Knox County Multi-Jurisdictional All Hazards Mitigation Plan Update

Knox County, Illinois

Participants:

Knox County
Abingdon, City of
Altona, Village of
Altona Oneida & Wataga Ambulance Service
Carl Sandburg College
Galesburg, City of
Henderson Fire Protection District
Knox College
Knoxville, City of
Maquon, Village of
OSF St. Mary Medical Center
Rio Fire Protection District
Wataga, Village of
Yates City, Village of

February 2023

The five year update of this Plan must be completed on or before March 22, 2028.

KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

KNOX COUNTY, ILLINOIS

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Researched and written for the Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee
by American Environmental Corporation

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 Knox County. Since 1974, Knox County has been included in seven major federal disaster declarations. **Figure I-1** identifies each declaration including the year the disaster was declared and the type of natural hazard that triggered the declaration. The natural hazard(s) recognized as contributing to the declaration for Knox County is identified in bold.

Figure I-1
Federal Disaster Declarations: Knox County

Declaration #	Year	Natural Hazard(s) Covered by Declaration
438	1974	severe storms; ***flooding***
997	1993	severe storms; ***flooding***
1729	2007	***severe storms***; flooding
1960	2011	***severe winter storm; snowstorm***
4116	2013	severe storms; straight-line winds; ***flooding***
4461	2019	severe storms; ***flooding***
4489	2020	***COVID-19 pandemic***

In the last 10 years alone (2012 – 2021), there have been 92 heavy rain events, 54 thunderstorms with damaging winds, 38 extreme cold events, 29 severe winter storms, 29 riverine flood events, 27 flash flood events, 26 excessive heat events, 23 severe storms with hail one inch in diameter or greater, 4 tornadoes, 2 verified lightning strikes with damages, and 2 droughts 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 an all hazards mitigation plan.

Why update an all hazards mitigation plan?

By updating and adopting an all hazards 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?

An all hazards 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 first time that Knox County has updated its hazard mitigation plan since the original plan was prepared in 2011. 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 all hazards mitigation plan, the Knox County Board authorized the update of the Knox County Multi-Jurisdictional All Hazards Mitigation Plan (hereto referred to as the Plan). The County then invited all the local government entities within Knox County to participate. **Figure I-2** identifies the participating jurisdictions represented in the Plan update who sought Plan approval.

Figure I-2
Participating Jurisdictions Represented in the Plan

- Abingdon, City of
- Altona, Village of
- Altona Oneida & Wataga (AO&W) Ambulance Service
- Carl Sandburg College
- Galesburg, City of
- Henderson Fire Protection District
- Knox County
- Knox College
- Knoxville, City of
- Maquon, Village of
- OSF St. Mary Medical Center
- Rio Fire Protection District
- Wataga, Village of
- Yates City, Village of

While a small portion of London Mills in located in Knox County, the Village will be participating in the Fulton County Hazard Mitigation Plan, which is scheduled to be updated in 2023. Therefore, London Mill's risk and/or vulnerability is not discussed in this Plan.

1.2 COUNTY PROFILE

Knox County is located in west-central Illinois and covers approximately 720 square miles. **Figure I-3** provides a location map of the County and the participating municipalities while **Figures I-4** identifies the boundaries of the census tracts located in the County. **Figures I-5, I-6, I-7,** and **I-8** identify the boundaries of the colleges, fire protection districts and the ambulance service.

The County is bounded to the north by Henry County, to the east by Stark and Peoria Counties, to the south by Fulton County, and to the west by Warren and Mercer Counties. The City of Galesburg is the county seat. The topography is gently rolling with stream terraces adjacent to the broad floodplains along the major streams and rivers.

Figure I-3
Location Map



Figure I-4
Knox County 2010 Census Tract Map

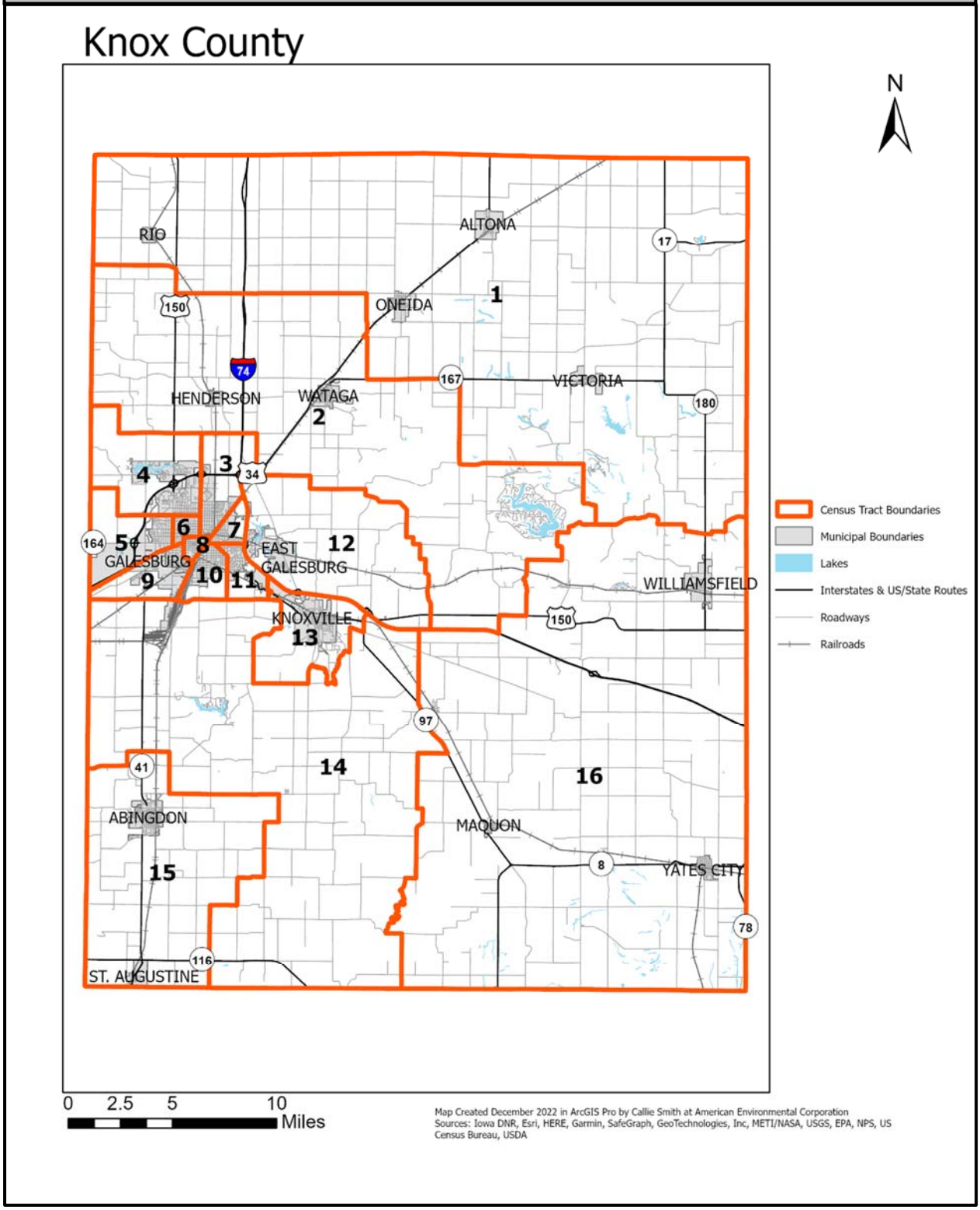


Figure I-5
Carl Sandburg College Campus Boundary Map

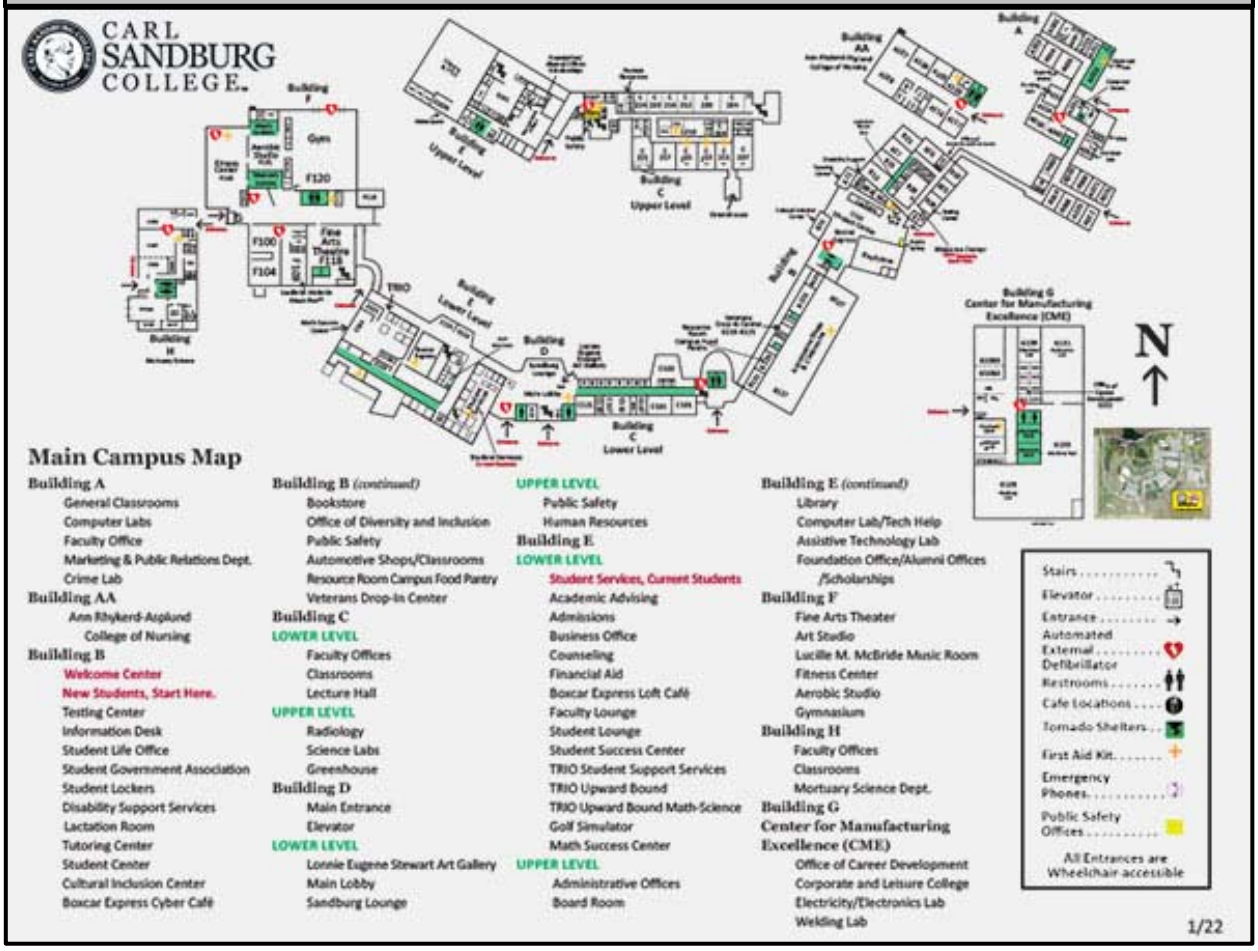
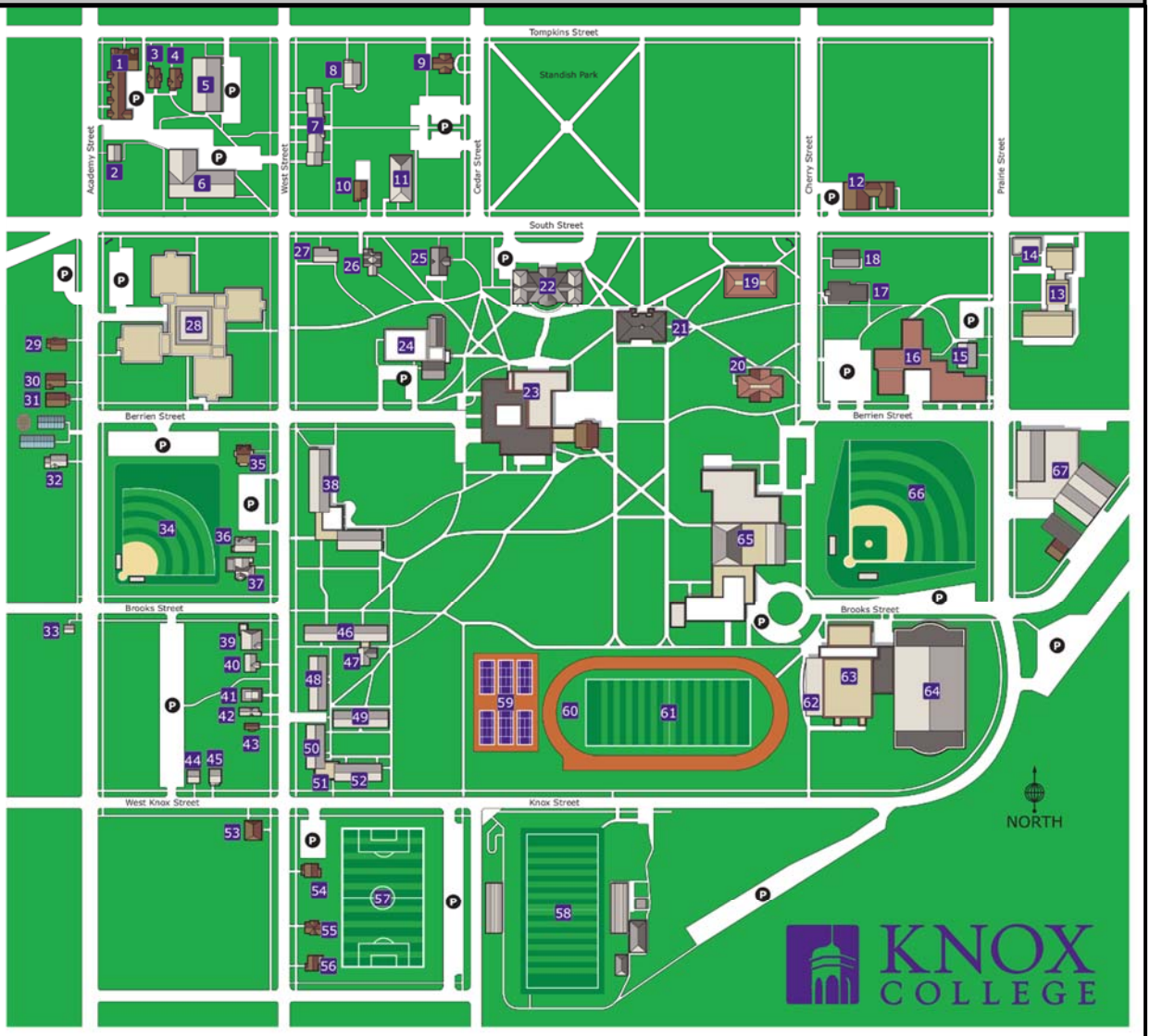


Figure I-6
Knox College Campus Boundary Map



Academic & Administrative Facilities
Administrative Services Center 15
Alumni Hall 22
Admission, Alumni Engagement, Career Center
Auxiliary Gymnasium 20
Borzello Hall 12
Center for Teaching and Learning 36
Communications Office 14
George Davis Hall 19
Ford Center for the Fine Arts 65
Health & Counseling Center 51
Heating Plant 16
HOPE Center 18
Old Jail 17
Old Main 21
Lyman K. Seymour Union 23
Henry M. Seymour Library 24
Sustainability Cottage 47
Umbeck Science-Mathematics Center 28
Advancement, Registrar
Warehouse 67
Whitcomb Art Center 13
Howard Wilson House 27

Prairie Fire Athletics Facilities
E. & L. Andrew Fitness Center 62
Blodgett Field (baseball) 66
T. Fleming Fieldhouse 64
Knosher Bowl, Stisser Field (football) 58
Memorial Gym 63
Merdian Tennis Courts 59
Whitcomb Soccer Facility, Prats Field (soccer) 57
Softball Field 34
Trevor Field 61
Turner Track 60

Residences, Fraternities, Sororities, and Cultural Centers
A.B.L.E. Center for Black Culture 8
Alpha Sigma Alpha House 29
Asian Cultural Center 56
Beta Theta Pi House 25
Campbell-Elder Halls 50
Casa Latina 54
Conger-Neal Halls 48
Delta Delta Delta House 30
Furrow Hall 51
Griffith-Drew-Longden-Simonds Halls 46
Hamblin Hall 6
Harambee House 44
Human Rights Center 32
International House 35
Jazz House 4
Kappa Kappa Gamma House 33
Peterson House 37
Phi Gamma Delta House 9
Pi Beta Phi House 31
Post Hall 38
Q & A House 45
Raub-Sellew Halls 49
Sherwin-Neifert Halls 52
Sigma Chi House 53
Sigma Nu House 42
Tau Kappa Epsilon House 26
Williston Hall 11
265 S. Academy 2
161 W. South 10
240 W. Tompkins 5
270 W. Tompkins 3
284 W. Tompkins 1
251 S. West-Townhouses 7
516 S. West 39
530 S. West 40
542 S. West 41
560 S. West 43
675 S. West 55

9/20

Figure I-7
Fire Protection District Boundary Map

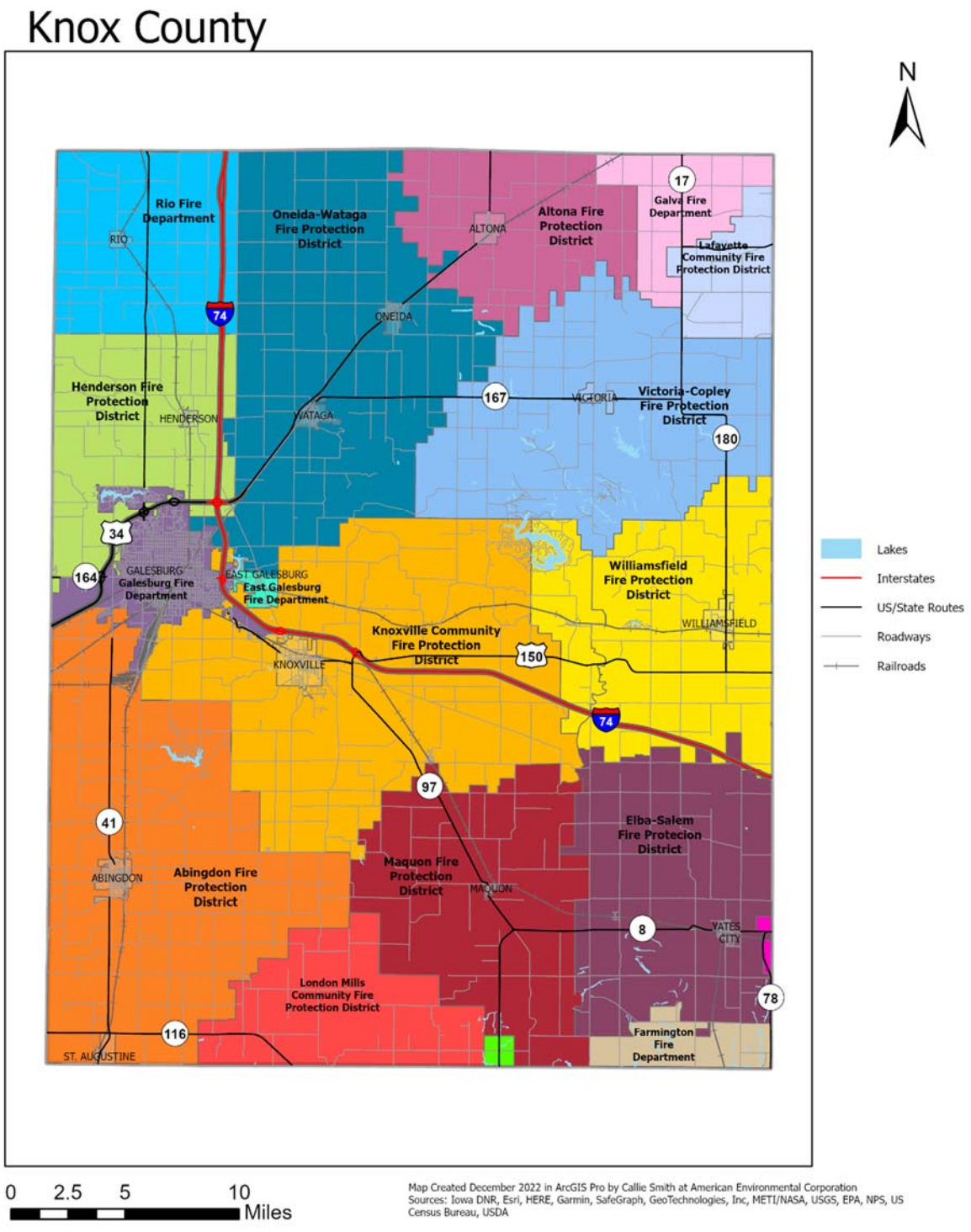
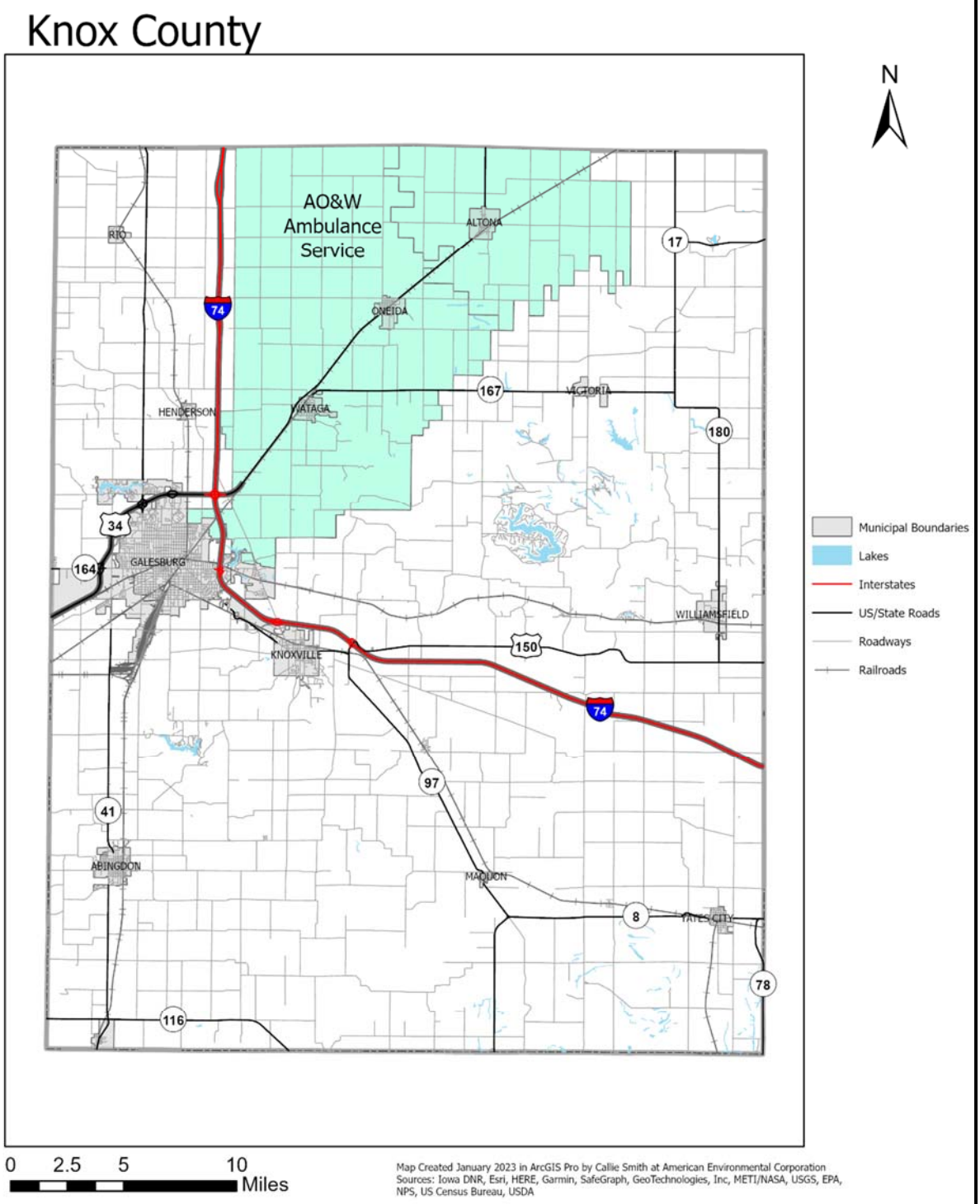


Figure I-8
AO&W Ambulance Service Boundary Map



The County is situated in the western portion of the Galesburg Plain in the Till Plains Section of the Central Lowland Province. Most areas are well-drained for crops grown in this area. The Spoon River watershed encompasses a majority of the County with the Mississippi River Valley watershed encompassing the northwestern corner.

Agriculture is a major enterprise of Knox County's economy. According to the 2017 Census of Agriculture, there were 853 farms in Knox County occupying approximately 90.3% (414,123 acres) of the total land area in the County. In comparison, there were 856 farms occupying 75.4% (347,597 acres) of the total land area in the County in 2012. The major crops include corn and soybeans while the major livestock includes hogs and cattle. The County ranks 15th in the State for crop cash receipts and 16th for livestock cash receipts.

The largest employment sectors in Knox County are health care/social assistance and retail trade followed by manufacturing and educational services according to the Illinois Department of Commerce and Economic Opportunity. Leading employers include BNSF Transportation & Logistics, OSF Healthcare, Community School District #205, Blick Art Materials, and Knox College.

Figure I-9, located at the end of this section, provides demographic data on the County and each of the participating municipalities along with information on housing units and assessed values. The assessed values are for all residential structures and associated buildings (including farm homes and buildings associated with the main residence.) The assessed value of a residence in Knox County is approximately one-third of the market value.

Figure I-10, 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. 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). The SVI currently uses 2010 census tract information. In 2010, there were 16 census tracts in Knox County. Nine of the 16 census tracts in Knox County have a "Medium to High" or "High" overall SVI ranking while the County as a whole has a "Medium to High" overall SVI.

Figures I-11 and **I-12** provide basic demographic information about the size and populations served by the participating school districts and fire protection districts.

Figure I-11 Demographic Data by Participating Fire Protection Districts				
Participating District	**Number of Fire Stations**	**Estimated Population Served**	**Area Served (Sq. Miles) (2010)**	**Communities / Unincorp. Areas Served in Knox County**
Henderson Fire Protection District	1	1,150	34	Henderson
Rio Fire Protection District	1	518	36	Rio

Source: Capability Assessment Worksheets – Fire Protection Districts.

Figure I-12 Demographic Data by Participating Fire Protection				
Participating District	**Number of Ambulance Buildings**	**Estimated Population Served**	**Area Served (Sq. Miles) (2010)**	**Communities / Unincorp. Areas Served in Knox County**
AO&W Ambulance Service	1	3,000	117	Altona, Oneida, Wataga

Source: Capability Assessment Worksheets – Ambulance Services.

1.3 LAND USE AND DEVELOPMENT TRENDS

Population growth and economic development are two major factors that trigger changes in land use. Knox County is almost entirely rural with a population that has seen an increase between 1900 and 2010 from 43,612 to 52,919. Between 2010 and 2020 the population decreased by 5.4% from 52,919 to 50,052. During that same time period, Galesburg, Maquon, and Wataga experienced population decreases while Abingdon, Altona, Knoxville, and Yates City, increased slightly.

Land use in Knox County is primarily agricultural. As discussed in the previous section, approximately 89.9% of the land within the County is used for farming practices. Agriculture is and will continue to be a major enterprise within the County and a mainstay of the County's economy.

According to the Ken Springer, President of the Knox County Area Partnership for Economic Development, most of the development in the County over the past decade has been in-fill development or the re-use of older buildings. Almost all of the available industrial and warehouse buildings in the area have been purchased and repurposed over the past few years.

Steve Gugliotta, Director of Community Development for the City of Galesburg, reports that the former Maytag factory buildings at Monmouth Boulevard and South Linwood Road have either been demolished or renovated and mostly occupied by other businesses. A new Veterans Administration Clinic is going into the former Bergner's location at the former Sandburg Mall. These developments suggest that a company seeking to expand or relocate in Knox County would need to develop on greenfield sites.

In terms of future development, several renewable energy projects are on the horizon. Knox County has permitted 12 solar projects (11 community-scale and one utility-scale project) and one 150 megawatt wind farm. A solar farm is scheduled to be built on about 350 acres along South

Seminary Street in Galesburg. About 14 acres of this facility will be in the City and the remainder in the County. To date, none of these projects have been constructed; however, with the demand for green electrical energy some of these projects may be constructed by early 2025. There are no other large-scale land development initiatives underway in the County. Substantial changes in land use, such as from forested and agricultural land to residential, are not anticipated within the County in the immediate future.

Figure I-9
2016-2020 Demographic Data by Participating Jurisdiction

Participating Jurisdiction	Population	Projected Population (2030)	Total Area (Sq. Miles) (2020)	Number of Housing Units	Percent Race								Income			Total Assessed Value of Housing Units (2020)
					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	Economically Disadvantaged Rural Community*	
Knox County (total)	50,052	44,114	716.395	23,890	85.7%	9.1%	1.1%	6.0%	0.3%	0.0%	1.6%	2.3%	16.7%	$24,804	---	$562,190,593
Knox County (unincorporated)	7,817	6,890	687.021	4,071	97.2%	0.9%	0.1%	3.5%	0.7%	0.0%	0.3%	0.8%	9.0%	---	---	$179,819,813
Abingdon	3,570	3,146	1.458	1,608	95.7%	2.3%	0.0%	4.6%	0.0%	0.0%	0.8%	1.1%	19.7%	$20,530	No	$26,901,130
Altona	634	559	0.997	265	94.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.8%	$27,144	Yes	$4,726,720
Galesburg	30,405	26,798	17.750	14,632	78.9%	13.9%	1.7%	7.7%	0.3%	0.0%	2.5%	2.8%	19.8%	$22,497	No	$255,933,920
Knoxville	3,137	2,765	2.321	1,174	97.2%	0.1%	0.3%	3.1%	0.0%	0.0%	0.0%	2.4%	6.6%	$27,526	No	$39,774,850
Maquon	181	160	0.159	95	100%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	31.3%	$22,554	Yes	$2,172,760
Wataga	778	686	0.863	380	94.9%	1.5%	0.3%	3.2%	0.3%	0.0%	0.0%	3.1%	24.0%	$23,927	Yes	$7,925,090
Yates City	821	724	0.518	374	95.9%	0.7%	0.5%	0.2%	0.0%	0.0%	0.0%	2.9%	10.7%	$29,083	No	$9,402,390
Illinois	12,770,631	12,790,000	55,513.18	5,373,385	61.3%	14.0%	5.4%	17.1%	0.1%	0.02%	0.2%	1.9%	14.2%	$37,306	---	---
US	329,569,308	---	3,533,038	138,432,751	69.8%	12.5%	5.6%	18.0%	0.8%	0.2%	5.1%	5.1%	12.8%	$35,384	---	---

* For the purposes of FEMA's Hazard Mitigation Assistance grant programs administered by the Illinois Emergency Management Agency, an Economically Disadvantaged Rural Community 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 US per capita income based on best available data.

Sources: Knox County Assessment Office.
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-10
2016-2020 Demographic Data by Census Tract

Census Tract	Incorporated Municipalities Located in Census Tract	Population (2016-2020)	Total Area (Sq. Miles) (2010)	Number of Housing Units (2016-2020)	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	Overall SVI Ranking	Level of Vulnerability
000100 (1)	Altona, Oneida, Rio, Victoria	2,744	202.044	1,339	96.5%	3.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.5%	9.4%	0.2168	Low
000200 (2)	Henderson, Wataga	2,975	101.561	1,704	94.4%	2.1%	0.1%	6.2%	0.1%	0.0%	1.1%	2.2%	13.4%	0.2377	Low
000300 (3)	Galesburg	4,209	5.582	2,288	88.4%	7.3%	0.5%	6.8%	0.0%	0.0%	1.9%	1.9%	20.4%	0.5961	Medium-High
000400 (4)	Galesburg	4,451	12.048	2,441	92.3%	1.2%	2.0%	1.8%	0.7%	0.0%	1.8%	1.9%	10.8%	0.4619	Low-Medium
000500 (5)	Galesburg	5,611	6.662	1,780	62.5%	31.5%	1.7%	8.9%	0.5%	0.0%	1.7%	2.1%	16.4%	0.7580	High
000600 (6)	Galesburg	3,648	0.867	1,772	84.3%	5.3%	0.7%	12.2%	0.0%	0.0%	9.2%	0.6%	18.3%	0.6612	Medium-High
000700 (7)	Galesburg	1,826	1.397	945	92.1%	3.9%	0.5%	4.5%	0.0%	0.0%	0.0%	3.5%	17.0%	0.4911	Low-Medium
000800 (8)	Galesburg	2,572	0.577	1,144	72.1%	14.3%	10.3%	13.6%	0.4%	0.0%	1.3%	1.6%	33.1%	0.9036	High
000900 (9)	Galesburg	2,256	4.337	1,194	57.6%	22.6%	0.6%	20.7%	0.0%	0.0%	4.0%	15.2%	31.4%	0.8252	High
001000 (10)	Galesburg	3,851	2.672	1,919	90.1%	6.5%	0.0%	6.0%	0.0%	0.0%	0.9%	2.5%	15.4%	0.6655	Medium-High
001100 (11)	Galesburg	2,217	2.426	1,207	78.2%	21.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	31.2%	0.8624	High
001200 (12)	East Galesburg, Galesburg	1,338	25.936	691	82.8%	16.3%	0.1%	1.1%	0.0%	0.0%	0.0%	0.8%	11.1%	0.4330	Low-Medium
001300 (13)	Galesburg, Knoxville	3,759	9.709	1,466	97.0%	0.7%	0.3%	2.6%	0.0%	0.0%	0.0%	2.0%	12.7%	0.5544	Medium-High
001400 (14)	---	1,559	114.104	829	97.1%	0.0%	0.2%	2.3%	0.0%	0.0%	0.0%	2.7%	6.0%	0.0273	Low
001500 (15)	Abingdon, St. Augustine	3,997	42.738	1,790	96.2%	2.1%	0.0%	4.5%	0.0%	0.0%	0.7%	1.1%	18.1%	0.6803	Medium-High
001600 (16)	Maquon, Williamsfield, Yates City	3,039	187.151	1,381	94.7%	2.5%	0.1%	0.6%	1.8%	0.0%	0.0%	0.9%	12.7%	0.3707	Low-Medium
Knox County	---	50,052	719.811	23,890	85.7%	9.1%	1.1%	6.0%	0.3%	0.0%	1.6%	2.3%	16.7%	0.6423	Medium-High

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

2.0 PLANNING PROCESS

The Knox County Multi-Jurisdictional All Hazards Mitigation Plan (the Plan) was updated through the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee (Planning 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: Organize the Committee	The Planning Committee was formed with broad representation and specific expertise to assist the County and the Consultant in updating the Plan.
Task Two: Public Involvement	Early and ongoing public involvement activities were conducted throughout the Plan's development to ensure the public was given every opportunity to participate and provide input.
Task Three: Coordination	Agencies and organizations were contacted to identify plans and activities currently being implemented that impact or might potentially impact hazard mitigation activities.
Task Four: Risk Assessment & Vulnerability Analyses	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 Five: Goal Setting	After reviewing existing plans and completing the risk assessment, the Consultant assisted the Planning Committee in updating the goals and objectives for the Plan.
Task Six: Mitigation Strategy & Activities	The participating jurisdictions were asked to identify mitigation actions that had been started and/or completed since the original Plan was adopted. In addition, they were also 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 Seven: Draft Plan	The draft Plan update summarized the results of Tasks One through Six. In addition, it described the responsibilities to monitor, evaluate and update the Plan. The draft Plan update 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 (IEMA) and FEMA for review and approval.
Task Eight: Finalize Plan & Adoption	Comments received from IEMA 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 will be reviewed periodically and updated again in five years.

The Plan update and development was led at the staff level by Randy Hovind, the Galesburg/Knox County Emergency Management Agency (EMA) Coordinator. American Environmental Corp. (AEC) an environmental consulting firm, with experience in hazard mitigation, risk assessment and public involvement, was employed to guide 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 development of the Plan update. 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 Planning 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.
- Submit a list of 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 PLANNING COMMITTEE

As previously mentioned, at the start of the planning process, the Knox County Multi-Jurisdictional All Mitigation Planning Committee was formed to update the hazard mitigation plan. The Planning Committee included representatives from each participating jurisdiction, as well as business, education, emergency services healthcare, and utilities.

Figure PP-2 details the entities represented on the Planning Committee and the individuals who attended on their behalf. The Planning Committee was chaired by the Galesburg/Knox County EMA.

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.

Mission Statement

Over the course of the first two meetings, the Planning Committee developed a mission statement that described their objectives for the Plan update.

"The mission of the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee is to develop a mitigation plan that:

1) documents the risks associated with the natural and man-made hazards that impact the County and

2) identifies projects and activities to reduce the negative impacts these hazards have on structures, critical facilities, infrastructure systems, residents, and the economy as well as community lifelines that enable continuous operation of critical government and business functions."

Figure PP-2
Knox County Planning Committee Member Attendance Record

Representing	Name	Title	10/21/2021	3/3/2022	6/30/2022	10/13/2022	1/26/2023
Abingdon, City of	Swearingen, Ed	Mayor			X	X	
Altona Oneida & Wataga (AO&W) Ambulance Service	Keener, Sally	Director	X		X		
Altona, Village of	Appell, Derrick	President		X			X
American Environmental Corporation	Bostwick-Campbell, Andrea	EMS Manager	X	X	X	X	
American Environmental Corporation	Krug, Zachary	Environmental Specialist	X				
American Environmental Corporation	Runkle, Ken	Risk Assessor / Env. Toxicologist		X	X	X	X
American Environmental Corporation	Smith, Callie	Environmental Analyst				X	X
Carl Sandburg College	Canfield, Kip	Director of Public Safety	X	X			
Carl Sandburg College	Gall, Cory	Associate Vice President of Administrative Services			X		
Carl Sandburg College Public Safety	Trulson, Gabriel	Chief Safety Officer					X
Galesburg / Knox County EMA	Hovind, Randy	Director	X	X	X	X	X
Galesburg Area Chamber of Commerce	Gaither, Pam	Executive Director	X			X	
Galesburg Area Chamber of Commerce	Heartlein, Karrie	Chairwoman		X			
Galesburg Hospitals' Ambulance Service	Springer, Richard	EMS System Coordinator	X	X	X	X	
Galesburg Sanitary District	Templeton, Stephanie	Administrative Assistant				X	
Galesburg, City of	Bennewitz, Kelli	City Clerk / PIO	X	X	X	X	
Galesburg, City of	Carl, Wayne	Public Works Director		X	X	X	X
Galesburg, City of	Cueno, Jim	GIS Analyst	X	X	X	X	X
Galesburg, City of	Hovind, Randy	Fire Chief	X	X	X	X	X
Galesburg, City of	Moser, Jenni	Secretary		X	X		
Galesburg, City of	Oligney-Estill, Tony	Director of Parks and Recreation	X	X			
Galesburg, City of	Schmitt, Brock	Fire Captain		X	X	X	
Galesburg, City of	Schwartzman, Peter	Mayor	X	X	X	X	X
Galesburg, City of	Seitz, John	Deputy Fire Chief		X		X	
Henderson Fire Protection District	Bledsoe, Brayden	Firefighter				X	X
Henderson Fire Protection District	Lenz, Rodney	Firefighter		X	X	X	X
Knox College	Kemp, Nathan	Director of Campus Safety			X		
Knox College	Robinson, Dan	Associate Director, Campus Safety		X	X	X	X
Knox County - Board	Amor, David	Board Member	X				
Knox County - Board	Hawkinson, Jared	Board Chairman		X			
Knox County - Board	Krejci, Darla	Board Member		X			
Knox County - Clerk's Office	Erickson, Scott	County Clerk & Recorder	X	X	X		
Knox County - GIS	Lotz, Bill	GIS Coordinator	X	X	X		
Knox County - Health Department	Dixon, Mandy	Emergency Response Coordinator	X	X		X	
Knox County - Health Department	Gabriel, Michele	Administrator		X	X		X
Knox County - Highway Department	Ratermann, Duane	Highway Engineer	X	X			
Knox County Area Partnership for Economic Development	Colvin, Abby	Director of Communication & Development	X				
Knox County Area Partnership for Economic Development	Springer, Ken	President	X		X	X	
Knoxville, City of	Myers, Toby	Mayor		X			
Maquon, Village of	Thomas, Mark	President		X		X	X
Oneida-Wataga Fire Protection District	O'Connor, John	Assistant Chief					X
OSF St. Mary Medical Center	Pilger, Mindy	Emergency Preparedness Coordinator	X	X			
OSF St. Mary Medical Center	Whedbee, Barb	EMS Coordinator			X	X	X
Rio Fire Protection District	LaGrow, Colton	Firefighter			X		
ROE #33	Scott, Jodi	Regional Superintendent	X	X		X	
Victoria-Copley Fire Protection District	Petentler, Jason	Fire Chief	X	X	X	X	
Wataga, Village of	Barnes, Ty	Village Clerk		X		X	
Williamsfield, Village of	Johnson, Robert	Mayor					X
Yates City, Village of	Benson, Randy	Police Chief			X		

Planning Committee Meetings

The Planning Committee met five times between October 2021 and January 2023. **Figure PP-2** identifies the representatives 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 Planning Committee Meeting – October 21, 2021

The purpose of this meeting was to explain the planning process to the Planning Committee members and give them a brief overview of the planning process including what mitigation is, what a hazards mitigation plan is and why the Plan needs to be updated. A discussion regarding the hazards to be included in the Plan update was conducted and an electronic survey was sent out following the meeting asking Committee members whether mine subsidence and dam failures should be included in the Plan. Based on the responses received, the Committee chose to include both hazards in the update.

Information needed from each participant was discussed and representatives for the 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 or man-made hazard events that have impacted the County and participants. A "Hazard Events Questionnaire" was distributed electronically following the meeting to solicit information on hazard events. Community participation was also discussed. The County and participating jurisdictions were asked to make information available on the planning process at their offices and in the 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 the County. Finally, drafts of a mission statement and updated mitigation goals were presented for review.

Due to the continuation of the COVID-19 pandemic the first meeting of Planning Committee was conducted as a virtual and via teleconference to ensure the safety of all participants.

Second Planning Committee Meeting – March 3, 2022

At the second Planning Committee meeting portions of the updated natural and man-made hazard risk assessment section were presented for review. Following the review of the risk assessment, the Planning Committee members participated in an exercise to calculate the Risk Priority Index (RPI) for the County and participating jurisdictions. The RPI can assist participants in determining which hazards present the highest risks and therefore which ones to focus on when formulating mitigation projects and activities. The Planning Committee then reviewed and discussed the draft mission statement and updated mitigation goals and finalized both with no changes.

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 original Plan was completed in 2011. Ideas for new potential mitigation projects and activities were presented. Representatives for the 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.

Due to the continuation of the COVID-19 pandemic the second meeting of Planning Committee was conducted as a hybrid meeting, allowing both in-person and virtual/teleconference participation.

Third Planning Committee Meeting – June 30, 2022

The purpose of the third Planning Committee meeting was to discuss the vulnerability analysis for select natural hazards and the preliminary results of the RPI exercise. The Planning Committee members then discussed vulnerable community assets and completed the form entitled "Critical Facilities Vulnerability Survey" which will be used in the vulnerability analyses.

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.

Next, an explanation of what a mitigation action prioritization methodology is and how it fits into the Mitigation Strategy was provided. The Planning Committee reviewed the updated mitigation project prioritization methodology and approved it with no changes. Finally, a discussion on how the mitigation projects and activities identified by the participating jurisdictions will be presented in the Plan update was provided. Participants were encouraged to provide their mitigation project lists prior to the 4th meeting when draft lists will be distributed for review.

Due to an increase in regional COVID-19 numbers, the third meeting of Planning Committee was conducted as a hybrid meeting, allowing both in-person and virtual/teleconference participation.

Fourth Planning Committee Meeting – October 13, 2022

At the fourth Planning Committee meeting, Committee members 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 sections outlining the mitigation strategy, plan maintenance and adoption were also reviewed.

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 participating jurisdictions and key members of the Planning Committee. The Plan must be reviewed, revised, and resubmitted to IEMA and FEMA at least once every five years.

The fourth meeting of Planning Committee was conducted as a hybrid meeting, allowing both in-person and virtual/teleconference participation.

Fifth Planning Committee Meeting – January 26, 2023
At this Planning Committee meeting the public was provided an opportunity to ask questions and provide comments on the draft Plan update.

The Public Forum was conducted as a hybrid meeting, allowing both in-person and virtual/teleconference participation.

2.2 PUBLIC INVOLVEMENT

To engage the public in the planning process, a comprehensive public involvement strategy was developed. The strategy was structured to engage the public 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 and man-made 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 Knox County. The questionnaire was distributed electronically to the Planning Committee members who were encouraged to make it available to their residents. A copy of the questionnaire and social media posts related to the questionnaire are contained in **Appendix C**.

A total of 13 questionnaires were completed and returned to the Planning Committee. Questionnaires were completed by residents in each participating jurisdiction, with the exception of Abingdon, Maquon, and Wataga. 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 and severe winter storms were the most frequently encountered natural hazard in Knox County. These results are consistent with the weather records compiled for the County and as described in this Plan.
- The most effective means of communication identified by respondents to disseminate information about natural hazards was the Internet, followed by social media and

television. Mailings, radio, and information disseminated via municipal and county government also received support among respondents.

- In terms of the most needed mitigation projects and activities, the following five categories received the strongest support:
  - maintain power during storms by burying power lines, trimming trees and/or purchasing backup generators (92%);
  - retrofit critical infrastructure (69%);
  - identify residents with special needs in order to provide assistance during a hazard event (62%);
  - maintain roadway passages during snowstorms and heavy rains (54%); and
  - flood or drainage protection (54%).

FAQ Fact Sheet

A "Frequently Asked Questions" fact sheet was disseminated to help explain what an all hazards mitigation plan is and briefly described the planning process. The fact sheet was made available at the participating jurisdictions. A copy of the fact sheet is contained in **Appendix D**.

Press Releases

Press releases were prepared and submitted to local media outlets and posted to the Galesburg/Knox County EMA's Facebook page prior to each Planning Committee meeting. The releases announced the purpose of the meetings and how the public could become involved in the Plan's development. **Appendix E** contains a list of the media outlets that received the news releases while copies of the releases, Facebook posts and any news articles published can be found in **Appendix F**.

Planning Committee Meetings

All of the meetings conducted by the Planning 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 Planning Committee.

Public Forum

The final meeting of the Planning Committee, held on January 26, 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 the public forum, the draft Plan update was made available for review and comment on the Galesburg 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 draft Plan update were also posted on the website.

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

Public Comment Period

After the public forum, the draft Plan update was made available for public review and comment through February 9, 2023 at the Knox County Clerk's Office and on the City 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 draft Plan update 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 Planning Committee.

Results of Public Involvement

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 the County. This information included details about lightning strikes, severe winter storms, flooding, and tornadoes not available from state and federal databases.
- *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 45 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.

Business Community

Representatives from those segments of the business community who had the most interest in natural hazard mitigation were invited to serve on the Planning Committee. The Galesburg Area Chamber of Commerce's Executive Director and the Knox County Partnership for Economic Development's President served as technical partners on the Planning Committee and provided input into the planning process.

Education

Representatives from the Regional Office of Education #33, Carl Sandburg College, and Knox College served on the Planning Committee and provided input into the planning process. Carl Sandburg College and Knox College chose to be included as participating jurisdiction in the Plan update.

Healthcare
Input was sought from the healthcare community. Representatives from OSF St. Mary Medical Center attended the Planning Committee meetings, provided input into the planning process, and chose to be included as a participating jurisdiction in the Plan update.

Not-for-Profit & Other Organizations
The fire departments/fire protection districts, ambulance services, Galesburg Sanitary District, American Red Cross, and United Way of Knox County were contacted and invited to participate in the Plan update. Representatives from the Galesburg Sanitary District, AO&W Ambulance Service, Galesburg Hospitals' Ambulance Service, Henderson Fire Protection District (FPD), Rio FPD and the Victoria-Copley FPD served on the Planning Committee. AO&W Ambulance Service, Henderson Fire Protection District (FPD), and Rio FPD chose to be included as participating jurisdictions in the Plan update.

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, Henry, Stark, Mercer, Peoria and Warren counties. **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 via email to each of the participating jurisdictions following the first Planning Committee meeting on October 21, 2021. 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-14** summarize the results of the Capability Assessment by participating jurisdiction type (i.e., county/municipalities, colleges, fire protection districts, 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-15** 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:

- Only the County, Galesburg and Knoxville have comprehensive/land use plans in place.
- While the County and all participating municipalities, with the exception of Altona and Yates City, have zoning ordinances in place, only Abingdon, Galesburg, and Knoxville have building codes.
- Only the County and Galesburg have a continuity of operations plan in place.

Knox County, Galesburg, Knoxville, Carl Sandburg College, Knox College, Henderson FPD, Rio FPD, OA&W Ambulance Service, and OSF St. Mary Medical Center fortunate to have the resources and abilities to potentially expand on and improve the existing policies and programs identified. A majority of the participating municipalities have 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, especially with regards to building codes, hamper these participants' abilities to expand and strengthen existing policies and programs.

This is due to a general resistance from many residents towards these types of regulations, which has resulted in an unwillingness by local officials to implement such policies. Their fiscal and staffing situations are also extremely limited, bordering on inadequate in most cases. These local government officials are part-time and lack the technical expertise and funds to expand or implement new programs and policies.

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.

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

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

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	County/Municipality							
	Knox County	Abingdon	Altona	Galesburg	Knoxville	Maquon	Wataga	Yates City
Adminstrative & Technical								
Zoning Board	X	X		X	X	X	X	
Public Utility Board								
Planning Commission				X	X			
Mutual Aid Agreements				X	X	X	X	X
Administrator/Manager				X				
Building Inspector/Officer		X		X	X			
Community/Economic Development Planner	X			X				
Emergency Manager	X			X				
Engineer/Construction Project Manager				X	X		X	
GIS Coordinator	X			X			X	
Grant Administrator/Writer								
Fire Chief - Municipalities Only				X				
Floodplain Administrator				X				
Police Chief - Municipalities Only		X		X	X	X		X
Public Works/Streets Director - Municipalities Only		X	X	X	X		X	X
Water Superintendent - Municipalities Only		X	X	X	X		X	X
Zoning Officer/Administrator	X	X		X		X		
Solid Waste Director - County Only	X							
Level of Capability	**L/M**	**L**	**L**	**H**	**M**	**L**	**L**	**L**

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	County/Municipality							
	Knox County	Abingdon	Altona	Galesburg	Knoxville	Maquon	Wataga	Yates City
Financial								
Roadway/Bridge Improvement Plan - County Only	X							
Capital Improvements Program				X	X			X
Tax Levies for Special Purposes		X	X	X	X	X	X	X
Motor Fuel Tax	X	X	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								
Federal Funding Programs (Non-FEMA)	X	X	X	X	X	X		
Level of Capability	**L/M**	**L/M**	**M**	**H**	**M/H**	**M**	**L**	**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	X	X			
Seasonal Outreach			X	X				
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs Populations)				X				
Public-Private Partnership Initiatives Addressing Disaster-Related Issues				X				
Level of Capability	**L**	**L**	**L**	**M**	**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
Colleges – Planning & Regulatory / Administrative & Technical Capabilities

Capability Type	College	
	Carl Sandburg College	Knox College
Plans & Policies		
Strategic/Tactical Plan	X	X
Campus Facilities Master Plan	X	
Housing Master Plan		X
Historic Preservation Plan		X
Emergency/Crisis Response Plan	X	X
Continuity of Operations Plan	X	
National Incident Management System (NIMS) Adoption	X	X
Level of Capability	**M**	**M**
Adminstrative & Technical		
Governing Board	X	X
Mutual Aid Agreements		X
President/Chancellor	X	X
Provost/Dean	X	X
Chief Financial Officer/Finance Director	X	X
Emergency Management Coordinator		
Facilities Manager	X	X
Food Services Supervisor		X
Grant Writer	X	
Student Health Supervisor		X
IT Director/Specialist	X	X
Maintenance Manager	X	X
Communications Director	X	X
Operations Manager	X	
Safety & Security Director	X	X
Level of Capability	**M**	**H**

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure PP-7
Colleges – Financial / Education & Outreach Capabilities

Capability Type	College	
	Carl Sandburg College	Knox College
Financial		
Capital Improvements Program	X	X
State Appropriations	X	
Tax Levies for Special Purposes	X	
General Obligation Bonds and/or Special Tax Bonds	X	
Endowments/Bequests	X	X
Non-Operating Grants and Contracts	X	X
Level of Capability	**H**	**M**
Education & Outreach		
StormReady Certification		
Natural Disaster/Safety-Related Campus Programs		
Ongoing Campus Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use, Environmental Education, etc.)		X
Seasonal Outreach		X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues		X
Level of Capability	**L**	**M**

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

Figure PP-8
Fire Protection Districts – Planning & Regulatory Capabilities

Capability Type	FPD	
	Henderson FPD	Rio FPD
Plans, Policies, Codes, Ordinances, Resolutions & Technical Documents		
Standard Operating Procedures/Guidelines for Structural Fire Fighting (NFPA 1700)		X
Standard Operating Procedures for Operations at Technical Search & Rescue Incidents (NFPA 1670)		X
Pre-Incident Planning (NFPA 1620)		X
Fire Prevention Codes		
Burn Ordinance	X	X
National Incident Management System (NIMS) Adoption		X
Incident Command System (ICS) Adoption		X
Building Inspections		
Tier II Reports		X
County Emergency Operations Plan		X
Safety Data Sheets		X
Pipeline Maps		X
Hazardous Materials Facilities Maps		X
Water Supply Systems Maps		X
Impassable Roads & Bridges Maps		X
Evacuation Zones Maps		X
Community & Special Residential Areas Maps (i.e., manufactured home parks, subdivisions, recreational communities)		X
Level of Capability	**L**	**H**

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

Figure PP-9
Fire Protection Districts –
Administrative & Technical Capabilities

Capability Type	FPD	
	Henderson FPD	Rio FPD
Adminstrative & Technical		
Board of Trustees	X	X
Board of Fire Commissioners	X	X
Mutual Aid Box Alarm System (MABAS)	X	X
Mutual Aid Agreements		X
Hazardous Materials Response Team		
Water Rescue/Dive Team		
Technical Rescue Team		
Fire Chief	X	X
Deputy Fire Chief	X	X
Administrative Assistant		X
Financial/Business Manager		X
Inspector		
Public Education Director/Officer		
Telecom Director		
Training Coordinator		X
Level of Capability	**L**	**M**

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

Figure PP-10
Fire Protection Districts –
Financial / Education & Outreach Capabilities

Capability Type	FPD	
	Henderson FPD	Rio FPD
Financial		
Capital Improvements Program		
Tax Levies for Special Purposes	X	X
General Obligation Bonds and/or Special Tax Bonds	X	X
Federal Funding Programs (Non-FEMA)		
Level of Capability	**M**	**M**
Education & Outreach		
Natural Disaster/Safety-Related School Programs		
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)		X
Seasonal Outreach		X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues		
Level of Capability	**L**	**M**

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

Figure PP-11
Ambulance Services – Planning & Regulatory / Administrative & Technical Capabilities

Capability Type	Ambulance
	Altona Oneida & Wataga
Plans, Policies, Codes, Ordinances & Resolutions	
Regional EMS System Prehospital Protocols & Policies	X
Emergency/Crisis Response Plan	
Continuity of Operations Plan	
National Incident Management System (NIMS) Adoption	X
Level of Capability	**L**
Administrative & Technical	
Governing Body	X
Prehospital Advisory Board	
Mutual Aid Agreements	X
EMS Director/Administrator	X
Assistant EMS Director	
Office Manager	
Maintenance Director	
Emergency Medical Responder (EMR)	X
Emergency Medical Technician - Basic (EMT-B)	X
Emergency Medical Technician - Intermediate (EMT-I)	
Emergency Medical Technician - Paramedic (EMT-P)	
Prehospital RN (PHRN)	
Level of Capability	**M**

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.

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

Figure PP-12
Ambulance Services – Financial / Education & Outreach Capabilities

Capability Type	Ambulance Altona Oneida & Wataga
Financial	
Capital Improvements Program	X
Tax Levies for Special Purposes	X
General Obligation Bonds and/or Special Tax Bonds	
Federal Funding Programs (Non-FEMA)	
Level of Capability	**M**
Education & Outreach	
Natural Disaster/Safety-Related School Programs	
Ongoing Public Education or Information Programs (CPF, household preparedness, fire safety, etc.)	X
Seasonal Outreach	X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	
Level of Capability	**M**

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

Figure PP-13
Healthcare Facilities – Planning & Regulatory / Administrative & Technical Capabilities

Capability Type	Healthcare
	OSF SMMC
Plans, Policies, Codes, Ordinances & Resolutions	
Continuity of Operations Plan	X
Strategic Plan	
Facilities Plan	X
Emergency Preparedness Plan	X
Medical Disaster Preparedness & Response Plan	X
Community Health Needs Assessment (CHNA)	X
Severe Weather Plan	X
National Incident Management System (NIMS) Adoption	X
Level of Capability	**H**
Administrative & Technical	
Board of Directors	X
Patient Advisory Board	
Mutual Aid Agreements	X
Chief Executive Officer	X
Chief Medical Officer	X
Chief Financial Officer	X
Chief Development Officer	
Chief Nursing Officer	X
Communications Director	X
EMS Director	X
ER Director	X
Grant Writer	X
IT Director/GIS Specialist	X
Maintenance Manager	X
Rehab & Long-Term Care Director	X
Safety Officer	X
Level of Capability	**H**

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure PP-14
Healthcare Facilities – Financial / Education & Outreach Capabilities

Capability Type	Healthcare
	OSF SMMC
Financial	
Capital Improvements Program	X
Tax Levies for Special Purposes	
General Obligation Bonds and/or Special Tax Bonds	
Federal Funding Programs (Non-FEMA)	X
Level of Capability	**M**
Education & Outreach	
StormReady Certification	
Natural Disaster/Safety-Related School Programs	
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	
Seasonal Outreach	
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs Populations)	
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	
Level of Capability	**L**

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

Figure PP-15
Capability Rankings by Participating Jurisdiction

Capability Type	County/Municipalities								Colleges		FPDs		Ambulance	Health
	Knox County	Abingdon	Altona	Galesburg	Knoxville	Maquon	Wataga	Yates City	Carl Sandburg College	Knox College	Henderson FPD	Rio FPD	Altona Oneida & Wataga	OSF SMMC
Planning & Regulatory	M	L	L	H	M	L	L	L	M	M	M	M	L	H
Administrative & Technical	L/M	L	L	H	M	L	L	L	M	H	M	L	M	H
Financial	L/M	L/M	M	H	M/H	M	L	M	H	M	L	H	M	M
Education & Outreach	L	L	L	M	L	L	L	L	L	M	H	M	M	L
Overall Capability	**L/M**	**L**	**L**	**H**	**M**	**L**	**L**	**L**	**M**	**M**	**M**	**M**	**L/M**	**M/H**

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

3.0 RISK ASSESSMENT

Risk assessment is the process of evaluating the vulnerability of people, buildings, and infrastructure in order to estimate the potential loss of life, personal injury, economic injury, and property damage resulting from natural and man-made hazards. This section summarizes the results of the risk assessment conducted on the natural and man-made hazards in Knox 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 (i.e., residential buildings, critical facilities, and infrastructure), and estimates the potential impacts each natural hazard would have on the health and safety of the residents as well as buildings, critical facilities and infrastructure. 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 Planning Committee was to review the natural and man-made hazards detailed in the original Plan and decide if additional hazards should be included in the Plan update. Over the course of the first two meetings, the Planning Committee members discussed their experiences with natural and man-made hazard events and reviewed information on various hazards. After discussing the information provided and completing an online survey, the Planning Committee chose to add land/mine subsidence and dam failures to this Plan update.

The following identifies the hazards included in the Plan update:

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

The Planning Committee chose not to include the following hazards in the Plan: levee failures and landslides. According to the U.S. Army Corps of Engineers' National Levee Database, there are no public or private levees located in Knox County. A review of the USGS Landslide Inventory did not identify any landslide events within the County. The Illinois State Geological Survey's (ISGS) *Landslide Inventory of Illinois* only contains two instances of landslides in Knox County prior to 1984. Both events were unclassified man-induced landslides that occurred near St. Augustine along Illinois Route 41 and Illinois Route 116. Discussions with the Planning Committee did not reveal any recent occurrences of landslides. Based on the information provided, the Committee did not consider these hazards warranted inclusion in the Plan update.

Risk Priority Index

After reviewing the preliminary results of the risk assessment at the second meeting, Planning 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 Planning 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. RPI scores were not generated for Yates City.

Figure R-3 provides a side-by-side comparison of how the hazards ranked between the RPI exercise conducted for the original Plan in 2011 and the exercise conducted for the Plan update for each of the original participants. RPIs were not generated in 2011 for any of the special districts. The top hazards for the County in 2011 were transportation hazardous materials incidents, followed by tornadoes and fixed facility hazardous materials incidents. In 2022, the top hazards were thunderstorms with damaging winds, followed by severe winter storms and tornadoes.

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, lightning, riverine flooding, strong wind, tornado, and winter weather. The NRI leverages available source data for natural hazard and community risk facts, 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 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. 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-4** located at the end of this section, presents the overall NRI scores and ratings for each census tract as well as for the County and State as a whole. The NRI currently uses 2010 census tract information. In 2010, there were 16 census tracts in Knox County. All of the census tracts have Risk Index and Social Vulnerability ratings of "Relatively Low" or "Relatively Moderate" with the exception of four tracts (000300, 000400, 000800, and 001000) which all have a "Relatively High" Social Vulnerability rating.

Figure R-5, 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 rating include severe storms, extreme cold, excessive heat, and tornadoes.

Critical Facilities & Infrastructure

Critical facilities and infrastructure are structures, institutions, and systems 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 completed a questionnaire identifying the critical facilities and infrastructure located within their jurisdiction, both publicly and privately-owned. **Figure R-6**, 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.

While considered a "local government entity" for planning purposes, Carl Sandburg College, Knox College, Henderson Fire Protection District (FPD), Rio FPD, Altona Oneida & Wataga (AO&W) Ambulance Service, and OSF St. Mary Medical Center (OSF SMMC) do not have an extensive inventory of assets in which to consider when conducting the risk assessment.

Since Carl Sandburg College, Knox College, AO&W Ambulance Service, and OSF SMMC are located within a participating municipality and are a subset of these municipalities' critical facilities, their risk is considered to be the same or similar to the risk experienced by the municipalities for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.). For those hazards where the risk to the colleges and medical center varies from the risk facing the municipalities, a separate narrative assessment will be provided under the appropriate hazard's vulnerability subsection.

The critical facilities for Henderson FPD and Rio FPD are located in non-participating municipalities. Their risk is considered to be the same or similar to the risk experienced by the participating municipalities and the County for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.) For those hazards where the risk to FPD critical facilities varies from the risk facing the planning area (i.e., the County), a separate narrative assessment will be provided under the appropriate hazard's vulnerability subsection.

Critical Facilities Vulnerability Survey

The participating jurisdictions were also asked to complete a Critical Facilities Vulnerability Survey at the third meeting to assist in the preparation of an overall summary of each jurisdiction's vulnerability to the studied hazards. The Survey asked participants to describe their jurisdiction's greatest vulnerability. This information is summarized under the appropriate hazard's vulnerability subsection.

Figure R-1
Risk Priority Index Scoring System

Category	Factors	Point Value
Hazard Frequency	An event is anticipated to occur within the next year. Based on previous history, at least one event is expected to occur in any given year.	4
	An event is likely to occur in the next 1 to 3 years. Based on previous history, an event has at least a 33% chance of occurring in any given year.	3
	An event is possible in the next 3 to 10 years. Based on previous history, an event has a 10% to 33% chance of occurring in any given year.	2
	An event is unlikely to occur within the next 10 years. These events occur infrequently and based on previous history have a less than 10% chance of occurring in any given year.	1
Impacts on Life & Health	Fatalities are expected to occur during the event.	4
	While fatalities are unlikely, injuries, some requiring hospitalization, may occur during the event.	3
	Minor injuries not requiring hospitalization may occur during the event.	2
	Injuries or fatalities are unlikely to occur during the event.	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 multiple infrastructure and critical facilities (i.e., road & school closures, loss of power to drinking water/wastewater treatment facilities, municipal buildings, etc.) is anticipated for an extended period of time (i.e., a day or more).	4
	- Property damage is expected to occur including superficial damage to infrastructure and critical facilities. AND/OR - Loss of access/operations at multiple infrastructure and critical facilities is anticipated for a period of time (i.e., a day or less).	3
	- Some minor property damage is anticipated (i.e., shingles & siding torn off homes, windows broken, etc.) but no 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).	2
	Property damage is likely to be negligible and no loss of access/operations is anticipated at any infrastructure/critical facilities during the event.	1

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 1 of 2)

Hazard	Hazard Ranking by Participating Jurisdiction						
	Knox County	Abingdon	Altona	Galesburg	Knoxville	Maquon	Wataga
Dam Failures	14	n/a	n/a	13	n/a	n/a	n/a
Drought	12	9/10/11	12/13/14	11/12	5/6/7/8	12/13/14	9/10/11/12
Earthquakes	15/16	12/13/14	11	15	14	12/13/14	15
Excessive Heat	13	4/5	**1/2/3**	8	9/10/11/12	11	9/10/11/12
Extreme Cold	8	4/5	**1/2/3**	5	9/10/11/12	8/9/10	9/10/11/12
Floods	4/5	12/13/14	5/6	6/7	9/10/11/12	8/9/10	13
Hail	6	6/7/8	7/8/9	10	**1/2**	8/9/10	9/10/11/12
HazMat Incidents: Transportation	9	9/10/11	7/8/9	6/7	4	6/7	3/4/5/6/7
HazMat Incidents: Fixed Facility	10	9/10/11	12/13/14	9	13	6/7	8
Heavy Rain	4/5	6/7/8	10	4	5/6/7/8	5	**1/2**
Lightning	7	6/7/8	5/6	11/12	9/10/11/12	2/3	3/4/5/6/7
Mine Subsidence	15/16	n/a	n/a	n/a	15	n/a	14
Terrorism	11	12/13/14	12/13/14	14	5/6/7/8	12/13/14	3/4/5/6/7
Thunderstorms w/ Damaging Winds	**1**	**1**	4	2/3	**1/2**	2/3	3/4/5/6/7
Tornadoes	3	2/3	**1/2/3**	2/3	5/6/7/8	**1**	3/4/5/6/7
Winter Storms	2	2/3	7/8/9	**1**	3	4	**1/2**

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 2 of 2)

Hazard	Hazard Ranking by Participating Jurisdiction					
	Carl Sandburg College	Knox College	Henderson FPD	Rio FPD	AO&W Ambulance Service	OSF SMMC
Dam Failures	n/a	n/a	15/16	n/a	n/a	n/a
Drought	12/13/14	13/14	13/14	4/5/6/7/8/9/10	9/10/11	7/8/9/10
Earthquakes	12/13/14	13/14	12	14/15	12/13/14/15	14
Excessive Heat	2/3/4/5/6/7/8/9/10	9/10/11	9/10/11	4/5/6/7/8/9/10	3/4/5/6/7/8	4/5/6
Extreme Cold	2/3/4/5/6/7/8/9/10	7/8	4/5/6/7/8	4/5/6/7/8/9/10	3/4/5/6/7/8	4/5/6
Floods	2/3/4/5/6/7/8/9/10	9/10/11	9/10/11	**1/2/3**	12/13/14/15	7/8/9/10
Hail	2/3/4/5/6/7/8/9/10	12	4/5/6/7/8	11/12/13	12/13/14/15	11/12/13
HazMat Incidents: Transportation	12/13/14	4/5/6	4/5/6/7/8	**1/2/3**	3/4/5/6/7/8	7/8/9/10
HazMat Incidents: Fixed Facility	2/3/4/5/6/7/8/9/10	4/5/6	13/14	4/5/6/7/8/9/10	3/4/5/6/7/8	7/8/9/10
Heavy Rain	2/3/4/5/6/7/8/9/10	9/10/11	4/5/6/7/8	11/12/13	9/10/11	11/12/13
Lightning	**1**	7/8	2/3	11/12/13	3/4/5/6/7/8	4/5/6
Mine Subsidence	12/13/14	n/a	9/10/11	14/15	12/13/14/15	n/a
Terrorism	11	**1/2/3**	15/16	4/5/6/7/8/9/10	9/10/11	**1**
Thunderstorms w/ Damaging Winds	2/3/4/5/6/7/8/9/10	**1/2/3**	**1**	4/5/6/7/8/9/10	**1/2**	11/12/13
Tornadoes	2/3/4/5/6/7/8/9/10	**1/2/3**	2/3	**1/2/3**	3/4/5/6/7/8	2/3
Winter Storms	2/3/4/5/6/7/8/9/10	4/5/6	4/5/6/7/8	4/5/6/7/8/9/10	**1/2**	2/3

Figure R-3
Comparison of 2011 & 2022 Risk Priority Index Hazard Rankings by Participating Jurisdiction

Hazard	Hazard Ranking by Participating Jurisdiction													
	Knox County		Abingdon		Altona		Galesburg		Knoxville		Maquon		Wataga	
	2011	2022	2011	2022	2011	2022	2011	2022	2011	2022	2011	2022	2011	2022
Dam Failures	n/a	14	n/a	15/16	n/a	15/16	n/a	13	n/a	15/16	n/a	15/16	n/a	16
Drought	n/a	12	n/a	9/10/11	n/a	12/13/14	n/a	11/12	n/a	5/6/7/8	n/a	12/13/14	n/a	9/10/11/12
Earthquakes	7	15/16	n/a	12/13/14	n/a	11	n/a	15	n/a	14	n/a	12/13/14	n/a	15
Excessive Heat	n/a	13	n/a	4/5	n/a	**1/2/3**	n/a	8	n/a	9/10/11/12	n/a	11	n/a	9/10/11/12
Extreme Cold	4	8	3	4/5	2	**1/2/3**	4	5	4	9/10/11/12	4	8/9/10	4	9/10/11/12
Floods	6	4/5	6	12/13/14	6	5/6	6	6/7	6	9/10/11/12	6	8/9/10	6	13
Hail	5	6	4	6/7/8	3	7/8/9	5	10	3	**1/2**	5	8/9/10	5	9/10/11/12
HazMat Incidents: Transportation	**1**	9	2	9/10/11	**1**	7/8/9	**1**	6/7	**1**	4	**1**	6/7	**1**	3/4/5/6/7
HazMat Incidents: Fixed Facility	3	10	5	9/10/11	5	12/13/14	3	9	5	13	3	6/7	3	8
Heavy Rain	n/a	4/5	n/a	6/7/8	n/a	10	n/a	4	n/a	5/6/7/8	n/a	5	n/a	**1/2**
Lightning	5	7	4	6/7/8	3	5/6	5	11/12	3	9/10/11/12	5	2/3	5	3/4/5/6/7
Mine Subsidence	n/a	15/16	n/a	15/16	n/a	15/16	n/a	16	n/a	15/16	n/a	15/16	n/a	14
Terrorism	n/a	11	n/a	12/13/14	n/a	12/13/14	n/a	14	n/a	5/6/7/8	n/a	12/13/14	n/a	3/4/5/6/7
Thunderstorms w/ Damaging Winds	5	**1**	4	**1**	3	4	5	2/3	3	**1/2**	5	2/3	5	3/4/5/6/7
Tornadoes	2	3	**1**	2/3	4	**1/2/3**	2	2/3	2	5/6/7/8	2	**1**	2	3/4/5/6/7
Severe Winter Storms	4	2	3	2/3	2	7/8/9	4	**1**	4	3	4	4	4	**1/2**

Figure R-4
National Risk Index Overall Scores/Ratings by Census Tract

Census Tract No.	Incorporated Municiplity Located in Census Tract	Risk Index Score	Risk Index Rating	Social Vulnerability Score	Social Vulnerability Rating	Community Resilience Score	Community Resilience Rating
000100 (1)	Alton, Oneida, Rio, Victoria	18.32	Relatively Moderate	29.89	Relatively Low	*	*
000200 (2)	Henderson, Wataga	18.16	Relatively Moderate	31.07	Relatively Low	*	*
000300 (3)	Galesburg	22.40	Relatively Moderate	36.68	Relatively High	*	*
000400 (4)	Galesburg	23.06	Relatively Moderate	37.08	Relatively High	*	*
000500 (5)	Galesburg	19.09	Relatively Moderate	30.01	Relatively Low	*	*
000600 (6)	Galesburg	19.06	Relatively Moderate	33.82	Relatively Moderate	*	*
000700 (7)	Galesburg	14.31	Relatively Low	32.32	Relatively Moderate	*	*
000800 (8)	Galesburg	20.75	Relatively Moderate	38.41	Relatively High	*	*
000900 (9)	Galesburg	17.29	Relatively Low	34.49	Relatively Moderate	*	*
001000 (10)	Galesburg	19.18	Relatively Moderate	35.30	Relatively High	*	*
001100 (11)	Galesburg	15.40	Relatively Low	33.34	Relatively Moderate	*	*
001200 (12)	East Galesburg, Galesburg	13.33	Relatively Low	30.13	Relatively Low	*	*
001300 (13)	Galesburg, Knoxville	18.98	Relatively Moderate	34.01	Relatively Moderate	*	*
001400 (14)	---	15.77	Relatively Low	30.54	Relatively Low	*	*
001500 (15)	Abingdon, St. Augustine	19.57	Relatively Moderate	34.24	Relatively Moderate	*	*
001600 (16)	Maquon, Williamsfield, Yates City	19.07	Relatively Moderate	30.41	Relatively Low	*	*
Knox County	---	13.22	Relatively Low	44.03	Relatively Moderate	57.24	Relatively High
Illinois	---	9.87	---	35.15	---	56.70	---
National	---	10.60	---	38.35	---	54.59	---

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

Figure R-5
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			
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Stong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating
000100 (1)	Alton, Oneida, Rio, Victoria	24.52	RH	18.78	RL	45.15	VH	20.60	RM	10.34	RM
000200 (2)	Henderson, Wataga	25.19	RH	19.31	RL	45.25	VH	23.21	RM	10.44	RM
000300 (3)	Galesburg	29.05	RH	27.18	RM	56.51	VH	28.78	RH	13.64	RM
000400 (4)	Galesburg	31.94	RH	28.33	RH	59.78	VH	31.32	RH	14.22	RM
000500 (5)	Galesburg	23.67	RH	24.43	RM	48.86	VH	23.79	RM	12.00	RM
000600 (6)	Galesburg	25.87	RH	24.02	RM	49.67	VH	25.62	RM	11.94	RM
000700 (7)	Galesburg	18.41	RM	18.76	RL	38.07	RH	18.54	RM	9.35	RL
000800 (8)	Galesburg	29.16	RH	24.66	RM	53.03	VH	28.56	RH	12.48	RM
000900 (9)	Galesburg	23.68	RH	21.02	RM	44.30	VH	23.27	RM	10.54	RM
001000 (10)	Galesburg	24.52	RH	25.44	RM	51.13	VH	24.75	RM	12.59	RM
001100 (11)	Galesburg	19.48	RM	20.13	RM	40.64	RH	19.64	RM	10.01	RL
001200 (12)	East Galesburg, Galesburg	17.18	RM	15.61	RL	33.53	RH	16.51	RM	8.05	RL
001300 (13)	Galesburg, Knoxville	25.47	RH	23.68	RM	49.60	VH	25.19	RM	11.97	RM
001400 (14)	---	21.35	RH	16.84	RL	38.21	RH	19.58	RM	8.79	RL
001500 (15)	Abingdon, St. Augustine	25.54	RH	25.30	RM	49.65	VH	28.47	RH	12.31	RM
001600 (16)	Maquon, Williamsfield, Yates City	24.14	RH	20.38	RM	44.95	VH	22.83	RM	10.60	RM
Knox County	---	22.64	RM	14.94	RL	26.41	RH	20.67	RM	14.05	RL

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

Figure R-5
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		Riverine Floods		Tornadoes		Drought		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
000100 (1)	Alton, Oneida, Rio, Victoria	26.95	RH	28.00	RH	11.01	RL	34.70	RM	7.98	RL	5.52	VL
000200 (2)	Henderson, Wataga	23.88	RH	26.41	RH	10.25	RL	37.88	RH	6.05	RL	6.80	VL
000300 (3)	Galesburg	27.66	RH	33.39	RH	16.92	RM	48.08	RH	2.68	VL	9.78	RL
000400 (4)	Galesburg	28.72	RH	34.55	RH	7.16	RL	51.51	VH	3.33	RL	10.12	RL
000500 (5)	Galesburg	24.60	RH	29.71	RH	14.42	RM	40.74	RH	2.24	VL	7.30	VL
000600 (6)	Galesburg	23.98	RH	29.09	RH	4.83	RL	42.55	RH	0.00	NR	9.89	RL
000700 (7)	Galesburg	19.12	RM	23.14	RM	1.73	VL	31.77	RM	1.34	VL	6.45	VL
000800 (8)	Galesburg	24.65	RH	29.92	RH	7.84	RL	46.39	RH	0.00	NR	11.68	RL
000900 (9)	Galesburg	21.17	RH	25.56	RM	9.44	RL	38.24	RH	2.07	VL	7.89	VL
001000 (10)	Galesburg	25.77	RH	31.20	RH	0.00	NR	42.56	RH	1.72	VL	8.62	RL
001100 (11)	Galesburg	20.53	RH	24.82	RM	6.94	RL	33.79	RM	1.71	VL	7.44	VL
001200 (12)	East Galesburg, Galesburg	17.42	RM	20.20	RM	9.64	RL	27.82	RM	3.55	RL	4.85	VL
001300 (13)	Galesburg, Knoxville	24.38	RH	29.36	RH	6.42	RL	42.12	RH	2.73	VL	8.04	VL
001400 (14)	---	22.27	RH	23.36	RM	10.35	RL	30.40	RM	6.37	RL	5.57	VL
001500 (15)	Abingdon, St. Augustine	26.58	RH	30.91	RH	10.48	RL	41.53	RH	5.22	RL	7.73	VL
001600 (16)	Maquon, Williamsfield, Yates City	26.60	RH	28.24	RH	16.54	RM	35.28	RM	7.53	RL	6.67	VL
Knox County	---	40.64	RH	16.69	RM	9.26	RL	24.94	RM	8.78	RL	3.43	VL

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

Figure R-6
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
Knox County	2	5	4	---	1	1	4	25	41	---	19
Abingdon	3	2	4	3	1	3	1	3	3	---	2
Altona	3	2	---	---	2	2	1	1	3	---	1
Galesburg	6	9	17	9	6	24	4	10	9	---	1
Knoxville	4	2	4	4	3	2	1	1	5	---	0
Maquon	2	2	---	---	2	1	1	---	2	---	1
Wataga	3	2	---	---	3	1	1	1	4	---	1
Yates City	2	2	---	---	2	2	1	---	2	---	1
Carl Sandburg College	---	2	---	3	---	---	---	---	---	---	1
Knox College	---	---	---	64	---	---	---	---	---	---	---
Henderson FPD	2	1	---	---	1	---	1	---	3	---	1
Rio FPD	2	1	---	---	2	---	1	---	3	---	1
AO&W Ambulance	---	3	---	---	---	---	---	---	---	---	---
OSF St. Mary Medical Center	---	---	4	---	---	---	---	---	---	---	---

[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.

Single-cell Thunderstorm

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.

Multi-cell Thunderstorm

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.

Squall Line

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		Description	Typical Damage Impacts
		millimeters (approx.)*	inches (approx.)*		
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 E 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 ***warnings*** for Knox 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, 3 and 4, located in **Appendix J,** summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Knox County. Severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning, and heavy rain. In Knox County, severe storms are the most frequently occurring natural hazard.

Thunderstorms with Damaging Winds

NOAA's Storm Events Database was used to document 174 reported occurrences of thunderstorms with damaging winds in Knox County between 1959 and 2021. Of the 174 occurrences, 126 had reported wind speeds of 50 knots or greater. There were 48 occurrences, however, where the wind speed was not recorded. Included in the 174 thunderstorms with damaging winds events are two events from August 23, 2007 that contributed to a federal disaster declaration for Knox County.

Severe Storms Fast Facts – Occurrences

Number of recorded Thunderstorms with Damaging Winds (1959 – 2021): ***174***

Number of recorded Severe Hail Events (1973 – 2021): ***60***

Number recorded of Lightning Strike Events (2011 – 2021): ***3***

Number of Heavy Rain Events (2000 – 2021): ***174***

Highest Recorded Wind Speed: ***87 knots (August 23, 2007)***

Largest Hail Recorded: ***4.5 inches (May 9, 1995)***

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

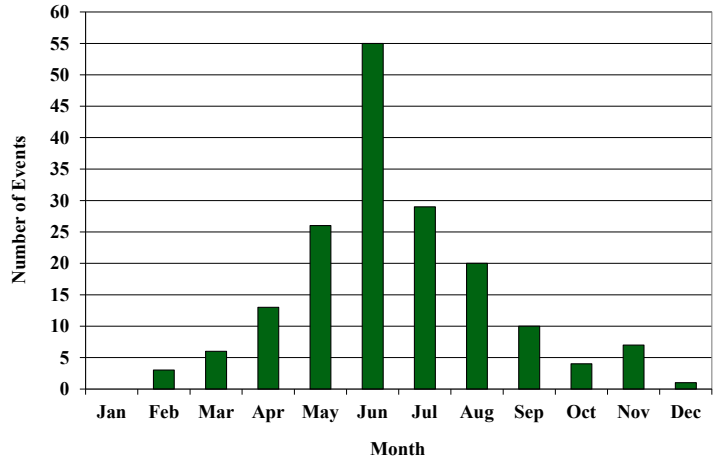
Most Likely Month for Severe Hail to Occur: ***May***

Most Likely Month for Heavy Rain to Occur: ***July***

The highest wind speed recorded in Knox County occurred in Galesburg on August 23, 2007, when winds reached 87 knots (100 mph) during a thunderstorm event. Thunderstorms with damaging winds have been *recorded* in every participating jurisdiction within the County on multiple occasions.

Of the 174 events, 110 (63%) took place in May, June, and July making this the peak period for thunderstorms with damaging winds in Knox County. Of those 110 events, 55 (50%) occurred during June, making this the peak month for thunderstorms with damaging winds. Of the 174 occurrences, 79% of all thunderstorms with damaging winds began during the p.m. hours.

Figure SS-4
Thunderstorms with Damaging Winds by Month
1959 – 2021



Hail

NOAA's Storm Events Database was used to document 60 reported occurrences of severe storms with hail one (1) inch in diameter or greater in Knox County between 1973 and 2021. Of the 60 occurrences, 26 produced hailstones 1.50 inches or larger in diameter.

The largest hail stones documented in Knox County measured 4.5 inches in diameter (softball sized) and fell on May 9, 1995, in Galesburg. Hail one (1) inch in diameter or greater has been *recorded* in every participating jurisdiction on at least one occasion, with the exception of Wataga. This does not mean that hail one inch in diameter or greater has not fallen in Wataga, it simply indicates it wasn't recorded.

Figure SS-5 charts the reported occurrences of hail by month. Of the 60 occurrences, 35 (58%) took place in April and May, making this the peak period for hail in Knox County. Of these 35 events, 21 (60%) occurred during May, making this the peak month for hail events. Of the 60 occurrences, 85% of all severe storms with damaging hail began during the p.m. hours.

Lightning

While lightning strike events occur regularly across west-central Illinois, NOAA's Storm Events Database and Committee Member records only identified three recorded occurrences of lightning strikes with verified damages in Knox County between 2011 and 2021. The data limitations are almost certainly due to the rural nature of the County.

According to data from Vaisala's National Lightning Detection Network, Knox 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
1973 – 2021

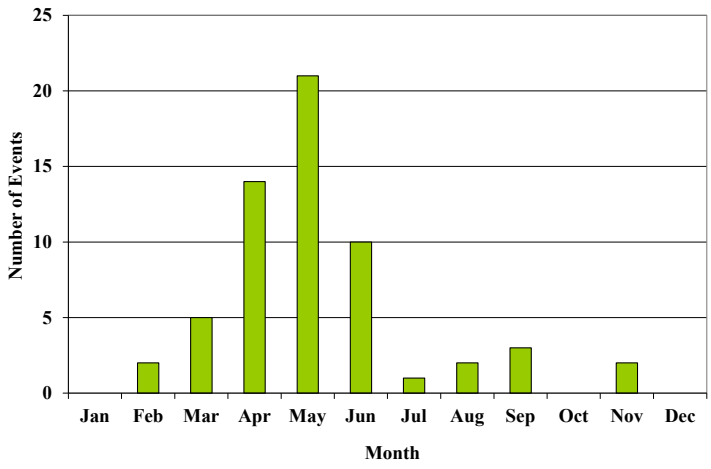
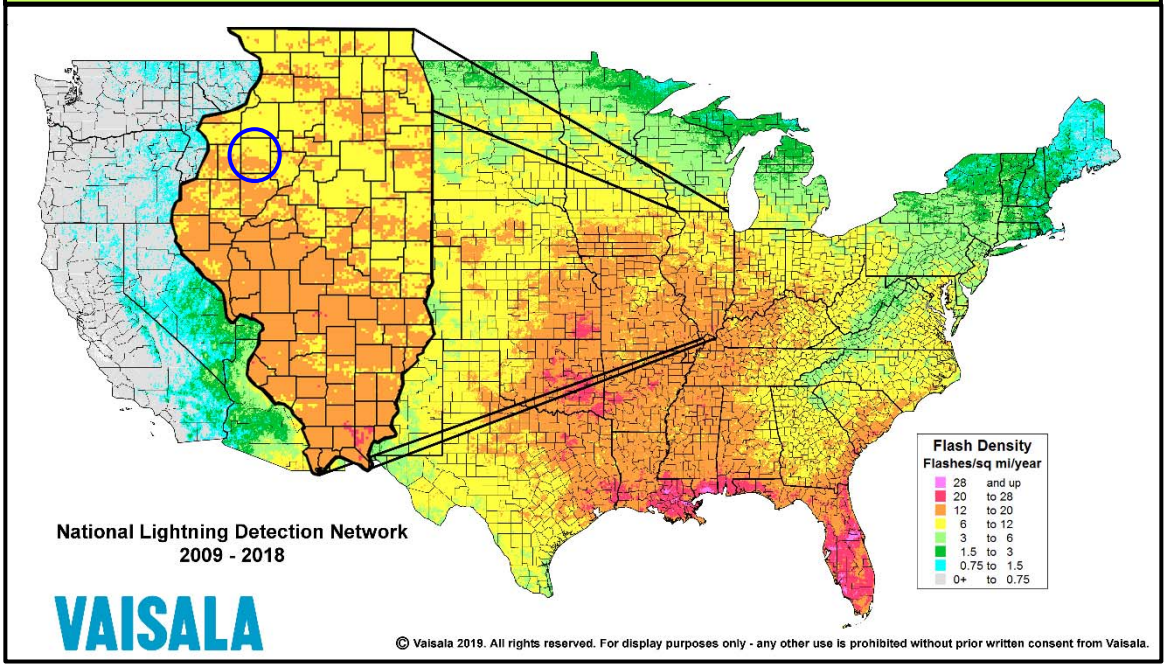


Figure SS-6
Cloud-to-Ground Lightning Flash Density: Continental U.S.

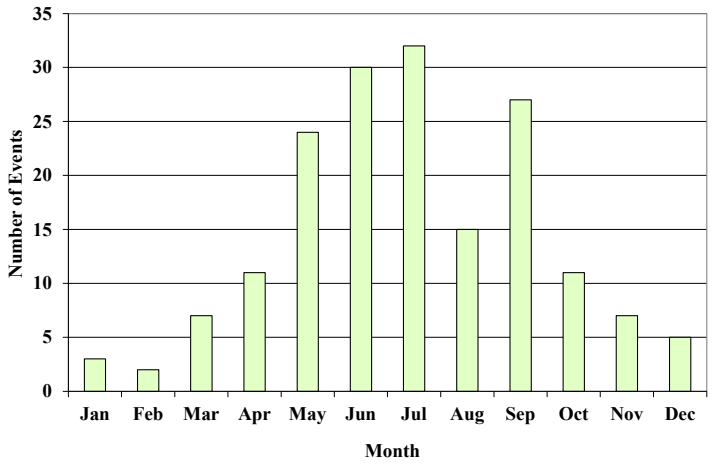


Heavy Rain

NOAA's Storm Events Database, Midwestern Regional Climate Center's cli-MATE database and National Weather Service's COOP data records were used to document 174 heavy rain events for Knox County between 2000 and 2021. Of the 174 occurrences, 26 events (15%) produced three inches or more of rain.

Figure SS-7 charts the reported occurrences of heavy rain by month. Of the 174 events, 86 (49%) took place in May, June, and July making this the peak period for heavy rain in Knox County. Of these 86 events, 32 (37%) occurred during July, making this the peak month for heavy rains. Of the 34 events with recorded times, 59% began during the p.m. hours.

Figure SS-7
Heavy Rain Events by Month
2000 - 2021



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 (IEMA) classifies Knox County's hazard rating for severe storms as "severe." (IEMA'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?

Thunderstorms with Damaging Winds

Knox County has had 174 verified occurrences of thunderstorms with damaging winds between 1959 and 2021. With 174 occurrences over the past 63 years, Knox County would expect to experience at least two thunderstorms with damaging winds in any given year. There were 23 years over the last 63 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 36.5%.

Hail

There have been 60 verified occurrences of hail one (1) inch in diameter or greater between 1973 and 2021. With 60 occurrences over the past 49 years, Knox County should expect to experience a least one severe storm with damaging hail in any given year. There were 14 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 28.6%.

Heavy Rain

Knox County has had 174 heavy rain events between 2000 and 2021. With 174 occurrences over the past 22 years, the County should expect to experience approximately eight heavy rain events each year.

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 Knox 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 2012, Knox County has recorded 92 verified heavy rain events, 54 thunderstorms with damaging winds, 23 severe storms with hail one (1) inch in diameter or greater, and two verified lightning strikes with damages.

Figure SS-8 details the number thunderstorms with damaging winds and hail events that were recorded in or near each participating municipality while **Figure SS-9** details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Knox County. The three verified lightning strike events occurred in Galesburg.

Figure SS-8
Verified Severe Storm Events by Participating Municipality

Participating Municipality	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Abingdon	26	5
Altona[3]	16	5
Galesburg [a,b,4]	93	20
Knoxville	20	6
Maquon	16	2
Wataga[3]	4	0
Yates City	11	3

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center [a] Carl Sandburg College [b] Knox College

Figure SS-9
Verified Severe Storm Events in Unincorporated Knox County

Unincorporated Area	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Dahinda	6	4
Delong	1	1
Douglas	1	3
Gilson	4	2
Oak Run	1	0
Rapatee	1	0

In terms of the number of thunderstorms with damaging winds and hail events that were recorded in each the fire protection districts, five thunderstorms with damaging wind events and two hail events occurred in the Village of Henderson in the Henderson FPD while four thunderstorms with damaging wind events and four hail events occurred in the Village of Rio in the Rio FPD.

Of the participating municipalities, Galesburg has had more recorded occurrences of thunderstorms with damaging winds and the greatest number of recorded hail events than any of the other municipalities. The difference in the number of recorded events is likely due to the relative size of the municipalities as well as the fact that there was a long-term NWS COOP Observation Station is located in the Galesburg area.

Do Any of the participating jurisdictions consider severe storms to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following respondents considered severe storms to be among their jurisdiction's greatest vulnerabilities.

Knox County:

- During severe storms, high winds have the potential to down power lines to critical facilities impacting services to residents.
- Highway and secondary roads can become blocked by fallen trees and flood waters during severe storms & heavy rain events, which can adversely affect travel for residents and responders.

Altona:

- Severe storms with high winds have downed trees and power lines impacting service to residents.

Galesburg:

- During severe storms, high winds cause power outages to critical facilities and communications, impacting services to residents.
- Heavy rains have the potential to cause flooding of the City's only drinking water well field located 32 miles away near the Mississippi River impacting service to residents.

Knoxville:

- Severe storms with high winds have downed power lines and poles, impacting critical services to residents.

Maquon:

- The Village does not have a stand-by generator for its water tower, so a loss of power due to a severe storm with high winds will affect service to residents.
- Heavy rains have the potential to cause our wastewater lagoon to overflow.

Wataga:

- Loss of power due to a severe storm would leave the drinking water treatment facility vulnerable and potentially impact service to residents.

Yates City:
- Severe storms with high winds or lightning can cause power loss at the police and fire departments impeding emergency response to residents.

Knox College:
- Hamblin Residence Hall basement is prone to flooding during heavy rain events due to insufficient storm sewer capacity. Past events have damaged supplies, personal items, and the building itself.
- The Old Main bell tower and the Heating Plant cooling towers are vulnerable to high winds from a severe storm.
- The college has limited backup power capacity and therefore the entire campus is vulnerable to power outages caused by severe storms.

Henderson FPD:
- District roads have been washed out by heavy rain events in the last year causing adverse travel and delays in emergency response times.
- A power outage caused by a severe storm could impact the water tower resulting in no water for fighting fires.

OSF St. Mary Medical Center:
- During severe storms, high winds have the potential to impact power service to the facility.

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated $4,945,607 in recorded property damages and $805,000 in crop damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database and FEMA public assistance figures provided by the Illinois Emergency Management Agency indicates that between 1959 and 2021, 83 of the 174 thunderstorms with damaging winds caused $4,892,607 in property damages and $805,000 in crop damages. Damage information was either unavailable or none was recorded for the remaining 91 reported occurrences.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts:
- Total Property Damage (83 events): ***$4,892,607***
- Total Crop Damage (4 event): ***$805,000***
- Injuries (4 events): ***34***
- Fatalities (2 events): ***2***

Severe Hail Impacts:
- Total Property Damage: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Lightning Strike Impacts:
- Total Property Damage (3 events): ***$53,000***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities (1 event): ***1***

Heavy Rain Impacts:
- Total Property Damage: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

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

NOAA's Storm Events Database documented two fatalities and 34 injuries as the result of five separate thunderstorm with damaging wind events. Detailed information was only available for four of the events. The following provides a brief description of each.

- On June 21, 1997 high winds blew a semi tractor-trailer over near the junction of Interstate 74 and US Route 34 northeast of Galesburg injuring the driver.
- High winds caused a woman to lose control of her vehicle near Rio, striking a utility pole and killing her on March 9, 2002.
- On June 8, 2005 a tree fell on a car during a thunderstorm event with high winds injuring two individuals.
- A man was killed in the Victoria area by a falling tree on August 23, 2007.

Hail

Damage information was either unavailable or none was recorded for any of the 60 hail events between 1973 and 2021. No injuries or fatalities were reported as a result of any of the recorded hail events.

Lightning

Data obtained from NOAA's Storm Events Database and Committee Member records indicates that the three verified lightning strike events caused a total of $53,000 in property damage. One fatality was reported as a result of the June 22, 2016 lightning strike. Detailed information was not available for this event.

Heavy Rain

Damage information was either unavailable or none was recorded for the 174 heavy rain events between 2000 and 2021. No injuries or fatalities were reported as a result of any of the heavy rain events.

What other impacts can result from severe storms?

In Knox 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 2015 through 2019 indicates that wet road surface conditions were present for 11.6% to 14.6% 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-10** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

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

For Knox 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, OSF St. Mary Medical Center in Galesburg is equipped to provide care to persons injured during a severe storm, as are hospitals in Peoria (Peoria County), Canton (Fulton County), Monmouth (Warren County), Aledo (Mercer County), and Geneseo (Henry County.)

Figure SS-10 Severe Weather Crash Data for Knox County				
Year	**Total # of Crashes**	**Presence of Wet Road Surface Conditions**		
		# of Crashes	**# of Injuries**	**# of Fatalities**
2015	1,022	123	32	0
2016	897	104	36	1
2017	1,026	134	37	2
2018	850	123	45	2
2019	878	128	39	0
Total:	**3,753**	**502**	**189**	**5**

Source: Illinois Department of Transportation.

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

Yes. All existing buildings, infrastructure and critical facilities located in Knox 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. Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Four of the participating jurisdictions acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as warming/cooling centers, shelters, schools, emergency operations centers, and health services.

According to the Critical Facilities Surveys completed by the participants, Knoxville and Yates City have a backup generator at both their wastewater and drinking water treatment facilities while Altona, Galesburg, and Wataga have backup generators at just their drinking water facilities. Knox County, Galesburg, Wataga, Yates City, and Carl Sandburg College have backup generators at their administrative buildings while the Rio FPD has a generator at its fire station.

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 Knox 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 Abingdon, Galesburg, and Knoxville 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 four remaining participating municipalities do not.

In addition, 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 86 of the 411 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 Knox County Supervisor of Assessments the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $744,927,813. The assessed values of structures in Knox County is approximately one-third the market value. Therefore, the estimated market value of all residential, commercial, and industrial buildings in the planning area is $2,234,783,439. 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 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 Knox 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 5, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) recorded in Knox County.

Severe Winter Storms

Severe Winter Storm Fast Facts – Occurrences

Number of Severe Winter Storm Events Reported (1950-2021): ***122***
Maximum 24-Hour Snow Accumulation: ***16.0 inches (February 2, 2011)***
Most Likely Month for Severe Winter Storms to Occur: ***January***

NOAA's Storm Events Database, Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP data records were used to document 122 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Knox County between 1950 and 2021. Of the 122 recorded occurrences there were 87 heavy snowstorms or blizzards; 16 combination events (freezing rain, sleet, ice and/or snow); and nine ice or sleet storms. Included in the 122 severe winter storms is one event that contributed to a major federal disaster declaration (2011 Ground Hog's Day Blizzard) and two events that contributed to two separate federal emergency disaster declarations in Knox County.

Figure SWS-1 charts the reported occurrences of severe winter storms by month. Of the 122 events, 89 (73%) took place in in December, January, and February making this the peak period for severe winter storms. Of these 89 events, 36 (40%) occurred during January, 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 severe winter storm events with recorded times, 53% began during the p.m. hours.

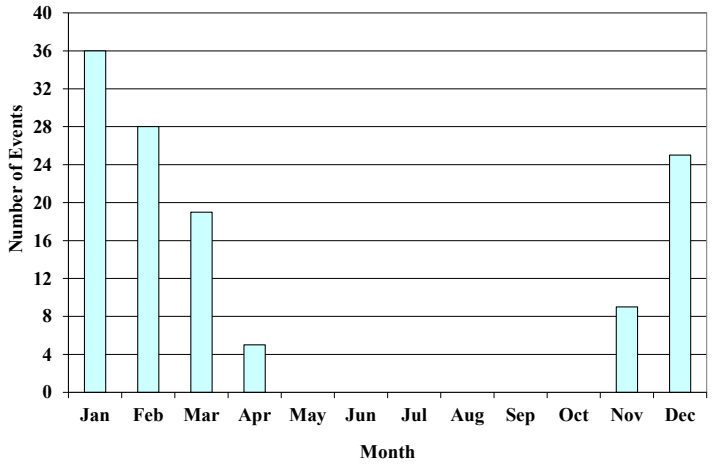
According to the NWS's COOP data records, the maximum 24-hour snow accumulation in Knox County is 16.0 inches, which occurred on February 2, 2011 at the Knoxville COOP Observation Station.

What locations are affected by severe winter storms?
Severe winter storms affect the entire County. All communities in Knox 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 classifies Knox County's hazard rating for severe winter storms as "high."

What is the probability of future severe winter storms occurring?

Knox County has had 122 verified occurrences of severe winter storms between 1950 and 2021. With 122 occurrences over the past 72 years, Knox County should expect at least one severe winter storm in any given year. There were 35 years over the past 72 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 49%.

Figure SWS-1
Severe Winter Storms by Month
1950 – 2021



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 Knox 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 2012, Knox County has experienced 29 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.

Do Any of the participating jurisdictions consider severe winter storms to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following respondents considers severe winter storms to be among their community's greatest vulnerabilities.

Knox County:
- ❖ During severe winter storms, high winds and ice have the potential to down power lines impacting critical services to residents.
- ❖ Highway and secondary roads can become impassible due to severe winter storms isolating individuals.

Altona:
- ❖ U.S. Highway 34 and County Highways 4 and 12 are the only roads in and out of the village and can become impassible during severe winter storms, isolating residents and making it difficult for emergency responders to respond.

Galesburg:
- ❖ During severe winter storms, high winds, and ice can cause power outages to critical facilities and communications, impacting services to residents.

Knoxville:
- ❖ Ice storms have downed power lines and poles, impacting critical services to residents.

Maquon:
- ❖ The Village does not have a stand-by generator for its water tower, so a loss of power due to a severe winter storm will affect service to residents.

Wataga:
- ❖ Loss of power due to a severe winter storm would leave the drinking water treatment facility vulnerable and potentially impact service to residents.

Knox College:
- ❖ The Old Main bell tower and the Heating Plant cooling towers are vulnerable to high winds from a severe winter storm.
- ❖ The College has limited backup power capacity and therefore the entire campus is vulnerable to power outages caused by severe winter storms and ice.
- ❖ Maintenance Department roofs may be vulnerable to collapse if the snow load caused by a severe winter storm is too great.

Henderson FPD:
- ❖ A power outage caused by a severe winter storm could impact the water tower resulting in no water for fighting fires.

AO&W Ambulance Service:
- ❖ U.S. Route 34, which passes through all three of our service communities, is susceptible to excessive drifting and becomes impassable during snowstorms making it difficult to respond to emergencies.

OSF St. Mary Medical Center:
- Power services are vulnerable to severe winter storms.
- Ice storms have impacted access to the Medical Center, both from the parking lot to the facility and on the roads.

What impacts resulted from the recorded severe winter storms?

Data obtained from NOAA's Storm Events Database, Committee Member records, and FEMA public assistance figures provided by the Illinois Emergency Management Agency indicates that between 1950 and 2021, three of the 122 severe winter storms caused $867,864 in property damages. Property damage information was either unavailable or none was recorded for the remaining 119 reported occurrences.

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

Severe Winter Storm (Snow & Ice) Impacts:
- Total Property Damage (3 events): ***$867,864***
- Injuries (1 event): ***2***
- Fatalities: ***n/a***

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 reported two injuries associated with the heavy snow event that began on April 10, 1997. Detailed information was not available for the event.

What other impacts can result from severe winter storms?

In Knox 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 2015 through 2019 indicates that treacherous road conditions caused by snow/slush and ice were present for 7.5% to 15.5% of all crashes recorded annually in the County. **Figure SWS-2** 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.

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 Knox 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 from severe winter storms is seen as ***low*** to ***medium***.

Figure SWS-2
Severe Winter Weather Crash Data for Knox County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2015	1,022	132	20	1
2016	897	74	12	0
2017	1,026	77	11	0
2018	850	118	29	0
2019	878	136	37	0
Total:	**3,753**	**537**	**109**	**1**

Source: Illinois Department of Transportation.

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

Yes. All existing buildings, infrastructure, and critical facilities located in Knox 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 Knox 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.

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 Knox 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. While Abingdon, Galesburg, and Knoxville 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 four remaining participating municipalities do not.

In addition, 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 three of the 122 recorded events listing property damage numbers for severe winter storms, it is difficult to accurately estimate future potential dollar losses. However, according to the Knox County Supervisor of Assessments the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $744,927,813. The assessed values of structures in Knox County is approximately one-third the market value. Therefore, the estimated market value of all residential, commercial, and industrial buildings in the planning area is $2,234,783,439. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to severe winter storms.

3.3 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 Knox 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.

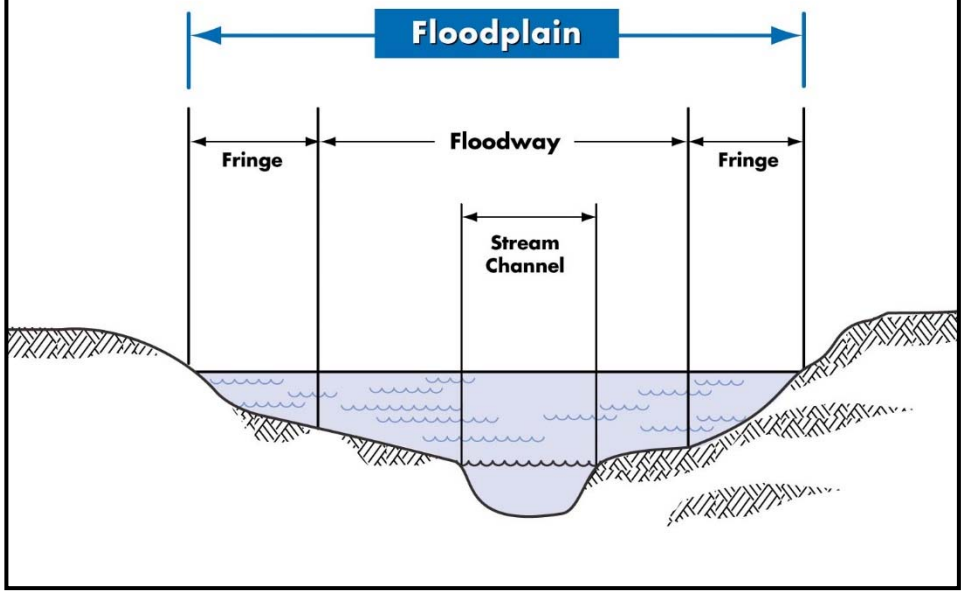
What is a floodplain?

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?

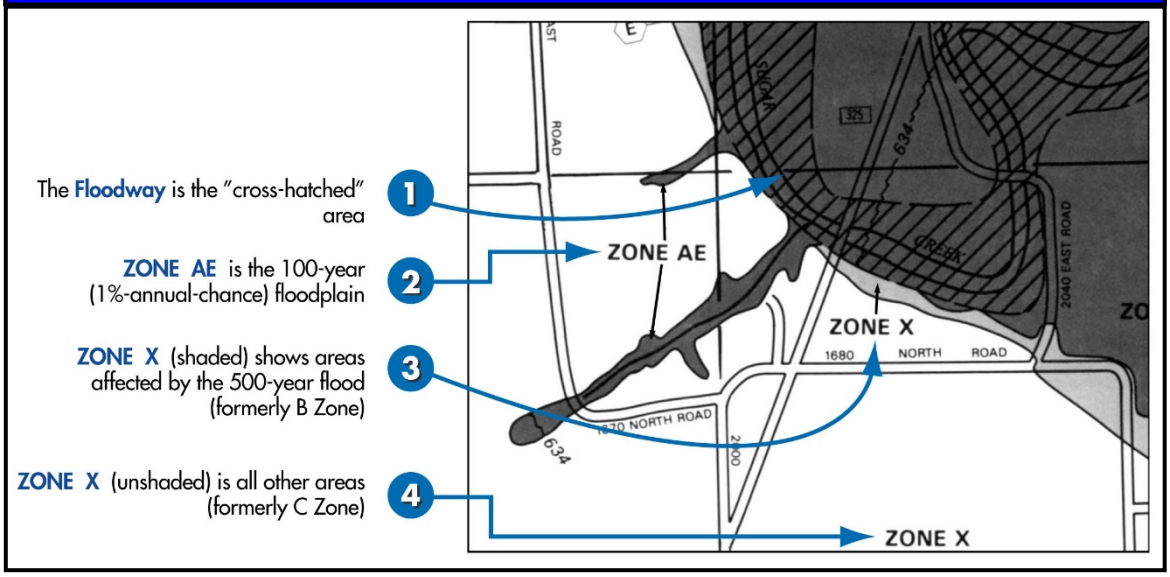
A Special Flood Hazard Area (SFHA) is the base floodplain. As discussed previously, this is the land area that is covered by the floodwaters of the base flood and has a 1% chance of flooding in any given year. The term SFHA is most commonly used when referring to the based floodplain on the Flood Insurance 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 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 Knox 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 6 and **7**, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in Knox 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, the U.S. Army Corps of Engineers' river gauge data, and Iowa State University's National Weather Service Watch, Warning, and Advisories database were used to document 91 occurrences of general flooding in Knox County between 1990 and 2021. Included in the 91 general flood events are nine events that contributed to three major federal disaster declarations for Knox County. The fourth major federal disaster declaration for the County included flooding from June 1974.

Based on historical gauge data, the record setting Spoon River flood at London Mills occurred on June 23, 1974 when the Spoon River crested at 28.03 feet. The second and third highest crests at this location occurred in 2013 and 1993 respectively.

Flood Fast Facts – Occurrences

Number of General Floods Reported (1990 – 2021): ***91***

Number of Flash Floods Reported (1990 – 2021): ***63***

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

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

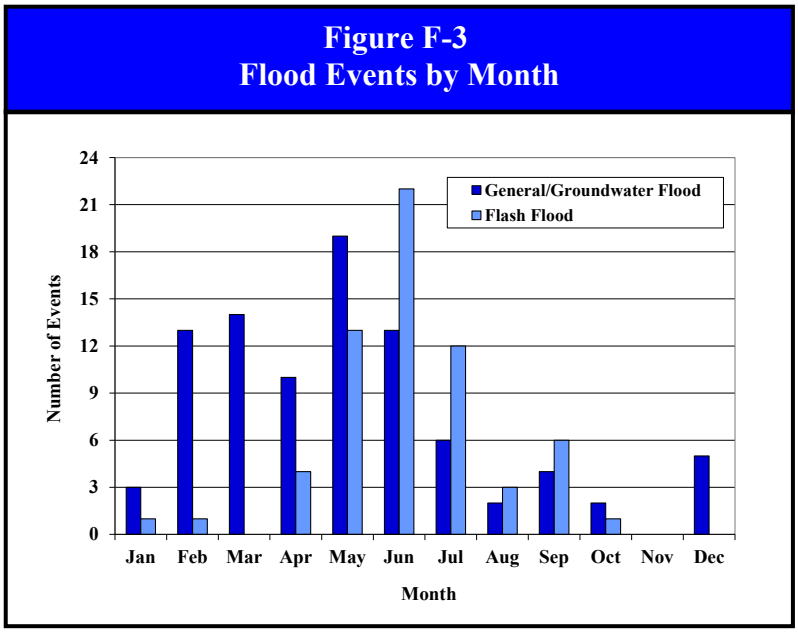
Number of Major Federal Disaster Declarations Related to General and Flash Flooding: ***4***

Flash Floods

NOAA's Storm Events Database and Iowa State University's National Weather Service Watch, Warning, and Advisories database were used to document 63 reported occurrences of flash flooding in Knox County between 1990 and 2021. On event contributed to a major federal disaster declaration for Knox County.

Figure F-3 charts the reported occurrences of flooding by month. Of the 91 general flood events, 32 (35%) began in began in May and June making this the peak period for general flooding. Of those 32 events, 19 (59%) began during May making this the peak month for general flooding. There were 10 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, 47 of the 63 flash flood events (75%) took place between May, June, and July making this the peak period for flash floods. Of the 47 events, 22 (47%) occurred in June making this the peak month for flash flooding. Of the flash flood events with recorded times, approximately 66% 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 Knox County, approximately 4.3% of the area in County is designated as being within the base floodplain and susceptible to riverine floods. The *2018 Illinois Natural Hazard Mitigation Plan* classifies Knox County's hazard rating for floods as "medium."

Figure F-4 identifies the floodplains in Knox County as well as the participating jurisdictions. This map is based on the Knox County DFRIMs that became effective August 2, 2011. While a large portion of the area prone to riverine flooding is in unincorporated portions of the County, Abingdon, Altona, Galesburg, Knoxville, and Wataga 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
Bodies of Water Subject to Flooding

Participating Jurisdiction	Water Bodies
Abingdon	**Unnamed Tributary of Italian Slough, Unnamed Tributary of Indian Creek**
Altona	**Unnamed Tributary of Walnut Creek, Walnut Creek**
Galesburg	**Cedar Creek, Cedar Creek Tributary A, Henderson Creek**
Knoxville	**Unnamed Tributary of Haw Creek**
Maquon	---
Wataga	**North Creek, Unnamed Tributary of North Creek**
Yates City	---
Unincorporated Knox County	**Brandywine Creek,** Brunk Creek, **Brush Creek,** Cadwell Creek, **Cedar Creek, Court Creek,** Italian Slough, **Fitch Creek, Flea Creek,** Foreman Creek, **French Creek, Haw Creek**, Henderson Creek, **Hickory Creek, Indian Creek, Little Henderson Creek, Littlers Creek,** Middle Creek, Mud Run, **North Creek,** Pennington Creek, **Pig Creek, Pilot Creek, Pope Creek, Spoon River,** Sugar Creek, **Swab Run, Walnut Creek, West Fork Walnut Creek**

Source: FEMA's DFIRMs.

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.

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.

What jurisdictions within the County take part in the NFIP?

Participating Jurisdictions

Knox County, Abingdon, Altona, Galesburg, Knoxville, and Wataga 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. Maquon and Yates City have no identified flood hazard boundaries within their corporate limits and do not wish to participate in the NFIP at this time.

Figure F-4
Floodplain Areas in Knox County

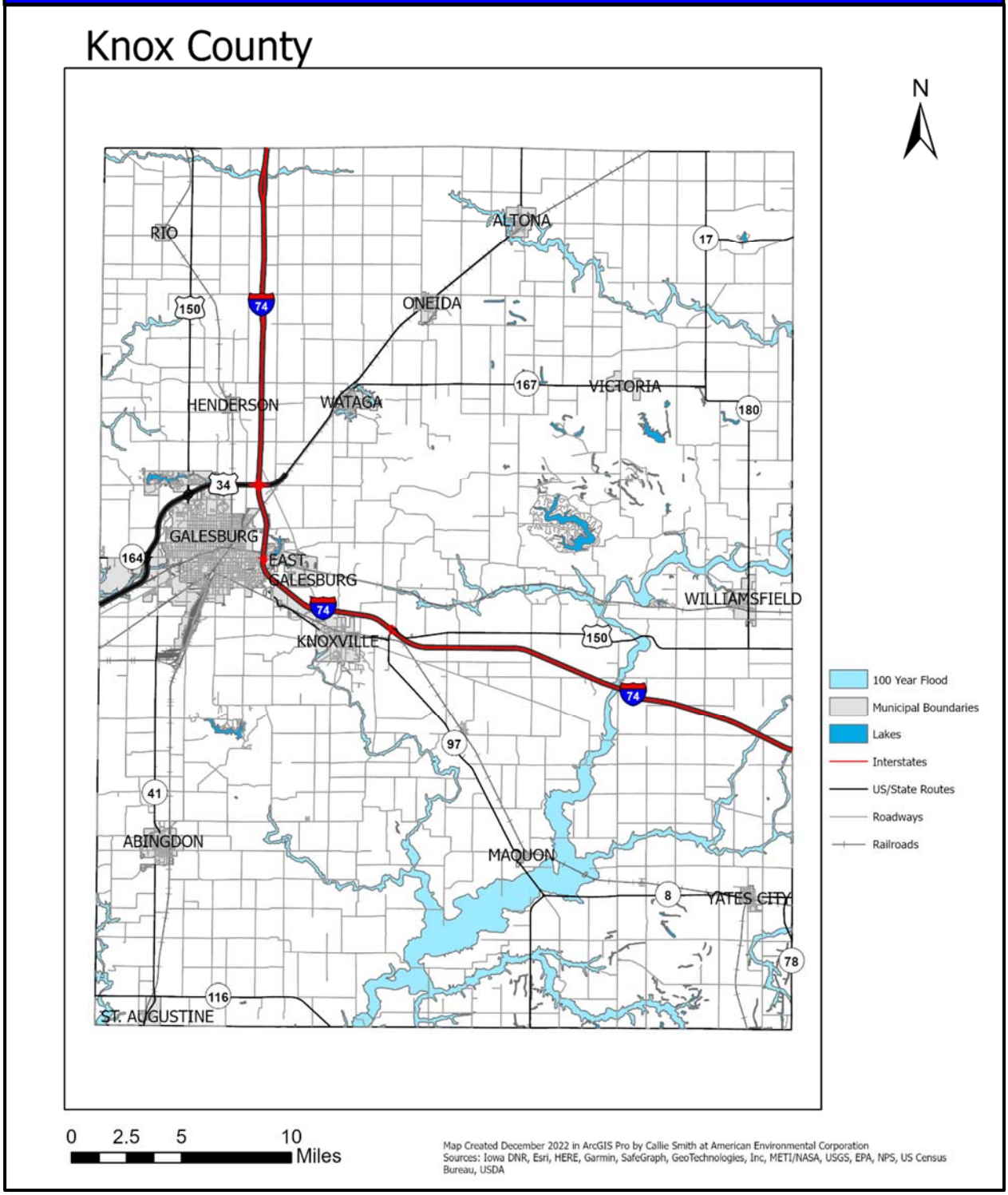


Figure F-6
NFIP Participating Jurisdictions

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Knox County	08/24/1984	08/02/2011	No	2011
Abingdon	02/06/1984	08/02/2011	No	2011
Altona	08/02/2011	08/02/2011	No	2011
Galesburg	06/19/1985	08/02/2011	No	2011
Knoxville	02/27/1984	08/02/2011	No	2011
Wataga	09/04/1985	08/02/2011	No	2011

Sources: FEMA, Community Status Book Report: Illinois.

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. Henderson, Rio, and St. Augustine have no identified flood hazard boundaries within their corporate limits and have chosen not to participate in the Program.

Figure F-7
Non-Participating Jurisdiction NFIP Status

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
East Galesburg	08/02/2011	08/02/2011 (NSFHA)	No	2011
Victoria	08/02/2011	08/02/2011	No	2011
Williamsfield	08/02/2011	08/02/2011	No	2011

Sources: FEMA, Community Status Book Report: Illinois.
FEMA, National Flood Insurance Program Insurance Manual.

While the current effective DFIRM for Oneida (dated August 2, 2011) does identify SFHAs 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 June 7, 1975 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 only includes one residence.

Jurisdictions that participate in the NFIP are expected to adopt and enforce floodplain management regulations. In Knox County, all the NFIP participating jurisdictions have adopted floodplain ordinance and as a result, are in compliance with NFIP requirements. 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.

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.

What is the probability of future flood events occurring?

General Floods

Knox County has had 91 verified occurrences of general flooding between 1990 and 2021. With 91 occurrences over the past 32 years, the County should expect about three general flood events in any given year. There were 13 years over the past 32 years where three or more general flood events occurred. This indicates that the probability or likelihood that more than two general flood events may occur during any given year within the County is 41%.

Flash Floods

There have been 63 verified flash flood events between 1990 and 2021. With 63 occurrences over the past 32 years, the County should expect about two flash flood events in any given year. There were 15 years over the past 32 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 47%.

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. Knox 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 2012, Knox County has experienced 29 general flood events and 27 flash flood events.

All but one of the general flood events impacted either a large portion of or the entire County and were not location specific. The remaining event occurred in Galesburg. In terms of flash flood events, all but three impacted either a large portion of or the entire County and were not location specific. Of the remaining three events, two took place in Galesburg, and one took place near unincorporated Gilson.

Galesburg has a unique situation in which its drinking water well field and drinking water treatment facility are located 32 miles west of the City along the Mississippi River just south of the Village of Oquawka in Henderson County, two counties over. As a result, the drinking water well field is susceptible to Mississippi River flooding. Major flood stage along the Mississippi River at the Keithsburg gage just north of Oquawka is 17 feet. Based on data from this gage, there

have been 21 major general flood events in the vicinity of the drinking water well field since 1953 with eight of the top ten events occurring since 1993. The top three flood crests occurred in 2008, 1993 and 2019. According to the Galesburg Public Works Director and Water Superintendent, flooding at these levels will often times result in Ameren shutting off electricity to the well pumps which results in us transferring to generator power and the exhausting task of transporting diesel fuel by boat to the drinking water treatment facility. Minor flooding events are becoming more frequent but are easier to manage.

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.

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.

Do any of the participating jurisdictions consider flooding to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following respondents considered flooding to be among their jurisdiction's greatest vulnerabilities.

Knox County:

- Flooding has the potential to adversely affect the wastewater treatment plants in several communities.
- Flooding can impact residential homes as well as make highway and secondary roads impassable, impacting emergency response and creating adverse travel conditions.

Altona:

- The North Olin Street subdivision was built in a low-lying area and flooding adversely affects residents.

Galesburg:

- Flooding has the potential to affect the Ameren power substation, which powers the City's drinking water well field, which would result in a power outage impacting service to residents.
- Flooding has the potential to impact the City's only drinking water well field located 32 miles away near the Mississippi River impacting service to residents.
- Flooding can make highway and secondary roads impassable, impacting emergency response and creating adverse travel conditions for residents.

Maquon:

- Flooding has the potential to cause our wastewater lagoon to overflow.

Carl Sandburg College:

- The main campus has flooded twice since initial construction in the 1970s; however, recent projects are believed to have mitigated this problem.

Knox College:

- Hamblin Residence Hall basement is prone to flooding during heavy rain events due to insufficient storm sewer capacity. Past events have damaged supplies, personal items, and the building itself.

Henderson FPD:

- District roads have been washed out by flood events in the last year causing adverse travel and delays in emergency response times.

What impacts resulted from the recorded floods?

Floods as a whole have caused a *minimum* of $42.8 million in property 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.

General Floods

Data obtained from NOAA's Storm Events Database, Committee Member records, and FEMA public assistance figures provided by the Illinois Emergency Management Agency indicates that between 1990 and 2021, three of the 91 general flood events caused $2,220,962 in property damages. Damage information was either unavailable or none was recorded for the remaining 88 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

Flood Fast Facts – Impacts/Risk

General Flood Impacts:
- Total Property Damage(3 events): ***$2,220,962***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flash Flood Impacts:
- Total Property Damage(3 events): ***$40,600,000***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

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

Flash Floods

Data obtained from NOAA's Storm Events Database indicates that between 1990 and 2021, three of the 63 flash flood events caused $40.6 million in property damages. Damage information was either unavailable or none was recorded for the remaining 60 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, almost half 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 Knox County?

Yes. According to information obtained from IEMA, there are two repetitive loss structures located in unincorporated Knox County. While two repetitive flood loss records were returned for the Village of Henderson, the Community Name listed is for Henderson 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.

While repetitive flood loss records were requested from FEMA, the information returned only identified NFIP policy holders. In Knox County there have been five NFIP policy holders, all located in unincorporated Knox County. Information on flood insurance claim payments was not provided for any of policies and all five policies have lapsed.

Figure F-8 identifies the repetitive flood loss structures by participating 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 IEMA, there

have been five flood insurance claim payments totaling $78,932.32 for the two repetitive flood loss structures.

Figure F-8
Repetitive Flood Loss Structures

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Unincorp. Knox County	Single Family	2	5	$71,832.32	$7,100.00	$78,932.32

Source: Illinois Emergency Management Agency

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

Yes. **Figure F-9** identifies the *estimated number* of existing structures by participating jurisdiction located within a 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** identifies the *estimated number* of existing structures by township located within the base floodplain. It should be noted that while the identified structures are located in a floodplain, the actual number impacted may differ during a real flood event.

Figure F-9
Existing Buildings, Infrastructure and Critical Facilities Located in a Floodplain by Municipality

Participating Jurisdiction	Residential			Residential Garages	Businesses (Commercial/ Industrial)	Miscellaneous (Barns, Sheds, Silos)	Infrastructure/ Critical Facilities
	Houses	Duplexes	Apartment Complexes				
Abingdon	21	---	---	2	---	1	---
Altona [3]	1	---	---	---	---	---	---
Galesburg [4]	43	6	4	---	9	16	1
Knoxville	---	---	---	---	---	---	1
Maquon	---	---	---	---	---	---	---
Wataga [3]	5	---	1	---	1	4	1
Yates City	---	---	---	---	---	---	---
Unincorp. Knox County	15	---	---	15	---	2	*

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service [4] OSF St. Mary Medical Center

* No specific infrastructure/critical facilities, aside from roads and bridges, were identified for Unincorporated Knox County.

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

- *Galesburg*: Portions of the City's wastewater treatment facility are located in the base floodplain of Cedar Creek while the City's drinking water well field is located in the base floodplain of the Mississippi River south of Oquawka in Henderson County.
- *Knoxville*: Portions of the City's wastewater treatment facility are located in the base floodplain of an Unnamed Tributary of Haw Creek.
- *Wataga*: The Village's wastewater treatment facility is located in the base floodplain of an Unnamed Tributary of North Creek.

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

Participating Jurisdiction	Residential			Residential Garages	Businesses (Commercial/ Industrial)	Miscellaneous (Barns, Sheds, Silos)	Infrastructure/ Critical Facilities
	Houses	Duplexes	Apartment Complexes				
Cedar	---	---	---	---	---	---	---
Chestnut	3	---	---	---	---	3	---
Copley [3]	---	---	---	---	---	---	---
Elba	1	---	---	1	---	---	---
Galesburg [1,3,4]	---	---	---	---	1	---	---
Galesburg City [4]	43	6	4	---	9	16	1
Haw Creek	---	---	---	---	---	3	---
Henderson [1]	---	---	---	---	1	1	---
Indian Point	22	---	---	2	---	1	---
Knox [3]	---	---	---	---	---	---	1
Lynn [3]	---	---	---	---	---	---	---
Maquon	1	---	---	---	---	3	---
Ontario [3]	1	---	---	1	---	2	1
Orange	---	---	---	---	---	1	---
Persifer	4	---	---	1	---	3	---
Rio [2]	---	---	---	---	---	---	---
Salem	1	---	---	---	---	1	---
Sparta [3]	6	---	1	---	1	4	1
Truro	2	---	---	---	---	1	---
Victoria	---	---	---	---	---	---	---
Walnut Grove [3]	1	---	---	---	---	---	---

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service [4] OSF St. Mary Medical Center

While only 4.3% of the land area in Knox 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 Spoon River and its tributaries; (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 and the townships within the County* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Knox 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.

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.

Assumption #1

A riverine flood event will impact vulnerable residential structures.

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.

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.

Assumption #2

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

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 would experience the same degree of flooding.

This assumption results in the following conditions for each participating jurisdiction:

- ➢ Maquon and Yates City would not experience any residential flooding since there are no river, stream or creek base floodplains located within their municipal limits; and
- ➢ *Abingdon*: Unnamed Tributary of Italian Slough and Unnamed Tributary of Indian Creek would overflow their banks and flood small portions on the north side of the Village;
- ➢ *Altona:* Walnut Creek and the Unnamed Tributary of Walnut Creek would overflow their banks and flood a small portion on the southwest edge of the Village;
- ➢ *Galesburg*: Cedar Creek, Cedar Creek Tributary A, and Henderson Creek would overflow their banks and flood a small portion on the northern and southwest edges of the City;
- ➢ *Knoxville*: Unnamed Tributary of Haw Creek would overflow its banks and flood a small portion on the southern edge of the City; and
- ➢ *Wataga*: North Creek and the Unnamed Tributary of North Creek would overflow their banks and flood a small portion on the northeast and southern edges of the Village.

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. **Figures F-9** and **F-10** identify 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 #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.

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.

Assumption #4

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

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 Knox County is approximately one-third of the market value). **Figure F-11** provides a sample calculation. The total assessed value is based on 2021 tax assessment information provided by the Knox County Supervisor of Assessments. **Figures F-12** and **Figure F-13** provide the average assessed value and average market value for each participating municipality and the townships.

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

Average Assessed Value

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

Abingdon: $26,901,130 ÷ 1,608 housing units = $16,730

Average Market Value

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

Abingdon: $16,730 x 3 = $50,190
($50,190)

Figure F-12
Average Market Value of Housing Units by Participating Municipality

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2021)	Total Housing Units (2010)	Average Assessed Values	Average Market Value (2021)
Abingdon	$26,901,130	1,608	$16,730	$50,190
Altona[3]	$4,726,720	265	$17,837	$53,511
Galesburg [4]	$255,933,920	14,632	$17,491	$52,473
Knoxville	$39,774,850	1,174	$33,880	$101,640
Maquon	$2,172,760	95	$22,871	$68,613
Wataga[3]	$7,925,090	380	$20,856	$62,568
Yates City	$9,402,390	374	$25,140	$75,420

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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-14** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

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%

Figure F-13
Average Market Value of Housing Units by Township

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2021)	Total Housing Units (2010)	Average Assessed Values	Average Market Value (2021)
Cedar	$42,722,940	1,564	$27,316	$81,949
Chestnut	$1,259,830	80	$15,748	$47,244
Copley [3]	$6,109,410	168	$36,366	$109,097
Elba	$2,446,580	104	$23,525	$70,574
Galesburg [1,3,4]	$5,046,880	169	$29,863	$89,590
Galesburg City [4]	$255,933,920	14,632	$17,491	$52,473
Haw Creek	$2,794,680	98	$28,517	$85,551
Henderson [1]	$18,020,940	619	$29,113	$87,339
Indian Point	$12,369,230	685	$18,057	$54,172
Knox [3]	$70,216,630	1,933	$36,325	$108,976
Lynn [3]	$1,914,880	77	$24,869	$74,606
Maquon	$4,292,210	198	$21,678	$65,033
Ontario [3]	$9,626,860	450	$21,393	$64,179
Orange	$5,037,630	235	$21,437	$64,310
Persifer	$76,825,062	776	$99,001	$297,004
Rio [2]	$5,569,030	235	$23,698	$71,094
Salem	$12,458,850	529	$23,552	$70,655
Sparta [3]	$11,583,520	444	$26,089	$78,267
Truro	$8,883,440	385	$23,074	$69,222
Victoria	$2,904,350	181	$16,046	$48,138
Walnut Grove [3]	$6,173,721	328	$18,822	$56,467

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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%.

Figure F-14
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

Potential Dollar Losses

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-15** provides a sample calculation.

Figure F-15
***Structure:* Potential Dollar Loss Sample Calculation – Abingdon**

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

Abingdon: $50,190 x 20% = $10,038 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)

Abingdon: $10,038 per housing unit x 21 housing units = $210,798

($210,798)

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-16** provides a sample calculation.

Figure F-16
***Content:* Potential Dollar Loss Sample Calculation – Abingdon**

½ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage = Average Content Damage per Housing Unit

Chrisman: ½ ($50,190) x 30% = $7,528.50 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)

Chrisman: $7,528.50 per housing unit x 21 housing units = $158,098.50
($158,099)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figures F-17 and F-18** provide a breakdown of the total potential dollar losses by participating municipality and township.

This assessment illustrates the *potential residential dollar losses* that should be considered when participating jurisdictions are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences within the participating municipalities would be expected to ***range from $18,729 in Altona to $789,719 in Galesburg***. There are three participating municipalities in this scenario that do not have any residences considered vulnerable to riverine flooding. For the townships, potential dollar losses caused by riverine flooding to vulnerable residences would be expected to ***range from $19,763 in Walnut Grove Township to $789,719 in Galesburg City Township***.

Figure F-17
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Participating Municipality

Participating Jurisdiction	Average Market Value (2021)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Abingdon	$50,190	21	$210,798	$158,099	$368,897
Altona [3]	$53,511	1	$10,702	$8,027	$18,729
Galesburg [4]	$52,473	43	$451,268	$338,451	$789,719
Knoxville	$101,640	0	$ 0	$ 0	$ 0
Maquon	$68,613	0	$ 0	$ 0	$ 0
Wataga [3]	$62,568	5	$62,568	$46,926	$109,494
Yates City	$75,420	0	$ 0	$ 0	$ 0

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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, Galesburg's wastewater treatment facility and drinking water well field are located in the base floodplains of Cedar Creek and the Mississippi River respectively while both Knoxville and Wataga have wastewater treatment facilities located in base floodplains of unnamed tributaries within their communities. No other above-ground infrastructure within the participating jurisdictions, other than key roads and bridges, were identified as being vulnerable to riverine flooding.

Figure F-18
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Township

Participating Jurisdiction	Average Market Value (2021)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Cedar	$81,949	0	$ 0	$ 0	$ 0
Chestnut	$47,244	3	$28,346	$21,260	$49,606
Copley [3]	$109,097	0	$ 0	$ 0	$ 0
Elba	$70,574	1	$14,115	$10,586	$24,701
Galesburg [1,3,4]	$89,590	0	$ 0	$ 0	$ 0
Galesburg City [4]	$52,473	43	$451,268	$338,451	$789,719
Haw Creek	$85,551	0	$ 0	$ 0	$ 0
Henderson [1]	$87,339	0	$ 0	$ 0	$ 0
Indian Point	$54,172	22	$238,357	$178,768	$417,125
Knox [3]	$108,976	0	$ 0	$ 0	$ 0
Lynn [3]	$74,606	0	$ 0	$ 0	$ 0
Maquon	$65,033	1	$13,007	$9,755	$22,762
Ontario [3]	$64,179	1	$12,836	$9,627	$22,463
Orange	$64,310	0	$ 0	$ 0	$ 0
Persifer	$297,004	4	$237,603	$178,202	$415,805
Rio [2]	$71,094	0	$ 0	$ 0	$ 0
Salem	$70,655	1	$14,131	$10,598	$24,729
Sparta [3]	$78,267	6	$93,920	$70,440	$164,360
Truro	$69,222	2	$27,689	$20,767	$48,456
Victoria	$48,138	0	$ 0	$ 0	$ 0
Walnut Grove [3]	$56,467	1	$11,293	$8,470	$19,763

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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. Knox County has experienced multiple events over the last 20 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.

3.4 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.

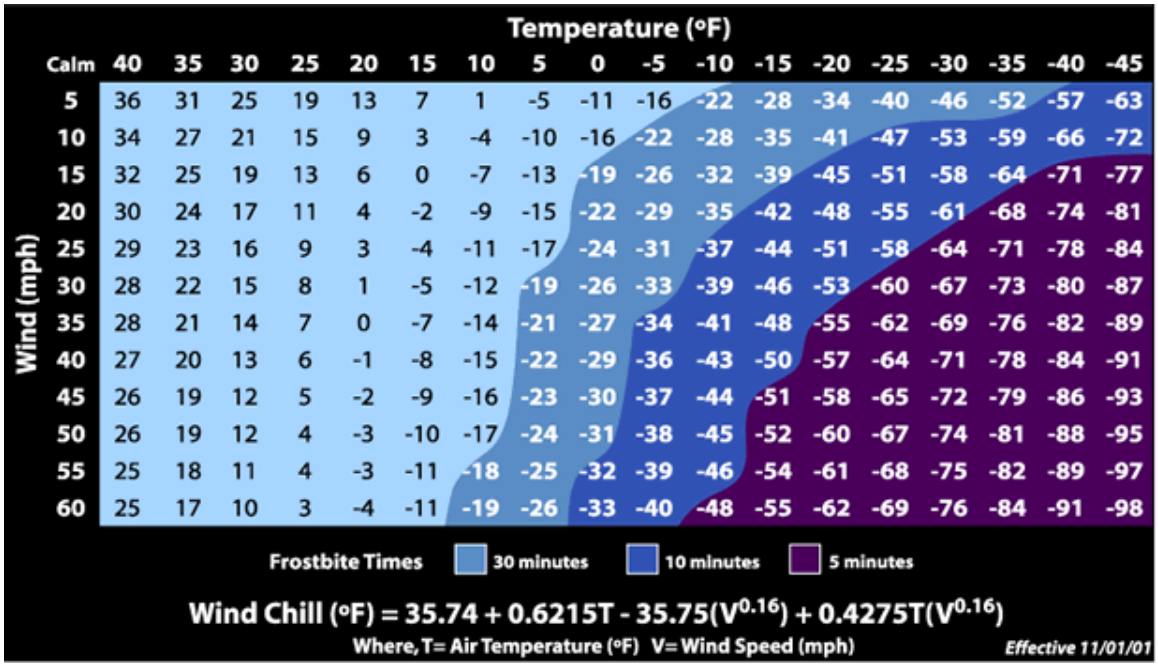
As an example, if the air temperature is 5°F and the wind speed is 20 miles per hour, then the wind chill temperature would be -15°F. The wind chill temperature is only defined for air temperatures at or below 50°F and wind speeds above three miles per hour. In addition, the wind chill temperature does 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



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 Knox County.

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***wind chill advisories*** and ***warnings*** for Knox 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.

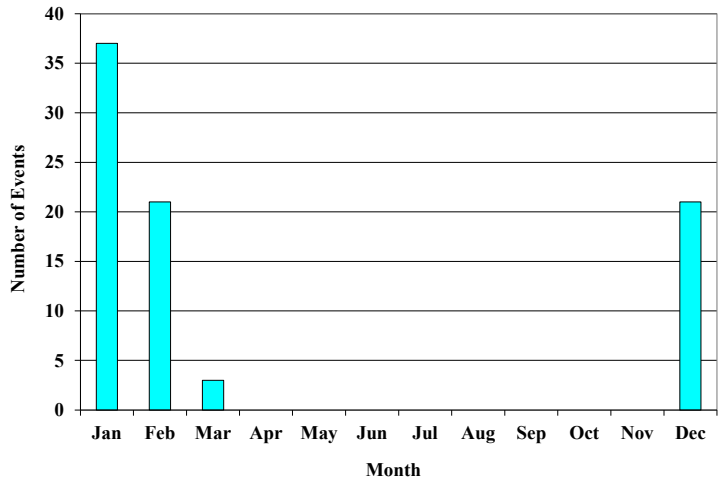
When have extreme cold events occurred previously? What is the extent of these events?
Table 8, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of extreme cold events recorded in Knox County. NOAA's Storm Events Database, Iowa State University's National Weather Service Watch, Warning, and Advisories database and NWS's COOP Data records were used to document 82 occurrences of extreme cold in Knox County between 1995 and 2021.

Extreme Cold Fast Facts – Occurrences

Number of Extreme Cold Events Reported (1995 - 2021): ***82***
Coldest Temperature Recorded in the County: ***-32°F*** ***(January 26, 2019)***
Most Likely Months for Extreme Cold Events to Occur: ***January***

Figure EC-2 charts the reported occurrences of extreme cold by month. Thirty-seven of the 82 events (45%) took place in January, making this the peak month for extreme cold events. There were three 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
1994 - 2021



According to the Midwestern Regional Climate Center, almost continuous temperature records for Knox County were kept from 1936 to the present by the Galesburg NWS COOP Observation Station. **Figure EC-3** lists the coldest days recorded at this Station. Based on the available records, the coldest temperature recorded in Knox County was -32°F at the Altona COOP Observation Station on January 26, 2019.

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

	Date	Temperature			Date	Temperature
1	02/13/1905	-28°F		5	02/03/1996	-24°F
2	01/06/2009	-27°F		6	02/02/1905	-23°F
3	02/09/1899	-26°F		7	12/21/1963	-22°F
4	01/10/1982	-25°F		8	01/20/1985	-22°F

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by extreme cold?
Extreme cold affects the entire County. All communities in Knox County have been affected by extreme cold. Extreme cold generally extend across the entire County and affects multiple locations.

Do any of the participating jurisdictions have designated warming centers?

Yes. Six of the 13 participating municipalities and fire protection districts 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 Abingdon, Altona, Maquon, Carl Sandburg College, Knox College, Henderson Township FPD, and OSF St. Mary Medical Center do not have any warming centers designated. In addition, there are no State of Illinois-designated warming centers in Knox County.

Figure EC-4
Designated Warming Centers by Participating Jurisdiction

Name/Address	Name/Address
AO&W Ambulance Service	*Rio Fire Protection District*
Oneida Fire Station, 254 N. Sage, Oneida	304 E. Center Ave.
Wataga Fire Station, 310 W. Willard, Wataga	*Wataga*
Galesburg	Oneida-Wataga FPD, 210 North Sage, Oneida
Hawthorne Gym, 2265 Veteran's Dr.	*Yates City*
Public Safety Building Lobby, 150 S. Broad St.	Community Center, 102 W. Main St.
YMCA Lobby, 1324 W. Carl Sandburg Dr.	
Knoxville	
Knoxville Fire Station, N. Public Square	

What is the probability of future extreme cold events occurring?

Knox County has experienced 82 verified occurrences of extreme cold between 1995 and 2021. With 82 occurrences over the past 27 years, Knox County should expect to experience approximately three extreme cold events in any given year. There were 23 years over the last 27 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 85%.

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 Knox County, including the participating jurisdictions, is vulnerable to the dangers presented by extreme cold. Since 2012, Knox County has experienced 38 extreme cold events.

Do Any of the participating jurisdictions consider extreme cold to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, Abingdon considered extreme cold to be among their community's greatest vulnerabilities because the community does not have designated warming centers for residents use.

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. 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: ***Low to 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 Knox County the level of risk or vulnerability posed by extreme cold to public health and safety 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 over half of the participating municipalities have designated warming centers.

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

Yes. All existing buildings, infrastructure and critical facilities located in Knox 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.

Based on the frequency with which extreme cold events have occurred in Knox 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. While Abingdon, Galesburg, and Knoxville 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 four 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 Knox County Supervisor of Assessments the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $744,927,813. The assessed values of structures in Knox County is approximately one-third the market value. Therefore, the estimated market value of all residential, commercial, and industrial buildings in the planning area is $2,234,783,439. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to extreme cold.

3.5 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?

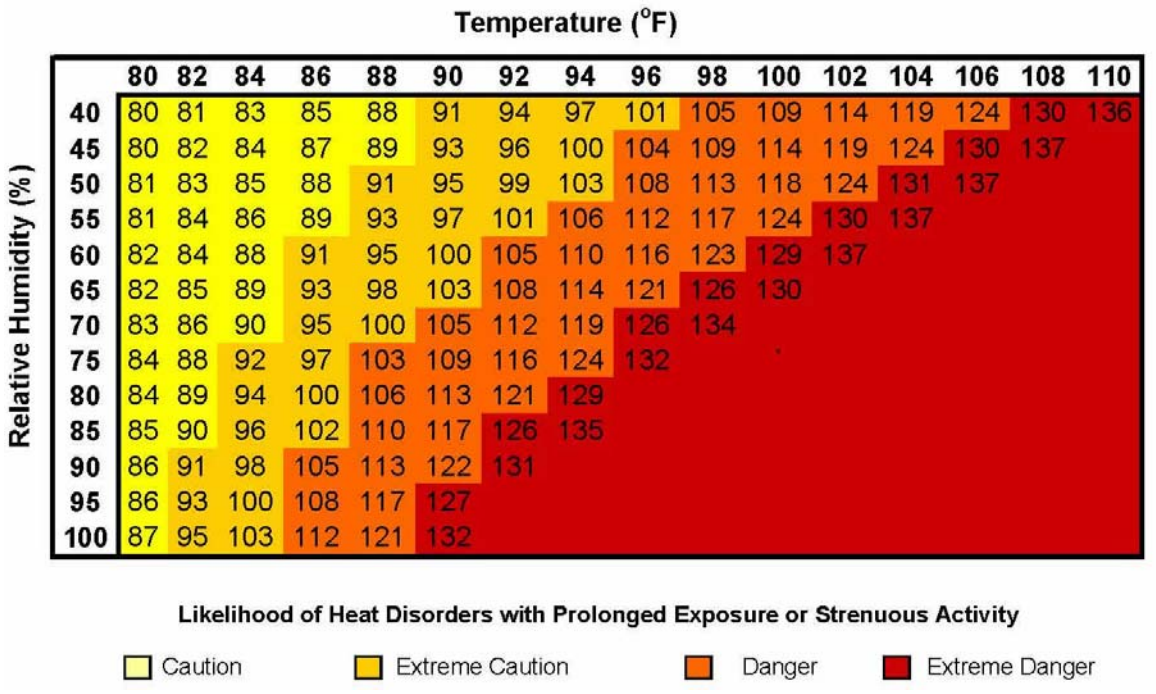
In an effort to raise the public's awareness of the hazards of excessive heat, the National Weather Service (NWS) devised the "Heat Index". The Heat Index, sometimes referred to as the "apparent temperature", is a measure of how hot it feels when relative humidity is added to the actual air temperature.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



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 Knox 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?

Table 9, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of excessive heat events recorded in Knox County. NOAA's Storm Events Database, Iowa State University's National Weather Service Watch, Warning, and Advisories database and NWS's COOP Data records were used to document 73 occurrences of excessive heat in Knox County between 1995 and 2021.

Excessive Heat Fast Facts – Occurrences

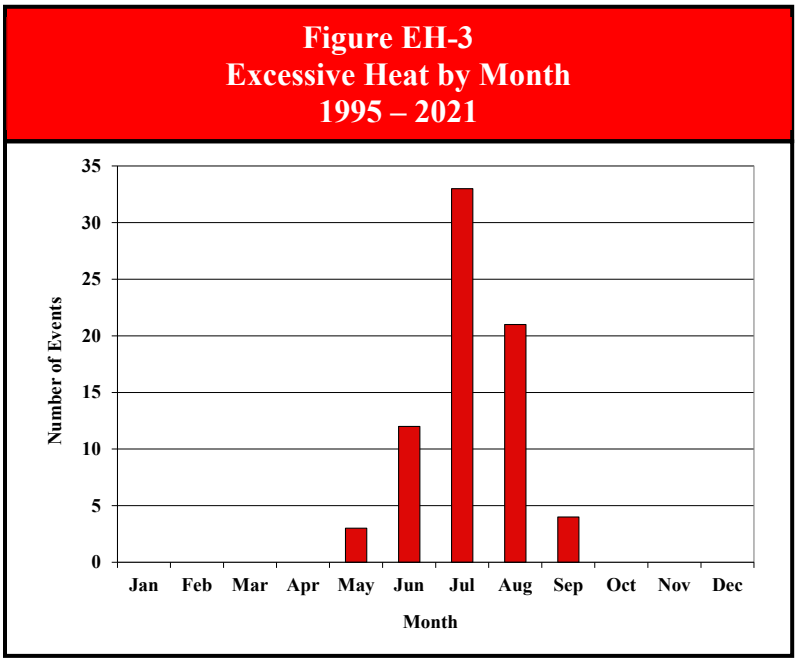
Number of Excessive Heat Events Reported (1995 – 2021): ***73***

Hottest Temperature Recorded in the County: ***112°F (July 15, 1936)***

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

Figure EH-3 charts the reported occurrences of excessive heat by month. Thirty-three of the 73 events (45%) began in July making this the peak month for excessive heat events in Knox County. There were four 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 – 2021



According to the Midwestern Regional Climate Center, almost continuous temperature records for Knox County were kept from 1936 to the present by the Galesburg NWS COOP Observation Station. **Figure EH-4** lists the hottest days recorded at this Station. Based on the available records, the hottest temperature recorded in Knox County was 112°F at the Galesburg COOP Observation station on July 15, 1936.

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

	Date	Temperature		Date	Temperature
1	07/15/1936	112°F	7	07/10/1901	106°F
2	07/14/1936	109°F	8	07/08/1936	106°F
3	07/24/1901	108°F	9	07/13/1936	106°F
4	07/12/1936	108°F	10	07/23/1901	105°F
5	07/21/1901	107°F	11	07/26/1936	105°F
6	07/22/1901	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 Knox County's hazard rating for excessive heat as "medium."

Do any of the participating jurisdictions have designated cooling centers?

Yes. Six of the 13 participating jurisdictions 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 Abingdon, Altona, Knoxville, Maquon, Carl Sandburg College, Henderson FPD, and OSF St. Mary Medical Center do not have any cooling centers designated. In addition, there are no State of Illinois-designated cooling centers in Knox County.

Figure EH-5
Designated Cooling Centers by Participating Jurisdiction

Name/Address	Name/Address
AO&W Ambulance Service	*Rio Fire Protection District*
Oneida Fire Station, 254 N. Sage, Oneida	Fire Station 304 E. Center Ave.
Wataga Fire Station, 310 W. Willard, Wataga	*Wataga*
Galesburg	Oneida-Wataga FPD, 210 North Sage, Oneida
Public Safety Building Lobby, 150 S. Broad St.	*Yates City*
YMCA Lobby, 1324 W. Carl Sandburg Dr.	Community Center, 102 W. Main St.
Knox College	
Taylor Lounge – Seymour Union, 401 S. West	
Lobby – Post Hall, 461 S. West	

What is the probability of future excessive heat events occurring?

Knox County has experienced 73 verified occurrences of excessive heat between 1995 and 2021. With 73 occurrences over the past 27 years, Knox County should expect to experience approximately three excessive heat events a year. There were 15 years over the last 27 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 55.5%.

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.

Are the participating jurisdictions vulnerable to excessive heat?

Yes. All of Knox County, including the participating jurisdictions, is vulnerable to the dangers presented by excessive heat. Since 2012, the County has experienced 26 excessive heat events.

Do any of the participating jurisdictions consider excessive heat to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following respondents considered excessive heat to be among their community's greatest vulnerabilities.

Abingdon: The community does not have designated cooling centers for residents use.

Galesburg: During excessive heat events, brown outs and black outs can impact power to critical facilities affecting services to residents.

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 – Sensitive 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 Knox

County, excessive heat has the ability to impact those residents in unincorporated Knox County 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 Knox 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 fact that several of the participating municipalities have designated cooling centers and the County does not have many large urban areas where living conditions (such as older, poorly-ventilated high rise buildings and low-income neighborhoods) tend to contribute to heat-related injuries and fatalities.

The level of risk or vulnerability posed by excessive heat to the public health and safety of *sensitive populations* is considered to be ***medium***. Sensitive 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-6** identifies the percent of sensitive populations by participating municipality and the County based on the U.S. Census Bureau's 2016-2020 American Community Survey data.

Figure EH-6
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
Abingdon	9.4%	5.2%	14.6%
Altona	6.3%	9.8%	16.1%
Galesburg	9.7%	5.1%	14.8%
Knoxville	11.7%	8.1%	19.8%
Maquon	6.1%	5.5%	11.6%
Wataga	7.6%	21.0%	28.6%
Yates City	6.5%	10.8%	17.3%
Unincorp. Knox County	9.7%	5.7%	15.4%
Knox County	9.5%	5.6%	15.1%
State of Illinois	6.6%	5.9%	12.5%

Source: U.S. Census Bureau.

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.

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 Knox 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 Knox 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 sensitive populations such as the elderly, infants, young children, and those with medical conditions.

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 Quad Cities Iowa/Illinois is responsible for issuing ***tornado watches*** and ***warnings*** for Knox 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?

Table 10, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of tornado events recorded in Knox County. NOAA's Storm Events Database, Storm Data Publications, Storm Prediction Center, and Midwestern Regional Climate Center's cli-MATE database have documented 33 occurrences of tornadoes in Knox County between 1950 and 2021. In comparison, there have been 2,745 tornadoes statewide between 1950 and 2021 according to NOAA's Storm Prediction Center.

Tornado Fast Facts – Occurrences

Number of Tornadoes Reported (1950 – 2021): ***33***

Highest F-Scale Rating Recorded: ***F3 (May 14, 1961 & June 14, 1974)***

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

Average Length of a Tornado: ***3.9 miles***

Average Width of a Tornado: ***99 yards***

Average Damage Pathway of a Tornado: ***0.22 sq. mi.***

Longest Tornado Path in the County: ***34.5 miles (July 21, 1961)***

Widest Tornado Path in the County: ***880 yards (May 13, 1995)***

Figure T-2 charts the reported occurrences of tornadoes by magnitude. Of the 33 reported occurrences there were: 2– F3s, 3 – F2s, 9 – F1s, 13 – F0s, 1 – EF2, 1 – EF1, 3 – EF0s, and 1 EFU.

Figure T-2
Tornadoes by Magnitude
1950 – 2021

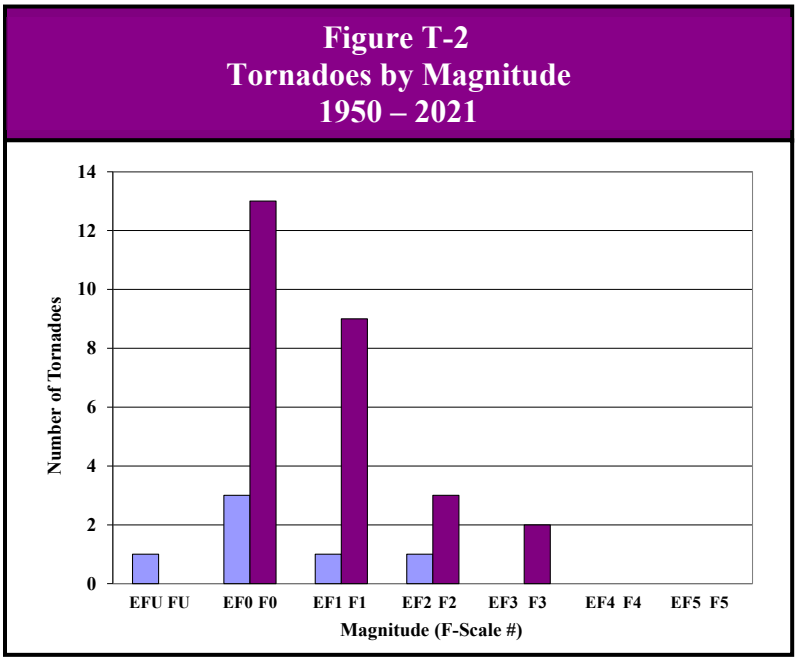
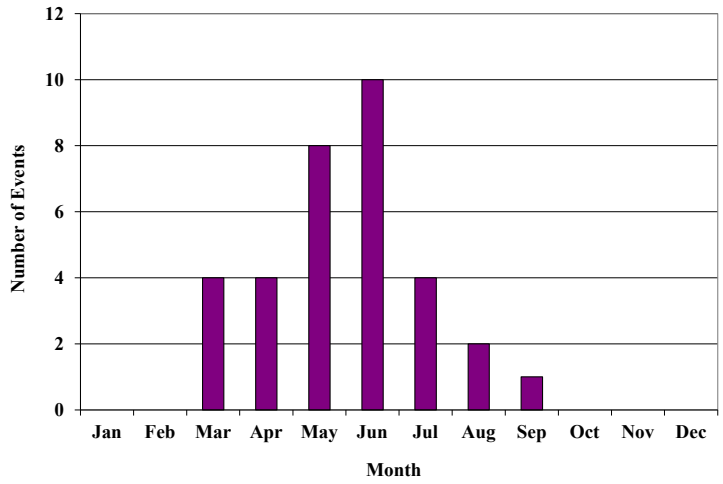


Figure T-3 charts the reported tornadoes by month. Of the 33 events, 22 (67%) took place in April, May, and June making this the peak period for tornadoes in Knox County. Of those 22 events, 10 (45%) occurred during June, making this the peak month for tornadoes. In comparison, 1,720 of the 2,745 tornadoes (63%) recorded in Illinois from 1950 through 2021 took place in April, May, and June.

Figure T-3
Tornadoes by Month
1950 – 2021



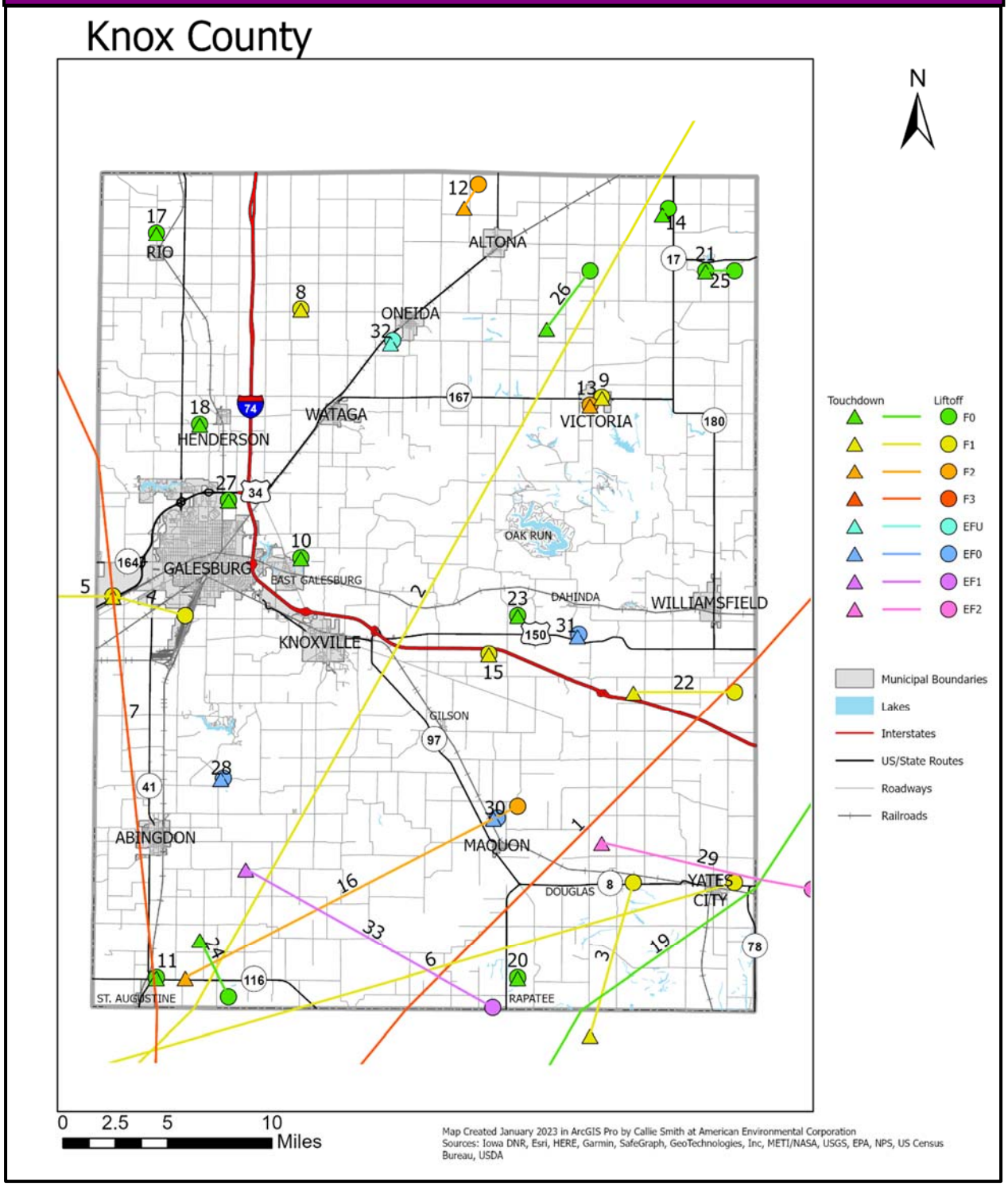
Approximately 97% of all tornadoes in the County occurred during the p.m. hours, with 69% taking place between 4 p.m. and 8 p.m. approximately 72% of all Illinois tornadoes occur between 1 p.m. and 8 p.m.

The tornadoes that have impacted Knox County have varied from 0.1 miles (176 yards) to 34.5 miles in length and from 10 yards to 880 yards in width. The average length of a tornado in Knox County is 3.9 miles and the average width is 99 yards (0.056 miles).

Figures T-4 shows the pathway of each reported tornado. The numbers by each tornado correspond with the tornado description in **Table 10** 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 Knox County, the average damage pathway or area impacted by a tornado is 0.22 square miles.

The longest tornado recorded in Knox County occurred on July 21, 1961. This F1 tornado, measuring 10 yards in width and 147.4 miles in length, touched down in Adams County at Quincy and traveled northeast through Knox County before lifting off southwest of Deer Grove in Whiteside County. This tornado was on the ground for 34.5 miles in Knox County. The damage pathway of this tornado covered approximately 0.84 square miles, with 0.20 square miles occurring in Knox County.

Figure T-4
Tornado Pathways in Knox County



The widest tornado recorded in Knox County occurred on May 13, 1995. This F2 tornado, measuring 880 yards in width and 14 miles in length, touched down near St. Augustine and traveled northeast through Knox County before lifting off near Maquon. The damage pathway of this tornado covered approximately 7 square miles.

What locations are affected by tornadoes?

Tornadoes have the potential to affect the entire County. Of the seven participating municipalities, three have had reported occurrences of tornadoes within their corporate limits. The *2018 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies Knox County's hazard rating for tornadoes as "medium."

What is the probability of future tornadoes occurring?

Knox County has had 33 verified occurrences of tornadoes between 1950 and 2021. With 33 tornadoes over the past 72 years, the probability or likelihood that a tornado will touchdown somewhere in the County in any given year is 45.8%. There were six over the last 72 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 9.3%.

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 Knox County, including the participating jurisdictions, is vulnerable to the dangers presented by tornadoes. Since 2012, four tornadoes have been recorded in Knox County.

Of the participating municipalities, Abingdon, Galesburg, and Maquon have had a tornado touch down or pass through their municipal boundaries. **Figure T-5** lists the verified tornadoes that have touched down in or near or passed through each participating municipality.

Figure T-5
Verified Tornadoes In or Near Participating Municipalities

Participating Municipality	Number of Verified Tornadoes	Year	
		Touched Down/Passed Through Municipality	Touched Down/Passed Near Municipality
Abingdon	2	1974	2010
Altona[3]	3	---	1975, 1981, 2004
Galesburg [a,b,4]	5	1967, 2005	1967, 1967, 1974
Knoxville	1	---	1961
Maquon	5	1995	1961, 1995, 1997, 2017
Wataga[3]	0	---	---
Yates City	3	---	1972, 1997, 2010

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center [a] Carl Sandburg College [b] Knox College

In terms of tornadoes that were recorded in each of the fire protection districts, two tornadoes have touched down or passed through the Henderson FPD while one tornado touched down in the Rio FPD. All three tornadoes occurred in unincorporated areas and did not impact either of incorporated municipalities in either fire protection district.

In terms of unincorporated areas vulnerable to tornadoes, Douglas has had four tornadoes touch down near its vicinity while Dahinda has had two tornadoes. **Figure T-6** details the verified tornadoes that have touched down in or near unincorporated areas in Knox County.

Figure T-6
Verified Tornadoes In or Near Unincorporated Areas of Knox County

Unincorporated Area	Number of Verified Tornadoes	Year	
		Touched Down/Passed ***Through*** Unincorporated Area	Touched Down/Passed ***Near*** Unincorporated Area
Dahinda	2	---	1999, 2019
Douglas	4	---	1961, 1967, 1972, 2010
Gilson	1	---	1967
Rapatee	1	---	2021

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center [a] Carl Sandburg College [b] Knox College

Do Any of the participating jurisdictions consider tornadoes to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, the following respondents consider tornadoes to be among their community's greatest vulnerabilities.

Knox County: Highway and secondary roads can become blocked by fallen trees during a tornado, which can adversely impact travel conditions for residents and responders.

Abingdon: Residents who live in the mobile home park in the Village are vulnerable since there are no community safe rooms nearby.

Altona: Tornadoes have downed trees and power lines and affected homes, impacting service to residents.

Galesburg: If a tornado were to touch down in the City it would impact critical infrastructure and services including roads, power, water, and medical care.

Knox College: The Old Main bell tower and the Heating Plant cooling towers are vulnerable to high winds from a tornado event.

OSF St. Mary Medical Center: Power services are vulnerable to tornadoes.

What impacts resulted from the recorded tornadoes?

Data obtained from NOAA's Storm Events Database, Storm Data Publications, Storm Prediction Center, and NWS's Tornado Climatology for Central and Southeast Illinois indicates that between 1950 and 2021, 14 of the 33 tornadoes caused $9,249,000 in property damage and $154,500 in crop damage. Three of the tornadoes had property damage totals of at least $2 million. Property damage information was either unavailable or none was recorded for 20 of the reported occurrences.

NOAA's Storm Events Database documented 14 injuries as a result of five separate tornado events in Knox County. Detailed information was only available for four of the events. The following provides a brief description of each.

- On May 14, 1961 five persons were injured on a farm near Douglas when debris from their home fell into the basement where they had sought shelter while three other individuals were injured in the Maquon area.
- An individual suffered a heart attack as the result of a tornado on June 14, 1974 in Abingdon.
- On March 23, 1975 an elderly couple were seriously injured and hospitalized with multiple contusions and abrasions when their home was torn off its foundation and left in a pile of rubble near Altona.
- A woman sustained minor injuries from flying glass during a tornado near Williamsfield on June 29, 1998.

Tornado Fast Facts – Impacts/Risk

Tornado Impacts:
- Total Property Damage (13 events): ***$9,249,000***
- Total Crop Damage (4 events): ***$154,500***
- Injuries (5 events): ***14***
- 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***

In comparison, Illinois averages roughly four tornado fatalities annually; however, this number varies widely from year to year.

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*, Knox County ***ranks 49th among all 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 low to 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, OSF St. Mary Medical Center in Galesburg is equipped to provide continuous care to persons injured by a tornado assuming that it is not directly impacted. In addition, there are hospitals in Peoria (Peoria County), Canton (Fulton County), Monmouth (Warren County), Aledo (Mercer County), and Geneseo (Henry County) that are equipped to

provide care and have sufficient capacity for the influx of additional patients from one or more counties.

Knox County/Fire Protection Districts/Ambulance Service
For Knox County, including the fire protection districts and ambulance service, , 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 (including Colleges and Healthcare Facilities)
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 five of the seven of the participating jurisdictions are small in size (less than one square miles) and 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 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. To calculate the number of existing residential structures vulnerable to a tornado, the size (area impacted) by 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 Knox County will be used since it has a higher probability of recurring. In Knox County the area impacted by an average-sized tornado is 0.22 square miles. This average is based on more than 70 years of data.

Assumption #1

Size of Tornado = 0.22 sq. miles

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.

Assumption #2

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

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: 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.

Assumption #3

The average housing unit density for each municipality will be used to determine 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-7** provides a sample calculation. **Figure T-8** 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-7
Calculation of Average Housing Unit Density – Knox County

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

Knox County: 23,890 housing units ÷ 716.395 sq. miles = 33.348 housing units/sq. mile
(34 housing units)

Figure T-8
Average Housing Unit Density by Participating Jurisdiction

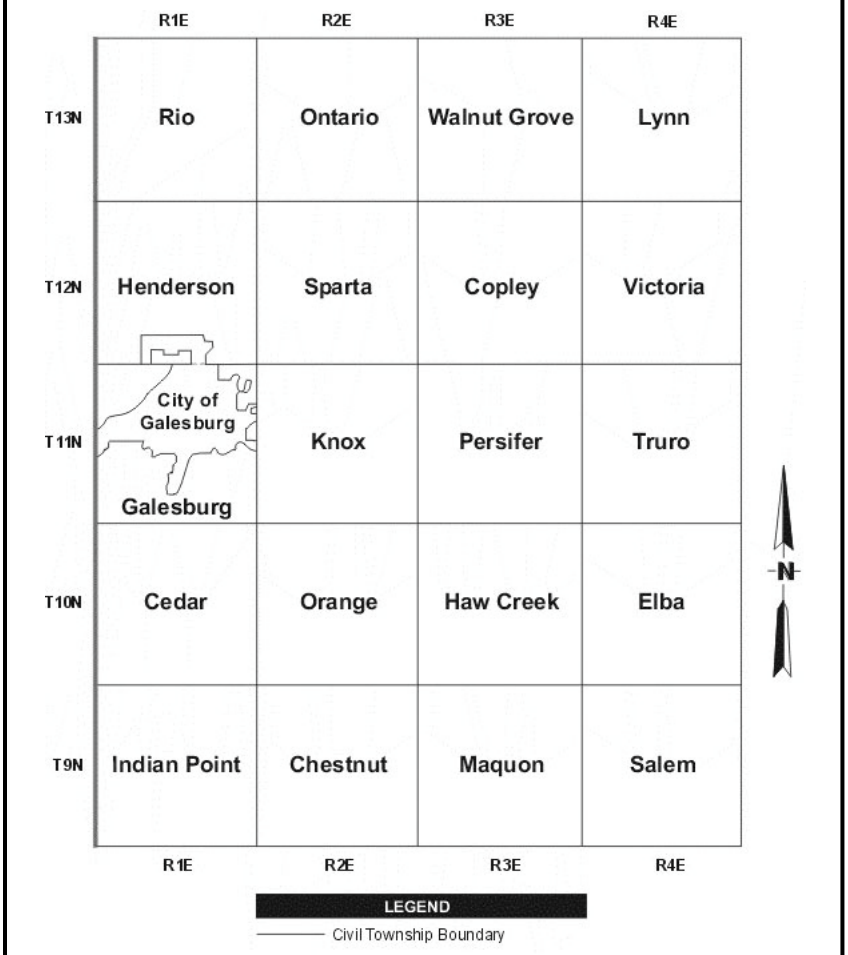
Participating Jurisdiction	Township Location	Total Housing Units (2016-2020)	Mobile Homes (2016-2020)*	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Abingdon	Cedar, Indian Point	1,608	13	1.458	1102.881
Altona[3]	Walnut Grove	265	0	0.997	---
Galesburg [4]	Galesburg City	14,632	712	17.750	824.338
Knoxville	Knox	1,174	17	2.321	505.816
Maquon	Maquon	95	0	0.159	---
Wataga[3]	Sparta	380	0	0.863	---
Yates City	Salem	374	0	0.518	---
Unincorp. County		4,071	238	687.021	5.926
County		23,890	995	716.395	33.348

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center
Source: U.S. Census Bureau.

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 Knox County.

In Knox County, as well as many other west-central Illinois counties, there are pronounced differences in housing unit densities. Approximately 76% of all housing units are located in three of the County's 21 townships (Galesburg City, Knox, and Cedar) while approximately 84% of all mobile homes are located in two of the County's 21 townships (Galesburg City and Knox). **Figure T-9** 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. However, only the County and Knoxville have ordinances that require anchoring systems for mobile homes that would help limit the damage from lower rated tornadoes.

Figure T-9
Township Boundaries Knox County



Source: Illinois Secretary of State

This substantial difference in density skews the average *county* housing unit density in Knox County and is readily apparent when compared to the average housing unit densities for each of the townships within the County. **Figure T-10** 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
Average Housing Unit Density by Township

Township	Incorporated Municipalities Located in Township	Total Housing Units (2016-2020)	Mobile Homes (2016-2020)*	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Cedar	Abingdon	1,564	0	35.999	43.446
Chestnut		80	15	36.179	2.211
Copley [3]	Victoria	168	0	35.037	4.795
Elba		104	0	36.378	2.859
Galesburg [1,3,4]		169	58	21.393	7.900
Galesburg City [4]	Galesburg	14,632	712	17.750	824.338
Haw Creek		98	0	35.773	2.739
Henderson [1]	Henderson	619	0	33.791	18.318
Indian Point	Abingdon, Indian Point	685	20	36.083	18.984
Knox [3]	Knoxville	1,933	127	35.394	54.614
Lynn [3]		77	0	35.311	2.181
Maquon	Maquon	198	0	35.875	5.519
Ontario [3]	Oneida	450	0	36.256	12.412
Orange		235	16	37.122	6.330
Persifer		776	18	34.722	22.349
Rio [2]	Rio	235	0	36.165	6.498
Salem	Yates City	529	0	35.555	14.878
Sparta [3]	Wataga	444	11	36.087	12.304
Truro	Williamsfield	385	6	35.705	10.783
Victoria	Victoria	181	12	34.978	5.175
Walnut Grove [3]	Altona	328	0	35.509	9.237
Townships - 3 most populated		18,129	839	89.143	203.370
Townships - 18 least populated		5,761	156	627.919	9.175

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center
Source: U.S. Census Bureau.

For 18 of the 21 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 three 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 need to be subtracted from the land area figures obtained from the U.S. Census Bureau.

In Knox 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-third to four-fifths 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-11** provides a breakdown of the refined land area figures for select municipalities. These refined land area figures will be used to update the average housing unit density calculations for these municipalities.

Figure T-11
Refined Land Area Figures for Participating Municipalities with Large Tracts of Commercial/Industrial and Undeveloped Land Areas

Participating Jurisdiction	Land Area (Sq. Miles) (2010)	Estimated Open Land Area & Commercial/ Industrial Tracts (Sq. Miles)	Refined Land Area (Sq. Miles)
Abingdon	1.458	0.480	0.978
Altona[3]	0.997	0.787	0.210
Galesburg [4]	17.750	8.860	8.890
Knoxville	2.321	1.290	1.031
Maquon	0.159	0.040	0.119
Wataga[3]	0.863	0.610	0.253
Yates City	0.518	0.250	0.268

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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 Knox County tornado. **Figure T-12** provides a sample calculation.

Figure T-12
Sample Calculation of Potentially-Damaged Housing Units – Knox County

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

Knox County: 33.348 housing units/sq. mile x 0.22 sq. miles = 7.34 housing units
(8 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 Knox 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-13** provides a sample calculation. Since the refined land areas in Altona and Maquon are less than the average area impacted, it is assumed that all of the housing units within these villages will be potentially damaged.

Figure T-13
Sample Calculation of Potentially-Damaged Housing Units for Municipalities Covering Less Than One Square Mile – Abingdon

Area Impacted by the Average-Sized Knox 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)
Abingdon: 0.22 sq. mile ÷ 0.978 sq. miles x 1,608 housing units = 361.72
(362 housing units)

Figures T-14 and **T-15** 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. The exception to this is Galesburg City Township whose boundaries only include the City of Galesburg and doesn't include any large rural areas.

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.)

Unincorporated Knox County/Fire Protection Districts/Ambulance Service

For Knox 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.

Figure T-14
Estimated Number of Housing Units by Participating Jurisdiction
Potentially Damaged by a Tornado

Participating Jurisdiction	Total Housing Units (2016-2020)	Land Area/Refined Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.22 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.22 Sq. Mi.) (Rounded Up)
Abingdon	1,608	0.978	---	361.72	362
Altona[3]	265	0.210	---	241.00	241
Galesburg [4]	14,632	8.890	1,645.894	362.10	363
Knoxville	1,174	1.031	1,138.700	250.51	251
Maquon	95	0.119	---	122.00	122
Wataga[3]	380	0.253	---	330.43	331
Yates City	374	0.268	---	307.01	308
Unincorp. County	4,071	687.021	5.926	1.30	2
County	23,890	716.395	33.348	7.34	8

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

Participating Municipalities (including Colleges and Healthcare Facilities)
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 will have a greater likelihood of causing substantial property damage.

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 Knox County. The purpose of providing a rough estimate is to help residents and municipal/county 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.

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

Township	Total Housing Units (2016-2020)	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.22 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.22 Sq. Mi.) (Rounded Up)
Cedar	1,564	35.999	43.446	9.56	10
Chestnut	80	36.179	2.211	0.49	1
Copley [3]	168	35.037	4.795	1.05	2
Elba	104	36.378	2.859	0.63	1
Galesburg [1,3,4]	169	21.393	7.900	1.74	2
Galesburg City [4]	14,632	17.750	824.338	181.35	182
Haw Creek	98	35.773	2.739	0.60	1
Henderson [1]	619	33.791	18.318	4.03	5
Indian Point	685	36.083	18.984	4.18	5
Knox [3]	1,933	35.394	54.614	12.02	13
Lynn [3]	77	35.311	2.181	0.48	1
Maquon	198	35.875	5.519	1.21	2
Ontario [3]	450	36.256	12.412	2.73	3
Orange	235	37.122	6.330	1.39	2
Persifer	776	34.722	22.349	4.92	5
Rio [2]	235	36.165	6.498	1.43	2
Salem	529	35.555	14.878	3.27	4
Sparta [3]	444	36.087	12.304	2.71	3
Truro	385	35.705	10.783	2.37	3
Victoria	181	34.978	5.175	1.14	2
Walnut Grove [3]	328	35.509	9.237	2.03	3
Townships - 3 most populated	18,129	89.143	203.370	44.74	45
Townships - 18 least populated	5,761	627.919	9.175	2.02	3

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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.

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.

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 Knox County is approximately one-third of the market value). **Figure T-16** provides a sample calculation. The total assessed value is based on 2021 tax assessment information provided by the Knox County Supervisor of Assessments.

Figure T-16
Sample Calculation of Average Assessed Value & Average Market Value – Abingdon

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)

Abingdon: $26,901,130 ÷ 1,608 housing units = $16,730

Average Market Value

Average Assessed Value x 3 = Average Market Value

Abingdon: $16,730 x 3 = $50,190
($50,190)

Figures T-17 and **T-18** 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-17
Average Market Value of Housing Units by Municipality

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2021)	Total Housing Units (2010)	Average Assessed Values	Average Market Value (2021)
Abingdon	$26,901,130	1,608	$16,730	$50,190
Altona[3]	$4,726,720	265	$17,837	$53,511
Galesburg [4]	$255,933,920	14,632	$17,491	$52,473
Knoxville	$39,774,850	1,174	$33,880	$101,640
Maquon	$2,172,760	95	$22,871	$68,613
Wataga[3]	$7,925,090	380	$20,856	$62,568
Yates City	$9,402,390	374	$25,140	$75,420
Unincorp. County	$179,819,813	4,071	$44,171	$132,513
County	$562,190,593	23,890	$23,532	$70,596

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center
Source: Knox County Supervisor of Assessments.

Figure T-18
Average Market Value of Housing Units by Township

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2021)	Total Housing Units (2010)	Average Assessed Values	Average Market Value (2021)
Cedar	$42,722,940	1,564	$27,316	$81,949
Chestnut	$1,259,830	80	$15,748	$47,244
Copley [3]	$6,109,410	168	$36,366	$109,097
Elba	$2,446,580	104	$23,525	$70,574
Galesburg [1,3,4]	$5,046,880	169	$29,863	$89,590
Galesburg City [4]	$255,933,920	14,632	$17,491	$52,473
Haw Creek	$2,794,680	98	$28,517	$85,551
Henderson [1]	$18,020,940	619	$29,113	$87,339
Indian Point	$12,369,230	685	$18,057	$54,172
Knox [3]	$70,216,630	1,933	$36,325	$108,976
Lynn [3]	$1,914,880	77	$24,869	$74,606
Maquon	$4,292,210	198	$21,678	$65,033
Ontario [3]	$9,626,860	450	$21,393	$64,179
Orange	$5,037,630	235	$21,437	$64,310
Persifer	$76,825,062	776	$99,001	$297,004
Rio [2]	$5,569,030	235	$23,698	$71,094
Salem	$12,458,850	529	$23,552	$70,655
Sparta [3]	$11,583,520	444	$26,089	$78,267
Truro	$8,883,440	385	$23,074	$69,222
Victoria	$2,904,350	181	$16,046	$48,138
Walnut Grove [3]	$6,173,721	328	$18,822	$56,467
Townships - 3 most populated	$368,873,490	18,129	$20,347	$61,041
Townships - 18 least populated	$372,425,961	5,761	$64,646	$193,938

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center
Source: Knox County Supervisor of Assessments.

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%

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-19** provides a sample calculation.

Figure T-19
***Structure:* Potential Dollar Loss Sample Calculation – Abingdon**

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit
Abingdon: $50,190 x 100% = $50,190 per housing unit

Average Structural Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Structure* Potential Dollar Losses
Abingdon: $50,190 per housing unit x 362 housing units = $18,168,780
($18,168,780)

Next, the potential dollar losses to the ***content*** of a potentially-damaged housing unit 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 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-20** provides a sample calculation.

Figure T-20
***Content:* Potential Dollar Loss Sample Calculation - Abingdon**

½ (Average Market Value of a Housing Unit) with the Jurisdiction x Percent Damage = Average Content Damage per Housing Unit
Abingdon: ½ ($50,190) x 100% = $25,095 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses
Abingdon: $25,095 per housing unit x 362 housing units = $9,084,390
($9,084,390)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and content. **Figures T-21** and **T-22** give a breakdown of the total potential dollar losses by municipality and township.

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 Knox County would be expected to exceed at least $12.5 million in any of the participating municipalities.***

Figure T-21
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado by Participating Jurisdiction

Participating Jurisdiction	Average Market Value (2021)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Abingdon	$50,190	362	$18,168,780	$9,084,390	$27,253,170
Altona[3]	$53,511	241	$12,896,151	$6,448,076	$19,344,227
Galesburg [4]	$52,473	363	$19,047,699	$9,523,850	$28,571,549
Knoxville	$101,640	251	$25,511,640	$12,755,820	$38,267,460
Maquon	$68,613	122	$8,370,786	$4,185,393	$12,556,179
Wataga[3]	$62,568	331	$20,710,008	$10,355,004	$31,065,012
Yates City	$75,420	308	$23,229,360	$11,614,680	$34,844,040
Unincorp. County	$132,513	2	$265,026	$132,513	$ 397,539
County	$70,596	8	$564,768	$282,384	$ 847,152

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

For comparison, an estimate of potential dollar losses was calculated for the entire County, the unincorporated portions of the County, the three most populated townships and the 18 least populated townships. As discussed previously, the estimate for the entire County is skewed because it does not take into consideration the differences in the housing density.

Vulnerability of Commercial/Industrial Businesses and Infrastructure/Critical Facilities

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.

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

Participating Jurisdiction	Average Market Value (2021)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Cedar	$81,949	10	$819,490	$409,745	$1,229,235
Chestnut	$47,244	1	$47,244	$23,622	$70,866
Copley [3]	$109,097	2	$218,194	$109,097	$327,291
Elba	$70,574	1	$70,574	$35,287	$105,861
Galesburg [1,3,4]	$89,590	2	$179,180	$89,590	$268,770
Galesburg City [4]	$52,473	182	$9,550,086	$4,775,043	$14,325,129
Haw Creek	$85,551	1	$85,551	$42,776	$128,327
Henderson [1]	$87,339	5	$436,695	$218,348	$655,043
Indian Point	$54,172	5	$270,860	$135,430	$406,290
Knox [3]	$108,976	13	$1,416,688	$708,344	$2,125,032
Lynn [3]	$74,606	1	$74,606	$37,303	$111,909
Maquon	$65,033	2	$130,066	$65,033	$195,099
Ontario [3]	$64,179	3	$192,537	$96,269	$288,806
Orange	$64,310	2	$128,620	$64,310	$192,930
Persifer	$297,004	5	$1,485,020	$742,510	$2,227,530
Rio [2]	$71,094	2	$142,188	$71,094	$213,282
Salem	$70,655	4	$282,620	$141,310	$423,930
Sparta [3]	$78,267	3	$234,801	$117,401	$352,202
Truro	$69,222	3	$207,666	$103,833	$311,499
Victoria	$48,138	2	$96,276	$48,138	$144,414
Walnut Grove [3]	$56,467	3	$169,401	$84,701	$254,102
Townships - 3 most populated	$66,685	45	$2,746,845	$1,373,423	$4,120,268
Townships - 18 least populated	$82,910	3	$581,814	$290,907	$872,721

[1] Henderson FPD [2] Rio FPD [3] AO&W Ambulance Service
[4] OSF St. Mary Medical Center

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 26 drought events with losses exceeding $1 billion each (CPI-Adjusted) across the U.S. between 1980 and 2018. 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

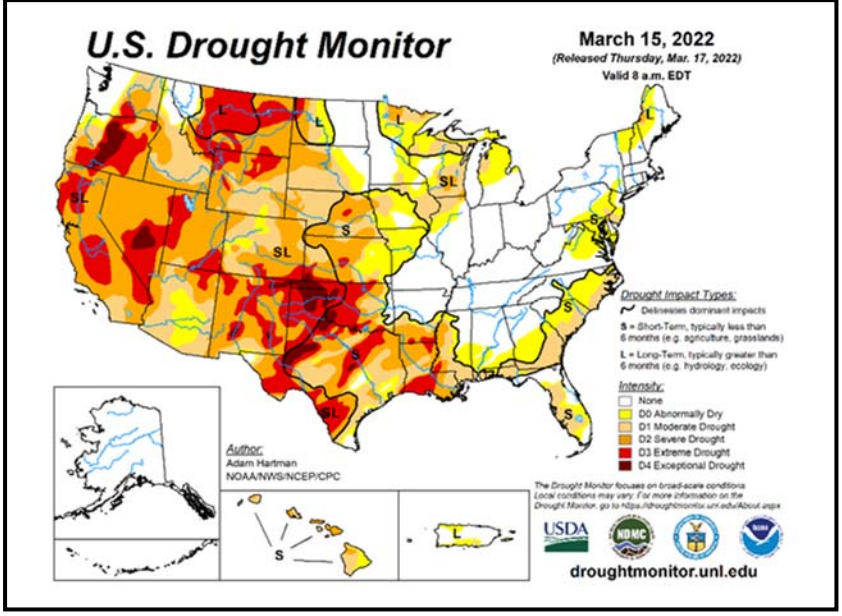
example of the USDM weekly map. The USDM is designed to provide a consistent big-picture look at drought conditions in the U.S. It is not designed to infer specifics about local conditions.

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 – 2021): ***6***

Table 11, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of the drought events recorded in Knox County. NOAA's Storm Events Database, the Illinois State Water Survey, the Illinois Emergency Management Agency (IEMA) the NDMC at the University of Nebraska-Lincoln, and the USDA have documented six official droughts for Knox County between 1980 and 2021.

The recorded drought events ranged in length from three to 19 months, with three of the six events (50%) beginning in June. Of the four drought events that were assigned drought intensity category ratings by the USDM, the 2005 and 2012 droughts reached 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 Knox 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 Knox County's hazard rating for drought as "medium."

What is the probability of future drought events occurring?

Knox County, including the participating jurisdictions, has experienced six droughts between 1980 and 2021. With six occurrences over 42 years, the probability or likelihood that the County may experience a drought in any given year is 14.3%. However, if earlier recorded droughts are factored in, then the probability that Knox County may experience a drought in any given year decreases to 10.8%.

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 Knox 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. Since 2012, Knox County has experienced two droughts.

Do any of the participating jurisdictions consider drought 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 drought to be among their community's greatest vulnerabilities.

What impacts resulted from the recorded drought events?

Damage information was only available for one of the six drought events experienced between 1980 and 2021. According to NOAA's Storm Events Database, the 2012 drought caused an estimated $2.7 million in corn crop damages in Knox County. Damage information was either unavailable or none was recorded for the remaining five reported occurrences.

Drought Fast Facts – Impacts/Risk

Drought Impacts:
- Total Property Damage: ***n/a***
- Total Crop Damage: ***$2.7 million (2012 drought – corn crop damage only)***

Drought Risk/Vulnerability:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Low***

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.

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 a major enterprise in Knox County. Farmland accounts for approximately 90.3% of all the land in the County. According to the 2017 Census of Agriculture, there were 853 farms in in the County occupying 414,123 acres. Of the land in farms, approximately 86% or 356,146 acres is in crop production. Less than 1% of the land in crop production is irrigated.

According to the 2017 Census of Agriculture, total crop and livestock sales accounted for $284.4 million in revenue. This is approximately a 3.0% reduction in revenue from the 2012 Census of Agriculture when the total crop and livestock sales accounted for $293.2 million. Knox County ranks 15th in Illinois for crop cash receipts and 16th 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 six 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 48.8% reduction in corn yields and a 18.8% reduction in soybean yields.

Figure DR-3
Crop Yield Reductions Due to Drought in Knox County

Year	Corn		Soybeans	
	Yield (bushel)	% Reduction Previous Year	Yield (bushel)	% Reduction Previous Year
1982	131.0	---	43	---
1983	**81.0**	**38.2%**	**38.5**	**10.5%**
1984	123.0	---	38	---
1987	123.0	---	42.5	---
1988	**63.0**	**48.8%**	**34.5**	**18.8%**
1989	89.0	---	43.5	---
2004	194.0	---	55	---
2005	**123.0**	**36.6%**	**45**	**18.2%**
2006	168.0	---	50	---
2007	194.0	---	51	---
2010	159.9	---	58.7	---
2011	**169.5**	---	61.9	---
2012	**160.8**	**5.1%**	**55.9**	**9.7%**
2013	191.0	---	56.6	---

Source: USDA, National Agricultural Statistics Service.

Drinking Water Shortages

Municipalities that rely on surface water sources for their drinking water supplies are more vulnerable to shortages as a result of drought. In Knox County, ***none of the participating municipalities rely on surface water sources*** for their drinking water supply. All obtain drinking water from wells in unconfined sand and gravel aquifers ranging in depth from 90 feet to 102 feet or bedrock aquifers ranging in depth from 640 feet to 2,400 feet in depth. Abingdon and Knoxville purchase water from Galesburg, which mainly draws its water from sand and gravel wells.

While 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 Knox 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 majority 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 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 Knox 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.

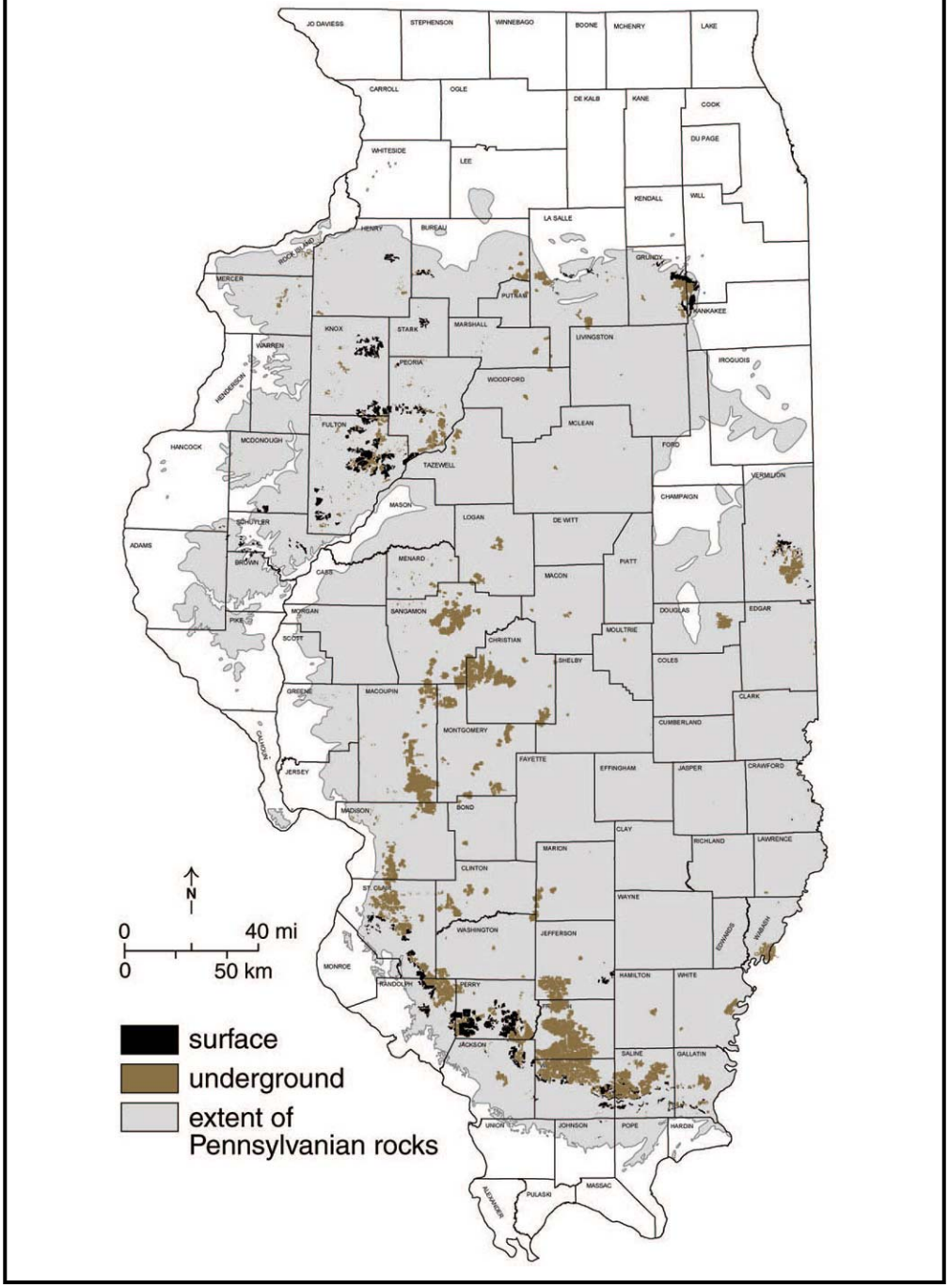
Room-and-Pillar

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.

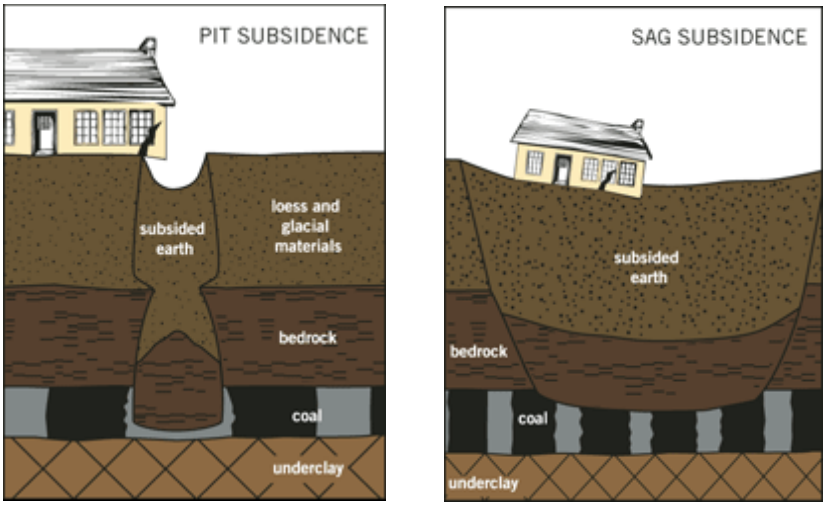
Pit Subsidence

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 Knox County, there are 126 documented underground mines located in the County. A copy of the Directory for Knox County is included in **Appendix L. Figure MS-4** illustrates the locations of these mines.

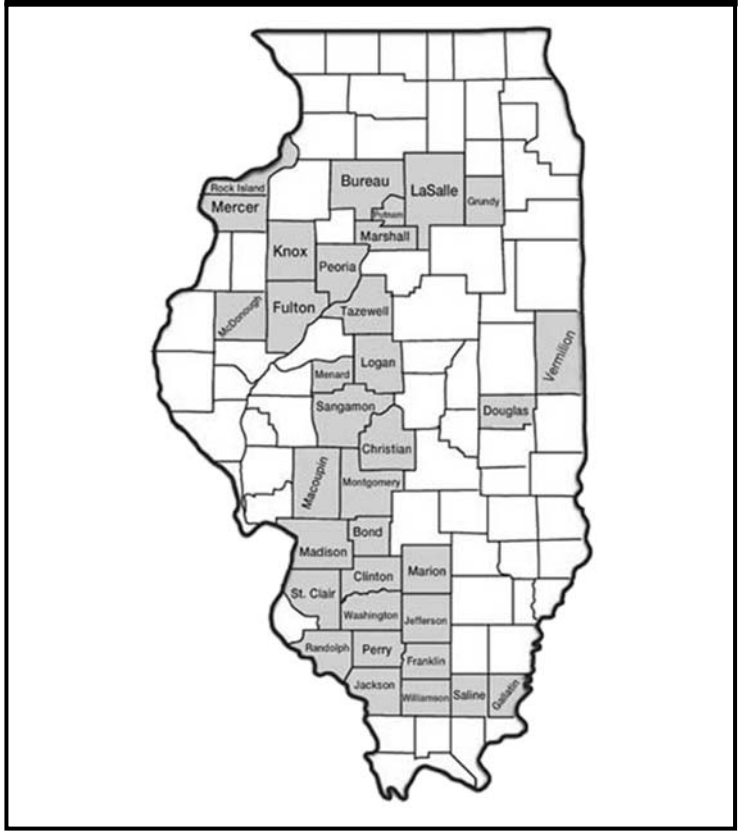
Mine Subsidence Fast Facts – Occurrences

Number of Underground Mines Located within the County: ***126***

Number of Mine Subsidence Events Reported ***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. According to a review of local news articles and discussions with Planning Committee members, there have been no recorded mine subsidence events reported in Knox County.

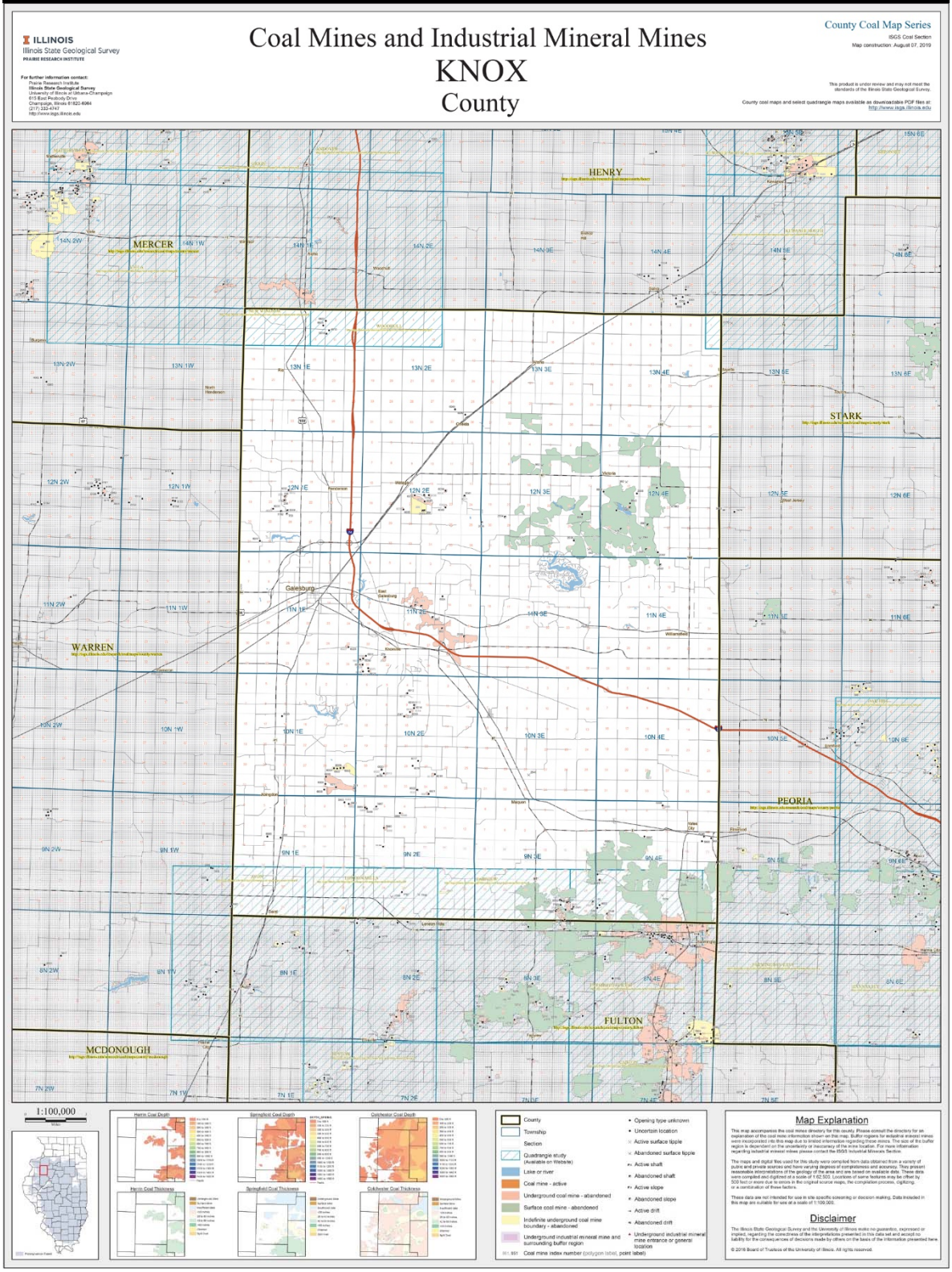
According to the Illinois Mine Subsidence Insurance Fund (IMSIF), there were six confirmed mine subsidence claims submitted to the IMSIF for Knox County between 1981 and 2019. However, detailed information about the locations and damages sustained by claim were not made available.

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 7,203 acres (1.6% of the land area) and 88 housing units (0.4% of the total housing units) in Knox County are located in Zone 1, land over or adjacent to mapped mines.

Figure MS-4
Underground Mines Located Knox County



Source: Illinois State Geological Survey.

- An additional 14,265 acres (3.2% of the land area) and 317 housing units (1.3% 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-5 identifies the location of the Zone 1 and 2 areas in Knox County. Based on this mapping, mine subsidence has the potential to impact parts of unincorporated Knox County as well as Knoxville and Wataga.

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?

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 Knox 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 Knox County, Knoxville, Wataga, Henderson FPD, Rio FPD, and AO&W Ambulance Service will experience future mine subsidence events is estimated to be ***low*** to ***medium*** and ***unlikely*** for the remaining participating jurisdictions and most of unincorporated Knox 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.

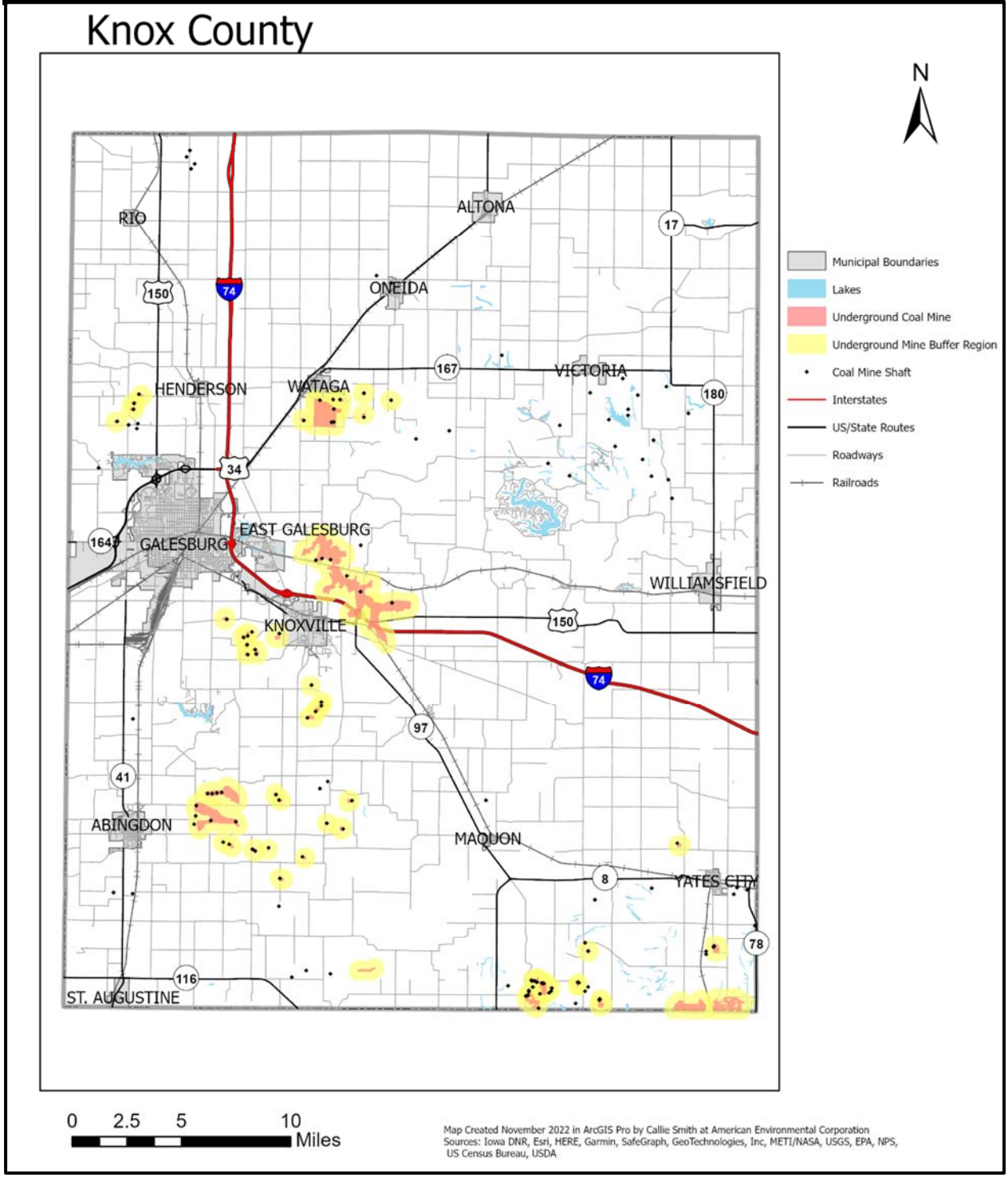
HAZARD VULNERABILITY

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. Knoxville, Wataga, Henderson FPD, Rio FPD, AO&W Ambulance Service, and parts of unincorporated Knox 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 7,203 acres (1.6% of the land area) of Knox County are over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 14,265 acres (3.2% 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 Knox County



Source: Illinois State Geological Survey.

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 Knox County, there are no recorded impacts, including injuries or fatalities, to report. While six confirmed mine subsidence claims were submitted to the Illinois Mine Subsidence Insurance Fund for Knox County between 1981 and 2019, no claims were paid, and no additional information was available regarding the mine subsidence events that led to the claim.

Mine Subsidence Fast Facts – Risk

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***
- Buildings/Infrastructure/Critical Facilities – Areas Outside Zones 1 & 2: ***Low***

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 Knox 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 88 housing units (0.4% of the total housing

units in the County) are located over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 317 housing units (1.3% 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, Knoxville, Wataga, Henderson FPD, Rio FPD, and AO&W Ambulance Service 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 Knox County is considered to be ***medium*** 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. Any future buildings, infrastructure and critical facilities located within Zones 1 and 2 are vulnerable to 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]
Knox County	---	---	---	---	---	---	---	---	---
Knoxville	---	---	---	---	---	---	---	---	---
Wataga	---	---	---	---	---	---	1	---	---
Henderson FPD	---	---	---	---	---	---	---	---	---
Rio FPD	---	---	---	---	---	---	---	---	---
AO&W Ambulance Service	---	---	1	1	---	---	1	---	---

[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.

3.9 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. Over 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, thrust (reverse) 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. Thrust or reverse 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.

Magnitude

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.

Intensity

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

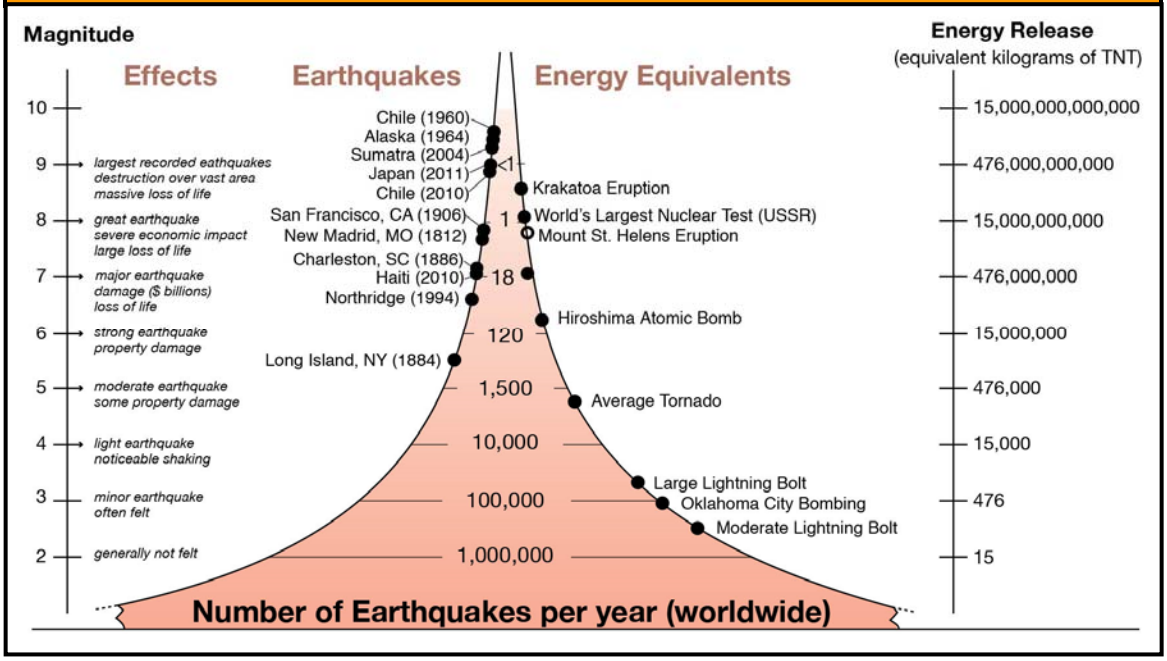
Richter Scale	Modified Mercalli Scale	Observations
1.0 – 1.9	I	Felt by very few people; barely noticeable. No damage.
2.0 – 2.9	II	Felt by a few people, especially on the upper floors of buildings. No damage.
3.0 – 3.9	III	Noticeable indoors, especially on the upper floors of buildings, but may not be 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?

No. There are no known faults or geologic structures located in Knox County or the immediate region as illustrated by **Figure EQ-4**.

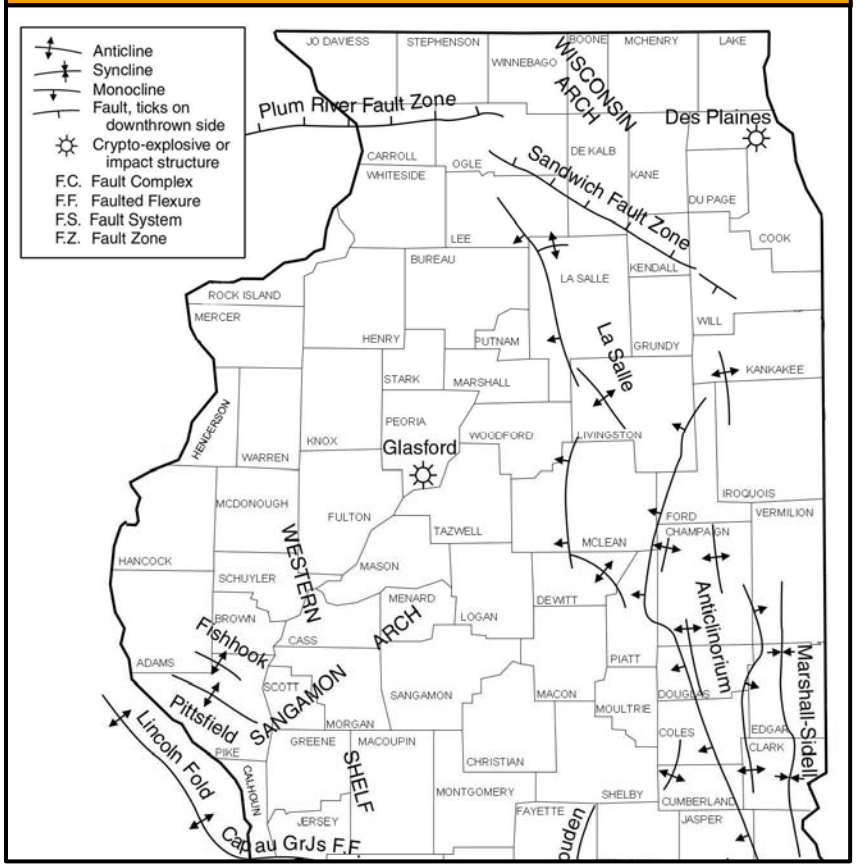
When have earthquakes occurred previously? What is the extent of these previous quakes?

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 Knox 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. **Figure EQ-5** illustrates the epicenters of the nearby earthquakes.

Earthquake Fast Facts – Occurrences

Earthquakes Originating in the County (1795 – 2021): ***None***
Fault Zones Located within the County: ***None***
Geological Structures Located within the County: ***None***
Earthquakes Originating in Adjacent Counties (1795-2021): ***4***
Fault Zones Located in Nearby Counties: ***None***
Geologic Structures Located in Adjacent Counties: ***None***

Figure EQ-4
Geological Structures in Northwestern Illinois



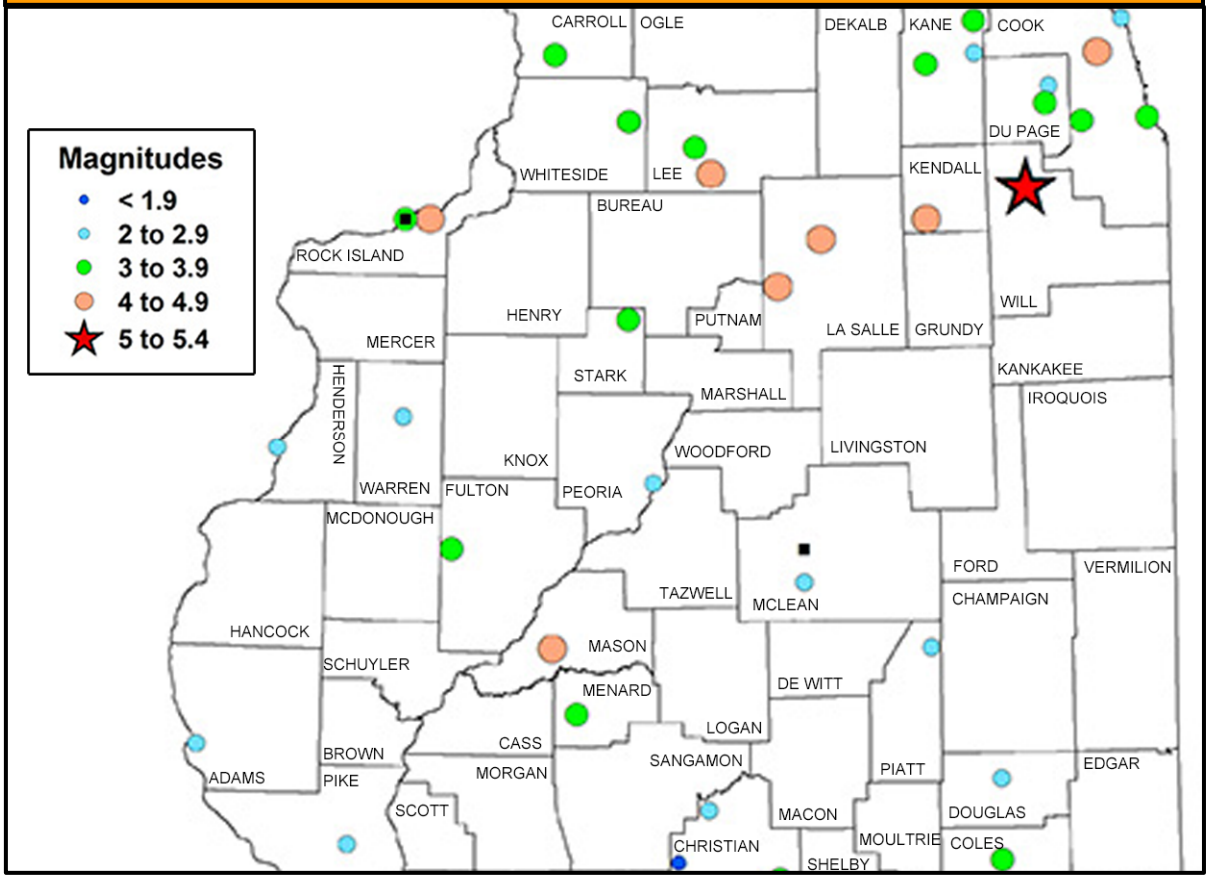
Source: Illinois State Geological Survey.

West-Central Illinois

Four earthquakes have originated in nearby Fulton, Peoria, Stark, and Warren Counties. The following provides a brief description of each.

- On March 3, 1956, an estimated magnitude 3.7 earthquake originated just west of Marietta in Fulton County. This earthquake had an intensity of IV on the Modified Mercalli Intensity Scale.
- An earthquake with an estimated magnitude between 2.0 to 2.9 originated in Peoria in Peoria County on June 29, 1937. This earthquake had an intensity of II on the Modified Mercalli Intensity Scale.
- On April 11, 1922, an earthquake with an estimated magnitude between 2.0 to 2.9 originated two miles east of Monmouth in Warren County. This earthquake had an intensity of II on the Modified Mercalli Intensity Scale.
- An earthquake with an estimated magnitude between 3.0 to 3.9 originated 2.5 miles northwest of Bradford in Stark County on March 1, 1942. This earthquake had an intensity of IV on the Modified Mercalli Intensity Scale.

Figure EQ-5
Earthquakes Originating Near Knox County



Source: Illinois State Geological Survey.

Northern Illinois

In addition to the above referenced events, 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 5.0 are generally not expected in this region. The following highlights a few of the other 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.

- The largest earthquake to take place in northern Illinois in the past several hundred years occurred on May 26, 1909. The exact location of this magnitude 5.1 earthquake isn't known, but the greatest damage occurred in and near Aurora where many chimneys fell, and gas lines were ruptured. Minor structural damage was reported across northern and central Illinois and southern Wisconsin. Ground shaking was felt over seven states.

Southern Illinois

Knox 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.

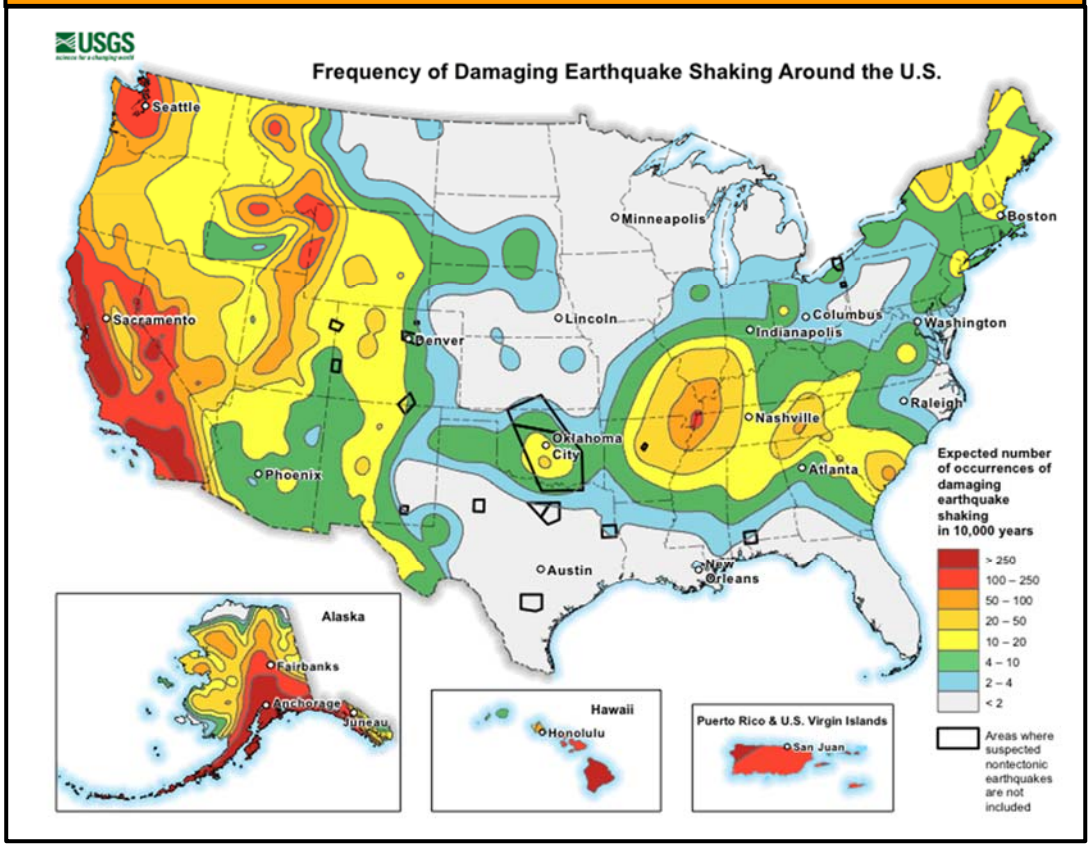
What locations are affected by earthquakes? What is the extent of future potential earthquakes?

Earthquake events generally affect the entire County. Earthquakes, like drought, impact large areas extending across an entire region and affecting multiple counties. Knox County's proximity

to 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 Knox County's hazard rating for earthquakes as "low."

According to the USGS, Knox County can expect 2 to 4 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?

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 Knox 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 – Major 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 – Major Quake in the region: ***Low to Medium***

This vulnerability, found throughout most of Illinois and all of Knox 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 Knox 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 Knox County is not vulnerable to damaging earthquakes. This perception has allowed the County and participating municipalities to develop largely without regard to earthquake safety.

Do any of the participating jurisdictions consider earthquakes to be among their community's greatest vulnerabilities?

Yes. Based on responses to a Critical Facilities Vulnerability Survey distributed to the participating jurisdictions, Galesburg considers earthquakes to be among their community's

greatest vulnerabilities. An earthquake has the potential to damage the City's 30+ mile long water transmission line from Oquawka to Galesburg, impacting serve to more than 35,000 persons.

What impacts resulted from the recorded earthquake events?

While Knox 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 Knox 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.

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 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

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 Knox 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 seen as ***low*** to ***medium*** for a major earthquake originating along seismic zones in the region (i.e., Wabash Valley or New Madrid.)

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

Yes. All existing buildings, infrastructure and critical facilities located in Knox County and the participating jurisdictions are vulnerable to damage from earthquakes. However, given the County's size (approximately 50,000 individuals), its population density, the fact that there are few buildings higher than two stories (with the exception of grain elevators, several multi-story buildings in downtown Galesburg, and Knox College instructional buildings and campus dormitories) tempered by the potential for magnitude 5.0 and above earthquakes to occur in the immediate region, the damage is anticipated to be slight with only superficial structural damage such as broken windows and cracks in weak plaster and masonry.

While unlikely, if a strong earthquake (6.0 – 6.9) were to occur in the immediate 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. **Figure EQ-8** identifies the number of unreinforced masonry buildings that serve as critical facilities within the participating jurisdictions.

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 Knox County would be a VI according to 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-6** 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 seen as ***low*** to ***medium*** for a major earthquake originating along seismic zones in the region (i.e., Wabash Valley or New Madrid.)

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

Yes. All future buildings, infrastructure and critical facilities located in Knox County and the participating jurisdictions are vulnerable to damage from earthquakes. While Abingdon, Galesburg, and Knoxville 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 Knox County, there is no way to accurately estimate future potential dollar losses to vulnerable structures. However, according to the Knox County Supervisor of Assessments the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is $744,927,813. The assessed values of structures in Knox County is approximately one-third the market value. Therefore, the estimated market value of all residential, commercial, and industrial buildings in the planning area is $2,234,783,439. 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 Knox 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	School	Drinking Water	Wastewater Treatment	Medical[2]	Healthcare Facilities[3]
Knox County	1	---	---	---	---	---	---	3	8
Abingdon	2	1	---	---	2	---	1	1	---
Altona	---	---	---	---	---	1	---	---	---
Galesburg	1	---	---	---	1	---	1	10	---
Knoxville	2	---	1	---	4	---	1	3	---
Maquon	2	1	1	---	---	---	---	---	---
Wataga	2	---	---	---	---	1	1	---	---
Yates City	1	---	---	---	---	1	1	---	---
Carl Sandburg College	---	1	---	---	3	---	---	---	---
Knox College	---	---	---	---	40	---	---	---	---
Henderson FPD	---	---	---	---	---	---	---	---	---
Rio FPD	---	---	---	---	---	---	---	---	---
AO&W Ambulance	---	---	---	---	---	---	---	---	---
OSF St. Mary Medical Center	---	---	---	---	---	---	---	---	---

[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 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 24 classified dams located in Knox County. Of those 24 dams, only four have a hazard potential classification of "High". Five dams have a hazard potential classification of "Significant" and the remaining 15 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" hazard potential classification will be analyzed as part of this Plan update.

The following details the location of "High" 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.

Do any of the participating jurisdictions own "High" hazard classified dams?

Yes. The City of Galesburg owns the Lake Storey Dam. **Figure DF-2** provides a brief description of this dam.

Dam Failure Fast Facts – Occurrences

Number of "High" Hazard Classified Dams Located in the County: ***4***

Number of "High" Hazard Classified Dams owned by Participating Jurisdictions: ***1***

Number of Dam Failures Reported: ***None***

Probability of Future Dam Failure Events: ***Low***

Are there any other publicly-owned or privately-owned "High" hazard classified dams within the County?

Yes. The Illinois Department of Natural Resources owns the Lake McMaster Dam within the Snakeden Hollow Fish and Wildlife Area in Knox County. **Figure DF-2** provides a brief description of this dam.

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 Planning Committee members, there are no known recorded dam failures associated with the "High" hazard classified dam in Knox 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 all four "High" hazard classified dams in Knox County. While EAPs for the Lake Rice Dam, Lake Storey Dam, and Spoon Lake Dam were made available to the Galesburg/Knox County Emergency Management Agency, the EAP for Lake McMaster Dam was not. A review of the available EAPs found that none contained a detailed breach analysis. As a result, a data deficiency exists in terms of estimating inundation times for various distances downstream.

Figure DF-2
"High" Hazard Classified Dams Located in Knox County

Dam Name	Hazard Classification	Associated Waterway	Owner	Type	Primary Purpose	Completion Year	Height (feet)	Length (feet)	Storage (acre-feet)	Impoundment Surface Area (acres)	Drainage Area (square miles)	Emergency Action Plan
Publicly-Owned												
Lake McMaster Dam	High	Snakeden Hollow (former tributary to Spoon River)	Illinois Department of Natural Resources	Earth	Recreation	1981	81	850	5,350	178	2.13	Yes
Lake Storey Dam	High	South Henderson Creek	Galesburg	Earth	Recreation	1942	53	770	3,016	109	6.77	Yes
Privately-Owned												
Lake Rice Dam	High	Court Creek	Soangetaha Country Club	Earth	Water Supply, Recreation	1895	35	585	1,511	66	2.7	Yes
Spoon Lake Dam	High	Sugar Creek	Oak Run Property Owners Association	Earth	Recreation	1971	74	1,128	19,500	610	17.4	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-3 shows the locations of the "High" hazard classified dams in Knox County. Dam failures have the potential to impact the following areas:

- ❖ agricultural and wooded land along Snakeden Hollow, a former tributary of the Spoon River, approximately 2 miles southeast of Victoria;
- ❖ wooded and agricultural land along South Henderson Creek immediately northwest of Galesburg (CH 30/W. Lake Story Road);
- ❖ wooded with some mix use residential/commercial land between Galesburg and East Galesburg (BNSF Rail Line, West Main St., and Mattison St. in East Galesburg); and
- ❖ agricultural and wooded land along Sugar Creek approximately 1.5 miles northwest of Dahinda (Oak Run Drive & Knox Rd 1550 N).

What is the probability of future dam failure events occurring?

Since none of the "High" hazard 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.

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. Portions of East Galesburg, Henderson FPD, and unincorporated Knox County 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 participating jurisdictions or the remainder of the County are considered vulnerable.

Do any of the participating jurisdictions consider dam failures 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 dam failures to be among their community's greatest vulnerability.

What impacts resulted from the recorded dam failures?

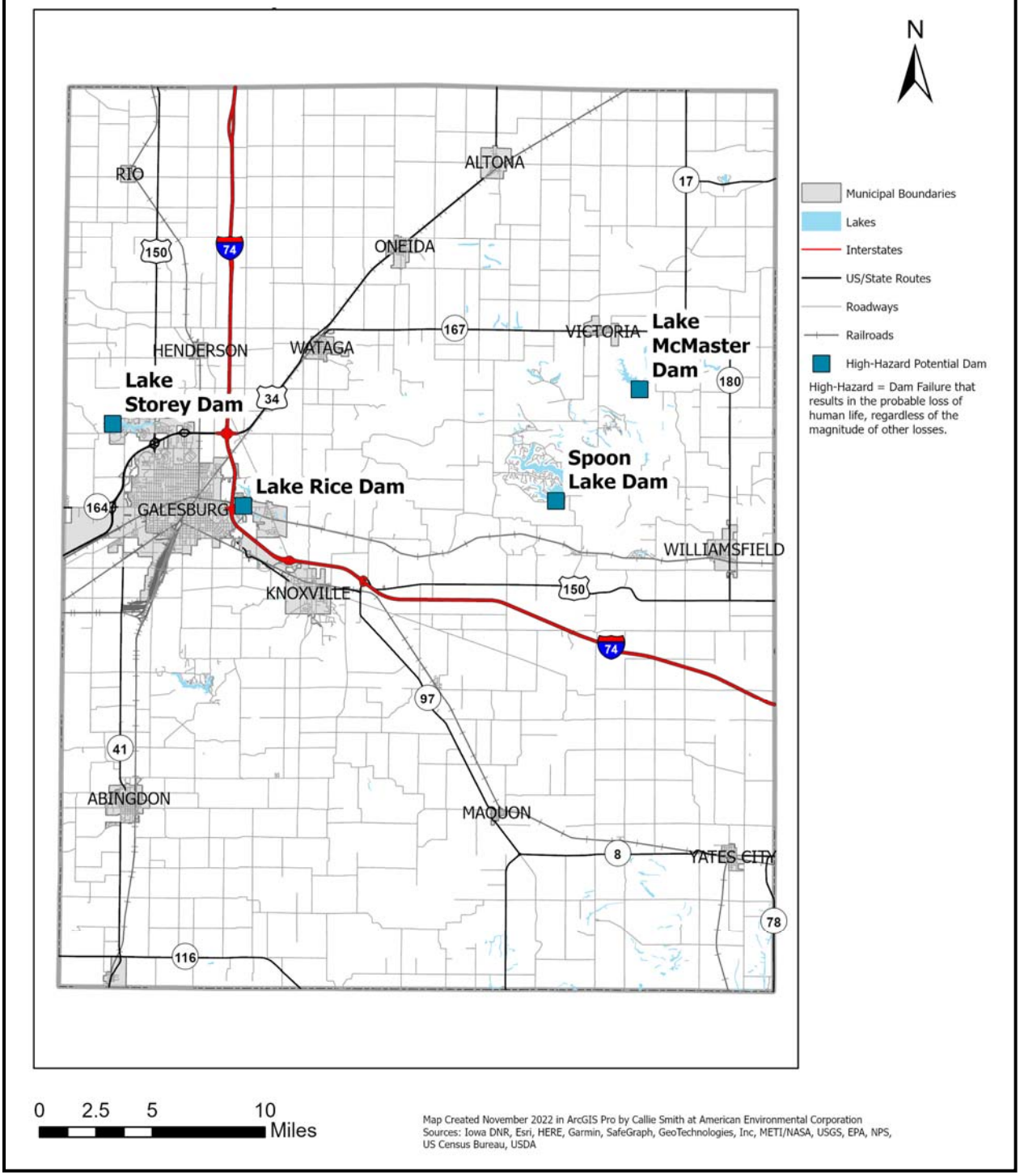
Since there have been no *recorded* dam failures associated with the "High" hazard classified dams studied in Knox County, there are no recorded impacts to report.

Dam Failure Fast Facts – Risk

Dam Failure Risk/Vulnerability:

- ❖ Public Health & Safety: "High" Hazard Classification Dams – ***Low***
- ❖ Buildings/Infrastructure/Critical Facilities: "High" Hazard Classification Dams – ***Low***

Figure DF-3
Location of "High" Classified Dams in McDonough County



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.

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 can also 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 may also 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" hazard classified dams studied in Knox County is considered to be ***low***.

Are existing buildings, infrastructure, and critical facilities vulnerable to dam failures?

Yes. **Figure DF-4**, located at the end of this section, provides a ***rough estimate*** of the buildings, infrastructure, and critical facilities vulnerable to a dam failure from the "High" hazard classified dams studied in Knox County.

The EAPs for Lake Story Dam, Lake Rice Dam, and Spoon Lake Dam included either inundation maps and/or narrative that identified potentially-impacted buildings and infrastructure. As discussed previously, the EAP for Lake McMaster Dam was not provided to the Galesburg/Knox County EMA. As a result, a data deficiency exists in terms of comprehensively identifying existing buildings, infrastructure, and critical facilities vulnerable to dam failures for this dam.

While detailed information was not available for Lake McMaster 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 posed by a dam failure in Knox County is considered to be ***low*** for the "High" hazard classified dams studied.

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 Knox 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-4 **Buildings, Infrastructure & Critical Facilities Vulnerable to a Dam Failure**					
Dam Name	**Location**	**Number of Vulnerable Buildings/Infrastructure**			
		Residential	**Commercial**	**Infrastructure**	**Critical Facilities**
Lake McMaster Dam	Snakeden Hollow State Fish & Wildlife Area Unincorp. Knox County (2 miles southeast of Victoria)	0	0	None	None
Lake Rice Dam	East Galesburg Unincorp. Knox County	2	0	- BNSF Rail Line - W. Main St. - Mattison St.	None
Lake Storey Dam	Unincorp. Knox County immediately northwest of Galesburg (Henderson FPD)	11	0	- W. Lake Storey Rd./CH 30 - W. Lake Storey Rd./CH 30 bridge over South Henderson Creek	None
Spoon Lake Dam	Oak Run Unincorp. Knox County	1-2	0	- BNSF Rail Line	None

3.11 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 Planning 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 Knox 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.

3.11.1 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 Knox County that generate and use hazardous substances, the population size, transportation patterns, and land use, the probability of a release occurring in Knox 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 Knox County.

3.11.1.1 Generation

Knox County has three 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** identifies the hazardous substance generators located in Knox County and summarizes the substances generated.

Hazardous Substances Fast Facts - Occurrences

Generation

Number of Facilities that Generate Reportable Quantities of Hazardous Substances (2020): ***3***

Transportation

Number of Roadway Incidents Involving Hazardous Substance Shipments (2011 - 2020): ***20***

Number of Railway Accidents/Incidents Involving Hazardous Substance Shipments (2011 - 2020): ***46***

Number of Pipeline Incidents Involving Hazardous Substances (2011 - 2020): ***None***

Storage/Handling

Number of Facilities that Store/Handle Hazardous Substances (2020): ***42***

Number of Facilities that Store/Handle Extremely Hazardous Substances (2020): ***13***

Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2020

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Galesburg		
Gates Corporation	Antimony compounds	1,726
	Certain glycol ethers	915
	Polycyclic aromatic compounds	3
	Zinc compounds	9,053
	Total:	*11,697*
Koppers, Inc.	Creosote	5,100
	Polycyclic aromatic compounds	10
	Total:	*5,110*
National Coatings	1,2,4-Trimethylbenzene	4,948
	Certain glycol ethers	36,455
	Ethylbenzene	837
	Naphthalene	1,262
	Xylene (mixed isomers)	2.033
	n-Butyl alcohol	3,247
	Sec-Butyl alcohol	5,547
	Total:	*71,136*

Source: U.S. Environmental Protection Agency, TRI Explorer, Releases: Facility Report.

3.11.1.2 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 Knox County is carried on Interstate 74. Other major roadways that carry truck traffic include U.S. Route 34, U.S. Route 150, Illinois Route 8, Illinois Route 17, Illinois Route 41, Illinois Route 97, Illinois Route 110, Illinois Route 167, and Illinois Route 180. 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 has not been conducted for Knox County.

According to records obtained from the Illinois Emergency Management Agency (IEMA), there were 20 recorded roadway incidents involving the shipment of hazardous waste and/or products in Knox County between 2011 through 2020. **Figure MMH-2** provides information on these incidents.

Figure MMH-2
Roadway Incidents* Involving Shipments of Hazardous Substances
2011 – 2020
(Sheet 1 of 2)

Date	Area	Location	Hazardous Product Released	Quantity Released
3/20/2012	Galesburg	IL Route 41 and US Route 34	Creosote and wood sugar	5 gallons
3/20/2012	Galesburg	Linwood Road & IL Route 41	Creosote	Unknown
6/20/2013	Victoria^	CR 2470N and CR 2100E	Diesel fuel	150 gallons
8/21/2014	Galesburg^	I-74, MP 40	Diesel fuel & motor oil	<5 gallons of diesel fuel; <1 gallon of motor oil
1/6/2015	Knoxville^	I-74, eastbound	Diesel fuel	25 gallons
7/6/2015	Galesburg	US Route 34, between Seminary St & Henderson St. exits	Diesel fuel	50-150 gallons
7/7/2015	Galesburg^	US Route 34, 0.5 miles east of I-74	Diesel fuel	<25 gallons
4/21/2016	Galesburg^	I-74, MP 48	Diesel fuel	>100 gallons
4/22/2016	Galesburg^	I-74, MP 48	Diesel fuel	50-100 gallons
3/22/2017	London Mills^	IL Route 116 & Walter Road	Diesel fuel	Unknown
5/25/2017	Galesburg^	I-74, MP 36	Plastic rolls	Unknown

* 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.

Figure MMH-2
Roadway Incidents* Involving Shipments of Hazardous Substances
2011 – 2020
(Sheet 2 of 2)

Date	Area	Location	Hazardous Product Released	Quantity Released
7/11/2017	Wataga	2100 US Route 34	Diesel fuel	150 gallons
7/13/2017	Wataga[^]	US Route 34, east of I-74	Diesel fuel	Unknown
8/3/2017	Galesburg[^]	I-74, eastbound	Diesel fuel	Unknown
5/17/2018	Altona[^]	CR 2950N & CR2000E	Atrazine 4L Herbicide	Unknown
12/2/2018	Galesburg[^]	I-74, MP 35	Diesel fuel	Unknown
12/6/2018	Galesburg[^]	I-74, MP 35	Diesel fuel	30 gallons
6/1/2019	Galesburg[^]	I-74, MP 40	Diesel fuel	50 gallons
6/21/2019	Galesburg	US Route 34, south on Seminary Road	Diesel fuel & motor oil	30 gallons of diesel fuel; 15 gallons of motor oil
8/17/2020	Galesburg[^]	I-74, eastbound of exit 46	UAN 32% (fertilizer)	3,820 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

Railways

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 Knox County there is one class I rail line operated by Burlington Northern and Santa Fe (BNSF) Railway. 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 2011, there have been 44 rail accidents involving hazardous substances in Knox County according to the ICC. In comparison, ICC records indicate that since 2011 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 Knox 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
2011 – 2020

Year	Category	Accident/Incident Location			
		Illinois	Knox County	Cook & Collar Counties	All Other Counties
2011	A	8	1	1	6
	B	10	0	9	1
	C	60	2	33	25
2012	A	4	0	2	2
	B	13	0	11	2
	C	73	5	42	26
2013	A	5	0	3	2
	B	23	1	16	6
	C	82	2	51	29
2014	A	2	0	2	0
	B	36	0	22	14
	C	84	3	40	41
2015	A	4	0	3	1
	B	27	1	15	11
	C	69	1	36	32
2016	A	4	1	1	3
	B	14	1	6	7
	C	65	3	33	29
2017	A	2	0	1	1
	B	14	1	9	4
	C	69	6	34	29
2018	A	1	0	0	1
	B	8	0	4	4
	C	55	7	24	24
2019	A	6	0	4	2
	B	6	0	4	2
	C	33	5	12	16
2020	A	4	0	2	2
	B	7	0	5	2
	C	46	4	30	12

Source: Illinois Commerce Commission.

According IEMA's hazardous materials incident records for 2011 through 2020, there were an additional two rail accidents/incidents involving the release of hazardous substances.

Figure MMH 5 provides information on these incidents by rail line. No derailments were associated with any of these accidents/incidents.

Figure MMH-5
IEMA Recorded Railway Accidents/Incidents Involving Hazardous Substances
2011 - 2020

Date	Area	Location	Hazardous Substance Released	Quantity Released
BNSF				
12/5/2013	Galesburg	Knox County Highway 32	Unknown petroleum product	Unknown
12/24/2018	Galesburg	Near IL Route 41	Engine oil	100 gallons

^ Accident/incident verified in the vicinity of this area.

Source: Illinois Emergency Management Agency, Hazardous Materials Incident Reports.

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.

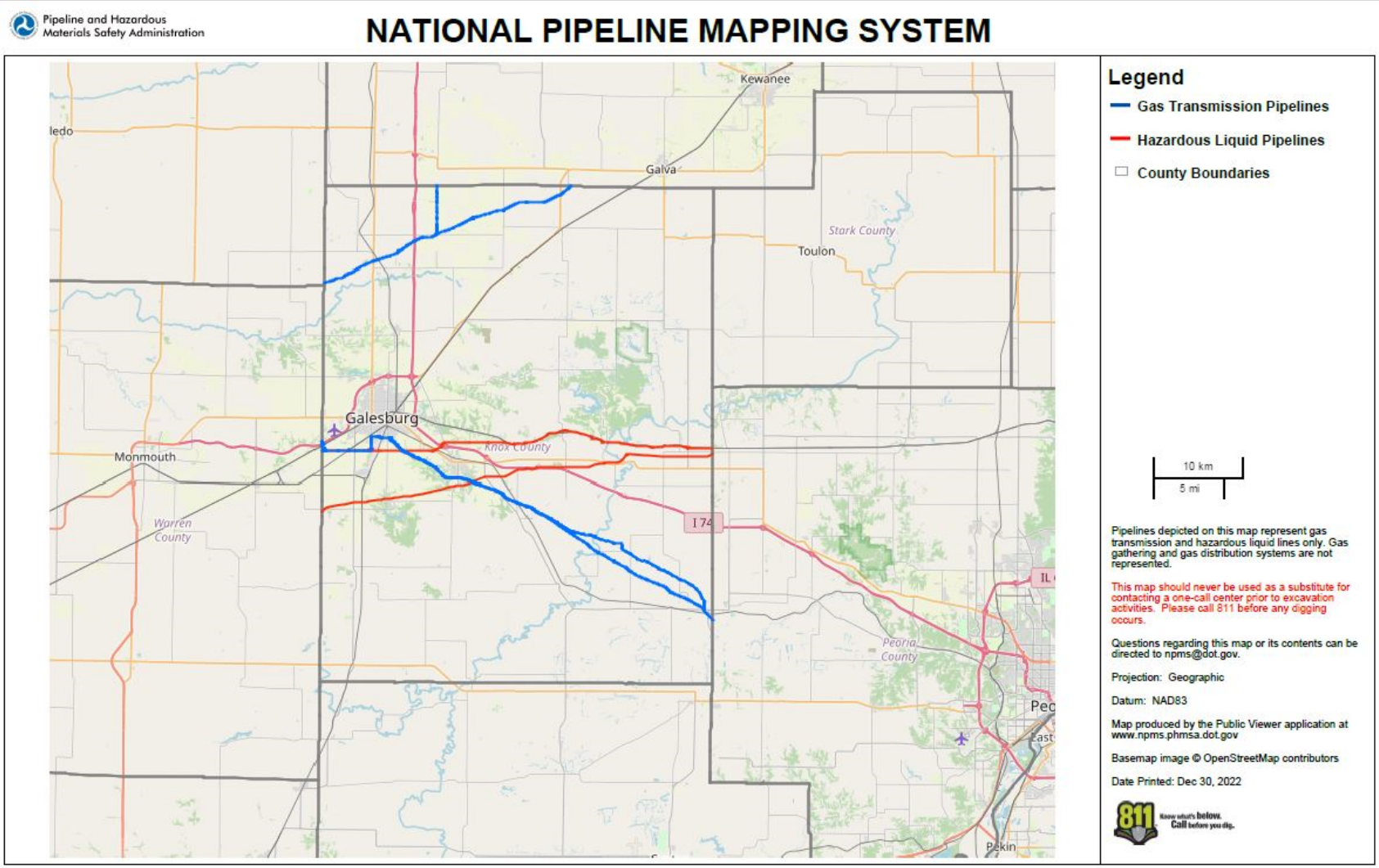
Pipelines

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 Knox County, there are three major pipelines that carry natural gas, all operated by Ameren Illinois Co. There also are two major pipelines for carrying crude oil, gasoline, or hazardous liquids crossing the County from east to west. The northern of these two pipelines is permanently abandoned, while the southern pipeline is operated by BP North America. ***No pipeline releases occurred in Knox County during a 10-year period from 2011 through 2020.*** **Figure MMH-6** shows the pipelines in Knox County.

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

Figure MMH-6
Pipeline Location Map



- 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.

3.11.1.3 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'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 Knox 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 42 facilities within Knox County in 2020 that store and handle hazardous substances.

Of these 42 facilities, 13 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.

3.11.2 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 Knox County.

3.11.2.1 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.

Waste Disposal Fast Facts - Occurrences

Solid Waste
Number of Solid Waste Landfills Operating in Knox County (2021): ***1***

Number of Landfills Serving Knox and adjacent counties (2021): ***2***

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***

According IEPA's Annual Landfill Capacity Report issued in July 2022, there was one commercial landfill that operates in Knox County, the Knox County Landfill #3. There are currently two additional landfills that serve Knox and the adjacent counties. These landfills include Echo Hill (Henry County) and Peoria City/County Landfill #2 (Peoria County.)

3.11.2.2 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 Knox County.

3.11.2.3 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 Knox County.

3.11.3 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 2011 to 2020, there were 99 hazmat incidents recorded in Knox County. Of these incidents, 44 (44%) involved transportation incidents/accidents while 55 (56%) occurred at fixed facilities. Thirty (30) of the 44 (68%) transportation incidents/accidents involved petroleum-based products.

Hazmat Incident Fast Facts - Occurrences

Number of Hazardous Material Incidents in Knox County (2011 - 2020): ***99***

Number of Transportation-Related Incidents/Accidents: ***44***

Number of Fixed Facility-Related Incidents/Accidents: ***55***

Average Number of Hazardous Material Incidents Experienced Annually: ***10***

Based on the recorded incidents, Knox County experienced an average of 10 hazmat incidents annually from 2011 through 2020. 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.

3.11.4 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.

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

Waste Remediation Fast Facts - Occurrences

Superfund

Number of Superfund Sites in the County: ***1***

Illinois Site Response Action Program

Number of SRAP Sites in the County: ***6***

Illinois Site Remediation Program

Number of SRP Sites in the County: ***15***

Number of SRP Sites with NFR Letters: ***9***

Illinois Leaking Underground Storage Tanks Program

Number of LUST Sites in County: ***155***

Number of LUST Sites with NFR/Non-LUST/4Y Letters: ***79 (51%)***

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 is one Superfund site in Knox County, the Galesburg/Koppers Co. Site, which was placed on the NPL on September 8, 1983, and is being managed through the Superfund Program.

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 six SRAP sites in Knox County, four of which (67%) have completed the 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 15 SRP sites in Knox County. Nine of the 15 (60%) SRP sites have received NFR letters. The remaining six sites do 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 Knox County, there are 155 sites involving the remediation of petroleum product releases from underground storage tanks. Of the 155 LUST sites, 79 (approximately 51%) have received NFR letters, other clearance letters, or remediation is virtually complete.

3.11.5 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 Knox County, residents could be exposed to radioactive material and/or radiation from a nuclear incident that occurs:

- at the Quad Cities Nuclear Power Facility located near Cordova; or
- as spent nuclear fuel rods are being transported by railway through the County.

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 Knox County.

Nuclear Incidents Fast Facts - Occurrences

Number of Nuclear Power Facilities in the County: ***None***

Number of Nuclear Power Facilities near the County: ***1***

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 (much of the northern half of the county)***

Number of Incidents Impacting the County: ***None***

3.11.5.1 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 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 is one nuclear generating station relatively close to Knox County. **Figure MMH-7** identifies the facilities, their locations, and their respective distances to the Knox County border. The station is owned and operated by the Exelon Corporation.

Figure MMH-7
Nuclear Generating Stations Near Knox County

Nuclear Generating Station Name	Location	Distance to Knox County Border
Quad Cities Generating Station	Cordova, Illinois	39 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 Knox 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-8** identifies the locations that fall within the 50-mile Ingestion Pathway Zone.

Figure MMH-8
Locations within Emergency Planning Zones

Nuclear Generating Station Name	Areas within 10-Mile Critical Risk Zone	Areas within 50-Mile Ingestion Pathway Zone
Quad Cities Generating Station	none	Rio, Altona, Ontario, Oneida, Wataga, Victoria, Centerville, Henderson, Henderson Grove

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 Knox 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 Exelon Corporation'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 the Quad Cities Nuclear Power Facility.

No nuclear power facilities have had any incidents that have impacted Knox County. The probability of an incident causing off-site impacts appears low.

3.11.5.2 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.

3.11.6 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

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.

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.

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 Knox 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.

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 and man-made hazards identified in the Risk Assessment section of this Plan. The strategy includes:

- Reviewing 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 and man-made 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 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 developed in the original Plan were reviewed and re-evaluated. The Planning Committee chose to replace the three primary goals and list of objectives in order to simplify the mitigation strategy and address a more comprehensive range of mitigation activities and projects.

The original list of mitigation goals as well as potential updates to the list were distributed to the Planning Committee members at the first meeting on October 21, 2021. Members were asked to review the potential updates before the second meeting and consider whether any changes needed to be made or if additional goals should be included. At the Planning Committee's March 3, 2022 meeting the group discussed the updated goals and approved them with no changes. **Figure MIT-1** lists the approved mitigation goals.

Figure MIT-1 Mitigation Goals	
Goal 1	Lessen the impacts of hazards on new and existing infrastructure (buildings, roads, bridges, utilities, water supplies, sanitary sewer systems, etc.) in order to promote hazard-resistant communities.
Goal 2	Incorporate hazard mitigation strategies into existing and new community plans and regulations.
Goal 3	Develop long-term strategies to educate residents and businesses on the hazards affecting the County and the actions they can take before a hazard event occurs to protect themselves, their households, homes and businesses.
Goal 4	Protect the lives, health, and safety of the individuals living in the County from the dangers caused by natural and man-made hazards.
Goal 5	Place a priority on protecting community lifelines (i.e., safety and security; food, water, and shelter; health and medical; energy; communication; and transportation), public services and schools.
Goal 6	Preserve and protect the creek, streams, and floodplains in the County.
Goal 7	Ensure future development does not increase the vulnerability of hazard-prone areas within the County or create unintended exposures to natural and man-made hazards.
Goal 8	Protect historic, cultural, and natural resources from the effects of natural and man-made 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 original Plan. A copy of these original actions is included in **Appendix M**. A review of the existing hazard mitigation actions revealed the following shortcomings:

- ❖ Actions did not identify specific entities other than the County responsible for implementation, even for municipal projects. This created a situation in which the municipalities did not have a clear understanding of which department within their own jurisdiction was tasked with implementing the action and therefore no sense of responsibility or ownership of the action was taken.
- ❖ Actions already completed were included in the mitigation strategy. Several of the actions identified were already implemented prior to the completion and adoption of the Plan and therefore were eliminated.
- ❖ Actions focused on emergency preparedness or response and not mitigation. Several of the actions identified were aimed at addressing emergency preparedness or response and not mitigation needs and therefore were eliminated.

The remaining existing mitigation actions were evaluated, assigned to the appropriate participating jurisdiction(s), and presented to the Planning Committee members for their review and evaluation at the second meeting held on March 3, 2022. Each participating jurisdiction was asked to identify those actions that were either in progress or that had been completed since the original Plan was prepared in 2011. They were also given the opportunity to eliminate any action on their specific list that they did not deem viable and/or practical for implementation.

Figures MIT-2 through **MIT-9**, located at the end of this section, summarize the results of this evaluation by jurisdiction. Each action listed includes a reference number to the original mitigation

action list found in **Appendix M**. Knox College, Altona Oneida & Wataga Ambulance Service, Henderson Fire Protection District, Rio Fire Protection District, and OSF St. Mary Medical Center did not participate in the development of the original Plan and therefore are not included in the summary. While Carl Sandburg College participated in the original Plan's development, it did not include any mitigation actions in the Plan and also was not included in the summary. While East Galesburg, Oneida, Rio, and Williamsfield participated in the original Plan, they chose not to participate in the Plan update process and are not included in the summary.

4.3 NEW MITIGATION ACTION IDENTIFICATION

Following the review and evaluation of the existing mitigation actions, the Planning Committee members were asked to consult with their respective jurisdictions to identify ***new, jurisdiction-specific mitigation actions***.

Representatives of Knox County, Abingdon, Altona, Galesburg, Knoxville, and Wataga 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 Planning Committee members to compare and consolidate similar actions. **Figure MIT-10** identifies each mitigation activity category and provides a brief description.

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 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-11** provides a brief description of each Community Lifeline.

Figure MIT-10 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.)

4.5 MITIGATION ACTION PRIORITIZATION METHODOLOGY REVIEW

The methodology developed to prioritize mitigation actions in the original Plan was reviewed by the Planning Committee as part of the Plan update process. The original prioritization methodology was based on the STAPLE+E planning factors (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) and applied a rating of high, medium, or low to each mitigation action.

Taking into account the number and types of factors assessed and the complexity associated with the STAPLE+E analysis, the Planning Committee decided to replace the original prioritization methodology with one focused on just two key factors: 1) the frequency of the hazard and 2) the degree of mitigation attained. This updated prioritization methodology was presented to the Planning Committee members at the third meeting held on June 30, 2022. The group reviewed and discussed the methodology and chose to approve it with no changes.

Figure MIT-12 identifies and describes the four-tiered prioritization methodology adopted by the Planning Committee. The methodology developed 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.

Figure MIT-11 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)

Figure MIT-12
Mitigation Action Prioritization Methodology

		Hazard	
		Most Frequent Hazard **(M)** (i.e., severe storms, severe winter storms, floods, extreme cold, excessive heat,)	Less Frequent Hazard **(L)** (i.e., tornadoes, drought, earthquakes, mine subsidence)
Mitigation Action	Mitigation Action with the Potential to Virtually Eliminate or Significantly Reduce Impacts **(H)**	**HM** mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from the most frequent hazards	**HL** mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from less frequent hazards
	Mitigation Action with the Potential to Reduce Impacts **(L)**	**LM** mitigation action has the potential to reduce damages, fatalities and/or injuries from the most frequent hazards	**LL** mitigation action has the potential to reduce damages, fatalities and/or injuries from less frequent hazards

4.6 MITIGATION ACTION IMPLEMENTATION, ADMINISTRATION & COST/BENEFIT ANALYSIS

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;
- describing the time frame for completion; and
- conducting a preliminary cost/benefit analysis.

Oversight & Administration

It is important to keep in mind that many of the participating jurisdictions have extremely limited capabilities related to organization and staffing for oversight and administration of the identified mitigation actions. Four of the seven participating municipalities are small in size, with populations of less than 850 individuals. In most cases these jurisdictions have minimal staff who are only employed part-time. Their organizational structure is such that most have very few 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 Western Illinois Regional Council has the ability to provide grant writing services to Knox County, most of the participating jurisdictions do not have administrators 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 planning 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 50,000 individuals. Four of the seven participating municipalities have populations of less than 850 individuals. Most 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.

Cost/Benefit Analysis

A preliminary qualitative cost/benefit analysis was conducted on each mitigation action. The costs and benefits were analyzed in terms of the general overall cost to complete an action as well as the action's likelihood of permanently eliminating or 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 based on the financial cost and staffing effort needed. It was repeatedly communicated to the Planning Committee members that when a grant application is

submitted to IEMA/FEMA for a specific action, a detailed cost/benefit analysis will be required to receive funding.

4.7 RESULTS OF MITIGATION STRATEGY

Figures MIT-13 through **MIT-26**, 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
Knox County – Status of Existing Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Follow Tier II reports requirements for EPA, ILEPA, and IEMA (Mitigation Item #1)			✓		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)			✓	2021	
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Significantly harden or replace the EOC and establish an incident command center (Mitigation Item #8)	✓				
Institute a mass notification system, e.g., Reverse 911 or Blackboard Connect, to cover all communities within the county (Mitigation Item #9)	✓				
Purchase and install new warning sirens within the county (Mitigation Item #10)		✓			
Conduct stream and ditch maintenance, particularly for Cedar Creek Fork (Mitigation Item #11)	✓				
Train and organize weather spotters through SKYWARN (Mitigation Item #13)	✓				
Enforce codes requiring mobile homes to have tie-downs (Mitigation Item #14)			✓		

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Knox County has one infrastructure project and one administrative activity completed or in progress that have the potential to decrease vulnerability to Shelter and Communications Community Lifelines. The County has also completed an additional two administrative activities. These projects and activities however it will not significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-2
Knox County – Status of Existing Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Develop ordinances to bury new power lines in subdivisions (Mitigation Item #15)	✓				
Repair roads that frequently flood (Mitigation Item #16)	✓				
Elevate State Route 41 (Mitigation Item #17)	✓				
Fix viaduct at Route 8 and Yates City (Mitigation Item #18)	✓				
Conduct a study to potentially re-engineer intersections with frequent vehicle accidents: Eastbound Interchange of US 34 and I-74 (Mitigation Item #21)	✓				
Establish a database to identify special needs population (Mitigation Item #22)	✓				
Conduct a study to determine which critical facilities are out of date regarding building codes (Mitigation Item #23)	✓				
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				
Re-route rail line outside of town (Mitigation Item #25)	✓				
Implement natural snow fences/tree barriers (Mitigation Item #26)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the County's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Knox County has one infrastructure project and one administrative activity completed or in progress that have the potential to decrease vulnerability to Shelter and Communications Community Lifelines. The County has also completed an additional two administrative activities. These projects and activities however it will not significantly change the vulnerability of hazard prone areas within the County.

Figure MIT-3
Abingdon – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)	✓				
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)		✓			
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Abingdon has one infrastructure project in progress that has the potential to decrease the vulnerability to Water Community Lifelines. It remains to be seen the degree of reduction that will be experienced from the implementation of this project.

Figure MIT-4
Altona – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)			✓		
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)	✓				
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Altona completed one administrative activity; however, this activity will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-5
Galesburg – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Create an EAP for Lake Story Dam (Mitigation Item #2)			✓	2016	
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)			✓	2021	
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Obtain funding to repair Lake Story Dam (Mitigation Item #12)			✓		
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)		✓			
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Galesburg has one infrastructure project in progress that has the potential to decrease the vulnerability to Water Community Lifelines. It remains to be seen the degree of reduction that will be experienced from the implementation of this project. The City also completed three administrative activities. These activities however will not significantly change the vulnerability of hazard prone areas within the City.

Figure MIT-6
Knoxville – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)	✓				
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)		✓			To be completed in 2024
Adopt International Building Codes for all new public buildings (Mitigation Item #24)			✓	10/19/2020	

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Knoxville has one infrastructure project in progress that has the potential to decrease the vulnerability to Water Community Lifelines. It remains to be seen the degree of reduction that will be experienced from the implementation of this project. The City also completed one administrative activity that has the potential to decrease hazard prone areas within the City, but it is still too early to tell the degree of reduction that will be experienced.

Figure MIT-7
Maquon – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)	✓				
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Procure backup generators for water treatment plant in Maquon (Mitigation Item #7)		✓			The Village Board approved purchase, lead-time is over a year for the generator
Purchase and install new warning sirens within the county (Mitigation Item #10)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)	✓				
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Maquon has one infrastructure project in progress that has the potential to decrease the vulnerability to Water Community Lifelines. This project however will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-8
Wataga – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)			✓		
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)		✓			
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)	✓				
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Wataga has one infrastructure project and one administrative activity in progress or completed have the potential to decrease the vulnerability to Shelter Community Lifelines. These projects however will not significantly change the vulnerability of hazard prone areas within the Village.

Figure MIT-9
Yates City – Status of Existing Mitigation Actions

Activity/Project Description	Status			Year Completed	Summary/Details of Completed Activity/Project (i.e., location, scope, etc.)
	No Progress (✓)	In Progress (✓)	Completed (✓)		
Distribute weather radios to critical facilities (Mitigation Item #3)	✓				
Establish new shelters/warming centers/cooling centers (Mitigation Item #4)	✓				
Harden critical facilities to serve as emergency shelters (Mitigation Item #5)	✓				
Purchase transfer switches countywide to provide back-up power to critical facilities (Mitigation Item #6)	✓				
Complete an inflow and infiltration study (Mitigation Item #19)	✓				
Slip line existing sewer pipes (Mitigation Item #20)	✓				
Adopt International Building Codes for all new public buildings (Mitigation Item #24)	✓				

(Mitigation Strategy "No.") refers to the original action by number detailed in Appendix M.

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the original Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Yates City was not able to complete the identified infrastructure improvement project due to fiscal constraints. As a result, there has been no changes in vulnerability of hazard prone areas within the Village.

Figure MIT-13
Knox County Hazard Mitigation Actions
(Sheet 1 of 5)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Purchase and distribute weather radios to county-owned facilities (i.e., Knox County Nursing Home, Courthouse, etc.) to establish a Communications Community Lifeline that notifies staff and residents of natural and man-made hazard event information.	DF, EC, EH, EQ, F, MMH, MS, SS, SWS, T	C	E&A	Small	4	---	---	EMA Coordinator	2 years	County	Low/High	Existing (2011)
LM	Establish new warming/cooling centers and emergency shelters in areas not currently served by a designated center/shelter.	DF, EC, EH, EQ, F, MMH, MS, SS, SWS, T	FWS	E&A	Medium	4	---	---	EMA Coordinator / County Board / Municipal Leadership	5 years	County	Low/Medium	Existing (2011)
HM	Harden EOP-designated emergency shelters strategically located throughout the County to increase building resilience to natural hazards, maintain continuity of operations, protect residents, and mitigate risk to Shelter Community Lifelines essential to human health and safety. Hardening measures would focus on constructing and/or retrofitting areas within these facilities to serve as community safe rooms (equipped with emergency backup generator & HVAC units).	EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium	1, 4, 5	---	Yes	EMA Coordinator / County Board	5 years	County / USDA – RD Critical Facilities Programs / FEMA HMGP	High/High	Existing (2011)

† 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 projected population growth, budgetary constraints, and the County's size (approx. 50,000 individuals of which approx. 7,800 reside in unincorporated Knox County). 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	MMH	Man-Made Hazard
DR	Drought	MS	Mine Subsidence
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
Knox County Hazard Mitigation Actions
(Sheet 2 of 5)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Conduct a study to determine which municipal critical facilities/infrastructure require the installation of transfer switches in order to utilize portable emergency backup generators to establish resilient and reliable power supplies in order to maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	C S&S	E&A	Medium	1, 5	---	---	EMA Coordinator / County Board	5 years	County	Low/Medium	New
HM	Purchase and install transfer switches at municipal critical facilities/ infrastructure throughout the County to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	C S&S	S&IP	Medium	1, 4, 5	---	Yes	EMA Coordinator / County Board	5 years	County / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)
HM	Harden the existing Emergency Operations Center (EOC) or design and construct a new multi-use EOC/Incident Command Center to ensure continuity of operations/government during hazard events. This facility would mitigate the risk for multiple Community Lifelines enabling the continuous operation of critical government and business functions essential to human health and safety and economic security.	DF, EC, EH, EQ, F, MMH, MS, SS, SWS, T	C S&S	S&IP	Large	1, 4, 5	Yes	Yes	EMA Coordinator / County Board	5 years	County	High/High	Existing (2011)

† 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 projected population growth, budgetary constraints, and the County's size (approx. 50,000 individuals of which approx. 7,800 reside in unincorporated Knox County). 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	MMH	Man-Made Hazard
DR	Drought	MS	Mine Subsidence
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
Knox County Hazard Mitigation Actions
(Sheet 3 of 5)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Subscribe to an automated emergency notification system (i.e., CodeRED, Hyper-Reach, etc.) to establish a Communications Community Lifeline that covers the entire County.	DF, EC, EH, F, MMH, SS, SWS, T	C	E&A	Large	4	---	---	EMA Coordinator / 911 Advisory Board	1 year	County	Low/High	Existing (2011)
HM	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	E&A	Medium	4	---	---	EMA Coordinator / County Board	5 years	County / USDA – RD Critical Facilities Program	Medium/High	Existing (2011)
LM	Organize and train weather spotters through the National Weather Service SKYWARN storm spotter program.	SS	---	E&A	Large	4	---	---	EMA Coordinator	1 year	County	Low/High	Existing (2011)
LM	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, MMH, MS, SS, SWS, T	H&M	E&A	Small	4	---	---	EMA Coordinator / 911 Supervisor	2 years	County	Low/High	Existing (2011)
LL	Obtain copy of Lake McMaster Dam Emergency Action Plan (EAP) 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	---	E&A	Small	1, 4, 5	---	Yes	EMA Coordinator	1-3 years	County	Low/Low	New

† 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 projected population growth, budgetary constraints, and the County's size (approx. 50,000 individuals of which approx. 7,800 reside in unincorporated Knox County). 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	MMH	Man-Made Hazard
DR	Drought	MS	Mine Subsidence
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
Knox County Hazard Mitigation Actions
(Sheet 4 of 5)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LL	Partner with "High" hazard classified dam owners to develop and/or obtain copies of their Emergency Action Plans (EAPs) with breach analysis that identify the extent (water depth, speed of onset, warning times, etc.) of potential dam failures to address data deficiencies.	DF	---	E&A	Small	1, 4, 5	---	Yes	EMA Coordinator	5 years	County	Low/Low	New
HM	Conduct a study to determine which critical roadways are frequently shut down by blowing and drifting snow and whether living snow fences/tree barriers would resolve the problem. Install living snow fences/tree barriers along select roadways to limit blowing and drifting snow, maintain access to critical routes and ease hazardous driving conditions.	SWS	T	S&IP	Small	1, 4, 5	---	Yes	EMA Coordinator	3 years	County / IDOT Local Roads	Medium/Medium	Existing (2011)
LM	Distribute public information materials to residents that detail the risks to life and property associated with the natural hazards that impact the County and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, MS, SS, SWS, T	---	E&A	Large	3, 4	---	---	EMA Coordinator	2-5 years	County	Low/Medium	New

† 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 projected population growth, budgetary constraints, and the County's size (approx. 50,000 individuals of which approx. 7,800 reside in unincorporated Knox County). 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	MMH	Man-Made Hazard
DR	Drought	MS	Mine Subsidence
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
Knox County Hazard Mitigation Actions
(Sheet 5 of 5)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 4, 6, 7	Yes	Yes	County Board Chair / County Board	1-5 years	County	Low/Medium	New
LM	Continue to make the most recent Flood Insurance Rate Maps available at the Zoning Office to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small	3, 4, 6, 7	Yes	n/a	Zoning Officer	1-3 years	County	Low/Medium	New
LM	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	3, 4, 6, 7	Yes	n/a	Zoning Officer	1-5 years	County	Low/Medium	New

* Mitigation action to ensure continued compliance with NFIP.

† 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 projected population growth, budgetary constraints, and the County's size (approx. 50,000 individuals of which approx. 7,800 reside in unincorporated Knox County). 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	MMH	Man-Made Hazard
DR	Drought	MS	Mine Subsidence
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-14
Abingdon Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Designate warming/cooling center(s) and emergency shelter(s) with the Village to establish Shelter Community Lifelines essential to human health and safety.	EC, EH, F, MMH, SS, SWS, T	FWS	E&A	Medium	4	---	---	Mayor / City Council	5 years	City	Low/High	Existing (2011)
LM	Distribute public information materials to residents that detail the risks to life and property associated with natural hazards that impact the Village and the proactive approaches they can take to reduce their risk.	EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	3, 4	---	---	Mayor / City Council	2-5 years	City	Low/Medium	New
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 4, 6, 7	Yes	Yes	Mayor / City Council	2-5 years	City	Low/Medium	New
LM	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	3, 4, 6, 7	Yes	n/a	Mayor / City Clerk	2-5 years	City	Low/Low	New
LM	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	3, 4, 6, 7	Yes	n/a	Mayor / City Clerk	2-5 years	City	Low/Low	New

* Mitigation action to ensure continued compliance with NFIP.

† 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. 3,500 individuals). The City 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-15
Altona Hazard Mitigation Actions
(Sheet 1 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase and install an automatic emergency backup generator at the Village lift station to establish a resilient and reliable power supply in order to maintain continuity of operations and mitigation risk to a Community Lifeline.	EC, EH, EQ, F, SS, SWS, T	FWS	S&IP	Large	1, 4, 5	Yes	Yes	President / Village Board	1 year	Village / USDA – RD Critical Facilities Programs	Medium/High	New
HM	Upgrade drainage system and install culvert/drainage structure along N. Olin Street to better manage stormwater runoff, alleviate drainage/flooding problems associated with heavy rain events and mitigate risk to a Community Lifeline.	F, SS	T	S&IP	Small	1, 4, 5	Yes	Yes	Village Engineer / President Village Board	2 years	Village / IEPA SRF – WPCLP	High/High	New
LM	Develop Memoranda of Agreement with area churches designating them as warming/cooling centers and emergency shelters for Village residents to establish Shelter Community Lifelines essential to human health and safety.	EC, EH, F, MMH, SS, SWS, T	FWS	LP&R	Medium	4	---	---	President / Village Board	1 year	Village	Low/Medium	New
HM	Purchase and install automatic emergency backup generators at area churches, designated warming/cooling centers and emergency shelters, to establish resilient and reliable power supplies and ensure continued operations of Shelter Community Lifelines essential to human health and safety.	EC, EH, F, MMH, SS, SWS, T	FWS	S&IP	Medium	1, 4, 5	---	Yes	President / Village Board	2-3 years	Village / USDA – RD Critical Facilities Programs	Medium/High	New

† 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 (just over 600 individuals). The Village struggles to provide even the most 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-15
Altona Hazard Mitigation Actions
(Sheet 2 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase and install transfer switches at critical facilities/infrastructure to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Medium	1, 4, 5	---	Yes	President / Village Board	5 years	Village / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)
LM	Conduct inflow and infiltration study of the Village's sewer system to identify remedies to improve capacity, function and reliability of the Village's sewer system.	F, SS	FWS	E&A	Medium	1, 5	---	---	President / Village Board	2-5 years	Village	Medium/Medium	Existing (2011)
HM	Slip line sanitary sewer sections where stormwater infiltration is occurring to improve capacity and prevent sewage backups.	F, SS	FWS	S&IP	Medium	1, 5	---	Yes	President / Village Board	5 years	Village / USDA – RD Water & Waste Disposal Program IEPA SRF – WPCLP	High/High	Existing (2011)

† 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 (just over 600 individuals). The Village struggles to provide even the most critical of 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-15
Altona Hazard Mitigation Actions
(Sheet 3 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 4, 6, 7	Yes	Yes	President / Village Board	2-5 years	Village	Low/Medium	New
LM	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	3, 4, 6, 7	Yes	n/a	President / Village Clerk	2-5 years	Village	Low/Low	New
LM	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	3, 4, 6, 7	Yes	n/a	President / Village Clerk	2-5 years	Village	Low/Low	New

* Mitigation action to ensure continued compliance with NFIP.

† 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 (just over 600 individuals). The Village struggles to provide even the most 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-16
Altona Oneida & Wataga Ambulance Service Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Construct a community safe room (equipped with emergency backup generator & HVAC units) at the Altona Fire Station that can also serve as a warming/cooling center and emergency shelter for District residents to establish a Shelter Community Lifeline essential to human health and safety.	EC, EH, SS, T	FWS	S&IP	Small	4	Yes	---	Director / Board of Trustees	5 years	District / USDA – RD Critical Facilities Programs / FEMA HMGP	High/High	New
LM	Make public information materials available to District residents that detail the risks to life and property associated with the natural hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	4	---	---	Director / Board of Trustees	2-5 years	District	Low/Medium	New

† 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 small, rural, all-volunteer ambulance services. 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-17
Carl Sandburg College Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase portable emergency backup generators to ensure resilient and reliable power supplies at the two designated locations on campus prepared to act as Emergency Operations Centers in order to maintain continuity of operations and ensure sustained functionality during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Large	1, 4, 5	---	Yes	Public Safety Director / Board of Trustees	1 year	College / FEMA HMGP	Medium/High	New
LM	Purchase and distribute weather radios to critical departments (i.e., dispatch center, emergency operations center, etc.) to establish Communications Community Lifelines that notify faculty, staff and students of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	Public Safety Director / Board of Trustees	1 year	College	Low/High	New
HM	Retrofit existing campus buildings to include community safe rooms (equipped with emergency backup generators and HVAC units) for use by faculty, staff and students.	SS, T	FWS	S&IP	Medium	4	Yes	---	Public Safety Director / Board of Trustees	5 years	College / FEMA HMGP	High/High	New
LM	Educate faculty, staff and students about the natural hazards that have the potential to impact their community and the proactive actions they can take to reduce their risk.	EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	3, 4	---	---	Public Safety Director / Board of Trustees	1 year	College	Low/Medium	New

† 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 small college. 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-18
Galesburg Hazard Mitigation Actions
(Sheet 1 of 4)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Purchase and distribute weather radios to critical city-owned facilities (i.e., city garage, streets department building, park department building, lakeside pool & recreation center, city hall, designed storm shelters & warming/cooling centers, etc.) to establish a Communications Community Lifeline that notifies staff and residents of natural and man-made hazard event information.	DF, EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	Fire Chief	2 years	City	Low/High	Existing (2011)
LM	Establish new warming/cooling centers and emergency shelters in areas not currently served by a designated center/shelter.	DF, EC, EH, EQ, F, MMH, SS, SWS, T	FWS	E&A	Medium	4	---	---	EMA Coordinator / City Council	2 years	City	Low/Medium	Existing (2011)
HM	Harden EOP-designated emergency shelters throughout the City to increase building resilience to natural hazards, maintain continuity of operations, protect residents, and mitigate risk to Shelter Community Lifelines essential to human health and safety. Measures would focus on installing hardening materials (shatter-proof glass, hail resistant singles/doors, etc.) and constructing and/or retrofitting areas within these facilities to serve as community safe rooms (equipped with emergency backup generator & HVAC units).	DF, EC, EH, EQ, F, MMH, SS, SWS, T	FWS	S&IP	Medium	1, 4, 5	---	Yes	Fire Chief / EMA Coordinator / City Council	5 years	City / FEMA HMGP	High/High	Existing (2011)

† 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 large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 30,500 individuals). The City works hard to maintain critical services to 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	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-18
Galesburg Hazard Mitigation Actions
(Sheet 2 of 4)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Adopt updated International Building Codes and Fire Codes to harden new buildings and renovations to existing buildings against hazard events.	EC, EQ, F, MMH, SS, SWS, T	---	LP&R	Large	1, 2, 7	Yes	Yes	Community Development Director / Fire Chief / City Council	1 year	City / FEMA BRIC	Low/High	Existing (2011)
HM	Install backup drinking water supply in the City with treatment, chlorination, and phosphate feeding capabilities to establish a constant and reliable supply of water for residents, ensure community resilience to drought, aid in fire suppression during hazard events, and mitigate risk to a Community Lifeline. The backup water supply would consist of 12 deep wells (approx. 2,800 feet deep) as well as an ion exchange treatment facility. Currently the City obtains its groundwater from an aquifer near Oquawka, which is located along the Mississippi River, and pumped 32 miles to the City's water plant. If the existing transmission line is disrupted by a hazard event, the City and the five communities served by its water supply would be without a community lifeline essential to human health.	DR, EC, EH, EQ, F, MMH, T	FWS	S&IP	Large	1, 4, 5	Yes	---	Public Works Director / City Council	5 years	City / IEPA SRF - PWSLP	High/High	New

† 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 large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 30,500 individuals). The City works hard to maintain critical services to 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
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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-18
Galesburg Hazard Mitigation Actions
(Sheet 3 of 4)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Construct a 24-inch diameter backup water transmission pipeline from the Water Plant to the City-owned water wells near Oquawka (located along the Mississippi River 32 miles west of the City) to establish a constant and reliable water supply for residents, aid in fire suppression during hazard events and mitigate risk to a Community Lifeline. If the existing transmission line is disrupted by a hazard event, the City and the five communities served by its water supply would be without a community lifeline essential to human health.	DR, EC, EH, EQ, F, MMH, T	FWS	S&IP	Large	1, 4, 5	Yes	---	Public Works Director / City Council	5 years	City / IEPA SRF - PWSLP	High/High	New
HM	Upgrade storm sewer system on Fremont Street between Henderson Street and Linwood Road to increase storage and drainage capacity, better manage stormwater runoff, ensure system resilience and functionality, alleviate flood problems experienced during heavy rain events and mitigate risk to Community Lifelines. This roadway is a main arterial street which serves Galesburg High School and the Fremont Street Fire Station and floods several times a year resulting in its closure until the water recedes, negatively impacting travel.	F, SS	S&S T	S&IP	Medium	1, 4, 5	---	Yes	Public Works Director / City Council	5 years	City / IEPA SRF – WPCLP	High/High	New

† 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 large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 30,500 individuals). The City works hard to maintain critical services to 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	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-18
Galesburg Hazard Mitigation Actions
(Sheet 4 of 4)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LL	Upgrade Lake Storey Dam spillway to mitigate potential drainage/flood risk to surrounding properties, especially residences to the west of the Dam.	DF, F, SS	S&S	S&IP	Small	1, 4, 5	---	Yes	Public Works Director / City Council	5 years	City	Medium/Medium	New
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 3, 4, 6, 7	Yes	Yes	Mayor / City Council	1-5 years	City	Low/Medium	New
LM	Continue to make the most recent Flood Insurance Rate Maps available at the Community Development Department to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small	3, 4, 6, 7	Yes	n/a	Community Development Director	1-2 years	City	Low/Low	New
LM	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	3, 4, 6, 7	Yes	n/a	Community Development Director	1-5 years	City	Low/Low	New

* Mitigation action to ensure continued compliance with NFIP.

† 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 large-scale activities/projects is unlikely due to the budgetary constraints experienced by a city of this size (approx. 30,500 individuals). The City works hard to maintain critical services to 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	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-19
Henderson Fire Protection District Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase and install storm warning sirens in areas without alert coverage to establish Communications Community Lifelines essential to human health and safety.	SS, T	C	E&A	Medium	4	---	---	Fire Chief / Board of Trustees	1-2 years	FPD / USDA – RD Critical Facilities Programs	Medium/High	New
LM	Make public information materials available to District residents that detail the risks to life and property associated with the natural hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	4	---	---	Fire Chief / Board of Trustees	2-5 years	FPD	Low/Medium	New

† 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 rural, all-volunteer fire protection district. Additional funding is necessary if implementation is to be achieved.

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-20
Knoxville Hazard Mitigation Actions
(Sheet 1 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Purchase and distribute weather radios to City-owned critical facilities to establish Communications Community Lifelines that notify staff and residents of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	Mayor / City Council	2-5 years	City	Low/High	Existing (2011)
LM	Designate additional warming/cooling center(s) and emergency shelter(s) with the City to establish Shelter Community Lifelines essential to human health and safety.	EC, EH, F, MMH, SS, SWS, T	FWS	E&A	Medium	4	---	---	Mayor / City Council	2-5 years	City	Low/High	Existing (2011)
HM	Install hardening materials (shatter resistant/shatter-proof windows, hail resistant doors/shingles, etc.) at City-owned critical facilities to increase building resilience to natural hazards, serve as emergency shelters, maintain continuity of government/operations, protect staff, and residents, and mitigation risk to Community Lifelines.	EC, EH, EQ, F, SS, SWS, T	FWS S&S	S&IP	Large	1, 4, 5	---	Yes	Mayor / City Council	5 years	City / FEMA HMGP	High/High	Existing (2011)
HM	Purchase and install transfer switches at City-owned critical facilities/infrastructure to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS S&S	S&IP	Medium	1, 4, 5	---	Yes	Mayor / City Council	5 years	City / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)

† 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. 3,100 individuals). The City 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-20
Knoxville Hazard Mitigation Actions
(Sheet 2 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Conduct inflow and infiltration study of the City's sewer system to identify remedies to improve capacity, function and reliability of the City's sewer system.	F, SS	FWS	E&A	Medium	1, 5	---	---	Mayor / City Council	2-5 years	City	Medium/Medium	Existing (2011)
HM	Slip line sanitary sewer sections where stormwater infiltration is occurring to improve capacity and prevent sewage backups.	F, SS	FWS	S&IP	Medium	1, 5	---	Yes	Mayor / City Council	5 years	City / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP	High/High	Existing (2011)
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 3, 4, 6, 7	Yes	Yes	Mayor / City Council	2-5 years	City	Low/Medium	New

* Mitigation action to ensure continued compliance with NFIP.

† 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. 3,100 individuals). The City 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-20
Knoxville Hazard Mitigation Actions
(Sheet 3 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	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	3, 4, 6, 7	Yes	n/a	Mayor / City Clerk	1-3 years	City	Low/Low	New
LM	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	3, 4, 6, 7	Yes	n/a	Mayor / City Clerk	1-5 years	City	Low/Low	New

* Mitigation action to ensure continued compliance with NFIP.

† 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. 3,100 individuals). The City 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-21
Knox College Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase and install an automatic emergency backup generator at the Heating Plant to establish a resilient and reliable power supply in order to maintain continuity of operations and ensure sustained functionality of all systems during extended power outages. A backup generator at the Heating Plant will allow the Campus to maintain safe temperatures in all buildings.	EC, EH, SS, SWS, T	S&S	S&IP	Large	1, 4, 5	---	Yes	Facilities Services Director	2-5 years	College / FEMA HMGP	Medium/High	New
HM	Purchase and install automatic emergency backup generators at the Campus Safety Building and Communications Center, both designated locations on campus prepared to act as Emergency Operations Centers, to establish resilient and reliable power supplies in order to maintain continuity of operations and ensure sustained functionality of all systems during extended power outages.	EC, EH, F, MMH, SS, SWS, T	S&S	S&IP	Large	1, 4, 5	---	Yes	Facilities Services Director	2-5 years	College / FEMA HMGP	Medium/High	New
LM	Purchase and distribute weather radios to critical departments (i.e., dispatch center, emergency operations center, etc.) to establish Communications Community Lifelines that notify faculty, staff and students of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	Campus Safety Director	2-5 years	College	Low/High	New
LM	Educate faculty, staff, and students about the natural hazards that have the potential to impact their community and the proactive actions they can take to reduce their risk.	EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	3, 4	---	---	Campus Safety Director	2-5 years	College	Low/Medium	New

† 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 small college. 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-22
Maquon Hazard Mitigation Actions
(Sheet 1 of 2)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LL	Construct an additional drinking water well to serve as backup to improve system reliability and resiliency to drought and aid in fire suppression as necessary during natural hazard events.	DR	FWS	S&IP	Medium	1, 5	---	Yes	President / Village Board	5 years	Village / IEPA SRF - PWSLP	High/High	New
LM	Purchase and distribute weather radios to village-owned critical facilities to establish Communications Community Lifelines that notify staff and residents of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	President / Village Board	2-5 years	Village	Low/High	Existing (2011)
HM	Install hardening materials (shatter resistant/shatter-proof windows, hail resistant doors/shingles, etc.) at Village-owned critical facilities to increase building resilience to natural hazards, serve as emergency shelters, maintain continuity of government/operations, protect staff and residents, and mitigation risk to Community Lifelines.	EC, EH, EQ, F, SS, SWS, T	FWS S&S	S&IP	Large	1, 4, 5	---	Yes	President / Village Board	2-5 years	Village / FEMA HMGP	High/High	Existing (2011)
HM	Purchase and install transfer switches at Village-owned critical facilities/infrastructure to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS S&S	S&IP	Medium	1, 4, 5	---	Yes	President / Village Board	5 years	Village / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)

† 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 (less than 200 individuals). The Village struggles to provide even the most 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-22
Maquon Hazard Mitigation Actions
(Sheet 2 of 2)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Purchase and install storm warning sirens to establish Communications Community Lifelines essential to human health and safety.	SS, T	C	E&A	Large	4	---	---	President / Village Board	3-5 years	Village / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)
HM	Slip line sanitary sewer sections where stormwater infiltration is occurring to improve capacity and prevent sewage backups.	F, SS	FWS	S&IP	Medium	1, 5	---	Yes	President / Village Board	5 years	Village / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP	High/High	Existing (2011)
LM	Adopt International Building Codes to harden new buildings and renovations to existing buildings against hazard events.	EC, EQ, F, SS, SWS, T	---	LP&R	Large	1, 2, 7	Yes	Yes	President / Village Board	5 years	Village / FEMA BRIC	Low/High	Existing (2011)

† 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 (less than 200 individuals). The Village struggles to provide even the most 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-23
OSF St. Mary Medical Center Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Conduct an emergency power system study to determine if additional services (i.e., cooling and medical imaging) can be added to the current generator load or whether additional generator capacity is needed to maintain continuity of operations. The two generators currently in service operate approximately 30% of the Medical Center's electrical needs.	EC, EH, EQ, F, MMH, SS, SWS, T	H&M	E&A	Large	1, 4, 5	---	Yes	Hospital Executive Council / Emergency Preparedness Committee / Facility Manager	1-5 years	OSF SMMC	Low/Medium	New
HM	Purchase a small portable backup generator for use in decontamination efforts and other services related to a hazardous materials incident to establish a resilient and reliable power supply in order to maintain continuity of operations.	MMH	H&M	S&IP	Small	1, 4, 5	---	Yes	Hospital Executive Council / Emergency Preparedness Committee	1 year	OSF SMMC / FEMA HMGP	Medium/High	New

† 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 small, rural hospitals. 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:

EC	Extreme Cold	MMH	Man-Made Hazard
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-24
Rio Fire Protection District Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Construct a community safe room (equipped with emergency backup generator & HVAC units) that can also serve as a warming/cooling center and emergency shelter for District residents to establish a Shelter Community Lifeline essential to human health and safety.	EC, EH, SS, T	FWS	S&IP	Small	4	Yes	---	Fire Chief / Board of Trustees	5 years	FPD / USDA – RD Critical Facilities Programs / FEMA HMGP	High/High	New
HM	Install siren controller equipment on storm warning sirens that allow remote activation to ensure operation of Communications Community Lifelines essential to human health and safety.	SS, T	C	E&A	Medium	4	---	---	Fire Chief / Board of Trustees	1-2 years	FPD	Low/High	New
LM	Make public information materials available to District residents that detail the risks to life and property associated with the natural hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	4	---	---	Fire Chief / Board of Trustees	2-5 years	FPD	Low/Medium	New

† 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 rural, all-volunteer fire protection district. Additional funding is necessary if implementation is to be achieved.

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-25
Wataga Hazard Mitigation Actions
(Sheet 1 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Purchase and distribute weather radios to village-owned critical facilities to establish Communications Community Lifelines that notify staff and residents of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	President / Board of Trustees	2-5 years	Village	Low/High	Existing (2011)
HM	Install hardening materials (shatter resistant/shatter-proof windows, hail resistant doors/shingles, etc.) at Village-owned critical facilities to increase building resilience to natural hazards, serve as emergency shelters, maintain continuity of government/operations, protect staff, and residents, and mitigation risk to Community Lifelines.	EC, EH, EQ, F, SS, SWS, T	FWS S&S	S&IP	Large	1, 4, 5	---	Yes	President / Board of Trustees	2-5 years	Village / FEMA HMGP	High/High	Existing (2011)
HM	Purchase and install transfer switches at Village-owned critical facilities/infrastructure to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS S&S	S&IP	Medium	1, 4, 5	---	Yes	President / Board of Trustees	5 years	Village / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)
LM	Conduct inflow and infiltration study of the Village's sewer system to identify remedies to improve capacity, function and reliability of the Village's sewer system.	F, SS	FWS	E&A	Medium	1, 5	---	---	President / Board of Trustees	2-5 years	Village	Medium/Medium	Existing (2011)

† 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 (just under 800 individuals). The Village struggles to provide even the most critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

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HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
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F	Flood		

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-25
Wataga Hazard Mitigation Actions
(Sheet 2 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Slip line sanitary sewer sections where stormwater infiltration is occurring to improve capacity and prevent sewage backups.	F, SS	FWS	S&IP	Medium	1, 5	---	Yes	President / Board of Trustees	5 years	Village / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP	High/High	Existing (2011)
LM	Adopt International Building Codes to harden new buildings and renovations to existing buildings against hazard events.	EC, EQ, F, SS, SWS, T	---	LP&R	Large	1, 2, 7	Yes	Yes	President / Board of Trustees	5 years	Village / FEMA BRIC	Low/High	Existing (2011)
LL	Construct an additional drinking water well to serve as backup to improve system reliability and resiliency to drought and aid in fire suppression as necessary during natural hazard events.	DR	FWS	S&IP	Medium	1, 5	---	Yes	President Board of Trustees / Public Works Director	3-5 years	Village / IEPA SRF - PWSLP	High/High	New
LM	Establish Village website to disseminate public information materials to residents that detail the risks to life and property associated with natural hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, SS, SWS, T	---	E&A	Large	3, 4	---	---	Village Clerk	1 year	Village	Low/Medium	New

† 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 (just under 800 individuals). The Village struggles to provide even the most critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

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Type of Mitigation Activity:

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FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Figure MIT-25
Wataga Hazard Mitigation Actions
(Sheet 3 of 3)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
HM	Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to 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	2, 4, 6, 7	Yes	Yes	President / Village Board	2-5 years	Village	Low/Medium	New
LM	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	3, 4, 6, 7	Yes	n/a	President / Village Clerk	2-5 years	Village	Low/Low	New
LM	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	3, 4, 6, 7	Yes	n/a	President / Village Clerk	2-5 years	Village	Low/Low	New

* Mitigation action to ensure continued compliance with NFIP.

† 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 (just under 800 individuals). The Village struggles to provide even the most critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

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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-26
Yates City Hazard Mitigation Actions
(Sheet 1 of 2)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Purchase and distribute weather radios to village-owned critical facilities to establish Communications Community Lifelines that notify staff and residents of natural and man-made hazard event information.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Medium	4	---	---	President / Board of Trustees	2-5 years	Village	Low/High	Existing (2011)
LM	Designate warming/cooling center(s) and emergency shelter(s) with the Village to establish Shelter Community Lifelines essential to human health and safety.	EC, EH, F, MMH, SS, SWS, T	FWS	E&A	Medium	4	---	---	Mayor / City Council	2-5 years	Village	Low/High	Existing (2011)
HM	Install hardening materials (shatter resistant/shatter-proof windows, hail resistant doors/shingles, etc.) at Village-owned critical facilities to increase building resilience to natural hazards, serve as emergency shelters, maintain continuity of government/operations, protect staff, and residents, and mitigation risk to Community Lifelines.	EC, EH, EQ, F, SS, SWS, T	FWS S&S	S&IP	Large	1, 4, 5	---	Yes	President / Board of Trustees	2-5 years	Village / FEMA HMGP	High/High	Existing (2011)
HM	Purchase and install transfer switches at Village-owned critical facilities/infrastructure to ensure the continued operations of Community Lifelines and maintain continuity of government/operations during extended power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FWS S&S	S&IP	Medium	1, 4, 5	---	Yes	President / Board of Trustees	5 years	Village / USDA – RD Critical Facilities Programs	Medium/High	Existing (2011)

† 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 (just over 800 individuals). The Village struggles to provide even the most 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
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Hazard(s) to be Mitigated:

EC	Extreme Cold	MMH	Man-Made Hazard
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-26
Yates City Hazard Mitigation Actions
(Sheet 2 of 2)

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)†	Cost/Benefit Analysis	Status
							New	Existing					
LM	Conduct inflow and infiltration study of the Village's sewer system to identify remedies to improve capacity, function and reliability of the Village's sewer system.	F, SS	FWS	E&A	Medium	1, 5	---	---	President / Board of Trustees	2-5 years	Village	Medium/Medium	Existing (2011)
HM	Slip line sanitary sewer sections where stormwater infiltration is occurring to improve capacity and prevent sewage backups.	F, SS	FWS	S&IP	Medium	1, 5	---	Yes	President / Board of Trustees	5 years	Village / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP	High/High	Existing (2011)
LM	Adopt International Building Codes to harden new buildings and renovations to existing buildings against hazard events.	EC, EQ, F, SS, SWS, T	---	LP&R	Large	1, 2, 7	Yes	Yes	President / Board of Trustees	5 years	Village / FEMA BRIC	Low/High	Existing (2011)

† 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 (just over 800 individuals). The Village struggles to provide even the most critical of services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

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EC	Extreme Cold	MMH	Man-Made Hazard
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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
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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 mitigation strategy will be incorporated into existing planning processes; and
- detailing how continued public input will be obtained.

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 on an annual basis. The Plan Maintenance Subcommittee will be composed of the participating jurisdictions who sought Plan approval and other key members of the Planning Committee. The Galesburg/Knox County Emergency Management Agency (EMA) will chair the Plan Maintenance Subcommittee.

The Galesburg/Knox County EMA 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 Galesburg/Knox County EMA 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 Galesburg/Knox County EMA Coordinator 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 Galesburg/Knox County EMA Coordinator.

The Galesburg/Knox County EMA together with 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., were losses avoided or the vulnerability of hazard-prone areas reduced.)

The Subcommittee will also ask each Plan participant to identify any significant changes in development 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 Galesburg/Knox County EMA will provide each Plan participant with a Plan Maintenance Checklist along with the necessary forms to complete and return. **Appendix N** contains a copy of Checklist and associated forms.

The Galesburg/Knox County EMA 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 and planning and regulatory capabilities for the Plan participants.

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 (IEMA) and FEMA for reference.

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 Galesburg/Knox County EMA, 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:

- a review of the Mitigation Strategy, including potential updates to the mitigation goals;
- an assessment of whether other natural or man-made hazards need to be addressed or included in the Plan;

Updating the Plan

- The Galesburg/Knox County EMA, 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.
- Any jurisdictions that did not take part in the previous Plan may do so during the 5-year update.
- 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 new hazard data that may affect the Risk Assessment Section; and
- identification of any changes in development that have occurred in hazard prone areas that would increase or decrease the participating jurisdictions' vulnerability.

In addition, any jurisdictions that did not take part in the previous Plan 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 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 Planning 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-14** 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.

Based on conversations with Planning Committee members, none of the jurisdictions that participated in the original Plan have incorporated it into other planning mechanisms within their jurisdictions, with the exception of Galesburg. This is due in part to the size, fiscal and staffing situations, and technical capacity of the participants.

Galesburg incorporated hazard mitigation planning principles into the update of its comprehensive plan completed in 2019. Items addressed included 1) utilizing green infrastructure to help improve the City's watersheds; 2) updating applicable development standards, codes, ordinances, and guidelines to encourage, incentivize, and regulate conservation-based green infrastructure practices throughout the City; 3) applying green roofs, permeable paving, street trees, bioretention, naturalized swales, naturalized detention, cisterns, water discharge reduction and onsite wastewater treatment as a means of stormwater management; and 4) identifying natural areas including wetlands, woodlands, and prairies, as well as flood prone areas, hydric soils (subject to

high water table/inundation) and other environmental qualities, and prioritizing as open space uses as development occurs in the undeveloped areas of the City.

There is no indication that the County or any of the participating jurisdictions, aside from Galesburg, will be adopting, reviewing, or strengthening current policies or programs in the near future. Most of the participating jurisdictions (Altona, Wataga and Yates City) have limited capabilities to integrate the mitigation strategy and other information contained in the Plan update into existing planning mechanisms. These jurisdictions are small in size and do not have the financial resources or trained personnel to develop planning mechanisms such as comprehensive plans or building and zoning ordinances.

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. A copy of the approved Plan will be maintained and available for review at the Galesburg/Knox County EMA Office. Individuals will be encouraged to provide feedback and submit comments for the next Plan update to the Galesburg/Knox County EMA Coordinator.

The comments received will be compiled and included in the annual progress report and considered for incorporation into the next Plan update. Any meetings held by the Plan Maintenance Subcommittee will be noticed and open to the public. Separate committee meetings and a public forum will be held prior to the next Plan update submittal to provide the public an opportunity to 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 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 (IEMA) 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 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 O**. FEMA signed the final approval letter on March 23, 2023 which began the five-year approval period and set the expiration date of March 22, 2028 for the Plan.

Figure PA-1
Plan Adoption Dates

Participating Jurisdiction	Plan Adoption Date
Knox County	03/29/2023
Abingdon, City of	04/03/2023
Altona, Village of	04/06/2023
Alton Oneida & Wataga (OAW) Ambulance Service	03/14/2023
Carl Sandburg College	03/21/2023
Galesburg, City of	04/17/2023
Henderson Fire Protection District	03/09/2023
Knox College	04/25/2023
Knoxville, City of	03/20/2023
Maquon, Village of	03/28/2023
OSF St. Mary Medical Center	03/20/2023
Rio Fire Protection District	04/11/2023
Wataga, Village of	06/13/2023
Yates City, Village of	06/14/2023

7.0 REFERENCES

Provided below is a listing, by section, of the resources utilized to create this document.

1.0 INTRODUCTION

1. Federal Emergency Management Agency. Data Visualization: Disaster Declarations for States and Counties. Database. <https://www.fema.gov/data-visualization-disaster-declarations-states-and-counties>.
2. Federal Emergency Management Agency. OpenFEMA Dataset: Disaster Declarations Summaries – V2. Excel Dataset. <https://www.fema.gov/openfema-dataset-disaster-declarations-summaries-v1>.
3. Federal Emergency Management Agency. Getting Started: Building Support for Mitigation Planning. FEMA 386-1. September 2002.
4. Illinois Emergency Management Agency. Mitigation Planning. 2018 Illinois Natural Hazard Mitigation Plan. October 2018. <https://iema.illinois.gov/content/dam/soi/en/web/iema/recovery/documents/plan-illmitigationplan.pdf>.

1.2 County Profile

1. Illinois Department of Commerce and Economic Opportunity. Community Profiles. Database. <https://app.locationone.com/areas/communities?organization=59eaba35bec80e09b4bbf0df&buildings:filters=%5B%5B%22railServed%22%2C%5B%22Y%22%5D%5D%5D&buildings:sort=sqft:high&sites:filters=%5B%5D&sites:sort=acres:high>.
2. Illinois Department of Public Health. IDPH Population Projections, Illinois, Chicago, and Illinois Counties by Age and Sex: July 1, 2015 to July 1, 2030 (2019 Edition). <https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/population-projections-report-2010-2030.pdf>.
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4.0 MITIGATION STRATEGY

1. Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Existing Mitigation Project/Activity Status. Form.
2. Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Hazard Mitigation Projects. Form.

APPENDIX A

Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 21, 2021

Due to the COVID-19 outbreak, the 1st meeting was held virtually/via teleconference. Attendance was taken verbally during the teleconference by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	David Amor	Knox County	County Board Member
2.	Kelli Bennewitz	City of Galesburg	City Clerk
3.	Andrea Bostwick	American Environmental Corporation	EMS Manager
4.	Kip Canfield	Carl Sandburg College	Director of Public Safety
5.	Abby Colvin	Knox County Area Partnership for Economic Development	Director of Communication & Development
6.	Jim Cueno	Knox County	GIS Analyst
7.	Mandy Dixon	Knox County Health Department	Environmental Health Specialist
8.	Scott Erickson	Knox County	County Clerk
9.	Pam Gaither	Galesburg Chamber of Commerce	Executive Director
10.	Randy Hovind	Knox County	EMA Coordinator
11.	Sally Keener	Knox County; Altona-Oneida-Wataga Ambulance Service	County Board Member; Director
12.	Zachary Krug	American Environmental Corporation	Environmental Specialist
13.	Bill Lotz	Knox County	GIS Coordinator
14.	Tony Oligney-Estill	City of Galesburg	Director of Parks and Recreation

Attendance Sheet
Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting
October 21, 2021

Due to the COVID-19 outbreak, the 1st meeting was held virtually/via teleconference. Attendance was taken verbally during the teleconference by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Jason Petentler	Victoria-Copley Fire Protection District	Fire Chief
2.	Mindy Pilger	OSF St. Mary	Emergency Preparedness Coordinator
3.	Duane Ratermann	Knox County	Highway Engineer
4.	Peter Schwartzman	City of Galesburg	Mayor
5.	Jodi Scott	ROE #33	Regional Superintendent
6.	Ken Springer	Knox County Area Partnership for Economic Development	President
7.	Richard Springer	Galesburg Hospitals' Ambulance Service	EMS System Coordinator
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

March 3, 2022

Due to the COVID-19 outbreak, the 2nd meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Toby Myers	City of Knoxville	Mayor
2.	Kelli Bennewitz	City of Galesburg	City Clerk
3.	Randy Hovind	Knox County EMA	EMA Director
4.	Kip Canfield	Carl Sandburg College	Director of Public Safety
5.	Mandy Dixon	Knox County HD	ERC.
6.	John Seitz	Galesburg Fire	Deputy Chief
7.	Dan Robinson	Knox College	Associate Director
8.	Tony Olignety-Estill	City of Galesburg	Director of Parks and Recreation
9.	Wayne Carl	" "	Director of Public Works
10.	Peterschwartzman	City of Galesburg	Mayor
11.	Ken Runkle	AEC	Risk Assessor
12.	Andrea Bostwick-Campbell	AEC	EMS Manager
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

March 3, 2022

Due to the COVID-19 outbreak, the 2nd meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	*Representing (Jurisdiction/Organization)*	*Title*
1.	Darla Krejci	County Board	Rep Dist. 1
2.	Jared Hawkinson - Chairman	County Board	Chairman
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

March 3, 2022

Due to the COVID-19 outbreak, the 2nd meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Derrick Appell	Village of Altona	President
2.	Karrie Heartlein	Galesburg Area Chamber of Commerce	Chairwoman
3.	Richard Springer	Galesburg Hospitals' Ambulance Service	EMS System Coordinator
4.	Jenni Moser	City of Galesburg	Secretary
5.	Brock Schmitt	City of Galesburg	Fire Captain
6.	Rodney Lenz	Henderson Fire Protection District	
7.	Scott Erickson	Knox County Clerk's Office	County Clerk & Recorder
8.	Jim Cueno	Knox County GIS	GIS Analyst
9.	Bill Lotz	Knox County GIS	GIS Coordinator
10.	Michele Gabriel	Knox County Health Department	Administrator
11.	Duane Ratermann	Knox County Highway Department	Highway Engineer
12.	Mark Thomas	Village of Maquon	President
13.	Mindy Pilger	OSF St. Mary Medical Center	Emergency Preparedness Coordinator
14.	Jodi Scott	ROE #33	Regional Superintendent

Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

March 3, 2022

Due to the COVID-19 outbreak, the 2nd meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Jason Petentler	Victoria-Copley Fire Protection District	Fire Chief
2.	Ty Barnes	Village of Wataga	Village Clerk
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Attendance Sheet

~~IN-PERSON~~

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

June 30, 2022

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Rodney Lenz	Henderson Township Fire Dept	Fire Fighter
2.	Ken Runkle	AEC	Env. Risk Assessor
3.	Kelli Bennewitz	Galesburg + Town of Obq.	City/Town Clerk
4.	Randy Benson	YATES CITY	CHIEF OF POLICE
5.	Keith D Schwartzman	City galesburg	Mayor
6.	Jenni Moser	City of Galesburg	Secretary
7.	WAYNE CARL	CCG	DIR. PUBLIC WORKS
8.	Barb Wheadbee	OSF SMMC	EMS Coordinator
9.	Randy Howind	COG	EMA Co
10.	Michele Gabriel	KCHD	Public Health Admn
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IN PERSON

Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

June 30, 2022

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick-Campbell	American Environmental	EMS Manager
2.	Brock Schmith	Galesburg Fire/ Knox County UEPC	Captain
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

June 30, 2022

Due to an increase in COVID-19 numbers, the 3rd meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Colton LaGrow	Rio Fire Protection District	Firefighter/EMT
2.	Jason Petentler	Victoria-Copley Fire Protection District	Fire Chief
3.	Jim Cueno	City of Galesburg	GIS Analyst
4.	Daniel Robinson	Knox College	Associate Director of Campus Safety
5.	Ed Swearingen	City of Abingdon	Mayor
6.	Bill Lotz	Knox County	GIS Coordinator
7.	Cory Gall	Carl Sandburg College	Associate VP of Admin Services
8.	Scott Erickson	Knox County	Clerk & Recorder
9.	Richie Springer	Galesburg Hospitals' Ambulance Service	EMS System Coordinator
10.	Nathan Kemp	Knox College	Director of Campus Safety
11.	Ken Springer	Knox Co. Area Partnership for Economic Development	President
12.	Sally Keener	Altona-Oneida-Wataga Ambulance Service	Director
13.			
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 13, 2022

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Callie Smith (Knox Class '15!)	American Environmental	Environmental Analyst
2.	Rodney Lenz	Henderson Fire	Fire Fighter
3.	Mandy Dixon	Knox County HD	ERC
4.	Kelli Bennewitz	City + Town Galesburg	PIO / Clerk
5.	Randy Hoving	City of Galesburg / Knox County	Fire Chief / KCEMA
6.	Wayne Carl	City of Galesburg	Director of Public Works
7.	Dan Robinson	Knox College	Associate Director of Safety Campus
8.	Brett Schmitt	GFD / Knox County LEPC	Captain
9.	Peter Schwartzman	City of Galesburg	Mayor
10.	Brayden Bledsoe	Henderson Fire Dept	volunteer
11.	Ken Springer	Knox County Area Partnership	President
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 13, 2022

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick	American Environmental	EMS Manager
2.	John Seitz	GFD	Deputy Chief
3.	Barb Whedbee	SMMC	EMS Coordinator
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 13, 2022

The 4th meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Ed Swearingen	Abingdon	Mayor
2.	Ken Runkle	American Environmental Corporation	Env. Toxicologist
3.	Stephanie Templeton	Galesburg Sanitary District	Administrative Assistant
4.	Jodi Scott	ROE #33	Superintendent
5.	Ty Barnes	Village of Wataga	Clerk
6.	James Cueno	Public Works (City of Galesburg)	GIS Analyst
7.	Pam Gaither	Galesburg Chamber of Commerce	Executive Director
8.	Jason Petentler	Victoria-Copley FPD	Chief
9.	Richie Springer	Galesburg Hospital Ambulance	Paramedic
10.	Mark Thomas	Village of Maquon	President
11.			
12.			
13.			
14.			

Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

January 26, 2023

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Ken Runkle	AEC	Risk Assessor
2.	Rodney Lenz	Henderson Fire Dept	Fire Fighter
3.	Peter Schwartzman	City of Galesburg	Mayor
4.	Michele Gabriel	Knox County Health Dept.	Public Health Admin
5.	Robert L. Johnson	Village of Williamsfield	Mayor
6.	Brayden P Bledsoe	Henderson Fire	Firefighter
7.	Olivia Dunn	Knox Student	Knox Student
8.	Kylie Thomson	Knox student	Knox student
9.	Randy Hovland	Galesburg Fire / Knox County EMA	Chief / Coordinator
10.	Barbara Wheelden	OSF St Mary Med Ctr	Ems Coordinator / EM
11.			
12.			
13.			
14.			

Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

January 26, 2023

	Name (Please Print)	*Representing (Jurisdiction/Organization)*	*Title*
1.	Mark Thomas	Village of Maquon	Village President
2.	Gabriel Trulson	Carl Sandburg College Safety	Chief of Safety
3.	James Cuevo	City of Galesburg	GIS Analyst
4.	WAYNE CARL	" " "	DIRECTOR OF PUBLIC WORKS
5.	John O'Connor	Oneida-Wataga Fire Protection District	Asst. Chief
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Attendance Sheet

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

January 26, 2023

The 5th meeting was held as a hybrid meeting with individuals attending in-person and virtually or via teleconference. For those attending virtually/via teleconference attendance was taken during the meeting by the Consultant and recorded below.

	Name (Please Print)	***Representing (Jurisdiction/Organization)***	***Title***
1.	Callie Smith	American Environmental Corporation	Environmental Analyst
2.	Derrick Appell	Village of Altona	President
3.	Daniel Robinson	Knox College	Associate Director, Campus Safety
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APPENDIX B

Meeting Minutes

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

October 21, 2021
2:00 p.m.
Virtual

Committee Members

Altona-Oneida-Wataga Ambulance Service
Carl Sandburg College
Galesburg Chamber of Commerce
Galesburg Hospitals' Ambulance Service
Galesburg, City of
Knox County Offices:
- County Board
- Clerk
- EMA

Knox County Offices:
- GIS
- Health
- Highway

Knox County Area Partnership for Economic Development
OSF St. Mary
Regional Office of Education #33
Victoria-Copley Fire Protection District
American Environmental Corp.

Welcome and Introductions

Chief Randy Hovind, Chairman of the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee, welcomed attendees. He indicated that the purpose of this Committee is to update the Knox County All Hazards Mitigation Plan.

Handout materials were distributed digitally via email to each member prior to the meeting. Links to a citizen questionnaire and contact information form were provided to potential members via email as well. The questionnaire will help gauge residents and committee member understanding of the natural hazards that impact the County and also identify communication preferences.

Andrea Bostwick, American Environmental Corporation (AEC), began the meeting by asking participants online to provide their name, title, and jurisdiction represented and to post any questions they might have during the presentation in the chat log. For those who can't access the chat, the phone lines will be opened to take attendance mid-way through the meeting and again at the end to answer any questions. She asked all those in attendance to mute their phones or computers when not speaking to reduce background noise during the presentation.

Before discussing the plan development, Andrea provided background on the grant and its planning process. Galesburg/Knox County EMA applied for and received a planning grant from FEMA to update the County's hazard mitigation plan. This grant is administered through the Illinois Emergency Management Agency (IEMA) and pays for 75% of the planning cost. The remaining 25% will be met through in-kind services. The

goal of the grant is to obtain a FEMA-approved hazard mitigation plan. The process generally takes 12 to 18 months from start to finish.

What is Mitigation?

Andrea 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 an All Hazards Mitigation Plan?

Andrea then explained that an All Hazards mitigation plan details the natural and man-made hazard events that have previously impacted the 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 the County's Emergency Operations Plan (EOP) because it identifies actions that can be taken before a disaster strikes, whereas the EOP identifies how the County will respond during and immediately after an event occurs.

The natural and man-made hazards that will be included in the Plan update are: floods; tornadoes; severe summer storms (including thunderstorms, hail, and lightning events); severe winter storms (including ice and snow storms); extreme cold; excessive heat; drought; earthquakes; dam failures; levee failures; transportation, generation, and storage/handling of hazardous substances; hazardous materials incidents; and waste disposal and remediation.

Andrea indicated that the Committee can also include additional hazards it feels have a significant impact on the County and then discussed mine subsidence, landslides, levee failures, and dam failures. Of these hazards, only mine subsidence and dam failures have the potential to significantly impact the County.

Andrea informed the Committee that AEC would send out a survey in the next week to poll the Committee on whether to include the hazards.

Why Update an All Hazards Mitigation Plan?

Since the early 1990s, damages caused by weather extremes have risen substantially. In 2020 the U.S. experienced $95 billion in severe storm damages from twenty-two (22) severe weather and natural hazard events. 2020 shattered the record number of annual billion-dollar events set in 2011 and 2017 by six events. In addition, the losses experienced in 2020 were the 4th highest only behind 2017, 2005, and 2012. 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 develop hazard mitigation plans because they've found that for every dollar spent on mitigation, $6 dollars can be reaped in savings.

Updating this plan provides several major benefits:

1. Access to the federal mitigation assistance fund. Specific projects and activities will be developed and updated through the planning process to help each participating jurisdiction reduce damages. By including these actions in this Plan, the participating jurisdictions will 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 Knox County 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 develop a Plan to meet state and federal requirements so that it can be approved by IEMA and FEMA. The Planning Committee is an integral part of the planning process and ensures that the Plan is tailored to the needs of the County and participating jurisdictions.

A five-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
2nd Committee meeting	Discuss the Risk Assessment Approve Mission Statement & Goals Participants Return Required Forms Begin discussing Mitigation Projects and Activities
3rd Committee meeting	Discuss and approve Mitigation Strategy Committee returns draft list of Mitigation Projects and Activities
4th Committee meeting	Finish discussing Mitigation Projects and Activities Committee discusses approval/adoption of the Plan
5th Committee meeting (Public Forum)	Present the Plan update for public review Committee helps answer questions from the public

Jurisdictions who wish to be part of the Plan 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 Plan once it's completed.

Information Needed from the Committee

As part of the plan update, Andrea indicated that there is information that will be needed from each participating jurisdiction. The information provided will be used to meet FEMA plan requirements. She 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 Plan 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 plan, 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 gathered to assist in assessing drought vulnerability.

Andrea indicated that Zachary Krug (AEC) would email the forms within the next week to all who have expressed an interest in being included in the Plan. She asked participants to complete the forms and return them by the next meeting if possible and to let her or Zak know if they had any questions.

Severe Weather Events

Given the format of the meeting, instead of having the Committee share their recollections of recent and historic hazard events that have impacted the County verbally, Andrea asked the Committee members to jot down any events that come to mind and complete the online Hazard Events Questionnaire survey that Zak will send out tomorrow.

Andrea 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 her best resource for this kind of information. The information provided in their questionnaires will be used to supplement the information for the next meeting.

Andrea also asked Committee members if they had any photos of storm damage they would be willing to share for inclusion in the Plan.

Community Participation

Andrea stressed the importance of attending each committee meeting and indicated that member participation helps the County meet its 25% match for this grant in addition to assuring that member jurisdictions are eligible for IEMA/FEMA funds. She indicated

that tag-teaming and designating substitute representatives is permissible when other obligations arise. Andrea pointed out that a designated substitute representative does not have be an official or employee of the jurisdiction.

Andrea 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. She also asked jurisdictions who are on Facebook to consider posting about the Plan on their pages as well.

Andrea 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. 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, she 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 Plan is and why it's important to participate.

Mission Statement & Goals

Copies of a draft mission statement and updated 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 Plan should be aimed at one or more of the goals identified by this Committee. Specific goals related to where you live 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 is scheduled for:

Thursday, January 20, 2022*
2:00 p.m.

Andrea asked Committee members to please review the "Tasks to be Completed" handout before the next meeting and indicated that her and Zak's contact information could be found on the last page of the meeting handout if any questions come up. With no further questions she adjourned the meeting.

* Following conversations between AEC and the Galesburg/Knox County EMA held in December 2021, it was decided that the meeting on Thursday, January 20, 2022 would be rescheduled to Thursday, March 3, 2022 to allow more time for the participants complete the required forms, encourage additional jurisdictions to participate in the planning process and avoid several scheduling conflicts.

Meeting Minutes

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

March 3, 2022
10:00 a.m.
Hybrid: In-Person/Virtual
Galesburg/Knox County Public Safety Building EOC
150 South Broad St., Galesburg

Committee Members

Altona, Village of
Carl Sandburg College
Galesburg Area Chamber of Commerce
Galesburg Hospitals' Ambulance Service
Galesburg, City of
- Clerk
- Fire
- Mayor
- Parks and Recreation
- Public Works

Henderson Fire Protection District
Knox College
Knox County Offices:
- County Board
- Clerk
- EMA
- GIS
- Health
- Highway

Knoxville, City of
Maquon, Village of
OSF St. Mary Medical Center
Regional Office of Education #33
Victoria-Copley Fire Protection District
Wataga, Village of
American Environmental Corp.

Welcome and Introductions

Chief Randy Hovind, Chairman of the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee, welcomed attendees. He turned the meeting over to Andrea Bostwick, American Environmental Corporation (AEC), who opened the meeting.

Handout materials were distributed to each member in attendance. For persons participating virtually, handout materials were distributed digitally via email to each member prior to the meeting.

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.

Risk Assessment

Andrea began the presentation by noting that there have been seven federally-declared disasters in Knox County since 1974. A total of 766 verified natural hazard events have been documented over the last 20 to 70 years. A minimum of $59.3 million in damages

have resulted from 105 documented natural hazard events. In addition, $3.6 million in crop damages were recorded for just eight 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.

The frequency, magnitude, and property damages for each category of natural hazard were described.

Severe Storms

Severe storms are the most frequently occurring natural hazard in Knox County with 411 events verified since 1965. One of the seven federal disaster declarations for Knox County included severe storms. Approximately $4.2 million in damages has resulted from 81 events. Additionally, there was $805,000 in crop damage from just four events. At least seven fatalities and 223 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 County, not associated with a tornado, is 84 knots (100 mph) and occurred at Galesburg on August 23, 2007. The largest hail recorded in the county is 4.50 inches (softball-sized) near Galesburg on May 9, 1995.

Severe Winter Storms

There were at least 108 verified events involving severe winter storms (snow and/or ice) since 1950 and 61 extreme cold events since 1994. One of the seven federal disaster declarations for Knox County is related to severe winter storms. With committee member assistance, we were able to verify $662,606 in property damages and emergency protective measures from two ice storms in 2007 and the 2011 Groundhog Day winter storm. At least, one fatality and 111 injuries can be attributed to severe winter storms, almost all of which are attributed to crashes involving ice and snow-covered roadways between 2015 and 2019.

At least nine major storms have occurred in every decade since 1950. Between 2010 and 2019, 23 severe winter storms took place. There have been two severe winter storms recorded during the current decade.

The record maximum 24-hour snowfall in the County is 16.0 inches, which occurred at the Knoxville COOP Station on February 2, 2011. The coldest recorded temperature is -32°F at the Altona COOP Station on January 26, 2019.

Floods

There have been a least 96 verified flood events in the County, 66 riverine/shallow flood events since 1997 and 30 flash flood events since 2001. Four of the seven federal disaster declarations for Knox County are related to flooding. At least $42.5

million in damages has resulted from six flood events. A majority of the property damage recorded ($39.5 million) is from the April 2013 flash flood event.

Excessive Heat

There have been 51 recorded excessive heat events reported in Knox County since 1997. No damages, fatalities, or injuries were recorded for any of the events.

The hottest temperature recorded in Knox County was 112°F at the Galesburg COOP Station on July 15, 1936.

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 $2.7 million in crop damages. 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 48.8% reduction in corn yields and an 18.8% reduction in soybean yields.

Year	Corn	Soybeans
1983	38.2%	10.5%
1988	48.8%	18.8%
2005	36.6%	18.2%
2011	---	---
2012	5.1%	9.7%
2013	---	---

Tornadoes

Since 1950, 33 tornadoes have been verified in Knox County. Approximately $9.2 million in property damages has resulted from 13 of these tornadoes. Four of the tornadoes have recorded property damages of at least $1.6 million per event. Fourteen injuries were recorded as a result of five separate tornado events.

The highest recorded F-Scale rating for a tornado in the County was an F3, which occurred on May 14, 1961, and again on June 14, 1974. The longest tornado was an F1 that was 34.5 miles in the County on July 21, 1961. The widest tornado recorded in the County was an F2 that was 880 yards wide (1/2 mile) on May 13, 1995.

Mine Subsidence

There are 126 documented underground coal mines located in the County according to the Illinois State Geological Survey's Directory of Coal Mines. No mine subsidence events were documented within the County. Andrea asked committee members for any information about such events.

According to the Illinois State Geological Survey, there are 21,468 acres (4.8% of the land area) and 404 housing units (1.7% of the total housing units) in the County are located or adjacent to mapped mines and land that could be affected if the mine boundaries are inaccurate or uncertain. Mine subsidence has the potential to impact

Oneida and Wataga as well as unincorporated areas of the County near East Galesburg & Knoxville.

Earthquakes

In the previous 200 years, no earthquakes have originated in Knox County while four earthquakes have originated in adjacent counties. There are no known fault zones or geologic structures located in the County.

Ken Runkle of AEC then provided information about select man-made hazards in Knox County.

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 this Plan, the term includes both hazardous product and hazardous waste.

Generation, Storage/Handling, & Transportation

In 2020, there were three facilities in Knox County that generated reportable quantities of hazardous substances according to the USEPA.

Based on records obtained from IEMA's Tier II database, there were 42 stationary facilities within Knox County that stored and/or handled hazardous substances. Thirteen of these facilities stored and/or handled chemicals identified as "Extremely Hazardous Substances".

Waste Disposal

There is one active commercial solid (household) waste landfill, the Knox County Landfill #3, operating in Knox County. There are two landfills that serve adjacent counties: Echo Hill Landfill (Henry Co.) and Peoria City/County Landfill (Peoria Co.). There are no facilities within the County 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 2011 and 2020 there were 99 hazmat incidents reported to IEMA

in Knox County. Of the 99 incidents, 55 occurred at fixed facilities, while 44 occurred during transport. Of the 44 transportation hazmat incidents, 20 were roadway incidents and 24 were rail 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 is one active Superfund site in Knox County.

Illinois SRP: There are 15 SRP sites located Knox County. Nine of the sites have received "No Further Remediation" (NFR) or 4(y) letters.

Illinois LUST: There are 155 LUST sites located in Knox County. Approximately 51% 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 the 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

Andrea 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 Andrea 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

Andrea 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.

To help the jurisdictions think about and assemble their lists, Andrea provided several examples and referred participants to a 2-page list of potential mitigation projects included in the handout material along with mitigation project lists from other jurisdictions. These examples can be used to help Committee members when they prepare their list. Finally, Andrea provided excerpts from a FEMA publication on mitigation ideas as another resource.

Status of Existing Projects

Ken distributed **"Status of Existing Mitigation Actions"** forms to each of the previously participating jurisdictions detailing the mitigation projects and activities included in the original Plan. Andrea explained that as part of the update process the status of these projects needs to be determined. She described how the form should be completed so that this information can be included in the Plan update.

New Projects

The form titled **"Hazard Mitigation Projects"** was distributed and Andrea indicated this form should be used to submit new projects and activities for the Plan. She told the committee that individual mitigation project lists will be developed 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 Plan 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. She 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.

Committee members were encouraged to contact Andrea or Ken if questions arise before they return to the next Committee meeting.

What Happens Next?

The vulnerability assessment and mitigation project prioritization methodology will be the main topics of the next committee meeting.

The third meeting of the Committee was scheduled for:

Thursday June 30, 2022
Galesburg/Knox County Public Safety Building EOC
150 South Broad St., Galesburg
10:00 A.M.

Public Comment

With no questions or comments, Andrea adjourned the meeting.

Meeting Minutes

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

June 30, 2022
10:00 a.m.
Hybrid: In-Person/Virtual
Galesburg/Knox County Public Safety Building EOC
150 South Broad St., Galesburg

Committee Members

Abingdon, City of
Altona, Oneida & Wataga Ambulance
Carl Sandburg College
Galesburg Hospitals' Ambulance Service
Galesburg, City of
Henderson Fire Protection District
Knox College
Knox County Area Partnership for Economic Development
Knox County Offices:
- Clerk & Recorder
- EMA
- GIS
- Health

OSF St. Mary Medical Center
Rio Fire Protection District
Victoria-Copley Fire Protection District
Yates City, Village of
American Environmental Corp.

Welcome and Introductions

Chief Randy Hovind, Chairman of the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee, welcomed attendees. He turned the meeting over to Andrea Bostwick, American Environment Corp. (AEC), who opened the meeting.

Handout materials were distributed to each member in attendance. For persons participating virtually, handout materials were distributed digitally via email to each member prior to the meeting.

Andrea provided a brief recap to reorient Committee Members as to what has been accomplished. Before beginning the vulnerability analysis presentation, Andrea asked the participating jurisdictions to submit their completed "critical facilities", "capability assessment", and "shelter surveys" if they haven't done so already.

Vulnerability Analysis

Andrea began the vulnerability analysis discussion by noting that the focus of this meeting is the vulnerability posed by tornadoes. The 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.

Tornadoes

Since 1950, 33 tornadoes have been verified in Knox County. While occurring less frequently than severe storms and severe winter storms, tornadoes have caused almost $9.2 million in property damages and 14 injuries.

Using information from the 33 verified tornadoes, damages were calculated based on an "average" tornado. The average tornado in Knox County impacts approximately 0.22 square miles. 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 to residences and their contents would be expected to exceed at least $9.3 million in any of the participating municipalities with the exception of St. Augustine. Losses ranged from $4.1 million in St. Augustine to $46.2 million in Galesburg. Potential dollar losses by township would be expected to range from $70,866 in Chestnut Township to $14.3 million in Galesburg City Township. Andrea noted that the damage figures for the most populated townships would only be reached if the tornado's path included a portion of the major municipality in the township.

Risk Priority Index Exercise Results

Andrea then presented the results of the Risk Priority Index Exercise, which was conducted at the March 3, 2022 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, thunderstorms with damaging winds scored the highest, followed by winter storms and tornadoes. The highest scoring man-made hazard was transportation related hazmat incidents. The hazards that scored the lowest included dam failures, earthquakes, and mine subsidence.

A side-by-side comparison of how the hazards ranked between the original exercise conducted for the 2010 Plan and this exercise was provided for comparison. The top hazards from the original exercise included transportation hazmat incidents, tornadoes, and fixed facility hazmat incidents.

Critical Facilities Vulnerability Survey

As part of the Plan update, Andrea indicated that vulnerable community assets need to be identified for the participating jurisdictions. She 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 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. Andrea 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.

Andrea 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 Projects

Committee Members were asked to submit their existing and new Mitigation Projects forms. Andrea 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.

Andrea 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.

Andrea 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 the County 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.

What Happens Next?

It is anticipated that participants will need time to assemble their mitigation project lists. Consequently, the Committee agreed to schedule the next meeting on:

Thursday, October 13, 2022
Galesburg/Knox County Public Safety Building EOC
150 South Broad St., Galesburg
10 a.m.

Public Comment

No additional questions or comments were raised. With concurrence from Chief Hovind, Andrea adjourned the meeting.

Meeting Minutes

Knox County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

October 13, 2022
10:00 a.m.
Hybrid: In-Person/Virtual
Galesburg/Knox County Public Safety Building EOC
150 South Broad St., Galesburg

Committee Members

Abingdon, City of
Galesburg Area Chamber of Commerce
Galesburg Hospitals' Ambulance Service
Galesburg, City of
Galesburg Sanitary District
Henderson Fire Protection District
Knox College
Knox County Area Partnership for Economic Development
Knox County Offices:
EMA
Health
Maquon, Village of
OSF St. Mary Medical Center
ROE #33
Victoria-Copley Fire Protection District
Wataga, Village of
American Environmental Corp.

Welcome

Chief Randy Hovind, Chairman of the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee, welcomed attendees. He turned the meeting over to Andrea Bostwick, American Environment Corp. (AEC), who opened the meeting.

Handout materials were distributed to each member in attendance. For persons participating virtually, handout materials were distributed digitally via e-mail to each member prior to the meeting.

Andrea provided a brief recap to reorient Committee members as to what has been accomplished and what will be covered at this meeting.

Mitigation Project Submittal & Action Tables

Andrea thanked the Committee Members for assembling their lists of mitigation projects and activities. She 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. A draft of the Mitigation Strategy section that details the review and re-evaluation of the goals and prioritization methodology as well as how the mitigation projects were analyzed in the tables was also provided in the meeting handouts for review by the Committee.

Committee members were 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 each member, while Ken Runkle

of AEC fielded questions from virtual participants. Some committee members expressed interest in adding additional mitigation projects to these tables. Andrea advised Committee Members who wished to add additional projects to provide them to her as soon as possible, and no later than November 11.

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 this is a mitigation plan, some projects were either removed or not included if they were not considered mitigation. Projects associated emergency preparedness/response, recovery, and maintenance will not be included in the Plan.

Public Forum and Adoption

Andrea laid out the timeline for remainder of the AHMP update process and explained in more detail how the final meeting and adoption process would proceed. The final Committee meeting will be conducted as an open-house style public forum to present the draft Plan for review and comment. A paper copy of the draft Plan will be available for review at the meeting and posted online on Galesburg's website. 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 plan to make available for public comment.

Once the comment period is over, any comments received will be incorporated into the Plan and submitted to IEMA/FEMA. Following IEMA and FEMA review, any edits requested will be made and then FEMA will issue an Approval Pending Adoption letter. At this point an email will be sent to all the participating jurisdictions, along with a copy of a model adoption resolution, asking them to formally adopt the Plan 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 letter starting the clock for the five-year update.

Plan Maintenance and Update

Andrea described the commitments detailed in a draft of the Plan Maintenance and Update section provided in the meeting handouts for review by the Committee. The Plan will be monitored and evaluated on an annual basis by a Plan Maintenance Subcommittee, which will be made up of the participating jurisdictions and key member of the Planning Committee. The Galesburg/Knox County EMA Office will send out a Plan Maintenance Checklist 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 Plan to determine its effectiveness at achieving its stated purpose and goals. Participants can also add new mitigation actions during the annual monitoring phase or by contacting the EMA Coordinator.

The EMA Office 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 list will require an update of the Mitigation Strategy and a resubmittal of the Plan to IEMA and FEMA for reference.

At least once every five years, the Plan 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 this Plan and who wants to become part of the updated Plan 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 Plan update will be presented for review and comment.

The public forum will be held on:

Thursday, January 26, 2023
Galesburg City Hall, City Council Chambers
55 West Tompkins St, Galesburg
4 p.m. to 6 p.m.

Public Comment

With no other questions, the meeting was adjourned.

APPENDIX C

Knox County Citizen Questionnaire

You can help protect lives and property from natural hazard events in the County by taking a few moments to complete this questionnaire.

Asterisk (*) desonates required questions for form completion.

* 1. **Please indicate where you live in the County (Please check only one.):**

- ☐ Abingdon
- ☐ Altona
- ☐ East Galesburg
- ☐ Galesburg
- ☐ Henderson
- ☐ Knoxville
- ☐ Maquon
- ☐ Oneida
- ☐ Other (please specify)
- ☐ Rio
- ☐ St. Augustine
- ☐ Victoria
- ☐ Wataga
- ☐ Williamsfield
- ☐ Yates City
- ☐ Unincorp. County

* 2. **Please place a checkmark next to each of the natural hazards listed below that you have experienced in the 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
- ☐ Levee 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 12 based on which hazard you feel poses the greatest threat. (1 = greatest threat and 12 = least threat)** ***Each number should only be used once.***

- ☐ Severe Summer Storms
- ☐ Floods
- ☐ Severe Winter Storms
- ☐ Excessive Heat

Appendix C

- [ ] Extreme Cold
- [ ] Tornadoes
- [ ] Drought
- [ ] Earthquakes
- [ ] Mine/Land Subsidence
- [ ] Landslides
- [ ] Dam Failures
- [ ] Levee Failures

* 5. **What types of mitigation projects or activities are most needed in the 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
- [ ] Other (please specify)
- [ ] 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

* 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.)**

- [ ] Newspapers
- [ ] Television
- [ ] Radio
- [ ] Internet
- [ ] Social Media (Facebook, Twitter, etc.)
- [ ] Schools
- [ ] Mailings
- [ ] Other (please specify)
- [ ] Fact Sheet/Brochure
- [ ] Extension Service
- [ ] Public Workshops/Meeting
- [ ] Fire Department/Law Enforcement
- [ ] Public Health Department
- [ ] Municipal/County Government

Thank you for your time in assisting with the update of the County's Hazard Mitigation Plan.
Knox County Multi-Jurisdictional Multi-Hazard Mitigation Planning Committee

Done

Powered by SurveyMonkey
See how easy it is to create a survey.

Privacy & Cookie Notice

Appendix C

APPENDIX D

Frequently Asked Questions

Knox County Multi-Jurisdictional
All Hazards Mitigation Plan Update

1) What is the Knox County All Hazard Mitigation Plan?

The Knox County Multi-Jurisdictional All Hazards Mitigation Plan evaluates damage to life and property from natural and man-made hazards in the County and identifies projects and activities that can reduce these damages. The Plan is considered to be multi-jurisdictional because it includes municipalities and other jurisdictions (fire protection districts, schools, health centers, etc.) who want to participate.

2) What is hazard mitigation?

Hazard mitigation is any action taken to ***reduce*** the long-term risk to life and property from a natural or man-made hazard ***before*** an event occurs.

3) Why is this Plan being updated?

The Plan update fulfills 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, this Plan update also provides these benefits:

- Funding for mitigation projects and activities ***before*** disasters occur.
- Funding for mitigation projects and activities ***following*** federally-declared disasters.
- Increased awareness about natural and man-made hazards and closer cooperation among the various organizations and political jurisdictions involved in emergency planning and response.

4) Who is updating this Plan?

The Knox County Multi-Jurisdiction All Hazards Mitigation Planning Committee is updating the Plan with assistance from technical experts in emergency planning, environmental matters, and infrastructure. The Committee includes 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 Knox County All Hazards Mitigation Planning Committee. In addition, you are encouraged to provide photographs, other documentation, and information about damages you experienced from natural and man-made hazards in Knox County. Surveys will be available at participating jurisdictions and through Knox County to help gather specific information from residents. All of this information will be used to update the Plan. A draft of the Plan update will be presented at a public forum for further public input.

More information can be obtained by contacting:

Fire Chief Randy Hovind, Coordinator
Knox County Emergency Management Agency
150 S. Broad Street
Galesburg, Illinois 61401
(309) 345-3756

APPENDIX E

Media Outlets Serving Knox County

The Register-Mail (daily)
https://www.galesburg.com/

The Burg (weekly)
https://www.theburg.news/

The Knoxville Bulletin (weekly)
https://www.facebook.com/knoxvillebulletin

The Peoria Journal Star (daily)
https://www.pjstar.com/

The Knox Student (weekly)
https://www.theknoxstudent.org/

KWQC TV – NBC-6
https://www.kwqc.com/

WHBF TV – Channel 4
https://www.ourquadcities.com/

WQAD TV – Channel 8
https://www.wqad.com/

WEEK TV – Channel 25
https://www.25newsnow.com/

WMBD TV – CBS 31
https://www.centralillinoisproud.com/

WIUTV-3 – News Channel 3
http://www.wiu.edu/cofac/bcj/NEWS3.php

WIUM – 89.5/90.7/91.3/106.3 FM
https://www.tspr.org/

WCBU – 89.9 FM
https://www.wcbu.org/

WVIK – 90.3/105.7 FM
https://www.wvik.org/

WKEI – 1450 AM/100.1 FM
https://regionalmedianews.com/

WGIL – 1400 AM/93.7 FM
https://www.wgil.com/

WVKC – 90.7 FM
https://www.thewvkc.com/

APPENDIX F

KNOX COUNTY EMERGENCY MANAGEMENT AGENCY
150 South Broad Street | Galesburg, IL. 61401
P: 309.345.3756 | F: 309.343.1340

County Prepares For Natural Disasters
Contact: Chief Randy Hovind
Phone: 309.345.3756

Galesburg, IL (October 5, 2021)—Knox County will update its plan to reduce the damages caused by severe weather such as floods, tornadoes, snow storms, thunderstorms, and ice storms 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 and man-made hazard events that have impacted the County and identifies activities and projects to reduce risk to residents, property and infrastructure", said Knox County EMA Coordinator Chief Randy Hovind. "By having an updated hazard mitigation plan, the County will remain eligible for federal funds to construct these projects" he added.

The Knox County Hazard Mitigation Planning Committee will hold its first meeting virtually on Thursday, October 21, 2021 at 2:00 P.M. Persons interested in participating in the meeting should contact Zachary Krug, American Environmental Corp. at 217.585.9517 Ext. 8 or zkrug@aecspfld.com.

The Planning Committee includes County, municipal, school, fire protection district and hospital representatives, 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 resident 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 our County's emergency response plan because it focuses on ways to reduce and prevent damages before they occur," added Hovind.

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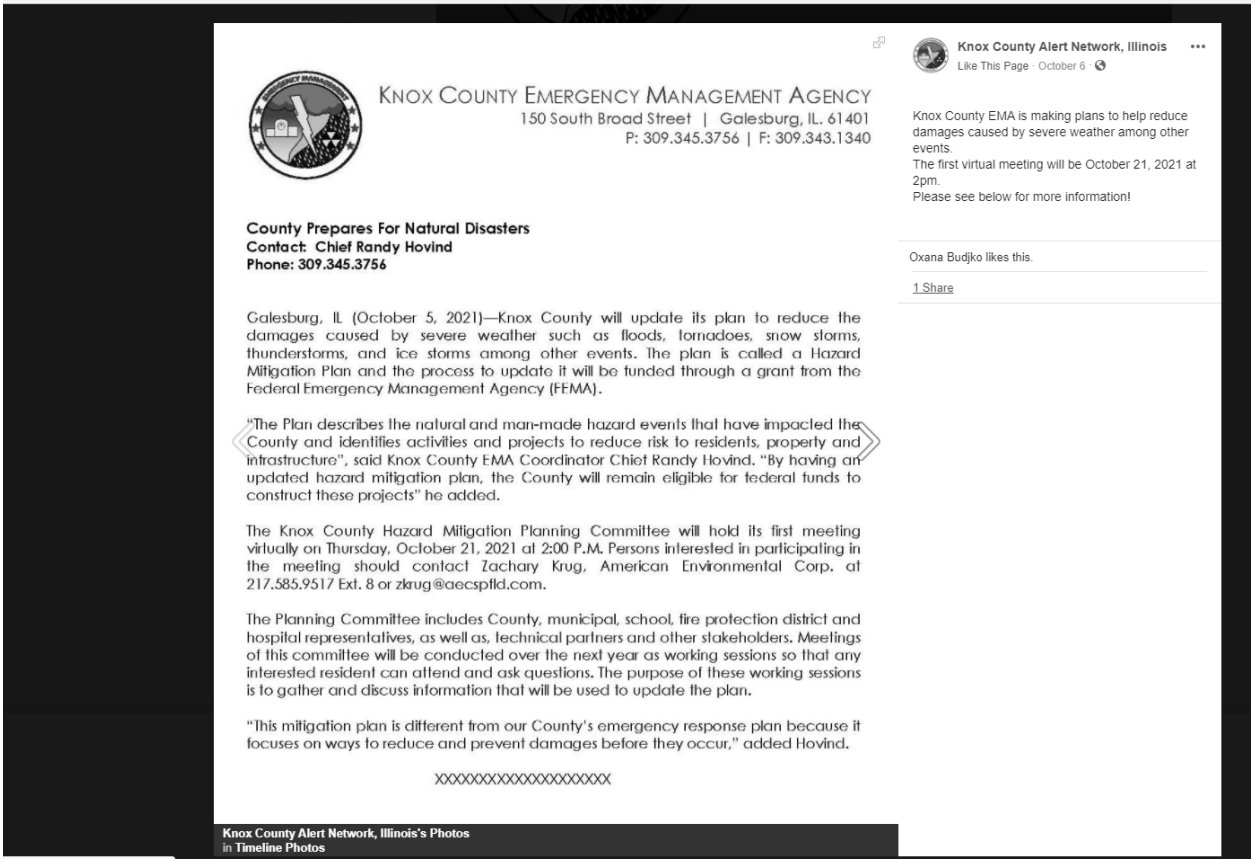
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Appendix F

https://www.facebook.com/KCAlertNetwork/photos/pb.311752695631590.-2207520000../2142410499232458/?type=3&theater



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P: 309.345.3756 | F: 309.343.1340

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Knox County Alert Network, Illinois's Photos
in Timeline Photos

Knox County Alert Network, Illinois
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Knox County EMA is making plans to help reduce damages caused by severe weather among other events.
The first virtual meeting will be October 21, 2021 at 2pm.
Please see below for more information!

Oxana Budjko likes this.

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Appendix F

KNOX COUNTY EMERGENCY MANAGEMENT AGENCY
150 South Broad Street | Galesburg, IL. 61401
P: 309.345.3756 | F: 309.343.1340

Contact: Chief Randy Hovind
P: 309.345.3756

Reducing Damages Caused by Severe Weather

Galesburg, IL (February 14, 2022) — The Knox County All Hazards Mitigation Planning Committee will hold its second meeting on Thursday, March 3 at 10 A.M. at the Galesburg Public Safety Building, in the Emergency Operations Center, 150 South Broad Street in Galesburg. This Committee, comprised of County and municipal representatives as well as technical partners and stakeholders, will meet over the next several months to update the County's All Hazards Mitigation Plan to reduce the damages caused by natural hazards, such as, floods, thunderstorms, ice storms, tornadoes, and excessive heat. Interested residents are invited to attend and can ask questions at these meetings.

"The purpose of this meeting is to identify how often severe weather events occur within the County and what kinds of damages have resulted. Based on this information we will begin to update each participant's list of activities and projects," said Knox County EMA Coordinator, Chief Randy Hovind.

"This Plan will be our best resource for determining how to mitigate damages from storms and other natural hazards. After the Plan update is completed, comprehensive information will be available in one document to help guide those who are making decisions about how to better protect Knox County residents," added Hovind.

Committee meetings are open to the public. Those who wish to attend the meeting may do so in person (masks required) or virtually. Persons interested in participating in the meeting virtually should visit the Knox County Alert Network, Illinois Facebook page for log-in details or contact Ken Runkle, American Environmental Corp. at 217-585-9517 Ext. 8, or via email at krunkle@aecspfld.com.

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The Register-Mail

SEVERE

Knox County plans second meeting to address reducing damages caused by severe weather

News Reports

Published 11:02 a.m. CT Feb. 14, 2022

GALESBURG — The Knox County All Hazards Mitigation Planning Committee will hold its second meeting at 10 a.m. Thursday, March 3 at the Galesburg Public Safety Building, in the Emergency Operations Center, 150 S. Broad St. in Galesburg.

The committee, comprised of county and municipal representatives as well as technical partners and stakeholders, will meet over the next several months to update the county's All Hazards Mitigation Plan to reduce the damages caused by natural hazards, such as, floods, thunderstorms, ice storms, tornadoes, and excessive heat. Interested residents are invited to attend and can ask questions at these meetings.

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Knox County Alert Network, Illinois

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(309) 345-3756

ci.galesburg.il.us/city_initiatives/emergency_management/emergency_management

Always open

Rating · 4.5 (24 Reviews)

Photos See all photos



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Knox County Alert Network, Illinois
February 16 at 11:24 AM ·

The Knox County All Hazards Mitigation Planning Committee will hold its second meeting on Thursday, March 3 at 10 A.M.

ALL are welcome to attend!!

If you would like to attend virtually:
Meeting ID
meet.google.com/ngj-ydax-zvt
Phone Number (US): +1 617-675-4444
PIN: 994 103 639 4165#

OR attend in person:
Galesburg Public Safety Building
150 South Broad Street, Galesburg

credit: Peoria Journal Star
2009 Knox County flood



3

KNOX COUNTY EMERGENCY MANAGEMENT AGENCY
150 South Broad Street | Galesburg, IL. 61401
P: 309.345.3756 | F: 309.343.1340

FOR IMMEDIATE RELEASE

Contact: Fire Chief Randy Hovind
309.345.3756

Projects to Reduce Damages Caused by Natural Hazards

Galesburg, IL (June 13, 2022) — Assessing the vulnerability of existing residential structures to tornado damage as well as identifying projects and activities to prevent injuries and fatalities while maintaining vital services within Knox County will be the main topics of discussion at the Knox County All Hazards Mitigation Planning Committee meeting on Thursday, June 30 at 10 A.M. The meeting will be held at the Galesburg Public Safety Building in the Emergency Operations Center, 150 S. Broad St. in Galesburg and is open to the public.

This Committee began work in October 2021 to update the County's Plan. This All Hazards Mitigation Plan will identify projects and activities to protect Knox County residents and property from storms and other natural disasters. Unlike all other emergency plans, this Plan is aimed at identifying projects and activities that can be taken before these disasters occur. Since 1974, the County has been a part of seven federal disaster declarations. In addition, there has been at least $59.3 million in verified property damages and $3.6 million in crop damages caused by natural hazard events in the County.

"Other emergency plans are directed at responding after a storm or natural disaster strikes. With this Plan update, we will identify actions that can reduce damages caused by natural hazards for each participating jurisdiction before they occur. The Plan also helps to assure each participating jurisdiction is eligible to receive federal grant money for mitigation projects," said Fire Chief Randy Hovind, Galesburg/Knox County EMA Coordinator.

Building community safe rooms, acquiring flood prone properties, resolving drainage issues, retrofitting critical infrastructure to better withstand hazard events, purchasing back-up power supplies, and developing public information materials are a few of the more frequently encountered mitigation projects in Illinois.

Participants include the County, Altona, Galesburg, Knoxville, Maquon, and Wataga, as well as Altona-Oneida-Wataga Ambulance Service, Carl Sandburg College Galesburg Area Chamber of Commerce, Galesburg Hospitals' Ambulance Service, Henderson Fire Protection District, Knox College, OSF St. Mary Medical Center, Regional Office of Education #33, and the Victoria-Copley Fire Protection District.

XXXXXXXXXXXXXXXXX

Knox County Alert Network, Illinois

Knox County Alert Network is a group of partners working to provide information to Knox County, IL r

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150 S Broad St, Galesburg, IL, United States, Illinois

(309) 345-3756

ci.galesburg.il.us/government/emergency_management/index.php

Always open

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Photos See all photos



Knox County Alert Network, Illinois
June 9 at 11:11 AM ·

FOR IMMEDIATE RELEASE

Contact: Fire Chief Randy Hovind
309.345.3756

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"Other emergency plans are directed at responding after a storm or natural disaster strikes. With this Plan update, we will identify actions that can reduce damages caused by natural hazards for each participating jurisdiction before they occur. The Plan also helps to assure each participating jurisdiction is eligible to receive federal grant money for mitigation projects," said Fire Chief Randy Hovind, Galesburg/Knox County EMA Coordinator.

Building community safe rooms, acquiring flood prone properties, resolving drainage issues, retrofitting critical infrastructure to better withstand hazard events, purchasing back-up power supplies, and developing public information materials are a few of the more frequently encountered mitigation projects in Illinois.

Participants include the County, Altona, Galesburg, Knoxville, Maquon, and Wataga, as well as Altona-Oneida-Wataga Ambulance Service, Carl Sandburg College Galesburg Area Chamber of Commerce, Galesburg Hospitals' Ambulance Service, Henderson Fire Protection District, Knox College, OSF St. Mary Medical Center, Regional Office of Education #33, and the Victoria-Copley Fire Protection District.

Knox County Emergency Management Agency
150 S Broad St
Galesburg, IL 61401
P: 309.345.3756

FOR IMMEDIATE RELEASE

Contact: Chief Randy Hovind
309.345.3756

Protecting Public Health and Property in Knox County

Galesburg, IL (September 26, 2022)—Projects and activities to protect Knox County residents and vital services will be the main topic of discussion at the Knox County All Hazards Mitigation Planning Committee meeting on Thursday, October 13, 2022, at the Galesburg/Knox County Public Safety Building Emergency Operations Center, 150 South Broad St. in Galesburg. The meeting begins at 10:00 am and is open to the public.

The Committee began work in October 2021 to update the County's All Hazards Mitigation Plan. This Plan details past severe weather events that have previously impacted the County and identifies mitigation projects and activities that can be taken before a severe weather event occurs to protect residents and critical services and infrastructure.

"There has been at least $59.3 million in verified property damages and $3.6 million in crop damages caused by severe weather events in the County. Obtaining FEMA's approval of our Plan update will make all of the participants eligible to receive federal grant money for mitigation projects and activities," according to Chief Randy Hovind, Galesburg/Knox County EMA Coordinator.

Projects identified by Committee members at this meeting will become part of the Knox County All Hazards Mitigation Plan. While portions of the Plan have been presented at each meeting, the entire Plan will be presented for public review and comment before it is submitted to the state and federal government for approval.

"A public forum will be conducted this winter for interested persons to review the updated Plan and ask questions of Committee Members. A two-week public comment period will be held 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 Plan update," added Hovind.

XXXXXXXXXXXXXXXX

Protecting Public Health and Property in Knox County



October 4, 2022(tel:3097349452)

Share

Projects and activities to protect Knox County residents and vital services will be the main topic of discussion at the Knox County All Hazards Mitigation Planning Committee meeting on Thursday, October 13, 2022, at the Galesburg/Knox County Public Safety Building Emergency Operations Center, 150 South Broad Street in Galesburg. The meeting begins at 10:00 a.m. and is open to the public.

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*****Courtesy of the City of Galesburg*****

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Appendix F

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October 3 at 11:41 AM ·

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Knox County Emergency Management Agency
150 S Broad St
Galesburg, IL 61401
P: 309.345.3756

FOR IMMEDIATE RELEASE

Contact: Chief Randy Hovind
309.345.3756

Plan to Protect Public Health and Property in Knox County
Ready for Public Review

Galesburg, IL (January 9, 2023) -- The updated Knox County Multi-Jurisdictional All Hazards Mitigation Plan outlining projects and activities to reduce damages caused by severe weather and other natural hazards will be available for public review and comment starting January 26, 2023. The Plan, along with a summary sheet and a comment survey, will be available on the City of Galesburg's webpage. The comment period will remain open through February 9, 2023.

If you are unable to access the Plan via the website, a paper copy of the Plan will be available for review at the Knox County Courthouse, County Clerk's Office, 200 South Cherry Street in Galesburg from 8:30 am to 4:30 pm on weekdays the courthouse is open. Public comments received will be used to make any revisions needed before the Plan is submitted to the Illinois and Federal Emergency Management Agencies.

The Knox County All Hazards Mitigation Planning Committee has been conducting working meetings open to the public since October 2021. The Committee prepared this Plan with technical assistance from state and federal agencies as well as a consultant specializing in emergency management planning.

The municipalities of Abingdon, Altona, Galesburg, Knoxville, Maquon, Wataga, and Yates City, as well as Carl Sandburg College, Knox College, Altona-Oneida-Wataga Ambulance Service, Henderson Fire Protection District (FPD), Rio FPD, and OSF St. Mary Medical Center have participated in the planning process.

"This Plan describes how the County and the participating jurisdictions have been impacted by severe weather and other hazards and identifies specific mitigation actions that can be taken to reduce damages to people and property before events occur," explained Chief Randy Hovind, Knox County EMA Coordinator.

A public forum will be held at the Galesburg City Hall Council Chambers, 55 West Tompkins St., Galesburg from 4 p.m. to 6 p.m. on Thursday, January 26, 2023. Individuals can still review the Plan and provide comments without participating in the public forum.

XXXXXXXXXXXXXXXX

Knox County Emergency Management - Hazard Mitigation Planning Meeting

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Contact: Chief Hovind
P: 309.345.3756



Knox County Emergency Management Agency

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Knox County Emergency Management Agency
150 S Broad St
Galesburg, IL 61401
P: 309.345.3756

FOR IMMEDIATE RELEASE

Contact: Chief Randy Hovind
309.345.3756

Plan to Protect Public Health and Property in Knox County Ready for Public Review

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xxxxxxxxxxxxxxxxx

APPENDIX G

KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN PUBLIC FORUM SUMMARY HANDOUT

JANUARY 26, 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 Knox County residents. Since 1974, Knox County has been a part of seven major federally-declared disasters and experienced at least $59.7 million in recorded property damages and $3.6 million in recorded crop damages.

In the last 10 years alone (2012 – 2021), there have been 92 heavy rain events, 54 thunderstorms with damaging winds, 38 extreme cold events, 29 severe winter storms, 29 riverine flood events, 27 flash flood events, 26 excessive heat events, 23 severe storms with hail one inch in diameter or greater, 4 tornadoes, 2 verified lightning strikes with damages, and 2 droughts verified in the County. While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning and implementation.

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 the County and 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 an all hazards mitigation plan.

Why prepare an updated all hazards mitigation plan?
By preparing and adopting an updated all hazards 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, 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.

Who participated in the update of the County's All Hazards Mitigation Plan?
Recognizing the benefits that could be gained from preparing an updated all hazards mitigation plan, Knox County invited all the local government entities within the County to participate. The following jurisdictions chose to participate in the Plan update with the County:

- Abingdon, City of
- Altona, Village of
- AO&W Ambulance Service
- Carl Sandburg College
- Galesburg, City of
- Henderson Fire Protection District
- Knox College
- Knoxville, City of
- Maquon, Village of
- OSF St. Mary Medical Center
- Rio Fire Protection District
- Wataga, Village of
- Yates City, Village of

How was the Plan update developed?
The Knox County Multi-Jurisdictional All Hazards Mitigation Plan update was developed through the Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee. The Planning Committee included representatives from each participating jurisdiction, as well as business, education, emergency services, healthcare, and utilities. The Planning Committee met five times between November 2021 and January 2023.

KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

Which natural and man-made hazards are included in the Plan update?
After reviewing the risk assessment, the Planning Committee chose to include the following natural and man-made hazards in the Plan:

Natural Hazards:
- severe storms (thunderstorms, hail, lightning, heavy rain)
- severe winter storms (snow & ice)
- floods (riverine & flash)
- extreme cold
- excessive heat
- tornadoes
- drought
- land/mine subsidence
- earthquakes
- 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 Plan update?
The Plan update is 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 Plan update is devoted to the risk assessment and mitigation strategy.

The risk assessment identifies the natural and man-made hazards that pose a threat to the County 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 Knox County, as well as the buildings, critical facilities, and infrastructure in the 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 and man-made 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 Plan update before it is submitted to the Illinois Emergency Management Agency (IEMA) and the Federal Emergency Management Agency (FEMA) for review. Once IEMA and FEMA have reviewed and approved the Plan, it will be presented to the County and each participating jurisdiction for formal adoption. After adopting the Plan update, each participating jurisdiction will be eligible to apply for federal mitigation funds and can begin implementing the mitigation actions identified in the Plan.

APPENDIX H

Knox County Multi-Jurisdictional All Hazards Mitigation Plan Update Comment Survey

The Knox County Multi-Jurisdictional All Hazards Mitigation Plan Update evaluates damage to life and property from natural hazards that occur in the County. This Plan also identifies projects and activities for the County and each participating jurisdiction to help reduce these damages. This comment survey should be used to provide feedback on the draft Plan.

An Asterisk (*) denotes a question that is required for form completion.

* 1. What comments, concerns or questions do you have regarding the draft Plan?

* 2. Name:

3. Address:

4. City/Village/Town:

5. State/Province:

6. Zip Code:

* 7. Email Address:

8. Phone Number:

Comments will be accepted through February 9, 2023.

Done

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KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

COMMENT SHEET

PLAN COMMENT PERIOD
JANUARY 26, 2023 THRU FEBRUARY 9, 2023

The County's Multi-Jurisdictional All Hazards Mitigation Plan evaluates damage to life and property from natural and man-made hazards that occur in the County. This Plan also identifies projects and activities for the County and each participating jurisdiction that will help reduce these damages. This comment sheet should be used to provide feedback on the draft Plan update.

What comments, concerns or questions do you have regarding the draft Plan update?
(Use additional sheets if necessary.)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Please Print Your Name, Address, and Phone Number Below:

Name: _____ Phone: _____

Address: _____

_____ Zip Code: _____

Comments will be accepted through February 9, 2023.

Place
Stamp
Here

Randy Hovind, Coordinator
Galesburg/Knox County EMA
150 South Broad Street
Galesburg, IL 61401

APPENDIX I

Knox County Emergency Management Agency
150 S Broad St
Galesburg, IL 61401
P: 309.345.3756

To: Fulton County EMA: Chris Helle (ESDA@fultonco.org)
Henry & Stark Counties OEM: Mat Schnepple (Schnepple@EMA-HC.com)
Mercer County OEM: Angie Litterst (angie.litterst@mchdept.org)
Peoria County EMA: Jason Marks (jmarks@peoriacounty.org)
Warren County ESDA: Casey Rexroat (casey.rexroat@monmouthfiredepartment.com)

From: Chief Randy Hovind, EMA Coordinator, Knox County

Subject: Hazard Mitigation Plan

Date: January 18, 2023

The purpose of this memorandum is to inform you that Knox County is updating its countywide All Hazards Mitigation Plan. Since we share common boundaries, you are invited to review our draft Plan and provide comments during the public comment period, which runs from January 26 through February 9, 2023. Starting January 26, the Plan along with a summary sheet and a comment survey can be viewed on the City of Galesburg webpage.

A public forum is scheduled for:

Thursday, January 26, 2023
4 p.m. to 6 p.m.
Galesburg City Hall Council Chambers
55 W Tompkins St, Galesburg, IL

If you have any questions, please contact me at 309-345-3756 or rhovind@ci.galesburg.il.us

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 Plan, please contact Ken Runkle, a consultant team member, at 217.585.9517 Ext. 8 or krunkle@aecspfld.com

Runkle, Ken

From: Jenni Moser, Fire Secretary <jmoser@ci.galesburg.il.us>
Sent: Wednesday, January 18, 2023 11:56 AM
To: ESDA@Fultonco.org; schnepple@ema-hc.com; Casey Rexroat; angie.litterst@mchdept.org; jmarks@peoriacounty.org
Cc: Runkle, Ken
Subject: Hazard Mitigation Plan
Attachments: Adjacent Counties Memo - Knox County 2023.01.18.pdf

Good afternoon,
Please see the attached memo from Chief Hovind.

Thank you,

Jenni Moser
Fire Department Secretary
309.345.3756
309.343.1340
www.ci.galesburg.il.us
150 S Broad St
Galesburg, IL 61401

APPENDIX J

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Knox County
1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/30/1959	7:30 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	100 trees were uprooted and half a dozen store windows were blown in
04/22/1963	5:30 AM	Galesburg^ Henderson Oneida Altona	n/a	n/a	n/a	n/a	n/a	
04/10/1965	10:00 PM	Galesburg Municipal Airport Galesburg Victoria	n/a	n/a	n/a	$25,000	n/a	- At the Galesburg Municipal Airport a plate glass window as bown out, a small plane was destroyed, and another damaged - Minor wind damaged was experienced across Galesburg - The Victoria area was hardest hit with barns, garages and other small buildings blown down or damaged
04/10/1965	11:00 PM	Williamsfield^	n/a	n/a	n/a	n/a	n/a	
04/24/1965	2:30 AM	Galesburg^	n/a	n/a	n/a	n/a	n/a	
09/04/1969	7:00 PM	Galesburg	n/a	n/a	n/a	$50,000	n/a	The roof of a Knox College building sustained damage
02/19/1971	3:00 PM	Galesburg^	n/a	n/a	n/a	n/a	n/a	
02/19/1971	3:30 PM	Victoria^	n/a	n/a	n/a	n/a	n/a	
04/30/1973	6:40 PM	Altona^	n/a	n/a	n/a	n/a	n/a	
09/24/1973	5:00 PM	Knoxville	n/a	n/a	n/a	n/a	n/a	Power lines and trees were downed and small fires were set off as storms passed over
06/20/1974	6:00 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	
06/20/1974	6:05 PM	Yates City^	n/a	n/a	n/a	n/a	n/a	
04/18/1975	2:00 PM	Galesburg Wataga^	52 kts	n/a	n/a	n/a	n/a	Winds destroyed a machine shed southeast of Wataga
07/03/1983	10:45 PM	Knoxville^	n/a	n/a	n/a	n/a	n/a	
09/06/1983	8:00 AM	Knoxville^	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 Knox County
1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/14/1985	5:30 PM	Galesburg Galesburg Municipal Airport^	60 kts	n/a	n/a	n/a	n/a	
05/14/1985	5:45 PM	Galesburg Galesburg Municipal Airport^	61 kts	n/a	n/a	n/a	n/a	
07/31/1986	1:00 AM	Galesburg	n/a	n/a	n/a	n/a	n/a	1,000 houses lost power
07/29/1987	4:05 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	
11/15/1988	9:05 PM	Galesburg	50 kts	n/a	n/a	n/a	n/a	Some power outages were reported
05/24/1989	10:15 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	
06/19/1990	10:00 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	Winds did much damage to trees and tree limbs, which fell on power lines
07/02/1992	12:05 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	
08/09/1993	3:55 PM	Maquon	n/a	n/a	n/a	$50	n/a	Large tree limbs were blown down
07/19/1994	6:50 AM	Galesburg	n/a	n/a	n/a	$500	n/a	Trees and limbs were blown down
05/27/1995	5:50 PM	Galesburg^	n/a	n/a	n/a	n/a	n/a	Thunderstorm winds blew down 35 to 40 trees in a cemetary northeast of the City
06/13/1996	3:00 PM	Victoria^	n/a	n/a	n/a	n/a	n/a	
06/13/1996	3:30 PM	Dahinda^	n/a	n/a	n/a	n/a	n/a	
06/23/1996	10:47 PM	Yates City	n/a	n/a	n/a	n/a	n/a	
07/29/1996	9:33 PM	Galesburg	n/a	n/a	n/a	$2,000	n/a	
04/05/1997	2:55 PM	Galesburg Knoxville East Galesburg Wataga Oneida Altona	n/a	n/a	n/a	n/a	n/a	- Winds destroyed a brick building and blew the roof off of one building at a lumber yard in the Knoxville area - Three people were in the brick building at the time, but escaped injury as it collapsed around them

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Knox County
1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/21/1997	4:45 AM	Galesburg	n/a	1	n/a	n/a	n/a	;- Winds blew down several large trees and tree limbs - Some minor siding damage was reported on one home - Winds blew over a semi tractor-trailer near the junction of I-74 and US 34, the driver was treated for minor injuries and released
07/19/1997	3:29 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	- Winds blew down numerous trees, tree limbs, and power lines - One tree fell onto an unoccupied house
08/03/1997	5:05 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	Winds blew down several trees and numerous tree limbs
08/16/1997	8:35 PM	Victoria^	n/a	n/a	n/a	n/a	n/a	Several large trees were blown down, as well as, several power lines at Lake Calhoun
03/27/1998	6:35 PM	Abingdon^ Altona^ Knoxville	n/a	n/a	n/a	n/a	n/a	- Numerous trees, tree limbs, and power poles were blown down - A semi was overturned two miles south of Abingdon - East of Altona a garage was destroyed
05/15/1998	6:30 PM	London Mills^ Williamsfield	n/a	n/a	n/a	n/a	n/a	- Winds blew down over a dozen trees between London Mills and Williamsfield - One tree fell onto a house causing minor damage and two other homes sustained shingle damage - Also, numerous large tree limbs were blown down
05/19/1998	4:35 PM	Yates City	n/a	n/a	n/a	$1,000	n/a	Winds blew down several large trees, as well as, several power poles

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

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1959 - 2021

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06/11/1998	2:30 PM	Knoxville^ Wataga^	n/a	n/a	n/a	$100,000	n/a	- Winds blew over a semi on I-74 one mile northeast of Knoxville, the driver was not injured - The winds also blew over several trees and caused minor damage to 5 homes in the area - Also, a part of the roof of a machine shed was peeled off and a garage was destroyed
06/18/1998	5:00 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	Winds blew down several power lines
06/29/1998	2:56 PM	Countywide	52 kts	2	n/a	$1,000,000	n/a	
04/08/1999	7:42 PM	Williamsfield^	n/a	n/a	n/a	n/a	n/a	One mile south of Williamsfield, a shed was destroyed
06/01/1999	4:55 PM	Maquon^	n/a	n/a	n/a	n/a	n/a	Six-25 foot tall trees were snapped off at their bases one mile north of Maquon
06/04/1999	2:24 PM	Knoxville^	n/a	n/a	n/a	n/a	n/a	Several power poles were blown down
06/10/1999	3:25 PM	Galesburg	n/a	n/a	n/a	$5,000	n/a	Numerous tree limbs were blown down and one power pole was blown down onto a car
07/27/1999	11:55 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	Several power lines were blown down
05/31/2000	3:08 AM	Abingdon^ East Galesburg^ Knoxville^	n/a	n/a	n/a	n/a	n/a	- A couple of large trees were blown down onto US 150 near Knoxville - Another tree fell onto county highway 26
06/13/2000	11:00 PM	Galesburg	n/a	n/a	n/a	n/a	n/a	Large tree limbs were blown down with one tree limb knocked down a power line
06/23/2000	3:15 PM	Abingdon	n/a	n/a	n/a	n/a	n/a	Several power lines were blown down
08/06/2000	1:45 PM	Galesburg Knoxville East Galesburg	n/a	n/a	n/a	$1,000	n/a	- Winds blew down several trees, tree limbs and power lines in Galesburg - One tree fell onto an occupied truck, causing $1,000 in damage - In Knoxville, at the county fair, a large tent was blown down
08/09/2000	3:35 AM	Galesburg	n/a	n/a	n/a	n/a	n/a	A tree was blown down into power lines

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 1
Severe Storms - Thunderstorms with Damaging Winds Reported in Knox County
1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
09/11/2000	8:40 PM	Henderson Galesburg^ East Galesburg^ Knoxville^ London Mills^ Delong^	n/a	n/a	n/a	n/a	n/a	Trees and power lines were blown down across the area as a result of straight line winds
10/03/2000	9:08 PM	Galesburg Galesburg Municipal Airport^ Gilson^ Knoxville^	51 kts	n/a	n/a	n/a	n/a	Several trees were blown down one mile south of Gilson
06/14/2001	5:18 PM	Galesburg Galesburg^ Knoxville	50 kts	n/a	n/a	n/a	n/a	- Winds blew down numerous trees, tree limbs and power lines on the south side of Galesburg and in Knoxville - Also, a couple of buildings sustained minor roof damage
08/02/2001	3:31 PM	Galesburg	50 kts	n/a	n/a	n/a	n/a	Several trees and power lines were blown down
08/09/2001	5:55 PM	Galesburg	52 kts	n/a	n/a	n/a	n/a	
08/22/2001	5:10 PM	Yates City	50 kts	n/a	n/a	n/a	n/a	A power line was blown down
03/09/2002	3:15 AM	Galesburg Rio^ Henderson^	50 kts	n/a	1	n/a	n/a	- Winds blew down several trees and power lines - Near Rio on IL Route 150 at 2500 N, winds caused a woman to lose control of her car, sliding sideways striking a utility pole and killing her
02/11/2003	5:45 PM	Galesburg	53 kts	n/a	n/a	n/a	n/a	- Winds blew down numerous light poles, mainly along US Routes 34 and 150 and on Interstate 74 - One light pole fell onto a car breaking the windshield and denting the hood, but driver and passenger were not injured

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Table 1
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1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/30/2003	7:22 PM	Altona^ Williamsfield^ Oneida^ Dahinda^	50 kts	n/a	n/a	n/a	n/a	- Winds blew down numerous trees, tree limbs, power poles and power lines ' A 150-foot long grain leg on a grain bin was destroyed near Altona, as well as part of the roof of a nearby barn
04/30/2003	8:25 PM	Victoria	50 kts	n/a	n/a	n/a	n/a	Several power lines were blown down
05/10/2003	7:25 PM	Galesburg	60 kts	n/a	n/a	n/a	n/a	Numerous large trees and tree limbs were blown down
06/25/2003	6:00 PM	Abingdon	52 kts	n/a	n/a	n/a	n/a	
07/08/2003	1:20 PM	Galesburg	50 kts	n/a	n/a	n/a	n/a	Several power lines were blown down
07/21/2003	12:04 AM	Countywide Rio Rio^	60 kts	n/a	n/a	n/a	n/a	- Winds blew down numerous trees, tree limbs and power lines across the northern portions of Knox county - Just north of Rio, a home sustained major roof damage due to the winds and a grain bin was damaged as well - A machine shed was destroyed in Rio
08/11/2003	3:10 PM	Galesburg	55 kts	n/a	n/a	n/a	n/a	- Numerous trees, tree limbs, power lines and power poles were blown down - Several of the fallen trees and power lines blocked streets temporarily
05/07/2004	3:56 AM	Altona^	61 kts	n/a	n/a	n/a	n/a	Winds destroyed 2 barns, damaged numerous farm buildings, and blew down numerous trees, tree limbs, power lines and power poles
05/30/2004	3:11 PM	Abingdon	55 kts	n/a	n/a	n/a	n/a	Several power lines and large tree limbs were blown down

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1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/09/2004	4:52 PM	Galesburg East Galesburg^ Knoxville Gilson Gilson^	55 kts	n/a	n/a	n/a	n/a	Numerous trees and power lines blown down from Galesburg to Gilson
07/11/2004	2:30 PM	Knoxville	50 kts	n/a	n/a	n/a	n/a	A large tree was blown down
08/18/2004	6:30 PM	Maquon^	52 kts	n/a	n/a	n/a	n/a	Several trees had the tops broken off of them, as well as several large tree limbs blown down
10/29/2004	10:45 PM	Galesburg	50 kts	n/a	n/a	n/a	n/a	Numerous large tree limbs down
06/08/2005	12:55 PM	Galesburg	60 kts	2	n/a	n/a	n/a	- Numerous trees blown down - Two minor injuries occurred when a tree fell on a car
08/11/2005	4:45 AM	Galesburg	52 kts	n/a	n/a	n/a	n/a	
08/18/2005	8:55 AM	Galesburg East Galesburg^	55 kts	n/a	n/a	n/a	n/a	- Numerous trees and tree limbs were blown down as well as a large area of corn through the damage path - Two garages and their contents received substantial damage when trees fell on them - In addition, a small, weak wood frame building received substantial damage
09/19/2005	1:45 AM	Abingdon	50 kts	n/a	n/a	n/a	n/a	Large tree blown down
04/13/2006	9:46 PM	Gilson^	52 kts	n/a	n/a	n/a	n/a	Several trees, power poles and power lines blown down
04/13/2006	9:52 PM	Galesburg	61 kts	n/a	n/a	n/a	n/a	- A Mobile home was moved off foundation and a was shed blown down - In addition, minor structural damage was reported, and a flag pole and numerous trees were blown down
04/13/2006	10:10 PM	Yates City^	55 kts	n/a	n/a	n/a	n/a	Numerous trees blown down

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Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/19/2006	1:34 PM	Galesburg East Galesburg Dahinda^	55 kts	n/a	n/a	n/a	n/a	Numerous trees, tree limbs and power lines were blown down
08/03/2006	1:00 AM	Galesburg	58 kts	n/a	n/a	n/a	n/a	Numerous trees, tree limbs and power lines were blown down
06/21/2007	8:00 PM	Galesburg	50 kts	n/a	n/a	n/a	n/a	Numerous tree limbs were blown down
06/21/2007	8:15 PM	Maquon	50 kts	n/a	n/a	n/a	n/a	Numerous tree limbs were blown down
06/21/2007	8:20 PM	Yates City Yates City^ Douglas^	50 kts	n/a	n/a	n/a	n/a	A few trees were blown down
08/23/2007	12:05 PM	Galesburg Galesburg^ Galesburg Municipal Airport^ East Galesburg^ Victoria^	61 kts	29	1	$1,338,057	$600,000	*Event Description Provided Below*

This event was part of a federally-declared disaster (Delaration #1729)
- Winds produced considerable tree, power line, and crop damage
- Numerous structures were also damaged along the path, primarily due to falling trees and tree limbs
- A man was killed in the Victoria area by a falling tree
- Seven injuries were reported in the Galesburg area due to the storm, at least one due to a falling tree

<u>FEMA Public Assistance totals by Jursdiction:</u>
- Abingdon CUSD #217: $811
- East Galesburg: $8,053
- Galesburg Sanitary District: $12,063
- Galesburg: $499,470
- Galesburg CUSD #205: $17,660

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1959 - 2021

Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
08/23/2007	12:15 PM	Galesburg	87 kts	n/a	n/a	n/a	n/a	***'This event was part of a federally-declared disaster (Delaration #1729)*** - Winds primarily damaged trees, fences, power lines and poles, and garages - Some structures received damage as well, primarily due to falling trees and other debris
06/08/2008	8:17 PM	Galesburg East Galesburg^ Victoria	52 kts	n/a	n/a	$25,000	n/a	- Numerous trees, tree limbs, and power lines were blown down between Galesburg, Altona, and Victoria
06/08/2008	8:20 PM	Galesburg Galesburg Municipal Airport^	50 kts	n/a	n/a	n/a	n/a	
07/21/2008	5:15 AM	Altona	52 kts	n/a	n/a	n/a	n/a	An 8-inch diameter branch was blown down
07/21/2008	5:20 AM	Abingdon	52 kts	n/a	n/a	n/a	n/a	A large tree limb fell near the old Pottery
08/05/2008	3:15 AM	Abingdon	52 kts	n/a	n/a	$10,000	n/a	Trees were blown down onto powerlines
12/27/2008	11:20 AM	Knoxville Knoxville^	52 kts	n/a	n/a	$20,000	n/a	A semi was blown over and a roof was ripped off a lumber yard near I-74
03/08/2009	4:50 AM	Galesburg^	52 kts	n/a	n/a	$8,000	n/a	Several power poles were blown just south of Galesburg along Illinois Route 41
06/01/2009	4:15 PM	Galesburg	52 kts	n/a	n/a	$7,000	n/a	Six large trees were blown down at the Bunker Links Golf Course on the north side of Galesburg
06/18/2009	3:04 AM	Abingdon Galesburg	61 kts	n/a	n/a	$150,000	n/a	- Numerous large tree limbs were blown down - In Abingdon, shingles were stripped off roofs
06/18/2009	3:38 AM	Yates City	61 kts	n/a	n/a	$300,000	n/a	- Several trees were blown down, including some up to 3 feet in diameter - Several homes and buildings were damaged by falling trees and limbs
06/19/2009	3:50 PM	Abingdon	52 kts	n/a	n/a	$12,000	n/a	Numerous large tree limbs were blown down

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Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/19/2009	4:00 PM	Galesburg East Galesburg^ Knoxville Knoxville^	52 kts	n/a	n/a	$40,000	n/a	- Numerous trees were blown down in Galesburg and Knoxville - Trees were knocked down across I-74 near mile marker 50
06/19/2009	4:05 PM	Victoria	52 kts	n/a	n/a	$65,000	n/a	A two-story barn and numerous trees were blown down
06/27/2009	5:45 PM	Galesburg	52 kts	n/a	n/a	$20,000	n/a	Several trees were blown down
07/24/2009	9:25 PM	Galesburg Galesburg^	52 kts	n/a	n/a	$1,000	n/a	A large sign was blown down across Highway 34 just east of Galesburg
08/04/2009	7:20 AM	Abingdon Abingdon^	61 kts	n/a	n/a	$2,000	n/a	The top of a large tree was snapped off just north of Abingdon
05/07/2010	1:32 AM	Galesburg^	60 kts	n/a	n/a	$2,000	n/a	The top of a tree was broken off due to strong winds
06/18/2010	1:23 PM	Galesburg East Galesburg Dahinda Dahinda^	52 kts	n/a	n/a	$20,000	n/a	- One tree and numerous tree limbs were blown down from Galesburg to Dahinda - Several power lines were downed as well
06/18/2010	8:00 PM	Altona Altona^ Oneida^ Wataga^ Galesburg Galesburg^ East Galesburg Knoxville^ Abingdon Abingdon^	52 kts	n/a	n/a	$75,000	n/a	Numerous trees, tree limbs, and power lines were blown down in and around Altona, Galesburg, and Abingdon

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Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/23/2010	4:40 PM	Galesburg Galesburg^	52 kts	n/a	n/a	$25,000	n/a	Numerous tree limbs and power lines were blown down
11/22/2010	1:55 PM	Galesburg	52 kts	n/a	n/a	$20,000	n/a	A few trees and powerlines were blown down
11/22/2010	2:00 PM	Altona^	70 kts	n/a	n/a	$25,000	n/a	Ten pine trees were snapped off at the base and about a dozen large headstones were toppled at the Galva Cemetery one mile south of Galva in far northern Knox County
05/11/2011	2:52 PM	Galesburg	52 kts	n/a	n/a	$30,000	n/a	Numerous large tree limbs were blown down and some siding was ripped off a few houses
05/11/2011	3:24 PM	Maquon^	52 kts	n/a	n/a	$10,000	n/a	Trees were blown down onto Illinois Route 97 south of Maquon
05/22/2011	6:25 PM	Dahinda^	52 kts	n/a	n/a	$1,000	n/a	An 8-inch diameter tree was blown down onto U.S. 150 about 1/4 mile east of the Spoon River
05/22/2011	6:30 PM	Yates City^	52 kts	n/a	n/a	$4,000	n/a	The roof of a hog pen was damaged by strong winds
05/22/2011	6:40 PM	Victoria^	52 kts	n/a	n/a	$10,000	n/a	Several trees were blown down, blocking both lanes of the access road to the Lake Calhoun Golf Course
05/25/2011	5:18 PM	Knoxville	52 kts	n/a	n/a	n/a	n/a	A tree was blown down along US 150
05/25/2011	5:19 PM	Galesburg	52 kts	n/a	n/a	n/a	n/a	- A shed was destroyed, playground equipment was damaged, and a large vent was torn off the roof of a school - In addition, a few outbuildings were damaged at Lowes
05/29/2011	9:46 AM	Altona	52 kts	n/a	n/a	$10,000	n/a	Numerous 3-inch diameter tree branches were blown down
05/29/2011	9:50 AM	Abingdon^	52 kts	n/a	n/a	$10,000	n/a	Several large tree limbs were blown down
07/29/2011	5:16 AM	Abingdon Abingdon^	61 kts	n/a	n/a	$25,000	n/a	Numerous large tree limbs were blown down

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07/29/2011	5:20 AM	Yates City Yates City^	61 kts	n/a	n/a	n/a	$75,000	Numerous corn fields were flattened
09/03/2011	2:52 PM	Abingdon Abingdon^	59 kts	n/a	n/a	$20,000	n/a	Large tree branches were blown down
06/16/2012	5:40 PM	Galesburg Abingdon	52 kts	n/a	n/a	n/a	n/a	Numerous trees and power lines were blown down
06/24/2013	2:57 PM	Abingdon	52 kts	n/a	n/a	$1,000	n/a	A large tree limb was blown down
06/24/2013	3:00 PM	Galesburg	52 kts	n/a	n/a	$8,000	n/a	Power lines were blown down
09/08/2013	12:35 AM	Galesburg	52 kts	n/a	n/a	$30,000	n/a	- Several large trees were snapped or uprooted in downtown Galesburg and in the Standish Park area. - An industrial building lost part of its roof and a transformer pole was snapped when a large tree fell across a road - A large portion of Galesburg was without power due to the storm
05/08/2014	4:00 PM	Abingdon	52 kts	n/a	n/a	$25,000	n/a	Part of a chicken coop was blown down
06/21/2014	1:42 PM	Yates City	52 kts	n/a	n/a	$12,000	n/a	- Numerous tree limbs were blown down - Corn stalks were knocked over and broken in two
06/22/2014	4:32 PM	St. Augustine	52 kts	n/a	n/a	$4,000	n/a	Strong thunderstorm winds caused minor roof damage to a garage
09/10/2014	4:50 AM	Altona	52 kts	n/a	n/a	$8,000	n/a	Several 1.5 to 5-inch diameter tree branches were blown down
06/10/2015	8:40 PM	Abingdon^	52 kts	n/a	n/a	$30,000	n/a	Numerous tree branches were blown down
06/20/2015	7:36 PM	Rio Rio^ Henderson Galesburg	52 kts	n/a	n/a	$60,000	n/a	- Several trees were blown down in Rio - Power lines and several trees were blown down in Galesburg
06/20/2015	7:45 PM	Oneida	52 kts	n/a	n/a	$7,000	n/a	A few trees were blown down

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06/20/2015	7:50 PM	Altona^ Altona	52 kts	n/a	n/a	$2,000	n/a	- A tree was blown down about 2 miles south of Altona - A tree and power line were blown down in Altona
07/16/2015	6:55 PM	East Galesburg Galesburg^	61 kts	n/a	n/a	$15,000	n/a	Several power lines were blown down on the east side of Galesburg
07/16/2015	7:00 PM	Knoxville	61 kts	n/a	n/a	$20,000	n/a	Numerous power lines were blown down
11/11/2015	6:30 PM	Galesburg	52 kts	n/a	n/a	$35,000	n/a	Numerous trees were blown down
11/11/2015	6:32 PM	East Galesburg Galesburg^	52 kts	n/a	n/a	$30,000	n/a	A portion of a church roof was blown off
11/11/2015	6:35 PM	Galesburg East Galesburg^	52 kts	n/a	n/a	$15,000	n/a	A semi was blown over on I-74 at mile marker 49
11/11/2015	6:37 PM	Gilson^	52 kts	n/a	n/a	$45,000	n/a	A barn was blown down about 2 miles south of Gilson
05/28/2016	4:10 PM	Galesburg	61 kts	n/a	n/a	$50,000	n/a	A power pole was snapped and numerous trees were blown down on the west side of the City
07/06/2016	3:20 AM	Altona^	52 kts	n/a	n/a	$6,000	n/a	A power pole was blown down about 1 mile east of Altona
07/10/2016	3:06 PM	Galesburg Galesburg^	52 kts	n/a	n/a	$60,000	n/a	Numerous tree branches and power lines were blown down around Galesburg
07/13/2016	2:45 PM	Rio^	61 kts	n/a	n/a	$2,000	n/a	A tree was snapped at the base just west of Rio
07/13/2016	3:49 PM	Oneida^	61 kts	n/a	n/a	$25,000	n/a	Several large tree limbs were blown down
07/19/2016	4:23 PM	Galesburg	52 kts	n/a	n/a	$25,000	n/a	A few trees and power lines were blown down
09/07/2016	3:30 PM	Abingdon^	78 kts	n/a	n/a	$100,000	n/a	- A downburst with estimated winds of 80-90mph created considerable damage at several farms - A silage wagon was flipped over, the roof of a livestock barn was ripped off, and a machine shed was destroyed at Malone Farms - Numerous trees were blown down around the area, and neighboring farm buildings were damaged as well

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09/21/2016	11:45 AM	Henderson	52 kts	n/a	n/a	$18,000	n/a	Several 1-foot diameter trees were blown down and shingles were torn off a roof
03/06/2017	11:07 PM	Galesburg	52 kts	n/a	n/a	$14,000	n/a	A car was crushed by a falling tree near Knox College
03/06/2017	11:11 PM	Abingdon	52 kts	n/a	n/a	$2,000	n/a	Sheet metal was blown off a building
03/06/2017	11:26 PM	Maquon^	52 kts	n/a	n/a	$7,000	n/a	A power pole was blown down near the intersection of 1200E and 650N
05/17/2017	8:18 PM	Altona^	52 kts	n/a	n/a	$15,000	n/a	A metal outbuilding was damaged
07/10/2017	4:20 AM	Galesburg	52 kts	n/a	n/a	n/a	n/a	A large tree was blown over
10/14/2017	5:00 PM	Abingdon Abingdon^	61 kts	n/a	n/a	$15,000	n/a	Several large tree branches were blown down about a mile north of Abingdon
10/14/2017	5:09 PM	Galesburg	61 kts	n/a	n/a	$30,000	n/a	Numerous trees and large tree branches were blown down across the City
06/10/2018	1:08 AM	Maquon	52 kts	n/a	n/a	n/a	n/a	A tree was blown down
06/19/2018	2:30 PM	Galesburg	52 kts	n/a	n/a	n/a	n/a	A power line was blown down
06/20/2018	4:55 PM	Galesburg	52 kts	n/a	n/a	$55,000	n/a	A few trees and power lines were blown down, with one tree falling onto a house
06/15/2019	8:37 PM	Maquon	52 kts	n/a	n/a	n/a	n/a	A tree was blown down
06/30/2019	6:40 PM	Galesburg	52 kts	n/a	n/a	$2,000	n/a	A small shed was overturned
06/30/2019	6:44 PM	Abingdon	52 kts	n/a	n/a	n/a	n/a	Several 3-inch diameter tree branches were blown down
08/20/2019	7:45 AM	Galesburg	52 kts	n/a	n/a	$80,000	n/a	Numerous trees and power lines were blown down
08/20/2019	7:50 AM	Oak Run Dahinda^	52 kts	n/a	n/a	n/a	$80,000	Corn and sorghum fields were flattened about 3 miles west-northwest of Dahinda
05/14/2020	9:23 PM	Galesburg	52 kts	n/a	n/a	$70,000	n/a	Several power poles were blown down
05/14/2020	9:27 PM	Abingdon	52 kts	n/a	n/a	$50,000	n/a	Several power poles were blown down
05/25/2020	6:28 PM	Yates City	52 kts	n/a	n/a	n/a	n/a	Numerous large tree branches were blown down, some of which fell on power lines
06/22/2020	3:45 PM	Galesburg	52 kts	n/a	n/a	$15,000	n/a	Several trees were blown down

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Date(s)	Start Time	Location(s)	Magnitude Windspeed (knots)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/22/2020	3:50 PM	East Galesburg	52 kts	n/a	n/a	$10,000	n/a	Several trees were blown down
07/09/2020	6:55 PM	Altona^	52 kts	n/a	n/a	n/a	$50,000	Strong thunderstorm winds damaged crops just east of Altona.
07/09/2020	7:15 PM	Williamsfield	52 kts	n/a	n/a	n/a	n/a	A power line was blown onto a road
07/11/2020	6:50 PM	Galesburg Knoxville East Galesburg^	61 kts	n/a	n/a	$40,000	n/a	Numerous large trees and tree branches were blown down from Galesburg to Knoxville
08/10/2020	1:00 PM	Galesburg	52 kts	n/a	n/a	$100,000	n/a	Numerous tree branches and power lines were blown down
06/18/2021	10:40 PM	Abingdon	70 kts	n/a	n/a	$75,000	n/a	Numerous trees and powerlines were damaged, causing a power outage in town
06/18/2021	10:50 PM	Abingdon^	70 kts	n/a	n/a	$60,000	n/a	Several trees were snapped and power lines were blown down along Route 41
06/18/2021	10:59 PM	London Mills^ Rapatee^	70 kts	n/a	n/a	$50,000	n/a	Several trees were snapped and powerlines were blown down north of London Mills Several trees were snapped near Rapatee
06/25/2021	n/a	Altona	n/a	n/a	n/a	$100,000	n/a	Committee member records identified the following damage: - Winds uprooted trees and damaged over 30 trees - Electrical service was ripped off two houses - Several vehicles sustained damage from falling tree limbs
GRAND TOTAL:				**34**	**2**	**$4,892,607**	**$805,000**	

Source: Illinois Emergency Management Agency.
Knox County Multi-Jurisdictional All Hazard Mitigation Planning Committee Member responses to the Natural Hazard Events Questionnaire.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

^ Thunderstorms with damaging winds verified in the vicinity of this location(s).

Table 2
Severe Storms - Hail Events Reported in Knox County
1973 - 2021

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/30/1973	7:00 PM	Williamsfield^	2.00 in.	n/a	n/a	n/a	n/a	
05/01/1973	6:30 PM	Oneida^	1.75 in.	n/a	n/a	n/a	n/a	
06/14/1974	4:15 PM	Galesburg	1.75 in.	n/a	n/a	n/a	n/a	
06/14/1974	4:45 PM	London Mills^ Hermon^	2.00 in.	n/a	n/a	n/a	n/a	
05/11/1975	4:00 PM	Altona^	1.75 in.	n/a	n/a	n/a	n/a	
05/05/1977	4:27 PM	Knoxville Knoxville^	1.00 in.	n/a	n/a	n/a	n/a	
07/29/1987	4:20 PM	Galesburg	1.25 in.	n/a	n/a	n/a	n/a	
04/05/1988	6:22 PM	Galesburg	1.75 in.	n/a	n/a	n/a	n/a	
03/27/1991	12:11 AM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
05/09/1995	4:45 PM	Galesburg	4.50 in.	n/a	n/a	n/a	n/a	
04/19/1996	4:30 PM	Delong^	1.75 in.	n/a	n/a	n/a	n/a	
05/09/1996	8:14 PM	Oneida Oneida^	1.75 in.	n/a	n/a	n/a	n/a	
05/10/1996	2:00 AM	Knoxville^	1.75 in.	n/a	n/a	n/a	n/a	
06/13/1996	3:45 PM	Maquon	1.75 in.	n/a	n/a	n/a	n/a	
05/18/1997	8:19 PM	Abingdon	1.00 in.	n/a	n/a	n/a	n/a	
05/18/1997	9:20 PM	Oneida Oneida^	1.00 in.	n/a	n/a	n/a	n/a	
04/15/1998	8:54 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
05/19/1998	4:13 PM	Dahinda^	1.75 in.	n/a	n/a	n/a	n/a	
05/19/1998	4:40 PM	Yates City	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 Knox County
1973 - 2021

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/08/1999	7:07 PM	Galesburg Knoxville East Galesburg^ Gilson^ Douglas^ Douglas	1.00 in.	n/a	n/a	n/a	n/a	
05/31/2000	1:31 AM	Galesburg	1.75 in.	n/a	n/a	n/a	n/a	
08/22/2001	5:10 PM	Yates City	1.50 in.	n/a	n/a	n/a	n/a	
05/30/2004	3:27 PM	Dahinda Dahinda^ Yates City Yates City^	1.00 in.	n/a	n/a	n/a	n/a	
09/19/2005	2:14 AM	Douglas^	1.00 in.	n/a	n/a	n/a	n/a	
04/13/2006	9:45 PM	Altona	2.75 in.	n/a	n/a	n/a	n/a	
04/13/2006	9:46 PM	Gilson^	1.50 in.	n/a	n/a	n/a	n/a	
04/13/2006	9:55 PM	Dahinda^	1.00 in.	n/a	n/a	n/a	n/a	
04/13/2006	10:28 PM	Altona	1.75 in.	n/a	n/a	n/a	n/a	
05/13/2008	3:30 PM	Galesburg Galesburg^ Victoria^ East Galesburg^	1.00 in.	n/a	n/a	n/a	n/a	
05/13/2008	4:30 PM	Douglas^	1.00 in.	n/a	n/a	n/a	n/a	
06/01/2009	4:14 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
06/01/2009	4:24 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
11/22/2010	1:55 PM	Oneida Oneida^	1.00 in.	n/a	n/a	n/a	n/a	
05/22/2011	7:00 PM	Abingdon	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 Knox County
1973 - 2021

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/25/2011	5:07 PM	Rio^	1.00 in.	n/a	n/a	n/a	n/a	
05/29/2011	9:40 AM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
09/03/2011	2:53 PM	Abingdon^	1.75 in.	n/a	n/a	n/a	n/a	
04/01/2012	12:30 AM	Rio^	1.75 in.	n/a	n/a	n/a	n/a	
06/16/2012	5:43 PM	Galesburg Galesburg^	1.50 in.	n/a	n/a	n/a	n/a	
06/16/2012	6:08 PM	Altona	1.00 in.	n/a	n/a	n/a	n/a	
06/16/2012	6:33 PM	Dahinda^	1.50 in.	n/a	n/a	n/a	n/a	
04/03/2014	1:26 AM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
04/28/2014	3:35 PM	Knoxville Knoxville^	1.00 in.	n/a	n/a	n/a	n/a	
08/04/2014	4:36 PM	Victoria^	1.00 in.	n/a	n/a	n/a	n/a	
06/10/2015	8:40 PM	Abingdon^	1.75 in.	n/a	n/a	n/a	n/a	
06/10/2015	8:40 PM	Knoxville	1.00 in.	n/a	n/a	n/a	n/a	
02/28/2017	4:10 PM	Altona	1.25 in.	n/a	n/a	n/a	n/a	
02/28/2017	5:04 PM	Williamsfield^	1.00 in.	n/a	n/a	n/a	n/a	
03/06/2017	11:28 PM	Maquon^	1.00 in.	n/a	n/a	n/a	n/a	
03/19/2017	11:55 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
03/20/2017	12:00 AM	Galesburg	1.75 in.	n/a	n/a	n/a	n/a	
03/20/2017	12:05 AM	Galesburg	1.50 in.	n/a	n/a	n/a	n/a	
05/17/2017	8:05 PM	Henderson	1.00 in.	n/a	n/a	n/a	n/a	
05/13/2018	2:25 PM	Rio^	1.00 in.	n/a	n/a	n/a	n/a	
05/13/2018	2:31 PM	Rio^	1.25 in.	n/a	n/a	n/a	n/a	
05/26/2018	4:40 PM	Knoxville	1.00 in.	n/a	n/a	n/a	n/a	
09/27/2019	5:42 PM	Abingdon	1.75 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 Knox County
1973 - 2021

Date(s)	Start Time	Location(s)	Magnitude Hail Stone Diameter (inches)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
04/07/2020	10:01 PM	Galesburg Galesburg^ Henderson Henderson^	1.50 in.	n/a	n/a	n/a	n/a	
04/08/2020	2:59 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
11/10/2020	2:35 PM	Galesburg	1.00 in.	n/a	n/a	n/a	n/a	
GRAND TOTAL:				**0**	**0**	**$0**	**$0**	

Source: 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 Knox County
2011 - 2021

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
8/20/2011	6:00 PM	Galesburg	n/a	n/a	$3,000	n/a	Lightning struck and destroyed a tree and killed a chinese sharpei dog which was chained to the tree
6/22/2016	n/a	Galesburg	n/a	1	$10,000	n/a	Committee member records identified $40,000 in damages caused when lightning struck a structure causing a fire
7/13/2016	n/a	Galesburg	n/a	n/a	$40,000	n/a	Committee member records identified $10,000 in damages caused when lightning struck a structure causing a fire
GRAND TOTAL:			**0**	**1**	**$53,000**	**$0**	

Source: Knox County Multi-Jurisdictional AllHazard Mitigation Planning Committee Member responses to the Natural Hazard Events Questionnaire.
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
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/30/2000	n/a	2.27 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/12/2000	n/a	1.61 in.	Galesburg	n/a	n/a	n/a	n/a	
06/24/2000	n/a	1.61 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
09/22/2000	n/a	1.79 in.	Galesburg	n/a	n/a	n/a	n/a	
09/22/2000 thru 09/23/2000	6:00 AM	2.87 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/16/2001	n/a	1.62 in.	Galesburg	n/a	n/a	n/a	n/a	
09/18/2001 thru 09/19/2001	4:00 PM	3.48 in.	Yates City	n/a	n/a	n/a	n/a	
05/11/2002 thru 05/12/2002	12:00 AM	3.30 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/05/2002	n/a	1.72 in.	Knoxville	n/a	n/a	n/a	n/a	
06/12/2002	n/a	2.41 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
07/27/2002	n/a	2.55 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
08/14/2002	n/a	1.93 in.	Knoxville	n/a	n/a	n/a	n/a	
08/18/2002 thru 08/19/2002	9:30 PM	1.63 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
08/22/2002 thru 08/23/2002	n/a	2.81 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
04/17/2003	n/a	1.70 in.	Knoxville	n/a	n/a	n/a	n/a	
06/25/2003 thru 06/26/2003	n/a	2.11 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
07/08/2003 thru 07/09/2003	3:00 PM	1.71 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
07/20/2003	n/a	2.24 in.	Galesburg	n/a	n/a	n/a	n/a	
07/21/2003	1:00 AM	1.67 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
08/31/2003 thru 09/01/2003	8:30 AM	2.46 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
11/18/2003	n/a	2.15 in.	Galesburg	n/a	n/a	n/a	n/a	
12/09/2003 thru 12/10/2003	1:00 PM	3.28 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/30/2004 thru 05/31/2004	4:30 PM	2.06 in.	Yates City	n/a	n/a	n/a	n/a	
	n/a	1.93 in.	Galesburg	n/a	n/a	n/a	n/a	
	n/a	2.82 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
10/22/2004 thru 10/23/2004	1:00 PM	1.57 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
11/01/2004	n/a	1.60 in.	Galesburg	n/a	n/a	n/a	n/a	
07/26/2005	3:00 PM	1.82 in.	Altona Yates City	n/a	n/a	n/a	n/a	
09/19/2005	n/a	1.65 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
01/28/2006	n/a	1.71 in.	Knoxville	n/a	n/a	n/a	n/a	
04/30/2006 thru 05/01/2006	n/a	1.81 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/26/2006 thru 06/27/2006	n/a	1.65 in.	Galesburg	n/a	n/a	n/a	n/a	
07/20/2006	n/a	1.88 in.	Knoxville	n/a	n/a	n/a	n/a	
09/11/2006	4:00 AM	3.20 in.	Yates City	n/a	n/a	n/a	n/a	
11/29/2006 thru 11/30/2006	4:30 AM	2.56 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
03/01/2007	n/a	1.52 in.	Galesburg	n/a	n/a	n/a	n/a	
04/24/2007 thru 04/25/2007	n/a	2.42 in.	Knoxville	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/25/2007 thru 05/26/2007	2:30 PM	3.24 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
06/21/2007 thru 06/22/2007	9:00 PM	1.68 in.	Altona	n/a	n/a	n/a	n/a	
07/03/2007	1:00 AM	1.67 in.	Altona	n/a	n/a	n/a	n/a	
07/17/2007	n/a	2.19 in.	Galesburg	n/a	n/a	n/a	n/a	
07/19/2007	n/a	1.69 in.	Galesburg	n/a	n/a	n/a	n/a	
08/24/2007	n/a	2.21 in.	Galesburg	n/a	n/a	n/a	n/a	
05/10/2008 thru 05/11/2008	n/a	2.50 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/03/2008	n/a	1.68 in.	Knoxville	n/a	n/a	n/a	n/a	
06/12/2008	12:00 AM	1.83 in.	Altona	n/a	n/a	n/a	n/a	
07/11/2008 thru 07/12/2008	n/a	1.53 in.	Knoxville	n/a	n/a	n/a	n/a	
09/03/2008	n/a	1.76 in.	Altona	n/a	n/a	n/a	n/a	
09/04/2008	5:00 AM	5.06 in.	Yates City	n/a	n/a	n/a	n/a	
09/11/2008 thru 09/13/2008	6:00 AM	5.97 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
03/07/2009 thru 03/08/2009	9:00 PM	1.98 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
03/09/2009 thru 03/10/2009	6:30 PM	1.63 in.	Yates City	n/a	n/a	n/a	n/a	
03/25/2009 thru 01/00/1900	n/a	1.69 in.	Galesburg	n/a	n/a	n/a	n/a	
03/28/2009 thru 03/29/2009	12:30 PM	1.62 in.	Yates City	n/a	n/a	n/a	n/a	
05/14/2009	n/a	1.84 in.	Galesburg	n/a	n/a	n/a	n/a	
05/15/2009	6:00 PM	5.07 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/26/2009	12:00 PM	1.54 in.	Yates City	n/a	n/a	n/a	n/a	
06/18/2009	n/a	2.01 in.	Altona	n/a	n/a	n/a	n/a	
06/20/2009	n/a	1.56 in.	Knoxville	n/a	n/a	n/a	n/a	
07/09/2009	n/a	2.04 in.	Yates City	n/a	n/a	n/a	n/a	
07/25/2009	n/a	2.35 in.	Altona Yates City	n/a	n/a	n/a	n/a	
08/08/2009	n/a	2.00 in.	Yates City	n/a	n/a	n/a	n/a	
08/17/2009	n/a	3.10 in.	Yates City	n/a	n/a	n/a	n/a	
08/20/2009	n/a	1.57 in.	Altona	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
10/22/2009 thru 10/23/2009	n/a	1.69 in.	Altona Yates City	n/a	n/a	n/a	n/a	
10/29/2009 thru 10/30/2009	1:00 PM	1.73 in.	Altona Galesburg Yates City	n/a	n/a	n/a	n/a	
12/23/2009 thru 12/25/2009	8:00 AM	2.64 in.	Yates City	n/a	n/a	n/a	n/a	
04/24/2010 thru 04/25/2010	n/a	2.70 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
05/07/2010	n/a	1.72 in.	Altona Knoxville	n/a	n/a	n/a	n/a	
05/12/2010 thru 05/13/2010	12:00 PM	2.74 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/01/2010 thru 06/02/2010	8:00 PM	2.99 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/18/2010 thru 06/19/2010	n/a	3.24 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
	n/a	1.81 in.	Knoxville	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
	1:00 PM	3.46 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
09/18/2010 thru 09/19/2010	10:00 AM	1.94 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/26/2011	n/a	4.60 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/15/2011	n/a	2.22 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
07/29/2011	5:00 AM	1.90 in.	Yates City	n/a	n/a	n/a	n/a	
09/03/2011	3:30 PM	2.75 in.	Yates City	n/a	n/a	n/a	n/a	
09/26/2011 thru 09/27/2011	n/a	1.55 in.	Altona	n/a	n/a	n/a	n/a	
11/07/2011 thru 11/08/2011	2:30 PM	2.36 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
12/14/2011	n/a	1.91 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/17/2012	n/a	1.68 in.	Altona Knoxville	n/a	n/a	n/a	n/a	
06/30/2012	n/a	1.67 in.	Altona	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
08/27/2012	n/a	3.33 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
09/02/2012	n/a	2.34 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
10/14/2012	n/a	1.66 in.	Yates City	n/a	n/a	n/a	n/a	
01/30/2013	n/a	1.81 in.	Yates City	n/a	n/a	n/a	n/a	
04/18/2013	n/a	5.75 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/04/2013	n/a	1.76 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/27/2013	n/a	2.11 in.	Galesburg	n/a	n/a	n/a	n/a	
05/29/2013	n/a	3.54 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/16/2013	n/a	1.63 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
07/27/2013	n/a	1.52 in.	Knoxville	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

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2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
09/08/2013	n/a	3.50 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
10/31/2013	n/a	1.60 in.	Knoxville	n/a	n/a	n/a	n/a	
04/03/2014	n/a	1.85 in.	Galesburg	n/a	n/a	n/a	n/a	
04/28/2014	n/a	2.23 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
05/27/2014	n/a	2.36 in.	Altona	n/a	n/a	n/a	n/a	
06/04/2014	n/a	1.77 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/08/2014	n/a	2.82 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
07/01/2014	n/a	2.41 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
08/22/2014	n/a	1.58 in.	Galesburg	n/a	n/a	n/a	n/a	
09/04/2014	n/a	3.78 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
09/09/2014 thru 09/10/2014	n/a	3.87 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/05/2015	n/a	1.63 in.	Altona	n/a	n/a	n/a	n/a	
06/08/2015	n/a	2.20 in.	Yates City	n/a	n/a	n/a	n/a	
06/11/2015	n/a	4.10 in.	Yates City	n/a	n/a	n/a	n/a	
06/12/2015	n/a	1.74 in.	Altona	n/a	n/a	n/a	n/a	

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2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
06/25/2015	n/a	1.53 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
07/07/2015	n/a	2.15 in.	Knoxville	n/a	n/a	n/a	n/a	
07/12/2015	n/a	2.92 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
07/17/2015	n/a	3.04 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
09/19/2015	n/a	2.51 in.	Altona Yates City	n/a	n/a	n/a	n/a	
11/18/2015	n/a	1.97 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
12/14/2015	n/a	1.55 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
12/29/2015	n/a	2.04 in.	Yates City	n/a	n/a	n/a	n/a	
06/22/2016	n/a	3.21 in.	Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
07/06/2016	n/a	1.53 in.	Yates City	n/a	n/a	n/a	n/a	
07/14/2016	n/a	2.52 in.	Knoxville	n/a	n/a	n/a	n/a	
07/22/2016	n/a	2.35 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
08/27/2016	n/a	1.85 in.	Knoxville	n/a	n/a	n/a	n/a	

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Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
09/08/2016	n/a	1.81 in.	Galesburg Yates City	n/a	n/a	n/a	n/a	
11/03/2016	n/a	2.40 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
01/17/2017	n/a	1.92 in.	Altona	n/a	n/a	n/a	n/a	
04/30/2017	n/a	2.99 in.	Altona Knoxville Yates City	n/a	n/a	n/a	n/a	
05/20/2017	n/a	2.10 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
07/21/2017	n/a	1.90 in.	Yates City	n/a	n/a	n/a	n/a	
07/22/2017	n/a	1.63 in.	Altona	n/a	n/a	n/a	n/a	
07/27/2017	n/a	1.50 in.	Yates City	n/a	n/a	n/a	n/a	
08/22/2017	n/a	1.62 in.	Altona	n/a	n/a	n/a	n/a	
10/11/2017	n/a	2.10 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
10/15/2017	n/a	2.92 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
02/20/2018	n/a	1.68 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/21/2018	n/a	1.70 in.	Galesburg	n/a	n/a	n/a	n/a	
07/06/2018	n/a	1.52 in.	Knoxville	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

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Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
07/14/2018	n/a	2.68 in.	Altona	n/a	n/a	n/a	n/a	
08/29/2018	n/a	2.20 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
09/06/2018 thru 09/07/2018	n/a	5.79 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
11/26/2018	n/a	1.54 in.	Altona Knoxville	n/a	n/a	n/a	n/a	
03/30/2019	n/a	1.60 in.	Yates City	n/a	n/a	n/a	n/a	
05/01/2019	n/a	2.13 in.	Altona Galesburg Yates City	n/a	n/a	n/a	n/a	
05/29/2019	n/a	2.55 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
06/20/2019	n/a	2.05 in.	Altona Yates City	n/a	n/a	n/a	n/a	
09/20/2019	n/a	2.02 in.	Altona	n/a	n/a	n/a	n/a	
09/22/2019	n/a	2.07 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
09/28/2019	n/a	4.57 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	

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Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
09/30/2019	n/a	1.62 in.	Knoxville	n/a	n/a	n/a	n/a	
10/03/2019	n/a	1.55 in.	Knoxville	n/a	n/a	n/a	n/a	
05/15/2020	n/a	2.50 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
05/17/2020	n/a	1.57 in.	Galesburg	n/a	n/a	n/a	n/a	
06/23/2020	n/a	1.60 in.	Knoxville	n/a	n/a	n/a	n/a	
07/10/2020	n/a	1.97 in.	Galesburg	n/a	n/a	n/a	n/a	
07/16/2020	n/a	2.12 in.	Yates City	n/a	n/a	n/a	n/a	
09/07/2020	n/a	2.05 in.	Altona	n/a	n/a	n/a	n/a	
09/08/2020	n/a	1.64 in.	Altona	n/a	n/a	n/a	n/a	
09/12/2020	n/a	2.90 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
02/15/2021	n/a	1.60 in.	Yates City	n/a	n/a	n/a	n/a	
03/18/2021	n/a	1.60 in.	Knoxville	n/a	n/a	n/a	n/a	
04/08/2021	n/a	1.59 in.	Altona	n/a	n/a	n/a	n/a	
04/11/2021		2.70 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
04/29/2021	n/a	1.91 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
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2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
05/09/2021	n/a	2.40 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
05/19/2021	n/a	1.61 in.	Knoxville Yates City	n/a	n/a	n/a	n/a	
06/19/2021	n/a	2.58 in.	Galesburg Knoxville	n/a	n/a	n/a	n/a	
06/25/2021	n/a	3.22 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
06/26/2021	n/a	1.83 in.	Altona	n/a	n/a	n/a	n/a	
07/11/2021	n/a	3.35 in.	Altona Galesburg Knoxville	n/a	n/a	n/a	n/a	
07/15/2021	n/a	1.53 in.	Altona	n/a	n/a	n/a	n/a	
08/26/2021	n/a	2.27 in.	Altona Yates City	n/a	n/a	n/a	n/a	
09/01/2021	n/a	1.82 in.	Altona	n/a	n/a	n/a	n/a	
10/08/2021	n/a	1.51 in.	Altona Galesburg	n/a	n/a	n/a	n/a	
10/12/2021	n/a	2.68 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	

[1] 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 and NOAA's Storm Events Database.

Table 4
Severe Storms - Heavy Rain Events Reported in Knox County
2000 - 2021

Date(s)	Start Time	Magnitude Rainfall (inches)	Observed Location(s)[1]	Injuries	Fatalities	Property Damages	Crop Damages	Impacts/Event Description
10/24/2021 thru 10/25/2021	n/a	3.21 in.	Altona Galesburg Knoxville Yates City	n/a	n/a	n/a	n/a	
GRAND TOTAL:				**0**	**0**	**$0**	**$0**	

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.

[1] 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 and NOAA's Storm Events Database.

Table 5
Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
02/24/1950 thru 02/24/1950	n/a	Heavy Snow	9.5 in.					Galesburg	n/a	n/a	n/a	
03/10/1951 thru 03/14/1951	12:00 PM	Heavy Snow	17.0 in.					Galesburg	n/a	n/a	n/a	
11/06/1951	6:00 AM	Heavy Snow	8.0 in.					Galesburg	n/a	n/a	n/a	
12/14/1951	6:00 AM	Heavy Snow	7.0 in.					Galesburg	n/a	n/a	n/a	
02/15/1953 thru 02/16/1953	8:30 PM	Heavy Snow	5.0 in.					Galesburg	n/a	n/a	n/a	
12/21/1953 thru 12/22/1953	11:00 PM	Heavy Snow	5.0 in.					Galesburg	n/a	n/a	n/a	
03/02/1954	10:00 AM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
12/29/1954	8:30 AM	Heavy Snow	6.0 in.					Galesburg	n/a	n/a	n/a	
03/21/1955 thru 03/22/1955	2:00 PM	Heavy Snow	5.0 in.					Galesburg	n/a	n/a	n/a	
01/09/1957	12:00 PM	Heavy Snow	8.5 in.					Galesburg	n/a	n/a	n/a	
03/24/1957 thru 03/25/1957	8:00 PM	Heavy Snow	7.0 in.					Galesburg	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 and NOAA's Storm Events Database.

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/20/1958 thru 01/21/1958	4:00 AM	Heavy Snow	9.0 in.					Galesburg	n/a	n/a	n/a	
01/20/1959 thru 01/21/1959	9:00 AM	Heavy Snow	12.0 in.					Galesburg	n/a	n/a	n/a	
03/04/1959 thru 03/05/1959	7:00 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
11/12/1959	5:30 AM	Heavy Snow	4.8 in.					Galesburg	n/a	n/a	n/a	
03/08/1960 thru 03/09/1960	10:00 PM	Heavy Snow	4.3 in.					Galesburg	n/a	n/a	n/a	
03/15/1960 thru 03/16/1960	8:00 PM	Heavy Snow	11.0 in.					Galesburg	n/a	n/a	n/a	COOP observer noted that the highway was blocked by drifting snow
02/17/1962	12:00 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
03/04/1964 thru 03/05/1964	4:00 PM	Heavy Snow	7.4 in.					Galesburg	n/a	n/a	n/a	COOP observer noted power lines and tree limbs down and streets and highways blocked by drifting snow

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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)					
01/25/1965 thru 01/26/1965	11:00 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
03/04/1965	12:00 AM	Heavy Snow	6.6 in.					Galesburg	n/a	n/a	n/a	
03/22/1965 thru 03/23/1965	7:30 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
01/26/1967 thru 01/27/1967	2:30 AM	Heavy Snow	9.9 in.					Galesburg	n/a	n/a	n/a	COOP observer noted that all hghways in and out were blocked
02/28/1969	12:30 AM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
12/22/1969	8:00 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
01/03/1971	2:30 AM	Heavy Snow	7.5 in.					Galesburg	n/a	n/a	n/a	
03/28/1972 thru 03/29/1972	11:00 PM	Heavy Snow	4.5 in.					Galesburg	n/a	n/a	n/a	
12/18/1973 thru 12/19/1973	8:00 PM	Heavy Snow	9.5 in.					Galesburg	n/a	n/a	n/a	
02/21/1974 thru 02/20/1974	8:00 PM	Heavy Snow	4.7 in.					Galesburg	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 and NOAA's Storm Events Database.

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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)					
11/30/1974 thru 12/01/1974	3:30 AM	Heavy Snow	8.4 in.					Galesburg	n/a	n/a	n/a	
02/08/1975	7:00 AM	Heavy Snow	4.8 in.					Galesburg	n/a	n/a	n/a	
02/23/1975 thru 02/24/1975	3:30 PM	Heavy Snow	5.3 in.					Galesburg	n/a	n/a	n/a	
04/02/1975 thru 04/03/1975	10:45 AM	Heavy Snow	7.3 in.					Galesburg	n/a	n/a	n/a	
11/26/1975	8:30 AM	Heavy Snow	5.4 in.					Galesburg	n/a	n/a	n/a	COOP observer noted drifting snow
11/30/1977 thru 12/01/1977	8:30 PM	Heavy Snow	4.5 in.					Galesburg	n/a	n/a	n/a	
12/07/1978	12:00 AM	Heavy Snow	5.5 in.					Galesburg	n/a	n/a	n/a	
01/01/1979	1:00 AM	Heavy Snow	8.3 in.					Galesburg	n/a	n/a	n/a	
01/13/1979 thru 01/14/1979	12:00 AM	Heavy Snow	13.1 in.					Galesburg	n/a	n/a	n/a	
02/06/1980	12:30 AM	Heavy Snow	4.0 in.					Galesburg	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 and NOAA's Storm Events Database.

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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)					
04/14/1980 thru 04/15/1980	2:00 AM	Heavy Snow	10.0 in.					Galesburg	n/a	n/a	n/a	
04/05/1982	9:30 AM	Winter Storm	6.0 in.		X	X		Galesburg	n/a	n/a	n/a	
01/01/1985	12:00 AM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
01/09/1987	9:30 AM	Heavy Snow	4.2 in.					Galesburg	n/a	n/a	n/a	
12/14/1987 thru 12/15/1987	1:00 PM	Winter Storm	8.5 in.			X		Galesburg	n/a	n/a	n/a	
02/10/1988 thru 02/11/1988	12:00 AM	Heavy Snow	6.2 in.					Galesburg	n/a	n/a	n/a	
12/10/1989 thru 12/11/1989	11:00 AM	Heavy Snow	4.7 in.					Galesburg	n/a	n/a	n/a	
01/05/1991	12:00 AM	Heavy Snow	4.4 in.					Galesburg	n/a	n/a	n/a	
02/28/1991	n/a	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
12/03/1991	4:00 PM	Heavy Snow	4.5 in.					Galesburg	n/a	n/a	n/a	
12/09/1992 thru 12/10/1992	2:30 PM	Heavy Snow	6.6 in.					Galesburg	n/a	n/a	n/a	
01/09/1993	5:00 PM	Heavy Snow	5.5 in.					Galesburg	n/a	n/a	n/a	
01/10/1994	8:00 AM	Heavy Snow	4.5 in.					Galesburg	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 and NOAA's Storm Events Database.

Table 5
Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/18/1995 thru 01/19/1995	8:00 PM	Winter Storm	9.5 in.	X		X	40 mph	Galesburg	n/a	n/a	n/a	
01/15/1997 thru 01/16/1997	2:00 AM	Heavy Snow	6.5 in.					Yates City	n/a	n/a	n/a	
01/24/1997	7:00 AM	Winter Storm	2.5 in.	X		X		Yates City	n/a	n/a	n/a	
01/26/1997 thru 01/27/1997	12:00 PM	Winter Storm	5.0 in.				X	Galesburg Yates City	n/a	n/a	n/a	
04/10/1997 thru 04/12/1997	12:30 PM	Heavy Snow	13.0 in.					Galesburg Yates City	2	n/a	n/a	
12/24/1997	12:00 PM	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
01/14/1998	7:00 AM	Winter Storm	1.5 in.	X		X		Galesburg	n/a	n/a	n/a	
03/08/1998 thru 03/09/1998	10:00 PM	Winter Storm	5.0 in.				50 mph	Galesburg	n/a	n/a	n/a	
12/30/1998	2:00 PM	Heavy Snow	4.0 in.					Galesburg Yates City	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 and NOAA's Storm Events Database.

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1950 - 2021

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)					
01/01/1999 thru 01/03/1999	11:00 AM	Heavy Snow	16.0 in.					Galesburg Yates City	n/a	n/a	n/a	***This event was part of a federal emergency disaster declaration (Declaration #3134)***
03/08/1999 thru 03/09/1999	12:00 PM	Heavy Snow	9.0 in.					Galesburg Yates City	n/a	n/a	n/a	
01/19/2000	10:00 AM	Heavy Snow	5.0 in.					Galesburg	n/a	n/a	n/a	
02/17/2000 thru 02/18/2000	10:00 PM	Ice Storm			0.25 in.				n/a	n/a	n/a	Numerous reports of downed power lines and tree limbs as well as extended power outages and traffic accidents across the region
12/11/2000	3:00 AM	Winter Storm	7.0 in.				45 mph	Galesburg Yates City	n/a	n/a	n/a	
12/28/2000 thru 12/29/2000	3:00 PM	Heavy Snow	6.0 in.					Galesburg Yates City	n/a	n/a	n/a	
01/30/2002 thru 01/31/2002	2:30 AM	Winter Storm	8.5 in.		0.25 in.		25 mph	Galesburg Yates City	n/a	n/a	n/a	

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
03/01/2002 thru 03/02/2002	6:00 PM	Winter Storm	6.5 in.				40 mph	Yates City	n/a	n/a	n/a	- Strong northwest winds produced signficant blowing and drifting snow - Most roads were snow and ice covered, with numerous traffic accidents reported
02/14/2003 thru 02/16/2003	5:00 PM	Winter Storm	9.0 in.				50 mph	Galesburg	n/a	n/a	n/a	Strong winds of 30 to 50 mph caused major blowing and drifting snow across the area, with drafts as high as 3 to 5 feet
01/04/2004	1:00 PM	Winter Storm	6.0 in.				X	Galesburg Yates City	n/a	n/a	n/a	Significant blowing and drifting of the snow caused near whiteout conditions in numerous locations
11/24/2004	3:00 PM	Winter Storm	6.0 in.				50 mph	Galesburg Yates City	n/a	n/a	n/a	- Sustained winds of 20 to 30 mph with gusts to 40 to 50 mph caused considerable blowing and drifting of the snow - In addition, the high winds and the weight of the wet snow downed numerous trees and power lines

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/05/2005 thru 01/06/2005	1:00 PM	Ice Storm			0.50 in.				n/a	n/a	n/a	There were numerous reports of downed trees and power lines, as well as numerous traffic accidents
03/22/2005 thru 03/23/2005	7:00 PM	Heavy Snow	5.0 in.					Altona	n/a	n/a	n/a	
01/20/2006 thru 01/21/2006	1:30 PM	Heavy Snow	4.2 in.					Altona	n/a	n/a	n/a	
11/29/2006 thru 12/01/2006	10:00 PM	Winter Storm	12.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	***This event was part of a federal emergency disaster declaration (Declaration #3269)***
01/12/2007 thru 01/13/2007	2:00 PM	Ice Storm			0.50 in.				n/a	n/a	n/a	The ice caused modest tree limb and power line damage and numerous vehicular accidents
02/13/2007	1:00 AM	Winter Storm	7.0 in.				45 mph	Galesburg	n/a	n/a	n/a	Significant blowing and drifting snow also occurred
02/24/2007	9:00 AM	Ice Storm			1.00 in.				n/a	n/a	n/a	Significant tree and power line damage occurred

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Table 5
Severe Winter Storm Events Reported in Knox County
1950 - 2021

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 thru 01/00/1900	9:00 AM	Ice Storm			0.33 in.				n/a	n/a	n/a	- Numerous power outages were reported due to ice accumulation on power lines - Numerous minor automobile accidents were reported around the County
12/14/2007 thru 12/15/2007	10:00 PM	Heavy Snow	5.5 in.					Yates City	n/a	n/a	n/a	
01/31/2008	n/a	Heavy Snow	5.0 in.					Galesburg Yates City	n/a	n/a	n/a	
12/18/2008 thru 12/19/2008	8:00 PM	Ice Storm			0.75 in.				n/a	n/a	$150,000	
01/12/2009 thru 01/13/2009	9:00 PM	Heavy Snow	5.9 in.					Altona	n/a	n/a	n/a	
01/13/2009 thru 01/14/2009	9:30 PM	Heavy Snow	5.0 in.					Yates City	n/a	n/a	n/a	
03/29/2009	12:00 AM	Heavy Snow	5.6 in.						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 and NOAA's Storm Events Database.

Table 5
Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/07/2010	12:00 AM	Heavy Snow	8.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	As a result of snow-covered roadways, several traffic accidents and vehicle slide-offs were reported
02/08/2010 thru 02/09/2010	11:00 AM	Heavy Snow	8.0 in.				X	Altona Galesburg	n/a	n/a	n/a	
02/21/2010 thru 02/22/2010	6:00 AM	Heavy Snow	8.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	
12/12/2010 thru 12/13/2010	6:00 AM	Blizzard	2.0 in.				50 mph	Altona Galesburg Yates City	n/a	n/a	n/a	
12/15/2010	6:00 PM	Heavy Snow	4.4 in.					Altona	n/a	n/a	n/a	
12/25/2010	n/a	Heavy Snow	5.1 in.					Altona Galesburg Yates City	n/a	n/a	n/a	

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
02/01/2011 thru 02/02/2011	12:00 PM	Blizzard	20.0 in.				55 mph	Galesburg	n/a	n/a	$342,864	*Event Description Provided Below*
This event was part of a federal major disaster declaration (Declaration #1960)												
FEMA Public Assistance totals by jurisdiction:												
- Abingdon: $10,743												
- Carl Sandburg College: $5,964												
- Cedar Township Road District: $8,402												
- Copley Township Road District: $7,616												
- East Galesburg: $3,223												
- Elba Township Road District: $8,112												
- Galesburg Township: $8,516												
- Galesburg, City of: $103,204												
- Galesburg CUSD #205: $10,040												
- Haw Creek Townshiop Road District: $5,331												
- Henderson Township Road District: $7,632												
- Indian Point Township Road District: $5,786												
- Knox County Highway Department: $29,798												
- Knox County Nursing Home: $2,085												
- Knox County Sheriff's Department: $4,896												
- Knox Township Road District: $10,002												
- Knoxville: $7,491												
- Lynn Township Road District: $8,806												
- Maquon Township Road District: $4,961												
- Maquon: $1,770												
- Ontario Township: $6,273												
- Orange Township Road District: $3,791												
- OSF St. Mary Medical Center: $11,863												
- Persifer Township Road District: $9,471												
- Rio Township Highway Department: $7,800												
- ROWVA CUSD #208: $2,468												
- Salem Township: $4,873												
- Sparta Township Road District: $7,278												
- Truro Township Road District: $8,323												
- Victoria Township Road District: $10,098												
- Walnut Grove Township Road District: $4,641												
- Wataga: $2,901												
- Yates City: $8,706												
01/13/2012	n/a	Heavy Snow	4.1 in.					Altona	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)					
12/20/2012	12:00 PM	Blizzard	5.5 in.				50 mph	Altona Galesburg	n/a	n/a	n/a	- Winds gusting over 50 mph at times created blizzard conditions, causing numerous traffic accidents across the County - One of the most serious accidents occurred when a semi jack-knifed across the westbound lanes of I-74 about 8 miles north of Galesburg, creating an 8-mile traffic back-up
02/26/2013	7:00 AM	Heavy Snow	7.0 in.					Altona	n/a	n/a	n/a	
03/24/2013 thru 03/25/2013	n/a	Heavy Snow	7.0 in.					Altona Yates City	n/a	n/a	n/a	
12/13/2013 thru 12/14/2013	2:10 AM	Heavy Snow	8.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	Numerous accidents were reported as a result of the snowfall

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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)					
01/04/2014 thru 01/05/2014	6:00 PM	Heavy Snow	10.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	The heavy snowfall along with significant blowing and drifting caused numerous road closures and traffic accidents across the County
02/01/2014	2:00 AM	Heavy Snow	8.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	Numerous traffic accidents occurred as a result of snow-covered roads
02/05/2014	n/a	Heavy Snow	6.1 in.					Altona Galesburg	n/a	n/a	n/a	
02/15/2014	n/a	Heavy Snow	4.0 in.					Yates City	n/a	n/a	n/a	
02/18/2014	n/a	Heavy Snow	4.4 in.					Altona Yates City	n/a	n/a	n/a	
01/05/2015 thru 01/06/2015	4:15 PM	Heavy Snow	7.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	Numerous traffic accidents occurred due to snow-covered and hazardous roads
02/01/2015	2:00 AM	Heavy Snow	9.0 in.					Altona Galesburg Yates City	n/a	n/a	n/a	Numerous traffic accidents occurred due to snow-covered and hazardous roadways
02/26/2015	n/a	Heavy Snow	6.0 in.					Altona Galesburg	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)					
11/20/2015 thru 11/21/2015	9:00 PM	Winter Storm	10.0 in.					Altona	n/a	n/a	n/a	Numerous traffic accidents occurred due to snow-covered roadways
12/28/2015	3:00 AM	Ice Storm			0.30 in.		50 mph		n/a	n/a	$375,000	- This amount of ice combined with winds gusting as high as 40 to 50 mph caused extensive damage to trees, power poles, and power lines - Several homes were damaged by falling trees and tree branches - About 20,000 people lost power for up to 3 days after the storm
02/15/2016	n/a	Heavy Snow	4.6 in.					Altona	n/a	n/a	n/a	
03/13/2017	n/a	Heavy Snow	4.0 in.					Galesburg	n/a	n/a	n/a	
12/29/2017 thru 12/30/2017	n/a	Heavy Snow	6.3 in.					Altona	n/a	n/a	n/a	
02/05/2018	2:30 PM	Heavy Snow	10.0 in.					Altona Galesburg	n/a	n/a	n/a	Numerous traffic accidents occurred due to snow-covered roadways

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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 and NOAA's Storm Events Database.

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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)					
02/10/2018 thru 02/11/2018	n/a	Heavy Snow	8.8 in.					Altona	n/a	n/a	n/a	
03/24/2018 thru 03/25/2015	n/a	Heavy Snow	7.2 in.					Altona	n/a	n/a	n/a	
11/25/2018 thru 11/26/2018	2:15 PM	Blizzard	14.0 in.				50 mph	Altona Galesburg	n/a	n/a	n/a	- Winds gusting 45-50mph created whiteout conditions and produced snow drifts of 3-6 feet deep - Numerous power outages occurred and several motorists were stranded on rural roads due to the snow
01/11/2019 thru 01/13/2019	10:15 PM	Heavy Snow	11.0 in.					Galesburg Yates City	n/a	n/a	n/a	- Numerous traffic accidents occurred due to snow-covered roads - The snow was heavy and wet, which made plowing of roads difficult

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/18/2019 thru 01/19/2019	11:15 PM	Heavy Snow	6.5 in.					Altona Galesburg Yates City	n/a	n/a	n/a	- Northerly winds gusting 30-40mph created snow drifts of 1-3 feet deep, particularly on east-west oriented roads - As a result, multiple traffic accidents were reported on I-74, US Route 150, and other rural roads
02/11/2019 thru 02/12/2019	5:00 PM	Ice Storm			0.50 in.		40 mph		n/a	n/a	n/a	The heavy ice accumulation snapped many tree branches, caused scattered power outages, and created slick and hazardous travel conditions
04/16/2020 thru 04/17/2020	2:20 AM	Heavy Snow	6.4 in.					Altona Galesburg Yates City	n/a	n/a	n/a	
12/30/2020	n/a	Heavy Snow	4.2 in.					Altona	n/a	n/a	n/a	
01/01/2021	7:00 AM	Ice Storm			0.30 in.				n/a	n/a	n/a	The heavy ice accumulation snapped many tree branches, caused scattered power outages, and created slick and hazardous travel conditions

[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 and NOAA's Storm Events Database.

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Severe Winter Storm Events Reported in Knox County
1950 - 2021

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)					
01/26/2021	n/a	Heavy Snow	4.0 in.					Altona	n/a	n/a	n/a	
GRAND TOTAL:									**2**	**0**	**$867,864**	

Sources: Illinois Emergency Management Agency.
Knox County Multi-Jurisdictional All Hazards Mitigation Planning Committee Member responses to Natural Hazard Events Questionnaire.
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.

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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 and NOAA's Storm Events Database.

Table 6
General Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Spoon River (London Mills)[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
03/12/1990 thru 03/14/1990	n/a	Spoon River	southern portion of county	16.67 ft. 03/13/1990				n/a	n/a	n/a	n/a	
05/09/1990 thru 05/11/1990	n/a	Spoon River	southern portion of county	18.27 ft. 05/10/1990				n/a	n/a	n/a	n/a	
05/25/1990 thru 05/26/1990	n/a	Spoon River	southern portion of county	18.03 ft. 05/26/1990				n/a	n/a	n/a	n/a	
06/21/1990 thru 06/24/1990	n/a	Spoon River	southern portion of county	21.93 ft. 06/22/1990				n/a	n/a	n/a	n/a	
07/01/1990 thru 07/02/1990	n/a	Spoon River	southern portion of county	19.55 ft. 07/02/1990				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 15.0 feet, moderate flood stage is 21.0 feet and major flood stage is 24.0 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.

Table 6
General Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Spoon River (London Mills)[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
05/26/1991 thru 05/27/1991	n/a	Spoon River	southern portion of county	17.90 ft. 05/27/1991				n/a	n/a	n/a	n/a	
12/16/1992 thru 12/17/1992	n/a	Spoon River	southern portion of county	18.30 ft. 12/17/1992				n/a	n/a	n/a	n/a	
03/04/1993 thru 03/09/1993	n/a	Spoon River	southern portion of county	19.51 ft. 03/06/1993				n/a	n/a	n/a	n/a	
03/23/1993 thru 03/27/1993	n/a	Spoon River	southern portion of county	19.14 ft. 03/25/1993				n/a	n/a	n/a	n/a	
04/14/1993 thru 04/20/1993	n/a	Spoon River	southern portion of county	19.91 ft. 04/16/1993				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #997)***

[1] Flood stage at gauge location is 15.0 feet, moderate flood stage is 21.0 feet and major flood stage is 24.0 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.

Table 6
General Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Spoon River (London Mills)[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
07/23/1993 thru 08/01/1993	n/a	Spoon River	southern portion of county	25.92 ft. 07/25/1993 3rd highest crest on record				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #997)***
08/10/1993 thru 08/12/1993	n/a	Spoon River	southern portion of county	18.34 ft. 08/11/1993				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #997)***
08/16/1993 thru 08/17/1993	n/a	Spoon River	southern portion of county	17.82 ft. 08/17/1993				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #997)***
09/14/1993 thru 09/15/1993	n/a	Spoon River	southern portion of county	16.58 ft. 09/15/1993				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #997)***
02/20/1994 thru 02/23/1994	n/a	Spoon River	southern portion of county	17.43 ft. 02/21/1994				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 15.0 feet, moderate flood stage is 21.0 feet and major flood stage is 24.0 feet.

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					Home	Business	Infra-structure					
04/11/1995 thru 04/13/1995	n/a	Spoon River	southern portion of county	16.22 ft. 04/12/1995				n/a	n/a	n/a	n/a	
05/08/1995 thru 05/16/1995	n/a	Spoon River	southern portion of county	19.40 ft. 05/14/1995				n/a	n/a	n/a	n/a	
05/24/1995 thru 05/31/1995	n/a	Spoon River	southern portion of county	21.90 ft. 05/29/1995				n/a	n/a	n/a	n/a	
7/5/1995	n/a	Spoon River	southern portion of county	15.33 ft. 07/05/1995				n/a	n/a	n/a	n/a	
05/26/1996 thru 06/05/1996	n/a	Spoon River	southern portion of county	24.21 ft. 05/28/1996 8th highest crest on record				n/a	n/a	n/a	n/a	
6/14/1996	n/a	Spoon River	southern portion of county	15.25 ft. 06/14/1996				n/a	n/a	n/a	n/a	

[1] Flood stage at gauge location is 15.0 feet, moderate flood stage is 21.0 feet and major flood stage is 24.0 feet.

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					Home	Business	Infra-structure					
02/21/1997 thru 02/23/1997	12:00 AM	Spoon River	southern portion of county	22.48 ft. 02/22/1997				n/a	n/a	n/a	n/a	
02/26/1997 thru 03/02/1997	n/a	Spoon River	southern portion of county	17.04 ft. 02/28/1997				n/a	n/a	n/a	n/a	
2/12/1998	n/a	Spoon River	southern portion of county	15.01 ft. 02/12/1998				n/a	n/a	n/a	n/a	
3/9/1998	n/a	Spoon River	southern portion of county	15.27 ft. 03/09/1998				n/a	n/a	n/a	n/a	
03/17/1998 thru 03/21/1998	n/a	Spoon River	southern portion of county	19.29 ft. 03/18/1998				n/a	n/a	n/a	n/a	
05/08/1998 thru 05/09/1998	n/a	Spoon River	southern portion of county	16.08 ft. 05/09/1998				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
06/16/1998 thru 06/18/1998	n/a	Spoon River	southern portion of county	17.45 ft. 06/16/1998				n/a	n/a	n/a	n/a	
01/22/1999 thru 01/26/1999	n/a	Spoon River	southern portion of county	18.23 ft. 01/24/1999				n/a	n/a	n/a	n/a	
05/13/1999 thru 05/18/1999	n/a	Spoon River	southern portion of county	18.69 ft. 05/15/1999				n/a	n/a	n/a	n/a	
6/12/2000	8:00 PM	areas streams & creeks	Galesburg	---			X	n/a	n/a	n/a	n/a	Thunderstorms produced locally heavy rainfall in Galesburg, with numerous reports of street flooding being received
06/24/2000 thru 06/26/2000	n/a	Spoon River	southern portion of county	17.50 ft. 06/25/2000				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
02/08/2001 thru 02/13/2001	n/a	Spoon River	southern portion of county	21.00 ft. 02/10/2001				n/a	n/a	n/a	n/a	
02/24/2001 thru 02/28/2001	n/a	Spoon River	southern portion of county	18.93 ft. 02/25/2001				n/a	n/a	n/a	n/a	
06/05/2001 thru 06/08/2001	n/a	Spoon River	southern portion of county	17.25 ft. 06/06/2001				n/a	n/a	n/a	n/a	
05/11/2002 thru 05/16/2002	9:00 PM	Spoon River	southern portion of county	23.29 ft. 05/13/2002			X	n/a	n/a	n/a	n/a	Numerous roads remained flooded for a time including County Road 39 (Knox County) near London Mills
06/13/2002 thru 06/15/2002	2:30 AM	Spoon River	southern portion of county	20.24 ft. 06/14/2002			X	n/a	n/a	n/a	n/a	Road flooding was experienced

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					Home	Business	Infra-structure					
01/12/2005 thru 01/15/2005	n/a	Spoon River	southern portion of county	18.72 ft. 01/14/2005				n/a	n/a	n/a	n/a	
03/01/2007 thru 03/04/2007	n/a	Spoon River	southern portion of county	17.95 ft. 03/02/2007				n/a	n/a	n/a	n/a	
03/24/2007 thru 03/26/2007	n/a	Spoon River	southern portion of county	16.33 ft. 03/26/2007				n/a	n/a	n/a	n/a	
4/27/2007	n/a	Spoon River	southern portion of county	15.70 ft. 04/27/2007				n/a	n/a	n/a	n/a	
02/17/2008 thru 02/21/2008	n/a	Spoon River	southern portion of county	19.22 ft. 02/18/2008				n/a	n/a	n/a	n/a	
3/4/2008	n/a	Spoon River	southern portion of county	15.31 ft. 03/04/2008				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
09/14/2008 thru 09/16/2008	n/a	Spoon River	southern portion of county	17.24 ft. 09/15/2008				n/a	n/a	n/a	n/a	
12/27/2008 thru 12/31/2008	n/a	Spoon River	southern portion of county	19.62 ft. 12/28/2008				n/a	n/a	n/a	n/a	
2/28/2009	n/a	Spoon River	southern portion of county	16.78 ft. 02/27/2009				n/a	n/a	n/a	n/a	
03/08/2009 thru 03/14/2009	n/a	area rivers, streams & creeks	countywide	23.02 ft. 03/11/2009			X	n/a	n/a	n/a	n/a	- A man was rescued from his vehicle near LaFayette in northeastern Knox County when he tried to cross a roadway flooded by a nearby creek - Highway 17 was closed due to high water - In addition, water was flowing across numerous other county roads across Knox County

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					Home	Business	Infra-structure					
3/30/2009	n/a	Spoon River	southern portion of county	15.07 ft. 03/30/2009				n/a	n/a	n/a	n/a	
04/20/2009 thru 04/21/2009	n/a	Spoon River	southern portion of county	15.98 ft. 04/20/2009				n/a	n/a	n/a	n/a	
04/30/2009 thru 05/02/2009	n/a	Spoon River	southern portion of county	19.04 ft. 05/01/2009				n/a	n/a	n/a	n/a	
05/15/2009 thru 05/20/2009	7:30 PM	Spoon River	southern portion of county	25.28 ft. 05/16/2009 4th highest crest on record				n/a	n/a	$1,500,000	n/a	- Nearly every road was under water and impassible in southern Knox County - More than 2,000 acres of agricultural land was inundated and several county roads and highways were flooded for up to four days
06/19/2009 thru 06/21/2009	n/a	Spoon River	southern portion of county	17.15 ft. 06/20/2009				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
10/30/2009 thru 11/01/2009	n/a	Spoon River	southern portion of county	16.86 ft. 10/31/2009				n/a	n/a	n/a	n/a	
12/24/2009 thru 12/27/2009	n/a	Spoon River	southern portion of county	19.09 ft. 12/26/2009				n/a	n/a	n/a	n/a	
01/24/2010 thru 01/27/2010	n/a	Spoon River	southern portion of county	19.56 ft. 01/25/2010				n/a	n/a	n/a	n/a	
03/13/2010 thru 03/16/2010	n/a	Spoon River	southern portion of county	18.04 ft. 03/14/2010				n/a	n/a	n/a	n/a	
05/13/2010 thru 05/18/2010	n/a	Spoon River	southern portion of county	22.12 ft. 05/14/2010				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
06/02/2010 thru 06/07/2010	n/a	Spoon River	southern portion of county	17.27 ft. 06/06/2010				n/a	n/a	n/a	n/a	
06/14/2010 thru 06/26/2010	n/a	Spoon River	southern portion of county	19.82 ft. 06/23/2010				n/a	n/a	n/a	n/a	
02/18/2011 thru 02/19/2011	n/a	Spoon River	southern portion of county	15.90 ft. 02/18/2011				n/a	n/a	n/a	n/a	
04/22/2011 thru 04/24/2011	n/a	Spoon River	southern portion of county	17.12 ft. 04/23/2011				n/a	n/a	n/a	n/a	
05/25/2011 thru 05/31/2011	n/a	Spoon River	southern portion of county	19.56 ft. 05/27/2011				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
03/10/2013 thru 03/14/2013	n/a	Spoon River	southern portion of county	17.91 ft. 03/14/2013				n/a	n/a	n/a	n/a	
04/17/2013 thru 04/22/2013	n/a	Spoon River	southern portion of county	26.18 ft. 04/19/2013 2nd highest crest on record	X	X	X	n/a	n/a	$279,687	n/a	*Event Description Provided Below*
This event is part of a federally-declared disaster (Declaration #4116) - Committee Member records identified $88,620 in damages to personal property, businesses, and public water systems <u>FEMA Public Assistance totals by Jurisdiction:</u> - Chestnut Township Road District: $11,824 - Copley Township Road District: $11,932 - East Galesburg: $15,464 - Elba Township: $12,261 - Galesburg: $10,412 - Haw Creek Township Road District: $19,763							- Knox Township Road District: $6,753 - Lynn Township Road District: $9,379 - Maquon Township Road District: $6,086 - Persifer Township Road District: $9,047 - Rio Township Highway Department: $39,730 - Sparta Township Road District: $10,298 - Truro Township Road District: $6,471 - Victoria Road District: $12,041 - Walnut Grove Township Road District: $9,606					
05/04/2013 thru 05/05/2013	n/a	Spoon River	southern portion of county	16.34 ft. 05/04/2013				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #4116)***

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					Home	Business	Infra-structure					
05/27/2013 thru 06/03/2013	3:25 AM	area rivers, streams & creeks	countywide	23.49 ft. 05/30/2013				n/a	n/a	n/a	n/a	- Numerous reports of flooded rural roads in and near Altona and Victoria - Nearly all rural roads in the northern half of Knox County were closed due to the flooding and remained flooded for nearly 36 hours
06/26/2013 thru 06/27/2013	n/a	Spoon River	southern portion of county	16.06 ft. 06/27/2013				n/a	n/a	n/a	n/a	
02/20/2014 thru 02/25/2014	n/a	Spoon River	southern portion of county	22.98 ft. 02/22/2014				n/a	n/a	n/a	n/a	
03/10/2014 thru 03/14/2014	n/a	Spoon River	southern portion of county	17.05 ft. 03/13/2014				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
07/01/2014 thru 07/02/2014	n/a	Spoon River	southern portion of county	16.16 ft. 07/01/2014				n/a	n/a	n/a	n/a	
09/10/2014 thru 09/11/2014	n/a	Spoon River	southern portion of county	17.03 ft. 09/11/2014				n/a	n/a	n/a	n/a	
06/11/2015 thru 06/13/2015	n/a	Spoon River	southern portion of county	18.85 ft. 06/12/2015				n/a	n/a	n/a	n/a	
06/25/2015 thru 06/26/2015	n/a	Spoon River	southern portion of county	16.09 ft. 06/25/2015				n/a	n/a	n/a	n/a	
07/11/2015 thru 07/12/2015	n/a	Spoon River	southern portion of county	17.94 ft. 07/12/2015				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
07/17/2015 thru 07/16/2015	n/a	Spoon River	southern portion of county	19.33 ft. 07/17/2015				n/a	n/a	n/a	n/a	
12/28/2015 thru 01/01/2016	n/a	Spoon River	southern portion of county	20.09 ft. 12/29/2015				n/a	n/a	n/a	n/a	
04/30/2017 thru 05/04/2017	n/a	Spoon River	southern portion of county	17.68 ft. 04/30/2017				n/a	n/a	n/a	n/a	
05/20/2017 thru 05/21/2017	n/a	Spoon River	southern portion of county	15.43 ft. 05/21/2017				n/a	n/a	n/a	n/a	
02/20/2018 thru 02/22/2018	n/a	Spoon River	southern portion of county	16.77 ft. 02/21/2018				n/a	n/a	n/a	n/a	

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					Home	Business	Infra-structure					
12/02/2018 thru 12/03/2018	n/a	Spoon River	southern portion of county	16.10 ft. 12/03/2018				n/a	n/a	n/a	n/a	
02/05/2019 thru 02/06/2019	n/a	Spoon River	southern portion of county	15.47 ft. 02/06/2019				n/a	n/a	n/a	n/a	
02/23/2019 thru 02/25/2019	n/a	Spoon River	southern portion of county	17.17 ft. 02/24/2019				n/a	n/a	n/a	n/a	***This event is part of a federally-declared disaster (Declaration #4461)***
03/09/2019 thru 03/12/2019	n/a	Spoon River	southern portion of county	19.19 ft. 03/11/2019				n/a	n/a	$441,275	n/a	*Event Description Provided Below*

This event is part of a federally-declared disaster (Declaration #4461)
- Committee Member records identified $265,786 in damages to personal property, businesses, bridgees, public water systems, and generators
- Galesburg provided labor and fuel to keep 2 generators running at their drinking water facility at Oquawka along the Mississippi River from March 16 to June 9

<u>FEMA Public Assistance totals by Jurisdiction:</u>
- Galesburg Sanitary District: $5,791
- Galesburg: $30,599
- Haw Creek Road District: $40,265
- Rio Township Road District: $98,834

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					Home	Business	Infra-structure					
04/30/2019 thru 05/05/2019	n/a	Spoon River	southern portion of county	21.11 ft. 05/03/2019				n/a	n/a	n/a	n/a	
05/21/2019 thru 06/03/2019	n/a	Spoon River	southern portion of county	23.46 ft. 05/30/2019				n/a	n/a	n/a	n/a	
09/29/2019 thru 10/02/2019	n/a	Spoon River	southern portion of county	17.81 ft. 10/02/2019				n/a	n/a	n/a	n/a	
05/17/2020 thru 05/19/2020	n/a	Spoon River	southern portion of county	18.25 ft. 05/19/2020.				n/a	n/a	n/a	n/a	
04/10/2021 thru 04/13/2021	n/a	Spoon River	southern portion of county	18.43 ft. 04/12/2021				n/a	n/a	n/a	n/a	
5/10/2021	n/a	Spoon River	southern portion of county	15.84 ft. 05/10/2021				n/a	n/a	n/a	n/a	

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Date(s)	Start Time	Water Body	Location(s)	Magnitude Flood Crest Spoon River (London Mills)[1]	Impacts[2]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
					Home	Business	Infra-structure					
05/18/2021 thru 05/21/2021	n/a	Spoon River	southern portion of county	19.73 ft. 05/20/2021				n/a	n/a	n/a	n/a	
10/25/2021 thru 10/27/2021	n/a	Spoon River	southern portion of county	16.92 ft. 10/25/2021				n/a	n/a	n/a	n/a	
GRAND TOTAL:								**0**	**0**	**$2,220,962**	**$0**	

Sources: Illinois Emergency Management Agency.
Knox County Multi-Jurisdictional All Hazard Mitigation Planning Committee Member responses to the Natural Hazard Events Questionnaire.
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, Spoon River at London Mills.
United States Army Corps of Engineers, RiverGages.com, Data Mining.

[1] Flood stage at gauge location is 15.0 feet, moderate flood stage is 21.0 feet and major flood stage is 24.0 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.

Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
06/19/1990 thru 06/20/1990	n/a	countywide				n/a	n/a	n/a	n/a	
06/30/1993	n/a	countywide				n/a	n/a	n/a	n/a	
07/23/1993	n/a	countywide				n/a	n/a	n/a	n/a	
07/24/1993 thru 07/25/1993	n/a	countywide				n/a	n/a	n/a	n/a	
06/02/1996	n/a	countywide				n/a	n/a	n/a	n/a	
06/13/1996	n/a	countywide				n/a	n/a	n/a	n/a	
05/31/2000	n/a	countywide				n/a	n/a	n/a	n/a	
02/24/2001	6:00 PM	countywide			X	n/a	n/a	n/a	n/a	- Widespread areas of county road flooding were noted, mainly in the northwest - A county road, 4 miles northwest of Rio, was reported to have 2 to 3 feet of water covering it along a 100 foot stretch - The road was blocked off, but not before a mini van drove into the flooded area
05/11/2002	11:25 AM	countywide			X	n/a	n/a	n/a	n/a	- Numerous roads were flooded - Several basements in Galesburg were flooded - Illinois Route 167 between Wataga and Victoria was flooded with some minor mudslides onto the road in spots - Illinois Route 116/Route 41 Viaduct was flooded 1 mile north of St. Augustine

^ Flash flood event verified in the vicinity of this location(s).

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Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
06/04/2002	2:30 PM	Gilson^			X	n/a	n/a	n/a	n/a	8 inches of water was flowing over Illinois Route 97 north of Gilson due to heavy rains in the area
06/12/2002 thru 06/13/2002	8:53 PM	countywide			X	n/a	n/a	n/a	n/a	Numerous roads were flooded including the intersection of Illinois Route 41 and Illinois Route 116 south of Abingdon and Illinois Route 180 north of Williamsfield, as well as, rural roads
07/27/2002	2:33 AM	central portion of county			X	n/a	n/a	n/a	n/a	- Several inches of rain fell in a short amount of time in an area from Galesburg to Williamsfield - Several rural roads were flooded
07/28/2002	n/a	east-central portion of county				n/a	n/a	n/a	n/a	
08/13/2002	n/a	northeastern portion of county				n/a	n/a	n/a	n/a	
08/23/2002	n/a	southern portion of county				n/a	n/a	n/a	n/a	
04/30/2003	9:30 PM	northern portion of county			X	n/a	n/a	n/a	n/a	- Between 1 and 3 inches of rain fell in a short amount of time over the northern half of Knox County - Numerous secondary roads and field were flooded for an hour or so
07/09/2003 thru 07/10/2003	n/a	southern portion of county				n/a	n/a	n/a	n/a	
05/30/2004	3:45 PM	countywide			X	n/a	n/a	n/a	n/a	Brief heavy rain caused numerous roads to become flooded including IL Route 97 near Gilson
07/08/2004	6:00 PM	countywide			X	n/a	n/a	n/a	n/a	Numerous roads in Galesburg and Gilson were flooded

^ Flash flood event verified in the vicinity of this location(s).

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Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
07/22/2004	9:30 AM	Galesburg		X		n/a	n/a	n/a	n/a	- An inch of rain fell in less than an hour in Galesburg causing widespread flooding in the City - Several businesses sustained significant water damage
01/12/2005 thru 01/13/2005	n/a	countywide				n/a	n/a	n/a	n/a	
08/24/2007	n/a	northern and central portion of county				n/a	n/a	n/a	n/a	
06/03/2008 thru 06/04/2008	n/a	southeastern portion of county				n/a	n/a	n/a	n/a	
09/13/2008 thru 09/14/2008	n/a	countywide				n/a	n/a	n/a	n/a	
05/15/2009	11:30 AM	countywide			X	n/a	n/a	n/a	n/a	- Heavy rain on an already saturated ground produced extensive flash flooding across Knox County, particularly along the Spoon River basin - Many roads were covered with water, and several rural roads were closed to traffic or impassible, particularly in rural areas - Part of U.S. Highway 150, about 3 miles southeast of Dahinda, was under water - Numerous streets in Galesburg were also closed due to high water

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Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
05/13/2010	3:30 AM	countywide				n/a	n/a	n/a	n/a	- Rainfall rates of 2.00 to 2.5 in a two hour period resulted in areas of flash flooding in the County - Small streams near Altona overflowed their banks
05/25/2010	n/a	east-central portion of county				n/a	n/a	n/a	n/a	
06/01/2010 thru 06/02/2010	10:30 PM	countywide			X	n/a	n/a	n/a	n/a	- More than 3.00 inches of rain was measured in three hours, 2.00 inches occurred in one hour - The rain produced flooding of rural roads as well as city streets within Galesburg
06/05/2010 thru 06/06/2010	n/a	southern portion of county				n/a	n/a	n/a	n/a	
06/18/2010 thru 06/19/2010	9:45 PM	countywide			X	n/a	n/a	n/a	n/a	Numerous city streets were flooded in Galesburg and Knoxville
06/22/2010	8:00 AM	southern portion of county			X	n/a	n/a	n/a	n/a	Many rural roads were impassable due to the flooding
06/23/2010	5:30 PM	countywide			X	n/a	n/a	n/a	n/a	Numerous roads had several inches of water flowing over them, viaducts were flooded, drainage ditches were overflowing, and fields were inundated with water

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Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
05/25/2011	5:45 PM	northwestern portion of county			X	n/a	n/a	n/a	n/a	- Severe thunderstorms produced very heavy rainfall with nearly 3.00 of rain in 90 minutes near the town of Rio, and around 2.00 of rain in 30 minutes at Altona - The biggest impacts were from Rio to the Mercer County line where 4.00 to 5.00 of rain during the early evening resulted in extensive flash flooding of roads and creeks
05/29/2011	10:00 AM	northwestern portion of county			X	n/a	n/a	$100,000	n/a	- Severe thunderstorms produced heavy rainfall for the second time within five days in northwest Knox County - Once again, the greatest impacts were near the town of Rio where 3.00 to 5.00 of rain occurred during the morning of May 29th - Many roads in this area were impassable, including U.S. Highway 150 about one mile north of Rio, where Polk Creek overflowed its banks and a landslide blocked one lane of the highway
06/15/2011	n/a	countywide				n/a	n/a	n/a	n/a	
06/27/2011	n/a	countywide				n/a	n/a	n/a	n/a	

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Table 7
Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
04/18/2013	12:00 AM	countywide	X	X	X	n/a	n/a	$39,500,000	n/a	***This event is part of a federally-declared disaster (Declaration #4116)*** - Torrential rainfall of 4.00 to 8.00 inches resulted in damage to thousands of houses and businesses in the County, including several in the cities of Galesburg and Knoxville. - Every creek and stream in the County was flooded - Nearly every road in the County was impassable, and several water rescues were made - This rainfall led to record or near record flooding on the Spoon River from April 18th through the 24th
05/26/2013 thru 05/27/2013	7:30 PM	northeastern portion of county			X	n/a	n/a	n/a	n/a	Numerous reports of flooded rural roads in and near Altona and Victoria
05/28/2013	5:30 PM	northern portion of county	X	X	X	n/a	n/a	$1,000,000	n/a	- Thunderstorms with torrential rainfall produced nearly 3.00 inches of rain in just one hour - Galesburg sustained the greatest impact with rapidly rising water on many city streets leading to at least 30 stranded motorists and one water rescue - Water flooded parts of Carl Sandburg College as well, causing nearly $300,000 in damage to flooring, furniture, and equipment - Numerous homes and businesses also sustained considerable flood damage - Nearly all rural roads in the northern half of Knox County were closed due to the flooding

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Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
05/30/2013 thru 05/31/2013	n/a	eastern portion of county				n/a	n/a	n/a	n/a	
09/08/2013	n/a	southern portion of county				n/a	n/a	n/a	n/a	
06/30/2014 thru 07/01/2014	n/a	countywide				n/a	n/a	n/a	n/a	
09/04/2014	5:30 AM	western portion of county			X	n/a	n/a	n/a	n/a	- Numerous streets within Galesburg and Knoxville were flooded - Multiple viaducts flooded which caused several stalled vehicles to become trapped in the rising water during the morning commute
06/07/2015	7:30 PM	southern portion of county			X	n/a	n/a	n/a	n/a	- Flash flooding rapidly developed, which made many roads impassable - State Highways 97 and 8, as well as most secondary roads in rural areas, were inundated
06/10/2015 thru 06/11/2015	10:30 PM	southern portion of county			X	n/a	n/a	n/a	n/a	- Illinois Route 97 from Gilson to the Fulton County line and Routes 8 and 78 from Maquon to the Peoria County line were impassable - Nearly all rural roads in southern Knox County were flooded - Streets in Abingdon, Maquon and Yates City were also inundated by the heavy rain and flooding

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Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
06/14/2015	6:45 PM	eastern portion of county			X	n/a	n/a	n/a	n/a	- Flooding made Illinois Route 180 north of Williamsfield impassable - Many rural roads from Oak Run to Williamsfield were also flooded
06/28/2015 thru 06/29/2015	n/a	southeastern portion of county				n/a	n/a	n/a	n/a	
07/06/2015 thru 07/07/2015	n/a	countywide				n/a	n/a	n/a	n/a	
07/11/2015	5:15 PM	southern portion of county			X	n/a	n/a	n/a	n/a	- Several rounds of heavy rain produced flash flooding on many rural roads in southern Knox County - Streets were also flooded in Yates City and Maquon.
07/16/2015 thru 07/17/2015	7:30 PM	central and southern portions of county			X	n/a	n/a	n/a	n/a	- Severe thunderstorms produced 2.00 to 4.00 inches of rain in less than three hours resulting in flash flooding that produced extensive street flooding in parts of Galesburg - Rural roads were flooded and impassable in spots from Abingdon to Maquon and from Galesburg to Knoxville
09/18/2015	n/a	southeastern portion of county				n/a	n/a	n/a	n/a	
07/13/2016	n/a	central portion of county				n/a	n/a	n/a	n/a	
07/16/2017	n/a	southeastern portion of county				n/a	n/a	n/a	n/a	

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Flash Flood Events Reported in Knox County
1990 - 2021

Date(s)	Start Time	Location(s)	Impacts[1]			Injuries	Fatalities	Property Damages	Crop Damages	Impacts/ Event Description
			Home	Business	Infra-structure					
10/14/2017	5:50 PM	Galesburg			X	n/a	n/a	n/a	n/a	- Thunderstorms producing excessive rainfall rates dropped 2 to 3 inches of rain across Galesburg in a short period of time - As a result, several streets were impassable due to as much as 2 feet of water flowing across them - A few cars stalled in the high water
05/25/2018	n/a	northwestern portion of county				n/a	n/a	n/a	n/a	
09/07/2018	5:35 AM	northern portion of county			X	n/a	n/a	n/a	n/a	- Numerous streets were inundated in Galesburg during the morning commute - Many rural roads were also flooded between Galesburg and Victoria through late morning
04/10/2019	n/a	northern portion of county				n/a	n/a	n/a	n/a	
04/30/2019	n/a	northern portion of county	X			n/a	n/a	n/a	n/a	Trained weather spotters reported flooding in drainage ditches, yards, and basements
05/28/2019 thru 05/29/2019	7:45 PM	countywide			X	n/a	n/a	n/a	n/a	Multiple streets were flooded in Galesburg and numerous rural roads were impassable
06/26/2019	n/a	northeastern portion of county				n/a	n/a	n/a	n/a	
09/27/2019 thru 09/28/2019	n/a	countywide				n/a	n/a	n/a	n/a	
06/19/2021	n/a	countywide				n/a	n/a	n/a	n/a	

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			Home	Business	Infra-structure					
06/25/2021	n/a	northern portion of county				n/a	n/a	n/a	n/a	
GRAND TOTAL:						**0**	**0**	**$40,600,000**	**$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.

^ Flash flood event verified in the vicinity of this location(s).

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Table 8
Extreme Cold/Wind Chill Events Reported in Knox County
1995 - 2021

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)					
01/04/1995	n/a	-5 °F	4 °F	n/a	Galesburg	n/a	n/a	n/a	
12/09/1995	n/a	-3 °F	6 °F	n/a	Galesburg	n/a	n/a	n/a	
01/19/1996	n/a	-7 °F	6 °F	n/a	Galesburg	n/a	n/a	n/a	
01/30/1996 thru 02/04/1996	n/a	-24 °F	5 °F	n/a	Galesburg	n/a	n/a	n/a	
12/25/1996	n/a	-1 °F	10 °F	n/a	Galesburg	n/a	n/a	n/a	
01/10/1997 thru 01/13/1997	n/a	-11 °F	11 °F	n/a	Galesburg	n/a	n/a	n/a	
01/16/1997 thru 01/18/1997	n/a	-11 °F	11 °F	n/a	Galesburg	n/a	n/a	n/a	
01/25/1997	n/a	-2 °F	7 °F	n/a	Galesburg	n/a	n/a	n/a	
01/28/1997	n/a	-12 °F	5 °F	n/a	Galesburg	n/a	n/a	n/a	
01/13/1998	n/a	-2 °F	8 °F	n/a	Galesburg	n/a	n/a	n/a	
12/30/1998	n/a	-2 °F	10 °F	n/a	Galesburg	n/a	n/a	n/a	
01/05/1999	5:00 AM	-18 °F	18 °F	n/a	Galesburg	n/a	n/a	n/a	
01/07/1999 thru 01/10/1999	n/a	-10 °F	13 °F	n/a	Galesburg	n/a	n/a	n/a	
01/26/2000	n/a	-5 °F	15 °F	n/a	Galesburg	n/a	n/a	n/a	
12/12/2000 thru 12/13/2000	n/a	-7 °F	15 °F	n/a	Galesburg	n/a	n/a	n/a	
12/17/2000	n/a	-3 °F	4 °F	n/a	Galesburg	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 Knox County
1995 - 2021

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)					
12/19/2000 thru 12/22/2000	n/a	-9 °F	17 °F	n/a	Galesburg	n/a	n/a	n/a	
12/24/2000 thru 12/25/2000	n/a	-10 °F	14 °F	n/a	Galesburg	n/a	n/a	n/a	
12/27/2000	n/a	-3 °F	10 °F	n/a	Galesburg	n/a	n/a	n/a	
02/02/2001	n/a	-6 °F	13 °F	n/a	Galesburg	n/a	n/a	n/a	
01/23/2003 thru 01/24/2003	n/a	-6 °F	15 °F	n/a	Galesburg	n/a	n/a	n/a	
02/07/2003	n/a	-3 °F	14 °F	n/a	Galesburg	n/a	n/a	n/a	
01/06/2004	n/a	-6 °F	15 °F	n/a	Galesburg	n/a	n/a	n/a	
01/28/2004 thru 01/31/2004	n/a	-11 °F	13 °F	n/a	Galesburg	n/a	n/a	n/a	
12/24/2004	n/a	-5 °F	14 °F	n/a	Galesburg	n/a	n/a	n/a	
12/05/2005 thru 12/09/2005	n/a	-13 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/19/2005 thru 12/20/2005	n/a	-3 °F	14 °F	n/a	Altona	n/a	n/a	n/a	
02/18/2006 thru 02/19/2006	n/a	-8 °F	8 °F	n/a	Altona Galesburg	n/a	n/a	n/a	

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Extreme Cold/Wind Chill Events Reported in Knox County
1995 - 2021

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)					
12/07/2006	n/a	-4 °F	13 °F	n/a	Altona	n/a	n/a	n/a	
02/02/2007 thru 02/10/2007	n/a	-12 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/14/2007 thru 02/15/2007	n/a	-11 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/02/2008 thru 01/03/2008	n/a	-3 °F	14 °F	n/a	Galesburg	n/a	n/a	n/a	
01/20/2008 thru 01/21/2008	n/a	-7 °F	16 °F	n/a	Galesburg	n/a	n/a	n/a	
01/25/2008	n/a	-17 °F	5 °F	n/a	Galesburg	n/a	n/a	n/a	
02/11/2008	n/a	0 °F	7 °F	n/a	Galesburg	n/a	n/a	n/a	
12/15/2008 thru 12/16/2008	n/a	2 °F	9 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/21/2008 thru 12/22/2008	n/a	-7 °F	-1 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/14/2009 thru 01/17/2009	n/a	-29 °F	16 °F	-35 °F	Altona Galesburg	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 Knox County
1995 - 2021

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)					
01/24/2009 thru 01/25/2009	n/a	-4 °F	10 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/02/2010 thru 01/10/2010	n/a	-17 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/14/2010	n/a	-3 °F	12 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/22/2011	n/a	-7 °F	12 °F	n/a	Galesburg	n/a	n/a	n/a	
02/03/2011 thru 02/04/2011	n/a	-8 °F	17 °F	n/a	Galesburg	n/a	n/a	n/a	
02/09/2011 thru 02/10/2011	n/a	-8 °F	11 °F	n/a	Galesburg	n/a	n/a	n/a	
01/22/2013 thru 01/23/2013	n/a	-3 °F	14 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/01/2013	n/a	-1 °F	12 °F	n/a	Galesburg	n/a	n/a	n/a	
12/10/2013	n/a	-6 °F	14 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/24/2013	n/a	-11 °F	6 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/31/2013	n/a	-5 °F	12 °F	n/a	Altona Galesburg	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 Knox County
1995 - 2021

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)					
01/03/2014	n/a	-10 °F	13 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/06/2014 thru 01/09/2014	n/a	-18 °F	13 °F	-45 °F	Altona Galesburg	n/a	n/a	n/a	
01/22/2014 thru 01/24/2014	n/a	-9 °F	17 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/28/2014 thru 01/29/2014	n/a	-12 °F	11 °F	-30 °F	Altona Galesburg	n/a	n/a	n/a	
02/03/2014 thru 02/04/2014	n/a	-21 °F	16 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/06/2014 thru 02/08/2014	n/a	-16 °F	17 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/10/2014 thru 02/12/2014	n/a	-20 °F	16 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/15/2014	n/a	-14 °F	17 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/28/2014	n/a	1 °F	11 °F	n/a	Altona Galesburg	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 Knox County
1995 - 2021

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)					
03/03/2014 thru 03/04/2014	n/a	-11 °F	14 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/06/2015 thru 01/08/2015	n/a	-13 °F	10 °F	-30	Altona Galesburg	n/a	n/a	n/a	
01/10/2015	n/a	-6 °F	6 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/14/2015	n/a	-12 °F	16 °F	n/a	Altona	n/a	n/a	n/a	
02/06/2015	n/a	-15 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/19/2015 thru 02/20/2015	n/a	-7 °F	10 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/23/2015 thru 02/24/2015	n/a	-6 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/27/2015 thru 02/28/2015	n/a	-18 °F	13 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
03/06/2015	n/a	-5 °F	14 °F	n/a	Altona	n/a	n/a	n/a	
01/11/2016	n/a	-2 °F	10 °F	n/a	Galesburg	n/a	n/a	n/a	
01/18/2016 thru 01/19/2016	n/a	-6 °F	8 °F	n/a	Galesburg	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 Knox County
1995 - 2021

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)					
12/19/2016	n/a	-13 °F	-1 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/07/2017	n/a	-3 °F	8 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/27/2017 thru 12/28/2017	n/a	-10 °F	9 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
12/31/2017 thru 01/06/2018	n/a	-20 °F	17 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
	n/a	-5 °F	9 °F	n/a	Galesburg	n/a	n/a	n/a	
02/06/2018 thru 02/07/2018	n/a	-9 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/21/2019	n/a	-15 °F	9 °F	n/a	Altona	n/a	n/a	n/a	
01/26/2019 thru 01/27/2019	n/a	-32 °F	15 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/30/2019 thru 02/01/2019	n/a	-21 °F	6 °F	n/a	Galesburg	n/a	n/a	n/a	
03/05/2019	n/a	-7 °F	16 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
01/20/2020	n/a	-3 °F	9 °F	n/a	Altona Galesburg	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 Knox County
1995 - 2021

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)					
02/14/2020	n/a	-16 °F	13 °F	n/a	Altona Galesburg	n/a	n/a	n/a	
02/07/2021 thru 02/17/2021	n/a	-20 °F	13 °F	-30 °F	Altona Galesburg	n/a	n/a	n/a	
GRAND TOTAL:						**0**	**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
Excessive Heat Events Reported in Knox County
1995 - 2021

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	100 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/12/1995 thru 08/13/1995	n/a	92 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/18/1995	n/a	92 °F	75 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/29/1996 thru 06/30/1996	n/a	92 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/18/1996	n/a	93 °F	78 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/05/1996 thru 08/07/1996	n/a	92 °F	73 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/18/1997	n/a	93 °F	73 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/26/1997 thru 07/27/1997	9:00 AM	94 °F	74 °F	115 °F	Galesburg	n/a	n/a	n/a	n/a	There were numerous reports of heat related injuries in most area hospitals and numerous reports of roads buckling due to the high temperatures
06/25/1998 thru 06/27/1998	n/a	94 °F	76 °F	110 °F	Galesburg	n/a	n/a	n/a	n/a	Several heat related illnesses were reported in area hospitals and several highways in the area had sections of roadway buckle due to the excessive heat
07/19/1998 thru 07/22/1998	n/a	96 °F	70 °F	n/a	Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
09/06/1998	n/a	93 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/03/1999 thru 07/05/1999	n/a	91 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/20/1999 thru 07/25/1999	10:00 AM	97 °F	68 °F	110 °F	Galesburg	n/a	n/a	n/a	n/a	
07/29/1999 thru 07/30/1999	n/a	97 °F	74 °F	110 °F	Galesburg	n/a	n/a	n/a	n/a	
08/31/2000 thru 09/02/2000	n/a	97 °F	70 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/07/2001	n/a	94 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/21/2001 thru 07/24/2001	n/a	94 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/30/2001 thru 08/01/2001	n/a	94 °F	73 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/30/2002 thru 07/05/2002	n/a	93 °F	67 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/20/2002 thru 07/21/2002	n/a	93 °F	73 °F	n/a	Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
08/04/2002	n/a	90 °F	76 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/03/2003 thru 07/07/2003	n/a	92 °F	70 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/20/2003 thru 08/21/2003	n/a	95 °F	69 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/25/2003 thru 08/27/2003	n/a	96 °F	69 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/22/2005 thru 06/27/2005	n/a	96 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/29/2005	n/a	95 °F	75 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/14/2005 thru 07/18/2005	n/a	95 °F	69 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/21/2005 thru 07/25/2005	n/a	101 °F	71 °F	115 °F	Galesburg	n/a	n/a	n/a	n/a	
08/02/2005 thru 08/04/2005	n/a	97 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/09/2005 thru 08/10/2005	n/a	97 °F	71 °F	n/a	Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
05/29/2006 thru 05/30/2006	n/a	96 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/18/2006 thru 07/18/2006	n/a	96 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/29/2006 thru 08/02/2006	n/a	97 °F	69 °F	110	Altona Galesburg	n/a	n/a	n/a	n/a	
08/05/2007 thru 08/08/2007	n/a	94 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/11/2007 thru 08/12/2007	n/a	94 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/29/2007	n/a	94 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/23/2009 thru 06/26/2009	n/a	95 °F	69 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/18/2010	n/a	91 °F	73 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/23/2010 thru 07/24/2010	n/a	91 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/13/2010 thru 08/14/2010	n/a	92 °F	70 °F	105 °F	Galesburg	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 - 2021

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)						
06/07/2011 thru 06/08/2011	n/a	93 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/02/2011	n/a	93 °F	73 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/11/2011	n/a	90 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/18/2011 thru 07/24/2011	n/a	97 °F	69 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/27/2011 thru 07/29/2011	n/a	94 °F	71 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/01/2011	n/a	96 °F	74 °F	110 °F	Altona Galesburg	n/a	n/a	n/a	n/a	
09/02/2011 thru 09/03/2011	n/a	99 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
05/28/2012	n/a	93 °F	73 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
06/29/2012 thru 06/30/2012	n/a	95 °F	68 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
07/02/2012 thru 07/08/2012	n/a	100 °F	68 °F	110 °F	Altona Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
07/16/2012 thru 07/19/2012	n/a	100 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/23/2012 thru 07/26/2012	n/a	102 °F	67 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/16/2013 thru 07/20/2013	n/a	94 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/28/2013 thru 08/31/2013	n/a	99 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
09/10/2013 thru 09/11/2013	n/a	97 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/26/2014	n/a	94 °F	71 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/18/2015	n/a	92 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
09/04/2015 thru 09/07/2015	n/a	93 °F	71 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
06/13/2017 thru 06/14/2017	n/a	94 °F	72 °F	n/a	Altona Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
07/20/2017 thru 07/22/2017	n/a	94 °F	67 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
05/25/2018 thru 05/29/2018	n/a	96 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
06/16/2018 thru 06/19/2018	n/a	94 °F	72 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/01/2018	n/a	93 °F	75 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/04/2018 thru 07/05/2018	n/a	91 °F	74 °F	n/a	Galesburg	n/a	n/a	n/a	n/a	
08/26/2018 thru 08/28/2018	n/a	91 °F	72 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
06/30/2019 thru 07/03/2019	n/a	95 °F	68 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/18/2019 thru 07/21/2019	n/a	96 °F	72 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
07/26/2020 thru 07/27/2020	n/a	93 °F	71 °F	n/a	Altona Galesburg	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 9
Excessive Heat Events Reported in Knox County
1995 - 2021

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)						
08/25/2020 thru 08/28/2020	n/a	94 °F	67 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
06/12/2021	n/a	94 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/11/2021	n/a	92 °F	74 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/25/2021	n/a	94 °F	67 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
08/28/2021 thru 08/29/2021	n/a	91 °F	70 °F	n/a	Altona Galesburg	n/a	n/a	n/a	n/a	
GRAND TOTAL:						**0**	**0**	**$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 10
Tornadoes Reported in Knox County
1950 - 2021

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	05/14/1961	7:00 PM	Maquon^ Douglas^ Williamsfield^	F 3	17.30 mi.	100 yd.	8	n/a	$2,500,000	$2,500	*Touchdown/Liftoff – Multiple Counties* touched down in Pike County west-northwest of Hull and traveled northeast through Adams, Brown, Schuyler, McDonough, Fulton, Knox and Peoria counties before lifting off near Castleton in Stark County – total length: 127.1 miles *Douglas/Maquon Area* - Destroyed 19 homes and 2 store - 5 individuals were injured on a farm near Douglas when debris from their home fell into the basement where they had sought shelter - 3 other individuals were injured in the Maquon area
2	07/21/1961	4:15 PM	St. Augustine^ Knoxville^ Victoria^	F 1	34.50 mi.	10 yd.	n/a	n/a	$250,000	n/a	*Touchdown/Liftoff – Multiple Counties* Touched down in Adams County at Quincy and traveled north-northeast through Hancock, McDonough, Warren, Knox, Henry and Bureau counties before lifting off southwest of Deer Grove in Whiteside County – total length: 147.4 miles

[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 10
Tornadoes Reported in Knox County
1950 - 2021

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
3	03/31/1967	4:30 PM	Douglas^	F 1	4.20 mi.	100 yd.	n/a	n/a	$25,000	n/a	*Touchdown/Liftoft - Two Counties* Touched down south of Middlegrove in Fulton County and traveled north-northeast lifting off southewat of Douglas in Knox County - total length: 5.2 miles
4	05/07/1967	6:15 PM	Galesburg Galesburg^ Galesburg Municipal Airport^	F 1	1.30 mi.	150 yd.	n/a	n/a	$250,000	n/a	- Damaged or destroyed 9 parked aircraft - Badly damaged several homes, outbuildings, automobiles and truck trailers
5	07/17/1968	6:40 PM	Galesburg^	F 1	0.60 mi.	127 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoft - Two Counties* Touched down north of Cameron and traveled east lifting off south of the Galesburg Municipal Airport in Knox County - total length: 3.8 miles
6	07/17/1972	6:30 PM	St. Augustine^ London Mills^ Douglas^ Yates City	F 1	16.50 mi.	10 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Multiple Counties* Touched down southeast of Greenbush in Warren County and traveled northeast through the corner of Fulton County before lifting off near Yates City in Knox County - total length: 27.2 miles
7	06/14/1974	3:08 PM	Galesburg^ Abingdon St. Augustine^	F 3	7.95 mi.	440 yd.	1	n/a	$2,000,000	n/a	*Event Narrative Provided Below*

[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 10
Tornadoes Reported in Knox County
1950 - 2021

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
Touchdown/Liftoff – Multiple Counties Touched down in Rock Island County southeast of Tayor Ridge and traveled southeast through Mercer and Warren Counties to the southwest side of Galesburg where it turned south following IL Route 41 through Abingdon before lifting off southeast of Avon in Fulton County - total length: 48.6 miles - The tornado followed an erratic skipping path through multiple counties - it remained near tree top level as it entered Knox County and touched down south of Galesburg where it moved south along IL Route 41 into Abingdon and continued south - 200 homes were damaged or destroyed in Abingdon and one individual suffered a heart attack											
8	06/20/1974	5:45 PM	Oneida^	F 1	0.00 mi.	10 yd.	n/a	n/a	$2,500	n/a	
9	06/20/1974	7:15 PM	Victoria	F 1	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	Reports of cars blown off the road
10	06/20/1974	8:00 PM	East Galesburg	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	
11	06/20/1974	8:20 PM	St. Augustine	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	
12	03/23/1975	7:18 PM	Altona^	F 2	1.00 mi.	80 yd.	2	n/a	$25,000	n/a	*Event Narrative Provided Below*
- A home was torn from its foundation and left in a pile of rubble - The elderly couple who lived in the home were seriously injuried and hospitalized with multiple contusions and abrasions - The home caught on fire after the tornado passed completing its destruction - A barn, garage, chicken house, and several outbuildings were ripped apart - Another farm northeast of the first was also damaged - shingles were torn off, and many windows were broken by flying debris, a tool shed was demolished and trees were uprooted											
13	03/04/1976	5:45 PM	Victoria	F 2	0.10 mi.	440 yd.	n/a	n/a	$25,000	n/a	*Event Narrative Provided Below*
- 8 buildings were damaged as the tornado moved through the west-central portion of the Village - Parts of several buildings were strewn across the main street through town - Power lines were downed - A large metal shed was completed destroyed - There was also minor damage to garages, car ports, and a few other residences - A roar like a freight train was heard just before the tornado struck											
14	08/25/1981	4:05 PM	Altona^	F 0	0.30 mi.	17 yd.	n/a	n/a	n/a	n/a	Damaged several trees and some property

[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 10
Tornadoes Reported in Knox County
1950 - 2021

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
15	07/06/1987	4:18 PM	Gilson^	F 1	0.10 mi.	20 yd.	n/a	n/a	$1,500	n/a	Tornado touched down at CR 19 and the Interstate 74 bridge causing damage to a corn bin
16	05/13/1995	4:18 PM	St. Augustine^ Maquon Maquon^	F 2	14.00 mi.	880 yd.	2	n/a	$1,600,000	n/a	- 12 farm structures and 14 pieces of farm equipment were destroyed - 18 homes were either damaged or destroyed - Numerous trees were blown over and a 10 acre orchard with over 1200 trees was destroyed - The tornado also took off the roof of the Maquon Fire Department - 2 people sustained minor injuries
17	05/27/1995	6:17 PM	Rio^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	
18	05/27/1995	6:46 PM	Henderson^	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	
19	04/30/1997	2:00 PM	Yates City	F 0	7.00 mi.	50 yd.	n/a	n/a	n/a	n/a	*Touchdown/Liftoff – Multiple Counties* Touched down southwest of Fairview in Fulton County and traveled northeast through Knox and Peoria Counties before lifting off northeast of Wyoming in Stark County - total length: 38.0 miles - Destroyed a grain bin and damaged several other buildings southwest of Yates City - East of Yates City it knocked down several power poles

[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 10
Tornadoes Reported in Knox County
1950 - 2021

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
20	05/18/1997	8:19 PM	Maquon^	F 0	0.10 mi.	50 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down in a field - no injuries or damage were reported
21	08/03/1997	3:58 PM	Victoria^	F 0	0.20 mi.	50 yd.	n/a	n/a	n/a	n/a	- A tornado briefly touched down on the south side of Lake Calhoun - It blew down between 25 to 30 large trees, some of which fell onto a picnic pavilion destroying it
22	06/29/1998	3:20 PM	Williamsfield^	F 1	3.00 mi.	200 yd.	1	n/a	$2,000,000	n/a	*Event Narrative Provided Below*
- A tornado touched down 3.5 miles southwest of Williamsfield - It destroyed a steel corn crib, blew down a large tree which damaged a home - Also, several windows were blown out on the home - As the tornado travelled east it caused major tree damage for a mile - It then blew a large tree onto another home and destroyed an empty silo											- Next it destroyed a barn and two outbuildings, knocked yet another tree onto a home, as well as, breaking several windows and blowing several 2x4s into the home - Further down the road, the roof and east walls of two homes were destroyed - Then for the last half of a mile, ten power poles were blown down, as well as, numerous trees and a barn sustained moderate damage - One woman sustained minor injuries from flying glass
23	04/22/1999	9:27 PM	Dahinda^	F 0	0.20 mi.	10 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down in a field - no injuries or damage were reported
24	09/11/2000	8:45 PM	St. Augustine^	F 0	0.50 mi.	70 yd.	n/a	n/a	n/a	n/a	- A small tornado touched down 2.5 miles northeast of St. Augustine - It moved through some corn fields, flattening them, before lifting 3 miles east of St. Augustine - No damage occurred to any structures, trees or power lines and noo 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 10
Tornadoes Reported in Knox County
1950 - 2021

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	04/30/2003	7:30 PM	Victoria^	F 0	1.00 mi.	10 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down in a field - no damage or injuries were reported
26	04/20/2004	4:40 PM	Victoria^ Altona^	F 0	2.80 mi.	30 yd.	n/a	n/a	n/a	n/a	- A tornado touched down 3 miles northwest of Victoria and traveled to the northeast - As it reached the intersection of 2500N and 1700E, it destroyed one farm building and damaged two other farm buildings - Several trees and power lines were blown down as well
27	06/08/2005	12:58 PM	Galesburg	F 0	0.10 mi.	10 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down and tore part of an outbuilding roof
28	06/05/2010	6:34 PM	Abingdon^	EF 0	0.09 mi.	10 yd.	n/a	n/a	n/a	$2,000	A tornado briefly touched down in a field causing minor crop damage; however, no structures were impacted
29	06/05/2010	6:56 PM	Douglas^ Yates City^	EF 2	5.71 mi.	50 yd.	n/a	n/a	$420,000	$50,000	*Event Narrative Provided Below*
Touchdown/Liftoft - Two Counties Touched down north of Douglas in Knox County and traveled east-southeast lifting off east of Elmwoood in Peoria County - total length: 7.81 miles											- Large tree limbs were snapped and crops were scoured in numerous places along this path - A house had The roof torn off and much of The upper level of The structure severely damaged - The attached garage was also destroyed - In addition, A large garage was destroyed, and seven outbuildings were severely damaged
30	05/23/2017	7:05 PM	Maquon^	EF 0	0.15 mi.	10 yd.	n/a	n/a	n/a	n/a	A landspout tornado briefly touched down in an open field - no damage occurred
31	05/27/2019	2:15 PM	Dahinda^	EF 0	0.08 mi.	10 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down in an open field 1- 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 10
Tornadoes Reported in Knox County
1950 - 2021

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
32	03/28/2020	4:39 PM	Oneida^	EF U	0.12 mi.	10 yd.	n/a	n/a	n/a	n/a	A tornado briefly touched down in an open field - no damage was observed
33	06/18/2021	10:50 AM	Rapatee^	EF 1	10.26 mi.	250 yd.	n/a	n/a	$150,000	$100,000	- A tornado touched down 3.5 miles east-southeast of Abingdon - The tornado tracked southeastward, flattening crops and knocking down numerous trees along its path - Significant damage occurred to several farm outbuildings along County Road 850 East north of County Highway 39, with debris being strewn southeastward for over a half mile
GRAND TOTAL:							**14**	**0**	**$9,249,000**	**$154,500**	

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, Weather Forecast Office Lincoln, Illinois, Tornado Climatology for Central and Southeast Illinois, Knox County.
NOAA, National Weather Service, Storm Prediction Center, SVRGIS, Tornadoes (1950-2017) Database.

[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 11
Drought Events Reported in Knox County
1980 - 2021

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	June	n/a						38.2 %	10.5 %	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						48.8 %	18.8 %	n/a	n/a	Approximately half of all Illinois counties were impacted by drought conditions
2005-2006	May	19	X	X	X	X		36.6 %	18.2	Yes	n/a	
2011	August	3	X	X				---	---	Yes	n/a	
2012-2013	June	9	X	X	X	X		5.1 %	9.7 %	No	$2,700,000	Total damage to corn crop was estimated at $2.7 million
2013	August	8	X	X	X			---	---	No	n/a	
GRAND TOTAL:											**$2,700,000**	

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.

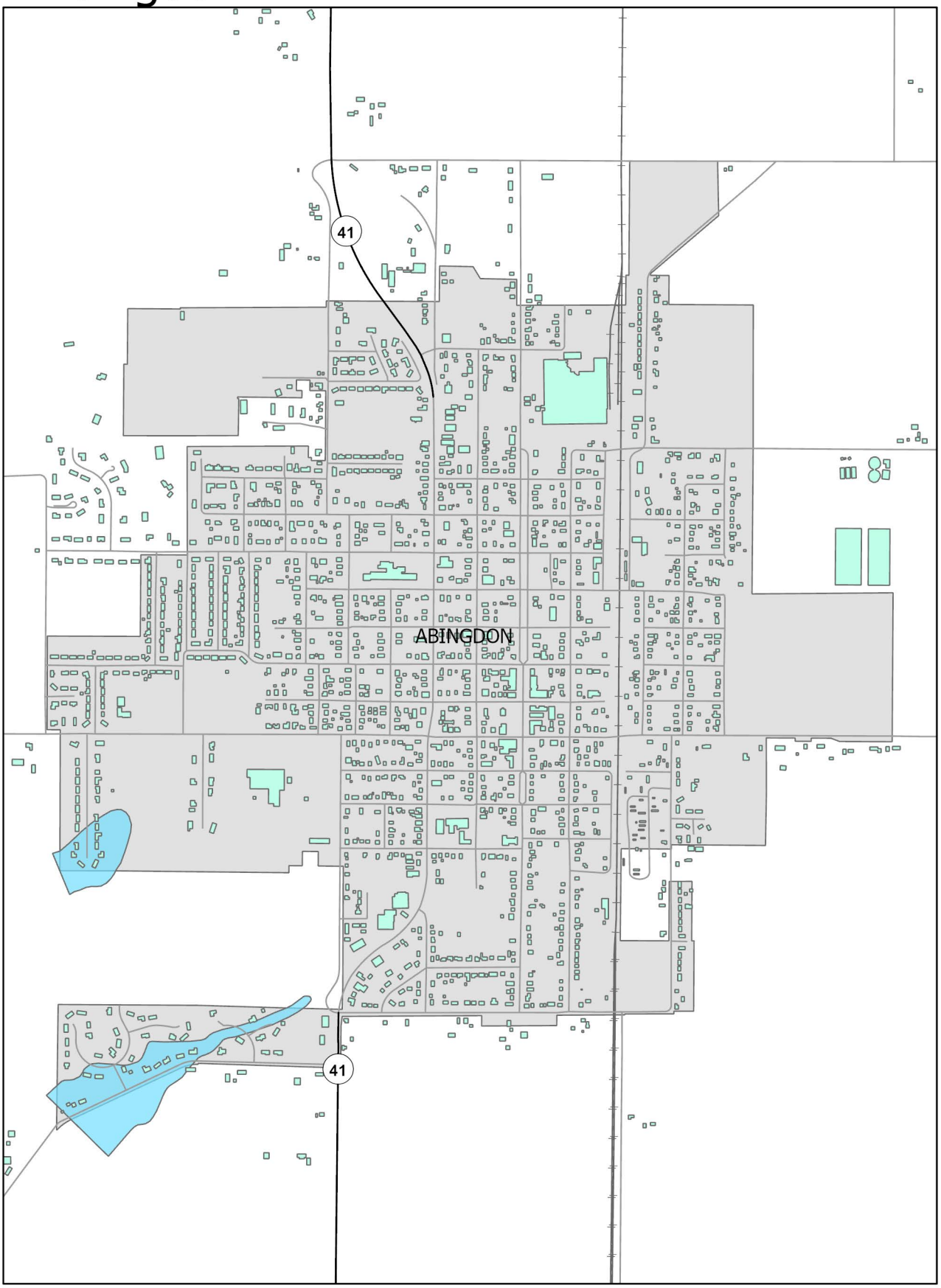
[1] An "X" identifies the level of drought intensity reached by at least a portion of the County during the event, if available.

US Drought Monitor – Drought Intensity Category Descriptions

D0	abnormally dry	D3	extreme drought
D1	moderate drought	D4	exceptional drought
D2	severe drought		

APPENDIX K

Abingdon



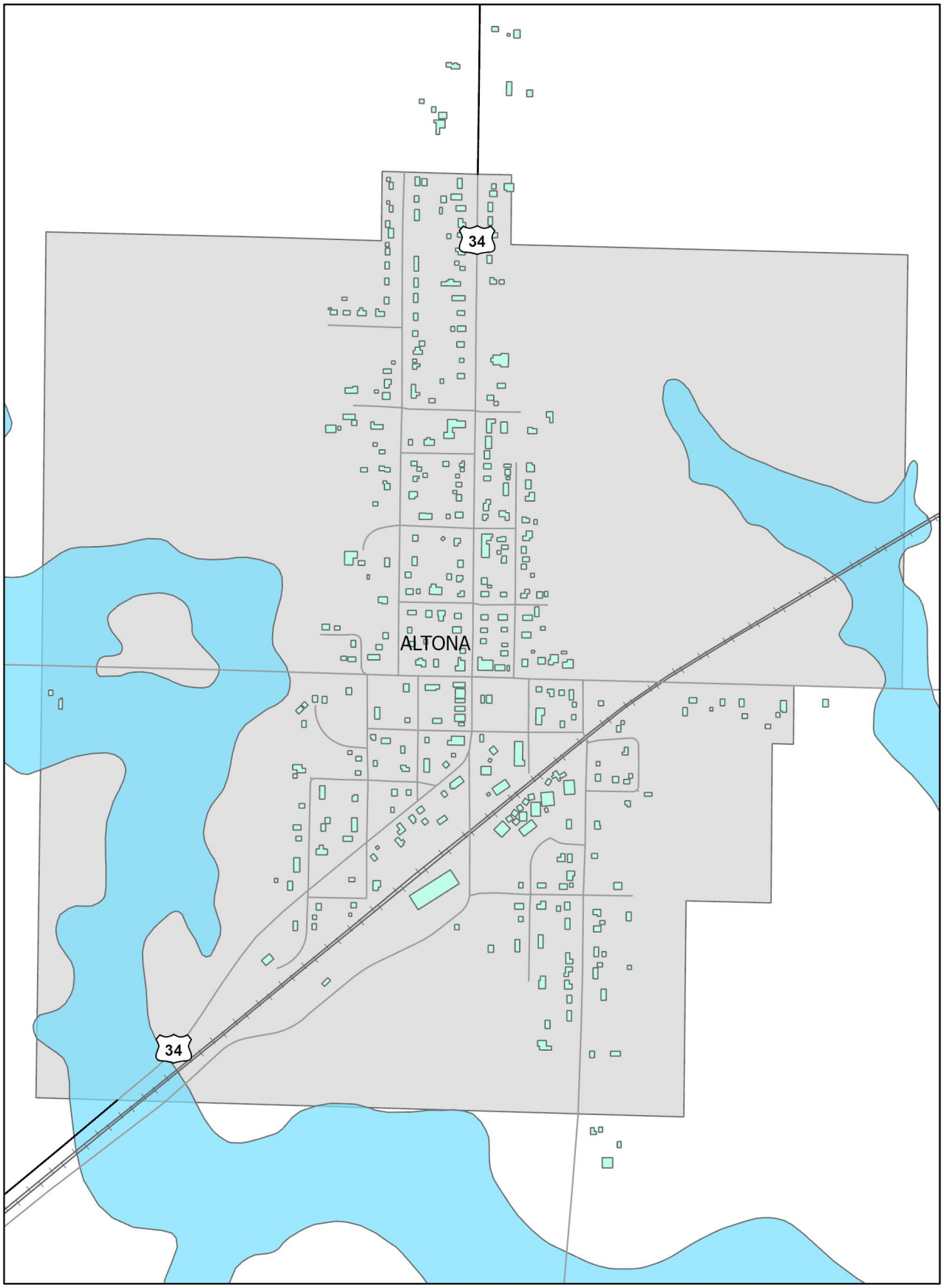
N

100 Year Flood
Municipal Boundaries
Building Footprints
US/State Routes
Roadways
Railroads

0 0.25 0.5 Miles

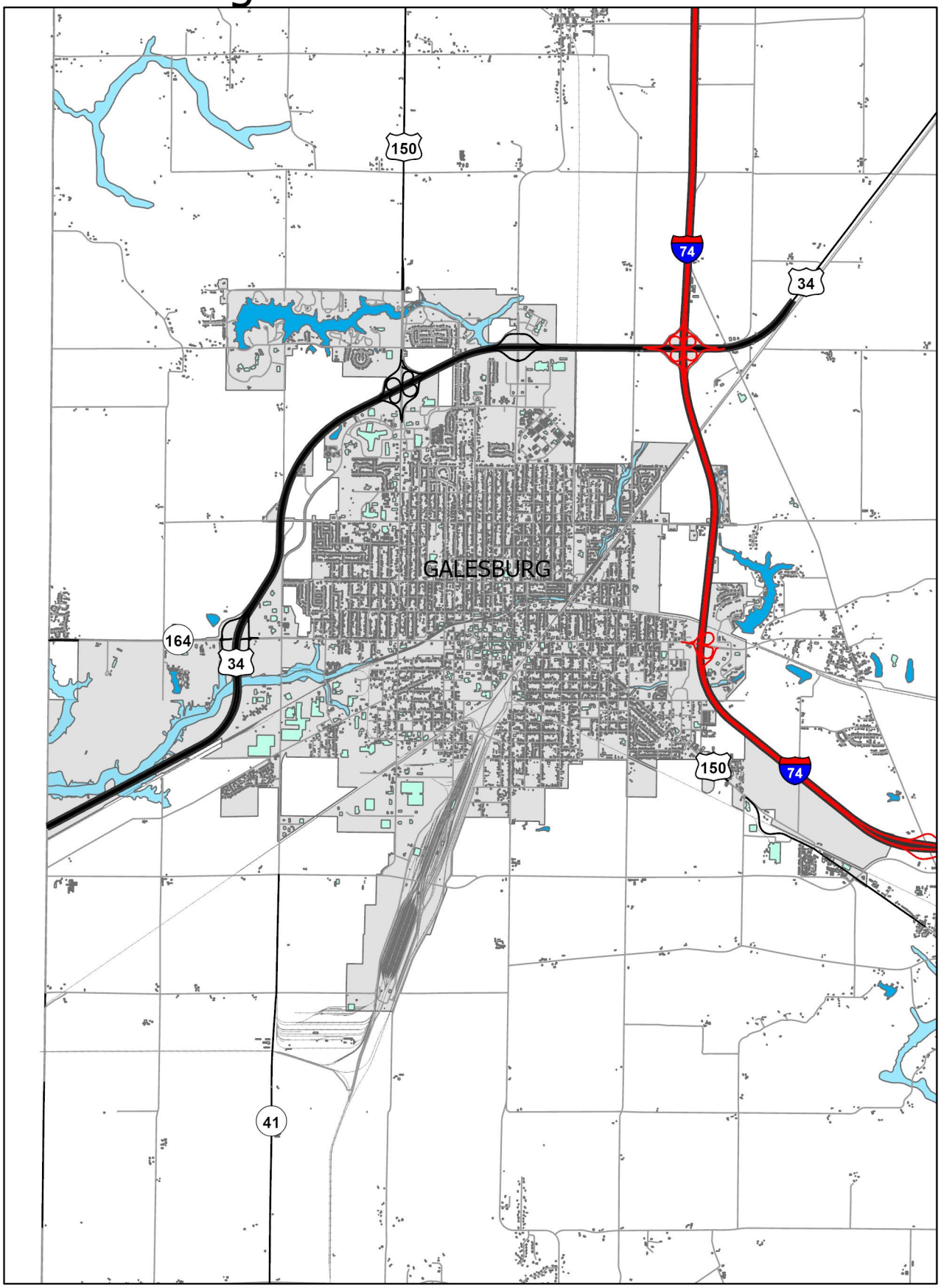
Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Altona



Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Galesburg



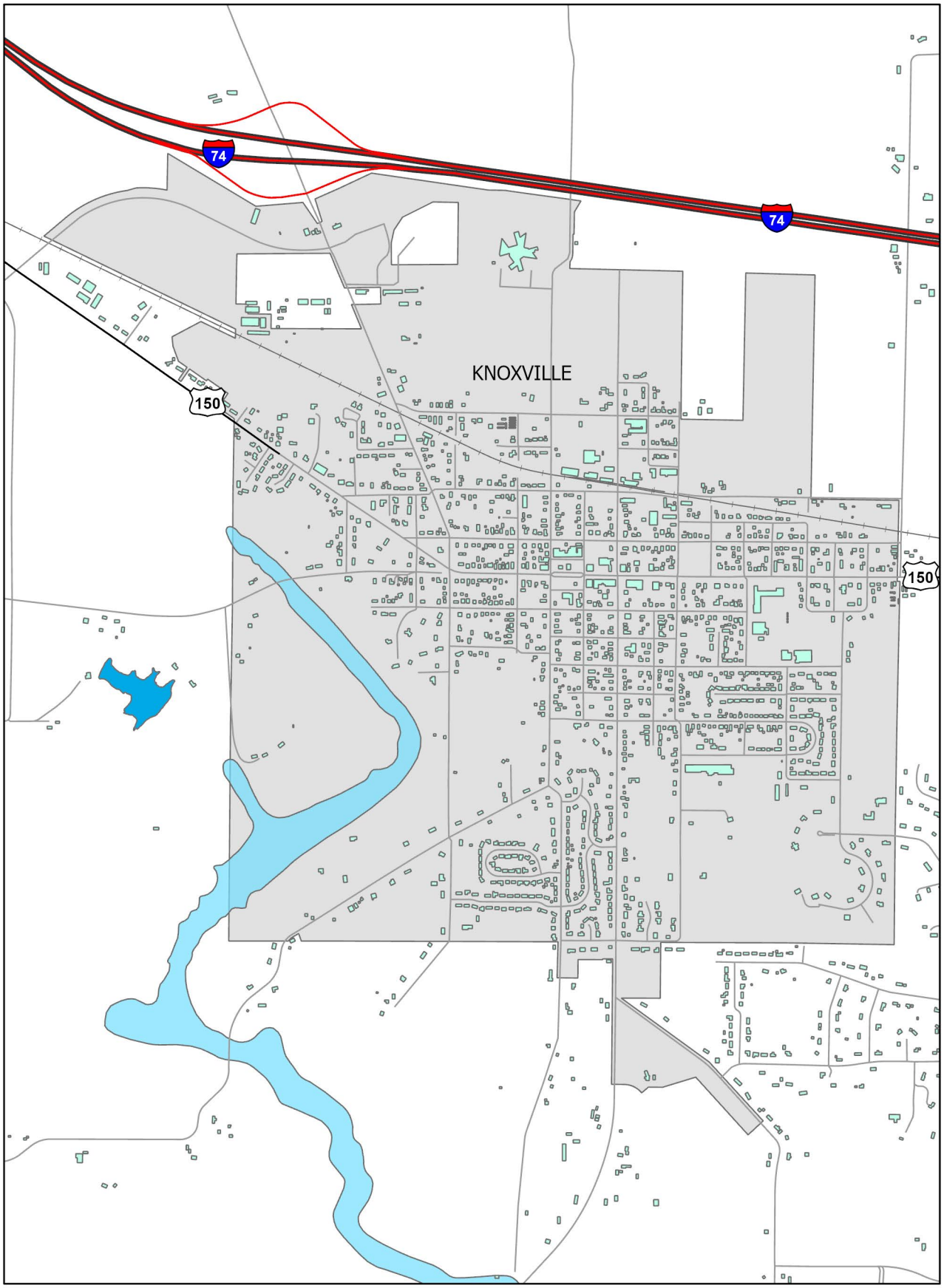
N

100 Year Flood
Municipal Boundaries
Building Footprints
Lakes
Interstates
US/State Routes
Roadways
Railroads

0 1 2 4 Miles

Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Knoxville



N

- 100 Year Flood
- Municipal Boundaries
- Building Footprints
- Lakes
- Interstates
- US/State Routes
- Roadways
- Railroads

0 0.25 0.5 1 Miles

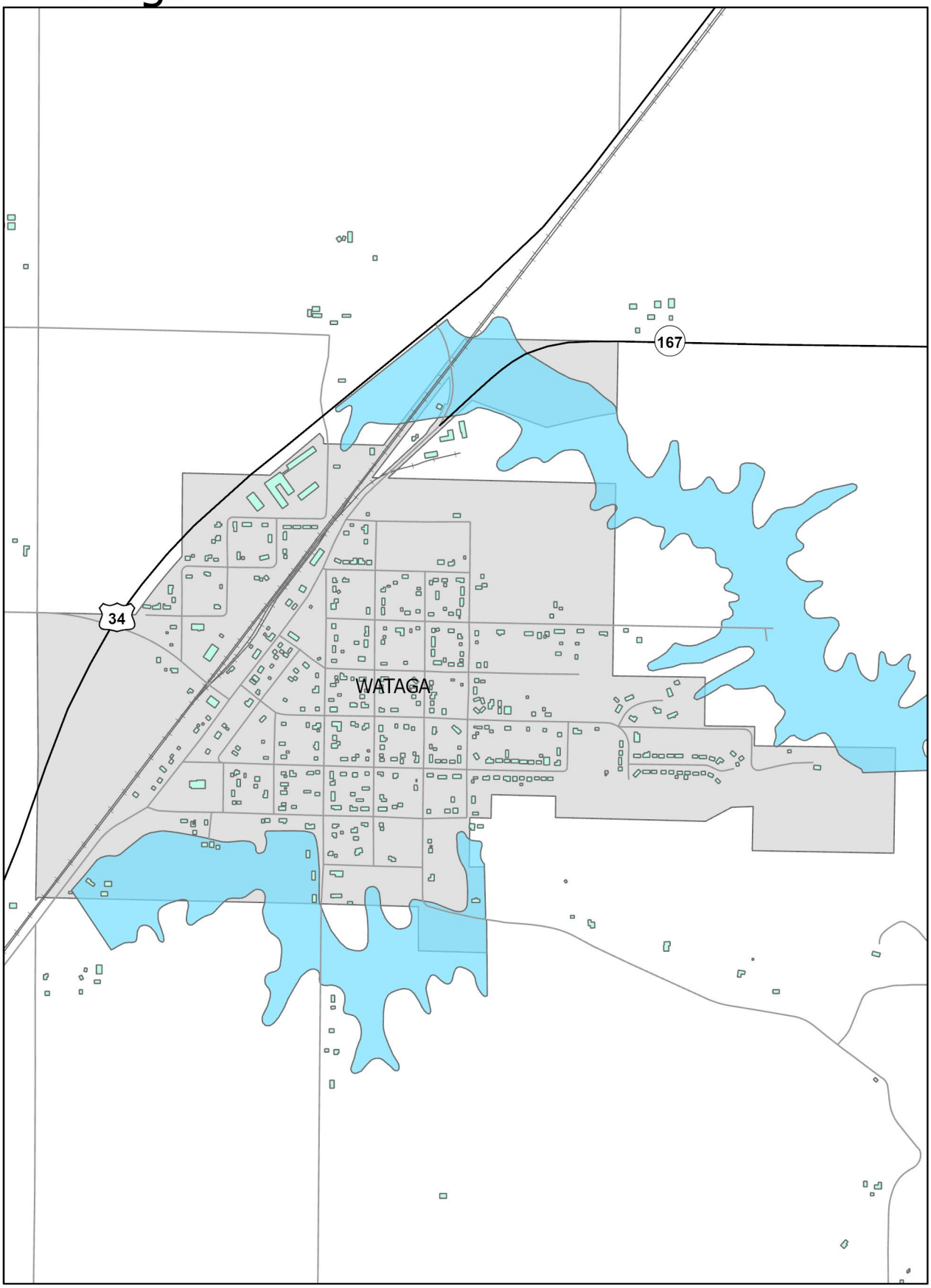
Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Maquon



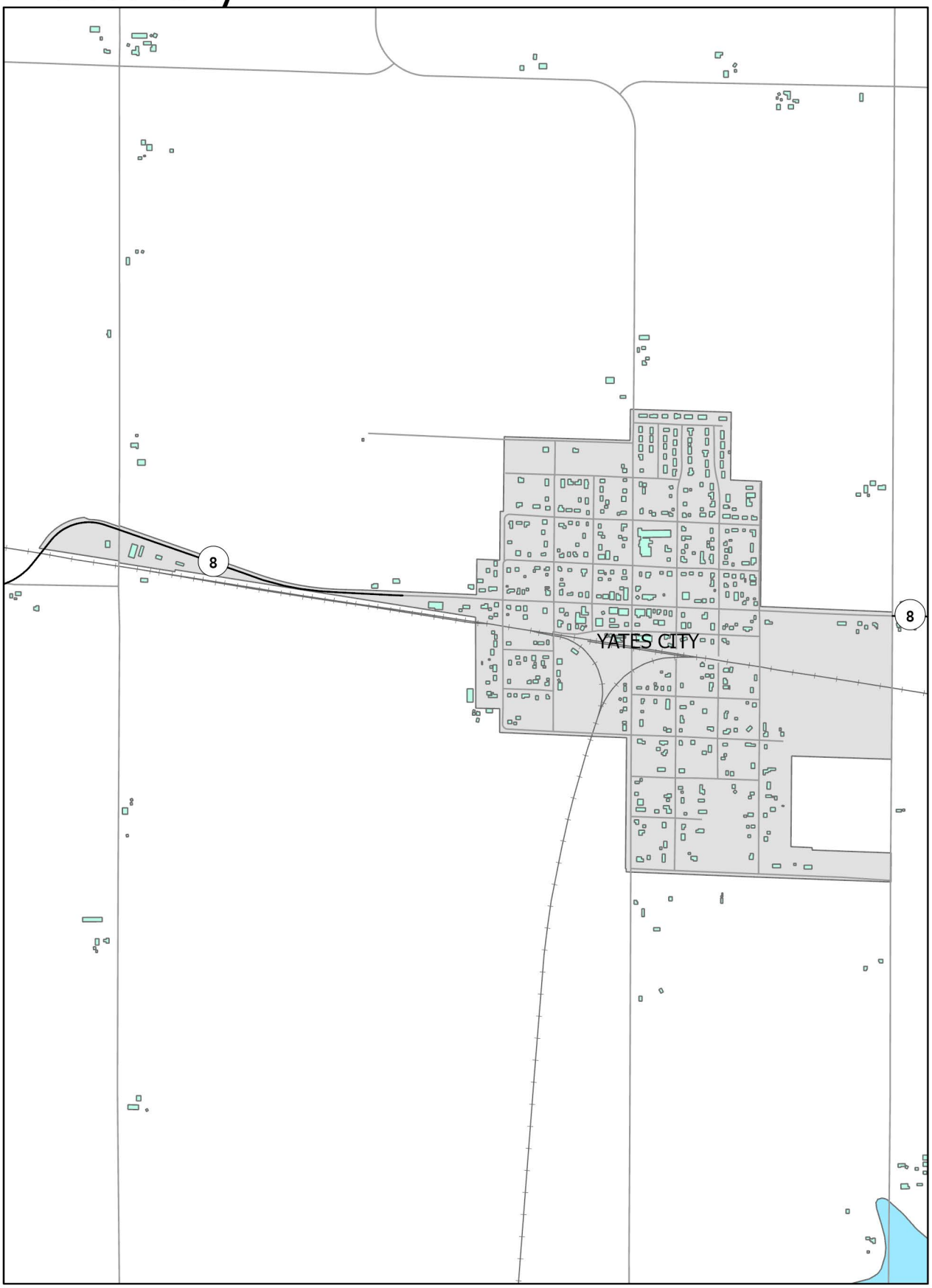
Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Wataga



Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Yates City



Map Created December 2022 in ArcGIS Pro by Callie Smith at American Environmental Corporation
Sources: Iowa DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

APPENDIX L

DIRECTORY OF COAL MINES IN ILLINOIS

Knox
County

This directory accompanies the Illinois Coal Mines map or maps for this County.

August 2019

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 76 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

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DIRECTORY OF COAL MINES FOR KNOX COUNTY, ILLINOIS (August 2019)

ISGS INDEX	COMPANY NAME	MINE NAME	MINE NO.	MINE TYPE	METHOD	YEARS OPERATED	SEAM MINED	COUNTY	LOCATION TWP	RGE	SEC
110	FARMINGTON COAL CO.	NICKEL PLATE		SHAFT	MRP	1888-1891	SPRINGFIELD	FULTON	8N	4E	2
110	CLAIRE COAL CO.	CLAIRE	2	SHAFT	MRP	1891-1895	SPRINGFIELD	FULTON	8N	4E	2
110	FARMINGTON COAL CO.	NICKEL PLATE		SHAFT	MRP	1895-1908	SPRINGFIELD	FULTON	8N	4E	2
110	ALDEN COAL CO.	ALDEN	5	SHAFT	MRP	1908-1927	SPRINGFIELD	FULTON	8N	4E	2
110	ILLINOIS COLLIERY CO.	ALDEN	5	SHAFT	MRP	1928-1952	SPRINGFIELD	FULTON	8N	4E	2
111	ALDEN COAL CO.	ALDEN	8	SHAFT	MRP	1914-1925	SPRINGFIELD	FULTON	8N	4E	3
111	KICKAPOO COAL MNG. CO.	KICKAPOO	8	SHAFT	MRP	1926-1926	SPRINGFIELD	FULTON	8N	4E	3
111	DORTHEL COAL CO.	DORTHEL	2	SHAFT	MRP	1927-1936	SPRINGFIELD	FULTON	8N	4E	3
235	ADCOCK, C L MINING C	ADCOCK	1	SHAFT	RPB	1919-1925	COLCHESTER	KNOX	12N	1E	21
236	REED & PENDERGAST	R & P		SHAFT	RP	1894-1904	HOUCHIN CREEK	KNOX	12N	1E	21
236	REED & PENDERGAST	R & P		SHAFT		1895-1926	HOUCHIN CREEK	KNOX	12N	1E	21
236	PENDERGAST BROS	SOPERVILLE	1	SHAFT		1904-1913	HOUCHIN CREEK	KNOX	12N	1E	21
236	PENDERGAST,JAMES	PENDERGAST		SHAFT		1925-1926	HOUCHIN CREEK	KNOX	12N	1E	21
269	GALVA C C	GALVA		SHAFT	RP*	1902-1913	HERRIN	KNOX	12N	2E	22
270	WAHLBERG,ALBERT	WAHLBERG		SHAFT	RPB	1904-1915	COLCHESTER	KNOX	11N	2E	32
271	YOUNG,JOHN	YOUNG		DRIFT		1909-1910	COLCHESTER	KNOX	10N	1E	36
355	GALESBURG MNG CO	GALESBURG	1	SHAFT	RPP	1926-1938	ROCK ISLAND	KNOX	11N	2E	16
526	DIEHLE MINE	DIEHLE		SHAFT		1932-1933	HERRIN	KNOX	12N	4E	29
621	MIDLAND ELECTRIC COAL CO.	MIDDLE GROVE	2	STRIP		1933-1963	HERRIN	FULTON	8N	3E	2
621	MIDLAND ELECTRIC COAL CO.	MIDDLE GROVE	2	STRIP		1933-1960	SPRINGFIELD	FULTON	8N	3E	2
621	MIDLAND ELECTRIC COAL CO.	MIDDLE GROVE	2	STRIP		1933-1960	SPRINGFIELD	KNOX	9N	3E	33
621	MIDLAND ELECTRIC COAL CO.	MIDDLE GROVE	85	STRIP		1963-1967	HERRIN	KNOX	9N	4E	24
621	PEABODY COAL CO.	MIDDLE GROVE		STRIP		1968-1968	HERRIN	FULTON	8N	3E	2
632	KNOXVILLE MNG CO	KNOXVILLE		SHAFT	RPP	1929-1946	ROCK ISLAND	KNOX	11N	2E	23
643	LITTLE JOHN C C	LITTLE JOHN		STRIP		1936-1954	HERRIN	KNOX	12N	3E	36
643	STONEFORT CORP	LITTLE JOHN		STRIP		1954-1960	HERRIN	KNOX	12N	3E	36
685	MORSE (J. L.)	MORSE		UG		1928-1932	SPRINGFIELD	FULTON	9N	3E	35
685	MORSE (RAYMOND L.)	MORSE		UG		1933-1933	SPRINGFIELD	FULTON	9N	3E	35

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685	MORSE (J. F.)	MORSE		UG		1934-1937	SPRINGFIELD	KNOX	9N	3E	35
685	SIXTH VEIN COAL CO.	MORSE		UG		1938-1939	SPRINGFIELD	KNOX	9N	3E	35
753	MILAN,T H (MARLIN)	MILAN		SHAFT	RP	1907-1927	HOUCHIN CREEK	KNOX	12N	1E	21
862	MIDLAND COLLIERIES,INC	MECCO	5	STRIP		1956-1963	HERRIN	KNOX	12N	4E	22
862	MIDLAND ELECTRIC C C	MECCO	5	STRIP		1963-1968	HERRIN	KNOX	12N	4E	22
862	PEABODY C C	MECCO		STRIP		1968-1970	HERRIN	KNOX	12N	4E	22
862	MIDLAND C C,DIV.OF ASARCO	MECCO		STRIP		1970-1980	HERRIN	KNOX	12N	4E	22
961	MIDLAND COAL CO.	RAPATEE		STRIP		1976-1988	SPRINGFIELD	FULTON	8N	3E	1
961	MIDLAND COAL CO.	RAPATEE		STRIP		1976-1988	SPRINGFIELD	FULTON	8N	3E	1
961	MIDSTATE COAL CO.	RAPATEE		STRIP		1989-1996	HERRIN	KNOX	9N	4E	23
961	MIDSTATE COAL CO.	RAPATEE		STRIP		1989-1996	SPRINGFIELD	KNOX	9N	4E	32
1024	SILVER CREEK COAL CO.	BEAR	1	STRIP		1999-2000	HERRIN	KNOX	9N	4E	27
2536	SALMONDS,H L	SALMONDS		DRIFT		1935-1938		KNOX	9N	2E	17
2537	MELTON (WILLIAM) & HUBBLE	MELTON & HUBBLE		SLOPE	MRP	1925-1925	SPRINGFIELD	KNOX	9N	3E	36
2537	HUBBLE (JAKE)	HUBBLE		SLOPE	MRP	1926-1928	SPRINGFIELD	KNOX	9N	3E	36
2537	HUBBLE & MORSE	HUBBLE & MORSE		SLOPE	MRP	1929-1929	SPRINGFIELD	KNOX	9N	3E	36
2537	HUBBELL (JAKE)	HUBBELL		SLOPE	MRP	1930-1936	SPRINGFIELD	KNOX	9N	3E	36
2537	HUBBELL COAL CO.	HUBBELL		SLOPE	MRP	1937-1939	SPRINGFIELD	KNOX	9N	3E	36
2537	WALKER BROTHERS	WALKER		SLOPE	MRP	1940-1942	SPRINGFIELD	KNOX	9N	3E	36
2538	KLING (FRANK)	KLING		DRIFT		1938-1938	SPRINGFIELD	KNOX	9N	3E	35
2538	MUNDWILER (HARLEY T.)	MUNDWILER		DRIFT		1939-1940	SPRINGFIELD	KNOX	9N	3E	35
2539	LITTLE COAL CO.	LITTLE		SLOPE	MRP	1936-1954	SPRINGFIELD	KNOX	9N	3E	35
2540	MERTZ (WILLIAM)	MERTZ		SLOPE	MRP	1919-1920	SPRINGFIELD	KNOX	9N	3E	35
2540	MEETZ (WILLIAM) & BATES	MEETZ & BATES		SLOPE	MRP	1920-1922	SPRINGFIELD	KNOX	9N	3E	35
2540	MERTZ (WILLIAM)	MERTZ		SLOPE	MRP	1922-1945	SPRINGFIELD	KNOX	9N	3E	35
2541	MORSE (J. B.)	MORSE		SLOPE	MRP	1927-1929	SPRINGFIELD	KNOX	9N	3E	35
2541	DAVIDSON, MORSE, BIDE&KEEMER	DAVIDSON, MORSE, et al.		SLOPE	MRP	1930-1930	SPRINGFIELD	KNOX	9N	3E	35
2541	DAVISON & MORSE	DAVISON & MORSE		SLOPE	MRP	1931-1931	SPRINGFIELD	KNOX	9N	3E	35
2541	MORSE (CLYDE)	MORSE		SLOPE	MRP	1932-1932	SPRINGFIELD	KNOX	9N	3E	35

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ISGS INDEX	COMPANY NAME	MINE NAME	MINE NO.	MINE TYPE	METHOD	YEARS OPERATED	SEAM MINED	COUNTY	LOCATION TWP	RGE	SEC
2541	MORSE (HOMER)	MORSE	1	SLOPE	MRP	1933-1933	SPRINGFIELD	KNOX	9N	3E	35
2541	MORSE (HOMER)	MORSE	2	SLOPE	MRP	1934-1936	SPRINGFIELD	KNOX	9N	3E	35
2541	DAVISON (AARON)	DAVISON		SLOPE	MRP	1936-1940	SPRINGFIELD	KNOX	9N	3E	35
2541	CHESTER (J.) & COOLEY (GEO.)	CHESTER & COOLEY		SLOPE	MRP	1941-1941	SPRINGFIELD	KNOX	9N	3E	35
2541	MORSE (HOMER)	MORSE		SLOPE	MRP	1941-1941	SPRINGFIELD	KNOX	9N	3E	35
2541	COOLEY COAL CO.	COOLEY		SLOPE	MRP	1942-1942	SPRINGFIELD	KNOX	9N	3E	35
2541	MORSE COAL CO.	MORSE		SLOPE	MRP	1942-1942	SPRINGFIELD	KNOX	9N	3E	35
2542	LILLIE CREEK COAL CO.	LILLIE CREEK		SLOPE	MRP	1938-1940	SPRINGFIELD	KNOX	9N	3E	35
2542	SCHATZ (ORVILLE)	LILLIE CREEK		SLOPE	MRP	1941-1943	SPRINGFIELD	KNOX	9N	3E	35
2543	DEHM (CHARLES H.)	DEHM		DRIFT		1935-1936	SPRINGFIELD	KNOX	9N	3E	36
2543	MORSE (HOMER)	MORSE		DRIFT		1937-1937	SPRINGFIELD	KNOX	9N	3E	36
2543	MORSE & BENNETT	MORSE & BENNETT		DRIFT		1938-1938	SPRINGFIELD	KNOX	9N	3E	36
2543	BENNETT (CHESTER)	BENNETT		DRIFT		1939-1939	SPRINGFIELD	KNOX	9N	3E	36
2545	BOWMAN (GEORGE)	BOWMAN		SHAFT	RP	1884-1892	HERRIN	KNOX	9N	4E	26
2545	BOWMAN BROTHERS	BOWMAN		SHAFT	RP	1892-1905	HERRIN	KNOX	9N	4E	26
2545	BOWMAN (G. W.)	BOWMAN		SHAFT	RP	1905-1906	HERRIN	KNOX	9N	4E	26
2546	PURVIANCE (L. S.)	PURVIANCE		SLOPE	MRP	1934-1936	SPRINGFIELD	KNOX	9N	4E	31
2546	BAKER (A. G.)	PURVIANCE		SLOPE	MRP	1937-1938	SPRINGFIELD	KNOX	9N	4E	31
2546	PURVIANCE (L. S.)	PURVIANCE		SLOPE	MRP	1938-1939	SPRINGFIELD	KNOX	9N	4E	31
2546	MITCHELL (WILLIAM)	PURVIANCE		SLOPE	MRP	1939-1943	SPRINGFIELD	KNOX	9N	4E	31
2547	LEWIS,ALBERT	LEWIS		SLOPE	RP	1922-1927		KNOX	10N	2E	16
2548	MAQUON COAL & GRAVEL CO	MAQUON		STRIP		1939-1941	COLCHESTER	KNOX	10N	3E	28
2548	BANDY,L K	BANDY		STRIP		1941-1943	COLCHESTER	KNOX	10N	3E	28
2549	GALESBURG PR.BRICK & TILE			SHAFT		1885-1894	COLCHESTER	KNOX	11N	2E	
2550	THERMAL C C	THERMAL		SHAFT	RPP	1936-1947	ROCK ISLAND	KNOX	11N	2E	25
2550	KNOXVILLE MNG CO	KNOXVILLE	2	SHAFT		1947-1955	ROCK ISLAND	KNOX	11N	2E	25
2551	BATES MINE	BATES				1921-1923		KNOX	11N	3E	2
2552	GLADFELTER,CHARLES & CO	GLADFELTER		SLOPE		1907-1917	HERRIN	KNOX	11N	4E	3
2552	WALSH,J E	WALSH		SLOPE		1907-1919	HERRIN	KNOX	11N	4E	3

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2553	WATAGA C C	WATAGA		SHAFT		1936-1942	HERRIN	KNOX	12N	2E	22
2553	WHITE,J M	WHITE		SHAFT		1936-1942	HERRIN	KNOX	12N	2E	22
2553	LINDLEEK,OLAF	LINDLEEK		SHAFT		1936-1942	HERRIN	KNOX	12N	2E	22
2554	CHARNOCK,WM	CHARNOCK		SLOPE		1926-1938	HERRIN	KNOX	12N	3E	29
2554	CHARNOCK & WESTFALL	C & W		SLOPE		1938-1940	HERRIN	KNOX	12N	3E	29
2555	STEGALL,LEONARD	STEGALL		SLOPE		1934-1941	HERRIN	KNOX	12N	3E	30
2556	STROM,ERIC	STROM		DRIFT		1904-1915	HERRIN	KNOX	12N	3E	35
2556	HORKSTROM,ED	HORKSTROM		DRIFT		1913-1914	HERRIN	KNOX	12N	3E	35
2557	ANDERSON,N C	ANDERSON		DRIFT		1902-1918	COLCHESTER	KNOX	12N	4E	16
2558	KING,H C C	KING		UG		1936-1938	SPRINGFIELD	KNOX	12N	4E	17
2559	STROM,ERIC	STROM				1921-1940	HERRIN	KNOX	12N	4E	19
2560	ENDERS,GEORGE	ENDERS		SHAFT		1935-1937	HERRIN	KNOX	12N	4E	20
2560	LARNER,ED	LARNER		SHAFT		1937-1940	HERRIN	KNOX	12N	4E	20
2561	SALMONS C C	SALMONS		SHAFT		1936-1941	HERRIN	KNOX	12N	4E	28
2561	STOUT & GOFF	STOUT & GOFF		SHAFT		1936-1941	HERRIN	KNOX	12N	4E	28
2561	FOREMAN & YELM C C	F & Y		SHAFT		1940-1941	HERRIN	KNOX	12N	4E	28
2562	MURPHEY,CHAS	MURPHEY				1936-1944		KNOX	12N	4E	33
2562	SECHRIST,GEORGE	SECHRIST				1936-1944		KNOX	12N	4E	33
2563	DIMMICK,C R	DIMMICK		SLOPE		1934-1937	HERRIN	KNOX	12N	4E	33
2564	GALE,J W	GALE		STRIP		1935-1937	HERRIN	KNOX	12N	4E	33
5008				SHAFT				KNOX	12N	1E	21
5192				SHAFT				KNOX	12N	1E	21
5982								KNOX	9N	1E	1
5983								KNOX	9N	1E	1
5984								KNOX	9N	1E	16

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ISGS INDEX	COMPANY NAME	MINE NAME	MINE NO.	MINE TYPE	METHOD	YEARS OPERATED	SEAM MINED	COUNTY	LOCATION TWP	RGE	SEC
5985								KNOX	9N	1E	17
5986								KNOX	9N	2E	4
5987								KNOX	9N	2E	5
5988								KNOX	9N	2E	6
5989								KNOX	9N	2E	6
5990								KNOX	9N	2E	8
5991		DEWITT SMITH		DRIFT	RPB	1918-1942		KNOX	9N	3E	35
5992	FOSTER (D.)	FOSTER		SLOPE	MRP	1917-1919	SPRINGFIELD	KNOX	9N	3E	35
5992	FOSTER (LAWRENCE L.)	FOSTER		SLOPE	MRP	1919-1925	SPRINGFIELD	KNOX	9N	3E	35
5992	FOSTER (L. L.) & HALFORD	FOSTER & HALFORD		SLOPE	MRP	1925-1925	SPRINGFIELD	KNOX	9N	3E	35
5992	FOSTER (L. L.)	FOSTER		SLOPE	MRP	1926-1926	SPRINGFIELD	KNOX	9N	3E	35
5992	FOSTER (SORENCE)	FOSTER		SLOPE	MRP	1927-1929	SPRINGFIELD	KNOX	9N	3E	35
5993				DRIFT			SPRINGFIELD	KNOX	9N	3E	35
5994	BYBIE & PAUL	BYBIE & PAUL		DRIFT	RP	1909-1911	SPRINGFIELD	KNOX	9N	3E	35
5994	PAUL (JOHN)	PAUL		DRIFT	RP	1911-1912	SPRINGFIELD	KNOX	9N	3E	35
5995	GRAHAM (GAVIN)	GRAHAM		UG		1934-1936	SPRINGFIELD	KNOX	9N	3E	35
5996	SLOAN, M. B.					1904-1904	SPRINGFIELD	KNOX	9N	4E	3
5997	NORWELL MINE							KNOX	9N	4E	9
5998	YATES CITY COAL CO.	YATES			LW	-1908	COLCHESTER	KNOX	9N	4E	12
5998	YATES CITY COAL CO.	YATES			RP	-1908	SPRINGFIELD	KNOX	9N	4E	12
5999	BENNETT MINE							KNOX	9N	4E	12
6000	ADDIS MINE			STRIP				KNOX	9N	4E	18
6001								KNOX	9N	4E	24
6002	ANDERSON (NEWTON)	ANDERSON		DRIFT	RP	1911-1914	SPRINGFIELD	KNOX	9N	4E	31
6002	FOLKENROTH (CHARLES)	FOLKENROTH		DRIFT	RP	1914-1917	SPRINGFIELD	KNOX	9N	4E	31

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6003								KNOX	10N	1E	16
6004								KNOX	10N	1E	25
6005								KNOX	10N	1E	25
6006								KNOX	10N	1E	25
6007								KNOX	10N	1E	26
6008				UG	RP			KNOX	10N	1E	35
6009								KNOX	10N	1E	35
6010								KNOX	10N	1E	35
6011								KNOX	10N	1E	36
6012								KNOX	10N	2E	4
6013								KNOX	10N	2E	9
6014								KNOX	10N	2E	9
6015								KNOX	10N	2E	9
6016								KNOX	10N	2E	27
6017								KNOX	10N	2E	27
6018								KNOX	10N	2E	28
6019								KNOX	10N	2E	29
6020								KNOX	10N	2E	29
6021								KNOX	10N	2E	34
6022								KNOX	10N	2E	34
6023								KNOX	11N	1E	25
6024								KNOX	11N	2E	14
6025								KNOX	11N	2E	31

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6026								KNOX	11N	2E	31
6027								KNOX	11N	2E	31
6028								KNOX	11N	2E	31
6029								KNOX	11N	2E	31
6030								KNOX	11N	2E	31
6031								KNOX	11N	2E	31
6032								KNOX	12N	1E	16
6033								KNOX	12N	1E	20
6034								KNOX	12N	2E	14
6035								KNOX	12N	2E	21
6036								KNOX	12N	2E	21
6037								KNOX	12N	2E	22
6038								KNOX	12N	2E	22
6039								KNOX	12N	2E	22
6040								KNOX	12N	2E	23
6041								KNOX	12N	2E	24
6042	NEDINO, L & SON					-1916		KNOX	12N	3E	24
6043	ENDERS, GEORGE							KNOX	12N	4E	20
6044				DRIFT			COLCHESTER	KNOX	9N	2E	26
6045				SHAFT			SPRINGFIELD	KNOX	9N	4E	19
6046	BOWMAN (W. H.) COAL CO.	BOWMAN		SHAFT	RPP	1916-1926	SPRINGFIELD	KNOX	9N	4E	23
6046	BOWMAN (OTIS) COAL CO.	BOWMAN		SHAFT	RPP	1927-1937	SPRINGFIELD	KNOX	9N	4E	23
6046	YATES CITY COLLIERY CO.	YATES CITY	2	SHAFT	RPP	1937-1941	SPRINGFIELD	KNOX	9N	4E	23

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6046	MCLEARY (GEORGE)	MCLEARY		SHAFT	RPP	1941-1942	SPRINGFIELD	KNOX	9N	4E	23
6047	ESSEX, G.W.							KNOX	12N	1E	32
6048								KNOX	13N	2E	26
6049								KNOX	13N	2E	36
6050	BUTLER	BUTLER						KNOX	12N	4E	18
6810				DRIFT			COLCHESTER	KNOX	13N	1E	11
6819				DRIFT			COLCHESTER	KNOX	13N	1E	11
6822				DRIFT			COLCHESTER	KNOX	13N	1E	2
6829				DRIFT			COLCHESTER	KNOX	13N	1E	3
6835	general mined-out area			UG			COLCHESTER	KNOX	10N	1E	25
7706				STRIP			COLCHESTER	KNOX	9N	2E	27
7707							COLCHESTER	KNOX	9N	2E	28
7708				STRIP			COLCHESTER	KNOX	9N	2E	29
7784	LAMBERG (AUGUST)	CORBIN		SHAFT	UG	1881-1882	HERRIN	KNOX	9N	4E	23
7784	CORBIN (WILLIAM)	CORBIN		SHAFT	UG	1882-1883	HERRIN	KNOX	9N	4E	23

APPENDIX M

Table 5-5: Mitigation Strategies

	Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
---	Establish technical teams	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Knox County	Complete	Knox County has technical rescue teams.
---	Develop a stormwater ordinance	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Flood	Knox County	Complete	The county has an up-to-date stormwater ordinance.
---	Flood-proof water supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Flood	Galesburg	Complete	Galesburg keeps its water supply flood-proofed.
---	Construct a facility for community showers in case of a hazmat incident	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Hazmat	Knox County	Complete	The county has community showers.
---	Establish an active LEPC and Hazmat Response Team	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Knox County	Complete	Knox County has an active LEPC and Hazmat Response Team.
---	Compile a local hazardous materials database	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Hazmat	Knox County	Complete	This strategy is complete.

	Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
---	Establish a snowmobile search and rescue team	Goal: Decrease response time from a snow storm Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Winter Storm	Abingdon, Altona, East Galesburg, Farmington, Galesburg, Henderson, Knoxville, Maquon, Oneida, Rio, St. Augustine, Victoria, Wataga, Williamsfield, Yates City	Complete	This strategy is complete.
1	Follow Tier II reports requirements for EPA, ILEPA, and IEMA	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Hazmat	Knox County	Ongoing	This is an ongoing activity.
2	Create an EAP for Lake Story Dam	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Flood	Galesburg	Ongoing	Lake Story Dam has a current EAP. The dam owners will continue to review the plan annually and update as necessary.
3	Distribute weather radios to critical facilities	Goal: Improve hazard communication with the public Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Abingdon, Altona, East Galesburg, Farmington, Galesburg, Henderson, Knoxville, Maquon, Oneida, Rio, St. Augustine, Victoria, Wataga, Williamsfield, Yates City	Ongoing	Most critical facilities are equipped with weather radios. The county would like to develop a program to update existing radios and distribute additional weather radios to the public and will solicit funding from IEMA and FEMA.
4 5	Establish new shelters/warming centers/cooling centers Harden critical facilities to serve as emergency shelters	Goal: Lessen the impacts of severe weather to at-risk communities Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Abingdon, Altona, East Galesburg, Farmington, Henderson, Knoxville, Maquon, Oneida, Rio, St. Augustine, Victoria, Wataga, Williamsfield, Yates City	Ongoing	Currently, only Galesburg has a shelter. The County EMA will work with Red Cross to determine which facilities could be designated as shelters. Funding will be sought from the PDM program and may be additionally used to conduct a shelter study for rural areas of the county. If funding is available, implementation will begin within one year.
6 7	Purchase transfer switches countywide to provide back-up power to critical facilities Procure backup generators for water treatment plants in Maquon and Williamsfield	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Abingdon, Altona, East Galesburg, Farmington, Galesburg, Henderson, Knoxville, Maquon, Oneida, Rio, St. Augustine, Victoria, Wataga, Williamsfield, Yates City	High	The County and other jurisdictions will oversee the implementation of this project. Local resources will be used to determine which facilities should receive generators. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. If funding is available, this project is forecasted to begin within one year.

	Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
8	Significantly harden or replace the EOC and establish an incident command center	Goal: Improve first responder communication and emergency disaster coordination/management Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Fire	Knox County	High	The County EMA will oversee the implementation of this project. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. Implementation of this project will begin within one year.
9	Institute a mass notification system, e.g. Reverse 911 or Blackboard Connect, to cover all communities within the county	Goal: Improve disaster communication with the public Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Fire	Knox County	High	The County EMA oversees the implementation of the project. Local resources will be used to maintain the system. Funding for implementation will be sought from state and federal agencies. Implementation, if funding is available, is forecasted to begin within one year.
10	Purchase and install new warning sirens within the county	Goal: Improve disaster warning system with the public Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Knox County, Maquon, Williamsfield	High	The County Engineer oversees the implementation of the project. Local resources will be used to install and maintain the warning systems. Additional funding will be sought from other funding sources, e.g. PDM program, to expand the warning system coverage area. Implementation, if funding is available, is forecasted to begin within one year.
11	Conduct stream and ditch maintenance, particularly for Cedar Creek Fork	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Flood	Knox County	High	The County EMA will oversee this project. IEMA and DNR are potential funding sources. If funding is available, implementation will begin within one year.
12	Obtain funding to repair Lake Story Dam	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Flood, Earthquake	Galesburg	High	The City of Galesburg will seek state and federal funding, in addition to funding from local resources and community grants, to complete the dam repairs. If funding is available, implementation will begin within one year.
13	Train and organize weather spotters through SKYWARN	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Thunderstorm, Flood, Winter Storm, Fire	Knox County	Medium	The County EMA and other local officials will oversee this project. Local resources will be used to publicize participation in SKYWARN and coordinate the weather spotters. If funding and resources are available, the project will begin within three years.
14	Enforce codes requiring mobile homes to have tie-downs	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Tornado, Thunderstorm	Knox County	Medium	The County EMA will coordinate this planning effort. Local resources will be used to review existing codes and research new options. Implementation will begin within three years.

	Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
15	Develop ordinances to bury new power lines in subdivisions	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Tornado, Earthquake, Thunderstorm, Winter Storm	Knox County	Medium	Although there is not a formal ordinance in place, new subdivisions typically bury power lines. The county will propose development of ordinances to require this practice for all future infrastructure. Local resources will be used to develop the ordinances. If resources are available, implementation will begin within three years.
16 17 18	Repair roads that frequently flood Elevate State Route 41 Fix viaduct at Route 8 and Yates City	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Flood	Knox County, Yates City	Medium	The County Engineer will oversee the implementation of this project. Funding has not been secured as of 2010, but the pre-disaster mitigation program, local resources, and ILDOT are possible funding sources. If funding is available, this project is forecasted to begin within three years.
19 20	Complete an inflow and infiltration study Slip line existing sewer pipes	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Flood	Knox County	Medium	The Engineer will work with ILDOT and DNR to evaluate the current conditions of the community's water systems and develop a plan. Funding has not been secured as of 2010, but county, state, and federal funding will be sought. Implementation will begin within three years.
21	Conduct a study to potentially re-engineer intersections with frequent vehicle accidents: Eastbound Interchange of US 34 and I-74	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Hazmat	Knox County	Medium	The Engineer will work with the County and State Highway Departments to implement this project. Funding for engineers will be sought from state agencies and community grants. Implementation will begin within three years.
22	Establish a database to identify special needs population	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Fire	Knox County	Low	The county has begun a database but needs to complete it and publicize it. The County EMA will work with local healthcare providers to identify the special needs population. Local resources will be used to create a database. State or federal resources may be used for public education. If resources are available, implementation will begin within five years.
23	Conduct a study to determine which buildings are out of date regarding building codes; demolish	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Knox County	Low	The County Planner will work with DNR and ILDOT to evaluate the current conditions of critical facilities and shelters. Funding has not been secured as of 2010, but county, state, and federal funding will be sought. If funding is available, the project is forecasted to begin within five years.
24	Adopt International Building Codes for all new public buildings	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Fire	Abingdon, Altona, East Galesburg, Farmington, Galesburg, Henderson, Knoxville, Maquon, Oneida, Rio, St. Augustine, Victoria, Wataga, Williamsfield, Yates City	Low	The County Planner will coordinate this planning effort. Local resources will be used to review existing codes and research new options. Funding for engineering efforts will be sought from federal resources. Implementation will begin within five years.

	Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
25	Re-route rail line outside of town	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Hazmat, Fire	Knox County	Low	County officials and first responders will oversee this project. Local resources, e.g. rail companies, will be approached to implement this project, and funding will be sought from local, state, and federal resources and community grants. If funding and resources are available, the project will begin within five years.
---	Upgrade transportation equipment for Hazmat Response Team	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Hazmat	Knox County	Low	The County EMA and other local officials will oversee this project. Local resources and community grants will be used to implement and fund this project. If funding and resources are available, the project will begin within five years.
26	Implement natural snow fences/tree barriers	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Winter Storm	Knox County	Low	The County EMA will oversee implementation of this project. Local resources and ILDOT will be used for funding. If funding is available, implementation will begin within five years.

APPENDIX N

Plan Maintenance Checklist

We are in the process of conducting our annual evaluation/status update of the Watseka Multi-Jurisdictional Natural 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.

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.

Plan Maintenance Checklist

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 policies, plans, regulations, or reports 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.

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.

Critical Facilities Damage Questionnaire

Supplemental information about ***damages to critical infrastructure/facilities*** (i.e., government buildings, schools, communication tower and radio equipment, water & sewer treatment facilities, hospitals, etc.) that have ***taken place*** in the municipalities 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 <u>one record</u> for <u>each natural hazard event that damaged a critical facility</u>. Do not combine multiple events on one record. Additional forms are located on the back of this page.

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
☐ hail	☐ snow storm	☐ sinkhole
☐ lightning strike	☐ ice storm	☐ mine subsidence
☐ heavy rain	☐ extreme cold	☐ earthquake
☐ flood	☐ drought	☐ levee failure
	☐ 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 O

Resolution 2023-016

RESOLUTION OF ADOPTION OF THE 2023 KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

WHEREAS, the County of Knox, Illinois is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the County of Knox, Illinois desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the County of Knox, Illinois has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the County of Knox, Illinois hereby approves the following:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Knox County, Illinois; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

Resolved and passed this 29th day of March, 2023

Jared Hawkinson,
Knox County Board Chair

ATTEST: _____
Scott G. Erickson, County Clerk

The City of Abingdon, Illinois
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the City of Abingdon Illinois, is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Abingdon Illinois, desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the City of Abingdon Illinois, has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the City of Abingdon Illinois, hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the City of Abingdon Illinois; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on April 3rd, 2023

CERTIFIED by Ed Swearingen
Ed Swearingen Mayor

ATTESTED by Becky Lewis
Becky Lewis City Clerk

Village of Altona, Illinois
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Village of Altona is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Altona, Illinois desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Village of Altona, Illinois has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THEREFORE, be it resolved that the Village of Altona, Illinois hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Village of Altona, Illinois; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on April 6, 2023

CERTIFIED by _____ SEAL
Village President

ATTESTED by _____
Village Clerk

AOW AMBULANCE SERVICE, INC. NFP
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, AOW Ambulance Service, Inc. NFP, is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, AOW Ambulance Service, INC. NFP desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

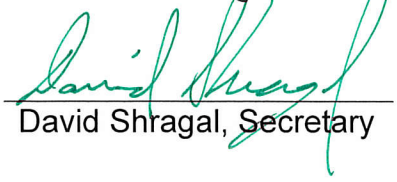
WHEREAS, AOW Ambulance Service, Inc. NFP has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the AOW Ambulance Service, Inc., NFP hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of AOW Ambulance Service, Inc., NFP; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 3/14/2023

CERTIFIED by 
Karl Johnson, President

ATTESTED by 
David Shragal, Secretary

(Carl Sandburg College)
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, (Carl Sandburg College) is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the (Carl Sandburg College) desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, (Carl Sandburg College) has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the (Carl Sandburg College) hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of (Carl Sandburg College); and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 3/21/2023

CERTIFIED by 
(Gabriel Trulson, Chief Safety)

ATTESTED by 
(Gabriel Trulson, Chief Safety)

RESOLUTION NO. 23-24

RESOLUTION TO ADOPT THE
2023 KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

WHEREAS, the City of Galesburg is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Galesburg desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2024; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the City of Galesburg has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Plan covering member jurisdictions of Knox County.

NOW THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF GALESBURG, KNOX COUNTY, ILLINOIS, as follows:

SECTION 1: Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the City of Galesburg; and

SECTION 2: Agrees to participate in the annual and five-year updates to this Plan.

SECTION 3: This Resolution shall be in full force and effect from and after its passage and approval according to law.

Approved this 17th day of April 2023, by a roll call vote as follows:

Roll Call #: 7

Ayes: Council Members Hix, Dennis, Wallace, White, Smith-Esters, Davis, and Cox, 7.

Nays: None.

Absent: None.

Abstain: None.

Peter D. Schwartzman, Mayor

ATTEST:

Kelli R. Bennewitz, City Clerk

(Henderson Fire Protection District)
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, (Henderson Fire Protection District) is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the (Henderson Fire Protection District) desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, (Henderson Fire Protection District) has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the (Henderson Fire Protection District) hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of (Henderson Fire Protection District); and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 3-9-2023

CERTIFIED by Dan NL Trustee; President (SEAL) (IF REQUIRED)

ATTESTED by Bill Stone Fire Chief

Knox College
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Knox College is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, Knox College desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Knox College has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that Knox College hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Knox College; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on April 25, 2023

CERTIFIED by _____
C. Andrew McGadney
President

ATTESTED by _____
Peggy Ware
Secretary of the College

RESOLUTION 2023-01
City of Knoxville, Illinois
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the City of Knoxville is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Knoxville desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the City of Knoxville has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the City of Knoxville hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the City of Knoxville; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 3-20-2023

CERTIFIED by _____
Toby Myers, Mayor

ATTESTED by Leslie Wilt
Leslie Wilt, City Clerk

CITY OF KNOXVILLE
CHARTERED
A.D. 1853
ILLINOIS

RESOLUTION NO. 2023-3A

A RESOLUTION FOR THE VILLAGE OF MAQUON, ILLINOIS TO ADOPT THE 2023 KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

WHEREAS, the Village of Maquon is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Maquon desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the Village of Maquon has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW, THEREFORE, BE IT RESOLVED by the Village Board of the VILLAGE OF MAQUON, Knox County, Illinois, hereby:

Section 1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the Village of Maquon; and

Section 2. Agrees to participate in the annual and 5-year updates to this Plan.

[INTENTIONALLY LEFT BLANK]

PASSED this 28th day of March, 2023, pursuant to a roll call vote as follows:

AYES: 6
NAYS: 0
ABSTAIN: 0
ABSENT: 0

APPROVED: March 28, 2023.

Village President

(CORPORATE SEAL)

ATTEST:

Village Clerk

CERTIFICATION

STATE OF ILLINOIS,)
COUNTY OF KNOX,) SS.
VILLAGE OF MAQUON,)

I, ASHLEY LITTLE, Village Clerk of the Village of Maquon, in the County of Knox and the State of Illinois, DO HEARBY CERTIFY that the foregoing and attached Resolution is a true copy of **Resolution No. 2023-3A** entitled "**A RESOLUTION FOR THE VILLAGE OF MAQUON, ILLINOIS TO ADOPT THE 2023 KNOX COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN** ", which was adopted by a majority vote of the Village Board of the VILLAGE OF MAQUON and approved by the President of said Village at a regular Village Board Meeting held on the 28th day of March, 2023, at which a quorum was present and that the matter of such Resolution was on the agenda for the meeting which was posted in the time and manner according to Illinois law.

I FURTHER CERTIFY that the original Resolution, of which the foregoing is a true copy, is entrusted to my custody for safekeeping and is on file in my office and a part of the official records and files of the Village Clerk's Office.

I FURTHER CERTIFY that the aforesaid Resolution was duly published in pamphlet form on the 31st day of March, 2023.

I FURTHER CERTIFY that I am keeper of the Papers, Entries, Records and Ordinances, of the said VILLAGE OF MAQUON, that I am the custodian of the attached Corporate Seal of said VILLAGE OF MAQUON and that the foregoing and attached Resolution is in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal of the VILLAGE OF MAQUON, in the County of Knox and State of Illinois, this 31st day of March, 2023.

(CORPORATE SEAL)

Ashley Little, Village Clerk of the
Village of Maquon, Illinois

OSF St. Mary Medical Center
Resolution of Adoption
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, OSF St. Mary Medical Center is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the OSF St. Mary Medical Center desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, OSF St. Mary Medical Center has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the OSF St. Mary Medical Center hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of OSF St. Mary Medical Center; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on March 20, 2023 Month, date, year

CERTIFIED by _____
Lisa DeKezel, President (SEAL) (IF REQUIRED)

ATTESTED by _____
Alice T. Snyder, CNO/VP Pt. Services

RIO Fire Protection District
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, RIO Fire Protection District is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the RIO Fire Protection District desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS,Rio Fire Protection District has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the Rio Fire Protection District hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of RIO Fire Protection District; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 04/11/23

CERTIFIED by _____
Zack Page Fire Chief

ATTESTED by _____
Ryan Bramlett Asst. Chief

VILLAGE OF WATAGA, KNOX COUNTY, ILLINOIS
RESOLUTION OF ADOPTION
OF THE
2023 KNOX COUNTY MULTI-JURISDICTIONAL
ALL HAZARDS MITIGATION PLAN

WHEREAS, the VILLAGE OF WATAGA, Knox County, Illinois, is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the VILLAGE OF WATAGA, Knox County, Illinois, desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the VILLAGE OF WATAGA has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THEREFORE, be it resolved that the VILLAGE OF WATAGA hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the VILLAGE OF WATAGA; and,

2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on June 13, 2023

CERTIFIED by _____
Michael R. Campbell, President

ATTESTED by _____
Ty Barnes, Village Clerk

Village of Yates City, Illinois
Resolution of Adoption
of the
2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Village of Yates City is subject to natural and man-made hazards including severe thunderstorms, severe winter storms, floods, tornadoes, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Yates City desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan was updated in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Village of Yates City has participated in updating the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Knox County:

NOW THERFORE, be it resolved that the Village of Yates City hereby:

1. Adopts the 2023 Knox County Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Village of Yates City ; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on June 14th 2023

CERTIFIED by _____ TITLE: Village President (SEAL) (IF REQUIRED)

ATTESTED by _____ TITLE Village Clerk