dam failures?

An Emergency Action Plan (EAP) defining the extent or magnitude of a potential dam failure (water depth, area of impact) was developed for Evergreen Lake Dam and made available to the Consultant. While an EAP has not been developed for the Eureka Dam, the Operation and Maintenance Plan for this dam was made available to the Consultant. As a result, a data deficiency exists in terms of defining the extent or magnitude of future potential dam failures.

Figure DF-3 details the estimated inundation time based on distance downstream for a Sunny Day breach and Probably Maximum Flood (PMF) storm breach. Based on the analysis, none of the roads/bridges identified will be overtopped by a Sunny Day breach while all but four of the identified roads/bridges will be overtopped *prior* to a PMF storm breach. There are four roads/bridges in the PMF storm breach scenario that will not be overtopped by a dam breach.

Figure DF-2
Select Classified Dams Located in Woodford County

Dam Name	Hazard Classification	Associated Waterway	Owner	Type	Primary Purpose	Completion Year	Height (feet)	Length (feet)	Maximum Storage (acre-feet)	Impoundment Surface Area (acres)	Drainage Area (square miles)	Emergency Action Plan
Publicly-Owned												
Eureka Lake Dam	Significant	Tributary of Walnut Creek	City of Bloomington	Earth	Water Supply	1942	33	536	404	30	3.2	No
Evergreen Lake Dam	High	Six Mile Creek	City of Eureka	Earth	Recreation, Water Supply	1971	69	1,780	22,875	n/a	n/a	Yes

Sources: Stanford University, National Performance of Dams Program, NPDP Dams Database.
U.S. Army Corps of Engineers, National Inventory of Dams Interactive Report.

What locations are affected by dam failure?

Figure DF-4 shows the locations of the classified dams in Woodford County. Dam failures have the potential to impact Lake Eureka Lower Park and developed areas along Walnut Creek in Eureka and wooded agricultural land along the Mackinaw River in unincorporated Woodford.

What is the probability of future dam failure events occurring based on historical data?

Since neither of the dams have experienced a dam failure, it is difficult to specifically establish the probability of a future failure. However, based on the capacity of the reservoirs and the scope and type of development and infrastructure located downstream, the probability is estimated to be ***low***. For the purposes of this analysis "low" is defined as having a less than 10% chance of occurring in any given year.

What is the probability of future dam failure events occurring based on modeled future conditions?

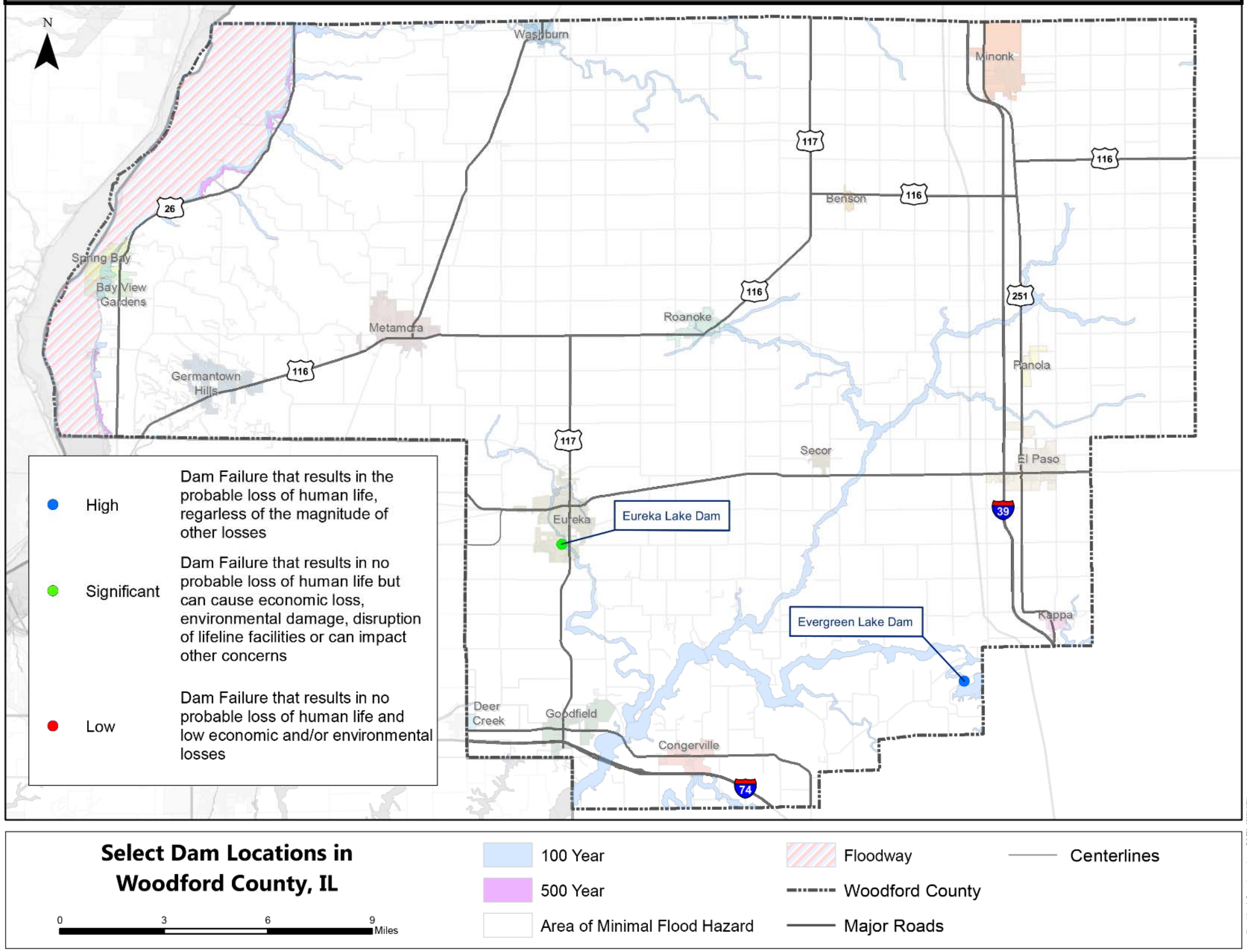
Dam failures are caused by a combination of multiple factors, including construction practices, soil permeability and conditions, wave erosion, precipitation, and most importantly maintenance. Although there are not yet sufficient studies exploring the possible relationship between dam failures and trends in temperature and precipitation changes in the U.S., it can be reasonably inferred that increases in heavy rain events could potentially increase the probability of dam failures. Since future condition forecasts suggest an increase in total annual precipitation in Illinois as discussed in Section 3.1, it is possible that one of the factors that contributes to dam failures will become more frequent. It is impossible to say how much of an impact, if any, this will have on any given dam, but this increased level of uncertainty should be taken into account in planning for the future. This analysis should be revisited in subsequent planning efforts as more data becomes available.

Figure DF-3
Evergreen Lake Dam – Water Depth and Speed of Onset Estimates for Sunny Day & Probable Maximum Flood Storm Breaches

Location	County	Reach	Sunny Day		Probable Maximum Flood (PMF) Storm		
			Speed of Onset (hr:mm)	Maximum Depth Over Bridge (Feet)	Speed of Onset (hr:mm)	Time of Initial Overtopping from Start of Breach (hr:mm)	Maximum Depth Over Bridge (Feet)
Dixon Ford Road	Woodford	Mackinaw River	0:15	-7.5	0:15	-0:35	9.1
County Highway 9	Woodford	Mackinaw River	0:45	-0.7	0:30	-0:40	17.7
I-39	McLean	Mackinaw River	0:45	-34.6	0:30	n/a	-8.5
IL-251	McLean	Mackinaw River	0:45	-32.1	0:30	n/a	-6.0
Kappa Road	Woodford	Wolf Creek	0:45	-22.6	0:30	-7:30	3.5
Railroad	McLean	Mackinaw River	0:45	-34.6	0:30	n/a	-8.5
N 1725 East Road	McLean	Mackinaw River	2:15	-7.0	1:00	-1:35	20.8
Kappa Road	McLean	Mackinaw River	2:15	-9.7	1:00	-0:10	18.1
County Highway 8	Woodford	Mackinaw River	2:30	-5.1	1:30	-1:05	16.3
Schuman Road	Woodford	Panther Creek	2:30	-18.5	1:30	-4:50	3.0
CR 2000 East	Woodford	Panther Creek	2:30	-12.5	1:30	-1:55	9.0
CR 800 North	Woodford	Panther Creek	2:30	-15.5	1:30	-3:05	6.0
US 150	Woodford	Mackinaw River	3:45	-4.0	2:00	-1:10	20.2
Railroad	Woodford	Mackinaw River	3:45	-40.7	2:00	n/a	-16.5
I-74	Woodford	Mackinaw River	4:15	-9.7	2:15	-1:30	15.9

Positive Depth = Flow over Road/Bridget
Negative Depth = Freeboard (No Overtopping)
Negative Time = Overtopping occurred prior to Dam Breach
= Overtopped

Figure DF-4
Location of Select Classified Dams in Woodford County



HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from dam failures.

Are the participating jurisdictions vulnerable to dam failures?

Yes. Eureka, and unincorporated areas of Woodford are vulnerable to the dangers presented by dam failures. While these areas are vulnerable, most residents would not be impacted by a dam failure. None of the rest of the participating jurisdictions or the remainder of the County are considered vulnerable.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of dam failures?

No. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, none of the participating jurisdictions considered specific assets within their jurisdiction vulnerable to dam failures.

What impacts resulted from the recorded dam failures?

Since there have been no *recorded* dam failures associated with the classified dams in Woodford County, there are no recorded impacts to report.

What other impacts can result from dam failures?

The impacts from a dam failure are similar to those of a flood. There is the potential for injuries, loss of life, property damage, and crop damage. Depending on the type of dam failure, there may be little, if any warning that an event is about to occur, similar to flash flooding. As a result, one of the primary threats to individuals is from drowning. Motorists who choose to drive over flooded roadways run the risk of having their vehicles swept off the road and downstream. Flooding of roadways is also a major concern for emergency response personnel who would have to find alternative routes around any section of road that becomes flooded due to a dam failure.

Dam Failure Fast Facts – Risk

Dam Failure Risk/Vulnerability:
- Public Health & Safety: "High" & "Significant" – ***Low to Medium***
- Buildings/Infrastructure/Critical Facilities: "High" & "Significant" Hazard Classification Dams – ***Low to Medium***

In addition to concerns about injuries and death, the water released by a dam failure poses the same biological and chemical risks to public health as floodwaters. The flooding that results from a dam failure has the potential to force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto roads and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly, and those with specific allergies.

Flooding from dam failures also can cause chemical contaminants such as gasoline and oil to enter floodwaters if underground storage tanks or pipelines crack and begin leaking during a dam failure event. Depending on the time of year, the water released by a dam failure also may carry away agricultural chemicals that have been applied to farm fields and cause damage to or loss of crops.

What is the level of vulnerability to public health and safety from dam failures?

In terms of the risk or vulnerability to public health and safety from a dam failure, there are several factors that must be taken into consideration including the severity of the event, the capacity of the reservoir and the extent and type of development and infrastructure located downstream. When these factors are taken into consideration, the overall risk to public health and safety posed by a dam failure at the "High" and "Significant" hazard dams studied in Woodford County is considered to be ***low to medium***.

Are existing buildings, infrastructure, and critical facilities vulnerable to dam failures?

Yes. **Figure DF-5**, located at the end of this section, provides a ***rough estimate*** of the buildings, infrastructure, and critical facilities vulnerable to a dam failure from "High" and "Significant" hazard classified dams in Woodford County.

The Tri-County Regional Planning Commission prepared inundation mapping based on the Emergency Action Plan for Evergreen Lake Dam. This mapping identifies the number of residential structures, outbuildings and roadways that would be impacted by a dam failure based on two separate scenarios: the Sunny Day and Probable Maximum Flood (PMF) storm. The PMF is a rainy-day failure scenario that refers to the flood magnitude that may be expected from the worst combination of meteorological and hydrologic conditions for a watershed. A Sunny Day failure, as discussed previously, results from a structural breach at a time when the reservoir is near normal pool level with less water entering the reservoir and therefore a smaller amount of water is being released at a lesser velocity than would occur during a PMF. **Figure DF-6**, located at the end of this section, illustrates the area potentially affected by scenario while **Figure DF-7** provides a breakdown of the buildings and infrastructure vulnerable to a dam failure based on each scenario.

Figure DF-7
Evergreen Lake Dam – Buildings and Infrastructure Vulnerable to a Dam Failure

Scenario	Number of Impacted Buildings/Infrastructure			Residential Structures within 100 feet
	Residential	Garages/ Outbuildings	Highways/ Roadways	
Probable Maximum Flood (PMF)	49	103	8	57
Sunny Day	2	3	0	0

While detailed information was not available for the Eureka Lake Dam, the Consultant conducted a visual inspection of the areas surrounding the Dam in order to provide an estimate of the number of potentially-impacted buildings, infrastructure, and critical facilities that are vulnerable to a dam failure.

Depending on whether there is a full or partial dam failure, all of the vulnerable buildings, infrastructure, and critical facilities may be inundated by water and structural damage may result.

Because some reservoirs are not immense in size, the damage sustained from dam failure flooding may not be to the structure, but to the contents of the buildings or nearby infrastructure and critical facilities.

In addition to impacting structures, a dam failure can damage roads and utilities. Roadways, culverts, and bridges can be weakened by dam failure floodwaters and may collapse under the weight of a vehicle. Power and communication lines, both above and below ground, are also vulnerable to dam failure flooding. Depending on their location and the velocity of the water as it escapes the dam, power poles may be snapped causing disruptions to power and communication. Water may also get into any buried lines causing damage and disruptions.

As with public health and safety, the risk or vulnerability to buildings, infrastructure, and critical facilities is dependent on several factors including the severity of the event, the capacity of the reservoir, and the extent and type of development and infrastructure located downstream. When these factors are taken into consideration, the overall risk to existing buildings, infrastructure, and critical facilities posed by a dam failure in Woodford County is considered to be ***low*** to ***medium*** for the "High" and "Significant" hazard dams.

Are future buildings, infrastructure, and critical facilities vulnerable to dam failures?

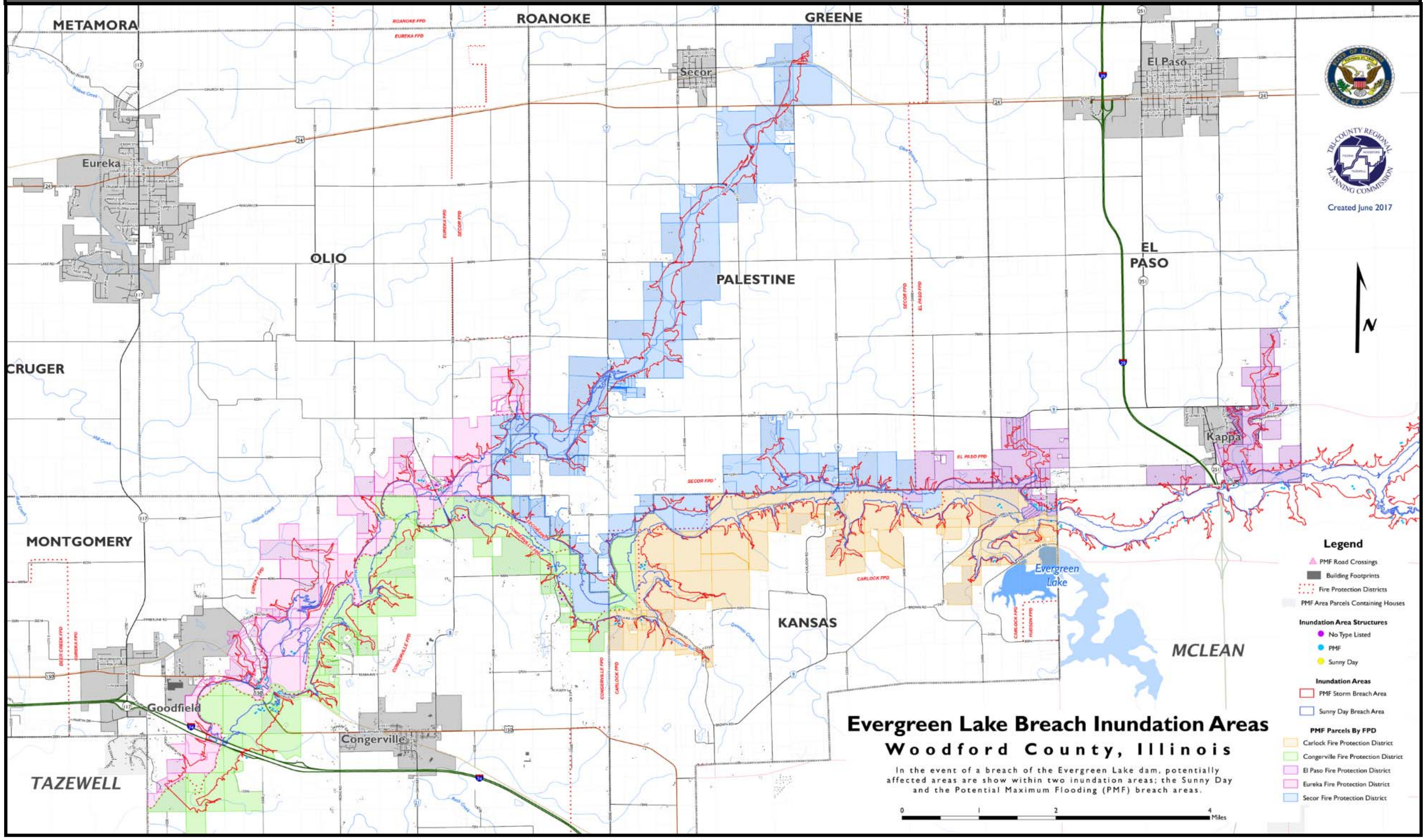
Yes. Any future buildings, infrastructure, and critical facilities located within the flood path of a classified dam are vulnerable to damage from a dam failure. As a result, future buildings, infrastructure, and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure, and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from dam failures?

Unlike other hazards, there are no standard loss estimation models or methodologies for dam failures. Given that there have been no recorded dam failures in Woodford County, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structure from a dam failure.

Figure DF-5 Buildings, Infrastructure & Critical Facilities Vulnerable to a Dam Failure from Select Classified Dams					
Dam Name	**Location**	**Number of Vulnerable Buildings/Infrastructure**			
		Residential	**Commercial**	**Infrastructure**	**Critical Facilities**
Eureka Lake Dam	Eureka (Lake Road/ Milt & Lynn Hinnen Way)	2-6	2-5	- Milt & Lynn Hinnen Way - Lake Road - S. Main St./IL Rte. 117	- :Lake Eureka Lower Park - Eureka Wastewater Treatment Plant
Evergreen Lake Dam	Unincorp. Woodford County (southeast corner of County CR 8)	2 – 49	---	---	---

Figure DF-6
Evergreen Lake Dam Failure Inundation Map – Woodford County



3.12 Man-Made Hazards

While the focus of this Plan update is on natural hazards, an ***overview of selected man-made hazards*** has been included. The Committee recognizes that man-made hazards can also pose risks to public health and property. The extent and magnitude of the impacts that result from man-made hazard events can be influenced by natural hazard events. For example, severe winter storms can cause accidents involving trucks transporting hazardous substances. These accidents may lead to the release of these substances, which can result in injury and potential contamination of the natural environment.

Consequently, the Planning Committee decided to summarize the more prominent man-made hazards in Woodford County. The man-made hazards profiled in this Plan update include:

- Hazardous Substances
  - Generation
  - Transportation
  - Storage/Handling
- Waste Disposal
- Hazardous Material Incidents
- Hazardous Waste Remediation
- Nuclear Incidents
- Terrorism

While the man-made hazards risk assessment does not have the same depth as the natural hazards risk assessment, it does provide useful information that places the various man-made hazards in perspective.

3.12.1 Hazardous Substances

Hazardous substances broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. For the purposes of this Plan, the term hazardous substance includes hazardous product and hazardous waste. A hazardous waste is defined as the byproduct of a manufacturing process that is either listed or has the characteristics of ignitability, corrosivity, reactivity, or toxicity and cannot be reused. A hazardous product is all other hazardous material.

Hazardous substances can pose a public health threat to individuals at their workplace and where they reside. The type and quantity of the substance, the pathway of exposure (inhalation, ingestion, dermal, etc.), and the frequency of exposure are factors that will determine the risk of adverse health effects experienced by individuals. Impacts can range from minor, short-term health issues to chronic, long-term illnesses.

In addition to impacting public health, hazardous substances can also cause damage to buildings, infrastructure, and the environment. Incidents involving hazardous substances can range from minor (scarring on building floors and walls) to catastrophic (i.e., destruction of entire buildings, structural damage to roadways, etc.) and lead to injuries and fatalities. The number of incidents involving hazardous substances in Illinois and across the U.S. every year underscores the need for trained and equipped emergency responders to minimize damages.

Since 1970, significant changes have occurred in regard to how hazardous substances are transported and disposed. Comprehensive regulations and improved safety and industrial hygiene practices have reduced the frequency of incidents involving hazardous substances. Based on the small number of facilities in Woodford County that generate and use hazardous substances, the population size, transportation patterns, and land use, the probability of a release occurring in Woodford County should remain relatively higher compared to other counties in Illinois. The relatively low numbers of transportation incidents should not diminish municipal or county commitment to emergency management.

HAZARD PROFILE – HAZARDOUS SUBSTANCES

The following subsections identify the general pathways – generation, transportation, and storage/handling – by which hazardous substances pose a risk to public health and the environment in Woodford County.

Hazardous Substances Fast Facts - Occurrences

Generation
Number of Facilities that Generate Reportable Quantities of Hazardous Substances (2021): ***4***

Transportation
Number of Roadway Incidents Involving Hazardous Substance Shipments (2012 - 2021): ***20***

Number of Railway Accidents/Incidents Involving Hazardous Substance Shipments (2012 - 2021): ***None***

Number of Pipeline Incidents Involving Hazardous Substances (2012 - 2021): ***None***

Storage/Handling
Number of Facilities that Store/Handle Hazardous Substances (2021): ***35***

Number of Facilities that Store/Handle Extremely Hazardous Substances (2021): ***16***

3.12.1.1 Generation

Woodford County has four facilities that generate reportable quantities of hazardous substances as a result of their operations according to the U.S. Environmental Protection Agency (USEPA) Toxic Release Inventory. **Figure MMH-1**, located at the end of this section, identifies the hazardous substance generators located in Woodford County and summarizes the substances generated.

3.12.1.2 Transportation

Roadways
Illinois has the nation's third largest interstate system and third largest inventory of bridges. According to the Illinois Department of Transportation, there were just over 147,000 miles of highways and streets in Illinois in 2021. Most of the truck traffic in Woodford County is carried on Interstates 39 and 74. Other major roadways that carry truck traffic include U.S. Route 24, Illinois Route 26, Illinois Route 89, Illinois Route 116, Illinois Route 117, and Illinois Route 251.

While this modern roadway system provides convenience and efficiency for commuters, it also aids inter-state and intra-state commerce which includes the transportation of hazardous substances. A Commodity Flow Study to gauge chemical transport was conducted for Woodford County in 2022.

According to records obtained from the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS), there were 20 recorded roadway incidents involving the shipment of hazardous substances in Woodford County between 2012 through 2021. **Figure MMH-2**, located at the end of this section, provides information on these incidents.

<u>*Railways*</u>

Illinois' rail system is the country's second largest, with the East St. Louis and Chicago terminals being two of the busiest in the nation. In Woodford County there is one Class I rail lines operated by Norfolk Southern. According to the Association of American Railroads, 3,796,300 carloads (125.9 million tons) of freight originated in Illinois in 2019 (the latest year for which data is available). Chemicals accounted for 101,100 carloads (9.7 million tons) or 2.8% of the total freight handled. In comparison, 27,549,000 carloads of freight originated in the U.S. in 2019 with approximately 2,014,000 carloads (7.1%) involved in the transport of chemicals.

The Illinois Commerce Commission (ICC) is required to maintain records on railway accidents/incidents that involve hazardous substances. Their records are divided into three categories. These three categories are described in **Figure MMH-3**.

Figure MMH-3
ICC Hazardous Substances Railroad Accident/Incidents Classification Categories

Category	Description
A	railroad derailments resulting in the release of the hazards substance(s) being transported
B	railroad derailments where hazards substance(s) were being transported but no release occurred
C	releases of hazardous substance(s)s from railroad equipment occurred; however, no railroad derailment was involved

Since 2012, there have been no rail accidents involving hazardous substances in Woodford County according to the ICC. In comparison, ICC records indicate that since 2012 the annual number of railway accidents in Illinois involving hazardous substances has ranged between 45 and 122. **Figure MMH-4** provides a breakdown by category of the ICC-recorded railway accidents/incidents involving hazardous substances. Included is a comparison of the number of accidents/incidents in Woodford County to those in Cook and the Collar Counties as well as the rest of Illinois.

Figure MMH-4
ICC Recorded Railway Accidents/Incidents Involving Hazardous Substances
2012 – 2021
(Sheet 1 of 2)

Year	Category	Accident/Incident Location			
		Illinois	Woodford County	Cook & Collar Counties	All Other Counties
2012	A	4	0	2	2
	B	13	0	11	2
	C	73	0	42	31
2013	A	5	0	3	2
	B	23	0	16	7
	C	82	0	51	29
2014	A	2	0	2	0
	B	36	0	22	14
	C	84	0	40	43

Figure MMH-4
ICC Recorded Railway Accidents/Incidents Involving Hazardous Substances
2012 – 2021
(Sheet 2 of 2)

Year	Category	Accident/Incident Location			
		Illinois	Woodford County	Cook & Collar Counties	All Other Counties
2015	A	4	0	3	1
	B	27	0	15	12
	C	69	0	36	31
2016	A	4	0	1	3
	B	14	0	6	8
	C	65	0	33	29
2017	A	2	0	1	1
	B	14	0	9	5
	C	69	0	34	33
2018	A	1	0	0	1
	B	8	0	4	4
	C	55	0	24	31
2019	A	6	0	4	2
	B	6	0	4	2
	C	33	0	12	21
2020	A	4	0	2	2
	B	7	0	5	2
	C	46	0	30	16
2021	A	4	0	2	2
	B	31	0	16	15
	C	29	0	13	16

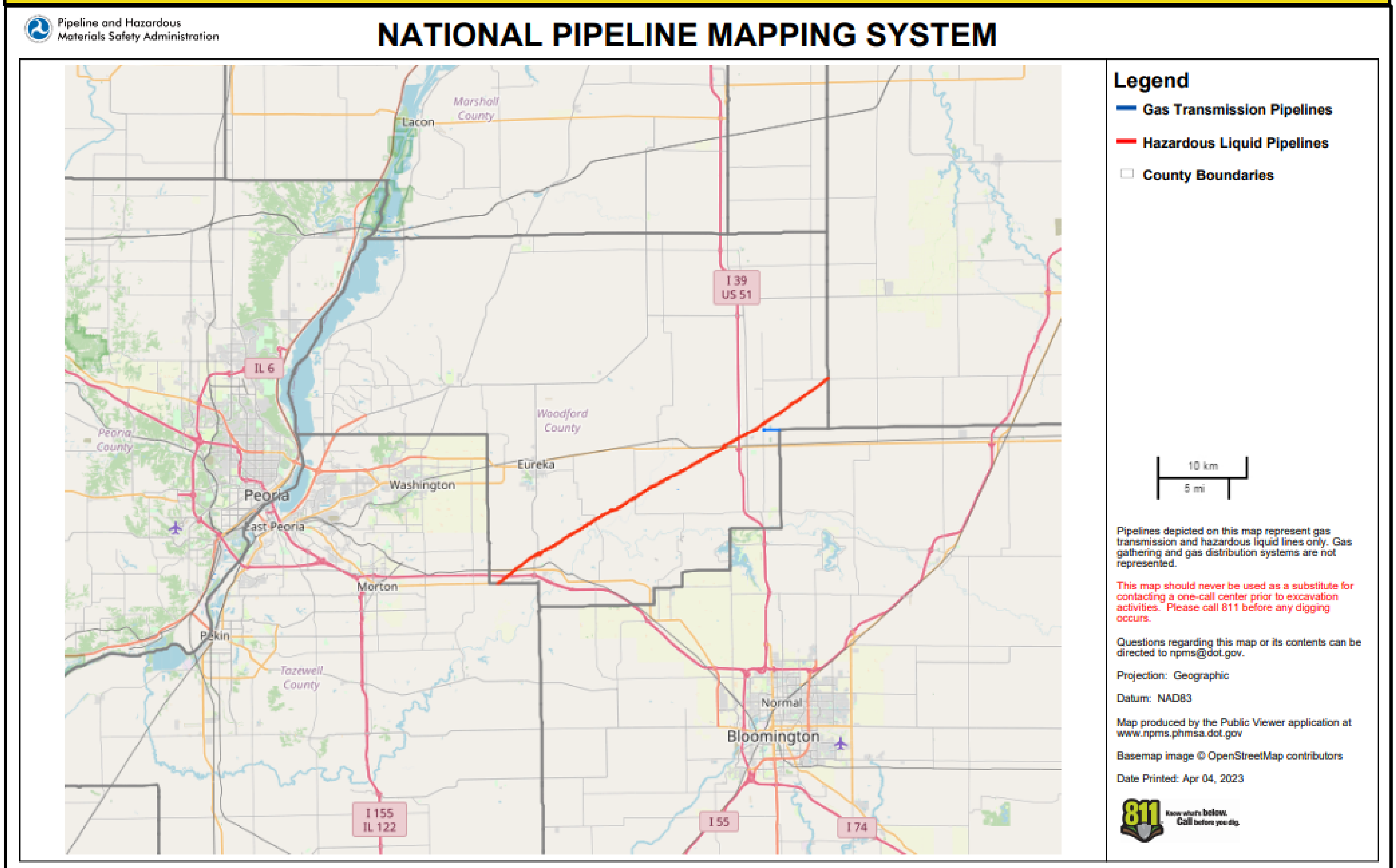
Source: Illinois Commerce Commission.

The top 20 hazardous substances moved by rail through Illinois include: sodium hydroxide, petroleum gases (liquefied), sulfuric acid, anhydrous ammonia, chlorine, sulfur, vinyl chloride, propane, fuel oil, denatured alcohol, methanol, gasoline, phosphoric acid, hydrochloric acid, styrene monomer, carbon dioxide (refrigerated liquid), ammonium nitrate, sodium chlorate, and diesel fuel.

Pipelines

Energy gases (natural gas and liquefied petroleum gas), petroleum liquids (crude oil and gasoline), and liquid and gas products used in industrial processes are carried in above-ground and buried pipelines across Illinois. In Woodford County, there is one major pipeline that carries natural gas. Operated by the Northern Illinois Gas Company, this pipeline extends only about a mile into the eastern portion of the County near El Paso. There are two major pipelines, both operated by CCPS Transportation, LLC, for carrying crude oil, gasoline, or hazardous liquids, which crosse the County from southwest to northeast. ***There have been no natural gas pipeline releases or hazardous liquids pipeline releases in Woodford County during the 10-year period from 2012 through 2021.*** **Figure MMH-5** shows the pipelines in Woodford County.

Figure MMH-5
Pipeline Location Map



There have been several high-profile incidents across the U.S., including one in Illinois, that have raised public concerns about our aging pipeline infrastructure. The following provides a brief description of each incident.

- On July 26, 2010, a 30-inch liquid product pipeline rupture near Marshall, Michigan and released at least 840,000 gallons of oil into a creek that led to the Kalamazoo River, a tributary of Lake Michigan.
- On September 9, 2010, another pipeline release received national attention. A 34-inch liquid product pipeline in the Chicago suburb of Romeoville, Illinois released more than 360,000 gallons of crude oil that flowed through sewers and into a retention pond narrowly avoiding the Des Plaines River. This release triggered numerous odor complaints from residents in the adjacent municipalities of Lemont and Bolingbrook. The property damage/cleanup costs were estimated at $46.6 million.
- Also, on September 9, 2010, a 30-inch-high pressure natural gas pipeline ruptured in the San Francisco suburb of San Bruno, California that resulted in an explosion that killed
- eight people, injured 51, destroyed over 30 homes and damaged an entire neighborhood. The property damage was estimated at around $55 million.
- On March 12, 2014, a gas main rupture in Manhattan, New York resulted in an explosion that killed eight people and leveled two multi-use, five story buildings.
- On May 19, 2015, a 24-inch liquid product pipeline ruptured near Refugio State Beach in Santa Barbara County, California and released approximately 100,000 gallons of crude oil. The release occurred along a rustic stretch of coastline that forms the northern boundary of the Santa Barbara Channel, home to a rich array of sea life. Oil ran down a ravine and entered the Pacific Ocean, blackening area beaches, creating a 9-mile oil slick and impacting birds, marine mammals, fish, and coastal and subtidal habitats.

Continual monitoring and maintenance of these pipelines is necessary to prevent malfunctions from corrosion, aging, or other factors that could lead to a release. In addition to normal wear and tear experienced by pipelines, the possibility of sabotage and seismic activity triggering a release must be considered when contemplating emergency response scenarios.

3.12.1.3 Storage/Handling

Beyond knowing where hazardous substances are generated and the methods and routes used to transport them, it is important to identify where hazardous substances are handled and stored. This information will help government officials and emergency management professionals make informed choices on how to better protect human health, property and the environment and what resources are needed should an incident take place.

Records obtained from IEMA-OHS's Tier II database were used to gather information on the facilities that generate, use and store chemicals in excess of reportable threshold quantities within Woodford County. The Tier II information was then compared with USEPA's Toxic Release Inventory (TRI) and information from Illinois Environmental Protection Agency (IEPA) databases. This review identified 35 facilities within Woodford County in 2021 that store and handle hazardous substances.

Of these 35 facilities, 16 reported the presence of Extremely Hazardous Substances (EHSs) at their facilities. An EHS is any USEPA-identified chemical that could cause serious, irreversible health effects from an accidental release. There are approximately 400 chemicals identified as EHSs. Stationary sources that possess one or more of these substances at or above threshold reporting quantities are required to notify IEMA-OHS.

3.12.2 Waste Disposal

Waste disposal has caused surface water and ground water contamination in Illinois and across the U.S. Beginning in the late 1970s substantial regulatory changes strengthened the design, operating and monitoring requirements for landfills where the majority of waste is disposed. These regulatory changes have helped reduce the public health threat posed by landfills.

HAZARD PROFILE – WASTE DISPOSAL

The following subsections identify the general pathways – solid, medical, and hazardous – by which waste disposal poses a risk to public health and the environment in Woodford County.

3.12.2.1 *Solid Waste*

While recycling activities have reduced the amount of solid waste (waste generated in households), the majority continues to be disposed of in landfills. As of 2021, there were 36 landfills operating in Illinois.

According IEPA's Annual Landfill Capacity Report issued in July 2022, there were no commercial landfill that operate in Woodford County. There are currently four landfills that serve Woodford and the adjacent counties. These landfills include Indian Creek Landfill #2 (Tazewell County), Peoria City/County Landfill #2 (Peoria County), LandComp Landfill (LaSalle County), and Livingston Landfill (Livingston County).

Waste Disposal Fast Facts - Occurrences

Solid Waste
Number of Solid Waste Landfills Operating in Woodford County (2021): ***None***

Number of Landfills Serving Woodford and adjacent counties (2021): ***4***

Potentially-Infectious Medical Waste (PIMW)
Number of Facilities within the County Permitted to Handle PIMW: ***None***

Hazardous Waste
Number of Commercial Off-Site Hazardous Waste Treatment or Disposal Facilities located in the County: ***None***

3.12.2.2 *Potentially- Infectious Medical Waste*

Potentially-Infectious Medical Waste (PIMW) is generated in connection with medical research; biological testing; and the diagnosis, treatment or immunization of human beings or animals. PIMW is typically generated at hospitals, nursing homes, medical or veterinary clinics, dental offices, clinical or pharmaceutical laboratories, and research facilities. According to IEPA's list of permitted PIMW Facilities, there are no facilities permitted to accept medical waste for disposal in Woodford County.

3.12.2.3 Hazardous Waste

A hazardous waste is defined as the byproduct of a manufacturing process that is either listed or has the characteristics of ignitability, corrosivity, reactivity, or toxicity and cannot be reused. According to IEPA's Storage, Treatment, Recycling, Incinerating, Transfer Stations, and Processing list, there are currently no off-site hazardous waste treatment or disposal facilities located in Woodford County.

3.12.3 Hazardous Material Incidents

A hazardous material or hazmat incident refers to any accident involving the release of hazardous substances, which broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. These incidents can take place where the substances are used, generated, or stored or while they are being transported. In addition, hazmat incidents also include the release of hazardous substances, such as fuel, used to operate vehicles. These releases can be the result of an accident or a leak.

HAZARD PROFILE – HAZARDOUS MATERIALS INCIDENTS

From 2012 to 2021, there were 45 hazmat incidents recorded in Woodford County. Of these incidents, 20 (44%) involved transportation incidents or accidents while 25 (56%) occurred at fixed facilities. Fourteen (14) of the 20 (70%) transportation incidents or accidents involved petroleum-based products.

Hazmat Incident Fast Facts - Occurrences

Number of Hazardous Material Incidents in Woodford County (2012 - 2021): ***45***

Number of Transportation-Related Incidents/Accidents: ***20***

Number of Fixed Facility-Related Incidents/Accidents: ***25***

Average Number of Hazardous Material Incidents Experienced Annually: ***4.5***

Based on the recorded incidents, Woodford County experienced an average of 4.5 hazmat incidents annually from 2012 through 2021. The types of existing industries; the major transportation corridors through the County, which include interstate and Illinois highways, rail, and pipeline; and chemical use within and adjacent to the County suggest that hazmat incidents are likely to continue to take place at the rate reflected in the 10-year study period. Constant vigilance, proper training and equipment, and prompt response are needed to minimize the potential impacts of each incident.

3.12.4 Waste Remediation

The improper disposal or containment of special and hazardous waste through the years has led to soil, groundwater, and surface water contamination of sites across the U.S. In order to safeguard human health and the environment, these contaminants must be removed or neutralized so they cannot cause harm. This process is known as waste remediation.

HAZARD PROFILE – WASTE REMEDIATION

In Illinois, waste remediation is handled through several programs including the federal Superfund program, the State Response Action Program, the state Site Remediation Program, and the Leaking Underground Storage Tanks Program. The following provides a brief description of each.

Waste Remediation Fast Facts - Occurrences

Superfund
Number of Superfund Sites in the County: ***None***

Illinois Site Response Action Program
Number of SRAP Sites in the County: ***2***

Illinois Site Remediation Program
Number of SRP Sites in the County: ***3***

Number of SRP Sites with NFR/4Y Letters: ***2***

Illinois Leaking Underground Storage Tanks Program
Number of LUST Sites in County: ***108***

Number of LUST Sites with NFR/Non-LUST/4Y Letters: ***94 (87%)***

Superfund (CERLCA) Program/ National Priorities List

Superfund is a USEPA-led program to clean up sites within the U.S. contaminated by hazardous waste that has been dumped, left out in the open, or otherwise improperly managed and which pose a risk to human health and/or the environment. Sites of national priority among the known or threatened releases of hazardous substances, pollutants or contaminants throughout the U.S. and its territories are identified on the National Priorities List (NPL). Those sites that pose the largest threat to public health and the environment are typically found on the NPL.

According to the NPL database, there are 45 Superfund sites in Illinois. There are no Superfund sites in Woodford County.

State Response Action Program (SRAP)

The main objective of the State Response Action Program (SRAP) is to clean up hazardous substances at sites that present an imminent and substantial threat to human health and the environment, but which may not be addressed by other federal or state cleanup programs. The sites handled by the SRAP include abandoned landfills, old manufacturing plants, former waste oil recycling operations, contaminated agrichemical facilities, and other areas where surface water, groundwater, soil, and air may be contaminated with hazardous substances. Since the mid-1980s, cleanup activities have been conducted at more than 500 sites in Illinois through this Program. Once the threat to human health and the environment has been mitigated, some sites are transferred to other state cleanup programs to complete remediation activities.

There are two SRAP sites in Woodford County, both of which have either completed the program or been transferred to another program.

Illinois Site Remediation Program (SRP)

The Site Remediation Program (SRP) is a voluntary cleanup program that provides applicants the opportunity to receive technical assistance in determining what course of action is needed to remediate sites where hazardous substances, pesticides, or petroleum may be present. The goal of the SRP is to receive a no further remediation determination from IEPA. Most site remediation in Illinois is handled through this Program. Since the mid-1980s, remediation activities have been conducted and monitored at approximately 5,800 sites in Illinois. Properties that satisfy respective IEPA laws and regulations can receive a No Further Remediation (NFR) letter. They must demonstrate, through proper investigation and, when warranted, remedial action, that environmental conditions at their remediation site do not present a significant risk to human health or the environment. This letter describes what remediation activities have been taken and whether any portion of the property, based on future property use, might need additional remediation.

There are three SRP sites in Woodford County. Two of the three SRP sites (67%) have received NFR or 4Y letters. The remaining site does not pose an immediate threat to public health or the environment.

Leaking Underground Storage Tank Program (LUST)
The Leaking Underground Storage Tanks Program (LUST) oversees remedial activities associated with petroleum product releases from underground storage tanks (UST). This program began in the late 1980s as a result of the threats posed by vapors in homes and businesses, contaminated groundwater, and contaminated soil. In Illinois, more than 14,500 acres of soil contaminated by leaking underground tanks have been remediated between 1988 and 2010 (the most recent year for which data was available).

In Woodford County, there are 108 sites involving the remediation of petroleum product releases from underground storage tanks. Of the 108 LUST sites, 94 (87%) have received NFR letters, other clearance letters, or remediation is virtually complete.

3.12.5 Nuclear Incidents

The term "nuclear incident" refers to the release of significant levels of radioactive material or exposure of the general public to radiation. This section does not address the intentional or malicious release of radioactive materials as a result of a terrorism activity. Exposure to dangerous levels of radiation can have varying health effects on people and animals. Impacts range from minor health issues to fatal illnesses.

HAZARD PROFILE – NUCLEAR INCIDENTS

In Woodford County, residents could be exposed to radioactive material and/or radiation from a nuclear incident that occurs:

- at the Dresden Generating Station located in Grundy County;
- at the Braidwood Generating Station located in Will County;
- at the LaSalle Generating Station located in LaSalle County;
- at the Clinton Generating Station located in DeWitt County; or
- as spent nuclear fuel rods are being transported by railway through the County.

Nuclear Incidents Fast Facts - Occurrences

Number of Nuclear Power Facilities in the County: ***None***

Number of Nuclear Power Facilities near the County: ***4***

Emergency Planning Zones
Are there Areas in the County within the 10-mile Critical Risk Zone of any Nuclear Power Facilities? ***No***

Are there Areas in the County within the 50-mile Pathway Zone of any Nuclear Power Facilities? ***Yes (portions of the County are in this zone for the Dresden, Braidwood, LaSalle, and Clinton facilities)***

Number of Incidents Impacting the County: ***None***

There have been no nuclear incidents and therefore no injuries or damages associated with any of the nuclear power facilities or the transportation of spent nuclear fuel rods through Woodford County.

3.12.5.1 Power Facilities

Commercial nuclear facilities constructed in the U.S. should withstand most natural hazards such as tornadoes and severe storms that frequently occur in Illinois. Nonetheless, IEMA-OHS has developed a Radiological Emergency Response Plan in cooperation with other state and local governments. Procedures are in place and exercises are conducted with state and local officials to protect the public in the unlikely event of a nuclear emergency. There are four nuclear energy generating stations relatively close to Woodford County operated by Constellation Energy. **Figure MMH-6** identifies the facilities, their locations, and their respective distance to the Woodford County border.

Figure MMH-6
Nuclear Generating Stations Near Woodford County

Nuclear Generating Station Name	Location	Distance to Woodford County Border
Braidwood Generating Station	1.25 miles northeast of Braceville Will County	42.5 miles
Clinton Generating Station	6 miles east-northeast of Clinton DeWitt County	33 miles
Dresden Generating Station	7 miles east of Morris Grundy County	47 miles
LaSalle County Generating Station	4.5 miles south of Marseilles LaSalle County	26 miles

An Emergency Planning Zone (EPZ) around each nuclear facility is assessed to estimate potential damages to the public and critical infrastructure. EPZs typically include a 10-mile Critical Risk Zone and a 50-mile Ingestion Pathway Zone. Ingestion refers to radiation that might enter a person's body. While none of Woodford County falls within the 10-mile Critical Risk Zone for the Quad Cities Generating Station, portions do fall within the 50-mile Ingestion Pathway Zone for this Station. **Figure MMH-7** identifies the locations that fall within these zones.

Figure MMH-7
Locations within Emergency Planning Zones

Nuclear Generating Station Name	Areas within 10-Mile Critical Risk Zone	Areas within 50-Mile Ingestion Pathway Zone
Braidwood Generating Station	none	Portions of Clayton, Minonk, and Panola Townships, including the City of Minonk
Clinton Generating Station	none	Most of the County, except Spring Bay and Partridge Townships, and portions of Worth, Metamora, Cazenovia, Linn, Clayton, Roanoke, and Minonk Townships
Dresden Generating Station	none	Portions of Minonk Township
LaSalle County Generating Station	none	Most of the County, except Spring Bay Township, and portions of Worth, Metamora, Montgomery, and Cruger Townships

The consequences associated with a release at any nuclear power facility would depend on the magnitude of the accident and the prevailing weather conditions. A significant incident might require individuals to stay indoors or to evacuate to temporary relocation centers. Temporary relocation centers have been established for Woodford County residents should a significant event requiring evacuation occur at the nearby nuclear power facility.

To protect the food supply, persons owning livestock may be advised to remove all livestock from pasture, shelter if possible, and provide them with stored feed and protected water. The American Nuclear Insurers (ANI) Company provides insurance to cover the Constellation Energy's legal liability up to the limits imposed by the Price-Anderson Act, for bodily injury and property damage such as the loss of livestock and crops caused by a nuclear energy incident at any of the four generating stations.

No nuclear power facilities have had any incidents that have impacted Woodford County. The probability of an incident causing off-site impacts appears low.

3.12.5.2 Transportation of Spent Nuclear Fuel Rods by Railway

The protocol for moving spent nuclear fuel rods from nuclear power plants requires that the train be stopped and inspected before moving through Illinois and that it be escorted as it moves through the State. Inspection of the track ahead of the train is also required to reduce the risk of derailment.

While movement of nuclear material has been minimal as the U.S. grapples with the issue of developing national or regional repositories, more rail movement is anticipated in the future. At the present time, the nuclear power facility previously mentioned is storing spent fuel rods on-site. If a national or regional repository is established, then the spent fuel rods will be moved off-site. According to the Illinois Commerce Commission, there has never been a railway transportation accident resulting in the release of radioactive material; however, widespread concern remains regarding its safe transportation.

3.12.6 Terrorism

Terrorism has different definitions across the globe. For the purpose of this Plan, terrorism will be defined as any event that includes violent acts which threaten, or harm lives, health or property conducted by domestic or foreign individuals or groups aimed at civilians, the federal government or symbolic locations intended to cause widespread fear.

HAZARD PROFILE – TERRORISM

Terrorism Fast Facts – Occurrences*

Number of Recorded Terrorism Events Worldwide (1970 – 2019): ***201,183***

Number of Recorded Terrorism Events in the U.S. (1970 – 2019): ***3,004***

Number of Recorded Terrorism Events in Illinois (1970 – 2019): ***117***

* Based on data from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) Global Terrorism Database.

The attack on the World Trade Center and the Pentagon on September 11, 2001 by foreign terrorists galvanized national action against terrorism and resulted in the creation of the U.S. Department of Homeland Security. While the number of terrorist activities garnering national attention in the U.S. has been relatively small, approximately 201,183 terrorist events have occurred worldwide between 1970 and 2019, according to the National Consortium for the

Study of Terrorism and Responses to Terrorism (the Consortium). During this same time span, the Consortium documented 3,004 terrorist events within the U.S.

Acts of terrorism have resulted in fatalities and injuries as a result of kidnappings, hijackings, bombings, and the use of chemical and biological weapons. The Global Terrorism Database has documented 3,633 American fatalities in the U.S. between 1995 and 2019 from terrorist attacks. The attacks on September 11, 2001 account for 3,001of the 3,633 fatalities. A search of the Global Terrorism Database identified 117 incidents of terrorism in Illinois between 1970 and 2019. These incidents resulted in six fatalities and 38 injuries.

The Federal Bureau of Investigation's (FBI) provides supporting documentation on domestic terrorist attacks in a series of reports on terrorism. These reports provide a chronological summary of terrorist incidents in the U.S. with detailed information on attacks between 1980 and 2005. During this time period, 192 incidents were documented within the U.S. Six of these incidents occurred in Illinois; five in the Chicago area and one downstate.

On September 24, 2009, a single individual from Macon County sought to carry out his anger at the federal government by detonating a van filled with explosive outside of the Federal Courthouse in Springfield. This attempt was thwarted by the FBI.

On May 16, 2018 at around 8:00 a.m., 19-year-old boy, armed with a 9-mm semi-automatic rifle, fired several shots near the Dixon High School Gymnasium where approximately 180 students were practicing for graduation. The school's resource officer confronted the shooter, who fled from the school on foot. The shooter fired several shots at the resource officer, who returned fire, wounding the shooter in the shoulder. The gunman suffered non-life threatening injuries. No students or staff were injured in the incident. Faculty and staff barricaded doors and took cover as the incident unfolded.

More recently an active shooter incident occurred at the Highland Park Independence Day parade on July 4, 2022. A 22-year-old man, armed with a semi-automatic rifle, gained access to the roof of a building along the parade route and opened fire on spectators and those in the parade killing seven individuals and wounding an additional 48 individuals. The shooter evaded immediate capture and fled the scene but was apprehended later the same day. He confessed to the shooting and is being held without bail as he awaits trial.

It is impossible to predict with any reasonable degree of accuracy how many terrorism events might be expected to occur in Woodford County or elsewhere in Illinois. Although targets for terrorist activity are more likely centered in larger urban areas, recruitment, training, and other support activities, such as the ones described above, have occurred in rural areas.

The economic resources available to some terrorist groups coupled with the combination of global tensions, economic uncertainty and frustration towards government appear to have recently raised the frequency of attempts. Enhanced efforts by law enforcement officials and civilian vigilance for unusual activity or behavior will be needed to repel terrorists whether they are domestic or foreign in origin.

Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2021

Name	Hazardous Substances Generated	Amount Generated (Pounds)
El Paso		
American Buildings Co.	Lead	0
	Manganese	17
	Total:	*17*
Corteva Agriscience, LLC	Chlorimuron-ethyl	26
	Chlorsulfuron	52
	Diuron	221
	Hexazinone	64
	Metribuzin	5
	Toluene	4,657
	Tribenuron-methyl	19
	Total:	*5,044*
Goodfield		
CNH Industrial America, LLC	Chromium	2
	Manganese	243
	Nickel	2
	Total:	*247*
Roanoke		
Parsons Co., Inc.	Chromium	671
	Copper	112
	Lead	10
	Nickel	681
	Total:	*1,474*

Source: U.S. Environmental Protection Agency, TRI Explorer, Releases: Facility Report.

Figure MMH-2
Roadway Incidents* Involving Shipments of Hazardous Substances
2012 – 2021

Date	Area	Location	Hazardous Product Released	Quantity Released
5/14/2013	Eureka^	1451 County Road 800N	28% Nitrogen solution	Unknown
5/14/2013	Eureka	4-H Park Rd & S. Main St	2,4-D	Unknown
6/19/2013	El Paso^	County Rd 2600E & County Rd 1300N	Anhydrous ammonia	150 gallons
1/25/2014	Minonk^	I-39, northbound MP23	Diesel fuel	50 gallons
7/16/2014	Germantown Hills	IL Route 116 & Woodland Knolls Rd	Latex paint	45 gallons
2/11/2015	Spring Bay	IL Route 26 & Hoffman Rd	Diesel fuel	150 gallons
8/17/2016	Minonk^	I-39, southbound MP23	Diesel fuel	250 gallons
8/19/2016	Minonk^	I-39, southbound MP26	Diesel fuel	125 gallons
10/29/2016	Minonk^	I-39, MP27	Diesel fuel	300 gallons
11/1/2016	Metamora^	IL Route 116 near Hickory Point Rd	Diesel fuel	25 gallons
11/16/2016	Roanoke^	1892 County Rd 1400N	Diesel fuel	200 gallons
7/6/2019	Congerville^	IL Route 150 & Irons Rd	Hydraulic fluid	25 gallons
8/2/2019	Secor^	1900 E County Road 800N	Diesel fuel	Unknown
8/2/2019	Secor^	County Road 800N & County Rd 1900E	Engine-motor oil	Unknown
11/1/2019	Eureka^	IL Route 117 & County Rd 1400E	Diesel fuel	70 gallons
2/3/2020	Goodfield^	I-74, eastbound MP111	Aluminum re-smelting material	40,000 pounds
2/11/2020	Congerville^	I-74, westbound MP115	Motor oil & Diesel fuel	25 gallons Unknown
4/5/2021	El Paso^	1262 County Rd 2800E	Diesel fuel	20 gallons
5/26/2021	Goodfield^	I-74, westbound MP110	Diesel fuel	60 gallons
5/28/2021	Congerville^	I-74, westbound MP116	Anti-freeze	8 gallons

* For the purposes of this report a roadway incident is generally defined as an accident/incident that occurs while in the process of transporting a hazardous substance(s) on a highway, roadway, access drive, field entrance, rest area or parking lot. Vehicles that experience a release while refueling are not considered roadway incidents but are instead considered fixed facility incidents.

^ Accident verified in the vicinity of this area.

Source: Illinois Emergency Management Agency, Hazardous Materials Incident Reports

4.0 MITIGATION STRATEGY

The mitigation strategy identifies how participating jurisdictions are going to reduce or eliminate the potential loss of life and property damage that results from the natural hazards identified in the Risk Assessment section of this Plan. The strategy includes:

- Reviewing, re-evaluating, and updating the mitigation goals. Mitigation goals describe the objective(s) or desired outcome(s) that the participants would like to accomplish in terms of hazard and loss prevention. These goals are intended to reduce or eliminate long-term vulnerabilities to natural hazards.
- Evaluating the status of the existing mitigation actions and identifying a comprehensive range of jurisdiction-specific mitigation actions including those related to continued compliance with the National Flood Insurance Program (NFIP). Mitigation actions are projects, plans, activities, or programs that achieve at least one of the mitigation goals identified.
- Analyzing the existing and new mitigation actions identified for each jurisdiction. This analysis ensures each action will reduce or eliminate future losses associated with the hazards identified in the Risk Assessment section.
- Reviewing, re-evaluating, and updating the mitigation actions prioritization methodology. The prioritization methodology outlines the approach used to prioritize the implementation of each identified mitigation action.
- Identifying the entity(s) responsible for implementation and administration. For each mitigation action, the entity(s) responsible for implementing and administering that action is identified as well as the timeframes for completing the actions and potential funding sources.
- Conducting a preliminary cost/benefit analysis of each mitigation action. The qualitative cost/benefit analysis provides participants a general idea of which actions are likely to provide the greatest benefit based on the financial cost and staffing efforts needed.

As part of the Plan update, the mitigation strategy was reviewed and revised. A detailed discussion of each aspect of the mitigation strategy and any updates made is provided below.

4.1 MITIGATION GOALS REVIEW

As part of the Plan update process, the mitigation goals from the previous Plan were reviewed and re-evaluated. The previous list of mitigation goals was distributed to the Committee members at the first meeting on January 31, 2023. Members were asked to review the list before the second meeting and consider whether any changes needed to be made or if additional goals should be included. At the Committee's April 25, 2023 meeting the group discussed the previous list of goals and approved them with no changes. **Figure MIT-1** lists the approved mitigation goals.

Figure MIT-1 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 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.

4.2 EXISTING MITIGATION ACTIONS REVIEW

The Plan update process included a review and evaluation of the ***existing hazard mitigation actions*** listed in the previous Plan. Each jurisdiction who chose to participate in the Plan update was provided a copy of their previous list of existing mitigation actions at the first meeting held on January 31, 2023. They were asked to identify those actions that were either in progress or that had been completed since the previous Plan was completed in 2019.

Figures MIT-2 through **MIT-5**, located at the end of this section, summarize the results of this evaluation by jurisdiction. None of the participants identified changes in priorities since the previous Plan was approved. El Paso and Minonk did not participate in the previous Plan update and therefore are not included in the summary.

4.3 NEW MITIGATION ACTION IDENTIFICATION

Following the review and evaluation of the existing mitigation actions, the Committee members were asked to consult with their respective jurisdictions to identify ***new, jurisdiction-specific mitigation actions***. Instead of focusing on all-inclusive actions covering multiple jurisdictions, participants were asked to identify mitigation actions that met the specific needs and risks associated with their jurisdiction.

Representatives of Woodford County, Eureka, and Roanoke were also asked to identify mitigation actions that would ensure their continued compliance with the National Flood Insurance Program. The compiled lists of new mitigation actions were then reviewed to assure the appropriateness and suitability of each action. Those actions that were not deemed appropriate and/or suitable were either reworded or eliminated.

4.4 MITIGATION ACTION ANALYSIS

Next, those existing mitigation actions retained, and the new mitigation actions identified were assigned to one of four broad mitigation activity categories that allowed Committee members to compare and consolidate similar actions. **Figure MIT-6** identifies each mitigation activity category and provides a brief description.

Figure MIT-6
Types of Mitigation Activities

Category	Description
Local Plans & Regulations (LP&R)	Local Plans & Regulations include actions that influence the way land and buildings are being developed and built. Examples include stormwater management plans, floodplain regulations, capital improvement projects, participation in the NFIP Community Rating System, comprehensive plans, and local ordinances (i.e., building codes, etc.)
Structure & Infrastructure Projects (S&IP)	Structure & Infrastructure Projects include actions that protect infrastructure and structures from a hazard or remove them from a hazard area. Examples include acquisition and elevation of structures in flood prone areas, burying utility lines to critical facilities, construction of community safe rooms, install “hardening” materials (i.e., impact resistant window film, hail resistant shingles/doors, etc.) and detention/retention structures.
Natural System Protection (NSP)	Natural System Protection includes actions that minimize damage and losses and also preserve or restore natural systems. Examples include sediment and erosion control, stream restoration and watershed management.
Education & Awareness Programs (E&A)	Education & Awareness Programs include actions to inform and educate citizens, elected officials and property owners about hazards and the potential ways to mitigate them. Examples include outreach/school programs, brochures, and handout materials, becoming a StormReady community, evacuation planning and drills, and volunteer activities (i.e., culvert cleanout days, initiatives to check in on the elderly/disabled during hazard events such as storms and extreme heat events, etc.)

Each mitigation action was then analyzed to determine:

- the hazard or hazards being mitigated;
- the general size of the population affected (i.e., small, medium, or large), the participant’s Social Vulnerability Index (SVI) ranking, as well as the participant’s status as an Economically Disadvantaged Rural Community (EDRC);
- the goal or goals fulfilled;
- whether the action would reduce the effects on new or existing buildings and infrastructure; and
- whether the action would ensure continued compliance with the National Flood Insurance Program.

Each mitigation action was also evaluated to determine whether it would mitigate risk to one or more of FEMA’s seven Community Lifelines. Community Lifelines are the most fundamental services in the community that, when stabilized, enable all aspects of society to function. These fundamental services enable the continuous operation of critical government and business functions essential to human health and safety or economic security. The Community Lifelines include Safety & Security; Food, Water, Shelter; Health & Medical; Energy (Power & Fuel); Communications; Transportation; and Hazardous Materials. **Figure MIT-7** provides a brief description of each Community Lifeline.

Figure MIT-7 Community Lifelines	
Category	**Components/Subcomponents**
Safety & Security	- Law Enforcement/Security (police stations, law enforcement, site security, correctional facilities) - Fire Service (fire stations, firefighting resources) - Search & Rescue (local search & rescue) - Government Service (emergency operation centers, essential government functions, government offices, schools, public records, historic/cultural resources) - Community Safety (flood control, other hazards, protective actions)
Food, Water, Shelter	- Food [commercial food distribution, commercial food supply chain, food distribution programs (e.g., food banks)] - Water [drinking water utilities (intake, treatment, storage & distribution), wastewater systems, commercial water supply chain]; - Shelter [housing (e.g., homes, shelters), commercial facilities (e.g., hotels)]; - Agriculture (animals & agriculture)
Health & Medical	- Medical Care (hospitals, dialysis, pharmacies, long-term care facilities, VA health system, veterinary services, home care) - Patient Movement (emergency medical services) - Fatality Management (mortuary and post-mortuary services) - Public Health (epidemiological surveillance, laboratory, clinical guidance, assessment/interventions/treatments, human services, behavioral health) - Medical Supply Chain [blood/blood products, manufacturing (e.g., pharmaceutical, device, medical gases), distribution, critical clinical research, sterilization, raw materials]
Energy	- Power Grid (generation systems, transmission systems, distribution systems) - Fuel [refineries/fuel processing, fuel storage, pipelines, fuel distribution (e.g., gas stations, fuel points), off-shore oil platforms]
Communications	- Infrastructure [wireless, cable systems and wireline, broadcast (e.g., TV and radio), satellite, data centers/internet] - Alerts, Warnings, & Messages (local alert/warning ability, access to IPAWS, NAWAS terminals) - 911 & Dispatch (public safety answering points, dispatch) - Responder Communications (LMR networks) - Finance (banking services, electronic payment processing)
Transportation	- Highway/Roadway/Motor Vehicle (roads, bridges) - Mass Transit (bus, rail, ferry) - Railway (freight, passenger) - Aviation [commercial (e.g., cargo/passenger), general, military] - Maritime (waterways, ports and port facilities)
Hazardous Materials	- Facilities [oil/hazmat facilities (e.g., chemical, nuclear), oil/hazmat/toxic incidents from facilities] - Hazmat, Pollutants, Contaminants (oil/hazmat/toxic incidents from non-fixed facilities, radiological or nuclear incidents)

4.5 MITIGATION ACTION PRIORITIZATION METHODOLOGY & COST/BENEFIT ANALYSIS REVIEW

The methodology applied to prioritize mitigation actions in the previous Plan was reviewed by the Committee as part of the Plan update process. The previous prioritization methodology was based on two key factors: 1) the frequency of the hazard and 2) the degree of mitigation attained. This methodology was presented to the Committee members at the second meeting held on April 25, 2023. The group reviewed and discussed the methodology and chose to approve it with no changes.

Figure MIT-8 identifies and describes the four-tiered prioritization methodology adopted by the Committee. This methodology provides a means of objectively determining which actions have a greater likelihood of eliminating or reducing the long-term vulnerabilities associated with the most frequently-occurring natural hazards.

While prioritizing the actions is useful and provides participants with additional information, it is important to keep in mind that implementing any the mitigation actions is desirable regardless of which prioritization category an action falls under.

<table>
<tr><th colspan="4">Figure MIT-8
Mitigation Action Prioritization Methodology</th></tr>
<tr><td colspan="2" rowspan="2"></td><th colspan="2">Hazard</th></tr>
<tr><td>Most Frequent Hazard
(M)
(i.e., severe storms, floods, severe winter storms, floods, excessive heat, extreme cold, tornadoes)</td><td>Less Frequent Hazard
(L)
(i.e., drought, landslides, levee failures, dam failures, earthquakes)</td></tr>
<tr><th rowspan="2">Mitigation Action</th><td>Mitigation Action with the Potential to Virtually Eliminate or Significantly Reduce Impacts
(H)</td><td>**HM**
mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from the most frequent hazards</td><td>**HL**
mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from less frequent hazards</td></tr>
<tr><td>Mitigation Action with the Potential to Reduce Impacts
(L)</td><td>**LM**
mitigation action has the potential to reduce damages, fatalities and/or injuries from the most frequent hazards</td><td>**LL**
mitigation action has the potential to reduce damages, fatalities and/or injuries from less frequent hazards</td></tr>
</table>

While this methodology does not take cost into consideration, it is a factor that may affect the order in which projects are implemented. As a result, a preliminary qualitative cost/benefit analysis was conducted to demonstrate each action's monetary and non-monetary benefits and provide additional information that can be considered in each participant's decision-making process. The costs and benefits were analyzed in terms of the general overall cost to complete an action as well as the staffing efforted needed and the action's likelihood of permanently eliminating or significantly reducing the risk associated with a specific hazard. The general descriptors of high, medium, and low were used. These terms are not meant to translate into a specific dollar amount, but rather to provide a relative comparison between the actions identified by each jurisdiction.

This analysis is only meant to give the participants a starting point to compare which actions are likely to provide the greatest benefit. It was repeatedly communicated to the Planning Committee members that when a grant application is submitted to IEMA-OHS/FEMA for a specific action, a detailed cost/benefit analysis will be required to receive funding.

4.6 MITIGATION ACTION IMPLEMENTATION & ADMINISTRATION

Finally, each participating jurisdiction was asked to identify how the mitigation actions will be implemented and administered. This included:

- identifying the party or parties responsible for oversight and administration;
- determining what funding source(s) are available or will be pursued; and
- describing the time frame for completion.

Oversight & Administration

It is important to keep in mind that some of the participating jurisdictions have limited capabilities related to organization and staffing for oversight and administration of the identified mitigation actions. Four of the five participating municipalities are smaller in size, with populations of less than 5,000 individuals. In most cases these jurisdictions have limited staff. Their organizational structure is such that they have fewer offices and/or departments, generally limited to public works and water/sewer. Those in charge of the offices/departments often lack the technical expertise needed to individually oversee and administer the identified mitigation actions. As a result, most of the participating jurisdictions identified their governing body (i.e., village board, city council or board of trustees) as the entity responsible for oversight and administration simply because it is the only practical option given their organizational constraints. Other participants felt that oversight and administration fell under the purview of the entity's governing body (board/council) and not individual departments.

Funding Sources

While the Tri-County Regional Planning Commission has the ability to assist with grant writing service to the participants, most do not have staff with grant writing capabilities. As a result, assistance was needed in identifying possible funding sources for the identified mitigation actions. The consultant provided written information to the participants about FEMA and non-FEMA funding opportunities that have been used previously to finance mitigation actions. In addition, funding information was discussed with participants during Committee meetings and in one-on-one contacts so that an appropriate funding source could be identified for each mitigation action.

A handout was prepared and distributed that provided specific information on the non-FEMA grant sources available including the grant name, the government agency responsible for administering the grant, grant ceiling, contact person and application period among other key points. Specific grants from the following agencies were identified: U.S. Department of Agricultural – Rural Development (USDA – RD), Illinois Department of Agriculture (IDOA), Illinois Department of Commerce and Economic Opportunity (DCEO), Illinois Environmental Protection Agency (IEPA), Illinois Department of Natural Resources (IDNR) and Illinois Department of Transportation (IDOT).

The funding source identified for each action is the most likely source to be pursued; however, if grant funding is unavailable through the most likely or other suggested sources, then implementation of medium and large-scale projects and activities is unlikely due to the budgetary constraints experienced by most, if not all, of the participants due to their size, projected population growth and limited revenue streams. It is important to remember that the population for the entire County is approximately 38,500 individuals. Four of the five participating municipalities are smaller in size, with populations of less than 5,000 individuals. Some of the jurisdictions struggle to maintain and provide the most critical of services to their residents. Additional funding is necessary if implementation is to be achieved.

Time Frame for Completion

The time frame for completion identified for each action is the timespan in which participants would like to see the action successfully completed. In most cases, however, the time frame identified is dependent on obtaining the necessary funding. As a result, a time range has been identified for many of the mitigation actions to allow for unpredictability in securing funds.

4.7 RESULTS OF MITIGATION STRATEGY

Figures MIT-9 through **MIT-14**, located at the end of this section, summarize the results of the mitigation strategy. The mitigation actions are arranged alphabetically by participating jurisdiction following the County and include both existing and new actions.

Figure MIT-2
Woodford County – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
County Board							
Improve coordination between the County, townships, cities and villages in an effort to help implement hazard mitigation projects and cleanup activities aimed at reducing or eliminating the risk associated with natural hazard events.		✓			This is an ongoing project; we are always working and meeting with all agencies and cities in Woodford County.	✓	
Purchase and install an automatic emergency backup generator at the County Courthouse to provide uninterrupted power to the Emergency Operations Center/Joint Information Center (County Board Room) and maintain operations during a power outage.		✓			A grant application has been submitted for this project with IEMA-OHS/FEMA. Currently awaiting information on selection.	✓	
Building/Zoning							
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓				Current effective floodplain maps were issued in 2010 and have not been updated since.	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Hard copies of maps are available in the Zoning Office and education on FEMA Flood Map Center provided as needed.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the 2019 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Woodford County has one infrastructure improvement project in progress that has the potential to decrease vulnerability to Communications & Safety & Security Community Lifelines. This project however will not significantly change the vulnerability of hazard prone areas in the County. The County also has ten administrative activities completed or in progress. Three of the projects have the potential to decrease the vulnerability of hazard prone areas to flooding. None of the remaining activities however will significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-2
Woodford County – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Building/Zoning Continued…							
Continue to make county officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing training of County Officials regarding flood requirements for both construction and post inspection as needed.	✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.		✓				✓	
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.		✓			FEMA produced materials available to the public in Zoning Office at all times, local information on recovery and necessary actions post flood provided in Office and on website as needed.	✓	
Target FEMA's Repetitive Loss Properties for potential mitigation projects.	✓					✓	
Target FEMA's Repetitive Loss Properties for educational outreach.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the 2019 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Woodford County has one infrastructure improvement project in progress that has the potential to decrease vulnerability to Communications & Safety & Security Community Lifelines. This project however will not significantly change the vulnerability of hazard prone areas in the County. The County also has ten administrative activities completed or in progress. Three of the projects have the potential to decrease the vulnerability of hazard prone areas to flooding. None of the remaining activities however will significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-2
Woodford County – Status of Existing Mitigation Actions
(Sheet 3 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Emergency Management Agency Continued							
Purchase portable, trailer-mounted LED emergency message boards to alert the public of hazardous conditions associated with natural hazard events.	✓					✓	
Purchase and install storm warning sirens in unincorporated communities and subdivisions within the County that do not have coverage.	✓					✓	
Purchase a new siren encoder (siren control unit) that can be utilized as a backup to activate sirens in all the communities in the County.				2019	Weather Warn System was bought in May of 2019. We now have most communities in the system as a backup.		✓
Develop an early warning notification system to alert residents along the Mackinaw River in the event of a dam failure at Lake Evergreen Dam.	✓					✓	
Partner with classified dam owners to develop Emergency Action Plans (EAPs) that identify the extent (water depths, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.		✓				✓	
Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the County and participating jurisdictions.			✓	2023	Completed as part of the hazard mitigation plan update.		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the 2019 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Woodford County has one infrastructure improvement project in progress that has the potential to decrease vulnerability to Communications & Safety & Security Community Lifelines. This project however will not significantly change the vulnerability of hazard prone areas in the County. The County also has ten administrative activities completed or in progress. Three of the projects have the potential to decrease the vulnerability of hazard prone areas to flooding. None of the remaining activities however will significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-2
Woodford County – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Emergency Management Agency Continued…							
Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.	✓						✓
Purchase and distribute NOAA weather radios to schools, churches and other gathering places.		✓			This is an ongoing project; the County distributes radios as needed.	✓	
Examine the feasibility of designating schools and other public buildings as heating centers and emergency shelters.		✓				✓	
Develop and implement a community outreach program that informs residents of the risks to life and property associated with natural hazards and the proactive actions that they can take to reduce or eliminate their risk		✓			This is an ongoing project; the County is always speaking to the community on the hazards that impact the County.	✓	
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.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the 2019 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Woodford County has one infrastructure improvement project in progress that has the potential to decrease vulnerability to Communications & Safety & Security Community Lifelines. This project however will not significantly change the vulnerability of hazard prone areas in the County. The County also has ten administrative activities completed or in progress. Three of the projects have the potential to decrease the vulnerability of hazard prone areas to flooding. None of the remaining activities however will significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-3
Eureka – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install sewer valves at wastewater treatment plant to isolate system operations and protect plant functions during heavy rain events.			✓	2020	Installed flood gates at sewer plant screw pits		✓
Obtain approval from Illinois Department of Natural Resources to construct flood wall/berm around the wastewater treatment plant.	✓					✓	
Construct flood wall/berm around the wastewater treatment plant to address recurring flood problems associated with Walnut Creek.	✓					✓	
Incorporate a community safe room (tornado shelter) into the design and construction of a new combined city services building for use by city employees and area residents.			✓	2020	Storm shelter/block building used for storage area to protect employees.		✓
Install/upsize new water mains and fire hydrants at various locations within the City to ensure a constant supply of water for residents and aid in fire suppression during natural hazard events.		✓				✓	
Repair/reline sewer line sections to reduce stormwater infiltration and prevent sewage backups.		✓				✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2019 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Eureka has three infrastructure improvement projects and two administrative activities completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has an additional three infrastructure improvement projects and one administrative activity completed or in progress. Two of the infrastructure improvement projects have the potential to decrease the vulnerability of hazard prone areas. The remain infrastructure improvement project and the administrative activity have the potential to decrease vulnerability to Communications, Food, Water, Shelter, and Safety & Security Community Lifelines. Neither of these actions however will significantly change the vulnerability of hazard prone areas within the City.

Figure MIT-3
Eureka – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Continue construction of water main loops to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.		✓				✓	
Upgrade/upsize storm sewer system in areas prone to flooding to increase capacity and better manage runoff.		✓				✓	
Upgrade/upsize stormwater drainage system (ditches, culverts, etc.) in areas prone to flooding to better manage runoff and alleviate flooding concerns.		✓				✓	
Collaborate with the County's Emergency Management Agency to develop a more robust Emergency Services Department within the City.		✓				✓	
Purchase portable trash pump, 8" or larger, to remove excess water from critical facilities/infrastructure during heavy rain/flood events.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2019 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Eureka has three infrastructure improvement projects and two administrative activities completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has an additional three infrastructure improvement projects and one administrative activity completed or in progress. Two of the infrastructure improvement projects have the potential to decrease the vulnerability of hazard prone areas. The remain infrastructure improvement project and the administrative activity have the potential to decrease vulnerability to Communications, Food, Water, Shelter, and Safety & Security Community Lifelines. Neither of these actions however will significantly change the vulnerability of hazard prone areas within the City.

Figure MIT-3
Eureka – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓					✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓				✓	
Make village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2019 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Eureka has three infrastructure improvement projects and two administrative activities completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has an additional three infrastructure improvement projects and one administrative activity completed or in progress. Two of the infrastructure improvement projects have the potential to decrease the vulnerability of hazard prone areas. The remain infrastructure improvement project and the administrative activity have the potential to decrease vulnerability to Communications, Food, Water, Shelter, and Safety & Security Community Lifelines. Neither of these actions however will significantly change the vulnerability of hazard prone areas within the City.

Figure MIT-4
Germantown Hills – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit an existing public building and/or construct a new structure to serve as a community safe room (tornado shelter) equipped with emergency backup generator and HVAC units that can also be used as an emergency shelter and heating/cooling center for Village residents.	✓					✓	
Retrofit the Village Hall, Maintenance Building/Shop and Wastewater Treatment Plant to high wind standards (including but not limited to installation of a roof anchoring system) to protect the buildings from high wind damage.	✓					✓	
Install shatter-proof glass at the Village Hall and Wastewater Treatment Plant to make the buildings resistant natural hazard events.	✓					✓	
Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups in the Whispering Oaks subdivision.		✓				✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Germantown Hills has four infrastructure projects completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also have one administrative activity in progress that will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-4
Germantown Hills – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase a portable emergency backup generator for use at lift stations to maintain operations during power outages.			✓	2022			✓
Purchase and install emergency backup generators with automatic transfer switches at Coventry Farms1 and Deer Ridge onsite lift stations to provide uninterrupted power and maintain operations during power outages.	✓					✓	
Purchase and install a new emergency backup generator at Wastewater Treatment Plant 1 to provide uninterrupted power and maintain operations during power outages.	✓					✓	
Inventory, scan and store off site (cloud-based storage) vital village records (including sewer & water records) to protect and maintain service in the event a natural hazard event impacts Village Hall.		✓				✓	
Purchase and install an automatic emergency backup generator at Village Hall to provide uninterrupted power and maintain operations during a power outage.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Germantown Hills has four infrastructure projects completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also have one administrative activity in progress that will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-4
Germantown Hills – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct a drainage/hydraulic study to identify the cause(s) and determine the appropriate remedy(s) to alleviate recurring drainage/flooding problems within the City.	✓					✓	
Select, design and construct the appropriate remedy(s) to alleviate recurring drainage/flooding problems within the City.	✓					✓	
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.	✓					✓	
Reshape and regrade select high impact drainage ditches to increase carrying capacity and alleviate drainage/flooding problems.	✓					✓	
Remove debris, vegetative overgrowth, brush from streams and creeks within the City to maintain/increase carrying capacity, better manage stormwater runoff and reduce/prevent drainage problems.		✓				✓	
Clean debris/obstructions out of culverts to maximize carrying capacity and reduce/prevent drainage problems.		✓				✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Germantown Hills has four infrastructure projects completed or in progress that have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also have one administrative activity in progress that will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-5
Roanoke – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Obtain elevation certificates for all municipal buildings located in the floodplain.	✓					✓	
Design and construct a community safe room (tornado shelter) that is equipped with an emergency backup generator and HVAC units as part of new a community center. The community safe room can be used as warming/cooling center and emergency shelter for village residents.	✓					✓	
Retrofit an existing public building and/or construct a new standalone structure to serve as a community safe room (tornado shelter) for City residents.	✓					✓	
Relocate Village Hall and Public Works out of the West Branch Panther Creek base floodplain to provide continuity/continuation of services during flood events.*			✓ Village Hall	2022	Purchased/remodeled former Commerce Bank Building for use as Village Hall.	✓	
Remove debris, vegetative overgrowth, and brush from streams and creeks within the Village to maintain/increase carrying capacity, better manage stormwater runoff and reduce the risk of flooding.		✓				✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Roanoke has completed one infrastructure project (relocation of Village Hall out of the floodplain) that will decrease the vulnerability of hazard prone areas to flooding. The Village also has one infrastructure project and seven administrative activities completed or in progress. The infrastructure project and four of the administrative activities have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The remaining three administrative activities will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-5
Roanoke – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Inventory, scan and store off site vital village records to protect and maintain service in the event a natural hazard event impacts Village Hall.		✓					✓
Acquire flood-prone properties and removed existing structures.	✓					✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓				✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓				✓	
Make city officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	
Participate in the National Flood Insurance Program’s voluntary Community Rating System to lower flood insurance rates for residents.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Roanoke has completed one infrastructure project (relocation of Village Hall out of the floodplain) that will decrease the vulnerability of hazard prone areas to flooding. The Village also has one infrastructure project and seven administrative activities completed or in progress. The infrastructure project and four of the administrative activities have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The remaining three administrative activities will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-5
Roanoke – Status of Existing Mitigation Actions
(Sheet 3 of 4)

Mitigation Action Description	**Status of Mitigation Action**			**Year Completed**	**Summary/Details of Completed Action (i.e., location, scope, etc.)**	**Status of No/In Progress Actions**	
	No Progress (✓)	**In Progress (✓)**	**Completed (✓)**			**Included in Updated Action Plan (✓)**	**No Longer Relevant (✓)**
Target FEMA's Repetitive Loss Properties for educational outreach.	✓					✓	
Target FEMA's Repetitive Loss Properties for potential mitigation projects.		✓				✓	
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.	✓					✓	
Locate and label all public hydrants in the Village to assist in street identification in the event of widespread natural hazard damage.			✓	2020			✓
Develop "hazard information centers" at the public library and on the Village'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	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Roanoke has completed one infrastructure project (relocation of Village Hall out of the floodplain) that will decrease the vulnerability of hazard prone areas to flooding. The Village also has one infrastructure project and seven administrative activities completed or in progress. The infrastructure project and four of the administrative activities have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The remaining three administrative activities will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-5
Roanoke – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Summary/Details of Completed Action (i.e., location, scope, etc.)	Status of No/In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)			Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.	✓					✓	
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.			✓	2022			✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2019 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Roanoke has completed one infrastructure project (relocation of Village Hall out of the floodplain) that will decrease the vulnerability of hazard prone areas to flooding. The Village also has one infrastructure project and seven administrative activities completed or in progress. The infrastructure project and four of the administrative activities have the potential to decrease the vulnerability of hazard prone areas to flooding. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The remaining three administrative activities will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 1 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Conduct a study to identify which municipal critical facilities and infrastructure within the County require the installation of transfer switches/electrical hookups in order to utilize portable emergency backup generators to maintain operations during prolonged power outages.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	FWS S&S	E&A	Medium County SVI: 0.0226	---	---	3, 5	LM	Low/Medium	EMA Director	2-5 years	County	New
Secure Memorandums of Agreement with critical facilities and infrastructure (i.e., ARC designated shelters, etc.) within the County to install electrical hookups (pigtails) for use with portable emergency backup generators to maintain operations during prolonged power outages.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	FWS S&S	LP&R	Medium County SVI: 0.0226	---	---	2, 3, 5	LM	Low/Medium	County Board Chair County Board / EMA Director	2-5 years	County	New
Purchase and install electrical hookups (pigtails) at critical facilities and infrastructure (i.e., ARC designated shelters, etc.) within the County for use with portable emergency backup generators to maintain operations during prolonged power outages.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	FWS S&S	S&IP	Medium County SVI: 0.0226	---	Yes	2, 3, 5	HM	Medium/High	County Board Chair County Board / EMA Director	2-5 years	County	New

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 2 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Purchase portable emergency backup generators for use at critical facilities and infrastructure (i.e., ARC designated shelters, etc.) within the County to maintain operations during prolonged power outages.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	FWS S&S	S&IP	Medium County SVI: 0.0226	---	Yes	2, 3, 5	HM	Medium/High	County Board Chair County Board / EMA Director	1-5 years	County / FEMA HMGP	New
Develop a database of access and functional needs populations within the County in order to identify the best method(s) to alert these individuals to hazard events.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C	E&A	Small County SVI: 0.0226	---	---	1, 2	LM	Low/High	EMA Director / 911 Coordinator	2-5 years	County	New
In cooperation with the American Red Cross, establish new warming/cooling centers and emergency shelters in areas not currently served by a designated center/shelter.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	FWS	E&A	Medium County SVI: 0.0226	---	---	2	LM	Low/High	EMA Director / American Red Cross	2-5 years	County	New

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 3 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Evaluate the cost/benefits of implementing an automated mass notification system (i.e., reverse 911 or similar system) to notify residents/responders of hazard event conditions and information and establish a Community Lifeline.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C	E&A	Large County SVI: 0.0226	---	---	2	LM	Low/High	County Board Chair County Board / 911 Coordinator / Sheriff	2-5 years	County	New
Retrofit the County Public Safety Building/Courthouse to include a community safe room (equipped with emergency backup generator & HVAC system) for use by staff, visitors, and area residents to establish a Community Lifeline essential to human health and safety.	SS, T	FWS	S&IP	Small County SVI: 0.0226	---	---	2	HM	Medium/High	EMA Director / Sherriff	3-5 years	County / FEMA BRIC/ HMGP	New
Improve coordination between the County, townships, and municipalities in an effort to help implement hazard mitigation projects and cleanup activities aimed at reducing or eliminating the risk associated with natural and man-made hazard events.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	S&S	E&A	Large County SVI: 0.0226	Yes	Yes	2, 3, 5	LM	Low/Medium	County Board Chair County Board / EMA Director	1-5 years	County	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 4 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Purchase and install an automatic emergency backup generator at the County Courthouse/Public Safety Building to provide uninterrupted power to the Emergency Operations Center/Joint Information Center (County Board Room) and maintain continuity of government/operations during power outages.	DF, EC, EH, EQ, MMH, F, SS, SWS, T	C S&S	S&IP	Small County SVI: 0.0226	---	Yes	2, 3, 5	HM	Medium/High	EMA Director / Sheriff	1-2 years	County / FEMA BRIC	Existing (2019)
Purchase portable, trailer-mounted LED emergency message boards to alert the public of hazardous conditions associated with natural and man-made hazard events.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C	E&A	Medium County SVI: 0.0226	---	---	2	LM	Low/Medium	County Engineer Highway Dept/ Sheriff	5 years	County	Existing (2019)
Purchase and install storm warning sirens in select areas of the County without alert coverage to establish communications community lifelines essential to human health and safety.	SS, T	C	S&IP E&A	Small County SVI: 0.0226	---	---	2	HM	Medium/High	EMA Director	1-5 years	County	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 5 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Develop an early warning notification system to alert residents along the Mackinaw River in the event of a dam failure at Lake Evergreen Dam.	DF	C	E&A	Small County SVI: 0.0226	---	---	2	HL	Medium/High	EMA Director	1-5 years	County	Existing (2019)
Partner with classified dam owners to develop Emergency Action Plans (EAPs) that identify the extent (water depths, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.	DF	S&S	E&A	Small County SVI: 0.0226	---	---	2, 3, 5	LL	Low/Medium	EMA Director	5 years	County / Classified Dam Owners	Existing (2019)
Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C FWS H&M S&S	E&A	Small County SVI: 0.0226	---	---	3, 5	LM	Low/Medium	County Board Chair County Board / EMA Director	3-5 years	County	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 6 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Purchase and distribute NOAA weather radios to vulnerable residents, businesses, schools, critical facilities (i.e., nursing homes, ARC designated shelters, etc.), fire protection districts, etc.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C	E&A	Medium County SVI: 0.0226	---	---	2	HM	Low/High	EMA Director	1-5 years	County	Existing (2019)
Examine the feasibility of designating schools and other public buildings as warming centers and emergency shelters.	DF, EC, EQ, F, L, MMH, MS, SS, SWS, T	FWS	E&A	Medium County SVI: 0.0226	---	---	2	LM	Low/Medium	EMA Director	1-2 years	County	Existing (2019)
Distribute public information materials that inform residents of the risks to life and property associated with natural and man-made hazards and the proactive actions that they can take to reduce or eliminate their risks.	DF, DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large County SVI: 0.0226	---	---	1, 2	LM	Low/Medium	EMA Director	2-5 year	County	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (just over 13,500 individuals in unincorporated areas), projected population growth, and budgetary constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

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LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 7 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
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 and man-made hazard events.	DF, DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C E FWS H&M S&S T	E&A	Large County SVI: 0.0226	---	---	3, 5, 8	LM	Low/Medium	County Board / EMA Director	3-5 years	County	Existing (2019)
Target FEMA's Repetitive Loss Properties for educational outreach.*	F	S&S	E&A	Small County SVI: 0.0226	---	---	2, 6	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-5 years	County	Existing (2019)
Target FEMA's Repetitive Loss Properties for potential mitigation projects.*	F	S&S	E&A	Small County SVI: 0.0226	---	---	2, 6	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-5 years	County	Existing (2019)
Distribute educational materials informing residents about the benefits of the National Flood Insurance Program and how it is administered locally.*	F	S&S	E&A	Small County SVI: 0.0226	---	---	1, 2	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-5 years	County	Existing (2019)

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority

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LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-9
Woodford County Hazard Mitigation Actions
(Sheet 8 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small County SVI: 0.0226	Yes	Yes	1, 2, 6, 7	HM	Low/Medium	Zoning Administrator / County Board	1-5 years	County	Existing (2019)
Continue to make the most recent Flood Insurance Rate Maps available at the Building/Zoning Department's office to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small County SVI: 0.0226	Yes	---	1, 2, 6, 7	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-5 years	County	Existing (2019)
Continue to make County officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small County SVI: 0.0226	Yes	---	1, 2, 6, 7	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-5 years	County	Existing (2019)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.	F	S&S	E&A LP&R	Small County SVI: 0.0226	---	---	4	LM	Low/Medium	Zoning Administrator / Building/Zoning Department	1-3 years	County	Existing (2019)

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Hazard(s) to be Mitigated:

DF	Dam Failure	L	Landslides
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
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Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-10
El Paso Hazard Mitigation Actions
(Sheet 1 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Clean debris/obstructions out of roadway culverts and drainage structures within the City to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Transportation Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.4455 EDRC: Yes	---	Yes	3, 5	HM	Low/Medium	Director of Public Service / Operations Supervisor	3 years	City	New
Establish/designate new warming/cooling centers and emergency shelters within the City.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	LP&R	Medium SVI: 0.4455 EDRC: Yes	---	---	2	LM	Low/High	Director of Public Service	5 years	City	New
Purchase and install automatic emergency backup generators at designated warming/cooling centers and emergency shelters to maintain operations during prolonged power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.4455 EDRC: Yes	---	---	2	HM	Medium/High	Director of Public Service	5 years	City / USDA – RD Critical Facilities Programs / FEMA BRIC	New

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Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

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Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-10
El Paso Hazard Mitigation Actions
(Sheet 2 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Conduct a study to identify which municipal critical facilities and infrastructure (i.e., lift stations, well pumps, etc.) require the installation of transfer switches/electrical hookups in order to utilize portable emergency backup generators to maintain continuity of government/operations during prolonged power outages.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	FWS S&S	E&A	Large SVI: 0.4455 EDRC: Yes	---	---	3, 5	LM	Low/Medium	Director of Public Service / Operations Supervisor	2 years	City	New
Harden existing Emergency Operations Center/ Incident Command Center to increase building resilience, maintain continuity of government/operations, and ensure the continued functionality of Community Lifelines.	EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.4455 EDRC: Yes	---	Yes	2, 3, 5	HM	High/High	Director of Public Service / Police Chief / Operations Supervisor	5 years	City / FEMA HMGP/ BRIC	New
Purchase portable, trailer-mounted LED emergency message board to alert the public of hazardous conditions associated with natural and man-made hazard events.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	C	E&A	Large SVI: 0.4455 EDRC: Yes	---	---	2	LM	Medium/Medium	Director of Public Service / Operations Supervisor / ESDA Coordinator	3-5 years	City	New

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Acronyms

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Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-10
El Paso Hazard Mitigation Actions
(Sheet 3 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Purchase and install new storm warning sirens as needed to maximize the system's effectiveness and establish/ensure continued operation of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP	Large SVI: 0.4455 EDRC: Yes	---	---	2	HM	Medium/High	Director of Public Service / ESDA Coordinator	1-5 years	City / USDA – RD Critical Facilities Programs	New
Upgrade/retrofit the storm sewer system in areas prone to flooding to eliminate stormwater infiltration, increase storage and draining capacity, better manage stormwater runoff, and ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	FWS	S&IP	Medium SVI: 0.4455 EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	Director of Public Service / Operations Supervisor	5 years	City / IEPA SRF – WPCLP / USDA – RD Water & Waste Disposal Program	New

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Acronyms

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LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-10
El Paso Hazard Mitigation Actions
(Sheet 4 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Install/upsize new water mains and fire hydrants at various locations within the City to improve system resilience, ensure a constant supply of water for residents, and aid in fire suppression during natural and man-made hazard events.	EC, EH, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.4455 EDRC: Yes	Yes	Yes	2, 3, 5	HM	High/High	Director of Public Service / Operations Supervisor	1-5 years	City / IEPA SRF – PWSLP / USDA – RD Water & Waste Disposal Program	New
Distribute public information materials that inform residents of the risks to life and property associated with natural and man-made hazards and the proactive actions that they can take to reduce or eliminate their risks.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Medium SVI: 0.4455 EDRC: Yes	---	---	1, 2	LM	Low/Medium	Director of Public Service / ESDA Coordinator	1-5 year	City	New

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Acronyms

Priority

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- LM Mitigation action with the potential to reduce impacts from the most frequent hazards
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- LL Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

- DR Drought
- EC Extreme Cold
- EH Excessive Heat
- EQ Earthquake
- F Flood
- MMH Man-Made Hazard
- SS Severe Storms
- SWS Severe Winter Storm
- T Tornado

Type of Mitigation Activity:

- E&A Education & Awareness
- LP&R Local Plans & Regulations
- NSP Natural Systems Protection
- S&IP Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

- C Communications
- E Energy (Power & Fuel)
- FWS Food, Water, Shelter
- HM Hazardous Material
- H&M Health & Medical
- S&S Safety & Security
- T Transportation

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Install a 3rd drinking water well to provide supplemental capacity to improve drought resiliency and mitigate risk to a Community Lifeline.	DR	FWS	S&IP	Large SVI: 0.6148 EDRC: No	---	Yes	2, 3, 5	HL	High/High	Mayor City Council / Public Works Director	3 years	City / IEPA SRF – PWSLP	New
Install 2nd clear well at the drinking water treatment facility (final storage point in the drinking water system following the filtration and disinfection stages) to provide supplemental capacity to improve system resilience and mitigate risk to a Community Lifeline.	DR, EC, EH, F, MMH, SS, SWS, T	FWS	S&IP	Large SVI: 0.6148 EDRC: No	---	Yes	2, 3, 5	HM	High/High	Mayor City Council / Public Works Director	2 years	City / IEPA SRF – PWSLP	New
Install a well housing at drinking water well #1 to prevent contamination of the water below, improve system resilience to hazards, and ensure continued operations of a Community Lifeline.	F, MMH, SS, SWS, T	FWS	S&IP	Large SVI: 0.6148 EDRC: No	---	Yes	3, 5	HM	Medium/High	Public Works Director / Water Department	1 year	City / IEPA SRF – PWSLP	New

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Acronyms

Priority

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HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Upgrade stormwater mains in five specific flood zones within the City to increase storage and capacity, better manage runoff, and ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	FWS	S&IP	Medium SVI: 0.6148 EDRC: No	---	Yes	3, 5	HM	Medium/High	Mayor City Council / Public Works Director	20 years	City / FEMA BRIC	New
Identify and install floodproof measures at wastewater treatment plant to protect bar screen, blowers, digester, and aeration to ensure system resilience and continued operation of a Community Lifeline. These components have all been previously damaged by flood events.	F, SS	FWS	E&A S&IP	Large SVI: 0.6148 EDRC: No	---	Yes	2, 3, 5	HM	Medium/High	Public Works Director / Sewer Department	5 years	City / FEMA FMA/BRIC / IEPA SRF – WPCLP	New
Develop an Emergency Action Plan (EAP) for the Eureka Lake Dam that identifies the extent (water depth, speed of onset, warning times, etc.) and location (inundation areas) of a potential dam failure to address data deficiencies.	DF	---	LP&R	Large SVI: 0.6148 EDRC: No	---	---	2, 3, 5	LL	Low/Medium	Mayor City Council / Public Works Director	5 years	City	New
Obtain approval from Illinois Department of Natural Resources to construct flood wall/berm around the wastewater treatment plant.	F, SS	FWS	LP&R	Large SVI: 0.6148 EDRC: No	---	---	2, 3, 5	LM	Low/Medium	Public Works Director	2-3 years	City	Existing (2019)

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† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 5,500 individuals). The City works hard to maintain critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
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Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)[§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)[†]	Status
					New	Existing							
Construct flood wall/berm around the wastewater treatment plant to address recurring flood problems associated with Walnut Creek.	F, SS	FWS	S&IP NSP	Large SVI: 0.6148 EDRC: No	---	Yes	2, 3, 5	HM	High/High	Mayor City Council / Public Works Director	2-3 years	City / FEMA FMA/BRIC	Existing (2019)
Install/upsize new water mains and fire hydrants at various locations within the City to improve system resilience, ensure a constant supply of water for residents, and aid in fire suppression during natural and man-made hazard events.	EC, EH, F, MMH, SS, SWS, T	FWS	S&IP	Large SVI: 0.6148 EDRC: No	Yes	Yes	2, 3, 5	HM	High/High	Mayor City Council / Public Works Director	1-5 years	City / IEPA SRF – PWSLP	Existing (2019)
Repair/reline sewer line sections to eliminate stormwater infiltration, prevent sewage backups, and improve capacity, function, and reliability of the City's sewer system.	F, SS	FWS	S&IP	Medium SVI: 0.6148 EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor City Council / Public Works Director	1-5 years	City / IEPA SRF – WPCLP	Existing (2019)

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Acronyms

Priority

- HM Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
- LM Mitigation action with the potential to reduce impacts from the most frequent hazards
- HL Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
- LL Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
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EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Phased construction of water main loops to improve system resilience by creating redundancy to minimize service disruptions resulting from pipe and water main breaks, ensure continued functionality of a community lifeline, and aid in fire suppression during natural and man-made hazard events.	DR, EC, EH, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.6148 EDRC: No	Yes	Yes	2, 3, 5	LM	High/High	Mayor City Council / Public Works Director	1-5 years	City / IEPA SRF – PWSLP	Existing (2019)
Upgrade/upsize storm sewer system in areas prone to flooding to increase storage and capacity, better manage runoff, and ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	FWS T	S&IP	Small SVI: 0.6148 EDRC: No	Yes	Yes	2, 3, 5	HM	High/High	Mayor City Council / Public Works Director	3-5 years	City / IEPA SRF – WPCLP	Existing (2019)
Upsize stormwater drainage system (ditches, culverts, etc.) in flood-prone areas to alleviate recurring flood problems, better manage stormwater runoff, and increase system resilience.	F, SS	T	S&IP	Small SVI: 0.6148 EDRC: No	---	Yes	2, 3, 5	HM	Medium/High	Mayor City Council / Public Works Director	1-5 years	City / FEMA BRIC/FMA	Existing (2019)

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Acronyms

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Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
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EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Collaborate with the County's Emergency Management Agency to develop a more robust Emergency Services Department within the City.	DF, DR, EC, EH, EQ, F, MMH, SS, SWS, T	S&S	LP&R E&A	Large SVI: 0.6148 EDRC: No	---	---	2, 3, 5	LM	Low/Medium	Mayor / City Council	2-4 years	City	Existing (2019)
Purchase portable trash pump, 8" or larger, to remove excess water from critical facilities/ infrastructure during heavy rain/flood events to ensure continued functionality of Community Lifelines.	F, SS	S&S T	S&IP	Small SVI: 0.6148 EDRC: No	Yes	Yes	3, 5	HM	Low/High	Mayor City Council / Public Works Director	3 years	City	Existing (2019)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.	F	S&S	E&A LP&R	Small SVI: 0.6148 EDRC: No	---	---	4	LM	Low/Medium	Chairman / Planning Commission	3-5 years	City	Existing (2019)

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Hazard(s) to be Mitigated:

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DR	Drought	MMH	Man-Made Hazard
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Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
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Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-11
Eureka Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.6148 EDRC: No	Yes	Yes	1, 2, 6, 7	HM	Low/Medium	Mayor / City Council	1-5 years	City	Existing (2019)
Continue to make the most recent Flood Insurance Rate Maps available at the City Clerk's Office to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.6148 EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Chairman / Planning Commission	1-5 years	City	Existing (2019)
Continue to make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.6148 EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Chairman / Planning Commission	1-5 years	City	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

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* Mitigation action to ensure continued compliance with NFIP.

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Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
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Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-12
Germantown Hills Hazard Mitigation Actions
(Sheet 1 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Retrofit existing village-owned building and/or construct a new stand-alone structure to serve as a community safe room equipped with emergency backup generator and HVAC system that can also be used as a warming/cooling center and emergency shelter for Village residents to establish a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.0557 EDRC: No	Yes	Yes	2	HM	High/High	President/ Village Board	5 years	Village / FEMA BRIC/ HMGP / HUD CDBG	Existing (2019)
Harden Village Hall, Maintenance Building/Shop, and Wastewater Treatment Plant to high wind standards (including but not limited to installation of a roof anchoring system) to increase building resilience to high wind damage, maintain continuity of government/operations, protect staff, and mitigate risk to Community Lifelines.	SS, T	S&S FWS	S&IP	Small SVI: 0.0557 EDRC: No	---	Yes	5 years	HM	Medium/High	President/ Village Board	5 years	Village / FEMA BRIC/ HMGP	Existing (2019)
Install shatter-proof glass at the Village Hall and Wastewater Treatment Plant to increase buildings resilience to natural hazard events, maintain continuity of government/operations, protect staff, and mitigate risk to Community Lifelines.	EQ, SS, T	S&S FWS	S&IP	Small SVI: 0.0557 EDRC: No	---	Yes	5 years	HM	Medium/Medium	President/ Village Board	5 years	Village / FEMA BRIC/ HMGP	Existing (2019)

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Hazard(s) to be Mitigated:

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EC	Extreme Cold	SS	Severe Storms
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F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-12
Germantown Hills Hazard Mitigation Actions
(Sheet 2 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Repair/reline sewer line sections in the Whispering Oaks subdivision to eliminate stormwater infiltration, prevent sewage backups, improve capacity, function, and reliability of the Village's sewer system.	F, SS	FWS	S&IP	Medium SVI: 0.0557 EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President/ Village Board/ Public Works Director	5 years	Village / IEPA SRF – WPCLP	Existing (2019)
Purchase and install emergency backup generators with automatic transfer switches at Coventry Farms1 and Deer Ridge onsite lift stations to establish a resilient and reliable power supply in order to maintain continuity of operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.0557 EDRC: No	Yes	Yes	2, 3, 5	HM	Medium/High	President/ Village Board/ Public Works Director	5 years	Village / FEMA HMGP	Existing (2019)
Purchase and install an emergency backup generator at Wastewater Treatment Plant 1 to establish a resilient and reliable power supply in order to maintain continuity of operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Large SVI: 0.0557 EDRC: No	Yes	Yes	2, 3, 5	HM	Medium/High	President/ Village Board/ Public Works Director	5 years	Village / FEMA HMGP	Existing (2019)

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EC	Extreme Cold	SS	Severe Storms
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EQ	Earthquake	T	Tornado
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Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-12
Germantown Hills Hazard Mitigation Actions
(Sheet 3 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Inventory, scan and store off site (cloud-based storage) vital village records (including sewer & water records) to protect and maintain service in the event a natural hazard event impacts Village Hall.	EQ, F, MMH, SS, SWS, T	S&S	LP&R E&A	Large SVI: 0.0557 EDRC: No	---	---	5, 8	LM	Medium/High	President Village Board/ Village Administrator	5 years	Village	Existing (2019)
Purchase and install an automatic emergency backup generator at Village Hall to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.0557 EDRC: No	---	Yes	2, 3, 5	HM	Medium/High	President/ Village Board/ Public Works Director	3 years	Village / FEMA HMGP	Existing (2019)
Conduct hydrologic/hydraulic study to determine the cause(s) and identify the design solutions to alleviate recurring drainage/flooding problems within the City.	F, SS	T	E&A	Medium SVI: 0.0557 EDRC: No	---	---	3, 5	LM	Medium/Medium	President/ Village Board/ Public Works Director	5 years	Village / IDOT Local Roads	Existing (2019)

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DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
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FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-12
Germantown Hills Hazard Mitigation Actions
(Sheet 4 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Construct the identified design solution(s) to alleviate recurring drainage/flooding problems within the City.	F, SS	S&S	S&IP	Medium SVI: 0.0557 EDRC: No	Yes	Yes	2, 3, 5	HM	High/Medium	President/ Village Board/ Public Works Director	5 years	Village / FEMA BRIC	Existing (2019)
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 and ensure continued functionality of Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.0557 EDRC: No	---	Yes	2, 3, 5	HM	Medium/Medium	President/ Village Board/ Public Works Director	5 years	Village / IDOT Local Roads	Existing (2019)
Reshape/regrade select high impact drainage ditches to alleviate drainage/flooding problems, increase carrying capacity, better manage stormwater runoff, and increase community resilience.	F, SS	T	S&IP	Small SVI: 0.0557 EDRC: No	---	Yes	2, 3, 5	HM	Medium/Medium	President/ Village Board/ Public Works Director	5 years	Village / IDOT Local Roads	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a village of this size (approx. 3,400 individuals). The Village works hard to maintain critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-12
Germantown Hills Hazard Mitigation Actions
(Sheet 5 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Remove debris, vegetative overgrowth, and brush from streams and creeks within the Village to maximize flow/carrying capacity, better manage stormwater runoff, and reduce/prevent drainage problems.	F, SS	S&S	S&IP	Small SVI: 0.0557 EDRC: No	---	Yes	3, 4, 5	LM	Low/Medium	President/ Village Board/ Public Works Director	1-5 years	Village	Existing (2019)
Clean debris/obstructions out of culverts to maximize flow/carrying capacity, reduce/prevent drainage problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.0557 EDRC: No	---	Yes	3, 4, 5	LM	Low/Medium	President/ Village Board/ Public Works Director	1-5 years	Village	Existing (2019)
Distribute public information materials that inform residents of the risks to life and property associated with natural and man-made hazards and the proactive actions that they can take to reduce or eliminate their risks.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Large SVI: 0.4455 EDRC: Yes	---	---	1, 2	LM	Low/Medium	President/ Village Board/ Public Works Director	1-5 year	Village	New

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a village of this size (approx. 3,400 individuals). The Village works hard to maintain critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storms
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-13
Minonk Hazard Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Design and construct community safe rooms, (built to high wind standards and equipped with an emergency backup generators and HVAC systems) at strategic locations within the City that can also be used as warming/cooling centers for residents to establish Community Lifelines.	EC, EH, SS, T	FWS	S&IP	Medium SVI: 0.1890 EDRC: No	Yes	---	2	HM	High/High	Mayor / City Council	5 years	City / FEMA BRIC/ HMGP	New
Reline main storm sewer line to eliminate stormwater infiltration, increase storage and draining capacity, better manage stormwater runoff, and ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	FWS T	S&IP	Medium SVI: 0.1890 EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	1 year	City / IEPA SRF – WPCLP	New
Install additional drainage pipes in the Elm Court area to increase carrying capacity, alleviate recurring flooding problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Small SVI: 0.1890 EDRC: No	---	Yes	3, 5	HM	Medium/High	Mayor / City Council	1 year	City / IEPA SRF – WPCLP	New

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 2,000 individuals). The City works hard to provide critical of services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-13
Minonk Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Upgrade/upsize the storm sewer line on the east end of the City to increase storage and draining capacity, better manage stormwater runoff, and ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	FWS T	S&IP	Medium SVI: 0.1890 EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	5 years	City / IEPA SRF – WPCLP	New
Separate combined sewer system to better manage stormwater runoff, reduce flow rates to wastewater treatment plant, increase system resilience, prevent damage to the collection systems and plant during flood events and mitigate risk to a Community Lifeline.	F, SS	FWS	S&IP	Large SVI: 0.1890 EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	5-10 years	City / IEPA SRF – WPCLP	New
Distribute public information materials that inform residents of the risks to life and property associated with natural and man-made hazards and the proactive actions that they can take to reduce or eliminate their risks.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1890 EDRC: No	---	---	1, 2	LM	Low/Medium	Mayor / City Council	1-5 years	City	New

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

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Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
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LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Obtain elevation certificates for all municipal buildings located in the floodplain.*	F	S&S	LP&R	Small SVI: 0.1465 EDRC: No	---	---	3, 5	LM	Low/Medium	President/ Village Board	1-3 years	Village	Existing (2019)
Design and construct a community safe room, (built to high wind standards and equipped with an emergency backup generator and HVAC system) as part of new a community center that can also be used as a warming/cooling center and emergency shelter Village residents to establish a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium SVI: 0.1465 EDRC: No	Yes	---	2	HM	High/High	President/ Village Board	5 years	Village / FEMA BRIC	Existing (2019)
Retrofit existing village-owned building and/or construct a new stand-alone structure to serve as a community safe room (built to high wind standards and equipped with emergency backup generator and HVAC system) for use by Village residents to establish a Community Lifeline.	SS, T	FWS	S&IP	Small SVI: 0.1465 EDRC: No	Yes	Yes	2	HM	High/High	President/ Village Board	5 years	Village / FEMA BRIC	Existing (2019)

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)[§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)[†]	Status
					New	Existing							
Relocate Public Works out of the West Branch Panther Creek base floodplain to ensure system resilience, maintain continuity of operations, and mitigate risk to a Community Lifeline.*	F	FWS	S&IP NSP	Medium SVI: 0.1465 EDRC: No	Yes	Yes	3, 5	HM	High/High	President / Village Board	5 years	Village / FEMA BRIC/FMA	Existing (2019)
Remove debris, vegetative overgrowth, and brush from streams and creeks within the Village to maximize flow/carrying capacity, better manage stormwater runoff, and reduce/prevent drainage problems.	F, SS	S&S	S&IP	Small SVI: 0.1465 EDRC: No	---	Yes	2, 4, 5	LM	Low/Medium	President / Village Board	1-5 years	Village	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

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Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Acquire flood-prone properties and remove existing structures.*	F, SS	S&S	S&IP NSP	Small SVI: 0.1465 EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	President / Village Board	3-5 years	Village / FEMA FMA/BRIC	Existing (2019)
Target FEMA's Repetitive Loss Properties for educational outreach.*	F	S&S	E&A	Small SVI: 0.1465 EDRC: No	---	---	2, 4, 6	LM	Low/Medium	President / Village Board	1-5 years	Village	Existing (2019)
Target FEMA's Repetitive Loss Properties for potential mitigation projects.*	F	S&S	E&A	Small SVI: 0.1465 EDRC: No	---	---	2, 4, 6	LM	Low/Medium	President / Village Board	1-5 years	Village	Existing (2019)

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority

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Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Distribute educational materials informing residents about the benefits of the National Flood Insurance Program and how it is administered locally.	F	S&S	E&A	Small SVI: 0.1465 EDRC: No	---	---	1, 2, 4	LM	Low/Medium	President / Village Board	1-5 years	Village	Existing (2019)
Develop "hazard information centers" at the public library and on the Village's website to distribute public information materials to residents that detail the risks to life and property associated with natural and man-made hazards that impact the Village and the proactive actions they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1465 EDRC: No	---	---	2, 4	LM	Low/Medium	President / Village Board	1-5 years	Village	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

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Acronyms

Priority

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LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Evaluate critical facilities and shelters to determine their resistance to natural hazards and recommend ways to strengthen or harden these facilities.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C FWS H&M S&S	E&A	Small SVI: 0.1465 EDRC: No	---	---	3, 5	LM	Low/Medium	President / Village Board	5 years	Village	Existing (2019)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System.*	F	S&S	E&A LP&R	Small SVI: 0.1465 EDRC: No	---	---	4	LM	Low/Medium	Zoning Officer / Planning & Zoning	1-3 years	Village	Existing (2019)

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

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LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-14
Roanoke Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, and/or EDRC)§	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.1465 EDRC: No	Yes	Yes	1, 2, 6, 7	HM	Low/High	President Village Board / Zoning Officer	1-5 years	Village	Existing (2019)
Continue to make the most recent Flood Insurance Rate Maps available at the Village Clerk's Office to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.1465 EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Zoning Officer / Planning & Zoning	1-5 years	Village	Existing (2019)
Continue to make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.1465 EDRC: No	Yes	---	1, 2, 3, 4, 5, 6, 7	LM	Low/Medium	Zoning Officer / Zoning Board	1-5 years	Village	Existing (2019)

§ Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a village of this size (approx. 1,800 individuals). The Village works hard to provide critical of services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

5.0 PLAN MAINTENANCE

This section focuses on the Federal Emergency Management Agency (FEMA) requirements for maintaining and updating the Plan once it has been approved by FEMA and adopted by the participating jurisdictions. These requirements include:

- establishing the method and schedule for monitoring, evaluating and updating the Plan;
- describing how the requirements of the Plan will be incorporated into existing planning mechanisms; and
- detailing how continued public input will be obtained during the plan maintenance process.

These requirements ensure that the Plan remains an effective and relevant document. The following provides a detailed discussion of each requirement.

5.1 MONITORING, EVALUATING & UPDATING THE PLAN

Outlined below is a method and schedule for monitoring, evaluating, and updating the Plan. This method allows the participating jurisdictions to make necessary changes and updates to the Plan and track the implementation and results of the mitigation actions that have been undertaken.

5.1.1 Monitoring and Evaluating the Plan

The Plan update will be monitored and evaluated by a Plan Maintenance Subcommittee of the Mitigation Advisory Committee (MAC or Committee) on an annual basis. The Subcommittee will be composed of the participating jurisdictions who sought Plan approval and other key members of the Committee. The Tri-County Regional Planning Commission (TCRPC) will chair the Plan Maintenance Subcommittee.

The TCRPC will assume lead responsibility for monitoring and tracking the implementation status of the mitigation actions identified in the Plan update. It will be the responsibility of each Plan participant to provide the TCRPC with an annual progress report on the status of their existing mitigation actions and identify whether any actions need to be modified. New mitigation actions may be added to the Plan during the annual monitoring and evaluation period or at any time during the plan maintenance cycle by contacting the TCRPC and providing the appropriate information.

Monitoring & Evaluating

- A Plan Maintenance Subcommittee will be formed to monitor and evaluate the Plan update.
- The ***Plan update will be monitored and evaluated*** on an ***annual basis***.
- Each Plan participant will be responsible for providing an annual progress report on the status of their mitigation actions.
- Plan participants can add ***new mitigation actions*** to the Plan ***during the annual monitoring phase or by contacting*** the Tri-County Regional Planning Commission.

The Plan Maintenance Subcommittee will also evaluate the Plan update on an annual basis to determine the effectiveness of the Plan at achieving its stated purpose and goals. In order to evaluate the effectiveness of the Plan update, the Subcommittee will review the mitigation actions that have been successfully implemented and determine whether the action achieved the identified goal(s) and had the intended result (i.e., losses were avoided, or the vulnerability of hazard-prone areas were reduced).

The Subcommittee will also ask each Plan participant to identify any significant changes in development or priorities that have occurred within the previous 12 months; whether any new plans, policies, regulations, or reports have been adopted; and if any hazard-related damages to critical facilities and infrastructure have been sustained.

In order to streamline the plan maintenance process, the TCRPC will provide each Plan participant with a Plan Maintenance Checklist along with the necessary forms to complete and return. **Appendix M** contains a copy of Checklist and associated forms.

The TCRPC will then prepare a progress report detailing the results of the annual Plan monitoring and evaluation period and provide copies to the Subcommittee. The annual progress report will include:

- information on any hazard-related damages sustained by critical facilities and infrastructure within the planning area during the previous year.
- implementation status of the mitigation actions identified in the Mitigation Strategy.
- identification of any new mitigation actions proposed by the Plan participants.
- information on changes in development, priorities, and planning and regulatory capabilities for the Plan participants.
- identification of how information will be disseminated to stakeholders and constituents on the Plan and its progress in effort to seek continued public participation.

If any existing mitigation actions are modified or new mitigation actions are identified for the Plan participants then Section 4.7 of the Mitigation Strategy will be updated and the Plan update resubmitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and FEMA for reference.

On an as needed basis the TCRPC, in consultation with the Subcommittee, will evaluate requests from non-participating jurisdictions to "join" the Plan before the five-year update. Consideration will be given if certain conditions are met as outlined in Appendix D of *FEMA's Local Mitigation Planning Policy Guide.*

5.1.2 Updating the Plan

The Plan must be updated within five years of the of the Plan approval date indicated on the signed FEMA final approval letter. (This date can be found in Section 6, Plan Adoption.) This ensures that all the participating jurisdictions will remain eligible to receive federal grant funds to implement those mitigation actions identified in this Plan.

The TCRPC, with assistance from the Plan Maintenance Subcommittee, will be responsible for updating the Plan. The update will incorporate all of the information gathered during the monitoring and evaluation phase and will also include:

Updating the Plan

- The TCPRC, with assistance from the Plan Maintenance Subcommittee, will be responsible for updating the Plan.
- The Plan ***must be updated within 5 years*** of the ***date of the final approval letter*** provided by FEMA.
- Once the Plan update has received FEMA/IEMA approval, each participating jurisdiction ***must adopt the Plan to remain eligible to receive federal mitigation funds.***

- a review of the Mitigation Strategy, including potential updates to the mitigation goals and prioritization methodology;
- an evaluation of whether additional natural or man-made hazards need to be addressed or included in the Plan;
- a review of new hazard data that may affect the Risk Assessment Section;
- identification of any changes in priorities within each participating jurisdiction; and
- identification of any changes in development that have occurred in hazard prone areas that would increase or decrease the participating jurisdictions' vulnerability.

A Mitigation Advisory Committee will be reformed to update the Plan and a public involvement strategy similar to the one employed for this Plan update will be implemented to ensure that the public and stakeholders have ample opportunities to become engaged and provide input during the development of the Plan update. In addition, any jurisdictions that did not take part in the previous Plan update may do so at this time. It will be the responsibility of these jurisdictions to provide all of the information needed to be integrated into the Plan update.

A public forum will be held to present the Plan update to the public for review and comment. The comments received at the public forum will be reviewed and incorporated into the Plan update. The Plan update will then be submitted to IEMA-OHS and FEMA for review and approval. ***Once the Plan update has received state and federal approval, FEMA requires that each of the participating jurisdictions adopt the Plan to remain eligible to receive federal funds to implement identified mitigation actions.***

5.2 Incorporating the Mitigation Strategy into Existing Planning Mechanisms

As part of the planning process, the Committee identified each participating jurisdiction's existing capabilities (i.e., existing authorities, policies, programs, technical information, etc.) and resources available to support or accomplish mitigation and reduce long-term vulnerability. **Figures PP-3** through **PP-5** identify the existing authorities, policies, programs, technical information, and resources available by capability type by jurisdiction. ***It will be the responsibility of each participating jurisdiction to incorporate, where applicable, the mitigation strategy and other information contained in the Plan update into the planning mechanisms identified for their jurisdiction.***

Adoption of this Plan update will trigger each participating jurisdiction to review and, where appropriate, integrate the Plan into other available planning mechanisms. The Plan Maintenance Subcommittee's annual review will help maintain awareness of the Plan among the participating jurisdictions and encourage active integration of the Plan into their day-to-day operations and planning mechanisms. Any time a mitigation action is slated for implementation by a participating jurisdiction, it will be integrated into their capital improvement plan/budget.

Several of the participating jurisdictions, including the County and Germantown Hills have identified the need to adopt, review, and/or strengthen current policies or programs in the near future. Given that the TCRPC often assists and supports the participating jurisdictions in their planning efforts, they will also play a role in assuring the information presented in this Plan update is utilized and expanded on, when appropriate, in existing planning mechanisms. This can be achieved through discussions at regularly scheduled meeting with participating jurisdictions and when existing plans and programs are reviewed and updated.

5.3 CONTINUED PUBLIC INVOLVEMENT

The County and participating jurisdictions understand the importance of continued public involvement and will seek public input on the Plan update throughout the plan maintenance cycle. Any meetings held by the Plan Maintenance Subcommittee will be noticed and open to the public. Stakeholders and public will be encouraged to participate and provide feedback. Following distribution of the annual progress report, each participating jurisdiction will be encouraged to discuss the findings at their monthly board/council meetings to help maintain awareness of the Plan and encourage integration of the Plan in day-to-day operations.

Participating jurisdictions will also be encouraged to make the annual progress report available via social media and on their websites, as available, and at their offices. As the lead organization responsible for maintaining the Plan update, the TCPRC will also periodically post mitigation-related topics to social media including where to access the approved Plan, information on the hazards that have the potential to impact the County, interesting facts about each hazard, and no or low-cost actions that residents can take to reduce their risk from natural hazards.

A copy of the approved Plan will be maintained and available for review at the TCRPC and on the Commission's website. Individuals will be encouraged to provide feedback and submit comments for the next Plan update to the TCRPC or Woodford County EMA Director. The comments received will be compiled and included in the annual progress report and considered for incorporation into the next Plan update. Separate Committee meetings and a public forum will be held prior to the next Plan update submittal to ensure that the public and stakeholders have ample opportunity to become engaged, provide input during the development of the Plan update, and comment on the proposed revision to the Plan update.

6.0 PLAN ADOPTION

The final step in the planning process is the adoption of the approved Plan update by each participating jurisdiction. Each jurisdiction must formally adopt the Plan to become or remain eligible for federal grant funds to implement mitigation actions identified in this Plan.

6.1 PLAN ADOPTION PROCESS

Before the Plan update could be adopted by the participating jurisdictions, it was made available for public review and comment through a public forum and comment period. Comments received were incorporated into the Plan update and the Plan was then submitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and the Federal Emergency Management Agency (FEMA) for their review and approval.

Upon receipt of the Approval Pending Adoption (APA) letter from FEMA, the Plan update was presented to the County and participating jurisdictions for adoption. ***Each participating jurisdiction was required to formally adopt*** the Plan to become or remain eligible to receive federal grant funds to implement the mitigation actions identified in this Plan. Any jurisdiction that chose not to adopt the Plan update did not affect the eligibility of those who did.

Figure PA-1 identifies the participating jurisdictions and the date each formally adopted the Plan update. Signed copies of the adoption resolutions are located in **Appendix N**. FEMA signed the final approval letter on March 5, 2024 which began the five-year approval period and set the expiration date of March 4, 2029 for the Plan.

Figure PA-1
Plan Adoption Dates

Participating Jurisdiction	Plan Adoption Date
Woodford County	02/20/2024
El Paso, City of	02/05/2024
Eureka, City of	02/05/2024
Germantown Hills, Village of	02/15/2024
Minonk, City of	02/05/2024
Roanoke, Village of	03/04/2024

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Provided below is a listing, by section, of the resources utilized to create this document.

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4.0 MITIGATION STRATEGY

1. Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee. Existing Mitigation Project/Activity Status. Form.

2. Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee. Hazard Mitigation Projects. Form.

APPENDIX A

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee Meeting

January 31, 2023

	Name (Please Print)	*Representing (Jurisdiction/Organization)*	*Title*
1.	KEN RUNKLE	AEC	RISK ASSESSOR
2.	Reema Abi-Akar	TCRPC	Planner III
3.	Ed Shimon	NWS	Warning Coordination Meteorologist
4.	Dawn Cook	TC EMA	Director
5.	Michael Bruner	TCRPC	Planner III
6.	Cameron Bettin	Pekin Park Dist.	EXEC. DIRECTOR
7.	Kent McCanless	WC EMA	Director
8.	Dawn HARPER	EPIC	TRANSPORTation Supervisor
9.	Julie Crutcher	Red Cross	Disaster Specialist
10.	Bill Moline	Minonk	City Administrator
11.	Marjorie Greuter	EP CHSD 309	Superintendent
12.	Jon Oliphant	City of Washington	Planning & Dev. Dir.
13.	Chief Justin Egan	Creve Coeur	Chief
14.	Shanita Wallace	Creve Coeur	Health & Safety trustee
15.	Ann Sasso	Germantown Hills	Village Administrator
16.	JAMEY BULLARD	VILLAGE OF MORTON	ENGINEERING TECH

Appendix A

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional
Multi-Hazard Mitigation Advisory Committee Meeting

January 31, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Callie Smith	AEC	Environmental Analyst
2.	Shabnam Danesh	WMBD	Reporter
3.	Ty Livingston	City of East Peoria	Director
4.	EMILY ROGIER	Tazewell Co. Farm Bureau	Manager
5.	Malena Cook	Woodford Co Farm Bureau	Mgr
6.	Tonya Minz	City of Minonk EMA	Director
7.	Julie McNamara	City of Minonk	Alderwoman
8.	Barry Kautner	City of El Paso	Director of Public Service
9.	Melissa Brown	City of Eureka	City Services Coordinator
10.	Justin Egan	Village of Creve Coeur	Chief
11.	Guy Hathaway	Guy m Hathaway ARL	Volunteer
12.	Don DeWitt	[illegible] / Realtor	D. Managing Broker
13.	JASON MARKS	PEORIA CO. EMA	DIRECTOR EM & PREP
14.	Bobby Zimmerman	City of East Peoria	Fire Chief
15.			
16.			

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee Meeting

April 25, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick-Campbell	AEC	EMS Manager
2.	Reema Abi-Akar	TCRPC	Senior Planner
3.	Julie McNamara	City of Minonk	Alderman
4.	Tonya Minz	City of Minonk EMA	Director
5.	Michael Bruner	TCRPC	Senior Planner
6.	Shanita Wallace	Creve Coeur	Trustee
7.	Rich Brecklin	Germantown Hills	Director
8.	Roger Ristow	Creve Coeur Fire	Assistant Chief
9.	Conrad Moore	Woodford County Highway Dept.	County Engineer
10.	Jon Oliphant	City of Washington	Planning & Dev. Dir.
11.	Monica Whetstone	EPDLD + EPSD	Commissioner
12.	Dawn Cook	TZ EMA	Director
13.	Ed Shimon	NWS	Warning Coord. Met.
14.	Melissa Brown	City of Eureka	City Services Coordinator
15.			
16.			

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee Meeting

April 25, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Ken Runkle	AEC	Risk Assessor
2.	Kent McCanless	WCEMA	Director
3.	Dawn Harper	EPIC / Peoria	Transportation Supervisor
4.	Barry Knuther	El Paso,	Director of Public Service
5.	Justin Egan	Creve Coeur, Village Of	Chief of Police
6.	WMBD	WMBD, Peoria	News
7.	Ty Livingston	City of East Peoria	Dir. of Planning & Com. Dev
8.	Terry Keogh	Creve Coeur	Public Works
9.	Michael Smith	Village of Roanoke	Mayor
10.	Patrick Ridgley	EPDLD	[illegible]
11.	Cameron Bettin	Pekin Park Dist.	Exec. Director
12.	Jaclynn Workman	Taz Co. Community Dev	Administrator
13.	Marjorie Greuter	East Peoria CHSD 309	Superintendent
14.	Jamey Bullard	Village of Morton	Eng Tech
15.			
16.			

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee Meeting

July 25, 2023

	Name (Please Print)	*Representing (Jurisdiction/Organization)*	*Title*
1.	Callie Smith	AEC	Environmental Analyst
2.	Michael Smith	Village of Roanoke	Mayor
3.	Kent McCandless	Woodford County EMA	Director
4.	Dawn HARPER	EP!C	Transp. Coordinator
5.	Bill Moline	City of Minonk	City Admin
6.	Monica Whetstone	EPDLD	Commissoner
7.	Tonya	City of Minonk EMA	EMA Director
8.	JAMEY BULLARD	VILLAGE OF MORTON	ENG TECH
9.	Shanita Wallace	Villaage Of Creve Coeur	Trustee
10.	Dustin R. Egan	Village of Creve Coeur	Chief of Police
11.	Dennis Carr	City of Washington	City Engineer
12.	Marjorie Greuter	East Peoria CHSD #309	Superintendent
13.	Barry Kuther	City of El Paso	Director of Public Services
14.	Andrea Campbell	American Environmental Corp	EMS Manager
15.			
16.			

Appendix A

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional
Multi-Hazard Mitigation Advisory Committee Meeting

July 25, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Reema Abi-Akar	Tri-County RPC	Senior Planner
2.	Gabriel Guevara	Tri-County RPC	Planner I
3.	Gavin Hunt	Tri-County RPC	Planner I
4.	Tony Readleman	City of Pekin	Deputy Fire Chief
5.	Terry L Keogel	Village of Creve Coeur	Public Works
6.	Ann Doubet	Village of Germantown Hills	Village Administator
7.	Rich Brucklin	" " " "	Publicworkentec.com
8.	Cameron Bettin	Pekin Park Dist.	Exec. Dir.
9.	Eric Hansen	Tremont	Village Engineer
10.	Ty Livingston	East Peoria	Director of PICD
11.	Jaclynn Workman	Tazewell County	Comm Dev. Admin.
12.	Jon Oliphant	City of Washington	Planning + Dev. Dir.
13.	Ed Shimon	National Weather Service	Warning Coordination Meteorologist
14.	Melissa Brown	City of Eureka	City Services Coordinator
15.			
16.			

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee Meeting

October 19, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	KEN RUNKLE	AEC	RISK ASSESSOR
2.	Callie Smith	AEC	Environmental Analyst
3.	Reema Abi-Akar	TCRPC	Senior Planner
4.	Kent McCanless	WCEMA	Director
5.	Bill Moline	City of Minonk	City Admin.
6.	Matt Smith	WCSO	Sheriff
7.	Ty Livingston	East Peoria	Dir. of PSCD
8.	Tonya Minz	City of Minonk EMA	Director
9.	Rich Brecklin	Village of Germantown Hills	Director
10.	Joshua Scarbeary	Village of Roanoke	Trustee
11.	Barry Kauther	City of El Paso	Director
12.	Dawn Cook	Tazewell County	Director
13.	Shanita Wallace	Village of Creve Coeur	Health & Safety Trustee
14.	Eric Hansen	Tremont	Village Engineer
15.	Cameron Bettin	Pekin Park Dist	Exec. Dir.
16.	Jon Oliphant	City of Washington	Planning + Dev. Dir

Attendance Sheet

Tazewell & Woodford Counties Multi-Jurisdictional
Multi-Hazard Mitigation Advisory Committee Meeting

October 19, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	KEVIN KOCH	EPDLD	DISTRICT ENGINEER
2.	Thomas Atchison	EPDLD	District Engineer
3.	JAMEY BULLARD	VILLAGE OF MORTON	ENG TECH
4.			
5.			
6.			
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Appendix A

APPENDIX B

Meeting Minutes

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

January 31, 2023
1:30 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

Committee Members

American Red Cross
Creve Coeur, Village of
East Peoria, City of
East Peoria CHSD #309
EP!C
El Paso, City of
Eureka, City of
Germantown Hills, Village of
Minonk, City of
Morton, Village of
National Weather Service
Pekin Park District
Peoria County EMA
Tazewell County EMA
Tazewell County Farm Bureau
Tri-County Reg. Planning Commission
Washington, City of
WMBD TV
Women's Council of Realtors
Woodford County EMA
Woodford County Farm Bureau
American Environmental Corp.

<u>Welcome and Introductions</u>

On behalf of the Tri-County Regional Planning Commission, Ken Runkle and Callie Smith of American Environmental Corporation (AEC) welcomed attendees. Handout materials were distributed to each member. A link to a citizen questionnaire was provided to potential members via email as well. The questionnaires will help gauge residents and committee member understanding of the natural hazards that impact the County and also identifies communication preferences.

Ken began the meeting by sharing that the purpose of this Advisory Committee is to update the Tazewell and Woodford Counties Hazards Mitigation Plan and by providing background information on the planning grant and the planning process. The Tri-County Regional Planning Commission (RPC) applied for and received a planning grant from FEMA to update the hazard mitigation plans for the Counties. This grant is administered through the Illinois Emergency Management Agency (IEMA) and pays for 85% of the planning cost. The remaining 15% will be met through in-kind services. The goal of the grant is to obtain a FEMA-approved hazard mitigation plan. The process is expected to take about 12 to 15 months from start to finish.

<u>What is Mitigation?</u>

Ken explained that for the purpose of this process, mitigation is any sustained action that reduces the long-term risk to people and property from natural and man-made hazards and their impacts. Sustained actions can include projects and activities such as building a community safe room or establishing warming and cooling centers. Mitigation is one of the phases of emergency management and is an important component in creating hazard-resistant communities.

What is a Multi-Hazard Mitigation Plan?

Ken then explained that a Multi-Hazard mitigation plan details the natural and man-made hazard events that have previously impacted a county and identifies activities and projects that reduce the risk to people and property from these hazards before an event occurs. A hazard mitigation plan is different from an Emergency Operations Plan/ Emergency Response Plan (EOP/ERP) because it identifies actions that can be taken before a disaster strikes whereas the EOP/ERP identifies how a county will respond during and immediately after an event occurs.

The natural and man-made hazards that will be included in the Plans are severe summer storms (including thunderstorms with damaging winds, hail, and lightning events); severe winter storms (including ice and snowstorms); floods (both flash flood and riverine floods); tornadoes; excessive heat; extreme cold; drought; earthquakes; landslides; mine subsidence; dam failures; levee failures; transportation, generation, and storage of hazardous substances; hazardous materials incidents; waste disposal; and remediation activities.

Why Update a Natural Hazards Mitigation Plan?

Since the early 1990s damages caused by weather extremes have risen substantially. In 2022 the U.S. experienced $162 billion in severe storm damages from 18 severe weather and natural hazard events. The losses experienced in 2022 were the 3rd highest only behind 2017 (Harvey, Irma, Maria, and California Wildfires) and 2005 (Katrina, Rita, & Wilma). In the last decade, the U.S. has experienced the top three years with the highest total number of billion-dollar events and two of the top three years with the highest total losses ever recorded. Consequently, the Federal Emergency Management Agency (FEMA) continues to encourage counties throughout the U.S. to prepare and update hazard mitigation plans because what they've found is that for every dollar spent on mitigation, $6 dollars can be reaped in savings.

Updating these plans provides several major benefits:

1. Access to federal mitigation assistance funds. Specific projects and activities will be developed through the planning process to help each participating jurisdiction reduce damages. By including these actions in these plans, the participating jurisdictions will remain or become eligible to receive state and federal funds to implement the actions.
2. Increased awareness of the impacts associated with natural hazards. Verifiable information about the natural hazards that occur in the two-county area will be gathered to help participants in municipal and county meetings make decisions about how to better protect citizens and property from storm damages.

The Planning Process

The goal of the Committee meetings is to update these plans to meet state and federal requirements so that they can be approved by IEMA and FEMA. The Planning Committee is an integral part of the planning process and ensures that the Plans are tailored to the needs of the counties and participating jurisdictions.

A four meeting process has been developed to achieve this goal. Specific activities for the Committee meetings include:

1st Committee meeting	Orientation to the Planning Process Required Information Needed to Participate Begin discussing Mitigation Projects and Activities
2nd Committee meeting	Discuss the Risk Assessment Approve Mission Statement & Goals Participants Return Required Forms Discuss and approve mitigation strategy
3rd Committee meeting	Finish discussing Mitigation Projects and Activities Committee discusses approval/adoption of the Plans
4th Committee meeting (Public Forum)	Present the Plans for public review Committee helps answer questions from the public

Jurisdictions who wish to be part of the Plans must meet certain participation requirements that include:

- Participating in the planning meetings and public forum;
- Completing required forms;
- Coordinating with their constituents and the public; and
- Adopting the Plans once they are completed.

Information Needed from the Committee

As part of the update, Ken indicated that there is information that will be needed from each participating jurisdiction. The information provided will be used to meet FEMA plan requirements. He then talked about each of the forms that must be completed at the beginning of the planning process. These Include:

Critical Facilities. Completed lists of Critical Facilities will be used to identify facilities vulnerable to natural hazards and will be provided to IEMA and FEMA as a separate supplement. Copies of the Plans made available to the public will not include these lists for security reasons.

Capability Assessment: Each jurisdiction has a unique set of capabilities and resources available to accomplish hazard mitigation and reduce long-term vulnerabilities to hazard events. As part of the update of the plans, the existing capabilities of each jurisdiction need to be identified and described.

Shelter Surveys. Identifies locations designated as severe weather shelters within each jurisdiction including warming centers, cooling centers and community safe rooms.

Drinking Water Supply Worksheet: Information on the drinking water supplies that serve the participating communities needs to be identified to assist in assessing drought vulnerability.

Callie distributed each of these forms and Ken asked participants to complete and return them by the next meeting and to contact AEC if they had any questions.

Community Participation

Ken stressed the importance of attending each committee meeting and indicated that member participation helps the TCRPC meet the 15% match for this grant in addition to assuring that member jurisdictions are eligible for IEMA/FEMA funds. He indicated that tag-teaming and designating substitute representatives is permissible when other obligations arise. Ken pointed out that a designated substitute representative does not have be an official or employee of the jurisdiction.

Ken requested that each jurisdiction consider sharing meeting information with their boards, councils, etc. at regularly scheduled meetings and consider posting the press release or adding a calendar item to their web pages. He also asked jurisdictions who are on Facebook to consider posting about the Plans or sharing the Planning Commissions post on their pages.

Ken indicated that another opportunity to include the public in the process is to post the link to the Citizen Questionnaire on their web pages or Facebook pages. The more individuals who complete the survey, the better our understanding will be of the public's perception of the hazards that impact the County. Finally, he asked the participants to consider posting or making available at their offices the "Frequently Asked Questions" document in their meeting packet. It provides a quick summary of what the Plans are and why it's important to participate.

Severe Weather Events

Ken told the Committee that, while AEC will review multiple data sources, including NOAA, NWS, and state and federal databases, these sources don't always include every event nor do they always include damage information, especially dollar amounts. In many cases, individuals at the local level are our best resource for this kind of information.

He then asked Committee members to share their memories of hazard events that have occurred in the County including any damages to critical infrastructure and facilities.

Hazard events related include:

- ❖ Parson tornado in July 2004 (Woodford County)
- ❖ Washburn tornado on February 28, 2017 (Woodford County)
- ❖ Roanoke flooding in 2013 (Woodford County)
- ❖ Roanoke flash flooding in late September 2019 (Woodford County)
- ❖ Severe winter storm in February 2022 that included a 100-car pileup on I-39 (Woodford County)

Ken asked participants to identify any hazard events that have impacted their jurisdiction by completing the form titled, "Hazard Event Questionnaire". The information provided will help supplement the information included in the risk assessment.

He also asked Committee members to please provide any storm damage photos they would be willing to share for inclusion in the Plans.

Critical Facilities Vulnerability Survey

As part of the Plan update, Ken indicated that vulnerable community assets need to be identified for the participating jurisdictions. He asked Committee members to complete a 2-page survey distributed to help identify each community's most vulnerable assets as well as identify a list of key issues that clearly describe each community's greatest vulnerabilities. This information will be used in the vulnerability analysis.

Mitigation Projects

Ken explained that mitigation actions include activities and projects that reduce the long-term risk to people and property from the natural and man-made hazards discussed in the risk assessment.

Status of Existing Projects

Callie distributed **"Status of Existing Mitigation Actions"** forms to each of the previously participating jurisdictions detailing the mitigation projects and activities included in the 2019 Plan. Ken explained that as part of the update process the status of these projects needs to be determined. He described how the form should be completed so that this information can be included in the updated Plans.

New Projects

The form titled **"Hazard Mitigation Projects"** was then distributed and Ken indicated this form should be used to submit new projects and activities for the updated Plans. To help the jurisdictions think about and assemble their lists, information was included in the handout materials.

Ken indicated individual mitigation project lists will be updated for each participating jurisdiction and that this is a list of projects each jurisdiction would like to see accomplished if funding becomes available. FEMA is trying to stimulate the implementation of mitigation projects and activities to reduce the extraordinary amount of money being expended on hazard event damages.

The projects and activities included in the Plans should be mitigation-related, not emergency preparedness, response, recovery, or maintenance. Mitigation projects can include studies, regulatory activities, structural and infrastructure projects, and information/education activities. He provided advice for completing the mitigation project list including providing a detailed description of the project, the jurisdiction responsible for the project and the time frame to complete the project.

MAC members were encouraged to contact AEC if questions arise before they return to the next MAC meeting.

Mission Statement & Goals

Copies of draft updated mission statement and mitigation goals were distributed in the meeting packet. Committee Members were asked to review these prior to the next meeting. The mitigation goals describe the objectives or end results the Committee would like to accomplish in terms of hazard and loss reduction/prevention. Every project included in the Plans should be aimed at one or more of the goals identified by this Committee. Specific goals related to each jurisdiction can be added to this list as well.

What Happens Next?

The risk assessment will be the main topic of the next committee meeting.

The second meeting of the Committee was scheduled for:

Tuesday, April 25, 2023
East Peoria City Hall
401 West Washington Street, East Peoria
1:30 P.M.

Ken asked Committee members to please review the "Tasks to be Completed" handout before the next meeting and indicated that AECs contact information could be found on the last page of the meeting handout if any questions come up. With no further questions the meeting was adjourned, and Ken thanked attendees for their participation.

Meeting Minutes

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

April 25, 2023
1:30 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

Committee Members

Creve Coeur, Village of	Pekin Park District
East Peoria, City of	Roanoke, Village of
East Peoria CHSD #309	Tazewell County
East Peoria D&LD	EMA
East Peoria Sanitary District	Comm. Development
EP!C	Tri-County Reg. Planning Commission
El Paso, City of	Washington, City of
Eureka, City of	WMBD TV
Germantown Hills, Village of	Woodford County
Minonk, City of	EMA
Morton, Village of	Highway
National Weather Service	American Environmental Corp.

<u>Welcome and Introductions</u>

On behalf of the Tri-County Regional Planning Commission, Andrea Bostwick-Campbell and Ken Runkle of American Environmental Corporation (AEC) welcomed attendees. Handout materials were distributed to each member.

Andrea provided a brief recap to reorient Committee Members as to what has been accomplished. Before beginning the risk assessment presentation, Andrea asked the participating jurisdictions to submit their completed “Critical Facilities”, “Capability Assessments” and “Shelter Surveys” if they haven’t done so already.

<u>Risk Assessment</u>

Andrea indicated that due to time constraints she would be providing a regional overview of the findings and pointed out the both regional and county-specific information for each hazard was included in the meeting packet. There have been 13 major federally-declared disasters in the two-county area since 1973. A total of 1,796 verified natural hazard events have been documented over the last 20 to 70 years. There have been 258 events identified since the 2018 Update was completed. A minimum of $1.1 billion in damages have resulted from 265 documented natural hazard events. In addition, $74.6 million in crop damages were recorded for 20 events. Eight fatalities and 208 injuries were recorded for 29 of the documented natural hazard events.

The damage amounts are actually much higher based on several facts:

1.) damage descriptions for many floods, tornadoes and severe storm events did not include dollar amounts;
2.) damages to roads from heat and freeze/thaws conditions were not included; and
3.) crop damage figures were unavailable for a majority of the events.

Tazewell County Overview

Eleven of the 13 major federally-declared disasters include Tazewell County and of the 1,796 natural hazard events documented, 971 events occurred in Tazewell County:

- Since 2018, 145 individual events have occurred in the County.
- At least $1 billion in property damages was recorded for 152 events
- Approximately 87% of the property damages documented in the two-county area was from the 2013 tornadoes ($980 million)
- At least $45.3 million in crop damages was recorded for 12 events
- A minimum of 7 fatalities and 189 injuries were recorded for 18 events
- 3 fatalities and 125 injuries were from the 2013 tornadoes and account for over 65% of all the fatalities and injuries recorded in the two-county area

Woodford County Overview

Eleven of the 13 major federally-declared disasters include Woodford County as well and of the 1,796 natural hazard events documented, 825 events occurred in Woodford County:

- Since 2018, 113 individual events have occurred in the County
- At least $84.9 million in property damages was recorded for 114 events
- At least $29.4 million in crop damages was recorded for 9 events
- A minimum of 1 fatality and 19 injuries were recorded for 11 events

The frequency, magnitude, and property damages for each category of natural hazard for the two-county area were then described.

Severe Storms

Severe storms are the most frequently occurring natural hazard with 645 events verified in the two-county area, 98 of those events occurring since the 2018 update was completed. One of the 13 major federal disaster declarations for the two-county area included severe storms. Approximately $10.3 million in damages has resulted from 182 events. Additionally, there was $1.2 million in crop damage from five events. At least seven fatalities and 610 injuries can be attributed to severe storms. Almost all the injuries and fatalities are attributed crashes associated with wet pavement conditions.

The highest recorded wind speed in the two-county area, not associated with a tornado, is 83 knots (96 mph) and occurred in Tazewell on June 29, 1998. The largest hail recorded in the two-county area is 4.00 inches (grapefruit-sized) at Secor on May 30, 2004.

Severe Winter Storms

There have been at least 279 verified events involving severe winter storms (snow and/or ice) since 1950 and 86 extreme cold events since 1995. Twenty-two severe winter storms and 12 extreme cold events have occurred since the 2018 update was completed. Two of the 13 major federal disaster declarations for the two-county area are related to severe winter storms. Approximately $3.7 million in damages has resulted from 11 events. At least six fatalities and 313 injuries can be attributed to severe winter storms, almost all of which are attributed to crashes involving ice and snow-covered roadways.

At least 16 major storms have occurred in every decade since 1970. In the last decade, at least 24 severe winter storms took place.

The record maximum 24-hour snowfall in the two-county area is 16.0 inches, which occurred at the Morton COOP Station on January 1, 1999. The coldest recorded temperature is -36°F at the Congerville COOP Station on January 5, 1999.

Floods
Gaps in historical data were reviewed to document a least 131 verified general flood events and 76 flash flood events in the two-county area. Seven of the 13 major federal disaster declarations for the two-county area are related to flooding. At least $105.4 million in damages has resulted from 16 flood events. Additionally, there was $8.3 million in crop damages from two flood events. No injuries or fatalities were recorded as a result of any of the recorded events.

Excessive Heat
Additional resources were reviewed to fill historic data gaps, which led to the identification of 118 recorded excessive heat events reported in the two-county area since 1995. No injuries or fatalities were recorded as the result of excessive heat events.

The hottest temperature recorded in the two-county area was 111°F at the Minonk COOP Station on July 14 & 15, 1936. Five of the six hottest recorded temperatures in Minonk are form 1936.

Tornadoes
Since 1950, 115 tornadoes have been verified in the two-county area, with 11 occurring since the 2018 update was completed. Approximately $1 billion in property damages has resulted from 48 of these tornadoes, which is about 90% of all the property damage recorded in the two counties. Additionally, $90,000 in crop damages were recorded from 11 separate events. Three fatalities and 184 injuries were recorded as a result of 12 separate tornado events.

The highest recorded F-Scale rating for a tornado in the two-county area was an F4, which occurred on July 13, 2004 in unincorporated Woodford County and an EF4 on November 17, 2013 in Tazewell County. The longest tornado was an F3 that was 21.1 miles long in Tazewell County on July 13, 1995. The widest tornado recorded, 880 yards, occurred twice: an F3 on July 13, 1995 in Tazewell County and an EF4/EF3 on November 17, 2013 in both counties.

Drought

Six major droughts have occurred during the last four decades – 1983, 1988, 2005, 2011, 2012, and 2013. There has been at least one drought per decade with the exception of the 1990s when no substantial droughts were recorded. The 2012 drought caused an estimated $65.1 million in crop damages, which is more than 86% of all the crop damage recorded for the two-county area.

Following each declared drought, crop yield reductions were generally experienced, some substantial. Corn and soybean yield reductions were most severe for the 1988 drought when there was a 50.7% to 58.9% reduction in corn yields and an 35.7% to 44.9% reduction in soybean yields.

Landslides

There have been five documented landslide events in the two-county area since 1985, four in Tazewell County and one in Woodford County. Approximately $1.1 million damages were recorded from two separate events in East Peoria. One fatality was recorded as a result of the 1995 East Peoria landslide.

Earthquakes

In the previous 200 years, no earthquakes have originated in the two-county area while seven earthquakes have originated in the adjacent counties of Peoria, Mason, Fulton, LaSalle, and McLean. There are no known fault zones or geologic structures located in the two-county area.

Mine Subsidence

There are 31 documented underground coal mines located in the two-county area according to the Illinois State Geological Survey's Directory of Coal Mines. No mine subsidence events have been documented. Andrea asked committee members for any additional information about such events.

According to the Illinois State Geological Survey, there are 8,288 acres (2.0% of the land area) and 7,539 housing units (14.3% of the total housing units) in Tazewell County located over or adjacent to mapped mines and land that could be affected if the mine boundaries are inaccurate or uncertain. These figures are 3,650 acres (1.1% of the land area) and 906 housing units (6.8% of total housing units) for Woodford County.

Mine subsidence has the potential to impact Creve Coeur, East Peoria, Marquette Heights, Pekin, Minonk, and Roanoke, as well as unincorporated areas of the two counties.

Levees

There are nine levees of significance in Tazewell County and none in Woodford County. Seven of the nine levees are located in East Peoria and protect approximately 1,041 structures, 6,034 individuals, and $543 million in property. The two remaining levees are located in southwest Tazewell County and protect approximately 184 structures, 278 individuals, and $157.5 million in property.

Dams

There are 53 classified dams in the two-county area according to the US Army Corps of Engineers' National Inventory of Dams. Six dams are publicly owned, four in Tazewell County and two in Woodford County. The remaining 47 dams are privately owned. There are six dams with a hazard classification of "High" (five in Tazewell and one in Woodford) and 11 dams with a hazard classification of "Significant" (10 in Tazewell and one in Woodford).

Ken Runkle of AEC then provided information about select man-made hazards in the two-county area.

Man-Made Hazards Risk Assessment

Ken informed the Committee that while the focus of this planning effort is directed at natural hazards, FEMA allows a small portion of the planning process to be devoted to an overview of selected man-made hazards.

Although this overview does not have the same depth as the assessment of natural hazards, it provides useful information to place various man-made hazards in perspective. The man-made hazard risk assessment focused on the following categories of:

- generation, storage/handling, and transportation of hazardous substances;
- waste disposal;
- hazardous materials (hazmat) incidents; and
- waste remediation.

Hazardous substances broadly include flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. For the purposes of these Plans, the term includes both hazardous product and hazardous waste.

Generation, Storage/Handling, & Transportation

In 2021, there were 20 facilities in the two-county area that generated reportable quantities of hazardous substances according to the USEPA.

Based on records obtained from IEMA's Tier II database, there were 146 stationary facilities within the two-county area that stored and/or handled hazardous substances. Sixty-five of these facilities stored and/or handled chemicals identified as "Extremely Hazardous Substances".

Waste Disposal

There is one active commercial solid (household) waste landfill operating in the two-county area: Tazewell County Landfill. There are no facilities within the two-county area permitted to handle Potentially Infectious Medical Waste and no commercial off-site hazardous waste treatment or disposal facilities.

Hazardous Materials (Hazmat) Incidents

A hazardous materials (hazmat) incident refers to any accident involving the release of hazardous substances. Incidents can take place at fixed facilities or as they are being transported. Between 2012 and 2021 there were 148 hazmat incidents reported to IEMA & ICC in the two-county area. Of the 148 incidents, 107 occurred at fixed facilities, while

41 occurred during transport. Of the 41 transportation hazmat incidents, 33 were roadway incidents, 2 were rail incidents, and 6 were barge incidents.

Waste Remediation

Waste remediation in Illinois is primarily conducted through three programs: the federal Superfund Program (for sites posing the largest threat to public health and the environment), the Illinois Site Remediation Program (SRP), and the Illinois Leaking Underground Storage Tank (LUST) Program.

Superfund: There are no active Superfund sites in the two-county area.

Illinois SRP: There are 27 SRP sites located the two-county area. Twenty-three of the sites have received “No Further Remediation” (NFR) or 4(y) letters.

Illinois LUST: There are 377 LUST sites located in the two-county area. Approximately 63% of these sites have received NFR, Non-Lust Determination or Section 4(y) letters or remediation is virtually complete.

Risk Priority Index Exercise

Following the risk assessment, Andrea led the Committee through a Risk Priority Index (RPI) exercise. The RPI is a quantitative means of providing guidance for ranking the hazards that have the potential to impact each county. This ranking can assist participants in determining which hazards present the highest risks and therefore which ones to focus on when formulating mitigation projects and activities. Each hazard is scored on three categories: frequency, impacts on life and health and impacts on property and infrastructure based on a scoring system provided. Andrea walked the committee through the scoring system using excessive heat as an example and then provided time for the Committee to fill out the PRI form during the meeting. The results will be compiled, and the findings will be presented at the next meeting.

Mission Statement & Goals

Ken asked Committee members to review the draft mission statement and updated mitigation goals provided in the meeting materials. Both of these are required elements of the Plan. As part of the Plan update process, both items need to be reviewed and re-evaluated. The mission statement was reviewed, and it was determined that no revisions to the wording were needed.

Next Ken discussed the mitigation goals, which are intended to reduce long-term vulnerabilities to natural and man-made hazards. Each project included in the updated Plan should be aimed at one or more of the goals developed by the committee. The updated goals were reviewed, and no revisions were made to the wording.

The mission statement and goals will be added to the Plan update.

Mitigation Actions Prioritization Methodology

The Mitigation Actions Prioritization Methodology outlines the approach used to classify each mitigation action identified by the participating jurisdictions and is a FEMA-required element of the Plan.

Mitigation actions can be prioritized in a number of ways. Ken explained that the updated methodology is based on two key factors:

1) Frequency of hazard—severe storms occur more frequently than earthquakes.
2) Degree of mitigation—some projects will *significantly reduce* damages while other projects only have the potential to reduce damages.

This methodology helps objectively identify which projects and activities have a greater likelihood to significantly reduce the long-term vulnerabilities associated with the most frequently-occurring hazards. After reviewing the updated methodology, the Committee determined that no changes needed to be made.

Ken acknowledged that while this methodology does not take cost or politics into consideration, these factors may affect the order in which projects are implemented. She also noted that it is important to keep in mind that implementing all of the mitigation projects is desirable regardless of which prioritization category they fall under.

Community Lifelines

Before discussing mitigation projects and the mitigation action tables with the Committee, Andrea took a few minutes to discuss the concept of community lifelines. FEMA has identified seven community lifelines that are the most fundamental services in the community that, when stabilized, enable all aspects of society to function. The seven community lifelines include: safety & security; food, water, shelter; health & medical; energy (power & fuel); communications; transportation; and hazardous materials.

While the concept of community lifelines was developed to support emergency response and planning, FEMA has begun applying it to all phases of emergency management. Efforts to protect community lifelines and prevent and mitigate potential impacts to them is one of the focuses of the BRIC grant program. A handout with a brief description of the community lifelines was included in the meeting packet. Community lifelines will be included in most project description to create a clear connection to the concept.

Mitigation Action Tables

Andrea reiterated that mitigation actions include activities and projects that reduce the long-term risk to people and property from the natural and man-made hazards discussed in the risk assessment.

She then described how the draft methodology, the existing and new lists of mitigation projects, finalized goals, and other information will be presented for Committee review. She chose a frequently-requested mitigation project, a community safe room (tornado-shelter), as an example to show how a typical project is prioritized and entered into the Plan on a Mitigation Action Table. She described how each column in the Mitigation Action Table would be completed for this example project.

She explained that the information in the Mitigation Action Tables would be prepared by AEC, but that the Tables cannot be completed until all of the participants submit their draft lists of projects. Committee Members will have the opportunity at the next meeting to review all of the mitigation projects submitted so that they can make adjustments to their lists if they choose.

It was noted that each jurisdiction will have their own list of jurisdiction-specific mitigation projects and they do not need to get approval from any of the other participating jurisdictions or any of the other participants for any of their projects. Participants were also reminded that this is a list of projects and activities they would like to see accomplished if funding becomes available. For a jurisdiction to be eligible for a project, it must be on its list.

This is a mitigation plan and there are some projects that IEMA/FEMA do not consider mitigation. Projects associated with emergency preparedness, disaster response & recovery and maintenance will not be included in the Plan. Andrea noted that as the committee members put their lists together, if they are unsure about whether a project would be considered mitigation, go ahead, and include it on their list. AEC will review the lists and help make the appropriate determinations.

Committee members were encouraged to contact Andrea or Ken if questions arise before they return to the next Committee meeting.

What Happens Next?

Committee members were asked to return all completed forms to AEC by Friday, June 16 so they can be processed in time for the next meeting, which was scheduled for:

Tuesday, July 25, 2023
East Peoria City Hall, 401 West Washington Street, East Peoria, 1:30 P.M.

Public Comment

The Tazewell County EMA Director asked whether there had been a shift in FEMA's priorities in terms of project funding. Andrea explained the grant programs available through FEMA's Hazard Mitigation Assistance program including the addition of BRIC and its focus on regional projects that address future conditions.

With no other questions or comments, Andrea adjourned the meeting.

Meeting Minutes

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

July 25, 2023
1:30 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

Committee Members

Creve Coeur, Village of
East Peoria, City of
East Peoria CHSD #309
East Peoria D&LD
EP!C
El Paso, City of
Eureka, City of
Germantown Hills, Village of
Minonk, City of
Morton, Village of
National Weather Service
Pekin, City of
Pekin Park District
Roanoke, Village of
Tazewell County
    Comm. Development
Tremont, Village of
Tri-County Reg. Planning Commission
Washington, City of
Woodford County
    EMA
American Environmental Corp.

Welcome

Reema Abi-Akar, Senior Planner of the Tri-County Regional Planning Commission, welcomed attendees. She turned the meeting over to Andrea Bostwick, American Environmental Corporation (AEC), who opened the meeting.

Handout materials were distributed to each member in attendance. Andrea provided a brief recap to reorient Committee Members as to what has been accomplished so far.

Tornado Vulnerability Analysis

Andrea then began the tornado vulnerability analysis discussion by noting that analysis estimates future potential damages in terms of dollar loss to residences, including contents, for each participating jurisdiction based on FEMA acceptable formulas. The potential damages were calculated on the magnitude most likely to be encountered, not on a worst-case event.

Since 1950, 67 verified tornadoes have occurred in Tazwell County, and 48 verified tornadoes have occurred in Woodford County. While occurring less frequently than severe storms, severe winter storms and floods, tornadoes have caused at least $978.2 million in property damages in Tazwell County, and $30.6 million in property damages in Woodford County.

Using information from the 67 verified tornadoes in Tazewell County and the 48 verified tornadoes in Woodford County, damages were calculated based on an “average” tornado.

The average tornado in Tazewell County impacts approximately 0.17 square miles, whereas the average tornado in Woodford County impacts approximately 0.15 square miles. She noted that the area impacted by the average tornado decreased slightly for each County from the previous Plan.

Housing densities were calculated from U.S. Census Bureau information for each of the participating jurisdictions. This information, along with a set of assumptions were used to estimate the number of vulnerable residential structures. Potential dollar losses were then calculated for these vulnerable residential structures using the provided tax assessment values and an additional assumption about the degree of damage sustained by the structures and their contents.

Potential dollar losses caused by an average-sized tornado in Tazewell County to residences and their contents would be expected to exceed at least $17 million in any of the participating municipalities. Losses ranged from $17.8 million in East Peoria to $56 million in Washington. For Woodford County, dollar losses caused to residences and their contents by an average-sized tornado would be expected to exceed at least $8.9 million in any of the participating municipalities. These losses ranged from $8.9 million in Minonk up to $50.8 million in Germantown Hills.

Potential dollar losses by township in Tazewell County would be expected to range from $75,750 in Boynton Township to $16.1 million in Pekin Township. For Woodford County, losses by township would be expected to range from $115,985 in Linn Township up to $4 million in Worth Township. Andrea noted that the damage figure for the most populated townships would only be reached if the tornado's path included a portion of a major municipality.

Risk Priority Index Exercise Results

Andrea then presented the results of the Risk Priority Index Exercise that was conducted at the April 25, 2023 meeting. She provided the Committee with a brief recap on what the Risk Priority Index is and how it can help participants determine which hazards present the highest risk and therefore which ones to focus on when formulating mitigation projects and activities.

Based on the Committee's responses, in Tazewell County, tornadoes scored the highest, followed by thunderstorms with damaging winds, floods, and severe winter storms. For Woodford County, tornadoes also scored highest, followed by floods and then by thunderstorms with damaging winds. The hazards that scored the lowest in Tazewell County included earthquakes, terrorism, and dam failures; for Woodford, the lowest three were earthquakes, landslides, and mine subsidence.

Mitigation Project Submittal & Action Tables

Committee members were then asked to review the Mitigation Action Tables containing the descriptions of the mitigation projects and activities. Andrea and Callie Smith of AEC moved throughout the room to discuss questions with committee members. Andrea advised Committee members who wished to add additional projects to provide them to her as soon as possible, and no later than September 1st.

Andrea explained that the information in the draft Mitigation Action Tables handout was prepared by AEC using the lists of mitigation projects and activities provided by the participation jurisdictions. Participants were reminded that this is a list of projects and activities they would like to see accomplished if the money becomes available. Also, for a jurisdiction to be eligible for a project, it must be on its list.

Since these are mitigation plans, some projects were either removed or not included if they were not considered mitigation. Projects associated with emergency preparedness/response, recovery, and maintenance will not be included in the Plans.

Public Forum and Adoption

The final Committee meeting will be conducted as an open-house style public forum to present the draft Plans for review and comment. Paper copies of the draft Plans will be available for review at the meeting and posted online on the Planning Commission's website. Additionally, the Planning Commission will also have hard copies available for review at their office. There will be a two-week public comment period following the public forum.

Unless otherwise specified, Committee members will receive an electronic copy of the draft Plans to make available for public comment.

Once the comment period is over, any comments received will be incorporated into the Plans and submitted to IEMA/FEMA. Following IEMA and FEMA review, any edits requested will be made and then FEMA will issue Approval Pending Adoption letters. At this point an email will be sent to the participating jurisdictions, along with a copy of a model adoption resolution, asking them to formally adopt the Plans by resolution. A copy of the executed resolution should then be provided to AEC. Once all the adoption resolutions are received, Andrea will submit them to IEMA and FEMA. FEMA will then issue the Final Approval letters starting the clock for the five-year update.

Plan Maintenance and Update

Andrea described the Plan maintenance and update commitments detailed in a draft of the Plan Maintenance and Update section provided in the meeting handouts for review by the Committee. The Plans will be monitored and evaluated on an annual basis by a Plan Maintenance Subcommittee, which will be made up of the participating jurisdictions, the Regional Planning Commission, and key members of the Planning Committee. The Planning Commission will send out Plan Maintenance Checklists to each of the participating jurisdictions who will be responsible for providing information to the Subcommittee. This information will include: the status of their mitigation actions; any hazard-related damages to critical facilities and infrastructure; the adoption of any new plans, policies, or regulations; and any significant changes in development. The Subcommittee will also evaluate the Plans to determine their effectiveness at achieving their stated purpose and goals. Participants can also add new mitigation actions during the annual monitoring phase or by contacting the Planning Commission.

The Planning Commission will then prepare an annual progress report detailing the results of the annual monitoring and evaluation period and provide copies to the Subcommittee. Any modifications or additions to the mitigation project lists will require an update of the Mitigation Strategy and a resubmittal of the Plans to IEMA and FEMA for reference.

At least once every five years, the Plans must be reviewed, revised, and resubmitted to IEMA/FEMA for the participating jurisdictions to remain eligible for mitigation project funds. At the five-year update, any jurisdiction that is not already part of these Plans and who wants to become part of the updated Plans may do so. New jurisdictions must supply the same information that all the current jurisdictions supplied.

What Happens Next?

Public Forum

The final Committee meeting will be conducted as an open-house style public forum where the draft Plans will be presented for review and comment.

The public forum will be held on:

Thursday, October 19, 2023
4 p.m. – 6 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

Public Comment

With no additional questions or comments, Andrea adjourned the meeting.

APPENDIX C

Tazewell and Woodford Counties Citizen Questionnaire

You can help protect lives and property from natural hazard events in the Tazewell and Woodford Counties area by taking a few moments to complete this questionnaire.

Asterisk (*) designates required questions for form completion.

* 1. **Please indicate where you live (please check only one).**

- ☐ Armington
- ☐ Bay View Gardens
- ☐ Benson
- ☐ Congerville
- ☐ Creve Coeur
- ☐ Deer Creek
- ☐ Delevan
- ☐ East Peoria
- ☐ El Paso
- ☐ Eureka
- ☐ Germantown Hills
- ☐ Goodfield
- ☐ Green Valley
- ☐ Heritage Lake
- ☐ Hopedale
- ☐ Kappa
- ☐ Mackinaw
- ☐ Marquette Heights
- ☐ Metamora
- ☐ Minier
- ☐ Minonk
- ☐ Morton
- ☐ North Pekin
- ☐ Panola
- ☐ Pekin
- ☐ Peoria Heights
- ☐ Roanoke
- ☐ Secor
- ☐ Spring Bay
- ☐ South Pekin
- ☐ Tremont
- ☐ Washburn
- ☐ Washington
- ☐ Unincorporated County
- ☐ Other (please specify)

Appendix C

* 2. **Please place a checkmark next to each of the natural hazards listed below that you have experienced in your County (please check all that apply).**

- [ ] Severe Summer Storms (thunderstorms, hail, lightning strikes)
- [ ] Floods
- [ ] Severe Winter Storms (snow,sleet, ice)
- [ ] Excessive Heat
- [ ] Extreme Cold
- [ ] Tornadoes
- [ ] Drought
- [ ] Earthquakes
- [ ] Mine/Land Subsidence
- [ ] Landslides
- [ ] Dam Failures
- [ ] Other (please specify)

3. **Which of the natural hazards above have you encountered most frequently?**

4. **Rank the natural hazards listed below in order from 1 to 11 based on which hazard you feel poses the greatest threat. (1 = greatest threat and 11 = least threat)**
Each number should only be used once.

- Severe Summer Storms
- Floods
- Severe Winter Storms

Appendix C

- Excessive Heat
- Extreme Cold
- Tornadoes
- Drought
- Earthquakes
- Mine/Land Subsidence
- Landslides
- Dam Failures

* 5. **What types of mitigation projects or activities are most needed in your County?**

Please check the five you feel are most important

- [ ] Public information fact sheets and brochures describing actions residents can take to protect themselves and their property against natural hazard impacts.
- [ ] Floodplain Ordinances
- [ ] Building Codes and Enforcement
- [ ] Sirens or other Alert Systems
- [ ] Flood or Drainage Protection (i.e., culvert and drainage ditch maintenance, retention pond construction, dam or levee conctruction/maintenance and/or hydraulic studies to determine cause of drainage problems.)
- [ ] Maintain power during storms by burying power lines, trimming trees and/or purchasing a back-up generator
- [ ] Tornado Safe Shelters
- [ ] Maintain roadway passage during snow storms and heavy rains
- [ ] Provide sufficient water supply during drought
- [ ] Identify residents with special needs in order to provide assistance during a ntural hazard event
- [ ] Retrofit critical infrastructure (public water supplies, schools, sewage treatment facilities, bridges, hospitals and other important services) to reduce potential damages

☐ Other (please specify)

* 6. **What are the most effective ways *for you* to receive information about how to make your household and property safer from natural hazards (Please check all that apply.)**

☐ Newspaper
☐ Television
☐ Radio
☐ Internet
☐ Social Media (Facebook, Twitter, etc.)
☐ Schools
☐ Mailings
☐ Extension Service
☐ Public Workshops/Meetings
☐ Fire Department/Law Enforcement
☐ Public Health Department
☐ Municipal/County Offices
☐ Other (please specify)

Thank you for your time in assisting with the update of the Hazard Mitigation Plans for the counties.
Tazewell and Woodford Counties Multi-Jurisdictional, Multi-Hazard Mitigation Advisory Committee

Done

Tazewell & Woodford Counties H

https://tricountyrpc.org/environment/hazard-mitigation/tazwood-hmp/

NHMPs | CFS | ESA | Illinois | Federal | Maps | Weather | Newspapers | ShareFile Login | FEMAGO - Login | Barracuda Networks | All Bookmarks

TRI-COUNTY REGIONAL PLANNING COMMISSION

About | Documents | Meetings & Events | RFPs & RFQs | Our Work

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611
- Time: 1:30 PM
- News Release
- Agenda
- Presentation
- Meeting Minutes

April 25, 2023 – Risk Assessment Meeting

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611
- Time: 1:30 PM
- News Release
- Agenda
- Meeting Minutes

July 25, 2023 – Mitigation Strategy Meeting

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611

Citizen Questionnaire

As part of our public outreach and participation strategy, a citizen questionnaire has been developed to gauge public perception about the natural hazards that impact Tazewell and Woodford counties. We would appreciate it if you took a few minutes and completed the following citizen questionnaire. The information provided in the survey will help us as we begin the planning process.

https://www.surveymonkey.com/r/Tri-County-CQ

Explore

Settings

Tweet

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@TriCountyRPC

If you live in Tazewell or Woodford County, we want to hear from you!

Fill out our #hazardmitigation survey here:

surveymonkey.com
Tazewell and Woodford Counties Citizen Questionnaire
Take this survey powered by surveymonkey.com. Create your own surveys for free.

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Appendix C

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January 24 at 10:25 AM ·

If you live in Tazewell or Woodford County, we want to hear from you!

Fill out our hazard mitigation survey here:

SURVEYMONKEY.COM

Tazewell and Woodford Counties Citizen Questionnaire

Take this survey powered by surveymonkey.com. Create your own surveys for free.

Appendix C

APPENDIX D

Frequently Asked Questions

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plan Updates

1) **What are the Tazewell & Woodford Counites Multi-Hazard Mitigation Plans?**
The Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plans evaluate damage to life and property from natural and man-made hazards that have impacted the two-county area and identify projects and activities to reduce these damages. The Plans are considered to be multi-jurisdictional because they includes municipalities and other jurisdictions who want to participate along with the counties.

2) **What is hazard mitigation?**
Hazard mitigation is any action taken to ***reduce*** the long-term risk to people and property from natural and man-made hazards ***before*** an event occurs.

3) **Why are these Plans being updated?**
The Plans are being updated to fulfill federal planning requirements of the Stafford Act as amended by the Disaster Mitigation Act and the Disaster Recovery and Reform Act. While meeting federal requirements, these Plan updates also provide the following benefits:
   - Funding for mitigation projects and activities ***before*** disasters occur.
   - Funding for projects and activities ***following*** declared disasters.
   - Increased awareness about natural hazards and closer cooperation among the various organizations and political jurisdictions involved in emergency planning and response.

4) **Who is updating these Plan?**
The Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee is updating the Plans with assistance from technical experts in emergency planning, environmental matters, and infrastructure. The Committee will include members from education, emergency services, municipal, and county government, health care, and law enforcement.

5) **How can I participate?**
You are invited to attend public meetings of the Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee. In addition, you are encouraged to provide photographs, other documentation, and anecdotal information about damages you experienced from natural and man-made hazards in Tazewell and Kendall Counties. Surveys will be available at participating jurisdictions and through the Tri-County Regional Planning Commission to help gather specific information from residents. All of this information will be used to update the Plans. Drafts of the updated Plans will be presented at a public forum for further public input.

More information can be obtained by contacting:

Reema Abi-Akar, Planner III
Tri-County Regional Planning Commission
456 Fulton Street, Suite 401
Peoria, IL 61602
(309) 673-9330

APPENDIX E

Media Outlets Serving the County

Chillicothe Times-Bulletin (weekly)
PO Box 9426
Peoria, IL 61612-9426
(309) 274-2185
www.chillicothetimesbulleting.com

Community Word (monthly)
621 Commercial St., Suite 1A-B
Peoria, IL 61602
communityword@yahoo.com
www.thecommunityword.com

East Peoria Times-Courier (weekly)
PO Box 430
Pekin, IL 61555
(309) 346-1111
www.eastpeoriatimescourier.com

Pekin Daily Times (daily)
306 Court St.
Pekin, IL 61554
(309) 346-1111
www.pekintimes.com

Peoria Journal Star (daily)
1 News Plaza
Peoria, IL 61643
(309) 686-3000
www.pjstar.com

The Traveler Weekly (monthly)
(309) 673-2613
www.thetravelerweekly.com

WCBU 89.9 FM
1501 W. Bradley Ave.
Peoria, IL 61625
(309) 438-2255
www.wcbu.org

The Weekly Post (weekly)
(309) 741-9790
www.illinoisweeklies.com

WEEK TV
2907 Springfield Rd.
East Peoria, IL 61611
(309) 698-2525
www.25newsnow.com

WMBD/WYZZ TV
3131 N. University
Peoria, IL 61604
(309) 688-3131
www.centralillinoisproud.com

WTVP TV
101 State St.
Peoria, IL 61602
(309) 677-4747
www.wtvp.org

Woodford County Journal (weekly)
1926 South Main St.
Eureka, IL 61530
(309) 467-3314
www.pantagraph.com/wcj

APPENDIX F

Tazewell & Woodford Counties Multi-Jurisdictional Hazard Mitigation Plan

2023 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 (AEC) and WSP Environment & Infrastructure (WSP) to facilitate the planning process and prepare the plan document. AEC will be responsible for coordination with Tazewell and Woodford Counties and their incorporated jurisdictions.

The Tazewell and Woodford Counties 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, (44 CFR §201.6) and finalized on October 31, 2007. These regulations establish the requirements that hazard mitigation plans must meet in order for Tazewell and Woodford Counties and their 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 Tazewell and Woodford Counties are subject to many kinds of hazards, access to these federal programs is vital.

Hazard Mitigation Advisory Committee Meetings

January 31, 2023 – Project Kick-off Meeting

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611
- Time: 1:30 PM
- News Release
- Agenda
- Presentation
- Meeting Minutes

April 25, 2023 – Risk Assessment Meeting

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611

- Time: 1:30 PM
- News Release
- Agenda
- Meeting Minutes

July 25, 2023 – Mitigation Strategy Meeting

- Location: East Peoria City Hall, 401 West Washington St, East Peoria, IL 61611
- Time: 1:30 PM
- News Release
- Agenda
- Meeting Minutes

Participating Jurisdictions

Fifteen jurisdictions throughout Tazewell and Woodford Counties are participating in the planning process:

- Village of Creve Coeur
- City of East Peoria
- City of El Paso
- City of Eureka
- Village of Germantown Hills
- City of Minonk
- Village of Morton
- City of Pekin
- Pekin Park District
- Village of Roanoke
- Tazewell County
- Tri-County Regional Planning Commission
- Village of Tremont
- City of Washington
- Woodford County

Citizen Questionnaire

As part of our public outreach and participation strategy, a citizen questionnaire has been developed to gauge public perception about the natural hazards that impact Tazewell and Woodford counties. We would appreciate it if you took a few minutes and completed the following citizen questionnaire. The information provided in the survey will help us as we begin the planning process.

https://www.surveymonkey.com/r/Tri-County-CQ

Tri-County Regional
Planning Commission

456 Fulton St
Suite 401
Peoria, IL 61602

Phone 309-673-9330
info@tricountyrpc.org

FOR IMMEDIATE RELEASE

DATE CORRECTION (from Jan 17 to Jan 31)

Contact: Reema Abi-Akar

309-673-9330

Tri-County Area Prepares for Natural Disasters

Peoria, IL (January 4, 2023) — Tazewell and Woodford Counties will update their plan to reduce the damages caused by severe weather such as floods, snow and ice storms, thunderstorms, and tornados, among other events. The plan is called a Hazard Mitigation Plan, and the process to update it will be funded through a grant from the Federal Emergency Management Agency (FEMA).

“The plan describes the natural hazard events that have impacted the counties and identifies activities and projects to reduce the risk to residents, property, and infrastructure”, said Reema Abi-Akar, Tri-County Regional Planning Commission Planner. “By having an updated hazard mitigation plan, the counties and participating jurisdictions will remain eligible for federal funds to construct these projects.” she added.

The Tri-County Hazard Mitigation Planning Committee will hold its first meeting on Tuesday, **January 31, 2023**, at 1:30 P.M. The meeting will be held at the East Peoria Civic Complex, 401 W. Washington Street, East Peoria. The meeting is open to the public.

The Planning Committee includes representatives from the counties, municipalities, schools, and health care services, as well as technical partners and other stakeholders. Meetings of this committee will be conducted over the next year as working sessions so that any interested residents can attend and ask questions. The purpose of these working sessions is to gather and discuss information that will be used to update the plan.

“This mitigation plan is different from an emergency response plan because it focuses on ways to reduce and prevent damages before they occur,” added Abi-Akar.

XXXXXXXXXXXXXXXXXXXX

Tri-County Regional Planning Commission

Intro

The Tri-County Regional Planning Commission provides planning services to Peoria, Tazewell, and Wood

Page · Government organization

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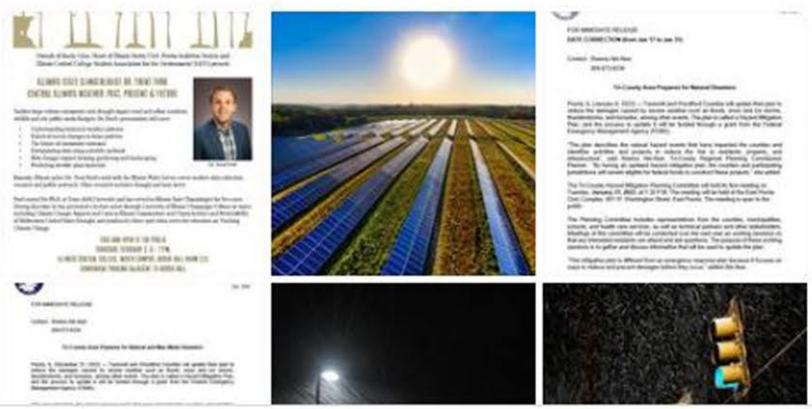

Tri-County Regional Planning Commission
January 6 at 9:23 AM

NOTE -- DATE CHANGE:
The Tazewell & Woodford Counties hazard mitigation meeting has been moved from January 17 to January 31.

***

Image description: Press release that reads as follows:

FOR IMMEDIATE RELEASE
DATE CORRECTION (from Jan 17 to Jan 31)

Contact: Reema Abi-Akar
309-673-9330

Tri-County Area Prepares for Natural Disasters

Peoria, IL (January 6, 2023) — Tazewell and Woodford Counties will update their plan to reduce the damages caused by severe weather such as floods, snow and ice storms, thunderstorms, and tornados, among other events. The plan is called a Hazard Mitigation Plan, and the process to update it will be funded through a grant from the Federal Emergency Management Agency (FEMA).

"The plan describes the natural hazard events that have impacted the counties and identifies activities and projects to reduce the risk to residents, property, and infrastructure", said Reema Abi-Akar, Tri-County Regional Planning Commission Planner. "By having an updated hazard mitigation plan, the counties and participating jurisdictions will remain eligible for federal funds to construct these projects." she added.

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"This mitigation plan is different from an emergency response plan because it focuses on ways to reduce and prevent damages before they occur," added Abi-Akar.

LOCAL NEWS

Tri-County Area updating federal hazard mitigation plans

by: Shabnam Danesh
Posted: Jan 31, 2023 / 06:36 PM CST
Updated: Jan 31, 2023 / 08:45 PM CST

EAST PEORIA, Ill. (WMBD) — Stakeholders from Woodford County and Tazewell County convened at East Peoria Civic Hall on Tuesday for the first of four meetings to update their multi-hazard mitigation plan in order to be eligible for federal mitigation funds.

The mitigation plan assesses vulnerabilities and identifies projects and activities to minimize the impact of environmental hazards, such as tornadoes and hurricanes, and manmade hazards, such as hazmat situations, to people and property before an event occurs.

Ken Runkle, risk assessor with American Environmental Consulting, a consulting firm that works with counties to help develop hazard mitigation plans, is working with Tazewell County and Woodford County to determine the best plan tailored to each community.

Local policymakers meet about Rental Housing Support Program ›

"[We're] hoping to be able to get lots of information that helps us tell their story through the document, and give them a robust list of projects they would be eligible for funding," said Runkle.

Mitigation is a sustained action that reduces long-term risk to people and property. Runkle said mitigation can be broken down into activities, such as developing a flood plan ordinance, and projects, such as building a community safe room for tornadoes.

"What are their critical facilities, what do they think they are vulnerable of…What are things that's happened in the last 5-10 years that have been hazards specific to this area?" said Runkle.

Runkle will present a risk assessment report at the second meeting. At the third meeting, the group will review lists of proposed projects. The fourth meeting will be a two-hour public forum, where the public is encouraged to see the plans and express their thoughts.

"Word of mouth and things people remember help us make sure we don't miss something," said Runkle.

Peoria County, which Runkle said has more flooding issues, is working with environmental consulting firm WSP, which he said is better equipped to advise on flooding.

Appendix F

FOR IMMEDIATE RELEASE

Contact: Reema Abi-Akar

309-673-9330

Reducing Damages Caused by Severe Weather and Other Hazards

Peoria, IL (April 13, 2023) — The frequency of and damages caused by severe storms and other natural and man-made hazards in Tazewell and Woodford counties will be discussed when the Tazewell and Woodford Counties Mitigation Advisory Committee meets on Tuesday, **April 25, 2023**, at 1:30 P.M. The meeting will be held at the East Peoria Civic Complex, 401 W. Washington Street, East Peoria. The meeting is open to the public.

This Committee, comprised of county, municipal, educational, and park district representatives, as well as technical partners and other stakeholders, will meet over the next several months to update the Tazewell and Woodford Hazards Mitigation Plans.

"The goal of this committee meeting is to identify how often severe weather events occur within the counties and what kinds of damages have resulted. Based on this information, we will compile lists of activities and projects to reduce damages caused by these events," said Reema Abi-Akar, Senior Planner for the Tri-County Regional Planning Commission.

Plan participants to date include the counties, Creve Coeur, East Peoria, El Paso, Eureka, Germantown Hills, Minonk, Morton, and Washington, as well as the American Red Cross, East Peoria Community High School District 309, and Pekin Park District. Jurisdictions that have yet to participate in a committee meeting are encouraged to attend. Interested persons can provide input at these meetings or submit their comments and questions to their appropriate representatives.

"These plans will be important resources for determining how to prepare for storms and other natural and man-made hazards. After the plans are updated, comprehensive information will be available in one document for each county to help guide those who are making decisions about how to better protect the residents of Tazewell and Woodford counties," Abi-Akar added.

XXXXXXXXXXXXXXXXXXXX

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Tri-County Regional Planning Commission
April 13 at 2:20 PM ·

We are hosting a meeting for the Tazewell & Woodford County Hazard Mitigation Planning process on Tuesday, April 25 at 1:30pm at the East Peoria Civic Complex, 401 W. Washington Street, East Peoria.

The meeting is open to the public, so come and learn about how we plan for hazards in our community!

2

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@TriCountyRPC

We're hosting a Tazewell & Woodford County Hazard Mitigation Planning meeting on Tuesday, April 25 at 1:30pm at the East Peoria Civic Complex, 401 W Washington St, East Peoria.
The meeting is open to the public, so come and learn about how we plan for hazards in our community!

2:22 PM · Apr 13, 2023 · **3** Views

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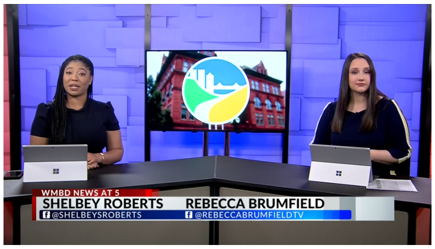

LOCAL NEWS

Tazewell and Woodford Counties meet to go over Hazard Mitigation

by: Benjamin Fries
Posted: Apr 25, 2023 / 06:02 PM CDT
Updated: Apr 25, 2023 / 09:15 PM CDT

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EAST PEORIA, Ill. (WMBD) — Officials from Tazewell and Woodford counties joined forces for the second meeting of four that are being offered by the Hazard Mitigation Advisory Committee.

This meeting focused mainly on risk assessment and how municipalities can lessen the damages that severe storms can cause. The goal of the meetings is to educate people about natural hazards such as thunderstorms and floods and how communities can protect themselves in a better way. Committee member Ken Runkle said that developing an action plan is the goal of these meetings.

Museum on wheels : Buseum exhibit travels to the Mclean County Museum of History ›

“A hazard mitigation plan finds ways that communities and entities, municipalities and participating jurisdictions in the two county area can develop projects to help mitigate hazards within the community,” Runkle said.

Runkle also discussed the research that was needed for putting together the plans.

“To be able to mitigate those hazards, we need to know what those hazards are, and so this meeting is about where we have gone back and looked at historically, we’ve looked at storms and once we’re able to identify what the different hazards are, the communities can then look at ways to mitigate those hazards,” Runkle said.

The first committee meeting went over the orientation and the beginnings of discussing mitigation projects. The next meeting will discuss the approval of final plans and will be held in a few months.

FOR IMMEDIATE RELEASE

Contact: Reema Abi-Akar

309-673-9330

Protecting Public Health and Property in Tazewell & Woodford Counties

East Peoria, IL (July 10, 2023) — Projects and activities that can protect residents and vital services in Tazewell and Woodford Counties will be the main topic of discussion when the Tazewell and Woodford Counties Mitigation Advisory Committee meets on Tuesday, **July 25, 2023**, at 1:30 P.M. The meeting will be held at the East Peoria Civic Complex, 401 W. Washington Street, East Peoria. The meeting is open to the public.

This Committee, comprised of county, municipal, educational, park district, fire protection district, and levee district representatives, as well as technical partners and other stakeholders, began work in January 2023 to update the Hazard Mitigation Plan for each county. The plans, which will ultimately be sent to the Federal Emergency Management Agency (FEMA) for approval, detail past severe weather events that have previously impacted the counties. The documents also identify mitigation projects and activities that can be taken before a severe weather event occurs to protect residents, critical services, and infrastructure.

"There has been more than $1 billion in verified property damages caused by severe weather events in the two-county area. Obtaining FEMA's approval of our updated plans will make all the participants eligible to receive federal grant money for mitigation projects and activities," explained Reema Abi-Akar, Tri-County Regional Planning Commission Senior Planner.

Projects identified by Advisory Committee members at this meeting will become part of each county's Hazard Mitigation Plan. While portions of the plans have been presented at each meeting, both plans will be presented for public review and comment before they are submitted to the state and federal government for approval.

"We will conduct a public forum this fall for interested persons to review the updated plans and ask questions of Advisory Committee members. We will then have a two-week public comment period following the public forum to accommodate interested persons who are unable to attend. We want to make sure that anybody who is interested has an opportunity to review and comment on the updated plans," added Abi-Akar.

XXXXXXXXXXXXXXXXX


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July 10 at 9:03 AM
Join us on Tuesday, July 25th for our Tazewell & Woodford counties Hazard Mitigation Plan meeting!
It will take place at 1:30pm at the East Peoria Civic Complex at 401 W. Washington Street. The meeting is open to the public.

Appendix F

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Join us on Tuesday, July 25th for our Tazewell & Woodford counties Hazard Mitigation Plan meeting! 🌪️⛈️❄️
It will take place at 1:30pm at the East Peoria Civic Complex at 401 W. Washington Street. The meeting is open to the public.

10:18 AM · Jul 21, 2023

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Appendix F

FOR IMMEDIATE RELEASE Contact: Reema Abi-Akar
309-673-9330

Plans to Protect Public Health and Property in Tazewell & Woodford Counties Ready for Public Review

Peoria, IL (October 5, 2023) — The updated Tazewell County and Woodford County Multi-Jurisdictional All Hazards Mitigation Plans outlining projects and activities to reduce damages caused by severe weather and other natural hazards will be available for public review and comment starting October 19, 2023. The plans, along with a summary sheet and a comment survey, will be available for review at the Tri-County Regional Planning Commission's office and on its Hazard Mitigation website.

The comment period will remain open through November 2, 2023. Public comments received will be used to make any revisions needed before the plans are submitted to the Illinois and Federal Emergency Management Agencies.

The Tazewell and Woodford Counties All Hazards Mitigation Planning Committee has been conducting working meetings open to the public since January 2023. The Committee prepared these Plans with technical assistance from state and federal agencies as well as a consultant specializing in emergency management planning.

The municipalities of Creve Coeur, East Peoria, Morton, Pekin, Tremont, and Washington in Tazewell County, and El Paso, Eureka, Germantown Hills, Minonk, and Roanoke in Woodford County have participated in the planning process. Other participating jurisdictions include the East Peoria Community High School District 309, Pekin Park District, East Peoria Drainage & Levee District, and the Tri-County Regional Planning Commission.

"These plans describe how the counties and the participating jurisdictions have been impacted by severe weather and other hazards and identify specific mitigation actions that can be taken to reduce damages to people and property before events occur," explained Reema Abi-Akar, Senior Planner at the Tri-County Regional Planning Commission.

An open-house-style public forum will be held at the East Peoria Civic Complex, 401 W. Washington Street, East Peoria from 4:00 p.m. to 6:00 p.m. on Thursday, **October 19, 2023**. Individuals can come and review the plans at any time during the forum. Those unable to attend can still review the plans and provide comments without participating in the public forum.

XXXXXXXXXXXXXXXXX

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Tri-County Regional Planning Commission
October 5 at 12:15 PM ·

We're hosting one more event for our Tazewell and Woodford counties Hazard Mitigation Plans!

Everyone is welcome on Thursday, October 19 between 4-6pm at the East Peoria Civic Complex at 401 W. Washington Street in EP.

Please see the news release below:

***

FOR IMMEDIATE RELEASE
Contact: Reema Abi-Akar, 309-673-9330

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FOR IMMEDIATE RELEASE

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309-673-9330

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XXXXXXXXXXXXXXXX

12:19 PM · Oct 5, 2023 · **15** Views

October 2023 Web view

Monthly Newsletter

Reema Abi-Akar Choosen for Statewide Emerging Planner Award

TCRPC would like to take a moment to highlight an achievement of our very own Reema Abi-Akar. At the APA-IL 2023 conference, Reema was awarded this year's Emerging Planner Award. The purpose of this award is to recognize a young planner whose performance shows that they are on their way to becoming a force in the planning profession. We are glad that the Illinois Chapter of American Planning Association is recognizing Reema for the rising star that she is!

Left to right: Gabriel Guevara, Gavin Hunt, Ray Lees, Nina Idemudia (APA IL President), Reema Abi-Akar, Phil Green (APA IL Membership Committee Chair), and Michael Bruner

We at Tri-County truly understand how deserving she is of this award. Our office benefits greatly from all the little things that make Reema great: her willingness to participate in new projects, keen eye for detail, and ability to ensure effectiveness and efficiency. TCRPC is grateful and appreciates her!

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Andrea Bostwick-Campbell, left, presents at the July 25 hazard mitigation plan meeting for Tazewell and Woodford counties

Catch Tazewell and Woodford's final hazard mitigation public forum on October 19th

Tri-County has been working with American Environmental Corporation for this ongoing planning process

Staff Contact: Reema Abi-Akar

Beginning in late 2022, Tri-County began working with our consultant, American Environmental Corporation to help update the region's hazard mitigation plan. The last iteration involved 16 participating jurisdictions across the three counties of Peoria, Tazewell, and Woodford. With this five-year update, TCRPC collaborated with Peoria County to add them to the plan, along with six other new jurisdictions dispersed across the area.

The last iteration of the hazard mitigaiton plan was one large region-wide document. This time, with the addition of new jurisdictions, it will be split up into three doucments, though Tri-County staff still oversee the consolidated planning process. Since Peoria County's plan had an earlier adoption deadline, their process is now coming to a close, and jurisdictions are reviewing and adopting it this month and next.

As for Tazewell and Woodford, one more public forum is scheduled for Thursday, October 19th from 4:00-6:00 pm at the East Peoria City Building at 401 W. Washington Street, East Peoria, IL 61611. Anyone from the public is invited to join, and attendees will learn about the final stages of the hazard mitigation process, be able to make comments as the plans come to a close, and understand the next steps for how participating jurisdictions can utilize the plan when applying for future mitigation grants. We hope you are able to attend!

APPENDIX G

TAZEWELL COUNTY MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN

WOODFORD COUNTY MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN

PUBLIC FORUM SUMMARY HANDOUT

OCTOBER 19, 2023
4:00 P.M. – 6:00 P.M.

Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of Tazewell County and Woodford County residents. Since 1973, Tazewell County has been a part of 11 federally-declared disasters and experienced at least $1.0 billion in recorded property damages and at least $45.1 million in crop damages within the County. Since 1974, Woodford County has been a part of 11 federally-declared disasters and experienced at least $84.9 million in recorded property damages and at least $31.7 million in crop damages within the County.

Tazewell County
In the last 10 years alone (2013 – 2022), there have been 87 thunderstorms with damaging winds, 42 excessive heat events, 34 severe storms with hail one inch in diameter or greater, 28 extreme cold events, 25 riverine flood events, 22 flash flood events, 22 severe winter storms, 12 tornadoes, 3 landslides, and one drought verified in the County.

Woodford County
There have been 54 thunderstorms with damaging winds, 42 excessive heat events, 28 extreme cold event, 27 riverine flood events, 24 severe winter storms, 19 flash flood events, 15 severe storms with hail one inch in diameter or greater, 8 tornadoes, and one drought verified in the County in the last 10 years alone (2013 – 2022).

While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning.

What is hazard mitigation planning?
Hazard mitigation planning is the process of determining how to reduce or eliminate property damage and loss of life from natural and man-made hazards. This process helps a county, and its participating jurisdictions, reduce their risk by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in a multi-hazard mitigation plan.

Why prepare updated multi-hazard mitigation plans?
By preparing and adopting updated multi-hazard mitigation plans, the counties and participating jurisdictions become or remain eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions identified in the plans. These funds, made available through the Disaster Mitigation Act of 2000, can help provide local government entities with the opportunity to complete mitigation projects that would not otherwise be financially possible.

Tazewell County Multi-Jurisdictional Multi-Hazard Mitigation Plan	Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Who participated in the update of the Tazewell County and Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plans?

- Creve Coeur, Village of
- East Peoria, City of
- East Peoria Community High School District #309
- East Peoria Drainage & Levee District
- Morton, Village of
- Pekin, City of
- Pekin Park District
- Tremont, Village of
- Tri-County Regional Planning Commission
- Washington, City of
- El Paso, City of
- Eureka, City of
- Germantown Hills, Village of
- Minonk, City of
- Roanoke, Village of

How were the updated Plans developed?

The two Plans were developed through the Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee. The Committee included representatives from each participating jurisdiction, as well as agriculture, education, emergency services, planning, social services, and utilities. The Planning Committee met four times between January 2023 and October 2023.

Which hazards are included in the updated Plans?

After reviewing the risk assessment, the Planning Committee chose to include the following hazards in the Plans:

Natural Hazards

- severe storms (thunderstorms, hail, lightning)
- floods (riverine & flash)
- severe winter storms (snow & ice)
- excessive heat
- extreme cold
- tornadoes
- drought
- landslides
- earthquakes
- mine subsidence
- levee failures (Tazewell County Only)
- dam failures

Man-Made hazards

- hazardous substances (generation, transportation, and storage/handling)
- waste disposal
- hazardous material incidents
- waste remediation
- nuclear incidents
- terrorism

What is included in the updated Plans?

The updated Plans are divided into sections that cover the planning process; the risk assessment; the mitigation strategy, including the jurisdiction-specific mitigation action lists; and plan maintenance and adoption. The majority of the Plans are devoted to the risk assessment and mitigation strategy.

The risk assessment identifies the natural hazards that pose a threat to the counties and includes a profile of each natural hazard, which describes the location and severity of past occurrences, reported damages to public health and property, and the likelihood of future occurrences. It also provides a vulnerability analysis that estimates the potential impacts each natural hazard would have on the health and safety of the residents of each county, as well as the buildings, critical facilities, and infrastructure in each county.

The key component of the mitigation strategy is a list of the projects and activities developed by each participating jurisdiction to reduce the potential loss of life and property damage that results from the natural hazards identified in the risk assessment. These projects and activities are intended to be implement *before* a hazard event occurs.

What happens next?

Any comments received at today's public forum and during the public comment period will be reviewed and, where applicable, incorporated into the draft Plans before they are submitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and the Federal Emergency Management Agency (FEMA) for review. Once IEMA-OHS and FEMA have reviewed and approved the Plans, each Plan will be presented to appropriate County and participating jurisdictions for formal adoption. After adopting their Plan, each participating jurisdiction will be eligible to apply for federal mitigation funds and can begin implementing the mitigation actions identified in their Plan.

APPENDIX H

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plans

Comment Sheet

Plan Comment Period
October 19, 2023 thru November 2, 2023

The Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plans evaluate damage to life and property from the natural and man-made hazards that occur in each County. These Plans also identify projects and activities for each County and the participating jurisdictions that will help reduce these damages. This comment sheet should be used to provide feedback on the updates to these draft Plans.

Please check which Plan the comments provided below apply to:

☐ Tazewell County ☐ Woodford County

What comments, concerns or questions do you have regarding the draft Plan update? (Use additional sheets if necessary.)

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Please Print Your Name, Address, and Phone Number Below:

Name: ______________________________ Phone: ______________

Address: ______________________________

______________________________ Zip Code: ______________

Comments will be accepted through November 2, 2023.

Place
Stamp
Here

Reema Abi-Akar, Senior Planner
Tri-County Regional Planning Commission
456 Fulton St., Suite 401
Peoria, IL 61602

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plans Update Comment Survey

The Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Plans evaluate damage to life and property from the natural and man-made hazards that occur in each County. These Plans also identify projects and activities for each County and the participating jurisdictions that will help reduce these damages. This comment sheet should be used to provide feedback on the updates to these draft Plans.

An asterisk (*) denotes a question that is required for form completion.

* 1. Please check which Plan the comments provided below apply to:

- ☐ Tazewell County
- ☐ Woodford County

* 2. What comments, concerns or questions do you have regarding the draft Plan?

* 3. Name:

4. Address:

5. City/Village/Town:

6. State/Province:

7. Zip Code:

* 8. Email Address:

9. Phone Number:

Comments will be accepted through November 2, 2023.

Done

Appendix H

APPENDIX I

To: Fulton County ESDA: Chris Helle (esda@fultonco.org)
LaSalle County EMA: Fred Moore (LaSalleCoEMA@lasallecountyil.gov)
Livingston County ESDA: Jesse King (jking@livingstoncountyil.gov)
Logan County EMA: Kendall Caruthers (loganema@lincolnil.us)
Marshall County EMA: Rich Koch (mcema1@yahoo.com)
Mason County EMA: Richard Crum (911@masoncountyil.gov)
McLean County EMA: Cathy Beck (Cathy.Beck@mcleancountyil.gov)
Peoria County EMA: Jason Marks (jmarks@peoriacounty.org)

From: Reema Abi-Akar, Tri-County Regional Planning Commission Senior Planner

Subject: Hazard Mitigation Plans Update

Date: October 5, 2023

The purpose of this memorandum is to inform you that Tazewell County and Woodford County are updating their countywide All Hazards Mitigation Plans. Since we share common boundaries, you are invited to review our draft plans and provide comments during the public comment period, which runs from October 19 through November 2, 2023. Starting October 19, the plans, along with a summary sheet and a comment survey, can be viewed on the Tri-County Regional Planning Commission's Hazard Mitigation webpage.

A public forum is scheduled for:

Thursday, October 19, 2023
4:00 p.m. to 6:00 p.m.
East Peoria Civic Complex
401 W. Washington Street, East Peoria

If you have any questions, please contact me at 309-673-9330 or rabiakar@tricountyrpc.org

American Environmental Corp., an emergency management and environmental consulting firm experienced in preparing these plans, is leading our planning process. If you have specific questions about the Plans, please contact Ken Runkle, a consultant team member, at 217-585-9517 Ext. 8 or krunkle@aecspfld.com.

Runkle, Ken

From: Reema Abi-Akar <rabiakar@tricountyrpc.org>
Sent: Thursday, October 05, 2023 2:45 PM
To: esda@fultonco.org; LaSalleCoEMA@lasallecountyil.gov; jking@livingstoncountyil.gov; loganema@lincolnil.us; Rich Koch; 911@masoncountyil.gov; Cathy.Beck@mcleancountyil.gov; Jason Marks
Cc: Runkle, Ken; Bostwick, Andrea; Michael Bruner
Subject: Tazewell & Woodford Hazard Mitigation Plans Update
Attachments: Adjacent Counties Memo - Tazewell & Woodford.docx

Hello,

I'm reaching out to let you know that Tazewell and Woodford Counties' hazard mitigation plans are currently being updated, and we will host a public forum on Thursday, October 19 from 4-6pm at the East Peoria Civic Complex at 401 W. Washington Street, East Peoria.

Since your county borders either Tazewell or Woodford, we are making you aware of this process. Please see the attached memo for more information.

Thank you,

--
Reema Abi-Akar, Senior Planner
Human Service Transportation Plan (HSTP) Region 5 Coordinator
Pronouns: She, her, hers
rabiakar@tricountyrpc.org
Office: 309-673-9330
Direct: 309-673-9796 Ext. 231

Tri-County Regional Planning Commission
https://www.tricountyrpc.org/
456 Fulton St., Suite 401
Peoria, IL 61602

APPENDIX J

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/05/1966	8:15 PM	Metamora^ Roanoke^ Eureka^	52 kts	n/a	n/a	n/a	n/a	
08/07/1968	2:30 PM	Eureka	n/a	n/a	n/a	n/a	n/a	
05/27/1973	1:00 PM	Minonk^	n/a	n/a	n/a	n/a	n/a	
06/20/1974	6:30 PM	Eureka	n/a	n/a	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)***
05/24/1975	5:30 PM	Metamora	n/a	n/a	n/a	n/a	n/a	winds knocked down two-69 kilovolt power lines causing a 6-hour power outage in the central portion of the County
12/14/1975	2:55 PM	Metamora	n/a	n/a	n/a	n/a	n/a	- winds uprooted several pine trees - siding was torn from a house - a pickup truck was turned partially around
03/26/1976	9:15 PM	Germantown Hills	n/a	n/a	n/a	n/a	n/a	
03/26/1976	9:20 PM	Metamora	n/a	n/a	n/a	n/a	n/a	
03/26/1976	9:25 PM	Washburn	n/a	n/a	n/a	n/a	n/a	
05/04/1977	6:10 PM	Roanoke	52 kts	n/a	n/a	n/a	n/a	
05/29/1978	6:50 PM	Secor	n/a	n/a	n/a	n/a	n/a	
07/21/1978	4:20 PM	Washburn	n/a	n/a	n/a	n/a	n/a	
07/05/1980	3:00 AM	Goodfield	n/a	1	n/a	n/a	n/a	an individual was injured when winds overturned a mobile home
08/13/1980	5:35 PM	Metamora	52 kts	n/a	n/a	n/a	n/a	winds caused severe tree and building damage
09/01/1980	3:25 PM	Eureka	n/a	n/a	n/a	n/a	n/a	
04/13/1981	11:50 PM	Goodfield	n/a	n/a	n/a	n/a	n/a	
06/20/1981	6:05 PM	Metamora	n/a	n/a	n/a	n/a	n/a	
12/27/1982	11:22 PM	Roanoke	61 kts	n/a	n/a	n/a	n/a	
12/27/1982	11:55 PM	Cazenovia	61 kts	n/a	n/a	n/a	n/a	
03/06/1983	5:06 PM	Roanoke	n/a	n/a	n/a	n/a	n/a	

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/29/1983	8:00 PM	southwestern part of the county	n/a	n/a	n/a	$2,500	n/a	
04/29/1984	8:23 PM	Roanoke	56 kts	n/a	n/a	n/a	n/a	
05/14/1985	5:30 PM	Minonk	n/a	n/a	n/a	n/a	n/a	
07/02/1985	6:25 PM	Germantown Hills Oak Ridge^	52 kts	n/a	n/a	n/a	n/a	*Germantown Hills* many tree limbs were blown down
11/19/1985	2:00 PM	Low Point^	n/a	n/a	n/a	n/a	n/a	
05/20/1987	6:10 PM	Roanoke^	n/a	n/a	n/a	n/a	n/a	
05/21/1987	8:25 PM	Spring Bay Low Point	57 kts	n/a	n/a	n/a	n/a	winds blew trees down
05/08/1988	4:45 PM	Goodfield^	69 kts	n/a	n/a	$25,000	n/a	winds destroyed 3 trailers and heavily damaged 5 others at the Timberline Court
10/17/1988	7:45 AM	Spring Bay Germantown Hills Metamora	n/a	n/a	n/a	n/a	n/a	*Metamora* winds shattered a 12' x 12' plate glass window *Metamora area* winds destroyed a mobile home several miles west of the Village
11/17/1988	7:45 AM	Roanoke^	55 kts	1	n/a	n/a	n/a	
05/24/1989	11:45 PM	Eureka^	n/a	n/a	n/a	$250,000	n/a	winds caused heavy damage to farm buildings east of the City
06/13/1990	7:50 PM	Washburn^	52 kts	n/a	n/a	n/a	n/a	
06/13/1991	7:37 PM	Benson	n/a	n/a	n/a	$2,500	n/a	winds downed trees and utility poles
06/17/1992	2:41 PM	Roanoke	61 kts	n/a	n/a	n/a	n/a	winds damaged trees
06/17/1992	3:00 PM	El Paso	n/a	n/a	n/a	n/a	n/a	
07/02/1992	1:17 PM	Metamora	n/a	n/a	n/a	n/a	n/a	winds caused heavy roof damage to several homes
07/02/1992	1:27 PM	Roanoke	52 kts	n/a	n/a	n/a	n/a	
09/09/1992	4:47 PM	Eureka	n/a	n/a	n/a	n/a	n/a	winds damaged trees
08/15/1993	7:50 PM	Spring Bay	n/a	n/a	n/a	$5,000	n/a	several 6-inch diameter trees were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
07/20/1994	6:31 PM	El Paso	n/a	n/a	n/a	n/a	n/a	a large tree and a street light pole were blown down
03/25/1996	4:00 AM	countywide	n/a	n/a	n/a	n/a	n/a	winds blew down numerous power lines and caused minor damage across the County *rain could not be documented with this event*
07/24/1996	11:51 AM	Metamora	n/a	n/a	n/a	n/a	n/a	winds blew down several trees
07/28/1996	6:30 PM	Benson^	n/a	n/a	n/a	n/a	n/a	- winds uprooted several large trees and knocked down numerous tree limbs - winds blew the roof off a shed
10/29/1996	4:59 PM	Metamora	n/a	n/a	n/a	n/a	n/a	- winds uprooted a large tree and blew down numerous tree limbs - several business signs were destroyed
10/30/1996	1:00 AM	countywide	57 kts	n/a	n/a	n/a	n/a	winds blew down trees, tree limbs and power lines *Roanoke* the roof of a large storage building was blown off which damaged a small storage shed and a few trees when the roof landed on them *rain could not be documented with this event*
04/05/1997	3:45 PM	countywide	n/a	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down throughout the area with some areas sustaining more serious damage
04/06/1997	9:15 AM	countywide	52 kts	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines *El Paso area* a semi was blown over on US Rte. 24 but no injuries were reported *rain could not be documented with this event*

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
04/30/1997	2:00 PM	countywide	61 kts	n/a	n/a	n/a	n/a	- hundreds of power lines were blown down across the area - numerous trees and tree limbs were blown down - widespread structural damage was reported - numerous sheds, grain bins and machine sheds were either blown over, damaged or destroyed
05/18/1997	9:26 PM	Benson	n/a	n/a	n/a	$80,000	n/a	- winds blew down a few trees and tree limbs - the grain leg was blown off a grain bin - several large sheds had their doors blown in - some siding damage was reported in the area
09/29/1997	10:00 AM	countywide	52 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down *rain could not be documented with this event*
05/12/1998	7:00 PM	Goodfield^	n/a	n/a	n/a	n/a	n/a	a tree was blown down across a road
05/19/1998	5:40 PM	Roanoke^	n/a	n/a	n/a	n/a	n/a	- winds moved a grain bin off its foundation and caused another to cave in - a storage building had its north facing doors blown in - numerous tree limbs were blown down
06/14/1998	7:30 AM	Spring Bay	n/a	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines
06/18/1998	6:30 AM	Metamora	n/a	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/29/1998	3:43 AM	countywide	52 kts	n/a	n/a	n/a	n/a	*Regionally* - wind blew down or uprooted thousands of trees, tree limbs, power poles and power lines - hundreds of trees fell onto structures causing damage ranging from torn gutters to major roof and structural damage - hundreds of vehicles sustained damage from fallen trees and numerous outbuildings, sheds and silos were either damaged or destroyed - considerable crop damage was sustained in most areas
11/10/1998	5:40 AM	El Paso Kappa	n/a	n/a	n/a	n/a	n/a	*El Paso/Kappa* several power poles were blown down *El Paso area* - a couple of outbuildings were destroyed - the top half of a barn was blown off - several power lines were blown down
11/10/1998	6:00 AM	countywide	n/a	n/a	n/a	n/a	n/a	winds downed thousands of power lines and tree limbs and blew over hundreds of trees across the region *rain could not be documented with this event*
02/11/1999	4:00 PM	Minonk^	n/a	n/a	n/a	n/a	n/a	a semi was blown over on I-39 just west of the City
06/01/1999	6:35 PM	Roanoke^	n/a	n/a	n/a	n/a	n/a	winds damaged a roof on a shed and caused minor damage to another one
06/04/1999	3:24 PM	Metamora	n/a	n/a	n/a	n/a	n/a	- several trees were uprooted and numerous tree limbs were blown down - one power pole was snapped off

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
06/06/1999	5:32 PM	Low Point	n/a	n/a	n/a	n/a	n/a	<u>*Low Point*</u> several trees and power lines were blown down <u>*Low Point area*</u> winds blew down a tree onto a house
06/10/1999	4:40 PM	Goodfield^	59 kts	n/a	n/a	n/a	n/a	several power poles were blown down
06/11/1999	2:14 PM	El Paso Secor^	n/a	n/a	n/a	n/a	n/a	<u>*El Paso*</u> several large tree limbs and power lines were blown down <u>*Secor area*</u> a roof was blown off a building at a campground and a semi was blown over
04/20/2000	5:24 AM	countywide	59 kts	n/a	n/a	$300,000	n/a	<u>*countywide*</u> - numerous power poles, power lines and trees were blown down - numerous sheds were destroyed <u>*Metamora/Roanoke area*</u> - 56 power poles were snapped off near the intersection of IL Routes 116 & 117 <u>*Roanoke*</u> - the roof of a business was blown off and it damaged 20 cars in the adjacent parking lot <u>*Benson*</u> - the legs of a grain elevator were damaged causing approx. $300,000 in damages - several outbuildings were destroyed - a large tree fell onto a home causing moderate damage

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/08/2000	8:55 PM	Bay View Gardens Germantown Hills Metamora Low Point Benson Minonk	70 kts	n/a	n/a	n/a	n/a	- numerous trees, power poles and power lines were blown down - several machine sheds were destroyed - homes affected along the path sustained only minor shingle and siding damage
05/18/2000	4:22 PM	Metamora^	n/a	n/a	n/a	n/a	n/a	a large tree was snapped off
09/11/2000	10:00 PM	Secor^	n/a	n/a	n/a	n/a	n/a	several large trees were blown down at a campground east of the Village
05/22/2001	1:00 PM	Germantown Hills Metamora	50 kts	n/a	n/a	n/a	n/a	a couple of trees, tree limbs and power lines were blown down
06/14/2001	6:28 PM	Spring Bay Oak Ridge Metamora	50 kts	n/a	n/a	n/a	n/a	*Spring Bay* a tree was blown down across the road *Metamora* several power lines were blown down
07/08/2001	1:45 PM	Woodford^	50 kts	n/a	n/a	n/a	n/a	a downburst flattened a large cornfield
08/22/2001	5:55 PM	Spring Bay Germantown Hills^ Metamora^ Eureka	51 kts	n/a	n/a	n/a	n/a	*Spring Bay* trees blocked roads in the Village
08/30/2001	7:36 PM	Germantown Hills	52 kts	n/a	n/a	n/a	n/a	
03/09/2002	12:00 PM	countywide	53 kts	n/a	n/a	n/a	n/a	- numerous reports of downed power lines, power poles and trees - several sheds and barns were damaged *rain could not be documented with this event*
05/08/2002	11:18 PM	Eureka^	55 kts	n/a	n/a	n/a	n/a	
06/04/2002	4:40 PM	Metamora	55 kts	n/a	n/a	n/a	n/a	several large tree limbs were blown down around the Village

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/25/2002	6:34 PM	Metamora	50 kts	n/a	n/a	n/a	n/a	- several trees, tree limbs and power lines were blown down - a small shed was destroyed
02/11/2003	6:30 PM	Eureka Roanoke Benson Secor El Paso Panola Woodford Minonk	54 kts	n/a	n/a	n/a	n/a	winds blew down power lines in Eureka, Roanoke, Minonk & El Paso
06/10/2003	6:15 AM	countywide	52 kts	n/a	n/a	n/a	n/a	- winds blew down numerous trees, tree limbs and power lines - several reports of minor damage to roofs and storage sheds rain could not be documented with this event
06/25/2003	6:42 PM	Germantown Hills	54 kts	n/a	n/a	n/a	n/a	several trees were blown down
06/28/2003	3:57 PM	Congerville	63 kts	n/a	n/a	n/a	n/a	winds blew down several large tree limbs
07/08/2003	5:52 PM	Eureka	55 kts	n/a	n/a	n/a	n/a	winds blew down several power poles
07/21/2003	12:50 AM	Washburn Low Point Cazenovia Metamora Roanoke	55 kts	n/a	n/a	n/a	n/a	- winds blew down several large trees *Washburn area* - one large tree was blown down across IL Rte. 89 just south of the Village *Metamora* - a couple of the fallen trees and tree limbs were blown down onto homes causing minor roof damage - numerous power lines were blown down
05/07/2004	5:00 AM	Benson^	52 kts	n/a	n/a	n/a	n/a	winds blew down several large tree limbs

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
07/11/2004	4:05 PM	Germantown Hills Metamora Roanoke Benson Minonk	52 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down in Germantown Hills, Eureka and Minonk
07/13/2004	2:23 PM	Roanoke^	65 kts	n/a	n/a	n/a	n/a	a microburst caused extensive damage to a cornfield
03/30/2005	3:10 PM	Metamora^	50 kts	n/a	n/a	n/a	n/a	6 power poles were blown down
06/04/2005	11:06 AM	Roanoke	50 kts	n/a	n/a	n/a	n/a	a few trees and power lines were blown down
06/04/2005	11:25 AM	Minonk	60 kts	n/a	n/a	n/a	n/a	- a semi-trailer was blown over on Interstate 39 - power lines were downed along IL Rte. 251
07/26/2005	3:55 PM	Germantown Hills	50 kts	n/a	n/a	n/a	n/a	several trees were blown down
03/13/2006	3:00 AM	Minonk	50 kts	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
04/02/2006	6:10 PM	Roanoke^	55 kts	n/a	n/a	n/a	n/a	a hog barn was damaged
04/13/2006	10:10 PM	Roanoke	56 kts	n/a	n/a	n/a	n/a	
04/13/2006	10:15 PM	Washburn	52 kts	n/a	n/a	n/a	n/a	
04/13/2006	10:36 PM	Eureka Roanoke^	61 kts	n/a	n/a	n/a	n/a	*Roanoke area* - 114 power poles were blown down near a substation (7 miles worth) *Eureka area* - winds blew down power poles - minor structural damage was experienced
05/17/2006	4:45 PM	Metamora	50 kts	n/a	n/a	n/a	n/a	power lines were blown down
05/24/2006	2:56 PM	Eureka^	65 kts	n/a	n/a	n/a	n/a	numerous trees and power lines were blown down
05/24/2006	3:05 PM	Washburn	52 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down
05/24/2006	3:15 PM	Minonk	50 kts	n/a	n/a	n/a	n/a	a few large branches were blown down
05/24/2006	3:25 PM	Washburn^	60 kts	n/a	n/a	n/a	n/a	- an 18-foot diameter grain silo was destroyed - a large tree was blown down
07/19/2006	2:42 PM	Metamora	52 kts	n/a	n/a	n/a	n/a	several large tree limbs were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
07/17/2007	6:52 AM	Germantown Hills Metamora Roanoke	55 kts	n/a	n/a	$20,000	n/a	numerous trees and large tree limbs were blown down *Roanoke* an awning was damaged on a house
08/23/2007	1:36 PM	Spring Bay^	55 kts	n/a	n/a	n/a	n/a	a tree was blown down
05/26/2008	1:10 AM	Goodfield^	56 kts	n/a	n/a	$9,000	n/a	- a large tree and power line were blown down - a roof sustained minor wind damage
06/15/2008	2:34 PM	Goodfield Eureka	61 kts	n/a	n/a	$30,000	n/a	numerous tree limbs and power lines were blown down
06/15/2008	2:49 PM	Secor^ El Paso^	61 kts	n/a	n/a	$40,000	n/a	numerous trees and tree limbs were blown down *El Paso area* a house had part of its roof blown off
07/21/2008	6:14 AM	Roanoke	70 kts	n/a	n/a	$30,000	n/a	numerous trees were blown down
07/21/2008	6:15 AM	Minonk	61 kts	n/a	n/a	$25,000	n/a	numerous trees and tree limbs were blown down across the City
08/05/2008	3:38 AM	Eureka^ Cruger	61 kts	n/a	n/a	$10,000	n/a	2 ½ to 3-foot diameter tree branches were blown down
08/05/2008	4:05 AM	Roanoke	61 kts	n/a	n/a	$10,000	n/a	3-foot diameter tree was blown down onto a house
08/05/2008	4:15 AM	Eureka	61 kts	n/a	n/a	$15,000	n/a	winds sheared off approx. 12 oak trees at Lake Eureka
03/08/2009	6:10 AM	Metamora	52 kts	n/a	n/a	$25,000	n/a	several houses experienced shingle and trim damage
03/08/2009	6:28 AM	Benson^	52 kts	n/a	n/a	$10,000	n/a	power lines were blown down south of the intersection of IL Routes 116 & 117
03/08/2009	11:15 AM	Eureka	52 kts	n/a	n/a	$10,000	n/a	power poles were blown down on the west side of the City
03/24/2009	1:51 PM	Countywide	52 kts	n/a	n/a	$6,000	n/a	*Roanoke* power lines were blown down across Douglas and East Woodford Streets *rain could not be documented with this event*
06/18/2009	4:29 AM	Congerville	52 kts	n/a	n/a	n/a	n/a	small tree branches were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/19/2009	2:38 PM	Metamora^	52 kts	n/a	n/a	$3,000	n/a	a 9-inch diameter tree was blown down across Morris Road north of the Village
06/27/2009	7:19 PM	Eureka^	52 kts	n/a	n/a	$20,000	n/a	power lines were blown down onto IL Rte. 24
08/04/2009	7:50 AM	Germantown Hills	61 kts	n/a	n/a	$2,000	n/a	a tree was blown down onto Old Germantown Hills Road
08/04/2009	8:15 AM	El Paso^	52 kts	n/a	n/a	$3,000	n/a	a large tree was blown down across a road just north of the City
08/19/2009	2:44 PM	Eureka	52 kts	n/a	n/a	$20,000	n/a	several trees and power lines were blown down
08/19/2009	2:45 PM	Woodford^	52 kts	n/a	n/a	$5,000	$30,000	- roofing material was stripped off a building - a nearby cornfield was flattened near Interstate 39
06/02/2010	12:30 AM	Spring Bay^	52 kts	n/a	n/a	$2,000	n/a	a tree was blown down across the road at the intersection of IL Rte. 26 & Lourdes Rd.
06/02/2010	12:35 AM	Eureka^	52 kts	n/a	n/a	$1,000	n/a	- a stop sign was bent over - construction barricades were scattered across the road at IL Rte. 24 and Dee-Mac Rd.
06/02/2010	12:42 AM	Roanoke^	52 kts	n/a	n/a	$3,000	n/a	a large tree was uprooted
06/02/2010	12:58 AM	Minonk	52 kts	n/a	n/a	$7,000	n/a	- shingles were blown off the Millennium Park Pavilion - a door was blown out at the Sewage Treatment Plant
06/12/2010	1:10 PM	Metamora^	52 kts	n/a	n/a	$10,000	n/a	power poles were blown down at 900E and 1200N

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
06/23/2010	5:51 PM	Minonk	52 kts	n/a	n/a	$3,000	n/a	a 10-inch diameter limb and a baseball diamond fence were blown down *Ameren (Regional information, including Woodford County)* - 8,000 customers were without power for up to 3 days - 259 wires downed - 17 poles replaced - 63 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 250 Ameren personnel responded to the event
09/21/2010	2:25 PM	Roanoke	61 kts	n/a	n/a	$170,000	n/a	- 8 large 64,000-volt power lines were blown down on the south edge of the Village - the entire town lost power for over 15 hours
10/26/2010	4:43 AM	Metamora^	52 kts	n/a	n/a	$4,000	n/a	- a metal chicken coop was destroyed - a large tree branch broke a window in a hom
10/26/2010	5:05 AM	Minonk	52 kts	n/a	n/a	n/a	n/a	a semi-truck was blown over on Interstate 39
05/29/2011	11:20 AM	El Paso	52 kts	n/a	n/a	$3,000	n/a	a 12 to 18-inch diameter rotted tree knocked down power lines at the intersection of US Rte. 24 and IL Rte. 251
05/03/2012	11:45 PM	Low Point^	52 kts	n/a	n/a	$8,000	n/a	power lines were blown down at 1950N and 1400E

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
05/20/2013	6:45 PM	Roanoke	52 kts	n/a	n/a	$12,000	n/a	a few small trees were blown down *Ameren (Regional information, including Woodford County)* - 16,000 customers were without power for up to 2 days - 559 wires downed - 66 poles replaced - 211 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 629 Ameren personnel responded to the event
05/29/2013	1:50 AM	El Paso^	61 kts	n/a	n/a	$14,000	n/a	- 5 trees were blown down - a power pole was damaged
05/30/2013	2:20 PM	El Paso	52 kts	n/a	n/a	$65,000	n/a	numerous trees and power lines were blown down *Ameren (Regional information, including Woodford County)* - 17,500 customers were without power for up to a day - 346 wires downed - 170 poles replaced - 140 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,285 Ameren personnel responded to the event
05/30/2013	2:32 PM	Minonk^	52 kts	n/a	n/a	$2,000	n/a	a large tree was blown down onto IL Rte. 116 at 3000E &1900N
05/30/2013	2:43 PM	Panola^	52 kts	n/a	n/a	$2,000	n/a	a tree was blown down
04/28/2014	4:30 PM	Washburn^	52 kts	n/a	n/a	$6,000	n/a	a power pole was blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/11/2014	4:17 PM	Washburn^	52 kts	n/a	n/a	$22,000	n/a	- a machine shed was damaged - a power pole was blown over
05/11/2014	4:20 PM	Benson^	52 kts	n/a	n/a	$32,000	n/a	- a machine shed was damaged - a large tree and several power lines were blown down
05/11/2014	4:22 PM	Benson^	52 kts	n/a	n/a	$14,000	n/a	- the roof and doors of a machine shed were blown off - a power pole was snapped
06/07/2015	3:10 PM	Benson	61 kts	n/a	n/a	$11,000	n/a	*Benson* a tree was blown down onto a power line *Benson area* a tree was blown onto a garage south of the Village *Ameren (Regional information, including Woodford County)* - 25,173 customers were without power for up to 2 days - 169 wires downed - 52 poles replaced - 104 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
06/07/2015	3:15 PM	Eureka	61 kts	n/a	n/a	$20,000	n/a	several trees were damaged
06/07/2015	3:16 PM	Metamora	61 kts	n/a	n/a	$25,000	n/a	numerous trees limbs were blown down
06/10/2015	8:00 PM	Germantown Hills^	52 kts	n/a	n/a	$8,000	n/a	trees were blown down onto IL Rte. 116 southwest of the Village
08/18/2015	5:12 PM	Congerville	52 kts	n/a	n/a	$12,000	n/a	numerous 4 to 6-inch diameter tree branches were blown down
08/18/2015	5:15 PM	Goodfield^	52 kts	n/a	n/a	$45,000	n/a	- a few trees were blown down along Interstate 74 - damage was done to the roof of a barn/dinner theater

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
11/11/2015	7:50 PM	Goodfield^	52 kts	n/a	n/a	$15,000	n/a	2 power poles were blown down
11/11/2015	7:56 PM	Metamora^	52 kts	n/a	n/a	n/a	n/a	a 24-inch diameter tree was blown down
11/11/2015	8:09 PM	El Paso Panola Woodford Minonk	52 kts	n/a	n/a	$50,000	n/a	*El Paso* several power lines were blown down *Minonk* several power lines were blown down *Ameren (Regional information, including Woodford County)* - 20,000 customers were without power for up to a day - 68 wires downed - 45 poles replaced - 20 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
07/13/2016	3:58 PM	Metamora	61 kts	n/a	n/a	$12,000	n/a	a large tree was blown over onto a house
02/28/2017	10:25 PM	Goodfield^	61 kts	n/a	n/a	$15,000	n/a	a semi was blown over on Interstate 74 west of the Village
05/10/2017	5:51 PM	Washburn^	70 kts	n/a	n/a	$15,000	n/a	- winds damaged several trees - tree limbs were blown down on 2 farms - a gas grill and singles on a home were also damaged by winds
05/17/2017	9:55 PM	Secor^	52 kts	n/a	n/a	$27,000	n/a	several trees were blown down, including one that fell onto power lines
06/14/2017	2:42 PM	Spring Bay	n/a	n/a	n/a	$25,000	n/a	numerous trees were blown down
06/14/2017	2:45 PM	Washburn^	52 kts	n/a	n/a	$30,000	n/a	numerous trees were blown down along IL Rte. 26 from the Woodford-Marshall County line southward for about 3 miles

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 **Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County** **1966 - 2022**								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
06/14/2017	3:00 PM	Metamora Low Point	52 kts	n/a	n/a	$50,000	n/a	numerous trees were blown down *Ameren (Regional information, including Woodford County)* - 19,203 customers were without power for up to a day - 253 wires downed - 57 poles replaced - 180 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 494 Ameren personnel responded to the event
06/17/2017	7:30 PM	Roanoke^	70 kts	n/a	n/a	n/a	n/a	- a detached garage was destroyed - a dairy barn was damaged - several 18 to 20-inch diameter trees were blown down near 1800N and 1700E *Ameren (Regional information, including Woodford County)* - 11,882 customers were without power for up to a day - 45 wires downed - 127 poles replaced - 31 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 954 Ameren personnel responded to the event
06/17/2017	7:49 PM	Secor^	70 kts	n/a	n/a	n/a	n/a	a garage was severely damaged
06/17/2017	7:56 PM	El Paso	70 kts	n/a	n/a	n/a	n/a	numerous trees and tree branches were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
10/14/2017	6:20 PM	Spring Bay^	61 kts	n/a	n/a	$12,000	n/a	- a power line was blown down closing IL Route 26 near the Village - numerous trees were blown down onto IL Route 26 about 5.5 miles northeast of the Village
06/10/2018	1:42 AM	Germantown Hills	52 kts	n/a	n/a	n/a	n/a	a tree was blown down
06/10/2018	1:48 AM	Metamora Metamora^	52 kts	n/a	n/a	n/a	n/a	a tree was blown down in Metamora
06/25/2019	8:53 PM	Spring Bay Bay View Gardens^	52 kts	n/a	n/a	n/a	n/a	a tree was blown down, knocking down a power line in the process
06/25/2019	9:00 PM	Metamora^	52 kts	n/a	n/a	n/a	n/a	a large tree was blown over
06/30/2019	7:15 PM	Metamora^	52 kts	n/a	n/a	n/a	n/a	- a 24-inch diameter tree was snapped - a power pole and several power lines were blown down *Ameren (Regional information, including Woodford County)* - 12,050 customers were without power for over half a day - 52 wires downed - 85 poles replaced - 37 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
06/30/2019	7:20 PM	Roanoke	52 kts	n/a	n/a	$5,000	n/a	a house was damaged by a pergola
08/16/2019	6:09 PM	Secor^	52 kts	n/a	n/a	n/a	n/a	- numerous 3-inch diameter tree branches were blown down - corn was flattened near the intersection of 2300 East and 800 North
08/20/2019	8:35 AM	Germantown Hills	52 kts	n/a	n/a	n/a	n/a	power lines were blown down

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
05/23/2020	12:23 PM	Eureka	52 kts	n/a	n/a	$40,000	n/a	power poles were snapped on the southwest side of Eureka
05/23/2020	12:29 PM	Eureka^ Cruger^	52 kts	n/a	n/a	n/a	n/a	power lines were blown down near Lake Road and 1200 East just southwest of Eureka
07/07/2020	5:05 PM	Eureka	52 kts	n/a	n/a	n/a	n/a	a few 2 to 4-inch diameter tree limbs were blown down
07/11/2020	7:45 PM	Roanoke^	61 kts	n/a	n/a	$70,000	n/a	ten power poles were blown down near 1700E and 1200 N just southwest of Roanoke *Ameren (Regional information, including Woodford County)* - 35,425 customers were without power for up to 2 days - 210 wires downed - 57 poles replaced - 48 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 310 Ameren personnel responded to the event
07/11/2020	7:48 PM	Roanoke	61 kts	n/a	n/a	n/a	n/a	numerous tree branches were blown down
07/11/2020	7:50 PM	Low Point^	61 kts	n/a	n/a	n/a	n/a	a large tree was blown onto a road
07/11/2020	7:55 PM	Secor^	61 kts	n/a	n/a	$80,000	n/a	numerous trees were blown down, including one that landed on a camper vehicle at Hickory Hills Campground
07/11/2020	8:00 PM	El Paso^	61 kts	n/a	n/a	$40,000	n/a	strong thunderstorm winds flattened a large area of corn
08/10/2020	1:38 PM	Germantown Hills	52 kts	n/a	n/a	$50,000	n/a	part of the Germantown Hills Middle School roof was blown off

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1 Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County 1966 - 2022								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Windspeed (knots)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
08/10/2020	1:40 PM	Metamora^ Cazenovia Low Point Washburn	52 kts	n/a	n/a	$90,000	n/a	*Metamora area* several trees and fences were blown down *Washburn* - multiple trees and power lines were blown down - one tree fell onto a house, and the residents had to be helped out of the house
08/10/2020	1:42 PM	Spring Bay Bay View Gardens^	56 kts	n/a	n/a	$30,000	n/a	a roof was blown off a large shed
08/10/2020	1:48 PM	Eureka	52 kts	n/a	n/a	$50,000	n/a	power lines were blown down *Ameren (Regional information, including Woodford County)* - 60,240 customers were without power for up to 4 days - 148 wires downed - 120 poles replaced - 84 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,434 Ameren personnel responded to the event
10/11/2021	3:45 PM	Washburn^ Low Point^	52 kts	n/a	n/a	n/a	n/a	a 10-inch diameter tree branch was blown down and an old barn was damaged
06/16/2022	1:18 AM	Bay View Gardens Spring Bay^	52 kts	n/a	n/a	n/a	n/a	a tree was blown down and several tree branches were snapped in Bay View Gardens
06/16/2022	1:30 AM	Cazenovia^	52 kts	n/a	n/a	n/a	n/a	a metal pole barn was heavily damaged on Wiedman Road southwest of Cazenovia

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Woodford County
1966 - 2022

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/25/2022	8:25 PM	Eureka Cruger^	61 kts	n/a	n/a	n/a	n/a	*Eureka* several tree limbs were blown down, one of which hit a power line and led to a power outage
07/23/2022	4:20 PM	Minonk	52 kts	n/a	n/a	n/a	n/a	power line down and two power poles leaning over
GRAND TOTAL:				**2**	**0**	**$2,165,000**	**$30,000**	

Source: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Woodford County Hazard Identification and Risk Assessment Packet.

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 2
Severe Storms - Hail Events Reported in Woodford County
1974 - 2022

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/10/1974	5:00 PM	Roanoke^ Metamora^ Washburn^	1.75 in.	n/a	n/a	n/a	$2,500,000	*Roanoke area* - destroyed a three square-mile area of crops - severely damaged corn, wheat and bean crops
07/10/1974	5:25 PM	Benson Woodford	1.75 in.	n/a	n/a	n/a	n/a	
07/10/1974	5:30 PM	Washburn	1.50 in.	n/a	n/a	n/a	n/a	
06/13/1975	11:40 PM	Benson^	2.00 in.	n/a	n/a	n/a	n/a	
07/26/1978	2:00 PM	Metamora	2.00 in.	n/a	n/a	n/a	n/a	
05/21/1987	9:10 PM	Roanoke^	1.25 in.	n/a	n/a	n/a	n/a	
04/22/1988	2:00 AM	El Paso^	1.75 in.	n/a	n/a	n/a	n/a	golf ball-sized hail piled up 4 inches deep near the City
05/17/1991	6:14 PM	Minonk	2.00 in.	n/a	n/a	n/a	n/a	
06/13/1991	7:10 PM	Eureka	1.75 in.	3	0	n/a	n/a	a police car was damaged by falling tree limbs
10/23/1991	3:25 PM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
04/15/1992	1:40 AM	Eureka	1.50 in.	n/a	n/a	n/a	n/a	
05/13/1995	6:29 PM	El Paso^	1.75 in.	n/a	n/a	n/a	n/a	
04/14/1996	7:23 PM	Roanoke	1.00 in.	n/a	n/a	n/a	n/a	
04/07/1998	6:49 PM	Roanoke^	1.75 in.	n/a	n/a	n/a	n/a	
04/20/1998	3:30 PM	Benson^	1.75 in.	n/a	n/a	n/a	n/a	several windows in a car were broken
05/05/1999	8:13 PM	Benson^	1.75 in.	n/a	n/a	n/a	n/a	
06/04/1999	3:20 PM	Germantown Hills	1.75 in.	n/a	n/a	n/a	n/a	
05/12/2000	4:01 PM	Eureka^ Roanoke^	2.50 in.	n/a	n/a	$300,000	n/a	over 100 cars sustained hail damage in the Eureka/Roanoke area
05/18/2000	4:54 PM	Congerville^ El Paso	1.00 in.	n/a	n/a	n/a	n/a	*El Paso* 2 squad cars sustained damage

^ Hail event verified in the vicinity of this location(s).

Table 2
Severe Storms - Hail Events Reported in Woodford County
1974 - 2022

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/10/2001	12:35 PM	Minonk	1.75 in.	n/a	n/a	$100,000	n/a	- widespread damage was noted to vehicles in the area – at least 50 vehicles were reported to have between $2,000 and $4,000 in damage each - some minor roof damage was also reported
04/21/2001	4:30 PM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
05/09/2003	10:30 PM	Washburn^	1.75 in.	n/a	n/a	n/a	n/a	
05/28/2003	1:53 PM	Germantown Hills	1.75 in.	n/a	n/a	n/a	n/a	numerous buildings and vehicles were damaged
06/28/2003	4:00 PM	Germantown Hills^ Eureka^ Goodfield Congerville	1.50 in.	n/a	n/a	n/a	n/a	
09/26/2003	1:59 PM	Minonk	1.25 in.	n/a	n/a	n/a	n/a	
05/30/2004	4:00 PM	Metamora^ Roanoke Eureka Secor	4.00 in.	n/a	n/a	n/a	n/a	
07/13/2004	2:05 PM	El Paso Kappa	2.75 in.	n/a	n/a	n/a	n/a	
03/30/2005	3:02 PM	Germantown Hills	1.00 in.	n/a	n/a	n/a	n/a	
03/30/2005	6:24 PM	Secor^	1.75 in.	n/a	n/a	n/a	n/a	
06/09/2005	1:25 AM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
09/22/2006	4:08 PM	Roanoke	1.00 in.	n/a	n/a	n/a	n/a	
09/22/2006	4:10 PM	Roanoke	1.25 in.	n/a	n/a	n/a	n/a	
06/03/2008	9:07 PM	Goodfield	1.75 in.	n/a	n/a	n/a	n/a	
05/13/2009	4:53 PM	El Paso	1.00 in.	n/a	n/a	n/a	n/a	
06/01/2009	4:54 PM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	

^ Hail event verified in the vicinity of this location(s).

Table 2 **Severe Storms - Hail Events Reported in Woodford County** **1974 - 2022**								
Date(s)	**Start Time**	**Location(s)**	**Magnitude Hail Stone Diameter (inches)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
06/01/2009	5:15 PM	Spring Bay	1.00 in.	n/a	n/a	n/a	n/a	
06/01/2009	5:24 PM	Metamora^	1.75 in.	n/a	n/a	n/a	n/a	
05/22/2011	1:15 PM	Goodfield	1.00 in.	n/a	n/a	n/a	n/a	
05/22/2011	1:26 PM	Eureka	1.00 in.	n/a	n/a	n/a	n/a	
05/22/2011	1:31 PM	Secor	1.50 in.	n/a	n/a	n/a	n/a	
11/17/2013	11:10 PM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
04/03/2014	2:30 AM	Eureka	1.00 in.	n/a	n/a	n/a	n/a	
04/08/2015	2:30 AM	Washburn	1.00 in.	n/a	n/a	n/a	n/a	
06/08/2015	3:55 PM	Congerville^	1.00 in.	n/a	n/a	n/a	n/a	
03/15/2016	8:07 PM	Secor	1.50 in.	n/a	n/a	n/a	n/a	
04/10/2017	3:20 PM	Panola^	1.00 in.	n/a	n/a	n/a	n/a	
05/17/2017	9:45 PM	Bay View Gardens	1.00 in.	n/a	n/a	n/a	n/a	
09/27/2019	11:45 AM	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
09/27/2019	3:15 PM	Eureka	1.00 in.	n/a	n/a	n/a	n/a	
07/11/2020	3:05 PM	Secor^	1.75 in.	n/a	n/a	n/a	n/a	
07/11/2020	7:08 PM	Eureka^ Cruger^	1.00 in.	n/a	n/a	n/a	n/a	
07/11/2020	7:26 PM	El Paso^ Kappa^	1.50 in.	n/a	n/a	n/a	n/a	
09/07/2021	3:11 PM	Minonk	1.00 in.	n/a	n/a	n/a	n/a	
06/16/2022	1:43 AM	Roanoke	1.00 in.	n/a	n/a	n/a	n/a	
09/18/2022	10:40 PM	Cazenovia	1.00 in.	n/a	n/a	n/a	n/a	
GRAND TOTAL:				**3**	**0**	**$ 400,000**	**$ 2,500,000**	

Source: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

^ Hail event verified in the vicinity of this location(s).

Table 3
Severe Storms - Lightning Events Reported in Woodford County
2008 - 2022

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/25/2008	3:50 AM	Germantown Hills	n/a	n/a	$ 300,000	n/a	lightning struck a house and started a fire which destroyed the house and its contents
05/12/2009	10:30 PM	Kappa	n/a	n/a	$ 45,000	n/a	- lightning struck a tree near a house setting the power lines and part of the house on fire - the kitchen, staircase and room above the kitchen were damaged
07/06/2010	5:00 PM	Washburn^	1	n/a	n/a	n/a	- a road construction flagger on IL Rte. 89 between Washburn and Cazenovia was struck by lightning - the victim was struck in the left shoulder with the bolt exiting his left foot, where part of his boot was blown off - the individual was treated for burns
06/05/2011	8:31 AM	Secor^	n/a	n/a	$ 1,000	n/a	lightning struck a house knocking a hole in the roof and taking out the electrical service
GRAND TOTAL:			**1**	**0**	**$ 346,000**	**$ -**	

Source: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

^ Lightning event verified in the vicinity of this location(s).

Table 4 General Flood Events Reported in Woodford County 1950 - 2022												
Date(s)	**Start Time**	**Water Body**	**Location(s)**	**Magnitude Flood Crest Illinois River Peoria[1]**	**Impacts[2]**			**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/ Event Description**
					Home	**Business**	**Infra-structure**					
01/17/1950 thru 01/19/1950	n/a	Illinois River	western portion of county	18.30 ft. 01/18/1950				n/a	n/a	n/a	n/a	
01/27/1950 thru 02/03/1950	n/a	Illinois River	western portion of county	19.40 ft. 01/30/1950				n/a	n/a	n/a	n/a	
03/09/1950 thru 03/13/1950	n/a	Illinois River	western portion of county	18.70 ft. 03/10/1950				n/a	n/a	n/a	n/a	
04/07/1950 thru 05/12/1950	n/a	Illinois River	western portion of county	25.00 ft. 04/29/1950				n/a	n/a	n/a	n/a	
02/20/1951 thru 03/08/1951	n/a	Illinois River	western portion of county	21.20 ft. 02/24/1951				n/a	n/a	n/a	n/a	
04/15/1951 thru 04/21/1951	n/a	Illinois River	western portion of county	18.50 ft. 04/17/1951				n/a	n/a	n/a	n/a	
07/12/1951 thru 07/20/1951	n/a	Illinois River	western portion of county	19.80 ft. 07/15/1951				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An “X” in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
03/23/1952 thru 03/28/1952	n/a	Illinois River	western portion of county	18.60 ft. 03/25/1952				n/a	n/a	n/a	n/a	
04/16/1952 thru 04/21/1952	n/a	Illinois River	western portion of county	18.60 ft. 04/18/1952				n/a	n/a	n/a	n/a	
04/30/1957 thru 05/07/1957	n/a	Illinois River	western portion of county	19.80 ft. 05/03/1957				n/a	n/a	n/a	n/a	
07/18/1957 thru 07/20/1957	n/a	Illinois River	western portion of county	18.50 ft. 07/19/1957				n/a	n/a	n/a	n/a	
06/15/1958 thru 06/25/1958	n/a	Illinois River	western portion of county	19.70 ft. 06/19/1958				n/a	n/a	n/a	n/a	
07/18/1958 thru 07/20/1958	n/a	Illinois River	western portion of county	18.30 ft. 07/19/1958				n/a	n/a	n/a	n/a	
02/16/1959 thru 03/02/1959	n/a	Illinois River	western portion of county	19.10 ft. 02/18/1959				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

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Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
03/31/1960 thru 04/28/1960	n/a	Illinois River	western portion of county	21.80 ft. 04/05/1960				n/a	n/a	n/a	n/a	
09/28/1961 thru 10/02/1961	n/a	Illinois River	western portion of county	18.74 ft. 09/29/1961				n/a	n/a	n/a	n/a	
03/15/1962 thru 04/13/1962	n/a	Illinois River	western portion of county	23.70 ft. 03/26/1962				n/a	n/a	n/a	n/a	
04/11/1965 thru 04/19/1965	n/a	Illinois River	western portion of county	18.60 ft. 04/13/1965				n/a	n/a	n/a	n/a	
04/27/1965 thru 05/11/1965	n/a	Illinois River	western portion of county	19.40 ft. 04/29/1965				n/a	n/a	n/a	n/a	
05/13/1966 thru 05/29/1966	n/a	Illinois River	western portion of county	21.20 ft. 05/17/1966				n/a	n/a	n/a	n/a	
04/03/1967 thru 04/12/1967	n/a	Illinois River	western portion of county	19.80 ft. 04/07/1967				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
02/05/1968 thru 02/13/1968	n/a	Illinois River	western portion of county	19.60 ft. 02/07/1968				n/a	n/a	n/a	n/a	
04/23/1970 thru 06/26/1970	n/a	Illinois River	western portion of county	25.90 ft. 05/19/1970				n/a	n/a	n/a	n/a	heavy rain fell over much of central Illinois for 3 to 8 consecutive days washing out crops and causing extreme soil erosion & ponding
09/28/1970 thru 10/01/1970	n/a	Illinois River	western portion of county	18.10 ft. 09/29/1970				n/a	n/a	n/a	n/a	
01/01/1973 thru 01/14/1973	n/a	Illinois River	western portion of county	21.60 ft. 01/06/1973				n/a	n/a	n/a	n/a	
03/14/1973 thru 05/18/1973	n/a	Illinois River	western portion of county	24.40 ft. 04/27/1973				n/a	n/a	n/a	n/a	
06/21/1973 thru 06/26/1973	n/a	Illinois River	western portion of county	18.90 ft. 06/23/1973				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4 General Flood Events Reported in Woodford County 1950 - 2022												
Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
01/24/1974 thru 02/12/1974	n/a	Illinois River	western portion of county	23.20 ft. 02/01/1974				n/a	n/a	n/a	n/a	
02/26/1974 thru 03/21/1974	n/a	Illinois River	western portion of county	19.10 ft. 03/10/1974				n/a	n/a	n/a	n/a	
5/18/1974 thru 07/07/1974	n/a	Illinois River, area rivers, streams & creeks	countywide	24.50 ft. 5/25/1974			X	n/a	n/a	$143,000 $2,500,000 §	$250,000 §	***This event is part of a federally-declared disaster (Declaration #438)*** 2 bridges in Woodford County were damaged beyond repair and had to be replaced
04/19/1975 thru 05/07/1975	n/a	Illinois River	western portion of county	19.70 ft. 05/01/1975				n/a	n/a	n/a	n/a	
02/25/1976 thru 03/23/1976	n/a	Illinois River	western portion of county	23.60 ft. 03/09/1976				n/a	n/a	n/a	n/a	
05/09/1976 thru 05/13/1976	n/a	Illinois River	western portion of county	18.80 ft. 05/11/1976				n/a	n/a	n/a	n/a	

1 Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

2 An “X” in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

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Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
04/07/1978 thru 04/19/1978	n/a	Illinois River	western portion of county	20.00 ft. 04/13/1978				n/a	n/a	n/a	n/a	
05/15/1978 thru 05/22/1978	n/a	Illinois River	western portion of county	19.00 ft. 05/17/1978				n/a	n/a	n/a	n/a	
03/06/1979 thru 05/17/1979	n/a	Illinois River, area rivers, streams & creeks	countywide	28.70 ft. 03/23/1979 3rd highest crest on record				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #583)***
05/28/1980 thru 06/16/1980	n/a	Illinois River, area rivers, streams & creeks	countywide	20.50 ft. 06/08/1980			X	n/a	n/a	n/a	n/a	- 14 inches of rain fell in a week flooding farm fields, buildings & roads - on a farm near Eureka about 300 pigs had to swim to safety - crops were washed out near El Paso - many bridges and road were washed out in the County

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

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Table 4 General Flood Events Reported in Woodford County 1950 - 2022												
Date(s)	**Start Time**	**Water Body**	**Location(s)**	**Magnitude Flood Crest Illinois River Peoria[1]**	**Impacts[2]**			**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/ Event Description**
					Home	**Business**	**Infra-structure**					
04/17/1981 thru 04/21/1981	n/a	Illinois River	western portion of county	18.80 ft. 04/20/1981				n/a	n/a	n/a	n/a	
05/15/1981 thru 05/27/1981	n/a	Illinois River	western portion of county	20.70 ft. 05/19/1981				n/a	n/a	n/a	n/a	
06/16/1981 thru 06/30/1981	n/a	Illinois River	western portion of county	20.10 ft. 06/18/1981				n/a	n/a	n/a	n/a	
02/23/1982 thru 05/01/1982	n/a	Illinois River	western portion of county	27.10 ft. 03/23/1982 9th highest crest on record	X			n/a	n/a	$180,000	n/a	67 homes sustained flood damage
12/04/1982 thru 01/06/1983	n/a	Illinois River, Mackinaw River, area rivers, streams & creeks	countywide	27.40 ft. 12/09/1982 8th highest crest on record				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #674)***

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
04/02/1983 thru 05/21/1983	n/a	Illinois River, area rivers, streams & creeks	countywide	25.70 ft. 04/17/1983				n/a	n/a	n/a	n/a	
02/15/1984 thru 02/29/1984	n/a	Illinois River	western portion of county	21.30 ft. 02/20/1984				n/a	n/a	n/a	n/a	
03/20/1984 thru 04/09/1984	n/a	Illinois River	western portion of county	21.80 ft. 03/28/1984				n/a	n/a	n/a	n/a	
05/29/1984 thru 06/06/1984	n/a	Illinois River	western portion of county	19.50 ft. 06/01/1984				n/a	n/a	n/a	n/a	
02/25/1985 thru 04/14/1985	n/a	Illinois River, Mackinaw River, area rivers, streams & creeks	countywide	28.40 ft. 03/07/1985 4th highest crest on record	X	X	X	n/a	n/a	$1,297,000	n/a	***This event is part of a federally-declared disaster (Declaration #735)*** - 600+ homes and 100+ businesses sustained flood damage - roads were closed

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

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Table 4 General Flood Events Reported in Woodford County 1950 - 2022													
Date(s)	**Start Time**	**Water Body**	**Location(s)**	**Magnitude Flood Crest Illinois River Peoria**[1]	**Impacts**[2]			**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/ Event Description**
					Home	**Business**	**Infra-structure**					
11/18/1985 thru 12/18/1985	n/a	Illinois River	western portion of county	25.20 ft. 11/24/1985				n/a	n/a	n/a	n/a	
10/05/1986 thru 10/16/1986	n/a	Illinois River	western portion of county	20.80 ft. 10/09/1986				n/a	n/a	n/a	n/a	
04/08/1988 thru 04/12/1988	n/a	Illinois River	western portion of county	18.69 ft. 04/10/1988				n/a	n/a	n/a	n/a	
09/11/1989 thru 09/13/1989	n/a	Illinois River	western portion of county	18.23 ft. 09/12/1989				n/a	n/a	n/a	n/a	
03/10/1990 thru 03/25/1990	n/a	Illinois River	western portion of county	22.88 ft. 03/15/1990				n/a	n/a	n/a	n/a	
05/13/1990 thru 05/25/1990	n/a	Illinois River	western portion of county	19.36 ft. 05/16/1990				n/a	n/a	n/a	n/a	
11/29/1990 thru 12/11/1990	n/a	Illinois River	western portion of county	21.27 ft. 12/02/1990				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

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Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
01/03/1991 thru 01/08/1991	n/a	Illinois River	western portion of county	18.57 ft. 01/04/1991				n/a	n/a	n/a	n/a	
03/19/1991 thru 04/04/1991	n/a	Illinois River	western portion of county	21.00 ft. 03/23/1991				n/a	n/a	n/a	n/a	
04/16/1991 thru 04/25/1991	n/a	Illinois River	western portion of county	20.14 ft. 04/19/1991				n/a	n/a	n/a	n/a	
05/27/1991 thru 06/03/1991	n/a	Illinois River	western portion of county	18.82 ft. 05/29/1991				n/a	n/a	n/a	n/a	
01/03/1993 thru 02/02/1993	n/a	Illinois River	western portion of county	23.03 ft. 01/08/1993				n/a	n/a	n/a	n/a	
03/06/1993 thru 03/16/1993	n/a	Illinois River	western portion of county	19.55 ft. 03/10/1993				n/a	n/a	n/a	n/a	
03/23/1993 thru 05/09/1993	n/a	Illinois River	western portion of county	23.40 ft. 04/23/1993				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4 General Flood Events Reported in Woodford County 1950 - 2022												
Date(s)	**Start Time**	**Water Body**	**Location(s)**	**Magnitude**	**Impacts[2]**			**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/ Event Description**
				Flood Crest Illinois River Peoria[1]	**Home**	**Business**	**Infra-structure**					
06/11/1993 thru 08/05/1993	n/a	Illinois River	western portion of county	21.56 ft. 07/05/1993				n/a	n/a	n/a	n/a	
09/14/1993 thru 10/02/1993	n/a	Illinois River	western portion of county	20.73 ft. 09/18/1993				n/a	n/a	n/a	n/a	
10/21/1993 thru 10/27/1993	n/a	Illinois River	western portion of county	18.66 ft. 10/24/1993				n/a	n/a	n/a	n/a	
02/21/1994 thru 02/25/1994	n/a	Illinois River	western portion of county	18.60 ft. 02/23/1994				n/a	n/a	n/a	n/a	
03/09/1994 thru 03/12/1994	n/a	Illinois River	western portion of county	18.37 ft. 03/10/1994				n/a	n/a	n/a	n/a	
01/22/1995 thru 01/24/1995	n/a	Illinois River	western portion of county	18.30 ft. 01/23/1995				n/a	n/a	n/a	n/a	
04/13/1995 thru 04/24/1995	n/a	Illinois River	western portion of county	19.63 ft. 04/16/1995				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
05/14/1995 thru 06/14/1995	n/a	Illinois River, area rivers, streams & creeks	countywide	25.90 ft. 05/30/1995	X			n/a	n/a	n/a	n/a	numerous homes were damaged or destroyed by flooding along the Illinois River
05/28/1996 thru 06/27/1996	n/a	Illinois River	western portion of county	22.71 ft. 06/04/1996				n/a	n/a	n/a	n/a	
07/21/1996 thru 07/30/1996	n/a	Illinois River	western portion of county	19.82 ft. 07/25/1996				n/a	n/a	n/a	n/a	
02/22/1997 thru 03/20/1997	n/a	Illinois River	western portion of county	26.86 ft. 03/03/1997	X			n/a	n/a	n/a	n/a	several homes just south of Spring Bay were flooded
03/14/1998 thru 04/17/1998	n/a	Illinois River	western portion of county	22.33 ft. 03/24/1998				n/a	n/a	n/a	n/a	
05/08/1998 thru 05/24/1998	n/a	Illinois River	western portion of county	23.74 ft. 05/13/1998				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
01/27/1999 thru 02/08/1999	n/a	Illinois River	western portion of county	20.12 ft. 01/31/1999				n/a	n/a	n/a	n/a	
04/23/1999 thru 05/08/1999	n/a	Illinois River	western portion of county	20.32 ft. 04/29/1999				n/a	n/a	n/a	n/a	
05/17/1999 thru 05/23/1999	n/a	Illinois River	western portion of county	18.52 ft. 05/19/1999				n/a	n/a	n/a	n/a	
02/11/2001 thru 03/09/2001	n/a	Illinois River	western portion of county	20.89 ft. 03/01/2001				n/a	n/a	n/a	n/a	
05/11/2002 thru 05/13/2002	9:00 PM	area rivers, streams & creeks	countywide	n/a	X			n/a	n/a	n/a	n/a	- runoff caused flood problems countywide, especially in the Eureka & Roanoke areas - 2 families were evacuated from their homes due to rising waters

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					Home	Business	Infra-structure					
05/12/2002 thru 06/02/2002	n/a	Illinois River, Mackinaw River	countywide	25.25 ft. 05/18/2002				n/a	n/a	n/a	n/a	
06/03/2004 thru 06/07/2004	n/a	Illinois River	western portion of county	18.50 ft. 06/05/2004				n/a	n/a	n/a	n/a	
06/15/2004 thru 06/21/2004	n/a	Illinois River	western portion of county	19.20 ft. 06/18/2004				n/a	n/a	n/a	n/a	
12/10/2004 thru 12/15/2004	n/a	Illinois River	western portion of county	18.78 ft. 12/13/2004				n/a	n/a	n/a	n/a	
01/13/2005 thru 01/30/2005	n/a	Illinois River	western portion of county	24.36 ft. 01/18/2005				n/a	n/a	n/a	n/a	
12/25/2006 thru 12/31/2006	n/a	Illinois River	western portion of county	18.72 ft. 12/27/2006				n/a	n/a	n/a	n/a	
01/07/2007 thru 01/22/2007	n/a	Illinois River	western portion of county	19.02 ft. 01/09/2007				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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					Home	Business	Infra-structure					
03/03/2007 thru 03/11/2007	n/a	Illinois River	western portion of county	19.90 ft. 03/05/2007				n/a	n/a	n/a	n/a	
03/24/2007 thru 04/09/2007	n/a	Illinois River	western portion of county	22.28 ft. 03/29/2007				n/a	n/a	n/a	n/a	
04/29/2007 thru 05/05/2007	n/a	Illinois River	western portion of county	19.19 ft. 05/01/2007				n/a	n/a	n/a	n/a	
08/25/2007 thru 09/05/2007	n/a	Illinois River	western portion of county	22.32 ft. 08/29/2007				n/a	n/a	n/a	n/a	
01/10/2008 thru 01/24/2008	n/a	Illinois River	western portion of county	23.09 ft. 01/15/2008				n/a	n/a	n/a	n/a	
02/09/2008 thru 03/11/2008	n/a	Illinois River	western portion of county	21.64 ft. 02/20/2008				n/a	n/a	n/a	n/a	

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Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
09/15/2008 thru 10/04/2008	n/a	Illinois River	western portion of county	27.06 ft. 09/20/2008			X	n/a	n/a	$133,330	n/a	***This event is part of a federally-declared disaster (Declaration #1800)*** Public Assistance figures for Woodford County totaled $133,330
12/29/2008 thru 01/13/2009	n/a	Illinois River	western portion of county	23.67 ft. 01/02/2009				n/a	n/a	n/a	n/a	
03/02/2009 thru 06/06/2009	n/a	Illinois River	western & northern portion of county	27.94 ft. 03/14/2009 6th highest crest on record				n/a	n/a	n/a	n/a	
3/10/2009	12:00 AM	area rivers, streams & creeks	Roanoke	n/a			X	n/a	n/a	n/a	n/a	several streets were covered with water
11/01/2009 thru 11/11/2009	n/a	Illinois River	western portion of county	21.12 ft. 11/04/2009				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
12/28/2009 thru 01/03/2010	n/a	Illinois River	western portion of county	19.55 ft. 12/31/2009				n/a	n/a	n/a	n/a	
03/15/2010 thru 03/26/2010	n/a	Illinois River	western portion of county	20.06 ft. 03/20/2010				n/a	n/a	n/a	n/a	
06/20/2010 thru 07/08/2010	n/a	Illinois River	western portion of county	22.89 ft. 06/28/2010				n/a	n/a	n/a	n/a	
03/02/2011 thru 03/16/2011	n/a	Illinois River	western portion of county	19.15 ft. 03/10/2011				n/a	n/a	n/a	n/a	
04/24/2011 thru 05/12/2011	n/a	Illinois River	western portion of county	22.79 ft. 05/01/2011				n/a	n/a	n/a	n/a	
05/27/2011 thru 06/29/2011	n/a	Illinois River	western portion of county	22.04 ft. 06/02/2011				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
03/14/2013 thru 03/18/2013	n/a	Illinois River	western portion of county	18.86 ft. 03/16/2013				n/a	n/a	n/a	n/a	
04/18/2013 thru 04/19/2013	9:00 AM	area rivers, streams & creeks	northwestern & western portions of county	n/a			X	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #4116)*** - very heavy rainfall produced up to 8 inches of rain causing both flash flooding & general flooding - nearly every road in the flooded area was impassable - most of the creeks and streams stayed in flood and most roads remained closed until the 19th

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
04/18/2013 thru 05/15/2013	n/a	Illinois River	western portion of county	29.35 ft. 04/23/2013 Flood of Record	X	X	X	n/a	n/a	$14,200,000	n/a	***this event was part of a federally-declared disaster (Declaration #4116)*** - 276 homes, 2 businesses, a fire station and numerous roads along the Illinois River in Spring Bay and Bay View Gardens were inundated and suffered damage due to record river levels - The Woodford County EMA Director identified $500,000 in damages to homes and businesses as a result of the flooding

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					Home	Business	Infra-structure					
5/27/2013	6:30 AM	area rivers, streams & creeks	northeast portion of county	n/a			X	n/a	n/a	n/a	n/a	- torrential rainfall produced 2.5 to 4 inches of rain causing flash flooding and general flooding of streets in Minonk, parts of Interstate 39 and numerous rural roads - most roads were impassable and closed through the morning with flooding subsiding by early afternoon
05/30/2013 thru 06/18/2013	n/a	Illinois River	western portion of county	22.66 ft. 06/05/2013				n/a	n/a	n/a	n/a	
03/15/2014 thru 03/24/2014	n/a	Illinois River	western portion of county	19.30 ft. 03/17/2014				n/a	n/a	n/a	n/a	
07/02/2014 thru 07/08/2014	n/a	Illinois River	western portion of county	19.38 ft. 07/05/2014				n/a	n/a	n/a	n/a	

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06/14/2015 thru 07/31/2015	n/a	Illinois River	western portion of county	27.09 ft. 06/30/2015 10th highest crest on record				n/a	n/a	n/a	n/a	
12/27/2015 thru 01/20/2016	n/a	Illinois River	western portion of county	26.49 ft. 01/03/2016				n/a	n/a	n/a	n/a	
04/04/2017 thru 04/22/2017	n/a	Illinois River	western portion of county	21.30 ft. 04/11/2017				n/a	n/a	n/a	n/a	

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04/29/2017 thru 04/30/2017	10:45 PM	area rivers, streams & creeks	western portion of county	n/a			X	n/a	n/a	n/a	n/a	- heavy rainfall of 2.75 to 4 inches in a two-hour period during the evening on already saturated ground caused both flash flooding & general flooding - streets in Germantown Hills, Metamora & Roanoke were impassable as well as numerous rural roads and highways in the county, including parts of IL Route 89 southwest of Washburn which was closed due to high water and flood debris - an additional 0.5 to 1 inch during the early morning hours of the 30th kept many roads flooded - flood waters subsided by early afternoon on the 30th

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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05/01/2017 thru 05/27/2017	n/a	Illinois River	western portion of county	23.48 ft. 05/05/2017				n/a	n/a	n/a	n/a	
06/17/2017 thru 06/18/2017	10:45 PM	area rivers, streams & creeks	northern portion of county	n/a			X	n/a	n/a	n/a	n/a	- torrential rainfall of 3 to 5 inches fell within a 90-minute period causing both flash flooding & general flooding - most county highways were impassable - additional rainfall during the late evening/early morning hours kept many roads flooded - flood waters subsided by daybreak on the 18th
02/22/2018 thru 03/16/2018	n/a	Illinois River	western portion of county	25.37 ft. 02/27/2018				n/a	n/a	n/a	n/a	
06/26/2018 thru 06/28/2018	n/a	Illinois River	western portion of county	18.30 ft. 06/27/2018				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

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				Flood Crest Illinois River Peoria[1]	Home	Business	Infra-structure					
02/09/2019 thru 03/02/2019	n/a	Illinois River	western portion of county	19.81 ft. 02/12/2019				n/a	n/a	n/a	n/a	
03/15/2019 thru 03/25/2019	n/a	Illinois River	western portion of county	19.09 ft. 03/18/2019				n/a	n/a	n/a	n/a	
05/01/2019 thru 07/11/2019	n/a	Illinois River	western portion of county	28.00 ft. 05/07/2019 5th highest crest on record				n/a	n/a	n/a	n/a	
09/30/2019 thru 10/10/2019	n/a	Illinois River	western portion of county	20.42 ft. 10/02/2019				n/a	n/a	n/a	n/a	
11/01/2019 thru 11/10/2019	n/a	Illinois River	western portion of county	20.12 ft. 11/04/2019				n/a	n/a	n/a	n/a	
01/15/2020 thru 01/23/2020	n/a	Illinois River	western portion of county	18.86 ft. 01/19/2020				n/a	n/a	n/a	n/a	

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05/01/2020 thru 06/09/2020	n/a	Illinois River	western portion of county	27.91 ft. 05/22/2020 7th highest crest on record				n/a	n/a	n/a	n/a	
07/15/2020 thru 0716/2020	8:00 PM	area rivers, streams & creeks	Roanoke	n/a	X	X	X	n/a	n/a	$10,000,000	n/a	- heavy rainfall of 5 to 7 inches brought widespread flash flooding to much of Woodford County, including the city of Roanoke, during the afternoon of July 15th - once the rain ended, the water continued to rise and cause significant issues in Roanoke through the morning of July 16th - 71 homes and 15 businesses were flooded, including 10 homes and 5 businesses with major flooding

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												- several basement walls and foundations collapsed within the structures impacted by major flooding - 10 people were rescued by boat due to the high water - in addition, Route 116 was closed in and just east of Roanoke
07/01/2021 thru 07/08/2021	n/a	Illinois River	western portion of county	20.02 ft. 07/03/2021				n/a	n/a	n/a	n/a	
10/30/2021 thru 11/06/2021	n/a	Illinois River	western portion of county	19.39 ft. 11/02/2021				n/a	n/a	n/a	n/a	
02/25/2022 thru 02/28/2022	n/a	Illinois River	western portion of county	18.52 ft. 02/26/2022				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An “X” in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

[§] The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 4
General Flood Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Illinois River Peoria[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
04/04/2022 thru 04/14/2022	n/a	Illinois River	western portion of county	19.21 ft. 04/09/2022				n/a	n/a	n/a	n/a	
GRAND TOTAL:								**0**	**0**	**$28,453,330 §**	**$250,000 §**	

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Weather Service, River Observations, North Central River Forecast Center, Illinois River at Peoria.
Tazewell & Woodford Counties Multi-Jurisdictional All Hazards Mitigation Planning Committee Member responses to the Natural Hazard Events Questionnaire.
United States Army Corps of Engineers, RiverGages.com, Data Mining.

[1] Flood stage at gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet.

[2] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a general flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

§ The property damage total includes $2.5 million, and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1] Home	Impacts[1] Business	Impacts[1] Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
06/20/1990	4:00 AM	countywide				n/a	n/a	n/a	n/a	
06/29/1990	8:30 AM	countywide				n/a	n/a	n/a	n/a	
08/15/1993	8:45 PM	countywide	X		X	n/a	n/a	n/a	n/a	numerous road and basements were flooded
08/23/1993	3:45 PM	countywide			X	n/a	n/a	n/a	n/a	street flooding occurred
07/21/2001	8:32 AM	Low Point Cazenovia			X	n/a	n/a	n/a	n/a	a section of IL Rte. 89 from Cazenovia to Low Point was flooded
05/11/2002	8:00 PM	countywide			X	n/a	n/a	n/a	n/a	numerous roads were flooded and several creeks went out of their banks
06/26/2002	12:30 AM	Minonk	X		X	n/a	n/a	n/a	n/a	numerous streets and basements were flooded
07/09/2003 thru 07/10/2003	11:00 PM	countywide			X	n/a	n/a	n/a	n/a	many streets and roads were flooded
09/13/2008	5:43 PM	Roanoke^			X	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #1800)*** County Highway 13 one mile south of the Village was closed due to high water
09/13/2008	8:00 PM	Spring Bay	X		X	n/a	n/a	$90,000	n/a	***this event was part of a federally-declared disaster (Declaration #1800)*** - several homes flooded, prompting boat evacuations - Funks Run Creek overflowed its banks and flooded streets in the Village near Mill Point Park - some small levees along the creek also gave way, aggravating the flooding in that area

^ Flash flood event verified in the vicinity of this location(s).

1 An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1] Home	Impacts[1] Business	Impacts[1] Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
09/13/2008	8:00 PM	Roanoke	X	X	X	n/a	n/a	$55,000	n/a	***this event was part of a federally-declared disaster (Declaration #1800)*** - Panther Creek rose out of its banks and flooded Main St. and Mill St. - 1.5 feet of water came into the American Legion - numerous other homes and businesses had water in their basements
09/13/2008	8:26 PM	Germantown Hills Metamora			X	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #1800)*** numerous roads had water flowing across them
05/13/2009 thru 05/14/2009	11:00 PM	eastern portion of the county			X	n/a	n/a	n/a	n/a	most roads in the eastern part of the County were flooded
05/25/2010	1:00 PM	northeast portion of the county			X	n/a	n/a	n/a	n/a	most rural roads were inundated, particularly near Minonk and north of Benson, including IL Rte. 117
06/23/2010	6:45 PM	western & central portions of the county			X	n/a	n/a	n/a	n/a	many rural roads were impassable, including portions of IL Rte. 116 & IL Rte. 117 *Metamora/Eureka/Roanoke* many streets were flooded

^ Flash flood event verified in the vicinity of this location(s).

[1] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
06/21/2011 thru 06/22/2011	7:15 PM	central portion of the county			X	n/a	n/a	$5,000,000	n/a	several rural roads were impassable during the late evening *Eureka/Roanoke* significant street flooding was reported, including parts of IL Rte. 117 & US Rte. 24 in Eureka & IL Rte. 116 in Roanoke *Eureka* The committee member from Eureka identified $5,000,000 in damages sustained by the sewer system and Park, including significant facilities damage
06/22/2011	8:00 PM	northeastern portion of the county			X	n/a	n/a	n/a	n/a	- nearly all rural roads were impassable - parts of Interstate 39 between Minonk & El Paso had standing water
04/17/2013 thru 04/18/2013	7:15 PM	northeastern & central portions of the county	X	X	X	n/a	n/a	$13,000,000	n/a	***this event was part of a federally-declared disaster (Declaration #4116)*** every road from the central to northeast part of the County was impassable *Minonk area* roads near Minonk were flooded with more than a foot of flowing water *Eureka/Roanoke/Metamora* - hundreds of homes and businesses in Roanoke, Eureka and Metamora were flooded - several water rescues had to be made

^ Flash flood event verified in the vicinity of this location(s).

1 An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1] Home	Impacts[1] Business	Impacts[1] Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
04/17/2013 thru 04/18/2013	10:00 PM	western portion of the county	X		X	n/a	n/a	$5,000,000	n/a	***this event was part of a federally-declared disaster (Declaration #4116)*** - hundreds of homes were damaged in northwest & western parts of the County - all roads were impassable - water rescues were made
05/26/2013 thru 05/27/2013	10:30 PM	northern and northeastern portion of the county			X	n/a	n/a	n/a	n/a	numerous rural roads and parts of Interstate 39 were impacted by flooding with most roads impassable and closed through the night *Minonk* streets were flooded
05/31/2013	4:00 PM	southern portion of the county			X	n/a	n/a	n/a	n/a	numerous rural roads were inundated and impassable as a result of the flash flooding
06/24/2013	4:00 AM	western portion of the county	X		X	n/a	n/a	$3,000,000	n/a	several state highways were impassable, including IL Routes 26, 89 & 116 *Spring Bay/Germantown Hills* streets and houses were flooded
05/11/2014	7:00 PM	southeastern portion of the county			X	n/a	n/a	n/a	n/a	- IL Rte. 251 and County Road 9 west of Kappa were inundated with water 12 to 18 inches deep - roads were closed for nearly 3 hours
06/07/2015	8:00 PM	western portion of the county			X	n/a	n/a	n/a	n/a	- secondary roads from Low Point to Benson and near Bay View Gardens were impassable - parts of IL Route 26 were also flooded

^ Flash flood event verified in the vicinity of this location(s).

1 An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1] Home	Business	Infra-structure	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
06/10/2015 thru 06/11/2015	7:30 PM	northern portion of the county			X	n/a	n/a	n/a	n/a	- IL Route 89 from Low Point through Washburn to the Tazewell/Marshall County Line were closed due to high water - most rural roads in the northern part of the County were impassable
06/18/2015	2:30 PM	central & eastern portions of the county			X	n/a	n/a	$10,000	n/a	- many rural roads were impassable - a section of railroad track of the Toledo, Peoria & Western Railway east of Eureka was washed out
04/29/2017	7:15 PM	western portion of the county			X	n/a	n/a	n/a	n/a	numerous rural roads were impassable *Germantown Hills/Roanoke/Metamora* streets were impassable *Washburn area* IL Route 89 south of the Village was closed due to high water and flood debris
06/17/2017	8:40 PM	southern portion of the county			X	n/a	n/a	n/a	n/a	most county highways were impassable
05/30/2018	8:00 AM	western portion of the county			X	n/a	n/a	n/a	n/a	several roads along the Illinois River were impassable, including parts of Illinois Route 26 from just south of Spring Bay to the Tazewell County line
06/21/2018 thru 06/22/2018	3:30 PM	western portion of the county			X	n/a	n/a	n/a	n/a	- numerous rural roads were flooded with flowing water at least six inches deep near Spring Bay, Metamora, Eureka and Washburn - some roads were closed until just past Midnight CDT
05/28/2019 thru 05/29/2019	9:30 PM	northern portion of the county			X	n/a	n/a	n/a	n/a	multiple roads were impassable, including Illinois Route 26 from northeast of Spring Bay to the Marshall County line

^ Flash flood event verified in the vicinity of this location(s).

[1] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 5
Flash Flood Events Reported in Woodford County
1990 - 2022

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
09/27/2019	12:35 PM	Roanoke^			X	n/a	n/a	n/a	n/a	- excessive rainfall of 4 to 9 inches created flash flooding near Roanoke - ten inches of water flowed across Highway 116 just west of Roanoke as ditches flooded and overflowed - several families near Roanoke were evacuated from their homes due to rising water
05/25/2020 thru 05/26/2020	4:25 PM	Roanoke^			X	n/a	n/a	n/a	n/a	- six to eight inches of water was flowing over Highway 116 and nearby county roads west of Roanoke - Highway 116 was barricaded and remained closed for several hours due to water overflowing from Panther Creek
07/15/2020	5:30 PM	countywide			X	n/a	n/a	n/a	n/a	most roads were flooded in the communities of Roanoke, Panola, Eureka, Congerville, Germantown Hills, and Secor
07/19/2020	9:30 AM	Germantown Hills^			X	n/a	n/a	n/a	n/a	Several rural roads were flooded east of Germantown Hills and north of Route 116.
08/02/2022	7:50 AM	Eureka			X	n/a	n/a	n/a	n/a	there was 6 inches of standing water on Route 24 in Eureka
GRAND TOTAL:						**0**	**0**	**$26,155,000**	**$0**	

Sources: Iowa State University, Iowa Environmental Mesonet, National Weather Service Data, Search for Warnings.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tazewell & Woodford Counties Multi-Jurisdictional All Hazards Mitigation Planning Committee Member responses to the Natural Hazard Events Questionnaire.

^ Flash flood event verified in the vicinity of this location(s).

[1] An "X" in the columns of Home, Business and Infrastructure indicates impacts occurred to those structure/infrastructure types during a flash flood event. A detailed description of the type and magnitude of the impacts are included in the Impacts/Event Description column if available.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
02/22/1950	n/a	Heavy Snow	4.9 in.					COOP	n/a	n/a	n/a	
02/24/1950 thru 02/25/1950	n/a	Heavy Snow	8.2 in.					COOP	n/a	n/a	n/a	
12/06/1950 thru 12/07/1950	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/14/1950	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
12/17/1950 thru 12/18/1950	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1950 thru 12/22/1950	n/a	Winter Storm	4.0 in.				X	COOP	n/a	n/a	n/a	drifting snow, highways blocked
02/14/1952	n/a	Winter Storm	7.0 in.			X		COOP	n/a	n/a	n/a	blowing snow, roads blocked
01/02/1953	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1953	3:00 PM	Winter Storm	4.5 in.				X	COOP	n/a	n/a	n/a	considerable drifting, roads blocked for a short time
12/07/1956 thru 12/08/1956	6:00 PM	Heavy Snow	6.5 in.		X			COOP	n/a	n/a	n/a	
12/27/1956	12:00 PM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
01/10/1957	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
03/25/1957	3:30 AM	Winter Storm	4.0 in.				X	COOP	n/a	n/a	n/a	blowing and drifting
12/31/1958	2:30 AM	Heavy Snow	5.8 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
01/21/1958	12:30 PM	Winter Storm	6.0 in.			X		COOP	n/a	n/a	n/a	
12/31/1958 thru 01/01/1959	n/a	Winter Storm	4.0 in.		X	X		COOP	n/a	n/a	n/a	
0\1/20/1959 thru 01/21/1959	12:00 PM	Winter Storm	8.0 in.			X	X	COOP	n/a	n/a	n/a	- drifting snow; all roads closed on 21st & 22nd - much damage to utilities because of ice
11/12/1959	9:00 AM	Winter Storm	7.2 in.		X	X		COOP	n/a	n/a	n/a	
02/20/1960 thru 02/21/1960	2:00 PM	Heavy Snow	6.1 in.					COOP	n/a	n/a	n/a	
03/15/1960 thru 03/16/1960	10:30 PM	Heavy Snow	9.5 in.					COOP	n/a	n/a	n/a	
02/03/1961	12:00 AM	Heavy Snow	4.1 in.					COOP	n/a	n/a	n/a	
12/23/1961	12:00 AM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
02/20/1962 thru 02/21/1962	10:00 PM	Winter Storm	4.1 in.			X		COOP	n/a	n/a	n/a	
02/12/1964 thru 02/13/1964	12:00 PM	Heavy Snow	6.9 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Date(s)	Start Time	Event Type	Magnitude[1] Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)	Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
Table 6 Severe Winter Storm Events Reported in Woodford County 1950 - 2022												
02/23/1965 thru 02/24/1965	1:00 PM	Heavy Snow	6.6 in.					COOP	n/a	n/a	n/a	
03/03/965 thru 03/05/1965	10:30 PM	Heavy Snow	9.0 in.					COOP	n/a	n/a	n/a	
01/26/1967 thru 01/27/1967	2:00 AM	Winter Storm	12.8 in.				X	COOP	n/a	n/a	n/a	strong winds – drifting
12/07/1969	12:00 AM	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
12/23/1969	12:00 AM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	some roads were blocked
03/25/1970	10:00 AM	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
03/28/1970	12:00 AM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
01/03/1971	1:00 AM	Winter Storm	4.0 in.			X		COOP	n/a	n/a	n/a	
03/29/1972	3:00 AM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/18/1973 thru 12/19/1973	8:00 PM	Winter Storm	8.0 in.				X	COOP	n/a	n/a	n/a	
01/08/1974 thru 01/09/1974	7:00 PM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
11/27/1975	n/a	Winter Storm	6.3 in.				X	COOP	n/a	n/a	n/a	blowing snow
12/06/1976	7:00 AM	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
01/09/1977 thru 01/10/1977	7:00 PM	Heavy Snow	4.3 in.					COOP	n/a	n/a	n/a	
12/05/1977	6:00 AM	Heavy Snow	5.8 in.					COOP	n/a	n/a	n/a	
12/08/1977	8:00 AM	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
01/24/1978 thru 01/26/1978	n/a	Winter Storm	X		X		X		n/a	n/a	n/a	
02/13/1978	6:00 AM	Heavy Snow	5.3 in.					COOP	n/a	n/a	n/a	
03/24/1978 thru 03/25/1978	1:30 PM	Ice Storm		X	X			COOP	n/a	n/a	n/a	
12/31/1978	12:00 AM	Winter Storm	6.5 in.	X	X		X	COOP	n/a	n/a	n/a	
01/12/1979 thru 01/14/1979	12:00 AM	Heavy Snow	16.8 in.					COOP	n/a	n/a	n/a	
01/22/1979 thru 01/23/1979	4:00 PM	Heavy Snow	5.3 in.					COOP	n/a	n/a	n/a	
03/13/1980	4:00 AM	Heavy Snow	4.8 in.					COOP	n/a	n/a	n/a	
04/14/1980	n/a	Winter Storm	X		X		X		n/a	n/a	n/a	Parts of El Paso experienced power outages
12/02/1981	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6 **Severe Winter Storm Events Reported in Woodford County** **1950 - 2022**													
Date(s)	**Start Time**	**Event Type**	**Magnitude[1]**					**Observed Location(s)[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/ Event Description**
			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
12/16/1981 thru 12/17/1981	5:00 PM	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
02/01/1982	12:00 AM	Winter Storm	7.0 in.				X	COOP	n/a	n/a	n/a	
02/05/1982	6:00 AM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
02/08/1982 thru 02/09/1982	7:00 PM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
04/06/1982	10:00 AM	Winter Storm	6.0 in.		X			COOP	n/a	n/a	n/a	
04/09/1982	11:00 AM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
03/21/1983	9:00 PM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/13/1983 thru 12/14/1983	4:30 PM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1983	12:00 PM	Winter Storm	4.5 in.		X			COOP	n/a	n/a	n/a	
01/29/1984 thru 01/30/1984	4:00 PM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
02/28/1984	12:00 AM	Winter Storm	6.0 in.				X	COOP	n/a	n/a	n/a	
01/10/1985	12:00 AM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
02/10/1985 thru 02/11/1985	4:00 PM	Winter Storm	4.0 in.		X			COOP	n/a	n/a	n/a	
02/07/1986	12:00 AM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6 Severe Winter Storm Events Reported in Woodford County 1950 - 2022													
Date(s)	**Start Time**	**Event Type**	**Magnitude[1]**					**Observed Location(s)[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/ Event Description**
			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
01/10/1987	11:00 AM	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
01/17/1987 thru 01/18/1987	3:00 PM	Heavy Snow	6.1 in.					COOP	n/a	n/a	n/a	
01/18/1987 thru 01/19/1987	10:30 PM	Heavy Snow	5.4 in.					COOP	n/a	n/a	n/a	
12/14/1987 thru 12/15/1987	6:30 PM	Blizzard	7.0 in.		X		50 mph	COOP	n/a	n/a	n/a	
02/11/1988	12:00 AM	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
12/27/1988 thru 12/28/1988	7:30 AM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
02/04/1989 thru 02/05/1989	2:00 PM	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
12/11/1989	1:00 PM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
01/05/1991	12:00 AM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
03/13/1991 thru 03/14/1991	12:00 AM	Winter Storm	10.0 in.			X		COOP	n/a	n/a	n/a	
12/10/1992	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	

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2 Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

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Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
010/09/1993 thru 01/10/1993	5:00 PM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
02/11/1993	n/a	Ice Storm		X	X				3	n/a	n/a	According to the El Paso Journal three individuals were injured in two separate vehicle accidents in the County
02/15/1993 thru 02/16/1993	6:30 PM	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
02/22/1994 thru 02/23/1994	4:00 PM	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
02/26/1994	7:30 PM	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
12/18/1995 thru 12/19/1995	7:00 PM	Heavy Snow	6.0 in.	X			30 mph	COOP	n/a	n/a	n/a	- numerous accidents were reported - numerous power lines knocked down due to freezing rain & strong winds - considerable blowing & drifting of snow closed some roads

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			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
01/18/1996 thru 01/19/1996	10:00 AM	Winter Storm	X		X		35 mph	SED	n/a	n/a	n/a	- numerous power outages & minor accidents - gusty winds created wind chills near -40°F
01/08/1997 thru 01/09/1997	9:00 PM	Heavy Snow	6.0 in.					COOP SED	1	n/a	n/a	numerous accidents were reported
01/15/1997 thru 01/17/1997	3:00 AM	Winter Storm	5.0 in.				30 mph	COOP SED	n/a	n/a	n/a	- after the snow stopped the winds picked up causing near whiteout conditions - strong winds & cold temperatures caused wind chill readings to dip well below -40°F - numerous accidents were reported
01/24/1997	7:00 AM	Winter Storm	2.0 in.	X		X		COOP SED	n/a	n/a	n/a	numerous accidents were reported
01/27/1997	n/a	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
02/21/1997 thru 02/22/1997	11:30 AM	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	

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Date(s)	**Start Time**	**Event Type**	**Magnitude[1]**					**Observed Location(s)[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/ Event Description**
			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
04/10/1997 thru 04/11/1997	11:00 AM	Heavy Snow	11.0 in.					COOP SED	n/a	n/a	n/a	- numerous trees, tree branches & power lines collapsed due to the weight of the heavy, wet snow with some causing damage to vehicles & homes - numerous accidents occurred throughout the area with a few minor injuries reported
12/09/1997 thru 12/10/1997	3:00 PM	Heavy Snow	5.5 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
03/08/1998 thru 03/09/1998	10:00 PM	Winter Storm	4.0 in.				50 mph	COOP SED	n/a	n/a	n/a	- numerous traffic accidents were reported with dozens of minor injuries - gusty winds created near white out conditions

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Date(s)	Start Time	Event Type	Magnitude[1] Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)	Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
01/01/1999 thru 01/03/1999	12:00 PM	Heavy Snow	15.0 in.					COOP SED	n/a	n/a	n/a	- after the snowfall winds increased from the northwest and temperatures dropped, causing dangerous wind chills and treacherous driving conditions with extensive blowing and drifting snow - the weight of the heavy snow caused many roofs and porches to collapse - many locations sustained temporary or extended power outages
03/08/1999 thru 03/09/1999	12:00 PM	Heavy Snow	7.5 in.					COOP SED	n/a	n/a	n/a	dozens of accidents occurred throughout the area with numerous minor injuries
01/19/2000	10:00 AM	Winter Storm	7.5 in.					COOP SED	n/a	n/a	n/a	- blowing & drifting snow was reported - storm caused numerous road closures as well as accidents
01/30/2000	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	

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Date(s)	**Start Time**	**Event Type**	**Magnitude[1]**					**Observed Location(s)[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/ Event Description**
			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
02/17/2000	11:00 PM	Ice Storm			≤0.5 in.			SED	1	n/a	n/a	- numerous reports of downed power lines & tree limbs - extended power outage & traffic accidents were reported - one traffic accident, attributed to an icy road, resulted in one serious injury
12/11/2000	12:00 AM	Winter Storm	7.0 in.	X		X		COOP SED	n/a	n/a	n/a	- northwest winds produced considerable blowing & drifting snow along with wind chills of -30°F to -40°F - numerous minor vehicle accidents were reported
12/14/2000	n/a	Heavy Snow	4.3 in.					COOP	n/a	n/a	n/a	
12/29/2000	n/a	Heavy Snow	5.2 in.					COOP	n/a	n/a	n/a	
01/30/2002 thru 01/31/2002	11:30 AM	Ice Storm	1.0 in.	X	≤1.0 in.	X		COOP SED	n/a	n/a	n/a	- trees & power lines were downed from ice accumulations with outages lasting several hours to a couple days - in El Paso school was closed for a day due to downed power lines and fallen tree limbs

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Date(s)	Start Time	Event Type	Magnitude[1] Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)	Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
03/01/2002 thru 03/02/2002	5:00 PM	Heavy Snow	7.4 in.				40 mph	COOP SED	n/a	n/a	n/a	- significant blowing & drifting snow - numerous traffic accidents reported
03/25/2002	5:00 AM	Winter Storm	4.5 in.				X	COOP SED	n/a	n/a	n/a	- numerous accidents occurred as a result of the snow-covered roads & decreased visibility - significant blowing & drifting snow created near whiteout conditions
12/24/2002	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
02/14/2003 thru 02/15/2003	7:00 PM	Winter Storm	10.0 in.		X	X	50 mph	COOP SED	n/a	n/a	n/a	winds caused major blowing & drifting of snow, with drifts as high as 3 to 5 feet
11/24/2004	3:00 PM	Winter Storm	5.7 in.				30 mph	COOP SED	n/a	1	n/a	- sustained winds with gusts of 40 to 50 mph caused considerable blowing & drifting - the high winds & weight of the wet snow downed numerous trees & power lines - traffic accidents resulted in numerous injuries - one fatality was reported as the result of a traffic accident

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Date(s)	Start Time	Event Type	Magnitude[1] Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)	Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
01/05/2005 thru 01/06/2005	1:00 PM	Ice Storm	2.0 in.		≤0.5 in.			COOP SED	n/a	n/a	n/a	numerous reports of downed trees & power lines as well as traffic accidents
12/09/2005	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
11/30/2006 thru 12/01/2006	7:30 AM	Winter Storm	7.0 in.	X	X	X		COOP SED	n/a	n/a	$500,000	***This event was part of a federally-declared disaster (Declaration #1681)*** - considerable tree & power line damage was caused by ice and heavy snow - the power was not restored across some locales for several days - snow- & ice-covered roads resulted in numerous vehicular accidents
02/06/2007	6:00 AM	Heavy Snow	4.7 in.					COOP	n/a	n/a	n/a	
02/13/2007	1:00 AM	Blizzard	9.0 in.				45 mph	COOP SED	n/a	n/a	n/a	many locations reported snow drifts of 3 to 6 feet, prompting the closure of several area roads
02/24/2007	10:00 AM	Ice Storm		X	X	X		COOP SED	n/a	n/a	n/a	

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Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
12/01/2007	9:30 AM	Ice Storm		X	0.25 in.			COOP SED	n/a	n/a	n/a	numerous power outages & minor vehicle accidents occurred
01/01/2008	6:00 AM	Heavy Snow	5.9 in.					COOP	n/a	n/a	n/a	
01/31/2008 thru 02/01/2008	3:00 PM	Heavy Snow	8.7 in.					COOP SED	n/a	n/a	n/a	
11/30/2008 thru 12/01/2008	12:00 AM	Heavy Snow	7.3 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly winds caused considerable blowing & drifting
12/18/2008 thru 12/19/2008	8:30 PM	Ice Storm				≤0.75 in.		SED	n/a	n/a	$400,000	
01/13/2009	11:00 AM	Heavy Snow	7.0 in.	in.	in.	in.	mph	COOP	n/a	n/a	n/a	
03/29/2009	n/a	Heavy Snow	6.0 in.	in.	in.	in.	mph	COOP	n/a	n/a	n/a	
04/06/2009	8:50 AM	Winter Storm	3.0 in.	in.	in.	in.	mph	COOP SED	n/a	1	n/a	a woman was killed near Low Point when she lost control of her car on a slushy road
12/26/2009 thru 12/27/2009	8:00 AM	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
01/06/2010 thru 01/07/2010	7:30 PM	Winter Storm	7.0 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly wind created considerable blowing & drifting across the area

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			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
01/20/2010 thru 01/21/2010	7:00 AM	Ice Storm		X	0.25 in.		X	AMRN COOP SED	n/a	n/a	$100,000	*Regional information, including Woodford County)* - 50,000 customers were without power for up to 3 days - 170 wires downed - 70 poles replaced - 13 service lines to individual customers damaged - 25 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 488 Ameren personnel responded to the event - numerous traffic accidents were reported - the thick ice, combined with gusty winds, caused damage to tree limbs & power lines -in Woodford County, power was out for about 12 hours for nearly 10,000 customers

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			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
02/08/2010 thru 02/09/2010	2:00 PM	Winter Storm	5.0 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly winds caused considerable blowing & drifting
11/24/2010	5:00 AM	Winter Storm		X	<0.25 in.	X		COOP SED	n/a	n/a	n/a	multiple accidents occurred on I-39 near El Paso due to icy road conditions
12/03/2010 thru 12/04/2010	6:00 PM	Heavy Snow	8.6 in.					COOP SED	n/a	n/a	n/a	
12/12/2010 thru 12/13/2010	7:00 AM	Blizzard	3.2 in.				35 mph	COOP SED	n/a	n/a	n/a	;'- strong northwesterly winds gusting over 50 mph at times created white-out conditions - wind chill values plunged well below zero
12/24/2010 thru 12/25/2010	11:00 AM	Heavy Snow	6.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported on Christmas Eve

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			Snow (inches)	**Freezing Rain (inches)**	**Ice (inches)**	**Sleet (Inches)**	**Strong Wind (mph)**					
02/01/2011 thru 02/02/2011	11:30 AM	Blizzard	17.0 in.	X		X	60 mph	AMRN COOP SED	n/a	n/a	$200,000	***This event was part of a federally-declared disaster (Declaration #1960)*** - event created nearly impossible travel conditions at times and resulted in multiple accidents & injuries across the region - numerous county highways were closed - all schools were closed for at least 3 days - power was lost the Eureka water well, causing a loss of water service to the City for more than 24 hours *Ameren (Regional information, including Woodford County)* - 14,000 customers were without power for up to 3 days - 1,964 wires downed - 104 poles replaced

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												- 470 service lines to individual customers damaged - 718 tree orders received for trees/tree limbs that eitherfell on a line and caused an outage or were on a line and had to be removed - 1,144 Ameren personnel responded to the event
01/12/2012 thru 01/13/2012	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	

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12/20/2012	3:00 PM	Blizzard	2.7 in.				50 mph	AMRN COOP SED	n/a	n/a	n/a	*Ameren (regional information, including Woodford County)* - 78,000 customers were without power for 2 days - 1,017 wires downed - 183 poles replaced - 191 service lines to individual customers damaged - 499 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,803 Ameren personnel responded to the event - numerous traffic accidents were reported across the county
03/24/2013	n/a	Heavy Snow	6.2 in.					COOP	n/a	n/a	n/a	
12/13/2013 thru 12/14/2013	5:00 PM	Winter Storm	7.6 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported

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01/05/2014	12:00 AM	Heavy Snow	8.2 in.				X	COOP SED	n/a	n/a	n/a	- significant blowing & drifting caused numerous road closures and traffic accidents across the County - many schools, businesses & churches were closed
02/01/2014	3:00 AM	Heavy Snow	6.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
02/14/2014	n/a	Heavy Snow	4.9 in.					COOP	n/a	n/a	n/a	
02/18/2014	n/a	Heavy Snow	4.9 in.					COOP	n/a	n/a	n/a	
01/05/2015 thru 01/06/2015	4:15 PM	Heavy Snow	5.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
02/01/2015 thru 02/02/2015	3:00 AM	Heavy Snow	9.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
11/21/2015 thru 11/22/2015	n/a	Heavy Snow	5.7 in.					COOP	n/a	n/a	n/a	

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			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
12/28/2015	5:00 AM	Ice Storm	2.5 in.	X	≤0.3 in.		50 mph	AMRN COOP SED	n/a	n/a	$530,000	- ice combined with wind gusts caused extensive damage to trees, power poles & power lines - several homes were damaged by falling trees and tree branches - about 20,000 individuals lost power for up to 4 days in the County - Committee member from Eureka College identified $80,000 in damages and indicated that the College had no power for 3 days, several trees were downed and the fire alarm systems were offline *Ameren (Regional information, including Woodford County)* - 192,000 customers were without power for up to 3.5 days - 1,969 wires downed - 475 poles replaced

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												- 882 service lines to individual customers damaged - 939 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,526 Ameren personnel responded to the event
12/05/2016	n/a	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
03/13/2017	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
12/30/2017	n/a	Heavy Snow	5.5 in.					COOP	n/a	n/a	n/a	
02/06/2018	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
03/24/2018	12:30 AM	Heavy Snow	11.1 in.					SED	n/a	n/a	n/a	numerous traffic accidents were reported
01/12/2019 thru 01/13/2019	12:30 AM	Heavy Snow	13.0 in.					SED	n/a	n/a	n/a	numerous traffic accidnets occurred due to snow-covered roads
01/19/2019	1:00 AM	Winter Storm	2.7 in.				35 mph	COOP SED	n/a	n/a	n/a	- northerly winds created snow drifts of 1 to 3 feet deep - numerous traffic accidents occurred and vehicles became stuck in drifts, especially on rural roads

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
01/01/2021	6:30 AM	Ice Storm			0.50 in.			AMRN SED	n/a	n/a	$30,000	- heavy ice accumulation snapped many tree branches, caused scattered power outages, and created slick and hazardous travel conditions - El Paso estimated its cleanup costs for this event at $30,000 *Ameren (Regional information, including Woodford County)* - 14,966 customers were without power for up to 6 days - 240 wires downed - 63 poles replaced - 123 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,296 Ameren personnel responded to the event
01/03/2021	n/a	Heavy Snow	4.2 in.					COOP	n/a	n/a	n/a	
02/14/2021 thru 02/16/2021	6:00 PM	Heavy Snow	8.0 in.					SED	n/a	n/a	n/a	numerous traffic accidents occurred due to snow-covered and hazardous roads

1 An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

2 Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1] Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)	Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
02/01/2022 thru 02/03/2022	11:00 PM	Winter Storm	14.0 in.					COOP SED	n/a	n/a	n/a	heavy snow accumulations and considerable blowing and drifting snow led to road closures and numerous traffic accidents
02/17/2022	10:00 AM	Winter Storm	7.0 in.					COOP SED	n/a	n/a	$2,000	- falling and blowing snow created hazardous travel conditions and resulted in a few traffic accidents around the area - Committee members from El Paso indicated that a 100-car pileup shutdown Interstate 30 for 24 hours - El Paso incurred $2,000 to house stranded vehicle owners
03/11/2022	n/a	Heavy Snow	5.2 in.					COOP	n/a	n/a	n/a	

[1] An "X" in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center's cli-MATE data system, NOAA's Storm Events Database, and weather records from Ameren.

Table 6
Severe Winter Storm Events Reported in Woodford County
1950 - 2022

Date(s)	Start Time	Event Type	Magnitude[1]					Observed Location(s)[2]	Injuries	Fatalities	Property Damages	Impacts/ Event Description
			Snow (inches)	Freezing Rain (inches)	Ice (inches)	Sleet (Inches)	Strong Wind (mph)					
12/22/2022	7:00 AM	Winter Storm	3.0 in.				40 mph	SED	n/a	n/a	n/a	- strong northwesterly winds caused near white-out conditions at times, especially in rural locations - numerous traffic accidents occurred as roads became snow-covered and hazardous
GRAND TOTAL:									**5**	**2**	**$ 1,762,000**	

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tony O'Neal, Emergency Response Specialist - Illinois Crisis Management, Ameren Illinois.
Tri-County MAC member responses to Natural Hazard Events Questionnaire.

[1] An “X” in the snow, freezing rain, ice, sleet and/or strong winds columns indicates the presences of that weather condition during the severe winter storm event.

[2] Observed Location information was obtained from NWS’s COOP Observation Station records as well as other officially-designated sources identified in the Midwestern Regional Climate Center’s cli-MATE data system, NOAA’s Storm Events Database, and weather records from Ameren.

Table 7 Excessive Heat Events Reported in Woodford County 1995 - 2022										
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)[1]**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
		Day (Max)	**Night (Min)**	**Heat Index (Max)**						
07/12/1995 thru 07/15/1995	n/a	102 °F	74 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
07/29/1995 thru 08/01/1995	n/a	94 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
08/11/1995 thru 08/30/1995	n/a	96 °F	69 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
05/19/1996	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/29/1996	n/a	94 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/18/1996	n/a	95 °F	75 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/05/1996 thru 08/06/1996	n/a	92 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/23/1997 thru 06/24/1997	n/a	95 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/13/1997	n/a	97 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/25/1997 thru 07/27/1997	n/a	100 °F	69 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	- numerous reports of heat-related injuries in most area hospitals - numerous reports of roads buckling

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 7 Excessive Heat Events Reported in Woodford County 1995 - 2022										
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)**[1]	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
		Day (Max)	**Night (Min)**	**Heat Index (Max)**						
06/24/1998 thru 06/26/1998	n/a	96 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	- several heat-relatd illnesses were reported in area hospitals - several highways in the area had sections of roadway buckle
07/19/1998 thru 07/21/1998	n/a	96 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/23/1998 thru 08/24/1998	n/a	93 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
09/26/1998	n/a	93 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/03/1999 thru 07/05/1999	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/16/1999	n/a	97 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
07/19/1999 thru 07/30/1999	n/a	101 °F	65 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
06/18/2001	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/07/2001	n/a	95 °F	73 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2001	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

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1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
07/20/2001 thru 07/24/2001	n/a	96 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/30/2001 thru 08/01/2001	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/08/2001	n/a	94 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/24/2002	n/a	94 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/30/2002	n/a	92 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/20/2002 thru 07/21/2002	n/a	97 °F	73 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/31/2002 thru 08/01/2002	n/a	93 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
08/04/2002	n/a	94 °F	73 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/03/2003 thru 07/06/2003	n/a	96 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/07/2005	n/a	95 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	

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1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
06/23/2005 thru 06/29/2005	n/a	98 °F	65 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2005	n/a	96 °F	74 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/23/2005 thru 07/25/2005	n/a	105 °F	73 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/02/2005 thru 08/03/2005	n/a	94 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/09/2005 thru 08/10/2005	n/a	96 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/20/2005	n/a	92 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
05/27/2006 thru 05/28/2006	n/a	94 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/16/2006	n/a	92 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/21/2006	n/a	93 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
07/15/2006 thru 07/17/2006	n/a	98 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	

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1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F Day (Max)	Night (Min)	Heat Index (Max)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/28/2006 thru 08/01/2006	n/a	98 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
10/03/2006	n/a	93 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
06/16/2007	n/a	96 °F	76 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/05/2007 thru 08/07/2007	n/a	96 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/21/2007 thru 08/23/2007	n/a	93 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
09/24/2007	n/a	93 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
06/22/2009 thru 06/25/2009	n/a	97 °F	68 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/08/2009	n/a	90 °F	74 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
06/26/2007	n/a	91 °F	71 °F	100 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/04/2010 thru 07/07/2010	n/a	92 °F	68 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/14/2010	n/a	94 °F	77 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	

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Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
07/17/2010	n/a	94 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/21/2010 thru 07/23/2010	n/a	94 °F	71 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/03/2010 thru 08/04/2010	n/a	95 °F	69 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/08/2010 thru 08/13/2010	n/a	94 °F	69 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
06/06/2011 thru 06/07/2011	n/a	95 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/01/2011	n/a	91 °F	75 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/10/2011 thru 07/11/2011	n/a	95 °F	69 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2011 thru 07/23/2011	n/a	101 °F	73 °F	115 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/27/2011 thru 07/28/2011	n/a	93 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	

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Excessive Heat Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
08/01/2011 thru 08/02/2011	n/a	94 °F	72 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
09/01/2011 thru 09/02/2011	n/a	100 °F	68 °F	107 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
05/26/2012 thru 05/27/2012	n/a	96 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
06/28/2012 thru 06/29/2012	n/a	102 °F	68 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/02/2012 thru 07/06/2012	n/a	106 °F	68 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/16/2012 thru 07/18/2012	n/a	103 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/22/2012 thru 07/25/2012	n/a	103 °F	67 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2013 thru 07/19/2013	n/a	96 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

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Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
08/26/2013 thru 08/28/2013	n/a	96 °F	68 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/30/2013 thru 08/31/2013	n/a	99 °F	67 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
08/24/2014 thru 08/25/2014	n/a	95 °F	67 °F	108 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2015 thru 07/18/2015	n/a	92 °F	72 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
09/01/2015 thru 09/07/2015	n/a	95 °F	68 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
06/10/2016 thru 06/11/2016	n/a	96 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
06/13/2016 thru 06/15/2016	n/a	94 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
07/20/2016 thru 07/24/2016	n/a	95 °F	69 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/11/2016	n/a	93 °F	73 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 7 Excessive Heat Events Reported in Woodford County 1995 - 2022										
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)[1]**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
		Day (Max)	**Night (Min)**	**Heat Index (Max)**						
09/06/2016	n/a	93 °F	73 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/11/2017 thru 06/13/2017	n/a	96 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/06/2017	n/a	94 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/19/2017 thru 07/21/2017	n/a	96 °F	68 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
09/21/2017 thru 09/22/2017	n/a	95 °F	69 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
05/27/2018 thru 05/28/2018	n/a	97 °F	71 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
06/16/2018 thru 06/19/2018	n/a	94 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
06/29/2018 thru 06/30/2018	n/a	94 °F	74 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/03/2018 thru 07/04/2018	n/a	93 °F	72 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 7 Excessive Heat Events Reported in Woodford County 1995 - 2022										
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)[1]**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
		Day (Max)	**Night (Min)**	**Heat Index (Max)**						
08/04/2018 thru 08/05/2018	n/a	93 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/25/2018 thru 08/27/2018	n/a	94 °F	70 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
09/02/2018 thru 09/04/2018	n/a	95 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
09/28/2018	n/a	96 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/29/2019 thru 07/01/2019	n/a	96 °F	67 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/13/2019 thru 07/14/2019	n/a	94 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/17/2019 thru 07/20/2019	n/a	95 °F	71 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
06/08/2020	n/a	93 °F	72 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
06/26/2020	n/a	93 °F	71 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

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1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F Day (Max)	Night (Min)	Heat Index (Max)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/06/2020 thru 07/08/2020	n/a	96 °F	67 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
07/18/2020	n/a	92 °F	74 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/25/2020 thru 07/26/2020	n/a	92 °F	71 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/24/2020 thru 08/28/2020	n/a	93 °F	70 °F	n/a	Minonk	n/a	n/a	n/a	n/a	
06/11/2021	n/a	96 °F	69 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
08/10/2021 thru 08/11/2021	n/a	93 °F	70 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/24/2021 thru 08/28/2021	n/a	95 °F	67 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
05/10/2022 thru 05/11/2022	n/a	95 °F	70 °F	n/a	Congerville	n/a	n/a	n/a	n/a	
06/13/2022 thru 06/15/2022	n/a	96 °F	70 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 7
Excessive Heat Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
		Day (Max)	Night (Min)	Heat Index (Max)						
06/21/2022	n/a	96 °F	71 °F	105 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/05/2022	n/a	97 °F	71 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
07/23/2022	n/a	96 °F	67 °F	110 °F	Congerville Minonk	n/a	n/a	n/a	n/a	
08/06/2022	n/a	92 °F	73 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
09/20/2022	n/a	97 °F	70 °F	n/a	Congerville Minonk	n/a	n/a	n/a	n/a	
GRAND TOTAL:						**0**	**0**	**$ -**	**$ -**	

Sources: Iowa State University, Iowa Environmental Mesonet, National Weather Service Data, Search for Warnings.
Midwestern Regional Climate Center, cli-MATE.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8
Extreme Cold/Wind Chill Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
		Low (Min)	High (Max)	Wind Chill (Max)					
12/09/1995	n/a	-2 °F	11 °F	n/a	Minonk	n/a	n/a	n/a	
01/19/1996	n/a	-3 °F	11 °F	n/a	Minonk	n/a	n/a	n/a	
01/30/1996 thru 02/04/1996	n/a	-20 °F	16 °F	n/a	Minonk	n/a	n/a	n/a	many people experienced problems with frozen pipes and vehicles
01/10/1997 thru 01/12/1997	n/a	-10 °F	10 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/16/1997 thru 01/17/1997	n/a	-16 °F	9 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/28/1997	n/a	-9 °F	12 °F	n/a	Minonk	n/a	n/a	n/a	
12/30/1998	n/a	-6 °F	12 °F	n/a	Congerville	n/a	n/a	n/a	
01/04/1999 thru 01/05/1999	n/a	-36 °F	5 °F	n/a	Congerville Minonk	n/a	n/a	n/a	a new state record low was set at Congerville, where the mercury plunged to -36°F
01/07/1999	n/a	-7 °F	12 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/09/1999	n/a	-9 °F	15 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/20/2000	n/a	-13 °F	14 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
12/12/2000	n/a	-12 °F	9 °F	n/a	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8 Extreme Cold/Wind Chill Events Reported in Woodford County 1995 - 2022									
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)[1]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/Event Description**
		Low (Min)	**High (Max)**	**Wind Chill (Max)**					
12/21/2000 thru 12/22/2000	n/a	-9 °F	15 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
12/24/2000	n/a	-18 °F	9 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
03/03/2002	n/a	-8 °F	13 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/23/2003	n/a	-7 °F	13 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/26/2003	n/a	-15 °F	17 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/29/2004 thru 01/31/2004	n/a	-12 °F	15 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
12/07/2005	n/a	-8 °F	15 °F	n/a	Minonk	n/a	n/a	n/a	
02/18/2006	n/a	-2 °F	13 °F	-24 °F	Congerville Minonk	n/a	n/a	n/a	
02/03/2007 thru 02/07/2007	n/a	-12 °F	14 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
02/15/2007 thru 02/16/2007	n/a	-6 °F	15 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
01/02/2008	n/a	-4 °F	16 °F	-20 °F	Congerville	n/a	n/a	n/a	
01/19/2008	n/a	-5 °F	10 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8
Extreme Cold/Wind Chill Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
		Low (Min)	High (Max)	Wind Chill (Max)					
01/24/2008	n/a	-11 °F	11 °F	-24 °F	Congerville Minonk	n/a	n/a	n/a	
02/10/2008	n/a	0 °F	10 °F	-15 °F	Congerville Minonk	n/a	n/a	n/a	
12/21/2008 thru 12/22/2008	n/a	-6 °F	5 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
01/14/2009 thru 01/16/2009	n/a	-25 °F	19 °F	-35 °F	Congerville Minonk	n/a	n/a	n/a	
01/25/2009	n/a	-2 °F	13 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
01/01/2010 thru 01/04/2010	n/a	-12 °F	15 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/09/2010	n/a	-15 °F	16 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
12/13/2010	n/a	-8 °F	15 °F	-15 °F	Congerville Minonk	n/a	n/a	n/a	
01/21/2011	n/a	-5 °F	15 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
02/03/2011	n/a	-2 °F	12 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
02/08/2011 thru 02/09/2011	n/a	-16 °F	16 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8
Extreme Cold/Wind Chill Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
		Low (Min)	High (Max)	Wind Chill (Max)					
01/02/2014	n/a	-10 °F	19 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
01/05/2014 thru 01/07/2014	n/a	-17 °F	16 °F	-45 °F	Congerville Minonk	n/a	n/a	n/a	- schools and businesses closed for the day - several locations activated warming centers *Ameren (Regional information, including Woodford County)* - 32,387 customers were without power for up to 1.5 days - 197 wires downed - 30 poles replaced - 46 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 44 Ameren personnel responded to the event
01/21/2014	n/a	-4 °F	11 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/23/2014	n/a	-6 °F	10 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/27/2014 thru 01/28/2014	n/a	-10 °F	15 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
02/02/2014	n/a	-19 °F	19 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
02/06/2014 thru 02/11/2014	n/a	-23 °F	19 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8 **Extreme Cold/Wind Chill Events Reported in Woodford County** **1995 - 2022**									
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)**[1]	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/Event Description**
		Low (Min)	**High (Max)**	**Wind Chill (Max)**					
03/02/2014	n/a	-8 °F	15 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/05/2015 thru 01/08/2015	n/a	-11 °F	15 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
01/09/2015	n/a	-8 °F	11 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/13/2015	n/a	-7 °F	15 °F	n/a	Minonk	n/a	n/a	n/a	
02/18/2015 thru 02/19/2015	n/a	-9 °F	11 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
01/17/2016 thru 01/18/2016	n/a	-4 °F	13 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
12/18/2016	n/a	-7 °F	9 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
01/06/2017	n/a	-2 °F	11 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
12/26/2017 thru 12/27/2017	n/a	-16 °F	13 °F	n/a	Congerville Minonk	n/a	n/a	n/a	
12/30/2017 thru 01/05/2018	n/a	-21 °F	19 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8 Extreme Cold/Wind Chill Events Reported in Woodford County 1995 - 2022									
Date(s)	**Start Time**	**Magnitude - Temperature °F**			**Observed Location(s)[1]**	**Injuries**	**Fatalities**	**Property Damages**	**Impacts/Event Description**
		Low (Min)	**High (Max)**	**Wind Chill (Max)**					
01/15/2018 thru 01/16/2018	n/a	-5 °F	17 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	
02/05/2018 thru 02/06/2018	n/a	-7 °F	14 °F	n/a	Minonk	n/a	n/a	n/a	
01/20/2019	n/a	-8 °F	14 °F	n/a	Minonk	n/a	n/a	n/a	
01/25/2019 thru 01/26/2019	n/a	-23 °F	11 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
01/29/2019 thru 01/31/2019	n/a	-23 °F	12 °F	-50 °F	Congerville Minonk	n/a	n/a	n/a	*Ameren (Regional information, including Woodford County)* - 10,033 customers were without power for up to 3 days
02/13/2020	n/a	-12 °F	21 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
02/07/2021	n/a	-11 °F	7 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
02/13/2021 thru 02/15/2021	n/a	-9 °F	11 °F	-30 °F	Congerville Minonk	n/a	n/a	n/a	
01/06/2022	n/a	-6 °F	11 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
01/25/2022 thru 01/26/2022	n/a	-9 °F	16 °F	-20 °F	Congerville Minonk	n/a	n/a	n/a	

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 8
Extreme Cold/Wind Chill Events Reported in Woodford County
1995 - 2022

Date(s)	Start Time	Magnitude - Temperature °F			Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
		Low (Min)	High (Max)	Wind Chill (Max)					
12/23/2022	n/a	-6 °F	8 °F	-25 °F	Congerville Minonk	n/a	n/a	n/a	
GRAND TOTAL:						**0**	**0**	**$ -**	

Sources: Iowa State University, Iowa Environmental Mesonet, National Weather Service Data, Search for Warnings.
Midwestern Regional Climate Center, cli-MATE.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

[1] Observed Location information, if available, was obtained from NWS's COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center's cli-MATE data system.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
1	05/28/1954	6:15 PM	Metamora^	F 1	0.10 mi.	10 yd.	n/a	n/a	$25,000	n/a	
2	05/14/1961	8:15 PM	Eureka^ Roanoke^	F 0	12.80 mi.	10 yd.	n/a	n/a	$250	n/a	
3	08/01/1961	12:44 PM	Minonk^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	$2,500	tornado leveled about 60 rows of corn
4	01/24/1967	6:30 PM	Eureka^	F 2	0.50 mi.	77 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in Tazewell County southeast of Washington and traveled northeast before lifting off west of Eureka in Woodford County – total length: 3.8 miles
5	10/10/1969	8:00 PM	Goodfield^	F 2	0.80 mi.	200 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in Deer Creek in Tazewell County and traveled east into Woodford County before dissipating – total length: 1.0 miles
6	05/09/1970	7:20 PM	Congerville^	F 1	2.70 mi.	200 yd.	n/a	n/a	$250,000	n/a	damaged trees, utility lines, barns, silos and one mobile home
7	06/15/1971	6:20 PM	Roanoke^	F 0	1.50 mi.	30 yd.	n/a	n/a	$250	$250	tornado moved west-northwest touching the ground briefly and disturbing crops in a few places
8	06/18/1973	2:10 PM	Roanoke^	F 0	0.10 mi.	10 yd.	n/a	n/a	$5,000	n/a	*Roanoke area* - tore the roof from a shed - struck the top of a grain elevator

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.

^ Tornado touchdown verified in the vicinity of this location(s).

† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
9	06/19/1974	2:30 AM	Minonk	F 2	1.00 mi.	20 yd.	n/a	n/a	$250	n/a	- one building suffered structural damage - damaged windows and trees in a narrow area - lifted 3 grain bins off their concrete foundations
10	06/22/1974	7:08 AM	Congerville^	F 2	0.80 mi.	100 yd.	n/a	n/a	$25,000	$2,500	- tornado touched down northeast of the Village and moved northeast - destroyed a barn - damaged farm buildings and crops
11	05/25/1975	10:25 PM	Roanoke^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	tornado touched down briefly in an open field but no damage occurred
12	03/26/1976	9:30 PM	Eureka	F 2	0.50 mi.	33 yd.	n/a	n/a	$250,000	n/a	- damaged roofs and windows on a number of homes - uprooted and snapped several trees - the roof of a home was lifted and carried over to the next block and the walls were bowed out
13	06/29/1976	3:00 PM	El Paso^	F 0	0.50 mi.	50 yd.	n/a	n/a	n/a	$2,500	- tornado cut a swath through corn and soybean fields 2 miles south of the City - crops were torn up and flattened

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.

^ Tornado touchdown verified in the vicinity of this location(s).

† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
14	04/13/1981	11:10 PM	Congerville^	F 1	8.30 mi.	150 yd.	n/a	n/a	$2,500,000 †	n/a	*Touchdown/Liftoff – Two Counties* touched down in Woodford County south-southeast of Congerville and traveled east-southeast before lifting off at Colfax in McLean County – total length: 34.5 miles - damaged barns, outbuildings and homes - pulled electrical poles out of the ground
15	09/24/1986	5:15 PM	Roanoke^	F 2	2.50 mi.	75 yd.	n/a	n/a	$250,000	$2,500	- damaged 3 farm houses and several rural structures - severed seven, 65-foot power poles along the tornado's path
16	05/20/1987	5:43 PM	Eureka^	F 1	0.50 mi.	50 yd.	n/a	n/a	$2,500	n/a	- destroyed a barn, scattering lumber across fields - flying debris damaged a nearby farm house
17	06/13/1990	7:57 PM	Eureka^	F 0	0.10 mi.	50 yd.	n/a	n/a	n/a	n/a	tornado touched down briefly
18	06/22/1990	6:00 PM	Germantown Hills	F 1	0.50 mi.	50 yd.	n/a	n/a	$25,000	n/a	damaged the water district building and a garage roof
19	04/29/1991	6:45 PM	Minonk^	F 0	0.20 mi.	100 yd.	n/a	n/a	n/a	n/a	
20	05/13/1995	6:10 PM	Congerville^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	- damaged 1 home and 5 outbuildings - the roof was blown off a mobile home - several trees and power lines were blown over

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.

^ Tornado touchdown verified in the vicinity of this location(s).

† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
21	06/26/1995	5:27 PM	El Paso^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	- twisted a trampoline around a tree - threw a swing set 40 to 50 feet - blew down a tree
22	06/04/1999	3:23 PM	Washburn^	F 0	0.30 mi.	20 yd.	n/a	n/a	n/a	n/a	- a home sustained extensive roof damage when several nearby trees fell onto it - blew down several trees at the Snag Creek Golf Course
23	05/18/2000	4:18 PM	Metamora^	F 0	0.20 mi.	20 yd.	1	0	$5,000	n/a	- tornado touched down west of the Village just south of IL Rte. 116 - flipped the car of a teenage boy driving through the area several times into a field - the driver only suffered cuts and bruises but his 1997 Cavalier was totaled
24	05/08/2002	11:32 PM	El Paso^	F 0	4.50 mi.	50 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in Woodford County near the intersection of County Road 700N and 2500E southwest of El Paso and traveled northeast before lifting off in the extreme northwestern corner of McLean County southwest of Gridley – total length: 5.5 miles - knocked power poles down

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.

^ Tornado touchdown verified in the vicinity of this location(s).

† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
25	05/10/2003	9:21 PM	Eureka Roanoke	F 2	10.50 mi.	300 yd.	4	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in Tazewell County southeast of Washington and traveled east into Woodford County where it turned to the northeast and traveled through the northwestern portions of Eureka and Roanoke before lifting off north of Roanoke – total length: 12.5 miles *Eureka area* - destroyed several homes, outbuildings and businesses along US 24 *Eureka* - clipped the northwestern side of the City damaging several homes *Unincorporated Woodford County* - additional homes sustained damage as well as shed and outbuildings - trees, power lines and power poles sustained damage *Roanoke area* - several homes suffered damage

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
26	05/10/2003	9:25 PM	Eureka^ Secor^ Roanoke^ Benson^	F 1	8.00 mi.	200 yd.	n/a	n/a	n/a	n/a	- blew down numerous trees and power lines - destroyed several barns and outbuildings - a couple of homes sustained minor damage
27	05/28/2003	1:40 PM	Germantown Hills	F 1	2.00 mi.	100 yd.	n/a	n/a	n/a	n/a	*this event was part of a federally-declared disaster (Declaration #1469)* *Touchdown/Liftoff – Two Counties* touched down in Woodford County in Germantown Hills and traveled southeast into Woodford County lifting off north of Washington – total length: 3.5 miles - damaged a house, pushing the front door open and blowing the back wall of the house out about 15 inches - blew down numerous trees and power lines
28	05/28/2003	1:58 PM	Metamora^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	tornado briefly touched down in a field 3 miles southwest of Metamora near the Woodford/Tazewell County Line

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
29	05/30/2003	6:53 PM	Cazenovia^ Roanoke	F 2	7.30 mi.	150 yd.	n/a	n/a	n/a	n/a	*Unincorporated Woodford County (southeast of Cazenovia)* - several homes sustained major damage - several sheds were destroyed - numerous trees, tree limbs, power lines and power poles were blown down *Roanoke* - the tornado weakened quite a bit by the time it approached the Village and only minor tree damage was reported
30	05/30/2004	4:05 PM	Eureka^ Secor	F 1	9.00 mi.	75 yd.	n/a	n/a	n/a	n/a	*southwest of Secor 3 miles* - destroyed 2 farm buildings, a grain bin and a corn crib - blew down numerous trees - destroyed 2 old farm buildings - moved hay bales and threw a medium-sized gas tank ½ mile into a field
31	06/10/2004	4:55 PM	El Paso^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	tornado briefly touched down in a field 2 miles southwest of the City and no damage or injuries were reported
32	07/05/2004	9:40 PM	Bay View Gardens^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	tornado briefly touched down in a field 2 miles south of the Village and no damages or injuries were reported

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
33	07/13/2004	2:34 PM	Metamora^ Roanoke^	F 4	9.60 mi.	440 yd.	3	n/a	n/a	n/a	CR 1400E & IL Rte. 116/117 - struck the Parson's Company severely damaging the manufacturing plant - approx. 140 people were in the plant at the time, but all personnel made it to storm shelters in time - steel beams and metal siding from the plant were found approx. ¾ mile east in a farm field south of IL Rte. 116/117 & east of CR 1400E - destroyed two 2-story houses on 2 separate farmsteads, with only debris remaining in the basements and nearby property - significantly damaged two 2-story houses on another 2 farmsteads and demolished outbuildings CR 1300 N & 1600E intersection - significantly damaged a barn near CR 1300N and 1700E intersection - damaged a house
34	03/30/2005	3:06 PM	Metamora^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	tornado briefly touched down in a field and no damages or injuries were reported

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
35	04/02/2006	6:13 PM	Kappa^	F 0	0.30 mi.	50 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in McLean County north-northwest of Hudson and traveled into Woodford County lifting off southwest of Kappa – total length: 0.5 miles
36	06/04/2008	7:39 PM	Congerville^	EF 0	0.71 mi.	150 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Two Counties* touched down in Tazewell County approx. 3 miles north of Washington and traveled east-northeast into Woodford County lifting off 2 miles south-southeast of Metamora – total length: 3.08 miles - several trees were snapped - 5 power poles were damaged - the metal roof of a barn was lifted off -windows were broken on a house
37	06/05/2010	7:53 PM	Metamora^	EF 2	2.28 mi.	250 yd.	n/a	n/a	$70,000	n/a	
38	09/01/2012	10:48 AM	Benson^	EF 0	0.06 mi.	20 yd.	n/a	n/a	n/a	n/a	tornado briefly touched down in a field 2 miles east-southeast of the Village and no damage was reported
39	09/01/2012	11:03 PM	Benson^	EF 0	0.69 mi.	20 yd.	n/a	n/a	n/a	n/a	tornado touched down in a field 3 miles north of the Village and traveled west across CR 2200E before dissipating and no damage was reported

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
40	09/01/2012	11:05 AM	Benson^	EF 0	1.75 mi.	75 yd.	n/a	n/a	$1,000	$4,000	*Touchdown/Liftoff – Two Counties* touched down in Tazewell County approx. 4 miles north-northwest of Benson and traveled northwest into Marshall County lifting off ¾ mile southeast of Pattonsburg – total length: 2.25 miles - tore the tin roof off a shed - caused minor damage to a corn field
41	11/17/2013	11:12 AM	Metamora^ Roanoke^ Benson^ Minonk^	EF 3	20.70 mi.	880 yd.	4	0	$25,000,000	n/a	***this event was part of a federally-declared disaster (Declaration #4157)*** *Touchdown/Liftoff – Multiple Counties* touched down in Tazewell County southeast of East Peoria and traveled northeast through Woodford and LaSalle Counties and into Livingston County before lifting off east of Long Point – total length: 46.36 miles - during much of the time the tornado was on the ground in Woodford County, it traveled across open field, impacting dozens of farmsteads - destroyed 7 homes and nearly 70 farm buildings

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
											- 17 homes sustained major damage - 23 others suffered minor damage - approx. 100 vehicles were damaged, including several semi-trucks at a truck stop north of Minonk - 3 individuals were injured in overturned semi-trucks - a cell tower was toppled and hundreds of power poles and trees were snapped *Ameren (Regional information, including Woodford County)* - 148,433 customers were without power for 3.25 days - 1,708 wires downed - 1,093 poles replaced - 267 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,966 Ameren personnel responded to the event
42	05/28/2014	12:40 PM	El Paso^	EF 0	0.61 mi.	100 yd.	n/a	n/a	n/a	n/a	tornado touched down in a field 1.9 miles north-northeast of El Paso traveling southeast and no damage was reported

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
43	02/28/2017	5:26 PM	Washburn^	EF 3	3.36 mi.	400 yd.	n/a	n/a	$2,250,000	n/a	*Touchdown/Liftoff – Multiple Counties* touched down in Tazewell County 3 ½ miles west of Washburn and traveled northeast through Marshall County and into LaSalle County before lifting off at Rutland – total length: 17.76 miles - MAC member identified $750,000 in damages to 4 homes and outbuildings as a result of this event *approx. 2 ½ miles west of Washburn* - destroyed a house - destroyed several outbuildings - broke windows and did roof damage to a house *approx. 1 ½ miles west of Washburn* - tore the roof off a house *Washburn* - damaged 8 houses - roofs, garages, vehicles and trees sustained significant damage
44	05/27/2019	3:38 PM	Benson^	EF 0	0.13 mi.	10 yd.	n/a	n/a	n/a	n/a	a tornado briefly touched down in an open field 3.4 miles northwest of Benson - no damage was reported

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
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† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9 Tornadoes Reported in Woodford County 1950 - 2022											
Map No.	**Date(s)**	**Start Time**	**Location(s)**	**Magnitude Fujita Scale**	**Length (Miles)[1]**	**Width (Yards)**	**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Impacts/Event Description**
45	05/23/2020	12:54 PM	Panola Panola^	EF 0	3.46 mi.	75 yd.	n/a	n/a	$20,000	n/a	*Panola* tornado damaged the roof of an outbuilding, cracking a window in a house, and knocked down several tree branches
46	10/11/2021	3:28 PM	Roanoke^	EF U	0.26 mi.	30 yd.	n/a	n/a	n/a	n/a	a tornado touched down in an open field about 3 miles north of Roanoke and tracked northeastward for about 0.3 miles before quickly dissipating - no damage was observed
47	10/11/2021	3:45 PM	Washburn^	EF 0	2.47 mi.	75 yd.	n/a	n/a	n/a	n/a	*3.4 miles east-southeast of Washburn along County Highway 2100 North* damaged the roof and walls of a barn and a couple large trees, throwing the debris into a corn field to the northeast *County Highway 2300 North* tracked through fields before damaging an outbuilding

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Table 9
Tornadoes Reported in Woodford County
1950 - 2022

Map No.	Date(s)	Start Time	Location(s)	Magnitude Fujita Scale	Length (Miles)[1]	Width (Yards)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
48	10/11/2021	4:39 PM	El Paso^	EF U	2.51 mi.	50 yd.	n/a	n/a	n/a	n/a	a tornado touched down in an open field about 2 miles southwest of El Paso and tracked northward across Highway 24 just west of El Paso before dissipating in a field 1.5 miles west-northwest of El Paso - no damage was observed
GRAND TOTAL:							**12**	**0**	**$30,679,250** †	**$14,250**	

Sources: Chris Miller, Warning Coordination Meteorologist, National Weather Service, Weather Forecast Office Lincoln, Illinois.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Weather Service, Weather Forecast Office Lincoln, Illinois, Tornado Climatology for Central and Southeast Illinois, Woodford County.
NOAA, National Weather Service, Storm Prediction Center, SVRGIS, Tornadoes (1950-2021) Database.

During the process of collecting and verifying the tornado data used in this updated Plan, discrepancies were identified in the existing tornado information databases. Discussions were immediately conducted with the NWS Weather Forecast Office in Lincoln to verify tornado coordinates so that these discrepancies could be corrected or clarified. Consequently, this Hazard Mitigation Plan has the most accurate information on tornadoes for the County. If the reader compares the tornado information in this Plan with other databases, they may encounter the same discrepancies until these databases are formally corrected.

[1] The length provided is only for the portion(s) of the tornado that occurred in the County.
^ Tornado touchdown verified in the vicinity of this location(s).
† Property damages sustained as a result of this tornado represent losses sustained in two or more counties. A detailed breakdown by county was not available.

Year(s)	Start Month	Duration (Months)	Magnitude Drought Intensity Category[1]					Percent Crop Yield Reduction from Previous Year		Designated USDA Primary Natural Disaster Area	Crop Damages	Impacts/Event Description
			D0	D1	D2	D3	D4	Corn	Soybeans			
1983	n/a	n/a						39.4 %	10.3 %	n/a	n/a	All 102 counties in Illinois were proclaimed state disaster areas because of high temperatures and insufficient precipitation beginning in mid-June
1988	June	16						58.9 %	44.9 %	n/a	n/a	Approximately half of all Illinois counties were impacted by drought conditions
2005	May	12	X	X	X	X		20.9 %	5.6 %	Yes	n/a	
2011	August	3.5	X	X	X			---	---	No	n/a	
2012	March	10	X	X	X	X		45.0 %	23.1 %	Yes	$29,200,000	crop damage figures are for corn crop damage only
2013	August	9	X	X	X			---	---	No	n/a	given the timing of this "flash drought", no significant crop stress or yield reductions were reported
GRAND TOTAL:											**$ 29,200,000**	

Table 10: Drought Events Reported in Woodford County 1980 - 2022

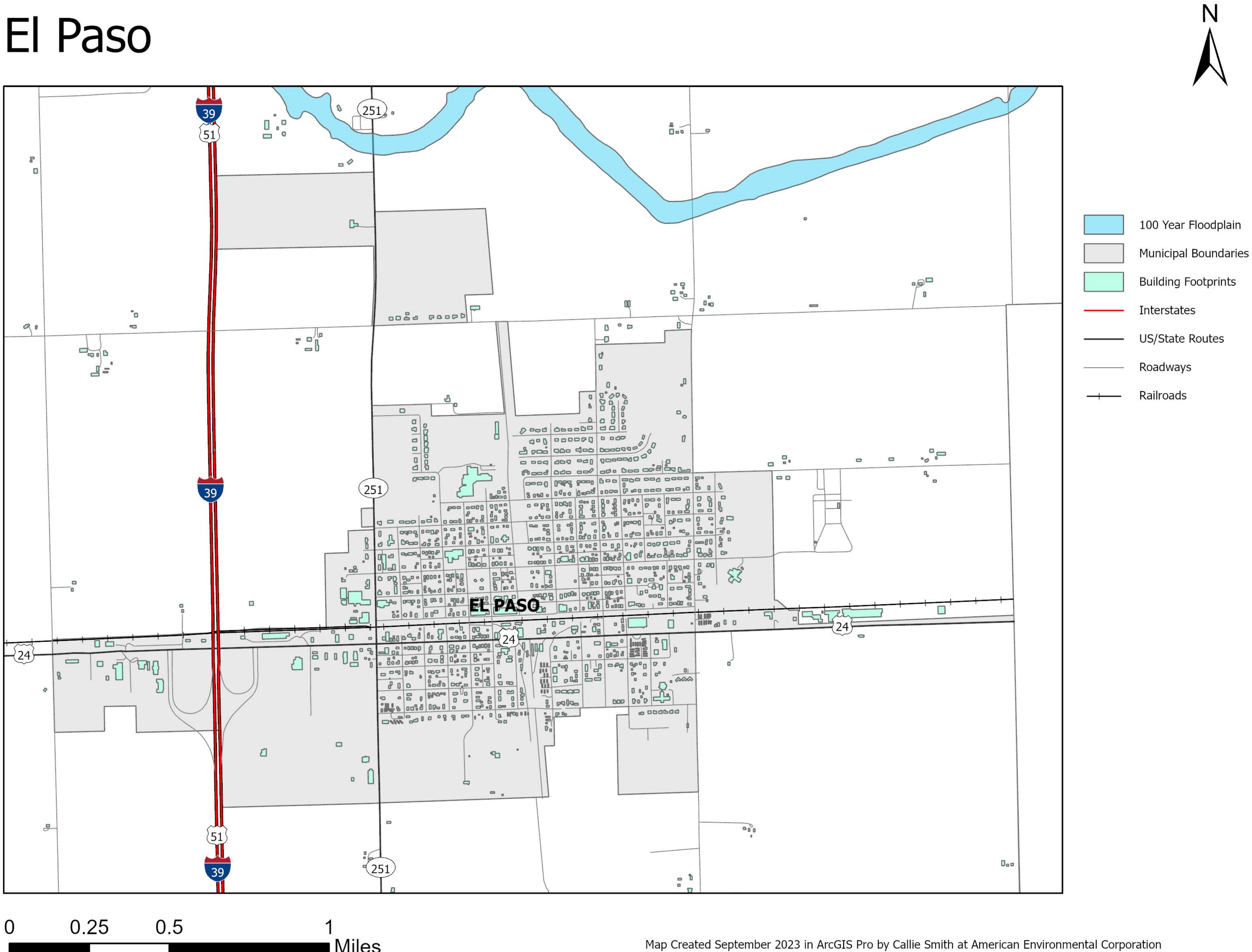
Sources: Illinois State Water Survey, Illinois State Climatologist.
National Drought Mitigation Center, United States Drought Monitor.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
United States Department of Agriculture, National Agricultural Statistics Service, Quik Stats Lite.

[1] An "X" identifies the level of drought intensity reached by at least a portion of the County during the event, if available.

US Drought Monitor – Drought Intensity Category Descriptions			
D0	abnormally dry	D3	extreme drought
D1	moderate drought	D4	exceptional drought
D2	severe drought		

APPENDIX K

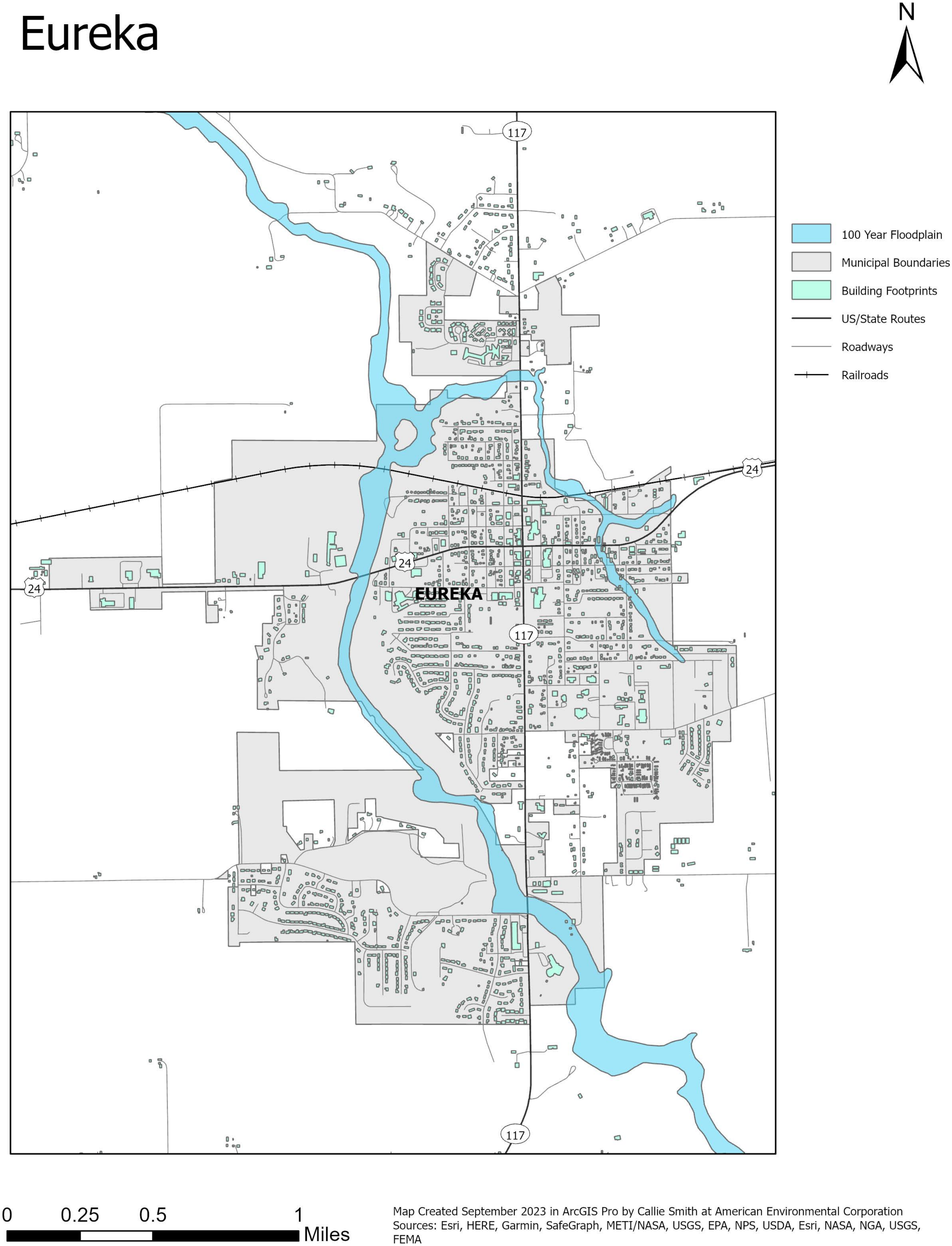
El Paso



Map Created September 2023 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Appendix K

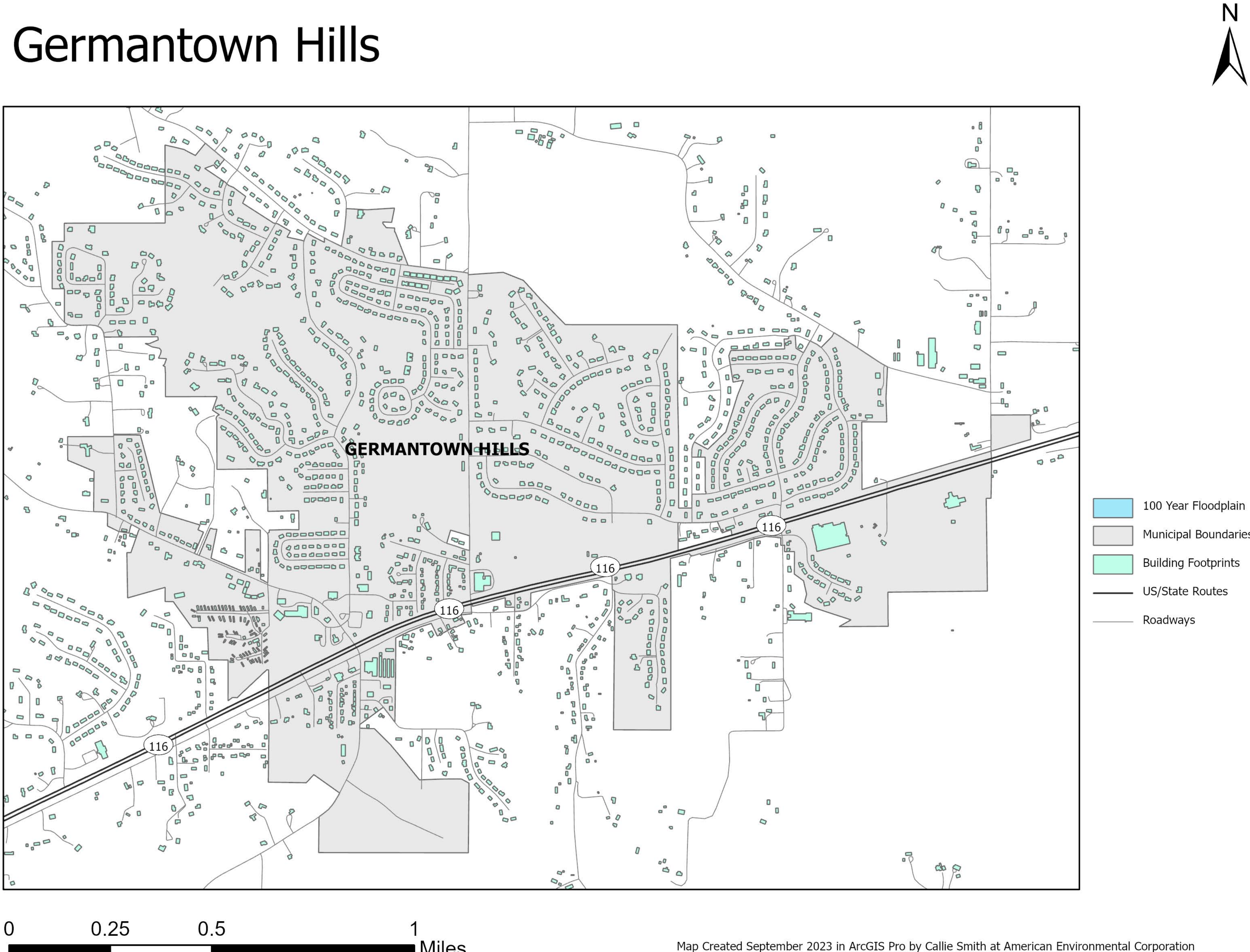
Eureka



Map Created September 2023 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Appendix K

Germantown Hills



Appendix K

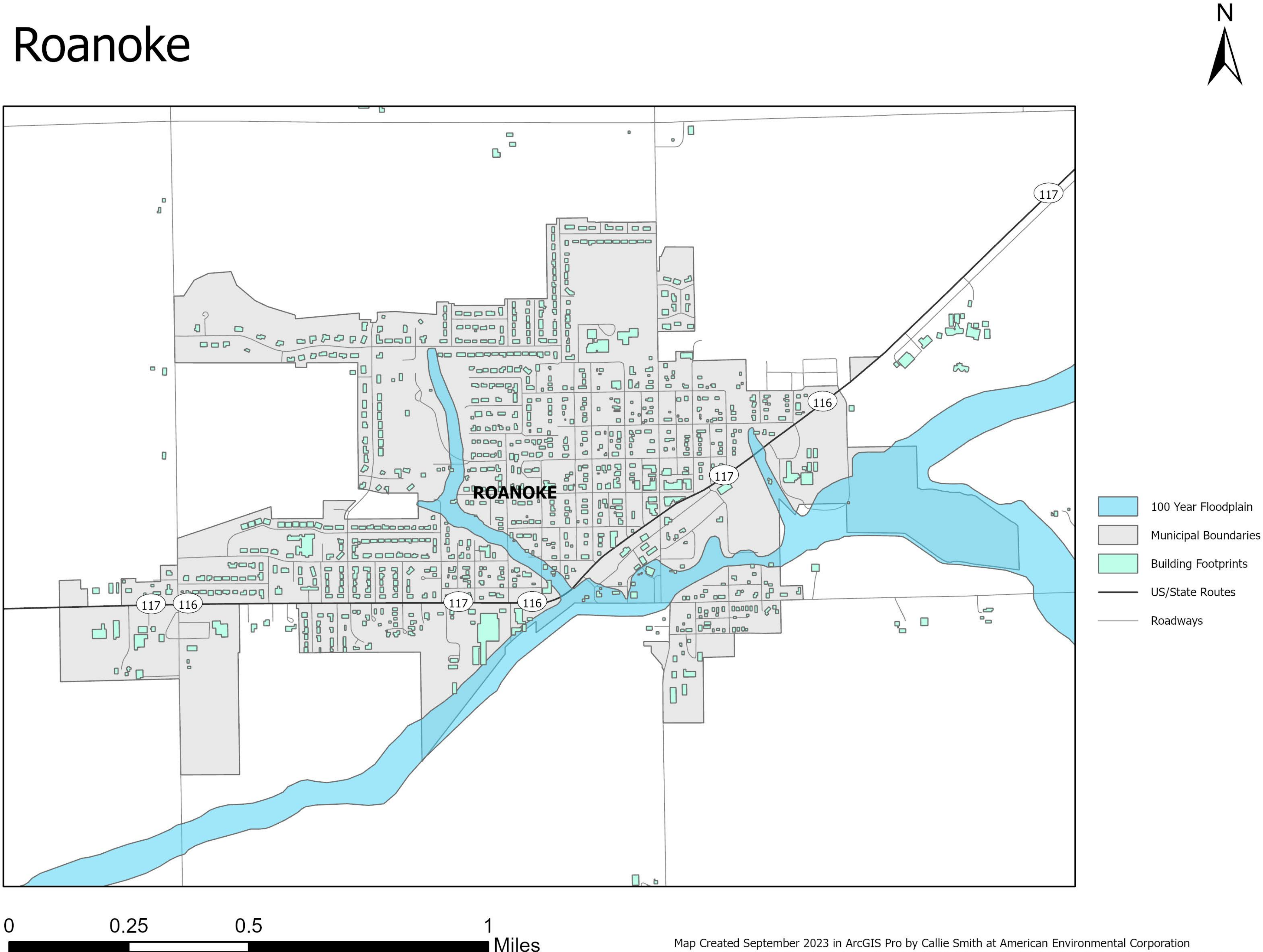
Map Created September 2023 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Minonk

Map Created September 2023 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Appendix K

Roanoke



Appendix K

Map Created September 2023 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

APPENDIX L

DIRECTORY OF COAL MINES IN ILLINOIS

Woodford County

This directory accompanies the Illinois Coal Mines map or maps for this County.

February 2023

ILLINOIS
Illinois State Geological Survey
PRAIRIE RESEARCH INSTITUTE

Prairie Research Institute
Illinois State Geological Survey
615 East Peabody Drive
Champaign, Illinois 61820
(217) 333-4747
http//:www.isgs.illinois.edu

INTRODUCTION

Coal has been mined in 77 counties. More than 7,400 coal mines have operated since commercial mining began in Illinois circa 1810. Our maps of known mines for each county may help the public to identify mined areas. This accompanying coal mine directory provides basic information about the coal mines. Please note, however, that the accuracy and completeness of the maps and directories vary depending on the availability and quality of source material. Little or no information is available for many mines, especially the older ones, because mining activity was not regulated or documented until the late 1800's. Even then, reporting requirements were minimal.

The coal mine maps are maps compiled by the Illinois State Geological Survey (ISGS) of known mines: underground and surface coal mines as well as underground industrial mineral mines. Buffer regions for industrial mineral underground mines were incorporated into the maps due to limited information regarding these mines. The size of the buffer region is dependent on the uncertainty or inaccuracy of the mine location based on the quality of the source material. For more information regarding industrial mineral mines please contact the ISGS Industrial Minerals Section.

In cooperation with the Illinois State Geological Survey, the Office of Mines and Minerals (a division of the Department of Natural Resources) is in search of old underground mine maps of Illinois. Many of the undocumented maps are believed to be in libraries, historical societies and personal files of old mine employees. The Department asks that anyone who knows of one of these maps, please contact the Department at (618) 650-3197 or by emailing rgibson@siue.edu. A map specialist will come to your location, if you wish. Otherwise maps can be mailed, or you may stop by one of our offices in Edwardsville, Springfield, Ottawa, or Benton. These maps will be checked against existing inventory. If they are found to be a new discovery, they will be electronically imaged and returned to the owner (if requested).

MINE MAPS

The mined areas are shown on county base maps at a scale of 1:100,000.

Three types of mine information are shown on the maps: an index number that identifies the mine in the directory, a symbol that marks the 'location' of the mine, and an outline of the mined area if that is known. The location is almost always the site of the main mine opening or, in the case of surface mines, the location of the tipple (coal washing and storage facility). The type of symbol indicates whether the opening is a shaft, drift, or slope and whether the mine is active or abandoned. Another symbol represents a mine with an uncertain type of portal and/or uncertain location. When the exact location is unknown, the symbol is placed in the center of the section or quarter section in which the mine was reported to exist. If a mine cannot be located within a section, it is not shown on the map, but is listed in the directory.

The boundaries of the mined areas are also shown for most of the mines; however, for some mines the only information available is the location of the main opening. There are three types of coal-mined areas: underground, surface, and indefinite--which are shaded with different patterns. The underground mines also show large blocks of unmined coal within the mine, when that information is available. The indefinite areas, which have been plotted from sketchy or incomplete information, usually are underground workings, although the directory should be consulted to determine the specific mine type.

For most counties, one map shows all known mines. However, in Gallatin, Saline, Vermilion, and Williamson Counties, several seams have been extensively mined. For the sake of readability, separate maps have been produced for the mines in each seam. Mines in the Herrin Coal are shown on one map, those in the Springfield Coal are shown on another, and the mines in all other coals are shown on a third map. In Vermilion County, the mines that operated in the Herrin and the Danville Coals are presented on separate maps.

Quadrangle maps at 1:24,000 scale have been completed for select areas and contain more detailed outlines with directories that contain more detailed coal mine information. The maps and directories are available as downloadable PDF files or can be purchased. Please visit the ISGS web site for more information.

MINE DIRECTORIES

Each county directory is keyed to the mine map by the mine index number; the directory provides basic information about the coal mines shown on the map. The data have been compiled from a variety of sources such as the annual Coal Report of the Illinois Office of Mines and Minerals and field notes taken by ISGS geologists. The information presented in the table is described below. A blank in any column indicates that information is not available for that item. Again, we welcome any additional information that you may have.

ISGS Index Each mine in the state is identified with a unique number; this number is shown on the map and is the link between the map and the directory. The number is permanently assigned to a mine regardless of changes in the mine name, ownership, or operator.

Company Name A mine may have been operated by more than one company or the operating company may have changed its name. Separate entries in the directory show each name and the years of operation under the name. In many instances, names have been abbreviated to fit within the space available.

Mine Name and Mine Number An entry is included for each name and/or number the mine operated under, even if the company name remained the same. Many companies use the same name for all their mines, but differentiate them by number. Again, abbreviations have been used where necessary.

Mine Type   Underground mines are either "shaft," "slope," or "drift" which refers to the type of opening used to remove the coal from the mine. In shaft mines the coal is removed through a vertical shaft. Slope designates mines in which the coal is removed via a sloping incline from the ground surface to the mining level. In slope mines, miners and equipment may use either the slope or a vertical shaft to get into the mine. A drift mine is an underground mine that is excavated where the coal outcrops in the side of a bluff or the highwall of a surface mine. The mine type for surface mines is "strip" because these mines are more commonly called "strip mines."

Method   This refers to the pattern by which the coal was removed. Most underground mines in Illinois have used a type of room and pillar pattern, the areas where the coal is removed are the 'rooms' with 'pillars' of coal left in place to support the roof. In some mines, the pillars were later pulled to extract additional coal. The abbreviations are listed below and most are illustrated in Figure 1.

RP	Room & Pillar; specific type unknown
RPB	Room & Pillar Basic; irregular panels, typical of old mines
MRP	Modified Room & Pillar; a somewhat more regular pattern than Room & Pillar Basic
RPP	Room and Pillar Panel; similar to Modified Room & Pillar
BRP	Blind Room and Pillar; every 6th or 7th room is left unmined to provide additional support
CRP	Checkerboard Room and Pillar; evenly spaced large pillars
LW	Longwall; all coal is removed Old longwall mines were backfilled with rock to provide support Modern longwall mines allow roof to collapse behind as mining progresses
HER	High Extraction Retreat; a form of Room & Pillar mining that extracts most of the coal

Years Operated   Years that the mine operated; these dates may include periods when the mine was idle or not in full operation. Dates of mining from different sources are sometimes contradictory. The conventions that we have used to indicate where we were uncertain of dates are as follows. If we know the full range of dates that a mine operated under a specific name, those are given (1928-1934). If we know when a mine last operated, but not when it began, we use a dash and end date (-1934). If we know that a mine operated in a particular year, but not when it opened or closed, we just give the year we know (1920). To avoid confusion with the previous case, if a mine opened and closed in the same year, the year is repeated (1926-1926). In cases where a mine operated under different names, but we don't know when the name change occurred, the full range of dates is given for all names (John Smith Sr. Mine 1913-1944, Bill Smith Mine 1913-1944). A blank indicates that we have no information on the dates that the mine operated.

Coal Seam Mined The seam name is that used by the Illinois State Geological Survey. Figure 2 shows these coal seams in a stratigraphic column and provides a cross-reference to other names commonly used for these coals. If a mine has operated in more than one seam, there are separate entries in the table for each seam mined.

Location The location given is the site of the main portal or, for surface mines, the tipple. For small surface mines, the pit and the tipple are assumed to be the same. The location is based on the Public Land Survey System of townships and sections. Townships are identified by a township (north-south) and range (east-west) designation such as T14N-R6E. Townships are subdivided into approximately 36 one-square-mile sections, which are numbered from 1 to 36.

ORDERING INFORMATION

A 1:100,000 scale color plot with the directory is available at a cost of $12.50. This can be ordered by contacting the Information Office at (217) 244-2414 or sales@prairie.illinois.edu.

ACCURACY OF MAP

The maps and digital files used for this study were compiled from data obtained from a variety of sources and have varying degrees of completeness and accuracy. They present reasonable interpretations of the geology of the area and are based on available data. These data were compiled and digitized at a scale of 1:62,500, except for areas where quadrangle studies have been completed and the data was compiled at 1:24,000 or better. Locations of some features may be offset by 500 feet or more due to errors in the original source maps, the compilation process, digitizing, or a combination of these factors. These data are not intended for use in site-specific screening or decision-making. Data included in this map are suitable for use at a scale of 1:100,000.

DISCLAIMER

The Illinois State Geological Survey and the University of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this data set and accept no liability for the consequences of decisions made by others on the basis of the information presented here.

DIRECTORY OF COAL MINES FOR WOODFORD COUNTY, ILLINOIS (February 2023)

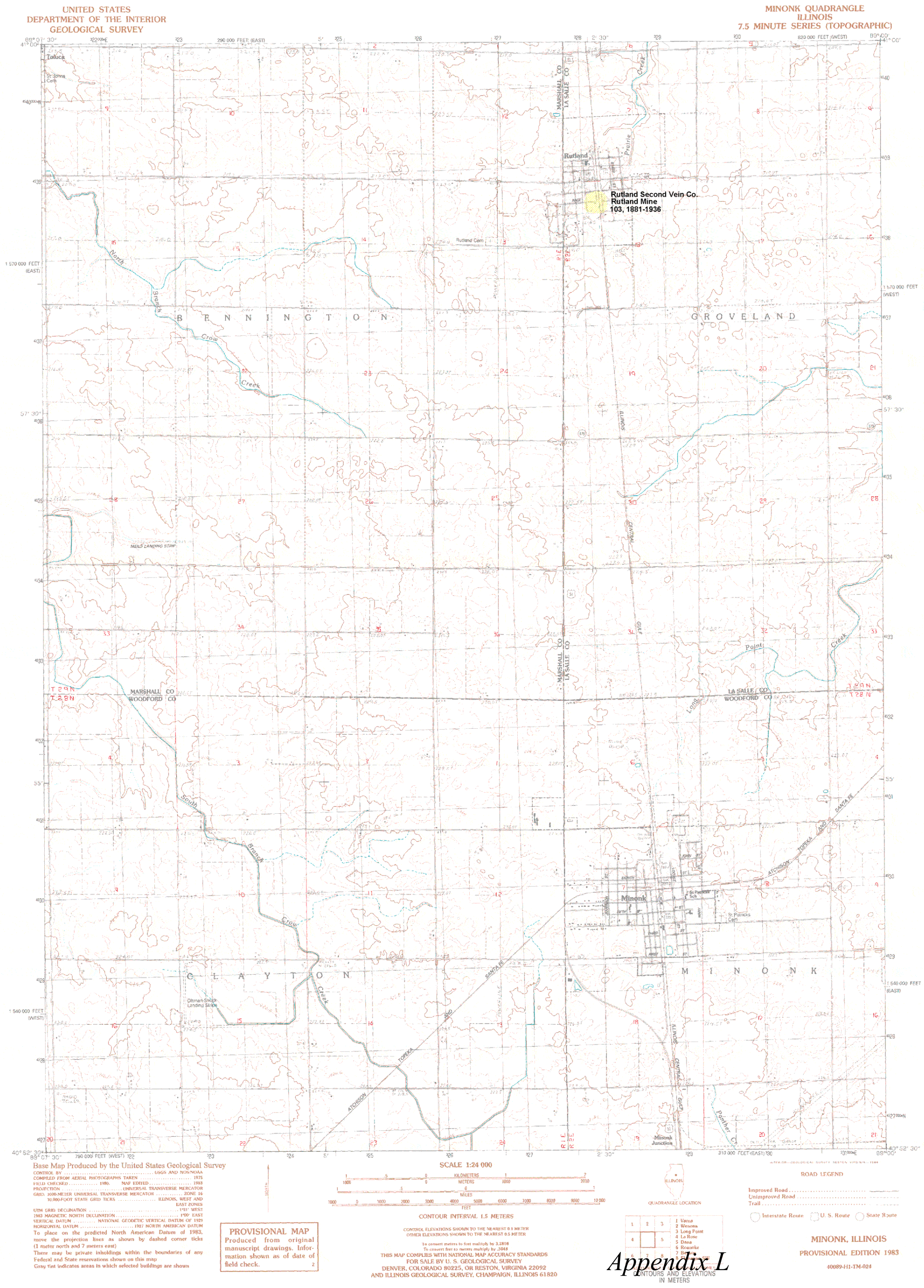
ISGS INDEX	COMPANY NAME	MINE NAME	MINE NO.	MINE TYPE	METHOD	YEARS OPERATED	SEAM MINED	COUNTY	LOCATION TWP	RGE	SEC
410	MINONK COAL CO.	MINONK	1	SHAFT	LW	1869-1873	DANVILLE	WOODFORD	28N	2E	7
410	AMES (MINER T.)	MINONK	1	SHAFT	LW	1873-1883	COLCHESTER	WOODFORD	28N	2E	7
410	CHI & MINONK COAL & COKE CO	MINONK	1	SHAFT	LW	1883-1891	COLCHESTER	WOODFORD	28N	2E	7
410	CHI & MINONK C & TILE WORKS	MINONK	1	SHAFT	LW	1891-1901	COLCHESTER	WOODFORD	28N	2E	7
410	ABANDONED	MINONK	1	SHAFT	LW	1894-1899	COLCHESTER	WOODFORD	28N	2E	7
410	MINONK COAL CO.	MINONK	2	SHAFT	LW	1904-1924	COLCHESTER	WOODFORD	28N	2E	6
410	SUTTON (W. G.)	MINONK	2	SHAFT	LW	1924-1951	COLCHESTER	WOODFORD	28N	2E	6
611	BELSLEY (PETER)	ROANOKE	1	SHAFT	LW	1881-1883	COLCHESTER	WOODFORD	27N	1W	14
611	ROANOKE COAL & MNG. CO.	ROANOKE	1	SHAFT	LW	1883-1907	COLCHESTER	WOODFORD	27N	1W	14
611	ROANOKE COAL CO.	ROANOKE	1	SHAFT	LW	1907-1924	COLCHESTER	WOODFORD	27N	1W	14
611	BARRON (J. T.)	ROANOKE	1	SHAFT	LW	1924-1928	COLCHESTER	WOODFORD	27N	1W	14
611	ROANOKE COAL & TILE CO.	ROANOKE	1	SHAFT	LW	1929-1938	COLCHESTER	WOODFORD	27N	1W	14
611	ROANOKE COAL CO.	ROANOKE	1	SHAFT	LW	1939-1940	COLCHESTER	WOODFORD	27N	1W	14
5979	EUREKA COAL CO.	EUREKA		SHAFT	UG	1886-1887	COLCHESTER	WOODFORD	26N	1W	7
5980	METAMORA COAL CO.	METAMORA		SHAFT		1870-1870	DANVILLE	WOODFORD	27N	3W	1

Coal Mines in Illinois
Minonk Quadrangle

La Salle, Marshall & Woodford Counties, Illinois

Danville Coal

This map accompanies the Coal Mines Directory for the Minonk Quadrangle, and map of mines in the Colchester Coal, Minonk Quadrangle. Consult the directory for a complete explanation of the information shown on this map.



Appendix L

Mining Method

- Room & Pillar (RP)
- Room & Pillar Basic (RPB)
- Modified Room & Pillar (MRP)
- Room & Pillar Panel (RPP)
- Blind Room & Pillar (BRP)
- Checkerboard Room & Pillar (CRP)
- High Extraction Retreat (HER)
- Longwall (LW)
- Underground, Method Unknown
- Strip Mine
- Auger Mine
- General Area of Mining

Source of Mine Outline

- Final Mine Map
- Not Final Mine Map
- Undated Mine Map
- Incomplete Mine Map
- Secondary Source Map

Tipple, Shaft, Slope, Drift Locations

- Strip Mine Tipple - Active
- Strip Mine Tipple - Abandoned
- Mine Shaft - Active
- Mine Shaft - Abandoned
- Mine Slope - Active
- Mine Slope - Abandoned
- Mine Drift - Active
- Mine Drift - Abandoned
- Air Shaft
- Uncertain Location
- Uncertain Type of Opening

Mine Annotation

(space permiting)
Company
Mine Name
ISGS Index No., Years of Operation

Location

DISCLAIMER

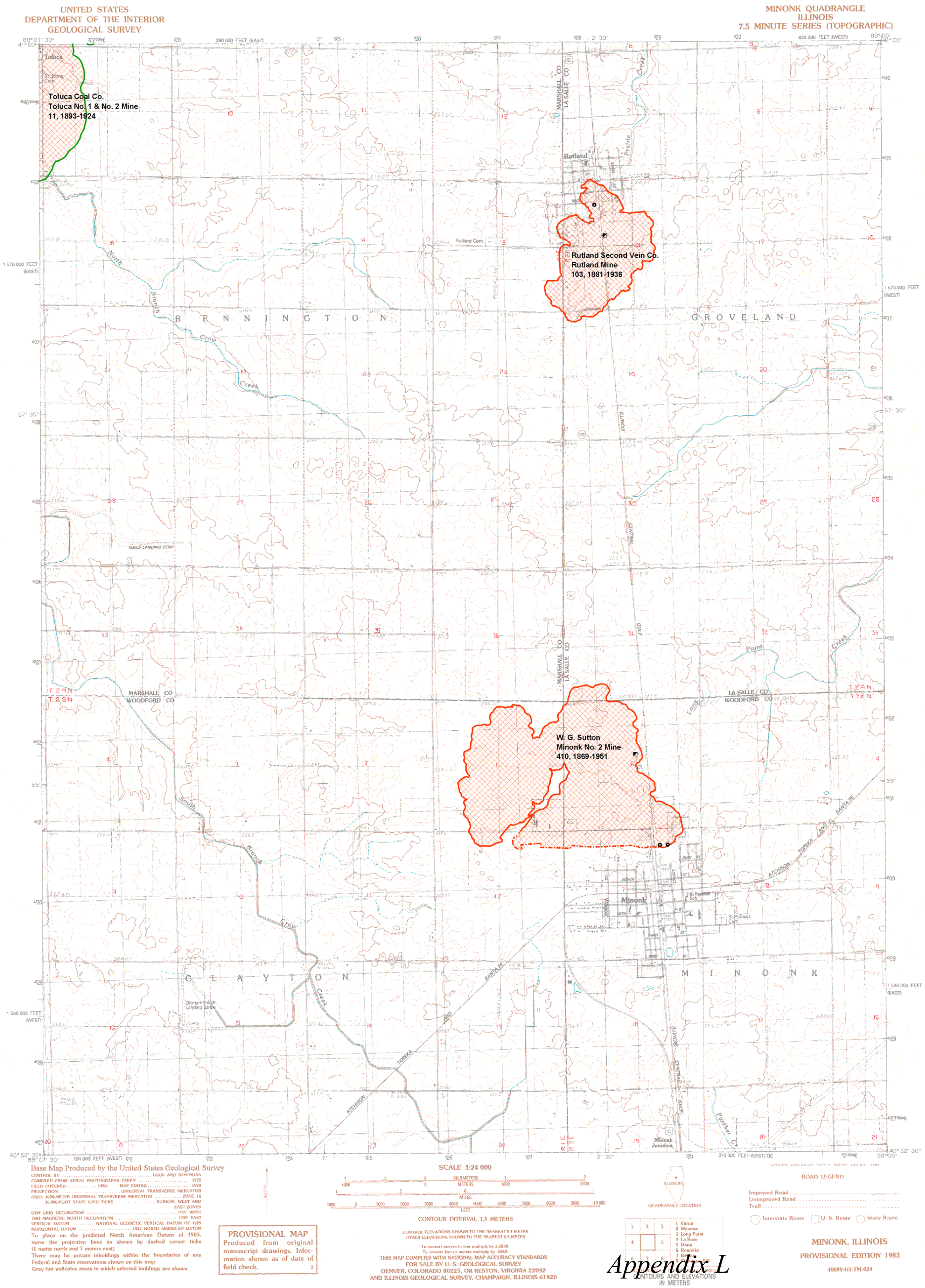
These data were compiled and digitized from the best source maps available. Locations of some features may be offset by 500 feet of more due to errors in the original source maps, the compilation process, digitizing or a combination of these factors. Documentation of the source materials used is contained in the directory that accompanies this map. It is the user's responsibility to read this documentation and understand the limitations of the data. Though efforts have been made to compile these data accurately, the Illinois State Geological Survey does not guarantee the validity or the accuracy of these data.

The image of the U.S.G.S. Minonk Quadrangle used as a basemap was projected from the original UTM to Lambert Conformal Conic.

Illinois State Geological Survey
615 E. Peabody Dr.
Champaign, IL 61820

Mine Outlines Compiled by
Jennifer M. Obrad

March 1, 2007



Appendix L

Coal Mines in Illinois
Minonk Quadrangle

La Salle, Marshall & Woodford Counties, Illinois

Colchester Coal

This map accompanies the Coal Mines Directory for the Minonk Quadrangle, and map of mines in the Danville Coal, Minonk Quadrangle. Consult the directory for a complete explanation of the information shown on this map.

Mining Method

- Room & Pillar (RP)
- Room & Pillar Basic (RPB)
- Modified Room & Pillar (MRP)
- Room & Pillar Panel (RPP)
- Blind Room & Pillar (BRP)
- Checkerboard Room & Pillar (CRP)
- High Extraction Retreat (HER)
- Longwall (LW)
- Underground, Method Unknown
- Strip Mine
- Auger Mine
- General Area of Mining

Source of Mine Outline

- Final Mine Map
- Not Final Mine Map
- Undated Mine Map
- Incomplete Mine Map
- Secondary Source Map

Tipple, Shaft, Slope, Drift Locations

- Strip Mine Tipple - Active
- Strip Mine Tipple - Abandoned
- Mine Shaft - Active
- Mine Shaft - Abandoned
- Mine Slope - Active
- Mine Slope - Abandoned
- Mine Drift - Active
- Mine Drift - Abandoned
- Air Shaft
- Uncertain Location
- Uncertain Type of Opening

Mine Annotation

(space permiting)
Company
Mine Name
ISGS Index No., Years of Operation

Location

DISCLAIMER

These data were compiled and digitized from the best source maps available. Locations of some features may be offset by 500 feet of more due to errors in the original source maps, the compilation process, digitizing or a combination of these factors. Documentation of the source materials used is contained in the directory that accompanies this map. It is the user's responsibility to read this documentation and understand the limitations of the data. Though efforts have been made to compile these data accurately, the Illinois State Geological Survey does not guarantee the validity or the accuracy of these data.

The image of the U.S.G.S. Minonk Quadrangle used as a basemap was projected from the original UTM to Lambert Conformal Conic.

Illinois State Geological Survey
Coal Section

Illinois State Geological Survey
615 E. Peabody Dr.
Champaign, IL 61820

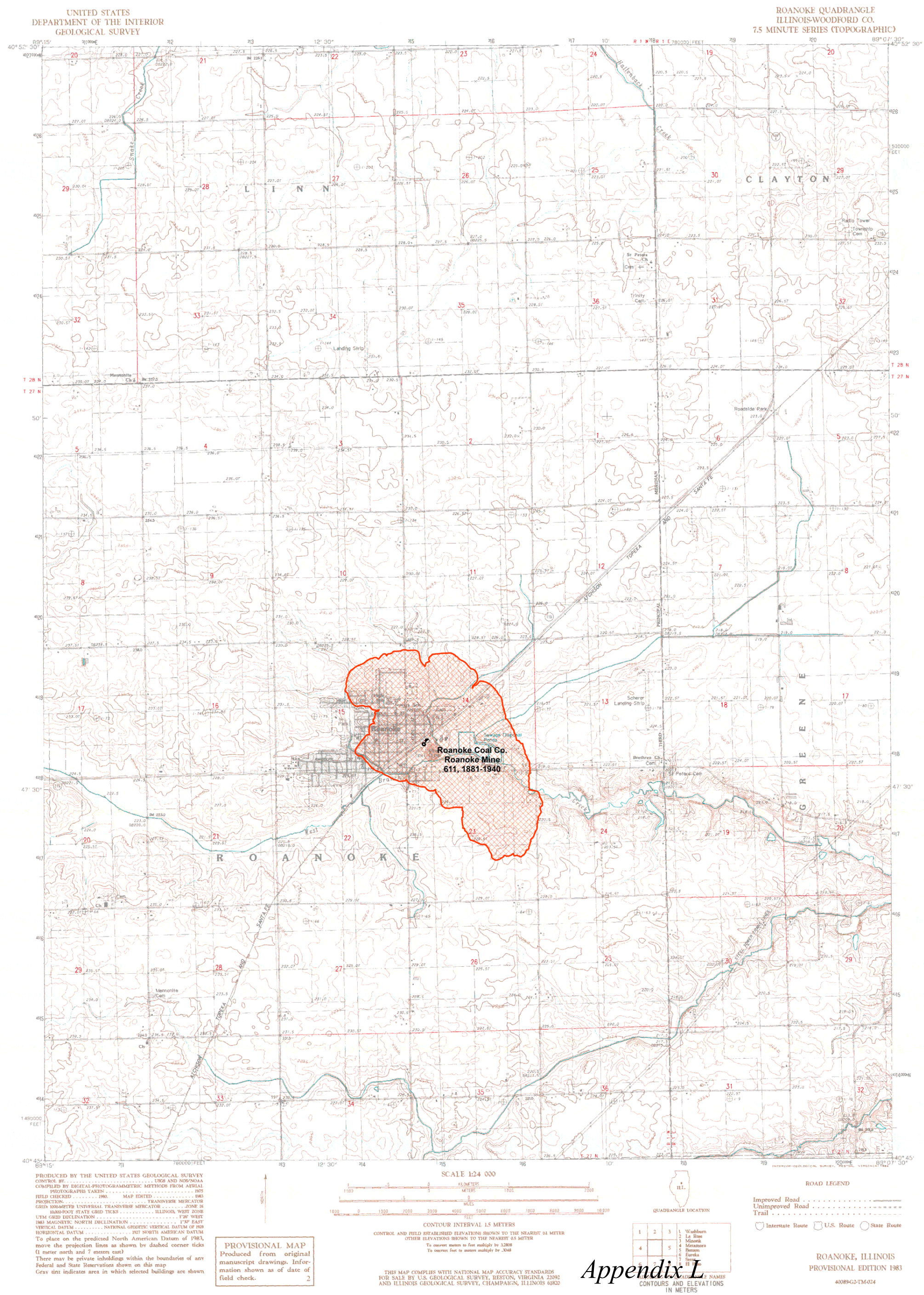
Mine Outlines Compiled by
Jennifer M. Obrad

March 1, 2007

Coal Mines in Illinois
Roanoke Quadrangle

Woodford County, Illinois

This map accompanies the Coal Mines Directory for the Roanoke Quadrangle. Consult the directory for a complete explanation of the information shown on this map.



Appendix L

Mining Method

- Room & Pillar (RP)
- Room & Pillar Basic (RPB)
- Modified Room & Pillar (MRP)
- Room & Pillar Panel (RPP)
- Blind Room & Pillar (BRP)
- Checkerboard Room & Pillar (CRP)
- High Extraction Retreat (HER)
- Longwall (LW)
- Underground, Method Unknown
- Strip Mine
- Auger Mine
- General Area of Mining

Source of Mine Outline

- Final Mine Map
- Not Final Mine Map
- Undated Mine Map
- Incomplete Mine Map
- Secondary Source Map

Tipple, Shaft, Slope, Drift Locations

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- Strip Mine Tipple - Abandoned
- Mine Shaft - Active
- Mine Shaft - Abandoned
- Mine Slope - Active
- Mine Slope - Abandoned
- Mine Drift - Active
- Mine Drift - Abandoned
- Air Shaft
- Uncertain Location
- Uncertain Type of Opening

Location

Mine Annotation
(space permiting)
Company
Mine Name
ISGS Index No., Years of Operation

Disclaimer
Please check the Coal Section at the Illinois State Geological Survey's web site at http://www.isgs.illinois.edu for the most up-to-date version of these products.

Note that each quadrangle scale mined-out area map requires the use of the associated text directory for full explanation of map features and mine attributes. Also note that some quadrangles have multiple seams of mining and therefore more than one map may be available for a particular quadrangle. Please take care to check for multiple maps, as extensive mining may exist in the other seams.

The maps and digital files used for these studies were compiled from data obtained from a variety of public and private sources and have varying degrees of completeness and accuracy. This compilation map presents reasonable interpretation of the geology of the area and is based on available data. Locations of some mine features may be offset by 500 feet or more due to errors in the original source maps, the compilation process, digitizing, or a combination of these factors. These data are not intended for use in site-specific screening or decision-making. Use of these documents does not eliminate the need for detailed studies to fully understand the geology of a specific site. The Illinois State Geological Survey, Institute of Natural Resource Sustainability, or the University of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this data set and accept no liability for the consequences of decisions made by others on the basis of the information presented here.

These maps were designed for use at 1:24,000. Enlarging the map may reduce accuracy, as the original scale of the source maps used to compile the outlines shown varies from 1:400 to 1:150,000, and some mine locations are known only from text descriptions. See the accompanying mine directory for the original scale of the source map used for a specific mine to check accuracy of a given portion of the map. Areas with no mines shown may still be undermined; see the unlocated mines list at the back of each mine directory.

The image of the U.S.G.S. topographic base map was projected from the original UTM to Lambert Conformal Conic.

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Institute of Natural Resource Sustainability
Illinois State Geological Survey
615 E. Peabody Dr.
Champaign, IL 61820

Mine Outlines Compiled by
Alan R. Myers

November 8, 2011

APPENDIX M

Plan Maintenance Checklist

We are in the process of conducting our annual evaluation/status update for our Multi-Jurisdictional Hazard Mitigation Plan. Please review the following tasks and complete and return this checklist along with the necessary forms. If you have any questions, please let us know.

Jurisdiction: ____________________

Prepared By: ____________________

Title: ____________________ Date: ____________________

TASK 1: DAMAGE INFORMATION

Has your jurisdiction sustained any natural hazard-related damages to critical facilities and infrastructure within the last year?

☐ Yes ☐ No ☐ Don't Know

If Yes, please complete and return the attached critical facilities damages questionnaire.

TASK 2: STATUS OF EXISTING PROJECTS/ACTIVITIES

Please look over the attached Mitigation Action Tables for your jurisdiction and determine whether any of the mitigation projects/activities listed have been completed or are in progress (in the planning stages.)

Does your jurisdiction have any mitigation projects/activities in progress (in the planning stages) or completed?

☐ Yes ☐ No

If Yes, please fill out and return the attached Mitigation Action Progress Report for each project/activity that has been completed or is in progress.

Has your jurisdiction undergone any changes in priorities within the last 12 months that would impact the implementation of the listed mitigation projects/activities?

☐ Yes ☐ No

If yes, please detail the changes in priorities.

____

____

____

Plan Maintenance Checklist

TASK 3: IDENTIFICATION OF NEW PROJECTS/ACTIVITIES

Are there any new mitigation projects/activities your jurisdiction would like to see add to the Plan? (Remember, only projects included in the Plan are potentially eligible for federal mitigation projects funding.)

☐ Yes ☐ No

If yes, please complete and return the attached New Mitigation Project Form.

TASK 4: JURISDICTION EVALUATION

Have there been any significant changes in development in your jurisdiction within the last 12 months (i.e. expansion of existing businesses, siting of new businesses, new subdivision development, or expansion of existing subdivisions, demolition of businesses/residents to create green spaces, etc.)

☐ Yes ☐ No

If yes, please specify the type of development changes.

____

____

Has your jurisdiction adopted any new/updated policies, plans, regulations, or reports (i.e., comprehensive plans, building codes, zoning ordinance, etc.) that could be incorporated into this Plan?

☐ Yes ☐ No

If yes, please provide the name of the policy, plan, regulation, or report and its purpose.

____

____

Were any components of the Hazard Mitigation Plan (i.e., mitigation actions, vulnerability analyses, etc.) integrated into any new/updated policies, plans, regulations, or reports (i.e., comprehensive plans, building codes, zoning ordinance, etc.)?

☐ Yes ☐ No

If yes, please provide the name of the policy, plan, regulation, or report and what component(s) of the hazard mitigation plan were integrated.

____

____

Plan Maintenance Checklist

TASK 4: JURISDICTION EVALUATION CONTINUED…

Do any new critical facilities or infrastructure need to be added to your jurisdiction's Critical Facilities Survey?

☐ Yes ☐ No

If yes, please provide the name and address of the facility.

___

___

What are your plans for sharing information on the Plan and its annual progress with your jurisdiction and constituents (i.e., informal presentation at board/council meeting, posting update to social media or website, etc.)?

___

___

Critical Facilities Damage Questionnaire

Supplemental information about ***damages to critical infrastructure/facilities*** (i.e., government buildings, schools, communication towers and radio equipment, water & sewer treatment facilities, hospitals, medical centers, etc.) that have ***taken place*** in the participating jurisdictions and County is needed for the risk assessment/vulnerability analysis portion of the Plan. If you could take a moment and think about the critical infrastructure damages caused by past natural hazard occurrences and provide any available information in the form below, it would be greatly appreciated.

Please complete one record for each natural hazard event that damaged a critical facility. Do not combine multiple events on one record. Additional forms are located on the back of this page. Please return the completed form(s) to Andrea or Zak. Thank you!

Jurisdiction: ______________________________

Prepared By: ______________________________ Date: ______________

1.) Date of Event (month/day/year if possible)**:** ______________________

2.) Critical Facility Damaged: ______________________________

3.) Type of Hazard:

☐ thunderstorm (straight-line winds)	☐ tornado	☐ landslide
	☐ snow storm	☐ sinkhole
☐ hail	☐ ice storm	☐ mine subsidence
☐ lightning strike	☐ extreme cold	☐ earthquake
☐ heavy rain	☐ drought	☐ levee failure
☐ flood	☐ excessive heat	☐ dam failure

4.) Types of Damages: ______________________________

____

5.) Estimate of Damages: $ ______________________________

Mitigation Action Progress Report

As part of the Plan Maintenance "monitoring" phase, the implementation status of each project and activity listed in the Plan for the participating jurisdictions needs to be identified.

1) Please review the Mitigation Action Tables provided for your jurisdiction to determine whether any of the projects/activities listed have been ***"Completed"*** or are ***"In Progress"*** (in the planning stages.)
2) For each project or activity that is ***"Completed"*** or "***In Progress"***, please fill out the following Progress Report.

Jurisdiction: ______________________________

Prepared By: ______________________________

Title: ____________________ Date: ____________

Progress Report Period	From Date:	To Date:
Project/Activity Description		
Responsible Agency		

Project Status	☐ In Progress
	  ☐ Approved by Council/Board
	  ☐ Included in Capital Improvement Plan/Slated for Construction & Implementation
	  ☐ Grant Completed & Submitted
	  ☐ Letting/Contractor Selected
	  ☐ Notice to Proceed Issued
	  ☐ Construction Underway
	    ☐ Anticipated Completion Date: ____________
	  ☐ Other (please specify): ____________
	☐ Completed
	☐ Project Delayed
	☐ Project Cancelled	

SUMMARY OF PROJECT PROGRESS FOR THIS REPORT PERIOD

What was accomplished during this reporting period for this project?

Were any obstacles, problems or delays encountered?	☐ Yes	☐ No	☐ Don't Know
If Yes, please describe:			

If the project was delayed, is it still relevant?	☐ Yes	☐ No	☐ Don't Know
If Yes, should the project be changed/revised?			

Other comments:

New Hazard Mitigation Projects Form
Multi-Jurisdictional Hazard Mitigation Plan

Participating Jurisdiction ______________________________

Prepared by: ______________________________

Title ______________________________ Date: ______________

	Project Description	**Position/Organization Responsible for Implementation & Administration of the Project** *(i.e. Mayor / City Council; Public Works Director; Fire Chief / Board of Trustees)*	**Time Frame to Complete the Project** *(i.e. 1 year; 5 years; 2-5 years)*
1.			
2.			
3.			
4.			

APPENDIX N

Woodford Illinois

Resolution No.
2023/24 #023. ________

A Resolution of Woodford County adopting the
2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the Woodford County Board recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within Woodford County and

WHEREAS the Woodford County has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Woodford County from the impacts of future hazards and disasters; and

WHEREAS adoption by Woodford County demonstrates its commitment to hazard mitigation and achieving the goals outlines in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THERFORE, BE IT RESOLVED BY Woodford ILLINOIS, THAT:

The Woodford County Board adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

1 absent

ADOPTED by a vote of 14 in favor and 0 against, and 0 abstaining, this 20th day of February 2024.

CERTIFIED by ________ County Board Chairman
(NAME & TITLE)

ATTESTED by Dawn L. Kupfer County Clerk & Recorder
(NAME & TITLE)

RESOLUTION NO. 2024-1
CITY OF EL PASO, ILLINOIS

A Resolution of the City of El Paso, Woodford County, Illinois adopting the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the City of El Paso recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within the City of El Paso; and

WHEREAS the City of El Paso has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the City of El Paso from the impacts of future hazards and disasters; and

WHEREAS adoption by the City of El Paso demonstrates its commitment to hazard mitigation and achieving the goals outlined in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY CITY OF EL PASO, ILLINOIS, THAT:

The City of El Paso adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 5th day of February, 2024.

CERTIFIED by ______________________
J.W. Price, Mayor

ATTESTED by ______________________
David W. Fever, City Clerk

City of Eureka, Illinois

Resolution No. 24-02

A Resolution of City of Eureka adopting the
2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the Eureka City Council recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within City of Eureka; and

WHEREAS the City of Eureka has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in City of Eureka from the impacts of future hazards and disasters; and

WHEREAS adoption by the City of Eureka demonstrates its commitment to hazard mitigation and achieving the goals outlines in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THERFORE, BE IT RESOLVED BY CITY OF EUREKA, ILLINOIS, THAT:

The Eureka City Council adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

ADOPTED by a vote of 7 in favor and 0 against, and 0 abstaining, this 5th day of February, 2024.

CERTIFIED by ____________________
Eric Lind, Mayor

ATTESTED by Jennifer Davis
Jennifer Davis, Deputy City Clerk

Resolution No. 2024-01

A Resolution of the Village of Germantown Hills adopting the
2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the Village of Germantown Hills Board recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within Village of Germantown Hills; and

WHEREAS the Village of Germantown Hills has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Village of Germantown Hills from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Germantown Hills demonstrates its commitment to hazard mitigation and achieving the goals outlines in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THERFORE, BE IT RESOLVED BY Village of Germantown Hills, ILLINOIS, THAT:

The Village of Germantown Hills Village Board adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

PASSED AND APPROVED by the Board of Trustees, Village of Germantown Hills this 15th day of February, 2024.

Ayes: 5

Nays: 0

Absent: 1

Ann Doubet, Village Clerk

Jeff DeGroot, Village President

City of Minonk, Woodford County, Illinois

Resolution No. 2024-01

A Resolution of the City of Minonk, Woodford County adopting the
2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the City of Minonk City Council recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within the City of Minonk; and

WHEREAS the City of Minonk has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the City of Minonk from the impacts of future hazards and disasters; and

WHEREAS adoption by the City of Minonk demonstrates its commitment to hazard mitigation and achieving the goals outlines in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THERFORE, BE IT RESOLVED BY City of Minonk, ILLINOIS, THAT:

The City of Minonk City Council adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

ADOPTED by a vote of 6 in favor and ∅ against, and ∅ abstaining, this 5th day of February, 2024.

CERTIFIED by John Marcoline
John Marcoline, Mayor

ATTESTED by Leta Janssen
Leta Janssen, City Clerk

Village of Roanoke, Illinois

Resolution No. 2024-01

A Resolution of Village of Roanoke adopting the
2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan

WHEREAS the Village of Roanoke recognizes the threat that natural and man-made hazards, including severe thunderstorms, severe winter storms, floods, and tornadoes among others, pose to people and property within the Village of Roanoke; and

WHEREAS the Village of Roanoke has prepared a multi-hazard mitigation plan, hereby known as the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Village of Roanoke from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Roanoke demonstrates its commitment to hazard mitigation and achieving the goals outlines in the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

NOW THERFORE, BE IT RESOLVED BY THE VILLAGE OF ROANOKE, ILLINOIS, THAT:

The Village of Roanoke adopts the 2023 Woodford County Multi-Jurisdictional Multi-Hazard Mitigation Plan and agrees to participate in the annual maintenance and evaluation of the Plan.

ADOPTED by a vote of 4 in favor and Ø against, and Ø abstaining, this 4th day of March, 2024.

CERTIFIED by *Michael J Smith* Michael J. Smith, Village President

ATTESTED by *Jennifer Crumrine* Jennifer Crumrine, Village Clerk